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**FIELD**

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**VOL. 13 PART 2**

**UTTAR PRADESH**

**1954-59**



**सत्यमेव जयते**

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## FOREWORD

Increase in agricultural production is one of the main objectives of our agricultural planning. It is only by the exploitation of scientific methods of agriculture that we can hope to increase our agricultural production to the level needed for maintaining a reasonable standard of living to the country's population. The technical worth of improvement measures is best judged from carefully conducted field experiments. While it is true that a large number of agricultural field experiments are conducted in the country, the results of these experiments have not been brought together in an integrated manner for the use of research workers. The absence of such a unified account has often led to duplication of work and delay in the utilisation of results for practical farming. The Institute of Agricultural Research Statistics has rendered a very valuable service by preparing a compendium of agricultural field experiments conducted in the country. The first series of compendium containing the results of all agricultural field experiments during the period 1948-53 have already been published by the Institute.

The present compendium is the second in the series covering the period 1954-59. As in the earlier compendium, the present series also contains critical summaries of results of experiments bearing on important agronomic factors, such as the response of crops to fertilizers and manures, inter-relationship of fertilizers, varieties and cultivation practices and other information of value for giving sound advice to farmers in different regions. Judging from the demand for the first series of the compendium, I am sure that the present series will also prove equally useful.

A Standing Committee consisting of the Agricultural Commissioner with the Government of India, the Director, Indian Agricultural Research Institute, and the Statistical Adviser, Indian Council of Agricultural Research, has been set up to provide general guidance to the work under this scheme. I congratulate the members of this Committee and, in particular, the Statistical Adviser and his associates at the Institute of Agricultural Research Statistics for bringing out this compendium. The preparation of this compendium has been made possible only by the wholehearted co-operation of the States and other organisations in making available the results of their experimental researches for this purpose. My thanks are due to the officers of the State Departments of Agriculture and other institutions for participating in this work. I hope that the present series will be followed by periodical publications of similar compendia for later years, in order that the availability, in a consolidated form, of results of scientific experiments in agriculture in India may be maintained up-to-date.

A. D. PANDIT

*Vice-President,*

*Indian Council of Agricultural Research.*

NEW DELHI,

March 26, 1965.

## PREFACE

The present set of volumes form Part II in the series of compendia of Agricultural Field Experiments being published by the Indian Council of Agricultural Research under the project for National Index of Field Experiments and contains a unified record of experiments conducted at agricultural research stations and institutes all over the country. Volumes in Part I in this series were published in 1962 and contained results of some 7,500 experiments conducted during the period 1948-53. The present set of volumes includes results of experiments conducted during the next period that is 1954-59. After the period, covered by Part I of the series, agricultural research and experimentation has expanded so much that for the period 1954-59, to which the present volumes refer, results of more than 15,000 experiments are available.

The present compendium is prepared on the same pattern as the previous one and is divided into 15 volumes one each for (1) Andhra Pradesh, (2) Assam, Manipur and Tripura, (3) Bihar, (4) Gujarat, (5) Kerala, (6) Madhya Pradesh, (7) Madras, (8) Maharashtra, (9) Mysore, (10) Orissa, (11) Punjab, Jammu and Kashmir and Himachal Pradesh, (12) Rajasthan, (13) Uttar Pradesh (14) West Bengal and (15) All Central Institutes. In each volume, background information of the respective state regarding its division into different soils and agro-climatic regions, rainfall and cropping pattern followed in each region and agricultural production and area under different crops in the State is given. The experiments reported in each volume have been arranged crop-wise for each State. All the experiments belonging to a particular crop at various research stations are Grouped together. For a particular crop, experiments are arranged according to the following classification :

Manurial (M), Cultural (C), Irrigational (I), Diseases, pests and chemicals other than fertilizers (D), Rotational (R), Mixed cropping (X) and combinations of these wherever they occur (*e.g.* CM as Cultural-cum-Manurial). Experiments in which crop varieties also form a factor are denoted by adding V to their symbol and are grouped together (*e.g.* MV as Manurial-cum-Varietal).

This publication owes its origin to the guidance and help of Dr. D.J. Finney, F.R.S., Professor of Statistics, Aberdeen University, Scotland, in formulating the project during his stay at the Institute of Agricultural Research Statistics as an F.A.O. expert in 1952-53.

At the Institute of Agricultural Research Statistics the work under the scheme was carried out under the supervision of Shri. T.P. Abraham, Assistant Statistical Adviser. The actual working of the scheme was conducted by Shri G.A. Kulkarni, Statistician till he left the Institute in July, 1964. The work was subsequently taken over by Shri O.P. Kathuria, Assistant Statistician. Messrs. L.B.S. Somayazulu, P.P. Rao, M.L. Sahni, Harbhajan Singh, A.L. Punhani, M.K. Joshi, N.K. Worrier, H.C. Jain and J.K. Kapoor of the statistical staff of the Institute deserve special mention for careful and painstaking work in editing and scrutiny of the manuscript as well as proofs of the compendium.

The burden of collecting the data from the various research stations and the analysis of a large number of experiments once again fell on the regional staff of the Council placed in different States. They deserve to be congratulated for the hard work they have put in.

Thanks are due to the State Departments of Agriculture, the Central Institutes and the Commodity Committees who made the data of the experiments conducted under their jurisdiction readily available to the staff of the Institute. The present publication has become possible only through their unstinted co-operation. The Institute is also thankful to the various

officers in the States who worked as Regional Supervisors for the project from time to time and took keen interest in the working of the Schemé. The list of the names of the regional supervisors and the regional staff of the project is given on the following page.

NEW DELHI,  
March 25, 1965.

V.G. PANSE  
*Statistical Adviser,*  
*Institute of Agricultural Research Statistics (I.C.A.R.).*

REGIONAL SUPERVISORS AND REGIONAL STAFF FOR THE NATIONAL  
INDEX OF FIELD EXPERIMENTS

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2. MAHARASHTRA (POONA)	P.D. MEHTA B. RAMAKRISHNAN	SHRI D.S. RANGARAO, Statistician, Department of Agriculture.
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7. BIHAR (SABOUR)	M.K. JOSHI P.C. KHOLIA	SHRI G.P. SINGH, Statistician, Department of Agriculture.  SHRI R.S. ROY, Principal, Agricultural Research Institute, Sabour.
8. RAJASTHAN (JAIPUR)	B.P. DYUNDI N.K. OHRI	SHRI H.C. KOTHARI, Statistician, Department of Agriculture,
9. ORISSA (BHUBANESWAR)	L.B.S. SOMAYAZULU	SHRI B. MISRA, Deputy Director of Agriculture (Hq.)  SHRI D. MISRA, Principal, Uttakal Krushi Mahavidyalaya, Bhubaneswar.
10. WEST BENGAL (CALUTTA)	S.N. NATH	SHRI S.N. MUKERJEE, Statistical Officer, Directorate of Agriculture;

11. MADRAS  
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- P. PRABHAKARA RAO      LATE SHRI M. BHAVANI SANKAR RAO,  
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SHRI A.H. SARMA,  
Extension Specialist.  
SHRI V. RAMAN,  
Secretary, Research Council.  
SHRI K.R. NAGARAJA RAO,  
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Assistant Director of Statistics.
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Director of Agriculture.  
SHRI N. SHANKARA MENON  
Director of Agriculture.  
SHRI P.D. NAIR,  
Director of Agriculture.

## ABBREVIATIONS COMMON TO EXPERIMENTS ON ANNUAL AND PERENNIAL CROPS AND EXPERIMENTS ON CULTIVATORS' FIELDS.

**Crops :-** In the top left corner is given the name of the crop on which the experiment is conducted. Within brackets along side the crop is mentioned the season wherever the information is available.

**Ref :-** Against the sub-title 'reference' is mentioned the name of the State, the year in which the experiment is conducted and the serial number of the experiment for that year given in brackets.

Abbreviations adopted for States are as follows :-

- |                           |                        |
|---------------------------|------------------------|
| 1. A.P.—Andhra Pradesh    | 9. M.—Madras           |
| 2. As.—Assam              | 10. Mh.—Maharashtra    |
| 3. Bh.—Bihar              | 11. Ms.—Mysore         |
| 4. Gj.—Gujarat            | 12. Or.—Orissa         |
| 5. H.P.—Himachal Pradesh  | 13. Pb.—Punjab         |
| 6. J.K.—Jammu and Kashmir | 14. Rj.—Rajasthan      |
| 7. K.—Kerala              | 15. U.P.—Uttar Pradesh |
| 8. M.P.—Madhya Pradesh    | 16. W.B.—West Bangal   |

For the experiments conducted under the schemes sponsored by the Indian Council of Agricultural Research like the Model Agronomic Experiments or the Simple Fertilizer Trials scheme no serial numbers have been given at the source as the data of these experiments were collected at the Headquarters (New Delhi). In such cases the abbreviations MAE, SFT or TCM are given in the brackets against the year in which the experiment is conducted.

**Site :-** Name of the Research Station is mentioned alongwith the place where it is located, e.g. Agri. Res. Stn. for Agricultural Research Station.

For Central Institutes, the corresponding standard abbreviations have been adopted e.g. I.A.R.I. for the Indian Agricultural Research Institute.

In case of the experiments conducted on cultivators' fields whether under an Indian Council of Agricultural Research scheme or by the State Government, the abbreviation (c.f.) is given along with the site or centre as, for example, Cuttack (c.f.).

**Type :-** Abbreviations used against this item are one or more than one of the following :-

C—Cultural ; D—Control of Diseases and Pests ; I—Irrigational ; M—Manurial ; R—Rotational ; V—Varietal and X—Mixed cropping. e.g. CM is to be read as Cultural-cum-manurial.

**Object :-** A statement of the objective of the experiment is given indicating the main crop and type of the experiment. In case of M.A.E., S.F.T. and T.C.M. experiments, the type to which the experiment corresponds is also given, e.g. Type V, Type A or B or C etc.

**Results :-** Information under this heading should be read against the following items :-

(i) General mean. (ii) S.E. per plot. (iii) Results of test of significance. (iv) Summary table(s) with S.E. of comparison(s).

Other abbreviations used in the text of experiments :

Nitro. Phos.—Nitro. Phosphate	A/N—Ammonium Nitrate
Ammo. Phos.—Ammonium Phosphate	A/C—Ammonium Chloride
A/S—Ammonium Sulphate	C/N—Chilean Nitrate
A/S/N.—Ammonium Sulphate Nitrate	N—Nitrogen
C/A/N—Calcium Ammonium Nitrate	P—Phosphate

K—Potash	F.M.—Fish Manure
B.M.—Bone meal	G.N.C.—Groundnut cake
Mur. Pot.—Muriate of Potash	M.C.—Municipal Compost
Pot. Sul.—Potassium Sulphate	T.C.—Town Compost
Super—Super Phosphate	lb.—Pounds
Zn. Sul.—Zinc Sulphate	Srs.—Seers
C/S—Copper Sulphate	B.D.—Basal dressing
G.M.—Green Manure	C.L.—Cart load
F.Y.M.—Farm Yard Manure	ac.—Acre
F.W.C.—Farm Waste Compost	Dical. Phos.—Dicalcium Phosphate

Under the item (ii) (b) of the sub-heading 'Basal conditions' in the text of the experiment, the respective farm/station at which the experiment was conducted has been referred to for the soil analysis. The soil analysis of the farm, with other details of the research station is given under the background information of each state. The information regarding the details of experimental stations may be obtained under the respective items as given below :

#### DETAILS OF EXPERIMENTAL STATIONS

##### A. General information :

(i) District and the nearest railway station with Latitude, Longitude and Altitude if available. General topography of the experimental area. (ii) Type of tract it represents. (iii) Year of establishment. (iv) Cropping pattern. (v) Programme of research.

##### B. Normal rainfall :

Average monthly rainfall specifying the period on which the figures are based.

##### C. Irrigation and drainage facilities :

(i) (a) Whether available, if so, since when. (b) Type of facilities available. (ii) Whether there is a proper drainage system.

##### D. Soil type and soil analysis :

(i) Broad soil type with depth, colour, and structure etc. (i) Chemical analysis. (iii) Mechanical analysis.

##### E. No. of experiments :

No. of experiments conducted on different crops that have been included in the compendium.

Information under the following heads is to be read against the respective items as given below.

#### BASAL CONDITIONS

##### A. For experiments on annual crops :

(i) (a) Crop rotation if any. (b) Previous crop. (c) Manuring of previous crop. (State amount and kind). (ii) (a) Soil type. (b) Soil analysis. (iii) Date of sowing/planting. (iv) Cultural practices. (a) Preparatory cultivation. (b) Method of sowing/planting. (c) Seed-rate. (d) Spacing. (e) No. of seedlings per hole. (v) Basal manuring with time and method of application. (vi) Variety. (vii) Irrigated or Unirrigated. (viii) Post-sowing/planting cultural operations. (ix) Rainfall during crop season (x) Date of harvest.

##### B. For experiments on perennial crops :

(i) History of site including manuring and other operations. (ii) (a) Soil type. (b) Soil analysis. (iii) Method of propagation of plants. (iv) Variety. (v) Date and method of sowing/planting. (vi) Age of seedlings at the time of planting. (vii) Basal dressing with time and method of application. (viii) Cultural operations during the year. (ix) Inter cropping if any. (x) Irrigated or Unirrigated. (xi) Rainfall during crop season. (xii) Date of harvest.



**C. For experiments on cultivators' fields :**

(i) (a) Crop rotation, if any. (b) Previous crop. (c) Manuring of previous crop. (ii) Soil type in general. (iii) Basal manuring with time and method of application. (iv) Variety. (v) Cultural practices. (a) Preparatory cultivation. (b) Method of sowing. (c) Seed-rate. (d) Spacing. (e) No. of seedlings per hole. (vi) Period of sowing/planting. (vii) Irrigated or Unirrigated. (viii) Post-sowing/planting cultural operations. (ix) Rainfall during crop season. (x) Period of harvesting.

## DESIGN

**A. For experiments on annual crops :**

(i) Abbreviations for design : C.R.D.—Completely Randomised Design. R.B.D.—Randomised Block Design, L. Sq.—Latin Square, Confd.—Confounded, Fact.—Factorial. (other designs and modifications of the above to be indicated in full.). (ii) (a) No. of plots per block. (b) Block dimensions. (iii) No. of replications. (iv) Plot size. (a) Gross (b) Net. (v) Border or guard rows kept. (vi) Whether treatments are randomised (separately in each block).

**B. For experiments on perennial crops :**

(i) Abbreviations for designs : C.R.D.—Completely Randomised Design ; R.B.D.—Randomised Block Design ; L.Sq.—Latin Square ; Confd.—Confounded. (other designs and modifications of the above indicated in full). (ii) (a) No. of plots per block. (b) Block dimensions. (iii) No. of replications. (iv) No. of trees/plot. (v) Border or guard rows kept. (vi) Are treatments randomised.

**C. For experiments on cultivators' fields :**

(i) Method of selection of experimental sites. (ii) No. and distribution of experiments. (iii) Plot size. (a) Gross. (b) Net. (iv) Whether treatments are randomised.

## GENERAL

**A. For experiments on annual crops :**

(i) Crop conditions during growth with date of lodging, if any. (ii) Incidence of pests and diseases with control measures taken. (iii) Quantitative observations taken. (iv) In case of repetition in successive years—(a) from what year to what year, (b) whether treatments were assigned to the same plots in the same manner every year, (c) reference to combined analysis, if any. (v) In case of repetition in other places (a) names of the places along with reference and (b) reference to combined analysis, if any. (vi) Abnormal occurrences like heavy rains, frost, storm etc., if any. (vii) Any other important information.

**B. For experiments on perennial crops :**

(i) Crop condition during the year. (ii) Incidence of pests and diseases with control measures taken. (iii) Quantitative observations taken. (iv) In case of repetition in successive years—(a) from what year to what year, (b) reference to combined analysis, if any. (v) Abnormal occurrences like heavy rains, frost, storm etc., if any. (vi) Any other important information.

**C. For experiments on cultivators' fields :**

(i) Crop condition during growth. (ii) Incidence of pests and diseases with control measures taken. (iii) Quantitative observations taken. (iv) In case of repetition in successive years, (a) from what year to what year, (b) whether treatments were assigned to the same plots in the same manner every year, (c) reference to combined analysis, if any. (v) In case of repetition in other places names of places along with reference. (vi) Abnormal occurrences, like heavy rains, frost, storm etc., if any. (vii) Any other important information.

## TABLE OF CONVERSIONS TO METRIC UNITS

1 foot	=	304.8 mm.
1 acre	=	0.404606 hectare.
1 gram	=	0.035274 ounce = 0.085735 tola = 0.017147 chatak
1 kg.	=	2.20462 pounds = 1.07169 seers.
1 metric tone	=	0.9842 ton = 26.7923 maunds.
1 maund	=	0.373242 quintal = 37.3242 kg.
1 lb./ac.	=	1.12085 kg./hectare.
1 md./ac.	=	92.23002 kg./hectare = 0.9223 quintal/hectare.
1 ton/ac.	=	2.51071 metric tones/hectare.
1 gallon (Imp.)	=	4.54596 litres.

GLOSSARY OF VERNACULAR NAMES OF CROPS

Sl. No.	Name of Crop	Botanical name	Assamese	Bengali	Oriya	Telugu	Tamil	Malayalam	Kannada	Marathi	Gujarati	Hindi	Punjabi
1.	Paddy	<i>Oryza sativa</i> L.	Dhan	Dhan	Dhano	Vadlu ; Biyyamu	Nel	Nellu	Bhatta	Bhat	Dangar	Dhan ; Chawal	Chaul ; Dhan
2.	Wheat	<i>Triticum sativum</i> Lamk. ; <i>Triticum aestivum</i> L.	Gaum ; Ghehu	Gam	Gaham	Godumalu	Kothumai	Gothambu	Godhi	Gahu	Ghahu	Gehon	Kanak
3.	Barley	<i>Hordeum vulgare</i> L.	Ja'dhan	Joba	Jaba, Barlhi or Jabadhana	Barley	Baarli arisi	Barley	Barley akki	Satu ; Jav	Jav	Jau	Jaun
4.	Oats	<i>Avena sterilis</i> Linn var. <i>culta</i>	Oat	Jai	Jaie, Ota	Yavalu	Oat Arisi	Oat	Thoke godhi	Jai	Jav	Jaie	Jaur, Jae
5.	Jowar	<i>Andropogon sorghum</i> Brot.	—	Jowar	Juara	Jonna	Cholam	Cholam	Jola	Jowari Jondhla	Jowari ; Juar	Jowar ; Juar	Jowar
6.	Bajra	<i>Pennisetum typhoides</i> Stapf Es Hubbard	—	Bajra	Bajra	Sajja	Kambu	Kambu	Sajje	Bajri	Bajri	Bajra	Bajra
7.	Maize	<i>Zea mays</i> L.	Gom dhan	Bhutta	Macca	Mokkajo- nna	Makka cholam	Cholam ; Makka cholam	Musukina jola	Makka	Makkai	Makka	Makki ; Makayee
8.	Potato	<i>Solanum tuberosum</i> L.	Alooguti	Alu	Bilati Alu	Bangala- dumpa, Utlagadda Benda	Ur zhai Kilangu	Urala kizangu	Alu gedde	Batata	Aloo ; Batata	Aaloo	Alu
9.	Bhindi (Lady's finger)	<i>Hibiscus esculentus</i> ; <i>Abelmoschus esculentus</i> Moench.	Bhendi	Dhenrosh	Vendi	Benda	Bendai kai	Venda	Bende kayi	Bhendi	Bhida ; Bhinda	Bhindi	Bhindi ; Tori
10.	Brinjal ; Egg plant	<i>Solanum melongena</i> L.	Bengena	Begun	Baigan	Vankaya	Katharikai	Vazhuthana	Badane kayi	Vange	Vengan	Baingan	Bengan ; Bataun
11.	Cabbage	<i>Brassica oleracea</i> L. var. <i>capitata</i> L.	Bandha Kabi	Bandhakapi	Bandha Kobi	L. Akugobi	Muttaikose	Muttakose	Yele kosu	Kobi	Kobij	Patgobhy	Band gobhi
12.	Cauliflower	<i>Brassica oleracea</i> L. var. <i>botrytis</i> L.	Phool Kabi	Fulkapi	Fula kobi	Poogobi	Gospoovu	Cauliflower	Hukosu	Phul kobi, Fulvar	Fulkobi ; Fulvar	Phool Gobhy	Phul gobh ;
13.	Onion	<i>Allium cepa</i> L.	Piyaz	Piaj	Peas ; Ulli	Ulli	Vengayam ; Erangagam	Ulli	Eerulli	Kanda	Dungli ; Kando	Piaz	Ganda ; Payaz
14.	Radish	<i>Raphanus sativus</i> L.	Mula	Mula	Mula	Mullangi	Mullangi	Mullanki	Mullangi	Mula	Mulo	Mooli	Muli

GLOSSARY OF VERNACULAR NAMES OF CROPS—contd.

Sl. No.	Name of Crop	Botanical Name	Assamese	Bengali	Oriya	Telugu	Tamil	Malayalam	Kannada	Marathi	Gujarati	Hindi	Punjabi
15.	Pumpkin	<i>Cucurbita pepo</i> ; <i>Cucurbita moschata</i> Duch.	Kumura	Kumra	Bilati Kakharu (Scas)	Alugadda Seemagummadi	Poosani	Mathanga	Kumbala kayi	Kashi Bhopla	Kohla	Sita phal	Halwa kadu ;
16.	Tomato	<i>Lycopersicum esculentum</i> Mill.	Bilahi	Bilati begun	Bilati baigan bapatla-ghant	Tomato ; Ramamulaka ; Seema vankaya	Thakkali	Thakkali	Tomato	Welwangi ; Tambati	Vilaiti wagan ; Tameta	Tamatter	Tamatar
17.	Ash gourd	<i>Benincasa cerifera</i> Savi	Kumura	Chal kumra	Pani kakharu	Bud'da-gummadi	Sambal poosani	Kumbalanga	Budugumbla	Kohala	Kohala	—	Petha
18.	Spinach	<i>Spinacia oleracea</i> L.	Palang sak	Palang	Mitha Palanga (Saga)	Teegabatchali	Vusavyeley keerai	—	Spinak soppu	Palak	Palak	Paalak	Palak
19.	Lettuce	<i>Lactuca sativa</i> L.	Salad	Letus	Salad	Letuse	Shallaathu	Lettuce	Lettuce	Salit ; Letu	Salit	Salad	Salad
20.	Water melon	<i>Citrullus Vulgaris</i> Schrad	Tarmuj	Tarmuj	Tarubhuja	Putchu or kalingarakaya	Tharbuza Palam Panna	Thannir mathan	Kallangadi	Kalingad	Tarbuz	Tarbooj	Tarbuz
21.	Arbi	<i>Colocasia antiquorum</i> Schott.	—	Kachu	Saru	Chema-dumpalu	Sambu ; Sapan Kizhangu	Chembu	Kesavina gedde	Alu	Alvi	Akhi Dhueya	Arvi
22.	Turnip	<i>Brassica Campestris</i> var. <i>rapa</i> L.	Salgom	Shalgam	Salgum	Turnip	—	Seema mullanki	Turnip	Salgam	Salgham	Saljam	Gonglu ; Shalgam ; Thippar
23.	Pea	<i>Pisum Sativum</i> L.	Motor mah	Bara matar	Ma'ar	Batancelu	Pattani	Pattani	Batani	Mator	Vatana	Muttar	Mattar
24.	Gram	<i>Cicer arietinum</i> L.	Butmah	Chola	Boot	Sanagalu	Kadalai;Sundal Kadalai	Kadala	Kadale	Harbara	Chana	Chana	Chhole ; Chana
25.	Urid	<i>Phaseolus mungo</i> var. <i>radiatus</i> Linn.	Matimah	Mashkalai	Biri	Minumulu	Uzhundu	Uzhunnu	Uddu	Udid	Adad ; Udad	Urd	Mash ; Urd
26.	Masoor	<i>Lens esculenta</i> Moench ; <i>Lens culinaris</i> Medic.	Masurmah	Musuri	Masur	Chirusenaga	Masur Paruppu	—	Masooru-bele	Masur	Masur	Masur	Massar
27.	Lobia, Cowpea	<i>Vigna catjang</i> Walp ; <i>Vigna sinensis</i> Savi.	—	Barbati	—	—	Thatapayaru	Mmbayar	Alasande	Chavli	Chola ; Choli	—	Lobia
28.	Moong	<i>Phaseolus aureus</i> Roxb.	Maguma	Sonamug	Murg	Pachaposalu	Pachapayaru; Pasipayaru	Cerupayaru ; Payaru	Hesaru	Mug ;	Mag	Moong	Moong, Mug

GLOSSARY OF VERNACULAR NAMES OF CROP—contd.

Sl. No.	Name of Crop	Botanical Name	Assamese	Bengali	Oriya	Telngu	Tamil	Malayalam	Kannada	Marathi	Gujarati	Hindi	Punjabi
29.	Sugarcane	<i>Saccharum officinarum</i> L.	Kuhiar	Akh	—	Cheruku	Karumbu	Karimbu	Kabbu	Oos	Sherdi	Ganna ; Kamad ; Naishakar	Kamad ; Ganna ; Eakh
30.	Cotton	<i>Gossypium</i> spp.	Kapah	Karpas	Kapa	Pratti	Paruthis	Paruthi	Hatti	Kapus	Kapas	Kapas	Kapah
31.	Jute	<i>Corchorus</i> spp.	Marapat	Shada pat Tosha pat	Jhota	Janumu	Chanapai	Chanambu	Senabu	Joot	Moti	Jute	Patsan
32.	Tobacco	<i>Nicotiana tabacum</i> L.	Dhopat	Tamak	Uanpatra	Pogaku	Pugayilai	Pukayila	Hoge Soppu	Tambaku	Tamaku	Tambaku	Tamaku, Tambaku Mungfali
33.	Groundnut	<i>Arachis hypogaea</i> L.	China Badam	Cheena badam	China- badam	Nelashanga	Nilakadalai	Nilakkadala	Kadale kayi	Bhuimug	Bhoising ; Magafali	Mungphali	
34.	Til (Sesamum)	<i>Sesamum orientale</i> L. <i>Sesamum indicum</i> L.	Til	Til	Rasi	Nuvvulu	Ellu	Ellu	Yellu	Til, Tili	Tal	Til	Til
35.	Soyabean	<i>Glycine hispida</i> ; <i>Glycine max</i> Merr.	Garomah	Gari kalai	—	Soya- chikkudu	Soya- payaru	Soybean	Soya bean	Soybin	Soyabin	Soyabeen or Bhat	Soyabean
36.	Linseed	<i>Linum usitatissimum</i> L.	Tisi	Tishi	Peshi	Avise	Alivithai	Cherucha- navithu	Agase	Java ; Alsi	Alsi	Alsi	Alsi
37.	Castor	<i>Ricinus communis</i> L.	Eri	Rehri	Jada	Amudalu	Amanakku	Avanakku	Haralu	Erandi	Diveli Erando	Rehri	Arnd, Harind, Rind
38.	Mustard	<i>Brassica juncea</i> Coss.	Sraiah	Rai Sarisha	Rai	Avalu	Kadugu	Kaduku	Kempu- sasive	Mohri	Rai	Rai	Rai
39.	Garlic	<i>Allium sativum</i> L.	Nohoyu	Rashun	Rasun	Vellulli	Poodu, Vella poodu	Veluthulli	Bellulli	Lasun	Lasan	Lehsoon	Thom, Lassan
40.	Berseem	<i>Trifolium alexandrinum</i> L.	—	Berseem	Gini ghasa	—	—	—	—	Bersim gavati	Barsim	Berseem	Berseem
41.	Cluster bean	<i>Cyamopsis psoraloides</i>	Thupi Urahi	Guar	Gunar chhuin	Goruchik- kudu	Kotha- varukai Seenia- vara kai	Kothavara	Gori kayi	Guwar	Gavar	Guar	Guara
42.	Lucerne	<i>Medicago sativa</i> L.	Lucerne ghah	Lucern	Lusarna	Garam Masal	Kuthirai- masal	Lucerne	Kudure masale	Lasun ghas ; Vilaiti ghavat	Gadab Rajko	—	Lusan
43.	Apple	<i>Pyrus malus</i> L.	—	Apel	Seo	Apple ; Sabe	Appel	Apple	Sebu	Apple	Safarjan	Seb	Seo ; Seb

GLOSSARY OF VERNACULAR NAMES OF CROPS *contd.*

Sl. No	Name of Crop	Botanical Name	Assamese	Bengali	Oriya	Telugu	Tamil	Malayalam	Kannada	Marathi	Gujarati	Hindi	Punjabi
44.	Mango	<i>Mangifera indica</i> L.	Am	Am	Amba	Mamidi	Mangai	Mavu	Mavu	Amba	Keri	Aam	Amb
45.	Grape fruit	<i>Citrus pardisi</i> Macf.	Grape Fruit	---	---	Pamparapana	China bombili maas	---	---	Grape fruit	---	Grape fruit	Grape phal
46.	Sweet orange	<i>Citrus sinensis</i> Osbeck.	Malta ; Mozambique	Mosambi	Mitha kamala ; Mhata kamala	Battayi	Sathugudi ; Cheeni	MaJura naranga	Sathkudi	Mosambi	Mosambi	Malta ; Mausmee	Malta
47.	Mandria	<i>Citrus reticulata</i> Blanco	Kamala	Kamla lebu	Santra	Kamalaphalamu	Kamla ; Koorg Kudagu orange	Arangu	---	Santra	Santra ; Narangi	Santra	Santra
48.	Lime	<i>Citrus aurntifolia</i> Swingle	Kagzi	Kagzi lebu	Kagji Lumbu	Nimma	Elummi chai	Naranga	Kittale	Kagdi limbu	Limbu ; khata limbu	Kagzi Nemboo	Nimbu
49.	Guava	<i>Psidium guajava</i> L.	Madhuri	Peyara	Pijuli	Jama	Koyya	Pera	Sebe	Peru	Jamphal	Amrood	Amrud
50.	Pear	<i>Pyrus communis</i> L.	Naspoti	Nashpati	Naspati	Beripallu	Berikai	---	Pear hannu	Pear	---	Naaspaati	Nakh Nashpati
51.	Peach	<i>Prunus persica</i> Butsch.	Narabogori	Pich	---	Peech	---	---	Pichis hannu	Pich	---	Aaroo	Aru
52.	Litchi	<i>Litchi chinensis</i> Sonn.	Litchu	Litchu	Litchu	Lichi	---	---	Lichi	Lichi	Lichi	Leechi	Lichee
53.	Plum	<i>Prunus domestica</i> L.	Ahom Bogori	Alu-bokhra	Alu-bokhara	Alubokarepallu	All P.kodda pazham	---	Albakora hannu	---	---	Aaloo Bukhara	Alucha
54.	Strawberry	<i>Fragaria vesca</i> L.	Garukhis	---	---	Strawberri	---	---	Strawberri hannu	---	---	Strawberry	Strawberri
55.	Apricot	<i>Prunus armeniaca</i> L.	Apricot	Khubani	Apricot	Apricot	Aaprikot	---	---	Aprikot	Akhrot	Khobani	Kuhrmani
56.	Papaya	<i>Carica papaya</i> L.	Amita	Peypey	Ambrut bhanda	Boppayi (badana-naba)	Pappali	Pappakka	Parangihannu	Papai	Popya	Papita	Papita

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# UTTAR PRADESH

## 1. General :

Uttar Pradesh lies between 23°52' N and 31°18' N latitudes and 77°3' E and 84°39' E longitude. On the north, its boundary runs along Tibet and Nepal. It is bounded by Bihar in the east, Madhya Pradesh in the south, Himachal Pradesh, Punjab and Rajasthan in the west and south-west. The State is divided into 54 districts which are grouped into the following 11 revenue divisions : 1. Meerut, 2. Agra, 3. Rohilkhand, 4. Allahabad, 5. Jhansi, 6. Varanasi, 7. Gorakhpur, 8. Lucknow, 9. Faizabad, 10. Kumaun and 11. Uttarakhand. The total geographical area according to village papers, during the year 1961-62 comes to 7,26,43,510 acres.

The land utilization statistics of Uttar Pradesh is given in Table 1 below :

TABLE 1  
Land Utilization Statistics of Uttar Pradesh (1961-62).

### (i) Plains Portion

<i>Classification</i>	<i>Area in acres</i>
1. Geographical area (according to village papers)	6,24,78,565
2. Forest	46,34,922
3. Barren and unculturable land	27,76,691
4. Land put to non-agricultural uses	47,70,240
5. Culturable waste	39,66,118
6. Permanent pastures and other grazing lands	1,17,896
7. Land under misc. tree crops and groves not included in net area sown	16,82,606
8. Current fallows	3,12,071
9. Other fallow-lands	30,42,845
10. Net area sown	4,11,75,176
11. Area sown more than once	1,18,07,560
Total cropped area	5,29,82,736

### (ii) Hilly Portion

The conventional estimate of the classification of land for the hilly regions of the Kumaun and Uttarakhand Divisions of the State for the year 1961-62 is given below :

<i>Classification</i>	<i>Area in acres</i>
1. Geographical area (according to village papers)	1,01,64,945
2. Forest	46,32,415
3. Land not available for cultivation	35,84,720
4. Culturable land other than current fallows	4,29,138
5. Current fallows	69,641
6. Net area sown	15,49,031
7. Area sown more than once	1,95,530
Total cropped area	17,44,561

## 2. Topography :

The natural divisions of the State of Uttar Pradesh are Himalayas in the north, Gangetic plain in the centre and Plateau on the south of the river Yamuna. Geologically, Himalayas



form a region of their own, the central plain and the plateau form a large alluvium of the Gangetic valley. This is the central part of the Indo-Gangetic plain which stretches from east to west of the country in the north.

A part of Mirzapur and the trans-Ganges part of the old state of Banaras are different both from the Himalayas in the north and large alluvial tract in the centre. East Satpura hills touch the south-east of the State and form a small separate tract.

The largest part of the land lying between Yamuna-Ganga in the south and the Himalayas in the north, is a large stretch of even land sloping very gently along the course of the Ganga. The plateau in the south slopes along the course of the Yamuna before its confluence with the Ganga at Allahabad.

### 3. Soil Types and Agro-Climatic Regions :

The State has been divided into 11 soil-climatic regions each of which has a particular combination of soil and climate that makes it somewhat different from others. However, it cannot strictly be said that the soils and climate within a region are throughout uniform, for there are local differences and that in passing from one region to another there is always a gradual rather than an abrupt change in these conditions. The various soil-climatic regions are described below :

1. *Hilly Region* :—The hilly region includes the areas of Kumaun and Uttarakhand divisions and portions of Dehra Dun district of Meerut division, the soils of which form a part of the southern outer spurs of the Himalayas, comprising of the eight hill districts viz., Almora, Garhwal, Tehri, Nainital (excluding Kichha and Kashipur *tehsils*), Dehra Dun (Mussoorie and Chakrata), Chamoli, Uttarkashi and Pithoragarh.

Native vegetation consists of forests of Oak and Pine with grasses and weeds as undergrowth.

2. *Tarai Region* :—This region extends along the foot hills of Himalayas from east to west and consists of Kichha and Kashipur *tehsils* of Nainital district, the whole of district of Pilibhit excluding Bilaspur *tehsil*, entire area in Dehra Dun below 3000 ft. height, northern part of Rampur district, Kheri district except Mohammadi *tehsil*, district Bahraich except Kaiserganj *tehsil*, district Gonda except Gonda and Tarabganj *tehsils*, Basti district except Harraiya, Basti and Khalilabad *tehsils*, district Deoria except Deoria *tehsil* and district Gorakhpur except Gorakhpur and Bansagaon *tehsils*.

The vegetation consists of grasses, natural weeds and wild shrubby plants specially in the west *tarai*.

3. *Western Region* :—This region comprises the districts of Saharanpur, Muzaffarnagar, Meerut and Bulandshahr which are located in the upper half of the Ganga-Yamuna *doab* of U.P. The region is separated from the States of Punjab and Delhi by the river Yamuna, which flows southwards down the Himalayas, forming the western boundaries of the region.

The vegetation mostly consists of forests and hill shrubs and weeds in the north ; grasses and halophytic plants in the south.

4. *Mid-Western Region* :—The area south of the *tarai* region covering the districts of Bijnor, Moradabad, Budaun, Rampur, Bareilly, Shahjahanpur and Pilibhit is called Mid-Western region. River Ganga forms the western boundary of this tract and river Sharda forms the eastern boundary.

Native vegetation is the same as in the western region, but the area abounds in natural vegetative growth also.

5. *South-Western Region* :—This region consists of the districts of Aligarh, Etah, Mainpuri and a major portion of Agra and Mathura districts. The region constitutes a very important tract of Ganga-Yamuna *doab* and extends both in the upper and mid region of this

productive alluvial plain. River Ganga forms the eastern boundary and river Yamuna flows through the centre of Mathura and Agra districts touching the western and south-western borders of Mainpuri district.

Native vegetation consists of short shrubs, bushes, low grasses, number of wild dry land weeds and ha'ophytic plants.

6. *Central Region* :—Central region is an area comprising of the districts of Kanpur, Fatehpur, Unnao, Lucknow, Sitapur, Hardoi, Farrukhabad and Etawah and forming a composite block of land in the middle and lower portions of Ganga-Yamuna *doab*. Besides the *doab* areas considerable portion of this region also occurs on the other side of the Ganga. River Yamuna forms the western boundary and flows in south-eastern direction. River Ganga also flows southward through the middle of this region.

7. *Mid-Eastern Region* :—The districts of Barabanki, Rae Bareli, Faizabad, Sultanpur, Pratapgarh and Allahabad are included in this region ; with the exception of last named district, the area is situated between the river courses of the Ganga and the Ghagra. The latter river flows at a greater velocity.

8. *North-Eastern Region* :—This region comprising of the non-*tarai* areas of the districts of Bahraich, Gonda, Basti, Gorakhpur and Deoria is bounded on the south by river Ghagra, northern boundary being the *tarai* belt. Great Gandak river separates the eastern-most districts of Gorakhpur and Deoria from the State of Bihar.

9. *Eastern Region* :—Areas of this region are distributed in the districts of Jaunpur, Azamgarh, Varanasi, Ghazipur and Ballia which are situated in south-eastern extremity of U.P. Ghazipur and Ballia districts adjoin the State of Bihar which is separated from these districts by the river Ganga. A number of important rivers viz., the Ganga, Sai, Gomati, Karmnasa and the Ghagra flow in this soil region. River Ghagra forms the northern boundary while the Ganga forms the southern boundary of this region.

10. *Bundelkhand Region* :—Jhansi, Jalaun, Hamirpur and Banda districts lying south-west of river Yamuna constitute this region.

Native vegetation consists of shrubs and grasses.

11. *Vindhyan Region* :—The Vindhyan region extends on the south of the river Ganga in Mirzapur and southern portions of Varanasi (*Chakia tehsil*) and Allahabad districts (*Meja and Karchhana tehsil*).

Native vegetation consists of wide range of forest trees and shrubs.

The soils in the eleven regions already described above are as follows :

1. *Hilly Region* : The soils have developed over biotite schists and phyllites. The soil classifications recognized so far are (i) Brown forest soils (ii) Podsollic soils and (iii) Wiesenboden or meadow soils. Brown forest soils are most productive. High acidity and deeper alluviation of nutrients are the main characteristics of Podsollic soils. Wiesenbodens have developed under water-logged conditions in valleys. Considerable correlation is found between soil condition and incidence of diseases and pests.

2. *Tarai Region* : The soils have developed over finer fractions of material of considerable thickness transported by innumerable streams and rivulets from the outer Himalayan and Siwalik ranges resulting from wide torrential rains during monsoon months. Parent gravelly material are often found in lower depths specially in the foothills. The thickness of the soil layers increases with distance from the base of the hills with simultaneous decline in the thickness of underlying pebble bed.

All grades of texturally varying soils of alluvial nature are found in this region. Soil types recognized in one of the *tarai* region in Nainital district are : (1) Matkota clay loam

(2) Matkota loam-highly calcareous (3) Matkota loam-slightly calcareous (4) Matkota loam-non-calcareous and (5) Matkota sandy loam.

Soils of *tarai* region are productive, possessing initial reserve of nitrogenous plant food which deplete within few years of intensive cultivation. These soils have been found to be extremely responsive to phosphatic fertilizers. Being younger in formation these soils respond favourably to the application of both macro and micro-elements. Major portion of the tract due to their light texture, necessitates occasional green manuring. Short term crops do well in these areas.

The two *tarai* tracts though developed under the influence of similar soil forming processes differ widely from one another in the fact that the soil in the north-western group are located in close proximity to the Himalayas and are less calcareous than the soils in the north-eastern *tarai* tracts, where the alluviums have to traverse larger distances. The latter thus are more calcareous and of much finer texture.

3. *Western Region*: The alluviums are fairly deep and except for certain tracts of Saharanpur, parent rocks are found nowhere. These alluviums are very varied and are essentially basic in character and have been developed from mild calcareous parent material. Like all alluvial regions, this tract contains all the four grades of the soil classes belonging to both the Ganga and Yamuna river system. The four categories of soils pertaining to each of the two river systems are: (i) Riverine soils, (ii) Soils developed on flats, (iii) Soils developed on uplands and (iv) Soils developed on low lands.

Soils on recent alluviums are of recent origin and generally calcareous and light textured and are found in the vicinities of the river courses. At certain distances from the rivers, soils developed on flat areas are found. These soils are partially mature and of considerably older origin. These soils are medium textured, generally belonging to loam or clay loam categories with a heavy strata of soil in the lower regions of the soil profile. They are neutral to slightly alkaline on the top but slightly to moderately alkaline at lower depths. Free calcium carbonate is occasionally found at lower depths. Soils of the upland class are generally found in the mid-interior of the region on the highest elevations and are the product of the oldest alluviums. They are lighter on the surface, the finer fractions having been alluviated to lower depths. These soils are brown to reddish brown in colour and are neutral to slightly alkaline in reaction. Free calcium is not commonly found in these soil types. Soils of low land are found extensively in low land tracts within the elevated regions. The soils are formed from the washing of the adjoining areas and on this account are generally fine textured. Considerable soil salinization found in these areas which give rise to various categories of *usar* formations. These soils are highly alkaline and usually contain a hard pan either of clay or of *kankar* nodules. Where salinity does not prevail these soils form very productive areas specially in respect of paddy crop.

The alluvial soils found in this region are productive and respond very well to fertilizer applications and other management practices. The water requirement of this region is generally high.

4. *Mid-Western Region*: Alluviums deposited by the river Ganga and its tributaries after the disintegration of Himalayan ranges in the north through which the rivers flow in southward direction, formed the soils. Those parent rocks are basic in character and calcareous in nature.

Soils of this region are closely related to the alluvial soils of the neighbouring western region and formed of similar parent material. Many of the characteristic features of those soils are also present in the soils of this region. All grades of soils viz., riverine, flat lands, up lands, and low lands distributed on topographical sequences are also found in this region.

These soils, however, differ from *doab* soils in their degree of development, the factors influencing the soil development in the two cases being slightly different. These soils are

generally finer in texture and have no impedence in drainage and on this account are, in general, comparatively free from hazards of soil salinity. They are generally calcareous except for the upland soils which have practically no lime.

The soils are freely drained and have a good moisture content. The water requirement of these soils is not as great as that of the soils of the adjoining western region. They are more productive and respond very well to improved management practices.

5. *South-Western Region* : The soils of this region greatly resemble the soils of the western region and all grades of soils pertaining to the two river systems obtained in that region are also present in this soil region. These soils, however, differ from the soils of the former region in their extent of soil salinization, this region having greatest concentration of saline and alkali lands. The drainage of this tract is extremely defective, resulting in formation of extensive tracts of *usar*. The soils of the Agra and Mathura districts, more so of their western and south western *tehsils* laying on the other side of Yamuna, are markedly different from the soils of the *doab* area, the former being more closely related to the desert soils of Rajasthan.

The soils are generally dry and have accordingly a high water requirement. Irrigation facilities in this area have brought spectacular responses and give record yields of *rabi* cereal crops. These soils, however, should be watched with caution for hazards of soil salinization and a well laid out drainage system seems to be a pre-requisite for any agricultural development programme of this area.

6. *Central Region* : Soils of this region also resemble closely the alluvial soils of the adjoining regions, more so of the *doab* areas. These soils due to slightly better climate, however, give rise to fully mature soils. Riverine, flat, upland and lowland soils of both the river systems as found in the *doab* area are also found in this region. Greater extent of soil salinization is noticeable in these soils.

These soils afford good crop yields under controlled management practices and constitute an important part of the well known wheat belt of U.P. Due to insufficient drainage a considerable area of this region suffers from soil salinity. Extra caution should be taken to check further spread of salinity, more so in areas where irrigation canals are being introduced by providing adequate drainage facilities.

7. *Mid-Eastern Region* : Practically all grades of soils including recent alluviums, flats, uplands and lowlands are found in this soil region. The region, however, differs from the other regions in the conspicuous absence of influence of Yamuna river which deposited alluviums primarily transported from more basic central Indian rock systems. The black, grey and the reddish brown soils found in the watersheds of the Yamuna river in *doab* areas are nowhere to be seen in this region. The districts adjoining Ganga river suffer from inadequate drainage facilities and on this account are subject to greater hazards of soil salinity. The districts worst affected from this hazard are, thus, Lucknow, Rae Bareli, Pratapgarh, Sultanpur and to a certain extent that of Barabanki. The area on the left bank of Gomati comprising of greater portion of Barabanki and Faizabad are comparatively less saline than the soils of the remaining districts in this soil region.

The soils of the region stand in need of more controlled management practices specially in respect of saline and alkali soil areas. Provision of adequate drainage and affording other soil conservation practices are very important for the improvement of these soils.

8. *North-Eastern Region* : The soils of this region have been rightly termed as calcimorphic soils due to the vast reserve of calcium present in them. Various stages of soil development found in other alluvial regions are also present in these areas even though they are inherently different in physical and chemical characteristics. The soils of the recent alluviums are highly calcareous, calcium carbonate at times being as high as 50 to 55 per cent. Soils are slightly to moderately alkaline in reaction and possess an excellent moisture region. Good crops are grown even without any irrigation.

The water table in these areas is usually very high which maintains moisture supply to the plants during the entire period of their growth. Soils of the plains in this region are also calcareous though not to the same extent as the youngest member of the soil family. Soil development which consists mainly of decalcification has considerably advanced in these areas and the surface soils have lost most of the calcium present in the recent alluviums. The lower regions are still fairly rich in free calcium carbonate and usually a zone of alluviated calcium present in the form of *kankar* nodules is found in these soil profiles. Soil salinity is not very common in these areas. Upland soils of this region are intensely leached, from which calcium carbonate has been completely washed out so much so that there is considerable depletion of exchangeable calcium. These soils thus are slightly acidic in reaction. There is excellent drainage and soil salinity is completely absent in these areas.

The soils of this region are fairly productive and afford bumper crops. Very intensive cultivation is practised in these areas and the fields are rarely left fallow. These areas have vast agricultural potential and given adequate plant foods, good crop yields can be maintained year after year. The upland soils due to the excessive rate of water percolation and their chemical and physical characteristics, hardly retain moisture for long period, and on this account stand in need of frequent irrigations. They respond remarkably well to fertilizer applications.

9. *Eastern Region* : The alluviums deposited in this region though related to other alluvial formations of the State are somewhat different than the soils of the upper areas. In general they are finer in texture than the soils of the upper regions. The soils of this region are more weathered and they distinctly exhibit the influences of various soil forming factors. The soils have been subjected to greater hydromorphic influences and have resulted in formation of a number of hydromorphic soil varieties more important of which are *Dhankar* and *Karail*, the former constituting extremely productive paddy soils of this State. In regions where Ganga flows in circuitous courses a group of very fine textured and black coloured soils, resembling in many aspects the black cotton soils of Central India plains, are found deposited in the interior depressed lands. They are calcareous and retain moisture for long periods. During dry months they crack and form deep fissures. They grow good crops of gram alone or mixed with barley and wheat even without much irrigation.

The soils of this region have a better moisture regime and are comparatively free from salt. They respond remarkably well to fertilizer application and more so to nitrogenous fertilizer. The soils are productive and given adequate irrigation facilities and suitable management, are liable to maintain high yields.

10. *Bundelkhand Region* : The soils have developed over granite and gneiss of the Deccan trap with highly ferruginous beds. Lime stones are occasionally found. Four broad soil types have been recognised. Type I-A is a reddish brown coarse grained soil, very shallow and underlain with the parent material locally known as *rakar*. Type II is found near the plains. It is deeper having a layer of calcium carbonate in lower depths. This is locally known as *parwa*. Type III and IV are clayey, black coloured and calcareous. These are the *kabar* and *mar* types.

The soils in general are devoid of moisture and afford only early crops needing less water. Type I soils are most suited for inferior crops. Types II are better suited for cultivation under irrigated conditions. Type III & IV soils are very fertile and grow wheat, linseed and gram. Methods of dry farming are practised throughout Bundelkhand region.

11. *Vindhyan Region* : A wide variety of rocks consisting of Vindhyan sand stones and shales, mixed conglomerates, calcareous shales, haematitic slates and schists, gneiss, granites, quartzite, trapezian and archean gneiss. Carboniferous rocks and lime stones give rise to different soils.

The topography already recognised has developed on (i) Vindhyan upland (ii) Vindhyan flats (iii) Vindhyan lowlands and categorized in five soil classifications viz., Vindhyan type 1 to 5.

Vindhyan type 1 soils are dark brown in colour and sandy loam in texture and are found on uplands. Types 2 soils are loam in texture and of brown colour underlain by reddish yellow mottled clay. Type 3 soils are yellowish grey in colour and comprise of heavy loams. They are developed on restricted drainage. Type 4 and 5 are associated with low lands. Type 4 soils have a compact surface of olive brown clay loam soil of strong acidic reaction. Type 5 soils have developed on extremely restricted drainage conditions with a high water table. These soils are grey coloured at the surface with a general fine texture and characterised by an underlying layer of *kankar* nodules. Signs of water logging are clearly marked in lower depths of the profile of this type.

Cultivated areas are found sparsely interspersed within hilly areas with a system of rocks all round. Such areas are only adjacent to villages which are a few in number and are very sparsely populated. With the exception of soils developed on low lands the area supports only inferior crops whose water requirements are necessarily low due to the general scarcity of water prevailing in that country. They are excessively drained. Soils found in the Belan Valley, belonging to Vindhyan lowland tracts, respond remarkable well to phosphate and potash applications.

**The climate and rainfall of the eleven regions are described below :**

1. *Hilly Region* :—The climate is good with temperature being cool and moist. Rainfall is over 60 inches. Summer is short and cool. Winter is long and cold with frost and snow at the higher altitudes.

2. *Tarai Region* :—The climate is sub-humid and cool specially during winter months. Rainfall ranges between 40 and 50 inches, maximum being from July to September. Summer is excessively hot, the temperature rarely crossing 108° F. Generally damp and excessive cold is experienced in the winter months.

3. *Western Region* :—The climate is sub-humid to semi-arid as one moves from north to south. Rainfall ranges between 30 and 50 inches, maximum being in the months of June to September. In north, the temperature is moderate all along the year.

4. *Mid-Western Region* :—The climate is sub-humid in the north getting drier as one proceeds southwards. The annual rainfall varies from 30 to 50 inches. The temperature is moderate with considerable fluctuations at different times of the year. Winters are very cold and summers are very hot. Almost the entire rainfall is received during the monsoon.

5. *South-Western Region* :—The climate is arid to desert-like with rainfall ranging from 20 to 25 inches. Summer is quite severe, the western most districts showing desert like conditions.

6. *Central Region* :—The climate is semi-arid to sub-humid with slightly greater monthly and annual rainfall than the preceding *doab* soil regions. Winters are very cold. Almost the entire rainfall is received during the monsoon months. Summers are very hot ranging only next to the adjoining south-west region.

7. *Mid-Eastern Region* :—The climate of this region is sub-humid resembling their western and northern counterparts. They are slightly less humid than the districts of mid-western region but slightly more humid than the western or south-western region. The rainfall ranges from 30 to 40 inches, nine tenths of the precipitations occur during the monsoon months. Summers and winters are extremes.

8. *North-Eastern Region* :—The climate is sub-humid. Rainfall is more than in the districts of plains and the northern *tarai*. The area, due to its geographical situation and its scooplike shape, is swampy and on this account is prone to numerous drainage and flood problems.

9. *Eastern Region* :—The climate is sub-tropic humid with annual rainfall ranging between 40 to 45 inches. The area due to the swampy nature maintains humidity almost through-

out the year. The temperatures are moderate and fluctuations during summer and winter are very marked.

10. *Bundelkhand-Region*—The climate is dry with hot summers and cool winters. Rainfall varies from 30 to 35 inches.

11. *Vindhyan Region*—The climate is sub-tropical with an annual rainfall of 40 to 45 inches. Months of July, August and September have the highest rainfall accounting for nine-tenths of the total rainfall. Temperatures are very high during summers and very low during winters. Marked difference between night and day temperatures is found.

#### 4. Irrigation :

The net irrigated area in the plains of the State was 119.3 lakh acres during the year 1961-62. It represents about 29.0% of the net cultivated area. Irrigated area is concentrated in the western and north-western districts of the State. The sources of irrigation in order of importance are canals, wells, tube-wells and tanks. The distribution of irrigation from different sources is given below :

TABLE 2

The table shows the source-wise distribution of the Net Irrigated Area for the plains portion of the State for the year 1961-62.

<i>Source</i>		<i>Irrigated area in acres</i>
1. Canals	Government	46,83,093
	Private	1,146
	Total	46,84,239
2. Tube-wells	Government	12,21,842
	Private	1,28,819
	Total	13,50,661
3. Other wells	Government	18,804
	Private	43,54,123
	Total	43,72,927
4. Reservoirs		6,616
5. Tanks, lakes and ponds		9,73,583
6. Other sources		5,44,580
7. Net area irrigated		1,19,32,605
Area irrigated more than once		10,61,253
Gross irrigated area		1,29,93,859

#### 5. Agricultural Production and Normal Cropping Pattern.

The main crops of the State are rice and wheat occupying about 10,312.9 and 10,130.8 thousands of acres respectively. The area, total production and average yield of important crops in the State are given in table 3 below :

TABLE 3

Area, production and average yield of principal crops for the year 1961-62.

<i>Crop</i>	<i>Area in acres</i>	<i>Production in tons</i>	<i>Av. yield in lbs. acre</i>
Rice	1,03,12,870	32,91,936	708*
Jowar	21,15,111	3,13,841*	332*
Bajra	23,95,078	3,79,042*	355*
Maize	26,82,959	6,83,339*	572*
Mandua	4,07,781	1,21,742	378
Sawan	4,36,239	68,322	351
Kodon	9,52,159	1,57,949	372

<i>Crop</i>	<i>Area in acres</i>	<i>Production in tons</i>	<i>Av. yield in lb./acre</i>
<i>Kakun</i>	27,795	3,366	272
<i>Kutki</i>	9,473	1,050	249
<i>Urd</i>	4,13,421	41,943	219
<i>Moong</i>	35,754	4,481	265
<i>Moth</i>	31,816	3,412	240
Total <i>kharif</i> foodgrains	1,98,20,456	50,70,423	
Wheat	1,01,30,801	40,88,990*	912*
Barley	45,07,920	17,26,714*	858*
Gram	63,65,859	14,94,118*	526*
Peas	25,65,411	9,94,629*	868*
<i>Arhar</i>	15,22,863	3,84,340*	565
<i>Masur</i>	4,68,103	79,655	374
Total <i>rabi</i> foodgrains	2,55,60,957	87,68,446	
Total foodgrains	4,53,81,413	1,38,38,869	
<i>Til</i> (pure)	1,55,303	8,909*	115*
Groundnut	6,40,093	2,21,600*	775*
Rapeseed and Mustard (pure)	4,10,860	70,240*	389*
Linseed (pure)	2,02,196	18,466*	204*
Castor	4,761	1,056	497
Total Oilseed (pure)	14,13,213	3,20,271	
<i>Til</i> (mixed)	13,79,733	70,843	115
Linseed (mixed)	15,40,557	1,40,238	204
Rap. seed and Mustard (mixed)	44,28,068	7,69,339	389
Total Oilseeds (mixed)	73,48,358	9,80,420	
Total Oilseeds (pure and mixed)	87,61,571	13,00,691	
Sugarcane	33,67,150	5,04,46,916*	33,560*
Potato	2,78,722	6,51,605*	5,319
Cotton**	1,77,911	42,565 bales	94*
Jute**	58,650	1,91,593* bales	1,307*
Sannhemp (For fibre)	1,71,484	23,572	308
Tobacco	39,576	11,878	713

Note :—1. \*Denotes that estimates are based on the results of crop-cutting experiments.

2. The production and average yield of Sugarcane are in terms of cane.
3. Production and average yield of rice are in terms of cleaned rice.
4. Figures of area and production are inclusive of the conventionally estimated figures for the hilly districts of Kumaun and Uttarakhand Divisions.
5. Figures of average yield are for the plains portion of the State only.
6. The figures of area under *Til*, Rapeseed (Mustard) and Linseed crops sown mixed are included in the crops with which these are sown mixed and have not been eliminated from the latter.
7. The production of rice in *Kharif* is 32,88,003 tons and is based on the results of crop-cutting experiments.
8. \*\*The production of Cotton is in bales of 392 lb. and Jute in bales of 400 lb.

Crops in different seasons and different crop rotations adopted in different regions are described below :

The net cultivated area of the State, excluding the hills, in 1961-62 was about 411.8 lakh acres. Of this, about 28.7% is *Dofasli* area. The total cropped area of each season



is as follows :

<i>Kharif</i>	272.8 lakh acres.
<i>Rabi</i>	254.8 lakh acres.
<i>Zaid</i>	2.1 lakh acres.

(i) In the plains portions of the State the main *kharif* crops are paddy and millets which occupy 36.9 per cent and 26.3 per cent respectively of the total *kharif* cropped area. The heaviest concentration of these crops is in the eastern U.P. Among millets, *jowar*, *bajra*, and maize are the most important crops.

Sugarcane is included in *kharif* crops. It occupies only 12.3 per cent of the *kharif* area but from the monetary point of view, it is the most important cash crop of the State. The highest concentration of this crop is in the western districts of the Meerut and Rohilkhand Divisions but it is an important crop throughout the northern districts of the plain.

Cotton, jute, groundnut and *til* are the other important cash crops of *kharif* season. The cultivation of cotton increases from east to west due to the comparative aridity of the western portion of the upper Gangetic plains.

Jute cultivation found encouragement after the partition of the country and although its cultivation was not known before, it is extensively grown in the *tarai* belt in low lying areas near river beds where water is in plenty.

(ii) Among the *rabi* crops, wheat is the most important crop, which is grown in 37.9% of *rabi* area. Cultivation of wheat increases from eastern to western U.P. Western districts of Meerut and Rohilkhand Divisions and northern districts of Faizabad and Lucknow Divisions constitute the most important wheat growing tract. Gram and barley come next in importance with an area of 25.0% and 17.4% respectively, of the total *rabi* cropped area. Bundelkhand is most important gram producing area of the State. Barley which is next in importance to gram, has its largest concentration in the eastern districts.

Rapeseed, mustard, linseed, tobacco and potato are the other important crops of *rabi* season.

(iii) *Zaid* crops : Rice and tobacco are the important *zaid* crops of the State.

*Crop rotations* :—The crop rotations followed locally by the cultivators in the different soil-climatic regions of the State, already described above, are given below :—

	Years
<b>1. Hilly Region :</b>	
(1) Maize-Wheat	(1 year)
(2) Rice-Peas- <i>Mandua</i> -Wheat	(2 years)
(3) Fallow-Wheat	(1 year)
(4) Rice-Wheat	(1 year)
(5) Maize-Potato	(1 year)
6. <i>Mandua</i> or Soyabean—wheat	(1 year)
<b>2. Tarai Region :</b>	
(1) Fallow- <i>Lahi</i> -Sugarcane	(2 years)
(2) Cowpea-Wheat	(1 year)
(3) Paddy-Peas-Green manure-Wheat	(2 years)
(4) Green manure- <i>Lahi</i> -Sugarcane	(2 years)
<b>3. Western Region :</b>	
(1) Paddy- <i>Berseem</i> or Peas	(1 year)
(2) Maize- <i>Berseem</i> -Sugarcane	(2 years)
(3) Maize-Peas-Sugarcane	(2 years)
(4) Maize-Wheat	(1 year)
(5) Fallow-Wheat alone or mixed with Gram	(1 year)
(6) Maize- <i>Methi</i> -Sugarcane	(2 years)
(7) Maize-Potato-Sugarcane	(2 years)

- (8) Green manure-Wheat-Sugarcane-*Ratoon* (3 years)  
 (9) Green manure-Wheat-Cotton-Sugarcane (3 years)

#### 4. Mid-Western Region :

- (1) *Jowar*, *Bajra* or *Arhar*-Fallow-Wheat (2 years)  
 (2) Paddy-Gram or Peas (1 year )  
 (3) Maize-Wheat (1 year )  
 (4) Maize-Sugarcane-*Ratoon* (3 years)  
 (5) Groundnut-Sugarcane (2 years)  
 (6) *Chari*-Gram (1 year )  
 (7) Paddy-Peas-Fallow-Wheat (2 years)  
 (8) Groundnut-Sugarcane-Fallow-Wheat (3 years)

#### 5. South-Western Region :

- (1) *Bajra* alone or mixed with *Arhar*-Fallow-Wheat (2 years)  
 (2) *Jowar* alone or mixed with *Arhar*-Fallow-Wheat (2 years)  
 (3) Cotton-Peas-Fallow-Wheat (2 years)  
 (4) Paddy-Peas-Sugarcane (2 years)  
 (5) Maize-Potato-Sugarcane (2 years)  
 (6) Fallow-Wheat (1 year )  
 (7) Green manure-Mustard-Sugarcane-*Ratoon* (3 years)

#### 6. Central Region :

- (1) *Jowar* mixed with *Arhar*-Fallow-Wheat (2 years)  
 (2) Maize-Potato-Tobacco (1 year )  
 (3) Paddy-Peas-Sugarcane (2 years)  
 (4) Groundnut-Sugarcane-Fallow-Wheat (3 years)  
 (5) Cotton-Barley (1 year )  
 (6) *Jowar* or *Bajra* alone or mixed with *Arhar*-Fallow-  
 Wheat (2 years )  
 (7) Paddy-Gram (1 year )

#### 7. Mid-Eastern Region :

- (1) Maize-Sugarcane-Fallow-Wheat (3 years)  
 (2) Paddy-Peas or Gram (1 year )  
 (3) Paddy-Fallow (1 year )  
 (4) Sugarcane-*Ratoon*-Maize (3 years)  
 (5) Paddy-Gram-Fallow-Sugarcane (3 years)  
 (6) *Sanai* seed-Barley (1 year )  
 (7) *Sanai* (fibre)-Wheat (1 year )

#### 8. North-Eastern Region :

- (1) Paddy-Fallow or *Chatrimatri* (1 year )  
 (2) Paddy-Peas or Gram (1 year )  
 (3) Sugarcane-*Ratoon*-Fallow-Wheat (3 years)  
 (4) Sugarcane-Maize-Peas (2 years)  
 (5) Paddy-Wheat (1 year )  
 (6) Fallow-Wheat (1 year )  
 (7) Paddy-Barley (1 year )

#### 9. Eastern Region :

- (1) Paddy-Peas (1 year )  
 (2) Paddy-Fallow (1 year )  
 (3) Maize-Peas (1 year )  
 (4) *Arhar*+*Bajra*-Fallow-Sugarcane (3 years)  
 (5) *Jowar*+*Arhar*-Fallow-Barley (2 years)  
 (6) Sugarcane-Fallow-Wheat-Paddy (3 years)

**10. Bundelkhand Region :**

- |   |           |
|---|-----------|
| (1) <i>Jowar</i> -Gram-Fallow-Wheat                     | (2 years) |
| (2) <i>Jowar</i> and <i>Arhar</i> -Fallow-Wheat         | (2 years) |
| (3) Early Paddy-Wheat                                   | (1 year)  |
| (4) Fallow-Wheat and Gram mixed                         | (1 year)  |
| (5) <i>Jowar</i> or <i>Bajra</i> -Fallow-Fallow-Linseed | (2 years) |
| (6) <i>Jowar</i> with <i>Til</i> -Fallow-Wheat          | (2 years) |
| (7) <i>Til</i> -Fallow-Fallow-Wheat                     | (2 years) |

**11. Vindhyan Region :**

- |  |           |
|--|-----------|
| (1) Early Paddy-Gram or Peas                                     | (1 year)  |
| (2) Paddy-Khesari  | (1 year)  |
| (3) Paddy-Fallow   | (1 year)  |
| (4) <i>Jowar</i> and <i>Bajra</i> -Fallow-Fallow-Wheat or Barley | (2 years) |
| (5) Maize-Linseed  | (1 year)  |
| (6) <i>Sawan</i> or <i>Kodon</i> -Barley                         | (1 year)  |
| (7) Fallow-Wheat or Barley mixed with Gram                       | (1 year)  |

**6. Experimentation and Agricultural Research Stations :**

There are 1960 experiments conducted at different Agricultural Research Stations of U.P. State, reported for the period 1954-1959.

TABLE 4

Crop-wise and type-wise distribution of experiments  
(1954-59)

Crop	M	MV	C	CV	CM	CMV	(I+IV+IM)	(D+DV+DC+DI)	Total
Paddy	139	—	45	—	29	1	—	10	224
Wheat	297	13	68	4	29	5	8	38	462
Barley	19	6	22	4	—	—	3	14	68
Oats	4	—	—	—	1	—	—	—	5
<i>Jowar</i>	6	1	—	—	1	—	—	6	14
<i>Bajra</i>	4	1	3	—	9	—	—	3	20
Maize'	12	—	9	—	5	1	—	4	31
<i>Mandua</i>	1	—	4	—	—	—	—	—	5
Potato	59	3	83	17	7	1	3	26	199
Other vegetables	15	1	11	—	8	1	5	51	92
Pulses	22	—	4	—	—	1	—	3	30
Sugarcane	112	—	66	32	14	—	39	77	340
Cotton	27	—	7	5	5	1	—	16	61
Jute	3	4	3	3	—	—	—	1	14
Tobacco	11	—	12	—	—	—	—	—	23
Oilseeds'	19	1	3	9	8	1	7	5	53
Fodder crops	50	1	6	2	4	—	—	2	65
Garlic	1	—	—	—	2	—	—	—	3
Mixed crops	—	—	—	—	—	—	—	—	108
Fruits	12	15	22	22	5	—	—	67	143
<b>Total</b>	<b>813</b>	<b>46</b>	<b>368</b>	<b>98</b>	<b>127</b>	<b>12</b>	<b>65</b>	<b>323</b>	<b>1960</b>

Crop-wise and type-wise distribution of the experiments is given in the table 4. Besides these about 880 experiments belonging to co-ordinated Model Agronomic Project of the Indian Council of Agricultural Research and the experiments conducted at cultivator's fields by the State which are also included in this compendium. The experiments are conducted on as many as 65 crops of which wheat, sugarcane, paddy and potato are the principal crops accounting for 62.5% of the State experiments. Agricultural Research Stations at Kanpur, Meerut, Nawabganj, Varanasi, Pura and Hardoi are some of the important ones where a good number of experiments are carried out on wheat crop. Experiments on paddy are reported mostly from Nawabganj and Varanasi farms. Research on Sugarcane is mainly carried out at Shahjahanpur and Muzaffarnagar farms and to some extent at Kunraghat farm also. Kanpur, Farrukhabad and Kausani are the main Research Centres for research on potato. A good number of experiments are carried out on cotton at the Raya farm.

Out of 1960 experiments reported from different Agricultural Research Stations, about 73% are laid out in Randomised Block Design. Split-plot design had been adopted in the case of 20% of the experiments. Maximum number of plots taken in a block in a R.B.D. is as high as 36. The net plot size varied from 15 square feet to 2420 sq. yards. Maximum number of replications taken in any design is 16.

The following is the list of Research Officers who conducted the experiments in Uttar Pradesh during 1954-59 :

<i>Sl. No.</i>	<i>Name and address of the Research Officer.</i>
1.	The Agricultural Chemist to Govt. Uttar Pradesh, Kanpur-2.
2.	The Principal, Allahabad Agricultural Institute, P.O. Agricultural Institute, Allahabad.
3.	The Director, Vivekananda Laboratory, Almora.
4.	The Officer-in-Charge, Allahabad and Jhansi, Division, 97/3, Civil Lines, Jhansi.
5.	The Research Officer, Jute Research Station, Bahraich.
6.	The Chief Horticulturist, Govt. Fruit Research Station, Basti.
7.	The Principal, Balwant Rajput College, Agra.
8.	The Economic Botanist (Cotton and Tobacco) to Govt. U.P., Bulandshahr.
9.	The Officer-in-Charge, Govt. Hill Fruit Research, Station, Chaubattia, District Almora.
10.	The Assistant Soil Conservation Officer, Soil Conservation Centre Govt. of India, Ministry of Food and Agriculture, (Department of Agriculture), 37, Vijaynagar Colony, Agra.
11.	The Cattle Utilization Officer, Dehra Dun.
12.	The Officer-in-Charge, Minor Forest Products Branch, Forest Research Institute, Dehra Dun.
13.	The Senior Soil Conservation Officer, Soil Conservation Research, Demonstration and Training Centre, Dehra Dun.
14.	The Jt. Director of Agriculture (Soil Conservation), Uttar Pradesh, Lucknow.
15.	The Jute Development Officer, U. P., Lucknow.
16.	The Officer-in-Charge, Regional Research Station, Hardoi.
17.	The Economic Botanist (Vegetable) to Govt. Uttar Pradesh, Govt. Vegetable Research Station, Kalianpur, Kanpur.
18.	The Head of the Centre, Regional Research Centre (Oilseeds and Millets), Pircom, I.C.A.R., G.T. Road, Kalianpur, Kanpur.
19.	The Crop Physiologist to Govt. Uttar Pradesh, Kanpur-2.
20.	The Economic Botanist (Oilseeds) to Govt. U. P., Kanpur-2.
21.	The Economic Botanist ( <i>Rabi</i> Cereals) to Govt. Uttar Pradesh, Kanpur-2.
22.	The Entomologist to Govt. U. P., Kanpur-2.
23.	The Plant Pathologist to Govt. U. P., Kanpur-2.
24.	The Principal, Govt. Agricultural College, Kanpur-2.
25.	The Assistant Economic Botanist (Paddy) to Govt. U. P., Nagina, Distt. Bijnor.
26.	The Director, Indian Institute of Sugarcane Research, Govt. of India, Ministry of Food and Agriculture (Department of Food), Rae Bareli Road, Lucknow-2.

27. The Officer-in-Charge, Regional Research Station, Nawabganj, District Bareilly:
28. The Officer-in-Charge, Regional Research Station, Delhi Road, Meerut.
29. The Director, Irrigation Research Institute, Roorkee.
30. The Director, Horticultural Research Institute, Saharanpur.
31. The Manager, Sahu Chemicals and Fertilizers, P. O. Sahupuri, Varanasi.
32. The Principal, College of Agriculture, Banaras Hindu University, Varanasi-5.
33. The Officer-in-Charge Regional Research Station, Varanasi-4.
34. The Director, Sugarcane Research, Shahjahanpur.

## PARTICULARS OF RESEARCH STATIONS AND SOIL ANALYSIS

### 1. Allahabad Agricultural Institute, Allahabad.

#### A. General information :

(i) In Karchhana *tehsil* of Allahabad district. 2 miles from Naini Railway Station. Not undulating land. (ii) Indo-Gangetic alluvium. (iii) It was established in 1912. (iv) Fodder Maize—Wheat—Cowpea ; Cowpea—Wheat—Fodder Maize ; *Jowar* fodder—Barley—Maize ; *Jowar* fodder—Barley + Gram—Maize are the normal rotations. (v) To conduct experiments on different aspects of crops.

#### B. Normal rainfall in cm. :

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
3	37	37	30	1	—	1	2	—	—	—	4	115

(The above is the average rainfall for the period 1960—1964).

#### C. Irrigation and drainage facilities :

(i) (a) Irrigation facilities exist since 1940 for 125 acres. (b) Source of irrigation—N.A.  
 (ii) Most of the soils are well-drained.

#### D. Soil type and soil analysis :

(i) Sandy loam to loam, deep loam soil grey in colour with fairly loose cultivated structure. (ii) Chemical analysis : Base ex. capacity—6.0 to 29.3, available  $P_2O_5$  32 to 656 lb./ac., absorbed  $P_2O_5$  0 to 115 lb./ac., available  $K_2O$  120 to 632 lb./ac., pH 7.0 to 9.25, organic carbon 0.30 to 99%, sticky point piper 14.6 to 28.35% and ratio of *kankar* 5 to 20 : 236. (iii) Mechanical analysis—N.A.

#### E. No. of experiments :

Wheat—13, Barley—1, Oats—2, *Jowar*—1, Maize—5, Potato—6, Onion—2, *Jowar* fodder—2, Lucerne—1, Cowpea—1, Papaya—1, Total=35.

### 2. Vivekananda Laboratory, Almora.

#### A. General information :

(i) In Almora *tehsil* of Almora district. About 65 miles from Kathgodam Railway Station. Terraced fields. (ii) Hilly tract. (iii) Established in 1924. (iv) *Kharif*: Maize—Sweet Potato—milo and G.M. ; *Rabi* : Wheat—Barley and Oats. (v) Combined scheme of plant physiology and cytology and plant introduction. Development of food and fodder crops, maize breeding, co-ordinated scheme of pre-soaking seeds in nutrient salts.

#### B. Normal rainfall in cm. :

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
15	30	27	12	16	20	2	7	5	5	4	6	149

(The average rainfall data is for the year 1957—1958).

#### C. Irrigation and drainage facilities :

(i) (a) and (b) Irrigated from rain storage tank since 1943. (ii) No drainage system exists.

#### D. Soil type and soil analysis :

(i) Sandy loam to clayey loam, medium deep soil, brownish in colour. (ii) Chemical analysis : pH 6.5 to 7, nitrate—low, ammonia—very low ;  $P_2O_5$  (available) 0.01 to 0.02%,  $K_2O$ —traces, calcium 0.07 to 0.14%. (iii) Mechanical analysis—N.A.

E. *No. of experiments :*

Barley—1, *Jowar* fodder—1, Total=2.

3. **Regional Research Station, Amrukh.**A. *General information :*

(i) In Moth *tehsil* of Jhansi district. 6 miles from Moth Railway Station. Slope from west to east. Hill rock situated about 2 furlongs west of research station. (ii) Bundelkhand tract representing *kabar* and *parwa* soils. (iii) Established in 1956. (iv) G.M. (fallow)—Wheat ; Paddy—Gram ; Paddy—Pea and Maize—Wheat. (v) To conduct experiments on cultural, varietal, manurial and insecticidal aspects.

B. *Normal rainfall in cm. :*

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
16	14	29	29	—	—	1	—	—	—	—	2	91

(The rainfall data is for the year 1963—64).

C. *Irrigation and drainage facilities :*

(i) (a) and (b) Irrigation by Bhujonal canal minor from the year of establishment of farm. (ii) Drainage system is not perfect, specially during rainy season.

D. *Soil type and soil analysis :*

(i) *Kabar* and *parwa* 6" to 9" deep, brown to dark brown in colour, granular, circular and hexagonal in structure. (ii) Chemical analysis : pH 6.6 to 8.3, total soluble salt 0.022 to 0.066%, water holding capacity 40.22 to 58.73%, organic carbon .588 to 1.37, total nitrogen 980 to 1840 lb./ac., available P<sub>2</sub>O<sub>5</sub> 12.0 to 110 lb./ac. and water soluble K<sub>2</sub>O : 22 to 178 lb./ac. (iii) Mechanical analysis—N.A.

E. *No. of experiments :*

Wheat—24, Barley—2, *Jowar*—2, Maize—2, Pea—1, Gram—2, *Urd*—1, *Moong*—1 and Linseed—2, Mixed cropping—10, Total=47.

4. **Government Agricultural Farm, Atarra.**A. *General information :*

(i) In Naraini *tehsil* of Banda district.  $\frac{1}{2}$  mile from Atarra Railway Station. (ii) *Parwa* tract. (iii) Established in 1912. (iv) Paddy—Sugarcane—Barley—Gram—Pea—Wheat and Potato. (v) N.A.

B. *Normal rainfall in cm. :*

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
1	46	39	22	10	—	—	10	1	0	0	3	132

(Period on which the figures are based is N.A.).

C. *Irrigation and drainage facilities :*

(i) (a) and (b) Irrigation by canal which depends upon rain. (ii) As the station is on low land area, there is no proper drainage.

D. *Soil type and soil analysis :*

(i) *Parwa*, light *kabar*, yellow and black. (ii) Chemical analysis and (iii) Mechanical analysis—N.A.

E. *No. of experiments :*

Paddy—9, Wheat—13, *Jowar* fodder—1, Mixed cropping—4, Total=27.

## 5. State Livestock-cum-Agricultural Farm, Babugarh.

### A. General information :

(i) In Hapur *tehsil* of Meerut district. One mile from Babugarh Railway Station. Generally experiments are conducted in even land. The slope of the farm land is from west to east and it is about 10' in 1500 yds. from one corner to the other. (ii) N.A. (iii) Established in 1946. (iv) Paddy—*Berseem*, G.M.—Wheat—*Kharif* fodder—*Berseem*, G.M.—Sugarcane—Ratoon—*Kharif* fodder—G.M.—Wheat, *Kharif* fodder—Fallow (for unirrigated area) and Maize—Lucerne or *Berseem*—*Kharif* fodder—Barley are the different rotations in practice. (v) N.A.

### B. Normal rainfall in cm. :

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
2	24	33	17	6	—	1	2	1	2	1	1	90

(Average is based on the period from June, 1958 to May, 1965).

### C. Irrigation and drainage facilities :

(i) (a) and (b) Irrigated from tube well since 1946-1947. (ii) Natural drainage exists.

### D. Soil type and soil analysis :

(i) Sandy loam and loam, 9" deep, grey in colour. (ii) Chemical analysis : pH 7 to 7.5, organic carbon 0.105 to 0.345%, available  $P_2O_5$  9 to 18 lb./ac. and total soluble salt—normal. (iii) Mechanical analysis—N.A.

### E. No. of experiments :

Sugarcane—2, Total=2.

## 6. Government Nursery, Bageshwar.

### A. General information :

(i) In Almora *tehsil* of Almora district. 115 miles from Kathgodam Railway Station. 885 metres above mean sea level. The plots are laid on terracing pattern. (ii) It represents a valley area. (iii) Established in 1946. (iv) Production of sub-tropical and temperate fruit plants like citrus variety, peach, plum, apricot, walnut and mango. (v) Only production programme has been undertaken.

### B. Normal rainfall in cm. :

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
5	12	56	12	—	—	2	1	4	2	2	2	98

(Average rainfall data is based on the period August, 1964 to July, 1965).

### C. Irrigation and drainage facilities :

(i) (a) and (b) A canal has been constructed but it is not dependable. Besides this there is a diesel pump. (ii) No proper drainage system exists. Water logging is a problem.

### D. Soil type and soil analysis :

(i) Top soil shallow with reddish brown and brownish yellow colour. Two types of soil structure are found *viz.* ferruginous sand stone having reddish brown to yellow brown lateritic types of soil of a light texture and chloritic phyllite from chloritic rock but still loam having a brownish yellow colour. (ii) Chemical analysis and (iii) Mechanical analysis—N.A.

### E. No. of experiments :

Citrus=2, Total=2.



## 7. Government Agricultural Farm, Bahraich.

### A. General information :

- (i) In Bahraich *tehsil* of Bahraich district. 2½ miles from Bahraich Railway Station. (ii) It represents Saryu river tract. (iii) Established in 1926. (iv) Paddy, maize, wheat, pea and gram are the normal crops of the tract. (v) N.A.

### B. Normal rainfall in cm. :

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
5	30	15	10	10	—	—	—	—	6	1	—	77

(Period on which the figures are based is N.A.)

### C. Irrigation and drainage facilities :

- (i) (a) and (b) Irrigated from tube well since 1926. (ii) No proper drainage system exists.

### D. Soil type and soil analysis :

- (i) Sandy loam, 3' deep, white in colour and poor structure. (ii) Chemical analysis and (iii) Mechanical analysis :

	Field No. 7	Field No. 1B	Field No. 19A	Field No. 10
Water holding capacity	33.18 to 41.12%	34.96 to 36.25	42.96 to 48.98%	47.13 to 55.03%
pH	7.0 to 7.4 %	7.3 to 7.7	7.3 to 7.6	7.5 to 7.7
P <sub>2</sub> O <sub>5</sub>	0.09 to 0.12%	0.086 to 0.10%	0.11 to 0.16%	0.11 to 0.15%
CaO	2.76 to 3.95%	2.82 to 3.40%	4.27 to 7.22%	4.62 to 6.98%
K <sub>2</sub> O	0.43 to 0.73%	0.35 to 1.45%	0.46 to 1.70%	0.71 to 1.08%
Total nitrogen	0.01 to 0.03%	0.01 to 0.02%	0.04 to 0.06%	0.04 to 0.06%
Total organic carbon	0.06 to 0.44%	0.04 to 0.17%	0.05 to 0.45%	0.10 to 0.36%
Total water soluble solids	0.06 to 0.07%	0.06 to 0.10%	0.05 to 0.09%	0.07 to 0.13%
Coarse sand	11.18 to 75.06%	46.78 to 66.51%	1.30 to 47.17%	0.88 to 7.53%
Fine sand	18.36 to 44.65%	26.46 to 42.82%	42.85 to 72.31%	42.95 to 76.45%
Silt	2.40 to 30.35%	0.65 to 2.70%	1.73 to 21.05%	4.20 to 39.10%
Clay	0.50 to 8.65%	0.80 to 2.6 %	0.9 to 0.30%	2.60 to 9.00%

### E. No. of experiments :

Paddy—5, Wheat—7, Moong—1, Sugarcane—3, Mixed cropping—4, Total=20.

## 8. Government Agricultural Farm, Barabanki.

### A. General information :

- (i) In Barabanki *tehsil* of Barabanki district. Barabanki Railway Station. (ii) It represents central range. (iii) Established in 1933. (iv) Paddy—Pea—Gram, Paddy—Pea, Sugarcane—Moong—G.M.—Wheat. (v) N.A.

### B. Normal rainfall in cm. :

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
9	10	38	14	25	—	—	—	—	—	—	6	102

(The average rainfall data is for the year 1958—1959).

**C. Irrigation and drainage facilities :**

(i) (a) and (b) Irrigated from canal since beginning and tube well since 1957. (ii) No proper drainage system exists.

**D. Soil type and soil analysis :**

(i) Loam, 2' deep, light blackish in colour and compact in structure. (ii) Chemical analysis and (iii) Mechanical analysis—N.A.

**E. No. of experiments :**

Paddy—1, Total=1.

**9. Baradari Farm, Baradari****A. General information :**

(i) In Bilaspur *tehsil* of Rampur district. 10 miles from Kiccha Railway Station. Newly cleared level land. This is a private farm belonging to Colonel Lal Singh and is situated at a distance of 2 miles from Rudrapur. This is one of the progressive farms of the area. Experiments at this farm were conducted by the Reg. Soil Lab. Rudrapur which has no farm of its own. (ii) *Tarai* soil of U.P. (iii) N.A. (iv) Paddy—wheat. (v) N.A.

**B. Normal rainfall in cm. :**

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
7	33	38	22	3	—	—	3	2	1	—	1	112

(The above is the average rainfall data for the period 1961 to 1964).

**C. Irrigation and drainage facilities :**

(i) (a) and (b) Irrigated from tubewell. (ii) No drainage facilities exist.

**D. Soil type and soil analysis :**

(i) Sandy loam to loam, 0" to 6" deep grey in colour and granular in structure. (ii) Chemical analysis : pH value 6.0 to 7.0, organic carbon 1.4% to 0.08%, total nitrogen—0.06% to 0.09%, available phosphate 18 lb./ac. and available potash below 100 lb./ac. (iii) Mechanical analysis—N.A.

**E. No. of experiments :**

Wheat—1, Total=1.

**10. Government Agricultural Research Farm, Belatal.****A. General information :**

(i) In Mahoba *tehsil* of Hamirpur district. One mile from Belatal Railway Station. Uneven land. (ii) Bundelkhand tract. (iii) Established in 1922. (iv) G.M.—Linseed—G.M.—Wheat ; G.M.—Paddy—Pea/Gram ; *Jowar*—Gram/Barley/Pea—G.M.—Wheat—*Jowar* for fodder or *Til*—Gram. (v) Experiments are conducted on oil seeds, wheat, barley, gram and *jowar*.

**B. Normal rainfall in cm. :**

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
3	26	41	15	7	1	—	3	1	—	—	—	97

(The average rainfall data is for the period 1959—1965.)

**C. Irrigation and drainage facilities :**

(i) (a) and (b) Irrigated from tank since the year of establishment. (ii) No proper drainage system exists.

## D. Soil type and soil analysis :

- (i) Hard *kabar*, 3' deep, black in colour, black cotton soil. (ii) Chemical analysis and (iii) Mechanical analysis :—

	0 to 1'5"	1'—5" to 2'—10"
Moisture (natural)	7.94%	12.35%
Moisture (airdry)	2.010%	1.906%
Moisture equivalent	37.806%	38.615%
Water holding capacity	48.821%	52.033%
Loss on ignition	5.254%	5.478%
pH	6.8	6.8
Total HCl insolubles	78.901%	77.985%
Sesqui oxide	11.464%	12.334%
Fe <sub>2</sub> O <sub>3</sub>	5.520%	6.440%
Total P <sub>2</sub> O <sub>5</sub>	0.080%	0.074%
Available P <sub>2</sub> O <sub>5</sub>	0.005%	0.004%
Al <sub>2</sub> O <sub>3</sub>	5.864%	5.820%
CaO	0.980%	0.980%
MgO	1.149%	1.068%
Total K <sub>2</sub> O	0.367%	0.645%
Available K <sub>2</sub> O	0.008%	0.103%
Total nitrogen	0.056%	0.043%
Total organic carbon	0.370%	0.269%
Total water soluble solids	0.080%	0.110%
NaHCO <sub>3</sub>	0.044%	0.065%
Chlorides	0.008%	0.011%
Exchangeable calcium ME%	24.56%	23.68%
Coarse sand	1.692%	0.908%
Fine sand	39.536%	37.478%
Silt	20.500%	21.200%
Clay	34.050%	36.000%
Loss by solution	1.271%	1.767%

## E. No of experiments :

Cotton—3, Linseed—1, Total=4.

## 11. State Livestock-cum-Agricultural Mechanised Farm, Bharari.

## A. General information :

(i) In Jhansi *tehsil* of Jhansi district. 8 miles from Jhansi Railway Station. Uneven land. (ii) Typical Bundelkhand tract of *rakar*, *kabar* and *parwa* soils. (iii) Established in 1927. (iv) M.P. *Jowar* fodder—*Berseem*/Gram ; G.M.—Wheat—Barley. (v) Multiplication of seeds of fodder and cereals.

## B. Normal rainfall in cm. :

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
4	22	30	15	6	1	—	3	—	—	—	—	81

(The average rainfall data is for the period 1960 to 1965.)

## C. Irrigation and drainage facilities :

- (i) (a) and (b) Irrigated from canal since 1948. (b) No proper drainage system exists.

## D. Soil type and soil analysis :

(i) *Rakar*, *kabar* and *parwa*, 0 to 9" and 9" to 18" deep, brownish, greyish black, reddish and grey in colour ; crumby, cloddy, single grained granular in structure. (ii) Chemical analysis—N.A. (iii) Mechanical analysis :

<i>Sample A.</i>	0-9"	9" to 13"
Conductivity in mhos.	0.214	0.233
Coarse sand%	5.03	2.78
Fine sand%	42.07	35.73
Clay%	29.92	37.03
Silt %	20.27	70.78
<i>Sample B.</i>		
Conductivity in mhos.	0.219	0.110
Coarse sand%	43.83	37.80
Fine sand %	24.82	17.87
Clay%	18.85	31.18
Silt %	11.06	10.71

Sample A consists of plot numbers 327/3, 272, 54, 285, 327/2, 123 to 130, 106 to 109, and sample B of 136 to 139, 253 to 258. 25 to 29, 32, 34, 37, to 39, 141 to 145, 246, 247 and 250.

*E. No. of experiments :*

Paddy—7, Wheat—7, Jowar fodder—1, Berseem—6, Mixed cropping—3, Total=24.

**12. State Orchard, Bharsar.**

*A. General information :*

(i) In Pauri *tehsil* of Pauri Garhwal district. 88 miles from Kotdwara Railway Station. Slopy land, sloping towards north and east with brownish clayey soil with humus in general. (ii) Hilly terraces. (iii) Established in 1951. (iv) Temperate fruit plants, vegetable seeds and fruit production. (v) The station is a garden for temperate fruit production with a nursery for supplying of the grafted plants.

*B. Normal rainfall in cm. :*

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
101	329	316	198	33	8	15	32	35	37	23	38	1165

(The average rainfall data is for the period 1958 to 1964.)

*C. Irrigation and drainage facilities :*

- (i) (a) and (b) Irrigation facilities were made available from Aobour since 1955-56.  
(ii) No proper drainage system exists.

*D. Soil type and soil analysis :*

- (i) Brownish and black at some places, 5' to 6' deep. Soft in general with brownish clay. (ii) Chemical analysis and (iii) Mechanical analysis :

	Sample No. I (2408)	Sample No. II (2409)	Sample No. III (2410)
Water holding capacity %	44.03	54.7	51.6
pH	5.9	5.5	5.7
Moisture %	4.13	3.69	4.75
Loss on ignition %	3.46	5.76	5.43
HCl insolubles %	74.44	74.22	75.74
Sesqui oxide ( $R_2O_3$ ) %	15.30	13.66	12.12
Calcium oxide (CaO) %	0.14	0.15	0.13
Magnesium oxide (MgO) %	0.58	0.30	0.42
Potassium oxide ( $K_2O$ ) %	0.89	0.94	0.32
Iron oxide $Fe_2O_3$ %	6.24	5.36	4.72
Aluminium oxide ( $Al_2O_3$ ) %	8.67	7.96	7.07
Phosphorus pentoxide ( $P_2O_5$ ) %	0.39	0.34	0.33
Organic carbon %	0.58	1.88	1.56

Coarse sand %	2.40	8.33	4.78
Fine sand %	33.34	35.39	39.22
Silt %	60.60	49.50	50.25
Clay %	2.15	4.30	4.90
Colour	Dark brown	Dark brown	Dark brown

*E. No. of experiments :*

Cabbage—1, Walnut—1, Total=2.

**13. B.R. College Horticultural Gardens, Bichpuri.**

*A. General information :*

(i) In Agra *tehsil* of Agra district. One mile from Bichpuri Railway Station. Well levelled fields. (ii) Semi-arid (Indo-Gangetic) tract, (iii) Established in 1950. (iv) Orchard of mango, guava and citrus trees along with small area under other fruit trees. Cole crops, tomato, onion, *bhindi* and cucurbits along with small area under other vegetables and ornamental gardens. (v) Research work is done in horticulture by M.Sc. (Ag.) and Ph. D. students.

*B. Normal rainfall in cm. :*

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
2	18	26	11	4	—	—	2	—	1	—	—	64

(The average rainfall data is for the period 1953 to 1963.)

*C. Irrigation and drainage facilities :*

(i) (a) and (b) Irrigated from canal and surface well from the very beginning, Tube well since 1954 and sewage since 1957. (ii) No proper drainage system exists.

*D. Soil type and soil analysis :*

(i) Sandy loam, 3' to 5' deep, brownish in colour and structureless. (ii) Chemical analysis : Nitrogen 0.045%, phosphorus 0.084% potash 1.213% and pH 7.2. (iii) Mechanical analysis : Coarse sand 0.445%, pure sand 58.925%, silt 22.821% and clay 16.66%.

*E. No. of experiments :*

Potato—4, Cauliflower—4, Onion—1, Total=9.

**14. B.R. College Institutional Research Farm, Bichpuri.**

*A. General information :*

(i) In Agra *tehsil* of Agra district. One mile from Bichpuri Railway Station. Well levelled land. (ii) Semi-arid (Indo-Gangetic). (iii) Established in 1943. (iv) *Kharif* : *Jowar—Bajra—Sanai* for G.M. and *Rabi* : *Wheat—Gram—Peas—Potato—Berseem* and Sugar-cane. (v) Research work is done in agriculture by M.Sc. and Ph.D. students and on research schemes of I.C.A.R., New Delhi.

*B. Normal rainfall to D. Soil type and soil analysis :*

Same as in B.R. College Hort. Gardens, Bichpuri.

*E. No. of experiments :*

Wheat—7, *Jowar*—1, *Bajra*—12, Maize—3, Potato—1, Cabbage—2, *Tinda*—2, Tomato—1, Water melon—1, Pea—3, Gram—1, Cotton—2, Sesamum—1, *Berseem*—1, Mixed cropping—4, Total=50.

**15. Government Cotton Research Station, Bulandshahr.**

*A. General information :*

(i) In Bulandshahr *tehsil* of Bulandshahr district. 3 miles from Bulandshahr Railway Station. The farm is well levelled and well laid. (ii) It represents the alluvial tract of

western U.P. (iii) Established in 1944. (iv) G.M.—Wheat—Cotton—Pea. (v) Evolution of long shaped strain of *desi* cotton through acclimatisation, selection and hybridisation which is suitable to mill industry. Improving quality of local survey selections by crossing them with quality cotton of other states. Research work is also done in tobacco and other fibre crop.

*B. Normal rainfall in cm. :*

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
2	17	29	17	11	—	—	2	1	1	0	1	81

(The average rainfall data is based on the period 1954 to 1963.)

*C. Irrigation and drainage facilities :*

(i) (a) and (b) Irrigated from tube well and Ganga canal. (ii) Fields are well drained.

*D. Soil type and soil analysis :*

(i) Loam, 6" deep, whitish in colour and granular and crumb in structure. (ii) Chemical analysis : pH 7.8, total soluble salt 0.03%, organic carbon 0.34% and average  $P_2O_5$  9.2 lb./ac. (iii) Mechanical analysis : Coarse sand 4.50%, fine sand 61.20%, clay 14.50% and silt 16.5%.

*E. No. of experiments :*

Cotton—5, Tobacco—3, Total=8.

**16. Usar Reclamation Farm, Chakeri.**

*A. General information :*

(i) In Kanpur *tehsil* of Kanpur district. 2 miles from Chakeri Railway Station. Even land. (ii) Alluvial with halomorphic phase. (iii) Established in 1954. (iv) Paddy—Wheat. (v) Research is done in method of reclamation of saline alkali soils including manurial and cultural methods.

*B. Normal rainfall in cm. :*

N.A.

*C. Irrigation and drainage facilities :*

(i) (a) and (b) Sewage irrigation. (ii) Proper drainage system exists.

*D. Soil type and soil analysis :*

(i) Saline alkali soil, very deep, greyish brown to ash grey in colour, sub-angular blocky to cloddy in structure. (ii) Chemical analysis : pH 8.4, E. conductivity 0.5 m. mhos./cm., organic carbon 0.5%, available  $P_2O_5$  36 lb./ac. (iii) Mechanical analysis : Sand 56.8%, silt 22.72% and clay 20.48%.

*E. No. of experiments :*

Paddy—3, Wheat—2, Barley—3, Oats—1, Total=9.

**17. Government Hill Fruit Research Station, Chaubattia.**

*A. General information :*

(i) In Pali (Ranikhet) *tehsil* of Almora district. 54 miles from Kathgodam Railway Station. Hilly tract with a northern aspect. (ii) Hilly tract. (iii) Established in 1934. (iv) Permanent plantation of temperate fruits with clean cultivation. (v) Research work is done on temperate and sub-tropical fruits.

**B. Normal rainfall in cm. :**

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
15	43	31	37	20	1	2	6	3	6	3	6	173

(The average rainfall data is for the period 1955 to 1964.)

**C. Irrigation and drainage facilities :**

(i) (a) and (b) No irrigation facility is available. Fruit trees raised under rainfed conditions. Pipe line is available only for nurseries and laboratories. (ii) Natural drainage exists.

**D. Soil type and soil analysis :**

(i) Usually shallow except at places, micaceous grey, brown in forest soils, at places red in laterite soil. Sandy quartzite, sandy micaceous, light loam, heavy loam and hard clay organic. (ii) Chemical analysis : Acidic soils of pH ranging from 4.0 to 6.0. Wide variation in chemical constituents. (iii) Mechanical analysis : Wide variation in soils not only from one acre to another but even in the same terrace.

**E. No. of experiments :**

Cabbage—7, Apple—50, Cirtus—1, Pear—5, Peach—7, Plum—1, Apricot—1, Total=72.

**18. Soil Conservation Research, Demonstration and Training Farm, Chhalesar.****A. General information :**

(i) In Etmadpur *tehsil* of Agra district. Adjacent to Chhalesar Railway Station. Land on the bank of the Jamuna cut up by numerous ravines. (ii) Alluvial tract. (iii) Established in August, 1955. (v) *Bajra*, cowpea and *jowar* in *kharif* followed by bengal gram, mustard, wheat etc. in *rabi*. (v) Reclamation of ravine land for agricultural purposes.

**B. Normal rainfall in cm. :**

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
4	24	35	15	3	—	—	2	—	1	—	1	85

(The average rainfall data is for the period 1958 to 1963.)

**C. Irrigation and drainage facilities :**

(i) (a) and (b) Irrigation facilities exist only for an area of about 2 acres since 1957. The existing well is being used for irrigation. (ii) Adequate surface drainage system exists.

**D. Soil type and soil analysis :**

(i) Loamy sand to sandy loam, several hundred feet, yellowish in colour and mostly single grain. (ii) Chemical analysis :

Depth	pH	Organic carbon %	Total nitrogen %	C/N ratio	Available P <sub>2</sub> O <sub>5</sub> %	Available K <sub>2</sub> O %
0" to 6"	7.8	0.19	0.026	8.05	0.00056	0.0063
6" to 20"	7.6	0.11	0.020	5.05	0.00960	0.0036

(iii) Mechanical analysis : Depth 0" to 6", clay 13.89%, silt 7.44%, and sand 80.56%.

**E. No. of experiments :**

Wheat—2, *Bajra*—2, Mixed cropping—5, Total=9.

**19. Government Seed Multiplication Farm, Chharara.****A. General information :**

(i) In Mathura *tehsil* of Mathura district. 6 miles from Mathura Railway Station. About 50% of the area is almost unlevelled and having high ups and downs. (ii) Alluvial.

(iii) Established in 1956. (iv) Fallow or G.M.—Wheat/Barley, Green fodder—Barley, Fallow—*Guar*+*Bajra* (non irrigated area), Fallow—Oilseed (irrigated area) are the crop rotations normally followed. (v) Breeder seeds are multiplied in an area of about 34 acres and varietal trials etc. are also conducted as per direction of the Regional Research Officer. Generally this is a seed multiplication farm.

**B. Normal rainfall in cm. :**

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
2	18	20	17	3	—	—	2	—	1	—	1	64

(The average rainfall data is for the period 1955 to 1964).

**C. Irrigation and drainage facilities :**

(i) (a) and (b) Irrigated from Mesoury well (fitted with Persian wheel) since 1956. Two tube wells one since 1957 and the other since 1960 and canal since beginning. (ii) No proper drainage system exists.

**D. Soil type and soil analysis :**

(i) Sandy and sandy loam, 8" to 10" deep, light brown in colour and very loose in structure. (ii) Chemical analysis : pH—7.52, total soluble salts 0.090%, organic carbon 0.31%, available  $P_2O_5$  8.56 lb./ac. (iii) Mechanical analysis—N.A.

**E. No. of experiments :**

Sugarcane—1, Total=1.

**20. Minor Forest Products Branch, Forest Research Institute, Dehra Dun.**

**A. General information :**

(i) In Dehra Dun *tehsil* of Dehra Dun district. 4 miles from Dehra Dun Railway Station. Almost plain with good drainage. (ii) It represents sub-tropical tract. (iii) Established in 1906. (iv) Minor forest products like *Rauwolfia*. (v) Research conducted with a view to find out optimum methods of cultivation, exploitation, marketing, grading adulteration etc. of the important minor forest products. Studies on optimum methods of propagation and their effect on production of alkaoidal content of roots of *Rauwolfia*. Small scale statistically laid out cultural experiments.

**B. Normal rainfall in cm :**

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
12	60	61	35	11	1	3	6	4	3	1	3	200

(The average rainfall is based on the period 1955 to 1964).

**C. Irrigation and drainage facilities :**

(i) (a) and (b) Canal irrigation facilities available in hot and dry season. (ii) Soil is porous and needs no special drainage system.

**D. Soil type and soil analysis :**

(i) Sandy loam to sandy clay loam. 10' to 12' deep thereafter murrum. Grey brown in colour and well drained. (ii) Chemical analysis : Layer 0"-9"—nitrogen 0.1029%, organic carbon 1.21%, organic matter 2.0855%, loss on ignition 4.4%, available  $P_2O_5$  0.0083%, available  $K_2O$  0.0043%. (iii) Mechanical analysis : Coarse sand 15.25%, fine sand 33.68%, silt 26.80% and clay 28.93%.

**E. No. of experiments :**

*Rauwolfia serpentina*—3, Total=3.



**21. State Usar Reclamation Farm, Dhakauni.****A. General information :**

(i) In Sandila *tehsil* of Hardoi district. 13 miles from Rahimabad and Sandila Railway Station. The experimental area was slightly slopy but got levelled before conducting the experiments. (ii) Saline-alkali soils. (iii) Established in 1950. (iv) *Kharif*—Paddy and *rabi*—Wheat and barley. (v) Experiments relating to reclamation of saline-alkali land are conducted.

**B. Normal rainfall in cm. :**

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
8	33	33	18	12	—	—	4	1	1	—	2	112

(The average rainfall data is for the period 1954—1964.)

**C. Irrigation and drainage facilities :**

(i) (a) and (b) Tube well in limited area since 1956—57 and canals since start. (ii) No proper drainage system exists.

**D. Soil type and soil analysis :**

(i) Gangetic alluvial soil, black and brownish in colour and variable type of structure. (ii) Chemical analysis : pH 9 to 10, K in M.E%—0.1 to 0.6, Na in M.E.%—5.5 to 7.7, permeability in inch/hour—0.0015 to 0.025. (iii) Mechanical analysis : Coarse sand 0.521 to 2.169%, fine sand 40.93 to 44.79%, silt 30.00 to 38.75%, clay 15.90 to 23.45% and *kankar* 5.71 to 8.8%.

**E. No. of experiments :**

Paddy—5, Wheat—7, Total=12.

**22. Institute of Crop Physiology, Dilkusha.****A. General information :**

(i) In Lucknow *tehsil* of Lucknow district. 5 miles from Charbagh, Lucknow Railway Station. The fields are even and uniform though the experimental area is in different tiers. (ii) Gangetic alluvium. (iii) Established in 1948. (iv) (a) *Kharif* : Paddy or other crops, *Rabi*—Gram or Pea. (b) *Kharif* : G.M. or a legume—Maize—*Jowar* or *Chari*, *Rabi* : Wheat/Barley—Gram or oilseed crops. (v) Mainly agro-physiological in nature. Undertaking of Agronomical and Physiological research on cultivated crops.

**B. Normal rainfall in cm. :**

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
8	29	39	20	10	—	—	4	1	1	—	2	114

(The average rainfall data is for the period 1954 — 1963.)

**C. Irrigation and drainage facilities :**

(i) (a) and (b) *Kachcha* well—since establishment of the farm upto 1960 and later tube well. (ii) No proper drainage system exists.

**D. Soil type and soil analysis :**

(i) Shallow, light brown and sandy loam to loam. (ii) Chemical analysis : Total N 0.0061%, organic carbon 0.684%, available  $P_2O_5$  0.0065%, available  $K_2O$  0.00025%, pH 7.5. (iii) Mechanical analysis : Clay 14.2%, silt 11.2% and sand 71.4%.

**E. No. of experiments :**

Paddy—8, Wheat—12, Barley—12, Potato—9, Gram—3, *Lobia*—1 *Moong*—2, *Berseem*—1, Mixed cropping—7, Total=55.

**23. Government Agricultural Farm, Dhanauri.**

*A. General information to D. Soil type and soil analysis*

Details are N.A.

*E. No. of experiments :*

Wheat—2, Total=2.

**24. Government Agricultural Farm, Etawah.**

*A. General information :*

(i) In Etawah *tehsil* of Etawah district. Nearest Railway Station is Etawah. (ii) N.A. (iii) Established in 1913. (iv) Wheat, barley, pea, gram, *berseem*, potato, paddy, cotton and sugarcane are the normal crops of the tract. (v) Nil.

*B. Normal rainfall in cm. :*

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
—	29	31	2	2	7	—	—	—	4	—	—	75

(The average rainfall data is for the year 1959-60.)

*C. Irrigation and drainage facilities :*

(i) (a) and (b) Irrigated from canal since 1913. (ii) Proper drainage system exists.

*D. Soil type and soil analysis :*

(i) Loam, light brown in colour. (ii) Chemical analysis and (iii) Mechanical analysis—N.A.

*E. No. of experiments :*

Wheat—3, Sugarcane—3, Mixed cropping—3, Total=9.

**25. Central Rice Research Station, Masodha (Govt. Agri. Farm, Faizabad).**

*A. General information :*

(i) In Faizabad *tehsil* of Faizabad district. 5½ miles from Faizabad Railway Station. Well drained even land. (ii) Irrigated upland. (iii) Rice Research Station established in 1961 (Farm in 1918). (iv) Paddy—Pea ; Sugarcane—G.M.—Wheat/Barley are the normal rotations of the tract. (v) Research is done on rice breeding.

*B. Normal rainfall in cm. :*

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
7	27	26	19	4	—	1	1	1	—	—	—	86

(The average rainfall data is for the period 1961 to 1965.)

*C. Irrigation and drainage facilities :*

(i) (a) and (b) Irrigated from tube well since 1918. (ii) Proper drainage system exists.

*D. Soil type and soil analysis :*

(i) Loam to light loam, grey to light brown in colour and light loam in structure. (iii) Chemical analysis : pH 6.5, organic carbon 0.41 to 0.31%, available P<sub>2</sub>O<sub>5</sub> 9 to 18 lb./ac., K<sub>2</sub>O 100 lb./ac. (iii) Mechanical analysis—N.A.

*E. No. of experiments :*

Paddy—9, Wheat—12, Barley—1, Potato—1, Sugarcane—2, Mixed cropping—3, Total =28.

**26. Government Potato Research Station, Farrukhabad.****A. General information :**

(i) In Farrukhabad *tehsil* of Farrukhabad district. 2½ miles from Farrukhabad Railway Station. Experimental area is levelled. (ii) Indo-Gangetic alluvium. (iii) Established in 1925. (iv) Wheat—Potato—Maize—*Sana* (G.M.). (v) Research work is done on potato.

**B. Normal rainfall in cm. :**

N.A.

**C. Irrigation and drainage facilities :**

(i) (a) and (b) Irrigated from tube well since 1925. (ii) No proper drainage system exists.

**D. Soil type and soil analysis :**

(i) Loam to sandy loam, pretty deep, light brown in colour and granular in structure. (ii) Chemical analysis : The soils of the farm are generally normal in respect of soluble salts and soil reaction. They are generally low in nitrogen content and are medium to rich in phosphorous content. pH varies from 7.8 to 8.1. Organic carbon—0.23 to 6.5%. (iii) Mechanical analysis—N.A.

**E. No. of experiments :**

Potato—45, Mixed cropping—1, Total = 46.

**27. Jute Experimental and Demonstration Farm, Gograghat.****A. General information :**

(i) In Kaiserganj *tehsil* of Bahraich district. One furlong from Gograghat Railway Station. Low lying area. (ii) *Tarai* belt. (iii) Established in 1949. (iv) Jute—Barley—Wheat, Jute—Sugarcane are the normal rotations of the tract. (v) Experiments are conducted to study the optimum dose of N, P and K for jute.

**B. Normal rainfall in cm. :**

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
11	36	30	16	4	—	1	3	1	2	—	1	104

(Average rainfall data is for the period 1950 to 1964).

**C. Irrigation and drainage facilities :**

(i) (a) and (b) Irrigated from tube well since 1957. (ii) No drainage system exists.

**D. Soil type and soil analysis :**

(i) Sandy loam, 6" to 10" deep, light yellow in colour. (ii) Chemical analysis : pH 9.0 to 9.1, organic carbon 0.64 to 0.74%, total nitrogen 0.056 to 0.092%, carbon nitrogen ratio 6.96 to 13.21, total soluble salts 0.122 to 0.265%, available  $P_2O_5$ —18.20 to 19.60 lb./ac. (iii) Mechanical analysis—N.A.

**E. No. of experiments :**

Sugarcane—5, Jute—4 Total = 9.

**28. Jute Research Station, Gograghat.****A. General information :**

(i) In Kaiserganj *tehsil* in Bahraich district. Two furlongs from Gograghat Railway Station. The farm has three types of land viz. high, medium and low. (ii) *Tarai*. (iii) Established in 1957. (iv) *Kharif*—low land : Jute, mid and high lands : Jute—*Sannhemp*—Millet and G.M. crops. *Rabi*—low land : fallow, mid and high land : Pulse, mustard,

wheat, barley etc. (v) Agronomy, Breeding and Genetics, Physiology, Agricultural Chemistry, Mycology and Entomology of jute, mesta and allied fibre.

**B. Normal rainfall in cm. :**

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
4	36	31	25	8	—	1	1	—	1	—	2	109

(The average rainfall data is for the period 1960—1964).

**C. Irrigation and drainage facilities :**

(i) (a) and (b) N.A. (ii) Not fully, as the land was once a river bed of the Gogra, with the rise of water level in Gogra river running adjacent to the farm, water enters into the farm by percolation and the draining out of percolatory and excess water is not possible.

**D. Soil type and soil analysis :**

(i) Sandy loam, 6" deep and light brown in colour. (ii) Chemical analysis : pH 7.5 to 7.9, organic carbon 0.03 to 0.88% and available P<sub>2</sub>O<sub>5</sub> 0.8 to 14.4 lb./ac. (iii) Mechanical analysis : depth 0 to 9", coarse sand 0.33 to 2.25% silt 19.25 to 48.75%, clay 5.57 to 9.25% and fine sand 40.50 to 75.00%.

**E. No. of experiments :**

Jute—9, Total=9.

**29. Government Regional Agricultural Research Station, Hardoi.**

**A. General information :**

(i) In Hardoi *tehsil* of Hardoi district, 2 miles from Hardoi Railway Station. Flat land. (ii) Alluvial soil. (iii) Established in 1956. (iv) Paddy—*Berseem* ; *Sanai* (G.M.)/*Moong*/*Urd*/*Lobia*—Potato/*Wheat*/*Barley* ; *Sugarcane*—*Berseem*—Paddy—Pea—G.M., *Jowar*/*Maize*/*Bhindi*—*Gram*/*Berseem* and *Bhindi*/*Sanai* (G.M.)—Potato—*Wheat*—*Tomato* are the different rotations of the tract. (v) Varietal, manurial, cultural, rotational, irrigational, weed control, botanical, soil pests and diseases of crops etc.

**B. Normal rainfall in cm. :**

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
7	28	29	15	14	—	—	4	—	1	—	1	99

(The average rainfall is for the period 1955—1964.)

**C. Irrigation and drainage facilities :**

(i) (a) and (b) Irrigated from tube well and canal since the inception of the farm. (ii) No proper drainage system exists.

**D. Soil type and soil analysis :**

(i) Sandy loam, greyish black to brownish grey in colour. Structure less with iron concretions. (ii) Chemical analysis and (iii) Mechanical analysis :

Depth	0"—6"	6"—2'6"
Moisture	16.5%	16.6%
pH	6.7%	6.9
HCl insolubles	89.0%	82.2%
Sesqui oxide	4.3%	11.6%
Fe <sub>2</sub> O <sub>3</sub>	2.48%	3.74%
P <sub>2</sub> O <sub>5</sub>	0.11%	0.07%
Al <sub>2</sub> O <sub>3</sub>	1.66%	7.74
CaO	0.20%	0.46%
MgO	0.79%	0.99%
K <sub>2</sub> O	2.43%	2.79%

Total Nitrogen	0.07%	0.07%
Total organic carbon	0.43%	0.17%
Water soluble solids	0.06%	0.06%
Bicarbonates as NaHCO <sub>3</sub>	0.04%	0.04%
Chlorides as NaCl	0.02%	0.02%
Coarse sand	1.2%	2.1%
Fine sand	64.6%	50.4%
Silt	13.7%	22.0%
Clay	12.3%	21.1%

*E. No. of experiments :*

Paddy—2, Wheat—27, Barley—3, *Jowar*—2, *Bajra*—1, Maize—3, Potato—1, *Moong*—1, Mixed cropping—9, Total=49.

**30. Vivekananda Laboratory Experimental Fields, Hawalbagh.**

*A. General information to D. Soil type and soil analysis :*

Details are N.A.

*E. No. of experiments :*

Wheat—1, Total=1.

**31. State Live stock-cum-Agricultural Farm, Hempur.**

*A. General information :*

(i) In Kashipur *tehsil* of Nainital district. Nearest Railway Station is Gaushala. Generally the land is uneven but the experimental area is even. (ii) *Tarai* area. (iii) Established in 1924. (Reorganised as Mechanical State Farm in 1948). (iv) G.M. (*lahi*), wheat, barley, pea, paddy, *berseem*, cowpea, and sugarcane. (v) N.A.

*B. Normal rainfall in cm. :*

June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
10	35	40	25	12	1	1	4	2	2	0	1	133

(The average rainfall data is for the period 1956 to 1964.)

*C. Irrigation and drainage facilities :*

(i) (a) and (b) Very limited irrigation facilities are available in Dhela. Lift and canal irrigation. Only 600 acres are under irrigation. (ii) Generally the land is uneven and the drainage system is not upto the required standard.

*D. Soil type and soil analysis :*

(i) Clay loam and sandy. About 9" in sandy loam and 1' in clay soil. Clay loam—greyish, sandy loam—yellowish. (ii) Chemical analysis and (iii) Mechanical analysis :

	North	Central	South
Available P <sub>2</sub> O <sub>5</sub> as ppm.	20—40	15—20	15
Organic carbon	0.39 to 0.59	0.65 to 0.85	0.56 to 0.60
Available nitrogen	50.4 to 53.2	25.2 to 78.9	25.0 to 84.0
Total soluble salts	0.027 to 0.028%	0.026 to .366%	0.74 to 09.05
pH	6.6 to 6.7	6.4 to 6.7	6.2 to 6.6
Coarse sand	8.95%	7.28%	5.37%
Fine sand	62.12%	55.53%	62.96%
Silt	17.80%	20.40%	18.15%
Clay	9.17%	14.82%	12.05%

E. *No. of experiments :*

Paddy—1, Wheat—3, Total=4.

**32. Horticultural Farm, Jeolikote.**A. *General information :*

(i) In Nainital *tehsil* of Nainital district. 11 miles from Kathgodam (N.E.R) Railway Station. Situated in the valley. (ii) Valley area with calcareous soil. (iii) Established in 1950. (iv) Strawberry, wheat and soyabean are the main crops. (v) No special research programme.

B. *Normal rainfall in cm. :*

Not maintained.

C. *Irrigation and drainage facilities :*

(i) (a) and (b) Irrigation facilities are available. Source and year—N.A. (ii) Natural and through drainage channels.

D. *Soil type and soil analysis :*

(i) Top soil is very shallow, reddish brown in colour. Calcareous transported soil full of lime stone gravel upto one cm. in diameter. (ii) Chemical analysis and (iii) Mechanical analysis : pH ranging from 6.0 to 6.8. Wide variation in chemical and mechanical constituents even in the same terrace.

E. *No. of experiments :*

Citrus—1, Guava—2, Strawberry—2, Total=5.

**33. Government Agricultural Farm, Kalai.**A. *General information :*

(i) In Aligarh *tehsil* of Aligarh district. 11 miles from Aligarh. Levelled land. (ii) Indo-Gangetic plain. (iii) Established in 1912. (iv) *Sanai/Dhaincha* (G.M.)—Wheat ; Maize—Barley ; Cotton—Sugarcane—*Ratoon*—*Moong*—Wheat, Cotton—Pea ; Paddy—Gram. (v) N.A.

B. *Normal rainfall in cm. :*

June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
—	35	20	38	—	—	—	—	1	1	1	—	96

(The average rainfall data is for the period 1960—1964.)

C. *Irrigation and drainage facilities :*

(i) (a) and (b) Irrigated from canal since the start of the farm. (b) Proper drainage system exists.

D. *Soil type and soil analysis :*

(i) Loam, 6" deep, light grey in colour and loose in structure. (ii) Chemical analysis :

Plot No.	pH	Conductivity	Organic carbon %	Available P <sub>2</sub> O <sub>5</sub> in lb./ac.
1	6.4	0.24	0.44	26.6
2	8.0	0.25	0.42	84.0
3	8.1	0.15	0.57	19.6
4	7.0	0.20	0.21	12.6
5	7.2	0.22	0.17	23.8
6	8.2	0.22	0.31	9.8
7	7.3	0.17	0.21	14.0
8	7.8	0.14	0.06	16.8
9	6.0	0.60	0.21	16.3

(iii) Mechanical analysis—N.A.

*E. No. of experiments :*

Paddy—1, Wheat—18, *Moong*—1, Sugarcane—4, Cotton—2, *Sanai*—1, *Berseem*—1, Cowpea—2, Mixed cropping—4, Total=34.

**34. Government Agricultural Research Farm, Kalianpur.**

*A. General information :*

(i) In Kanpur *tehsil* of Kanpur district. 1 mile from Kalianpur Railway Station. Plain land. (ii) Alluvial. (iii) Established in 1912. (iv) G.M.—Wheat ; Paddy—*Berseem* ; Paddy—Pea, *Moong*—Wheat ; *Lobia*—Sugarcane ; *Chari*—Pea or Gram. (v) To carry out the experiments on oilseeds, millets and legumes.

*B. Normal rainfall in cm. :*

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
3	22	28	14	12	—	—	3	—	—	—	1	83

(The average rainfall data is for the period 1955 to 1965.)

*C. Irrigation and drainage of facilities :*

(i) (a) and (b) Irrigated from canal since 1912. (ii) Proper drainage system exists.

*D. Soil type and soil analysis :*

(i) Loam soil, 9" to 3' deep, grey in colour and granular in structure. (ii) Chemical and (iii) Mechanical analysis :

Depth	0'—9"	9"—1' 6"	1'6" to 2'	2" to 2' 9"
Moisture (natural)	2.06	4.98	6.00	7.78
Moisture (air dry)	1.01	1.77	1.64	1.67
Moisture equivalent	14.09	23.02	24.08	23.87
Water holding capacity	44.87	45.25	45.19	47.09
Loss on ignition	1.44	1.93	1.89	2.30
pH	7.2	7.2	7.8	7.8
Total HCl in solubles	86.86	81.62	80.57	78.59
Sesquioxide	7.62	10.30	10.98	12.54
Fe <sub>2</sub> O <sub>3</sub>	3.56	4.72	4.76	5.36
Al <sub>2</sub> O <sub>3</sub>	4.06	5.58	6.22	7.18
CaO	0.36	0.45	0.83	0.98
MgO	0.97	1.30	1.32	1.41
Total nitrogen	0.06	0.05	0.05	0.05
Total water soluble salt	0.04	0.04	0.06	0.03
NaHCO <sub>3</sub>	0.03	0.02	0.03	0.02
Total exchangeable bases m.e%	10.00	15.20	29.04	31.04
Exchangeable calcium m.e.%	6.26	11.60	14.08	15.84
Coarse sand	0.34	0.24	0.17	1.21
Fine sand	59.66	45.71	42.99	42.41
Silt	22.35	24.70	25.50	25.40
Clay	16.00	25.95	28.60	29.15
Loss by solution	0.61	0.67	0.77	0.86
Total organic carbon	0.56	0.70	0.84	0.98
K <sub>2</sub> O	0.46	0.42	0.35	0.22
P <sub>2</sub> O <sub>5</sub>	0.23	0.20	.21	0.21

*E. No. of experiments :*

Paddy—10, Wheat—14, *Jowar*—2, *Bajra*—3, Maize—2, Potato—2, *Moong*—2, Cotton—2, Groundnut—5, Linseed—2, Castor—3, *Brassica*—20, Mixed cropping—3, Total=70.

### 35. Regional Research Centre (Oilseeds and Millets), PIRRCOM, I. C. A. R., Kalianpur.

#### A. General information :

(i) In Kanpur *tehsil* of Kaupur district. 2 km. from Rawatpur Railway Station. Level land. (ii) Indo-Gangetic plain, known as *Doab*. (iii) Established in 1958. (iv) *Bajra*—Peas, *Bajra*-Lentil, Paddy-Linseed, *Brassica*-G.M. (*Sanai or Dhaincha*) (v) Research on different aspects of crop.

#### B. Normal rainfall in cm. :

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
2	21	22	11	8	—	1	2	—	1	—	1	69

(The average rainfall data is for the period 1955 to 1964).

#### C. Irrigation and drainage facilities :

(i) (a) and (b) Since the commencement of the centre. Source-N.A. (ii) Proper drainage system exists.

#### D. Soil type and soil analysis :

(i) Alluvial, deep, light grey brown and granular. (ii) Chemical analysis : Total exchangeable bases m. e. 8.8 to 11.5, exchangeable calcium m. e. 6.0 to 8.0, pH 6.8 to 7.4, nitrogen 0.05 to 0.07%, available  $P_2O_5$  ppm. 0.20 to 0.50%, organic carbon 0.6 to 0.7%. (iii) Mechanical analysis : Sand 60 to 70%, silt 10 to 12% and clay 19 to 21%.

#### E. No. of experiments :

Most of the experiments conducted are on *Brassica* crop. The experiments are included in the number of experiments of Govt. Agri. Res. Farm, Kalianpur at Sl. No. 34.

### 36. Government Vegetable Research Station, Kalianpur.

#### A. General information. :

(i) In Kanpur *tehsil* of Kanpur district. 1.5 miles from Rawatpur Railway Station. Plain land. (ii) Indo-Gangetic plain, known as *Doab*. (iii) Established in 1954. (iv) No crop pattern is strictly followed. (v) Breeding, Entomological, Mycological, Biochemical and Agronomical experiments are being conducted year to year.

#### B. Normal rainfall in cm. :

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
3	20	26	14	11	—	—	2	1	—	—	2	79

(The average rainfall data is for the period 1958 to 1964).

#### C. Irrigation and drainage facilities :

(i) (a) and (b) Irrigated from canal and one tube well since 1959. (ii) There is proper arrangement of drainage.

#### D. Soil type and soil analysis :

(i) Alluvial, extremely deep. Grey brown to brownish grey in colour at the surface and darker below the surface. Single grained and sub-blocky. (ii) Chemical analysis : Total HCl insolubles 86.86%, sesqui oxide 7.62%,  $Fe_2O_3$  3.56%,  $Al_2O_3$  4.06%, CaO 0.36%, MgO 0.97%.  $K_2O$  0.46%,  $P_2O_5$  0.23% and total nitrogen 0.06%. (iii) Mechanical analysis : Coarse sand 0.34%, fine sand 59.66%, silt 22.35% and clay 16.00%.

#### E. No. of experiments :

*Bhindi*—6, *Brinjal*—8, *Cabbage*—3, *Onion*—4, *Radish*—4, *Pumpkin*—1, *Arbi*—1, *Pea*—7, Total=37.



**37. Botanical Garden, Government Agricultural College, Kanpur.**

*A. General information :*

(i) In Kanpur *tehsil* of Kanpur district.  $\frac{1}{2}$  mile from Rawatpur Railway Station. Levelled land. (ii) Sub-tropical. (iii) Established in 1906. (iv) Fruit, vegetables and flowers are grown in the garden. (v) Research is done on vegetables, plants and seasonal annuals.

*B. Normal rainfall in mm. :*

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
26	274	262	117	156	—	6	27	5	16	16	17	922

(The average rainfall data is for the period 1960 to 1964).

*C. Irrigation and drainage facilities :*

(i) (a) and (b) Irrigated from tank water and tube well since 1935. (ii) Proper drainage system exists.

*D. Soil type and soil analysis :*

(i) Yellow in colour and granular in structure. (ii) Chemical analysis : pH—8.0, conductivity—0.25%, organic carbon—0.03%, available  $P_2O_5$ —40.0 lb./ac., total nitrogen—0.113%, moisture—1.018%, organic matter—2.839%,  $R_2O_3$ —9.16%,  $Fe_2O_3$ —4.88%, CaO—1.288%, MgO—0.322%,  $P_2O_5$ —0.189% and  $K_2O$ —0.744%. (iii) Mechanical analysis : Coarse sand—1.235% and silt+clay—36.925%.

*E. No. of experiments :*

Bajra—2, Brinjal—2, Onion—1, Radish—3, Tomato—4, Letuce—1, Turnip—2, Pea—2, Groundnut—1, Litchi—1, Total=19.

**38. Government Research Farm, Kanpur.**

*A. General information :*

(i) In Kanpur *tehsil* of Kanpur district. 8 k.m. from Rawatpur Railway Station. Levelled land. (ii) Alluvial. (iii) Established in 1902. (iv) Maize, *jowar*, *arhar*, *moong*, *urd*, paddy, *bajra*, *til*, *lobia*, and *guar* in *kharif* and wheat, barley, oats, linseed, mustard, gram, pea etc. in *rabi*. (v) Varietal, cultural and manurial experiments on wheat, barley, legumes and oilseeds.

*B. Normal rainfall in cm. :*

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
8	25	26	13	3	—	—	1	1	—	—	1	78

(The average rainfall is for the last 47 years).

*C. Irrigation and drainage facilities :*

(i) (a) and (b) Irrigated from canal and tube well. Tube well has now gone out of commission. (ii) No proper drainage system exists.

*D. Soil type and soil analysis :*

(i) Kanpur Ganga flates, greyish brown and sub-angular blocky. (ii) Chemical analysis and (iii) Mechanical analysis :

Depth	0" to 6"	6" to 12"	12" to 30"
Nitrogen	.04	.03	0.03
$P_2O_5$	.25	.30	0.18
$K_2O$	1.20	1.29	1.11
CaO	0.38	0.42	0.41
MgO	1.06	1.36	1.48
Organic carbon	0.35	0.40	0.31

pH	7.2	7.0	7.0
Coarse sand	0.21	1.61	0.27
Fine sand	48.37	37.78	35.34
Silt	26.90	27.25	28.15
Clay	20.25	28.85	31.20

**E. No. of experiments :**

Paddy—7, Wheat—73, Barley—32, Jowar—4, Maize—3, Potato—69, Pea—1, Moong—1, Linseed—2, Jowar fodder—7, Sanai—1, Total=200.

**39. Old Dairy Farm, Government Agricultural College, Kanpur.**

**A. General information :**

(i) In Kanpur *tehsil* of Kanpur district. Adjoining to Rawatpur Railway Station. It is purely a fodder growing farm and there is no experimental area. Levelled land. (ii) Gangetic alluvial. (iii) Established in 1936. (iv) Jowar—Berseem ; Jowar—Lobia—Barley ; Jowar—Barley ; Jowar or Lobia—Oats ; Pusa Giant Napier. (v) N.A.

**B. Normal rainfall in cm. :**

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
3	23	25	12	12	—	1	3	—	—	—	2	81

(The average rainfall data is for the period 1958 to 1964).

**C. Irrigation and drainage facilities :**

(i) (a) and (b) Irrigated from tube well and canal since the inception of the farm. (ii) Proper drainage system exists.

**D. Soil type and soil analysis :**

(i) Alluvial loam, light yellowish in colour and granular in structure. (ii) Chemical analysis and (iii) Mechanical analysis—N.A.

**E. No. of experiments :**

Jowar fodder—1, Total=1.

**40. Student's Instructional Farm, Government Agricultural College, Kanpur.**

**A. General information :**

(i) In Kanpur *tehsil* of Kanpur district. 1½ miles from Rawatpur Railway Station. The farm is bench terraced except some slopey plots. (ii) Ganga alluvium. (iii) Established in 1930. (iv) *Kharif*: Jowar fodder, maize, moong, sugarcane, arhar and vegetables. *Rabi*: Wheat, barley, gram, pea and vegetables. (v) Mainly thesis work of post-graduate students on manurial and cultural problems.

**B. Normal rainfall in cm. :**

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
3	23	25	12	12	—	1	3	—	—	—	2	81

(The average rainfall data is for the period 1958 to 1964).

**C. Irrigation and drainage facilities :**

(i) (a) and (b) Irrigated from tube well and canal lift and flow irrigation. The facilities have been available for more than 30 years. (ii) Yes, there is good surface drainage.

**D. Soil type and soil analysis :**

(i) Sandy loam, calcareous ; 9" deep ; very light brown and hard on drying. (ii) Chemical analysis : Total nitrogen—0.065%, P<sub>2</sub>O<sub>5</sub>—0.120% and pH—7.3. (iii) Mechanical analysis : Clay—12.25%, silt—21.14%, fine sand—61.36% and coarse sand—0.63%.

*E. No. of experiments :*

Paddy—6, Wheat—17, Maize—2, Potato—2, Gram—2, Sugarcane—1, Groundnut—2, Garlic—1, *Berseem*—3, Mixed cropping—2, Total=38.

**41. State Usar Reclamation Farm, Katiyar.**

*A. General information :*

(i) In Malihabad *tehsil* of Lucknow district. 8 miles from Rahimabad Railway Station. Even land. (ii) Alluvial tract, *usar* soils. (iii) Established in 1956. (iv) Paddy—Wheat—G.M. (*dhaincha*)—Wheat. (v) Experiments relating to reclamation of alkali and saline soils are conducted.

*B. Normal rainfall in cm. :*

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
5	28	30	15	11	—	—	3	1	1	—	1	95

(The average rainfall data is for the period 1954 to 1964).

*C. Irrigation and drainage facilities :*

(i) (a) and (b) Irrigated from tube well. (ii) Proper drainage system exists.

*D. Soil type and soil analysis :*

(i) Clay loam soil ; deep but hard *kankar* pan is found at 2' to 3' depth. Light to dark grey. (ii) Chemical analysis : pH—8.5 to 10.0, conductivity—0.406 to 1.016 mm./cm., total soluble salts : 0.163 to 0.406%. (iii) Mechanical analysis :

Depth	Coarse sand%	Fine sand%	Silt%	Clay%
0 — 6"	0.02	55.64	25.62	20.75
6"—18"	0.24	51.70	26.87	25.00
18"—36"	0.30	46.05	27.25	26.75

*E. No. of experiments :*

Paddy—4, Total=4.

**42. Potato Sub-Station, Kausani.**

*A. General information :*

(i) In Almora district. Nearest Railway Station is Kathgodam. Surrounded with Pine forest. (ii) Hilly tract. (iii) Established in 1949. Station closed in 1959. (iv) Paddy—Small-millets—Potato and wheat. (v) Breeding of potato to test varieties, cultural and manurial practices for potato suitable for recommendation to cultivators in hilly tract.

*B. Normal rainfall in cm. :*

N.A.

*C. Irrigation and drainage facilities :*

(i) (a) and (b) No irrigation facilities are available. (ii) No proper drainage system exists.

*D. Soil type and soil analysis :*

(i) Brown forest soil of the hills. (ii) Chemical analysis and (iii) Mechanical analysis—N.A.

*E. No. of experiments :*

Potato—37, Total=37.

**43. Government Agricultural Research Farm, Keserwa.**

*A. General information :*

(i) In Budaun *tehsil* of Budaun district. Six miles from Budaun Railway Station. Flat

land. (ii) Alluvial tract. (iii) Established in 1926. (iv) *Kharif*: Groundnut, *til* and *bajra* *Rabi*: *Sarson*, *laha* and gram. (v) Dry farming, mainly trials as instructed by the Economic Botanist (Oil seeds) to Govt. of U.P. are conducted.

**B. Normal rainfall in cm. :**

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan	Feb.	March	April	May	Total
—	53	6	39	1	—	—	—	—	—	—	—	99

(The average data is for the period 1964—1965).

**C. Irrigation and drainage facilities :**

- (i) (a) and (b) Irrigated from tube well situated at a distance of 4 furlongs, since 1940.
- (ii) No proper drainage system exists.

**D. Soil type and soil analysis :**

- (i) Alluvial soil, light grey and colloidal in structure. (ii) Chemical analysis and (iii) Mechanical analysis :

	<i>Upper surface</i>	<i>Lower surface</i>
Moisture	0.74%	1.01%
Loss on ignition	1.54%	1.72%
HCl insoluble	90.16%	89.08%
R <sub>2</sub> O <sub>3</sub>	5.44%	6.59%
Available P <sub>2</sub> O <sub>5</sub>	Very low	Very low
Organic carbon	0.30%	0.32%
T.S.S.	0.11%	0.02%
pH	6.2	6.0
Clay	13.06%	9.25%
Silt	16.50%	7.75%
Fine and coarse sand	66.25%	80.67%

**E. No. of experiments :**

Groundnut—8, Mixed cropping—1, Total=9.

**44. B.R. College Institutional Research Farm, Khandari.**

**A. General information :**

(i) In *Agra tehsil* of *Agra* district. One mile from *Rajakimandi* Railway Station. Well levelled. (ii) Semi-arid (*Indo-Gangetic*). (iii) Established in 1940. (iv) *Kharif*: *Jowar*, *guar*, *bajra*, maize, *lobia* and *G.M.* *Rabi*: *Wheat*, *barley*, *gram*, *oats*, *berseem*, *potato*. (v) Research programme for *M.Sc. (Agri.)*, *Ph. D.* and research work of *I.C.A.R.*, *New Delhi*.

**B. Normal rainfall in cm. :**

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
2	18	26	11	5	—	—	2	—	1	—	—	65

(The average rainfall data is for the period 1953 to 1963).

**C. Irrigation and drainage facilities :**

- (i) (a) and (b) Irrigated from canal since long and tube wells from 1952 and 1954. (ii) No proper drainage system exists.

**D. Soil type and soil analysis :**

(i) Alluvial soil, 16" deep, brownish and structureless. (ii) Chemical analysis : Nitrogen—0.047%, P<sub>2</sub>O<sub>5</sub>—0.085%, K<sub>2</sub>O—1.22% and pH—7.75. (iii) Mechanical analysis : Coarse sand—0.45%, fine sand—58.93%, silt—22.8% and clay—16.66%.

**E. No. of experiments :**

Wheat—3, Total=3.

**45. Rice Research Sub-Station, Kunraghat.****A. General information :**

(i) In Gorakhpur *tehsil* of Gorakhpur district. 4 furlongs from Kunraghat Railway Station. Flat land. (ii) Low land, alluvial soils with sandy texture and free drainage. (iii) Established in 1939. (iv) Early Paddy—Pea/Gram/Barley. (v) Varietal and manurial trials on paddy are conducted.

**B. Normal rainfall in cm. :**

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
16	31	40	26	11	1	1	2	1	1	1	2	133

(The average rainfall data is for the period 1955 to 1964).

**C. Irrigation and drainage facilities :**

(i) (a) and (b) Irrigated from tube well since 1957. (ii) Proper drainage system exists.

**D. Soil type and soil analysis :**

(i) Sandy loam, 20' deep, yellowish brown to greyish brown, structureless. (ii) Chemical analysis and (iii) Mechanical analysis :

Depth	0 to 7.5"	7.5" to 17.5"	17.5" to 35.5"
Moisture	0.99%	1.60%	1.83%
Loss on ignition	2.05%	2.22%	3.72%
HCl insoluble	87.53%	84.38%	80.18%
R <sub>2</sub> O <sub>3</sub>	7.45%	10.01%	11.75%
Al <sub>2</sub> O <sub>3</sub>	4.49%	6.65%	7.83%
Fe <sub>2</sub> O <sub>3</sub>	2.96%	3.36%	3.92%
CaO	0.84%	0.87%	0.81%
MgO	0.41%	0.70%	0.62%
K <sub>2</sub> O	0.44%	0.45%	0.47%
P <sub>2</sub> O <sub>5</sub>	0.05%	0.05%	0.05%
Nitrogen	0.03%	0.01%	0.02%
Organic carbon	0.39%	0.12%	0.16%
C/N ratio	11.16	8.86	7.81
Total soluble salts	0.12%	0.13%	0.08%
Bicarbonates	0.03%	0.03%	—
Chlorides	0.01%	0.01%	—
Sulphate	0.02%	0.04%	—
pH	7.00	7.0	7.2
Coarse sand	11.78%	10.78%	12.56%
Fine sand	60.79%	51.40%	43.87%
Silt	9.65%	9.10%	15.45%
Clay	15.05%	25.55%	23.00%

**E. No. of experiments :**

Paddy—11, Mixed cropping—1, Total=12.

**46. Sugarcane Research Sub-Station, Kunraghat.****A. General information :**

(i) In Gorakhpur *tehsil* of Gorakhpur district. 3 miles from Gorakhpur Railway Station. Flat, high lying land. (ii) Sandy loam, well drained soils. (iii) Established in 1939. (iii) G.M./leguminous crop for grain—Sugarcane—G.M.—Wheat. (v) To evolve high yielding and better quality cane at economic cost. The programme comprises varietal selection, evolving suitable manurial and cultural schedules for eastern U.P. and controlling diseases and pests etc. A soil survey unit is also located for soil extension work.

**B. Normal rainfall in cm. :**

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
16	31	40	26	11	1	1	2	1	1	1	2	133

(The average rainfall data is for the period 1955 to 1964).

**C. Irrigation and drainage facilities :**

(i) (a) and (b) Irrigated from tube well since start of the farm. (ii) Proper drainage system exists.

**D. Soil type and soil analysis :**

Same as in Rice Research Sub-Station, Kunraghat at Sl. No. 41.

**E. No. of experiments :**

Sugarcane—44, Total=44.

**47. State Live-Stock-cum-Agricultural Farm, Madhurikund.****A. General information :**

(i) In Mathura *tehsil* of Mathura district. 16 miles from Mathura Railway Station. The farm falls on the right bank of Agra Canal (Lower Yamuna Canal). (ii) Loam soil mixed with 30% *usar* patches. (iii) Established in 1913. (iv) G.M.—Barley ; *Lobia* fodder—Barley ; G.M.—Wheat ; *Jowar*—Gram ; M.P. *Chari*—*Lobia* and Pusa Giant Naphier—Pusa Giant Napier. (v) N.A.

**B. Normal rainfall in cm. :**

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
2	22	26	16	2	—	—	1	—	1	—	1	71

(The average rainfall data is for the period 1957 to 1964).

**C. Irrigation and drainage facilities :**

(i) (a) and (b) Irrigated from canal since 1913. (ii) Drainage project has been sanctioned and will be implemented soon.

**D. Soil type and soil analysis :**

(i) N.A. (ii) Chemical analysis : In field No. A—3 pH varies from 7.02 to 7.9 and in field No. D—1 it varies from 7.0 to 8.2. (iii) Mechanical analysis :

**Field No. A—3.**

Depth	0'—11"	11"—26"	26"—36"
Coarse sand	0.15%	0.11%	0.04%
Fine sand	46.00%	41.45%	37.00%
Silt	31.00%	31.20%	34.65%
Clay	19.00%	25.05%	25.75%

**Field No. D—1.**

Depth	0"—13"	13"—26"	26"—39"
Coarse sand	0.07%	0.05%	0.05%
Fine sand	55.62%	41.27%	40.84%
Silt	23.50%	32.05%	31.37%
Clay	15.10%	24.30%	25.05%

**E. No. of experiments :**

Wheat—1, *Berseem*—2, Total=3.

**48. Groundnut Research Station, Mainpuri.****A. General information :**

(i) In Mainpuri *tehsil* of Mainpuri district. 2 miles from Mainpuri Railway Station.

Plain land. (ii) Alluvial tract. (iii) Established in July, 1958. (iv) *Kharif*: Groundnut and paddy. *Rabi*: Wheat, potato and pea. (v) Research is done on intensive breeding of groundnut.

**B. Normal rainfall in cm. :**

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
4	25	29	13	9	—	—	3	1	1	—	—	85

(The average rainfall data is for the period 1954 to 1964).

**C. Irrigation and drainage facilities :**

(i) (a) and (b) Irrigated from tube well since 1918. (ii) A drainage system exists leading drain water to nearby *nala*.

**D. Soil type and soil analysis :**

(i) Sandy loam (alluvial soil), quite deep and brown in colour. (ii) Chemical analysis and (iii) Mechanical analysis :

	Surface soil	Sub-soil
pH	7.7	7.7
Total solubles salts	0.13%	0.17%
Organic carbon	0.31%	0.13%
Available P <sub>2</sub> O <sub>5</sub>	Very low	Very low
Coarse sand	1.94%	1.86%
Fine sand	76.00%	72.62%
Silt	11.56%	13.70%
Clay	9.43%	11.34%
Water holding capacity	32.88%	32.48%

**E. No. of experiments :**

Groundnut—1, Mixed cropping—2, Total = 3.

**49. Hill Paddy Research Sub-Station, Majhera.**

**A. General information :**

(i) In Nainital *tehsil* of Nainital district. 35 miles by bus and 2 miles by bridle path Kathgodam Railway Station. Terraces are not well levelled and are irregular in shape. General gradation of slope is west to east. (ii) Valley area of hill tract of district Nainital. (iii) Established in 1956. (iv) Paddy—Fallow—Paddy; Paddy—Wheat—*Mandua*—Fallow—Paddy; Paddy—Wheat or Potato—Paddy. (v) Experiments are conducted on the following aspects of crops i.e. isolation of pure lines from locals, introductions, hybridization, cultural studies and varietal trials.

**B. Normal rainfall in cm. :**

N.A.

**C. Irrigation and drainage facilities :**

(i) (a) and (b) Majhera canal runs at the top of the farm since the establishment of the station. (ii) There is no drainage system.

**D. Soil type and soil analysis :**

(i) Sandy loam, 6" to 1½' deep. Greyish brown to grey. (ii) Chemical analysis and (iii) Mechanical analysis :

Depth	0" to 6"	6" to 12"	12" to 18"
Water holding capacity	37.02%	32.28%	27.53%
pH	6.7	6.4	6.9
Moisture	1.41%	1.60%	0.82%
Loss on ignition	4.69%	3.42%	3.12%
HCl insolubles	84.07%	85.00%	85.75%

Sesquioxides	7.96%	8.27%	8.15%
Calcium oxide	0.48%	0.39%	0.39%
Magnesium oxide	1.36%	1.31%	1.36%
Potassium oxide	0.72%	0.73%	0.54%
Iron oxide	4.08%	4.00%	4.00%
Aluminium oxide	3.79%	4.25%	4.13%
Phosphorus pentoxide	0.09%	0.03%	0.03%
Organic carbon	0.98%	0.62%	0.64%
Stone	18.20%	21.20%	36.00%
Coarse sand	27.52%	31.57%	40.06%
Fine sand	60.90%	54.63%	39.55%
Silt	6.40%	6.90%	10.75%
Clay	3.15%	3.35%	6.30%

E. *No. of experiments :*

Paddy—5, Total=5.

**50. Regional Research Station, Majhera.**

A. *General information :*

(i) In Nainital *tehsil* of Nainital district. 35 miles from Kathgodam Railway Station and 2½ miles from Garampani Research Station. Terraces are irregular in shape—general gradation of slope is from west to east. (ii) Valley area of hill tract of district Nainital. (iii) Established in 1956—57. (iv) *Kharif* : Mandua—Urd or *Til*, *Rabi* : Wheat—Barley—Oats—*Sarson* or Pea. (v) Isolation of pure line cultures. Introduction and testing the varietal performances of different varieties of different crops evolved or recommended for the region by different Economic Botanists of the State.

B. *Normal rainfall in cm.*

Informations—N.A.

C. *Irrigation and drainage facilities :*

(i) (a) and (b) Majhera Canal is running at the top of the farm since the establishment of the Stn., but this water supply is very irregular and insufficient. (ii) No proper drainage system exists.

D. *Soil type and soil analysis :*

Same as in Hill Paddy Research Sub-Station, Majhera.

E. *No. of experiments :*

Wheat—7, Barley—2, Maize—2, Mahuwa—5, *Soyabean*—1, Mixed cropping—3, Total =20.

**51. Tarai State Farm, Matkota.**

A. *General information :*

(i) In Kichha *tehsil* of Nainital district. 10 miles from Phool Bagh Railway Station. Low lying to high lying land, levelled and sloping to west. (ii) Tarai. (iii) Established in 1949. (iv) G.M.—*lahi*—sugarcane, G.M.—wheat ; Jute for seed—sugarcane ; *dhaincha* for seed—sugarcane ; *Jowar* fodder—*berseem* and maize—peas and gram. (v) N.A.

B. *Normal rainfall in cm. :*

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
13	42	41	26	13	—	1	6	2	2	—	4	150

(The average rainfall data is for the period 1954 to 1963.)



**C. Irrigation and drainage facilities :**

(i) (a) and (b) Not available except some tubewell having very poor discharge and insufficient for the purpose. (ii) No proper drainage system exist.

**D. Soil type and soil analysis :**

(i) Clay loam, loam (highly calcarious loam) and sandy loam ; dark grey to dark brown in colour. Moderate fine crumb structure to granular and coarse structure. (ii) Chemical analysis and (iii) Mechanical analysis :

**Matkota clay loam**

Depth	0 - 8"	8" to 16"	16" to 25"	25"—38"
Moisture (air dry)	1.48%	2.26%	1.68%	1.82%
Loss on ignition	8.77%	4.12%	4.95%	4.56%
HCl insoluble	73.25%	74.41%	72.81%	73.32%
Sesquioxide	15.10%	15.24%	17.45%	17.51%
Fe <sub>2</sub> O <sub>3</sub>	6.00%	6.64%	7.84%	8.40%
Al <sub>2</sub> O <sub>3</sub>	9.43%	8.45%	9.49%	8.96%
CaO	0.97%	1.20%	1.04%	1.0%
MgO	0.89%	0.83%	0.81%	0.27%
K <sub>2</sub> O	0.79%	0.75%	0.66%	0.60%
P <sub>2</sub> O <sub>5</sub>	0.07%	0.15%	0.14%	0.15%
Coarse sand	0.88%	0.86%	0.56%	1.41%
Fine sand	20.03%	21.14%	13.73%	14.01%
Silt	51.63%	54.10%	59.15%	56.70%
Clay	25.20%	23.90%	24.00%	22.70%
Water holding capacity	64.50%	64.40%	64.21%	64.09%
pH	7.5	6.8	7.2	7.00
Organic carbon	1.63%	1.02%	0.80%	0.78%
Total nitrogen	0.18%	0.09%	0.06%	0.08%
C/N	9.1	11.3	13.4	9.4
Moisture equivalent	34. 0%	34. 0%	35.10%	36. 4%

**Matkota loam (highly calcarious)**

Depth	0"—9"	9"—25"	25" - 38"
Moisture (air dry)	2.46%	1.40%	1.12%
Loss on ignition	5.49%	5.06%	3.25%
HCl Insoluble	69.19%	69.11%	73.55%
Sesquioxide	17.35%	16.09%	16.38%
Fe <sub>2</sub> O <sub>3</sub>	6.48%	5.32%	5.40%
Al <sub>2</sub> O <sub>3</sub>	10.72%	10.61%	10.82%
CaO	2.41%	5.51%	2.87%
MgO	0.88%	0.75%	0.83%
K <sub>2</sub> O	0.77%	0.34%	0.58%
P <sub>2</sub> O <sub>5</sub>	0.15%	0.18%	0.16%
Coarse sand	7.87%	2.63%	0.80%
Fine sand	31.35%	39.39%	33.27%
Silt	36.60%	35.75%	48.20%
Clay	25.00%	19.75%	15.00%
Water holding capacity	51.00%	57.99%	56.52%
Moisture equivalent	31.00%	30.53%	30.98%
pH	7.2	7.2	7.4
Organic carbon	1.23%	0.84%	0.45%
Total nitrogen	0.13%	0.06%	0.04%
C/N	9.8	10.1	10.7

**Matkota loam (slightly calcareous)**

Depth	0"—9"	9"—15"	15"—20"	24"—32"
Moisture (air dry)	2.41%	2.84%	2.39%	2.74%
Loss on ignition	5.68%	4.22%	5.42%	4.01%
HCl insoluble	73.76%	74.48%	75.60%	73.65%
Sesquioxide	16.21%	14.79%	13.20%	16.30%
Fe <sub>2</sub> O <sub>3</sub>	7.52%	5.72%	4.48%	4.86%
Al <sub>2</sub> O <sub>3</sub>	8.63%	8.96%	8.61%	11.54%
CaO	1.64%	1.08%	0.66%	1.19%
MgO	0.83%	0.81%	0.78%	0.80%
K <sub>2</sub> O	0.86%	0.81%	0.96%	0.80%
P <sub>2</sub> O <sub>5</sub>	0.07%	0.11%	0.11%	0.08%
Coarse sand	2.50%	4.55%	3.08%	1.35%
Fine sand	20.34%	27.05%	30.61%	17.90%
Silt	45.18%	38.00%	37.80%	49.20%
Clay	29.65%	28.00%	24.00%	30.70%
Water holding capacity	53.20%	57.06%	53.10%	57.10%
Moisture equivalent	24.50%	21.60%	20.55%	27.10%
pH	7.3	7.3	7.5	7.6
Organic carbon	0.72%	0.89%	0.83%	0.62%
Total nitrogen	0.07%	0.08%	0.09%	0.06%
C/N	10.3	10.5	10.5	10.2

**Matkota sandy loam**

	0—9"	9"—13"	18"—32'
Moisture (air dry)	1.41%	1.41%	1.16%
Loss on ignition	1.64%	2.24%	1.90%
HCl insoluble	84.56%	83.72%	84.21%
Sesquioxide	9.91%	9.56%	10.10%
Fe <sub>2</sub> O <sub>3</sub>	4.08%	4.08%	4.16%
Al <sub>2</sub> O <sub>3</sub>	5.72%	5.36%	5.83%
CaO	0.45%	0.60%	0.42%
MgO	0.82%	0.73%	0.73%
P <sub>2</sub> O <sub>5</sub>	0.11%	0.12%	0.11%
K <sub>2</sub> O	0.56%	0.65%	0.43%
Coarse sand	25.50%	29.28%	35.28%
Fine sand	45.30%	43.60%	42.22%
Silt	15.60%	12.33%	10.30%
Clay	12.22%	12.80%	10.40%
Water holding capacity	38.73%	38.90%	55.82%
Moisture equivalent	11.70%	12.20%	9.73%
pH	7.4	7.2	6.2
Organic carbon	0.81%	0.62%	0.36%
Total nitrogen	0.06%	0.06%	0.04%
C/N	13.7	11.2	9.2

**E. No. of experiments :**

Wheat—4, Jute—1, Total=5.

**52. Regional Research Station, Meerut.**

**A. General information :**

(i) In Meerut *tehsil* of Meerut district. 3 miles from Meerut Railway Station. Plain land. (ii) Alluvial soils. (iii) Established in 1956. (iv) Sugarcane—wheat—cotton—pea,

Maize—potato, Paddy—*berseem*. (v) Varietal, manurial and cultural trials on important *rabi* and *kharif* crops are conducted.

**B. Normal rainfall in cm. :**

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
4	30	29	29	14	—	2	4	1	2	—	1	117

(The average rainfall data is for the period 1955 to 1964).

**C. Irrigation and drainage facilities :**

(i) (a) and (b) Tube well since 1956. (ii) Natural drainage system exists.

**D. Soil type and soil analysis :**

(i) Sandy loam, brownish grey in colour and granular in structure. (ii) Chemical analysis : Organic carbon—0.384%, total nitrogen—0.069%, available  $P_2O_5$ —18 to 36 lb./ac., available  $K_2O$ —100 lb./ac. and pH—7.9. (iii) Mechanical analysis : Coarse sand—43.30%, fine sand—58.12%, silt—18.86% clay—15.70%, water holding capacity—42.36%.

**E. No. of experiments :**

Paddy—7, Wheat—34, Barley—4, Maize—3, Potato—4, *Urd*—2, *Moong*—1, Sugarcane—4, Cotton—1, *Jowar* fodder—1, *Berseem*—2, Cowpea—1, Cluster bean—2, Mixed cropping—13. Total=88.

**53. Sugarcane Research Sub-Station, Muzaffarnagar.**

**A. General information :**

(i) In Muzaffarnagar *tehsil* of Muzaffarnagar district. 1½ miles from Muzaffarnagar Railway Station. Even land. (ii) Indo-gangetic plains (old alluvium with free drainage). (iii) Established in 1934. (iv) Sugarcane—G.M.—wheat—cotton; Paddy—*berseem*—sugarcane; Paddy—pea—sugarcane. (v) Agronomic, Entomological, Mycological, Physiological and soil studies in relation to sugarcane. The main object is to evolve high yielding and better quality cane at economic cost under the conditions of Western U.P.

**B. Normal rainfall in cm. :**

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
8	32	28	25	9	1	1	4	3	2	—	1	114

(The average rainfall data is for the period 1954 to 1963).

**C. Irrigation and drainage facilities :**

(i) (a) and (b) Tube well since 1934. (ii) No under ground drainage and flow drainage in rainy season.

**D. Soil type and soil analysis :**

(i) (i) Loam and clay loam, surface soil—Brown to brownish yellow in colour and granular to crumbly in structure and sub-soil—Brownish yellow to yellow in colour and crumbly to compact in structure. (ii) Chemical analysis and (iii) Mechanical analysis :

*Type IV loam soil*

Depth	0—9"	9"—18"	18"—42"
Moisture	0.41%	0.84%	0.88%
Loss on ignition	1.35%	2.98%	3.60%
HCl insoluble	88.65%	82.46%	80.22%
pH	6.7	6.8	6.4
HCl—soluble silica	1.05%	1.23%	1.28%
$R_2O_3$	6.67%	11.46%	12.39%
$Al_2O_3$	3.87%	7.38%	7.99%
$Fe_2O_3$	2.80%	4.08%	4.40%
CaO	0.84%	0.50%	0.50%

MgO	0.87%	1.09%	0.87%
K <sub>2</sub> O	0.33%	0.40%	0.42%
P <sub>2</sub> O <sub>5</sub>	0.04%	0.02%	0.04%
Nitrogen	0.04%	0.03%	0.02%
Organic carbon	0.34%	0.29%	0.25%
Coarse sand	12.71%	13.70%	9.54%
Fine sand	59.38%	48.02%	49.64%
Silt	14.37%	16.27%	18.22%
Clay	11.21%	19.43%	20.03%

E. *No. of experiments :*

Sugarcane—92, Cotton—2, *Jowar* fodder—2, Total=96.

54. **Rice Research Station, Nagina.**

A. *General information :*

(i) In Nagina *tehsil* of Bijnor district. 1½ miles from Nagina Railway Station. The slope of the farm is from north to south and east to west. Canal runs from north to south. Nearest Himalyan range in the east about 8 miles. (ii) Semi Tarai area. (iii) Established in 1926. (iv) *Chari* fodder—gram ; Paddy—*berseem*, *Dhaincha*—paddy—pea—wheat—barley and cotton—sugarcane—wheat. (v) Plant breeding and agronomy are the main aspects of research work.

B. *Normal rainfall in cm. :*

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
8	39	30	23	9	1	1	4	1	2	—	2	120

(The average rainfall data is for the period 1955 to 1964).

C. *Irrigation and drainage facilities :*

(i) (a) and (b) Canal and tube well from 1926 and 1927 respectively. (ii) No proper drainage system exists, but no difficulty of drainage.

D. *Soil type and soil analysis :*

(i) Loam to sandy loam, 6" deep, light brown in colour and medium compact in structure. (ii) Chemical analysis and (iii) Mechanical analysis :

Field No. G—5

Depth	0—9"	9"—21"	21"—33"
Moisture	0.17%	1.05%	0.67%
Loss on ignition	1.45%	1.81%	2.02%
HCl insoluble	92.05%	85.65%	86.24%
R <sub>2</sub> O <sub>3</sub>	5.06%	9.54%	9.61%
Al <sub>2</sub> O <sub>3</sub>	3.22%	6.26%	5.69%
Fe <sub>2</sub> O <sub>3</sub>	1.84%	3.28%	3.92%
CaO	0.17%	0.20%	0.20%
MgO	0.95%	0.40%	0.61%
K <sub>2</sub> O	0.40%	0.70%	0.52%
P <sub>2</sub> O <sub>5</sub>	0.09%	0.16%	0.24%
Nitrogen	0.04%	0.03%	0.03%
Organic carbon	0.30%	0.29%	0.24%
C/N	7.9	9.3	8.5
pH	7.0	6.8	6.9
Coarse sand	19.49%	13.57%	16.23%
Fine sand	55.61%	44.47%	43.36%
Silt	11.00%	17.90%	17.40%
Clay	12.00%	21.45%	19.90%

## Field No. B—16

Depth	0—9"	9"—21"	21"—33"
Moisture	0.52%	1.06%	1.11%
Loss on ignition	2.70%	3.24%	2.26%
HCl insoluble	84.33%	78.80%	80.66%
P <sub>2</sub> O <sub>5</sub>	10.58%	14.31%	13.71%
Al <sub>2</sub> O <sub>3</sub>	6.90%	9.43%	8.67%
Fe <sub>2</sub> O <sub>3</sub>	3.68%	4.88%	5.04%
CaO	0.63%	0.31%	0.45%
MgO	0.36%	0.77%	0.64%
K <sub>2</sub> O	0.70%	0.94%	0.85%
P <sub>2</sub> O <sub>5</sub>	0.12%	0.07%	0.09%
Nitrogen	0.05%	0.04%	0.04%
Organic Carbon	0.52%	6.44%	0.33%
C/N	10.5	9.8	8.1
pH	7.3	7.1	7.1
Coarse sand	1.55%	0.61%	0.26%
Fine sand	48.57%	27.67%	27.42%
Silt	9.00%	38.45%	41.35%
Clay	37.30%	28.95%	27.45%

## E. No. of experiments :

Paddy—9, Total=9.

## 55. Tarai State Farm, Nagla.

## A. General information :

(i) In Kichha *tehsil* of Nainital district, 4 furlongs from Pantnagar Railway Station. Undulated land. (ii) Tarai. (iii) Established in 1950. (iv) G.M.—wheat—G.M.—lahi—sugarcane—sugarcane *ratoon*, G.M.—lahi—sugarcane—sugarcane *ratoon*, G.M.—wheat—maize—lahi—gram ; Paddy—peas. (v) N.A.

## B. Normal rainfall in cm. :

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
17	34	44	28	13	—	1	4	1	2	—	2	145

(The average rainfall data is for the period 1958 to 1964).

## C. Irrigation and drainage facilities :

(i) (a) and (b) Artesian well and canals since 1952. Only partial irrigation is available. (ii) No proper drainage system exists.

## D. Soil type and soil analysis :

(i) Clay loam, loam, sandy loam and sandy, 9" to 18", grey brown, olive, dark grey and pale brown in colour and even soils. (ii) Chemical analysis :

Type	Texture	pH
Tarai clay loam calcareous	Clay loam to silty loam	6.8 to 7.5
Tarai clay loam non calcareous	Clay loam even upto 40"	6.8 to 7.5
Tarai loam highly calcareous	Loam to silty loam	1.0 to 5.5
Tarai loam slightly calcareous	Loam to silty loam	7.3 to 7.6
Tarai loam non calcareous	Loam to sandy loam	0.5 to 0.6
Tarai sandy loam	Sandy loam to sandy	0.3 to 0.6

(iii) Mechanical analysis—N.A.

## E. No. of experiments :

Paddy—4, Wheat—9, Total=13.

## 56. Regional Research Station, Nawabganj.

### A. General information :

(i) In Nawabganj *tehsil* of Bareilly district. 3 miles from Bijauria Railway Station. The experimental area is low lying and gets water logged during rainy season. The general slope is towards east. (ii) Sub-Tarai tract of Rohilkhand division. (iii) Established in 1956. (iv) Early paddy—Wheat or barley, Medium paddy—wheat or pea, barley or gram, late paddy—oats, linseed or lentil, sugarcane—G.M. (*dhaincha*)—wheat; *Moong*, *lobia* (fodder)—wheat. (v) Varietal, cultural, manurial, rotational, mixed cropping as well as pests diseases problems of all crops, arising in Rohilkhand and Kumaun division of the State.

### B. Normal rainfall in cm. :

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
7	34	43	23	11	—	1	6	1	1	—	1	128

(The average rainfall is for the period 1960 to 1964).

### C. Irrigation and drainage facilities :

(i) (a) N.A. (b) Canal and Tube well. (ii) No proper drainage system exists.

### D. Soil type and soil analysis :

(i) Clay loam, varying from 6" to 2' depending upon fluctuating water table. Blackish grey and cloddy. (ii) Chemical analysis and (iii) Mechanical analysis :

Depth	0—6"	6"—16"	16"—24"	24"—36"
pH	7.1	7.2	7.3	7.4
Moisture	2.82%	2.59%	1.99%	1.19%
Loss on ignition	4.20%	3.46%	3.39%	2.11%
HCl insoluble	75.93%	N.A.	N.A.	N.A.
Sesquioxide	14.31%	14.36%	10.79%	8.55%
Calcium oxide	0.64%	1.06%	0.63%	0.43%
Magnesium oxide	—	1.39%	0.71%	0.55%
P <sub>2</sub> O <sub>5</sub>	0.18%	0.20%	0.13%	0.16%
K <sub>2</sub> O	0.72%	—	—	—
Organic carbon	1.11%	0.60%	0.38%	0.19%
Nitrogen	0.12%	0.05%	0.03%	0.03%
Coarse sand	1.78%	3.43%	16.52%	30.07%
Fine sand	20.20%	25.83%	34.25%	33.94%
Silt	49.38%	33.48%	41.03%	32.58%
Clay	26.73%	35.88%	7.73%	2.23%

### E. No. of experiments :

Paddy—38, Wheat—27, Barley—1, *Jowar*—1, Potato—1, Pea—1, Gram—1, *Masoor*—2, Sugarcane—2, Brassica—1, *Jowar* fodder—1, *Berseem*—1, Cowpea—1, Mixed cropping—5, Total=83.

## 57. Government Sugarcane Research Sub-Station, Neoli.

### A. General information :

(i) In Kasganj *tehsil* of Etah district. 3 miles from Manpurnagar Railway Station. The land was situated in the Khadar tract of river Ganga which flows just on the north eastern boundry of farm. (ii) Mostly low lying tract. (iii) Established in 1951 and terminated in 1956. (iv) Sugarcane—wheat—*dhaincha*. (v) Varietal and cultural trials are conducted on different crops.

**B. Normal rainfall in cm. :**

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
5	18	24	14	13	—	—	1	—	1	—	—	76

(The average rainfall data is for the period 1955 to 1964).

**C. Irrigation and drainage facilities :**

(i) (a) and (b) Tube wells since 1933. (ii) No proper drainage system exists.

**D. Soil type and soil analysis :**

(i) Sandy soil (*Bhur*), 6" to 9" deep, Grayish white, 20 to 30% clay soil. (ii) Chemical analysis—N.A. (iii) Mechanical analysis : Coarse sand—50%, fine sand—30% and silt—20%.

**E. No. of experiments**

Sugarcane—11 Total=11.

**58. Government Late Paddy Research Sub-Station, Pachperva.****A. General information :**

(i) In Gonda district. (ii) It represents late paddy growing tract. (iii) Established in 1949. (iv) and (v) N.A.

**B. Normal rainfall in cm. :**

Information—N.A.

**C. Irrigation and drainage facilities :**

(i) (a) N.A. (b) Canal. (ii) No proper drainage system exists.

**D. Soil type and soil analysis :**

(i) Light loam to loam. (ii) Chemical analysis and (iii) Mechanical analysis—N.A.

**E. No. of experiments :**

Paddy—2, Total=2.

**59. Tarai Sugarcane Research Centre, Phoolbagh.****A. General information :**

(i) In Kichha *tehsil* of Nainital district.  $5\frac{1}{2}$  miles from Pant Nagar Railway Station. Not levelled. (ii) Tarai tract. (iii) Established in 1956-1957. (iv) Fallow or lahi—sugarcane. (v) Varietal, cultural and manurial trials are conducted on different crops.

**B. Normal rainfall in cm. :**

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
14	45	37	28	11	—	—	5	2	1	—	—	143

(The average rainfall data is for the period 1955 to 1964).

**C. Irrigation and drainage facilities :**

(i) (a) and (b) The area is partly irrigated by the Artision wells from the very beginning. (ii) Natural drainage exists.

**D. Soil type and soil analysis :**

(i) Sandy loam, 0" to 9", dark grey brown to grey brown, granular in structure. (ii) Chemical analysis :  $\text{Fe}_2\text{O}_3$ —4.20%,  $\text{P}_2\text{O}_5$ —0.15%,  $\text{Al}_2\text{O}_3$ —4.56%,  $\text{CaO}$ —0.52%,  $\text{MgO}$ —0.50%,  $\text{K}_2\text{O}$ —0.37%, organic carbon 0.77%, nitrogen 0.06%. and pH 6.0. (iii) Mechanical analysis : Coarse sand—27.89%, fine sand—44.34%, silt—15.60% and clay 10.60%.

**E. No. of experiments :**

Sugarcane—15. Total=15.

**60. Tarai State Farm, Phoolbagh.***A. General information :*

(i) In Kichha *tehsil* of Nainital district. Nearest Railway Station is Phoolbagh. Undulated land. (ii) Tarai area. (iii) Established in 1950. (iv) Maize, sugarcane, G.M., *lahi*, wheat, gram and pea. (v) Multiplication and demonstration farm.

*B. Normal rainfall in cm. :*

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
11	46	19	57	17	1	2	1	—	—	2	—	156

(The average rainfall data is for the year 1958—1959).

*C. Irrigation and drainage facilities :*

(i) (a) and (b) Limited facilities are available. There are only five artisons and two tube wells on the farm. The cultivation depends on rainfall only. (ii) Natural drainage system exists.

*D. Soil type and soil analysis :*

(i) There are six types of soils. Clay loam, loam, loam highly calcareous, slightly calcareous, sandy loam and sandy. 18" deep, brownish black in colour. The sandy soil is loose structured and other soils are sticky. Soil particles are fine, have got the capacity of retaining fertility. (ii) Chemical analysis—Soils are deficient in N, P<sub>2</sub>O<sub>5</sub> and K<sub>2</sub>O. (iii) Mechanical analysis—N.A.

*E. No. of experiments :*

Paddy—2, Wheat—7, Brassica—1, *Jowar* fodder—2. Total=12.

**61. Pilkini farm, Pilkini.***A. General information :*

(i) In Varansi *tehsil* of Varanasi district. About 2 miles from Lohta Railway Station. Flat land. (ii) Upland tract. (iii) N.A. (iv) Fallow—wheat or barley, E. Paddy—pea and sugarcane. (v) It is a private farm and no difinite research programme is carried out.

*B. Normal rainfall in cm. :*

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
8	32	28	24	7	—	—	3	—	—	—	1	103

(The average rainfall data is for the period 1955 to 1964.)

*C. Irrigation and drainage facilities :*

(i) (a) and (b) Tube well since 1942. (ii) Proper drainage system exists.

*D. Soil type and soil analysis :*

(i) Upland (major soil) and Dhanker (minor soil). Greyish white to light grey mottled with rusty brown spots, loose to granular in structure. (ii) Chemical analysis and (iii) Mechanical analysis :

	Upland soil (0 to 6")	Dhanker (0 to 6")
pH	7.5	7.9
Moisture (air dry)	1.43%	1.28%
Loss on ignition	2.13%	1.67%
HCl insoluble	85.52%	87.57%
R <sub>2</sub> O <sub>3</sub>	8.48%	6.59%
CaO	0.76%	0.59%
MgO	0.61%	1.05%



K <sub>2</sub> O	0.28%	0.27%
Fe <sub>2</sub> O <sub>3</sub>	2.80%	3.12%
P <sub>2</sub> O <sub>5</sub>	0.09%	0.08%
Al <sub>2</sub> O <sub>3</sub>	5.59%	3.39%
Coarse sand	1.36%	0.60%
Fine sand	44.44%	52.21%
Silt	31.32%	28.60%
Clay	16.00%	14.65%

*E. No. of experiments :*

Wheat—3. Total=3.

**62. Government Agricultural Farm, Pratapgarh.**

*A. General information :*

(i) In Pratapgarh (Sadar) *tehsil* of Pratapgarh district. 1 mile from Pratapgarh Railway Station. Even land. (ii) N.A. (iii) Established in 1905. (iv) Sugarcane—*sanai* G.M.—wheat/barley, paddy/*gowar*—*berseem*, paddy—gram/peas, *sanai* (G.M.)—wheat/barley. (v) No research work is being done at the farm.

*B. Normal rainfall in cm. :*

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
5	30	26	19	4	—	—	1	—	—	—	2	87

(The average rainfall data is for the period 1954 to 1965).

*C. Irrigation and drainage facilities :*

(i) (a) and (b) Tube well, since 1957. (ii) Proper drainage system exists.

*D. Soil type and soil analysis :*

(i) Sandy loam. (ii) Chemical analysis—pH 7.7, organic carbon—0.18%, total soluble salts—0.42% and available P<sub>2</sub>O<sub>5</sub>—31.2 lb./ac. (iii) Mechanical analysis—N.A.

*E. No. of experiments :*

Wheat—4, Sugarcane—1, Total=5.

**63. Government Research Farm, Pusa.**

*A. General information :*

(i) In Bilhaur *tehsil* of Kanpur district. 1 mile from Uttari Pura Railway Station. Flat. land. (ii) Alluvial. (iii) Established in 1953. (iv) Paddy—pea, fallow or legume—wheat or barley. (v) Research is done on different fertilizers.

*B. Normal rainfall in cm. :*

Information—N.A.

*C. Irrigation and drainage facilities :*

(i) (a) N.A. (b) Canal irrigation. (ii) Proper drainage system exists.

*D. Soil type and soil analysis :*

(i) Alluvial, gangetic, very deep, light brown and single grained. (ii) Chemical analysis : pH 6.95, E. conductivity—0.56 m. mhos/cm., organic carbon—0.48%, available P<sub>2</sub>O<sub>5</sub>—8.0 lb /ac. (iii) Mechanical analysis : sand—68.8%, silt—20.72% and clay—10.46%.

*E. No. of experiments :*

Paddy—11, Wheat—24, Potato—5, Gram—2, Moong—1, Sanai—1, Berseem—5, Cluster bean—1, Dhaincha—1, Total=51.

**64. State Usar Reclamation Farm, Rahimabad.****A. General information :**

(i) In Malihabad *tehsil* of Lucknow district.  $\frac{1}{4}$  mile from Rahimabad Railway Station. The experimental area was slightly slopy but got levelled before conducting the experiments. (ii) Saline alkaline soils, alluvial tract. (iii) Established in 1950. (iv) *Kharif*: *Dhaincha* (G.M.)—paddy ; *Rabi* : Wheat and barley. (v) Experiments relating to reclamation of saline and alkaline lands are conducted.

**B. Normal rainfall in cm. :**

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
7	31	30	16	12	—	—	3	—	1	—	2	102

(The average rainfall data is for the period 1955 to 1964).

**C. Irrigation and drainage facilities :**

(i) (a) and (b) Tube well, canal but in limited area since 1957. (ii) On the farm, as a whole there is no proper drainage system.

**D. Soil type and soil analysis :**

(i) Gangetic alluvial soil, halomorphic phase. Sufficient soil depth are available. Light to dark grey. Platy and granular. (ii) Chemical analysis : pH—8.4 to 9.7, E. conductivity—0.406 to 5.097, total soluble salts—0.103 to 2.37. (iii) Mechanical analysis :

Depth	Coarse sand	Fine sand	Silt	Clay
0—6"	0.21%	64.08%	20.50%	19.00%
6"—18"	0.25%	53.45%	25.00%	27.00%
18"—30"	0.25%	51.88%	20.00%	27.00%

**E. No. of experiments :**

Paddy—3, Total=3.

**65. Government Cotton Research Sub-Station, Raya.****A. General information :**

(i) In Mat *tehsil* of Mathura district. 3 km. from Raya Railway Station. The farm is well levelled and well laid out, but the drainage of a part of it is defective. (ii) The tract is characterised by dry climate and scanty rainfall. (iii) Established in 1918. (iv) G.M.—wheat—cotton—pea ; other crops grown—barley, gram, *moong*, *urd* and fodder. (v) Experiments are conducted on breeding, agronomic-cum-physiological, pest and disease aspects.

**B. Normal rainfall in cm. :**

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
2	21	30	19	5	1	—	1	1	1	—	1	82

(The average rainfall data is for the period 1955 to 1964).

**C. Irrigation and drainage facilities :**

(i) (a) and (b) Canal since long. (ii) No proper drainage system exists.

**D. Soil type and soil analysis :**

(i) Loam to sandy loam with moderate fertility. The south strip is characterised by gravelly sub-soil, greyish yellow and granular in structure. (ii) Chemical analysis : Organic carbon—0.55%, total nitrogen—0.43%, available nitrogen—0.014%, pH—7.0, available  $P_2O_5$

0.00037% and conductivity in m. mhos/cm—0.69. (iii) Mechanical analysis : Clay—19.53% fine silt—9.17%, fine sand—54.09%, silt—13.78%, coarse sand—1.4% and misc.—2.03%.

*E. No. of experiments :*

Wheat—5, Pea—1, Sugarcane—1, Cotton—34, Mixed cropping—1, Total=42.

**66. State Soil Conservation Research Demonstration and Training Centre, Rehmankhara.**

*A. General information :*

(i) In Malihabad *tehsil* of Lucknow district. 3 miles from Kakon Railway Station. Slopy with 1 to 2.5% slopes. (ii) Alluvial tract. (iii) Established in 1956—1957. (iv) G.M.—wheat or potato, *jowar—arhar*, fallow—barley or gram ; *urd—barley*, (v) Research pertaining to soils fertilizers, grasses and forest under eroded land.

*B. Normal rainfall in cm :*

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
7	28	34	17	9	—	—	2	1	1	—	2	101

(The average rainfall data is for the period 1954 to 1964.)

*C. Irrigation and drainage facilities :*

(i) (a) and (b) About 33% area is irrigated with the help of pumping set fitted on Behta Nala, which is perinnial riverlet since beginning. (iii) Proper drainage system exists.

*D. Soil type and soil analysis :*

(i) Sandy loam to loamy sand, Deep alluvium, light brown and variable structure. (ii) Chemical analysis : pH—6.7 to 7.4,  $P_2O_5$ —10 to 40% nitrogen 0.03 to 0.06%,  $K_2O$ —0.33 to 0.65% and organic matter—0.25 to 0.54%. (iii) Mechanical analysis: Sand—45.85%, silt—10.40% and clay—5.10%.

*E. No. of experiments :*

Wheat—14, Maize—6, Ashground—3, Sugarcane—3, Grass—1, Mixed cropping—11, Total=38.

**67. Regional Research Station, Rudrapur.**

*A. General information :*

(i) In Kichha *tehsil* of Nainital district. 9 miles from Kichha Railway Station. Slopy from north to south. (ii) Tarai region. (iii) Established in 1958. (iv) Wheat—barley—gram—pea—oats—*toria*, sugarcane—paddy, maize, *dhaincha—lobia* and *jowar*. (v) Varietal, manurial and weed control experiments are conducted.

*B. Normal rainfall in cm. :*

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
14	45	37	28	12	—	1	5	2	1	—	5	150

(The average rainfall data is for the period 1955 to 1964).

*C. Irrigation and drainage facilities :*

(i) (a) and (b) No irrigation facilities exist. (b) No proper drainge system exists.

*D. Soil type and soil analysis :*

(i) Loam to clay loam, 0 to 9" deep, grey and sticky in structure. (i.) Chemical analysis : pH 8.0 to 8.1, organic carbon 0.17 to 1.0%, nitrogen 0.07 to 0.10%,  $P_2O_5$  0.065 to 0.071%.  $K_2O$ —0.79 to 0.86%. (iii) Mechanical analysis : Coarse sand—2.0 to 10.0%, fine sand—20 to 22%, silt—45 to 50% and clay 25 to 29%.

*E. No. of experiments :*

Wheat—4, Pea—1, Gram—1, Sugarcane—2, Cowpea—1. Total=9.

**68. Government Horticultural Research Institute, Saharanpur.***A. General information :*

(i) In Saharanpur *tehsil* of Saharnpur district. One mile from Saharanpur Railway Station. Generally levelled, but slightly sloping towards the river Dhomola on the eastern side of the experimental area. (ii) Foot hill area of Shiwalek extending into the plains of west U.P. (iii) Established in 1949. (iv) Mango, *litchi*, *loquat*, citrus, papaya, *guava*, pear, plum, peach, banana and grape wine. (v) Investigation resulting to the problem of tropical and sub tropical fruit growing in U.P.

*B. Normal rainfall in cm. :*

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
11	36	40	22	10	1	2	8	4	2	—	1	137

(The average rainfall data is for the period 1954 to 1963).

*C. Irrigation and drainage facilities :*

(i) (a) and (b) Tube well and canal since 1949. (ii) There is a proper drainage system.

*D. Soil type and soil analysis :*

(i) Loam, sandy loam, 6' to 14' deep, grey on the top and brown to redish brown sub soil. Generally structureless but at places showing blocky structure. (ii) Chemical analysis and (iii) Mechanical analysis :

Depth	0—12"	12'—31"
Moisture (air dry)	1.35%	2.05%
Loss on ignition	2.34%	3.93%
Si O <sub>2</sub>	84.86%	83.56%
Al <sub>2</sub> O <sub>3</sub>	6.38%	6.51%
Fe <sub>2</sub> O <sub>3</sub>	0.83%	1.79%
CaO	0.39%	0.29%
MgO	1.21%	1.26%
P <sub>2</sub> O <sub>5</sub>	0.11%	0.10%
K <sub>2</sub> O	0.51%	0.46%
C	0.66%	0.34%
N	0.02%	0.02%
pH	6.00%	N.A.
Coarse sand	11.44%	7.39%
Fine sand	56.47%	47.79%
Silt	16.45%	17.75%
Clay	14.55%	24.02%
Water holding capacity	33.89%	38.04%
Moisture equivalent	23.09%	25.69%

*E. No. of experiments :*

Potato—2, Grass—1, Mangc—19, Citrus—5, Sweet organe—10, Mandarin—11, Lime—5, *Guava*—6, Peach—2, *Lichi*—5, Papaya—2. Total=68.

**69. Sahupuri Agricultural Farm, Sahupuri.***A. General information to D. Soil type and soil analysis :*

Information—N.A.

*E. No. of experiments :*

Paddy—1, Sugarcane—1, Cotton—1. Total=3.

**70. Government Agricultural Farm, Saini.***A. General information :*

(i) In Sirathu *tehsil* of Allahabad district. 1 mile from Sirathu Railway Station. (ii) N.A. (iii) Established in 1958. (v) Paddy—gram, paddy—pea, fodder—pea, cotton, *lobia*, sugarcane, early *urd*, *til*—barley ; G.M.—barley, G.M.—wheat and G.M.—paddy. (v) It is a seed multiplication farm.

*B. Normal rainfall in cm. :*

June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
3	30	20	17	5	—	—	2	1	1	—	1	80

(The average rainfall is for the period 1959 to 1964).

*C. Irrigation and drainage facilities :*

(i) (a) and (b) Tube well since 1958. (ii) No proper drainage system exists.

*D. Soil type and soil analysis :*

Information—N.A.

*E. No. of experiments :*

Sugarcane—1. Total=1.

**71. Government Tobacco Research Station, Saraimiran.***A. General information :*

(i) In Kannauj *tehsil* of Farrukhabad district. Just adjacent to Kannauj Railway Station. The experimental area at the farm is not levelled to the desired standard. (ii) Alluvial soils. (iii) Established in 1954. (iv) *Kharif*: Maize—*dhaincha*—*jowar*—*arhar* and paddy, *Rabi*: Wheat—barley—gram—tobacco—pea—*berseem*, and potato. (v) Work on the improvement of indigenous tobacco under a scheme of Indian Central Tobacco Committee, Madras.

*B. Normal rainfall in cm. :*

June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
5	22	33	14	10	—	1	3	—	1	—	2	91

(The average rainfall is for the period 1955 to 1964.)

*C. Irrigation and drainage facilities :*

(i) (a) and (b) Tube well since 1951. (ii) Proper drainage system exist.

*D. Soil type and soil analysis :*

(i) Sandy loam to loam, 9" deep, greyish to light brown and crumbling in structure. (ii) Chemical analysis : pH—6.1 to 7.9, total soluble salts—0.09%, organic carbon—0.40 to 0.75%, available  $P_2O_5$ —1.6 to 15.2 lb./ac. (iii) Mechanical analysis : Sand—65.08 to 74.08%, silt—17.28 to 20.28% and clay 8.64 to 15.64%.

*E. No. of experiments :*

Tobacco—20, Total=20.

**72. Soil Conservation Research Station, Selakui.***A. General information :*

(i) In Dehra Dun *tehsil* of Dehra Dun district. 12 miles from Dehra Dun Railway Station. Rolling topography. (ii) Alluvial soils. (iii) Established in 1954. (iv) Maize—

wheat. (v) Soil and water conservation research covering the disciplines of soils, agronomy, agri-engineering and forestry.

**B. Normal rainfall in cm. :**

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
13	55	52	22	11	2	3	7	5	3	1	3	177

(The average rainfall data is for the period 1950 to 1963).

**C. Irrigation and drainage facilities :**

(i) (a) and (b) No. (ii) Soils are well-drained.

**D. Soil type and soil analysis :**

(i) Alluvial soils, mostly greyish brown to greyish yellow for surface soil and yellowish brown to brownish yellow for sub-soil, blocky, sub-angular, blocky or single grained. (ii) Chemical analysis and (iii) Mechanical analysis :

	Surface soil	Sub-soil
pH	6.0 to 7.2	4.8 to 7.8
Organic matter	0.4 to 2.5	0.1 to 1.3
Nitrogen	0.05 to 0.16	0.02 to 0.10
HCl Solubles		
Total CaO	0.14 to 1.00	0.10 to 1.00
Total P <sub>2</sub> O <sub>5</sub>	0.13 to 0.23	0.020 to 2.20
Coarse sand	2.4 to 35.0	0.7 to 85.0
Fine sand	5.5 to 86.0	2.6 to 92.0
Silt	1.6 to 48.5	0.3 to 65.0
Clay	2.7 to 45.7	2.2 to 50.0

**E. No. of experiments :**

Wheat—6, Grass—1, Total=7.

**73. Sugarcane Research Station, Shahjahanpur.**

**A. General information :**

(i) In Shahjahanpur *tehsil* of Shahjahanpur district. 3 miles from Shahjahanpur Railway Station. In general there are uplands with even surface except in 3 blocks where there are slight slopes from north to south-west or east to west. (ii) Type—3, well drained soils. (iii) Established in 1941. (iv) *Sanai* (G.M.)—wheat/barley—russian giant *lobia*—sugarcane, *Sanai* (G.M.)—wheat/barley—*lobia*—sugarcane *ratoon*. (v) The main object is to evolve high yielding sugarcane varieties at economic cost suitable for different tracts of the State and suitable manurial and cultural schedule as well as methods for controlling diseases and pests.

**B. Normal rainfall in cm. :**

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
11	28	32	18	6	1	1	3	1	1	1	1	104

(The average rainfall data is for the period 1941 to 1960).

**C. Irrigation and drainage facilities :**

(i) (a) and (b) Canal and tube well. (ii) Proper drainage system exists.

**D. Soil type and soil analysis :**

(i) Type-3 sandy loam, 9" deep, greyish brown and granular in structure (ii) Chemical analysis and (iii) Mechanical analysis :

*Field No. H<sub>2</sub>*

Depth	0"—9"	9"—32"
Moisture	0.67%	1.79%
Loss on ignition	2.07%	3.01%
HCl insoluble	82.18%	72.95%
P <sub>2</sub> O <sub>5</sub>	13.33%	18.39%
Al <sub>2</sub> O <sub>3</sub>	8.09%	12.67%
Fe <sub>2</sub> O <sub>3</sub>	5.24%	5.72%
CaO	0.42%	0.44%
MgO	0.99%	—
K <sub>2</sub> O	0.10%	0.21%
P <sub>2</sub> O <sub>5</sub>	0.09%	0.72%
Nitrogen	0.03%	0.04%
Organic carbon	0.34%	0.21%
C/N	12.44%	4.95%
C P	3.73%	0.94%
Coarse sand	1.34%	0.29%
Fine sand	55.52%	10.72%
Silt	23.47%	52.57%
Clay	17.40%	33.60%
Water holding capacity	42.66%	58.30%
Moisture equivalent	22.49%	27.13%
Sticky pt. moisture	18.38%	26.35%
Basic exchange capacity	13.80%	18.20%
Exchangeable Ca m.e.	8.01%	9.00%
Total exchangeable bases m.e.	11.00%	14.00%
pH	6.6	6.2

*E. No. of experiments :*

Sugarcane—137, Total=137.

**74. Rice Research Sub-Station, Tissuhi.***A. General information :*

(i) In Mirzapur *tehsil* of Mirzapur district. 19 miles from Mirzapur Railway Station. Even and flat land. (ii) Bindhyan soil. (iii) Established in 1935. (iv) Late paddy followed by fallow, linseed, gram, pea, *masoor* etc. (v) Usually varietal and manurial experiments on paddy are being conducted.

*B. Normal rainfall in cm. :*

Information—N.A.

*C. Irrigation and drainage facilities :*

(i) (a) N.A. (b) Canal. (ii) No proper drainage system exists.

*D. Soil type and soil analysis :*

(i) Karail (Khankar), 8" deep, grey in colour, silt cloddy in structure. (ii) Chemical analysis—Moisture—3.79; loss on ignition—4.20%, HCl insoluble 76.96%, R<sub>2</sub>O<sub>3</sub> 12.23%, CaO 0.81%, MgO 0.91%, K<sub>2</sub>O 0.50%, CO<sub>2</sub> 0.51, Fe<sub>2</sub>O<sub>3</sub> 4.32%, P<sub>2</sub>O<sub>5</sub> 0.04%, Al<sub>2</sub>O<sub>3</sub> 7.93%. (iii) Mechanical analysis—Coarse sand 1.8%, fine sand—32.39%, silt—25.75% and clay—33.88%.

*E. No. of experiments :*

Paddy—16, Wheat—6, *Berseem*—1. Total=23.

**75. Agricultural Farm, College of Agriculture, B.H.U., Varanasi.****A. General information :**

(i) In Varanasi *tehsil* of Varanasi district. 6 miles from Varanasi Cantt Railway Station. Uniformly level except certain portion of the farm which is low and suited for paddy cultivation. (ii) Gangetic alluvium. (iii) Established in 1932. (iv) As required by the teaching programme. (v) No fixed line of work.

**B. Normal rainfall in cm. :**

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
6	36	31	26	7	—	—	4	—	—	—	—	110

(The average rainfall data is for the period 1958 to 1964).

**C. Irrigation and drainage facilities :**

(i) (a) and (b) Tube well since 1955. (ii) General drainage good except on certain area in the farm where deep ditches are provided for removing surplus and standing water.

**D. Soil type and soil analysis :**

(i) Medium alluvium soil suited for cultivation of all most all crops. Korezons not distinctly formed. Light brownish yellow and structureless to compact. (ii) Chemical analysis—pH—7.4%, N—0.05% to 0.04%, K<sub>2</sub>O—0.50% to 0.30%, P<sub>2</sub>O<sub>5</sub>—0.5% to 0.10%, CaO—0.06% and organic carbon 0.5%. (iii) Mechanical analysis—Clay—20.0%, silt—25.0%, fine sand—35.0% and coarse sand—15.0%.

**E. No. of experiments :**

Paddy—3, Wheat—5, Barley—3, Oats—2, *Jowar*—1, Potato—1, Onion—3, Spinach—3, Pea—1, Gram—1, Brassica—2, Garlic—2. Total=27.

**76. Regional Research Station, Varanasi.****A. General information :**

(i) In Varanasi *tehsil* of Varanasi district. 3 miles from Varanasi Cantt Railway Station. Flat (at slightly lower level than the surrounding fields). (ii) Brown grey alluvial soil. (iii) Established in 1856. (iv) No definite cropping pattern is observed on account of the experiments. (v) As per approved programme of research by the department of Agriculture, U.P.

**B. Normal rainfall in cm. :**

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
8	32	27	24	7	—	—	3	—	—	—	1	102

(The average rainfall data is for the period 1955 to 1964.)

**C. Irrigation and drainage facilities :**

(i) (a) and (b) Tube well since 1954. (ii) Proper drainage system exists.

**D. Soil type and soil analysis :**

(i) Banaras type III, brownish grey, moderately drained soil, 6" to 9" surface soil brownish grey and crumb in structure. (ii) Chemical analysis and (iii) Mechanical analysis :

Depth	0 to 9"	9" to 22"	22" to 33"
pH	6.8	6.6	6.2
Moisture (air dry)	1.46%	1.06%	1.28%
Loss on ignition	2.12%	2.56%	2.62%
HCl insoluble	84.67%	80.27%	75.46%
R <sub>2</sub> O <sub>3</sub>	8.05%	12.29%	16.99%
CaO	0.28%	0.34%	0.45%



Mgo	1.29%	0.93%	1.13%
F <sub>2</sub> O <sub>3</sub>	2.52%	1.60%	3.68%
P <sub>2</sub> O <sub>5</sub>	0.0%	0.04%	0.05%
K <sub>2</sub> O	1.03%	0.99%	1.06%
Water soluble salts	0.06%	0.07%	0.04%
MaHCO <sub>3</sub>	0.01%	0.01%	0.01%
NaCl	0.005%	0.008%	0.006%
Organic carbon	0.55%	0.23%	0.22%
Total Nitrogen	0.05%	0.03%	0.02%
Coarse sand	0.90%	3.20%	2.80%
Fine sand	42.25%	25.45%	25.07%
Silt	34.75%	34.50%	32.46%
Clay	17.13%	33.85%	35.9%

*E. No. of experiments :*

Paddy—34, Wheat—29, Barley—2, Potato—2, Pea—4, Sugarcane—5, Jowar fodder—4  
Cowpea—1, Dhaincha—1, Mixed cropping—9. Total=91.

**77. Udai Pratap College Farm, Varanasi.**

*A. General information :*

(i) In Varanasi *tehsil* of Varanasi district. 2 miles from Varanasi Cantt Railway Station. Well levelled. (ii) Banaras type 3. (iii) Established in 1942. (iv) N.A. (v) No research work is done here.

*B. Normal rainfall in cm. :*

June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
8	32	27	24	7	—	—	3	—	—	—	1	102

(The average rainfall data is for the period 1953 to 1964.)

*C. Irrigation and drainage facilities :*

(i) (a) and (b) Tube well since 1957. (ii) Surface drainage exists.

*D. Soil type and soil analysis :*

(i) Banaras type 3 (moderately drained loam soil), more than 10', grey in colour. (ii) Chemical analysis : pH—7.2, Total soluble salts—0.035% (normal), organic carbon—0.38%, P<sub>2</sub>O<sub>5</sub>—34.74 lb./ac. (iii) Mechanical analysis : Coarse sand—3.08%, fine sand—46.55%, silt—27.55% and clay—19.25%.

*E. No. of experiments :*

Wheat—5. Total=5.

**Crop :- Paddy (Kharif).**  
**Site : Govt. Agri. Farm, Atarra.**

**Ref :- U.P. 54(112).**  
**Type :- 'M'.**

Object :—To study the effect of trace elements on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) *Parwa* and light *kabar*. (b) N.A. (iii) N.A./5.8.1954. (iv) (a) 4 ploughings by Watt plough. (b) Transplanting. (c) to (e) N.A. (v) 15 lb./ac. of  $K_2O$  as Pot. Sul. + 30 lb./ac. of N as A/S + 30 lb./ac. of  $P_2O_5$  as Super + 15 lb./ac. of CaO as gypsum. (vi) T—136. (vii) Irrigated. (viii) and (ix) N.A. (x) 2 and 3.12.1954.

2. TREATMENTS :

10 trace element treatments :  $T_0$  = Control (3 plots),  $T_1$  = 3 lb./ac. of Cu,  $T_2$  = 6 lb./ac. of Cu,  $T_3$  = 12 lb./ac. of Cu,  $T_4$  = 1 lb./ac. of B,  $T_5$  = 2 lb./ac. of B,  $T_6$  = 4 lb./ac. of B,  $T_7$  = 1 lb./ac. of Zn,  $T_8$  = 4 lb./ac. of Zn and  $T_9$  = 10 lb./ac. of Zn. Cu as C/S, B as Borax, Zn as  $ZnSO_4$  mixed with fine dry earth or sand and applied as surface dressing 2 days before transplanting.

3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 3. (iv) (a) 28' × 37'. (b) 25' × 34'. (v) 1½' × 1½'. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Attack of *chilari* disease. (iii) Yield of grain. (iv) 1954—1955. (b) No. (c) Nil. (v) (a) Conducted at many centres. (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 1560 lb./ac. (ii) 104.5 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$T_0$	$T_1$	$T_2$	$T_3$	$T_4$	$T_5$	$T_6$	$T_7$	$T_8$	$T_9$
Av. yield	1760	1089	1002	1116	1616	2293	1476	1643	1019	2188

S.E./mean (except  $T_0$ ) = 60.3 lb./ac.

S.E. of  $T_0$  mean = 34.8 lb./ac.

**Crop :- Paddy (Kharif).**  
**Site :- Govt. Agri. Farm, Atarra.**

**Ref :- U.P. 55(242).**  
**Type :- 'M'.**

Object :—To study the effect of trace elements on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy—Gram. (b) *Dhaincha*. (c) N.A. (ii) (a) Light *kabar*. (b) N.A. (iii) 4.7.1955/5.8.1955. (iv) (a) 4 ploughings by Watt plough. (b) Transplanting. (c) 8 to 10 srs./ac. (d) and (e) N.A. (v) G.M. + 30 lb./ac. of N as A/S + 30 lb./ac. of  $P_2O_5$  as Super + 15 lb./ac. of  $K_2O$  as Pot. Sul. (vi) CH—4. (vii) Irrigated. (viii) and (ix) N.A. (x) 2.10.1955.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 54(112) above.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1954—1955. (b) No. (c) Nil. (v) (a) Conducted at many centres. (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 3044 lb./ac. (ii) 214.0 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$T_0$	$T_1$	$T_2$	$T_3$	$T_4$	$T_5$	$T_6$	$T_7$	$T_8$	$T_9$
Av. yield	3461	2328	3031	2842	3171	3857	2477	2188	3229	3022

S.E./mean (except  $T_0$ ) = 123.5 lb./ac.

S.E. of  $T_0$  mean = 71.3 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 54(193).**

**Site :- Govt Agri. Farm, Atarra.**

**Type :- 'M'.**

**Object :-**To study the effect of different levels of N and P alone and in combination on the yield of Paddy.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Gram. (c) Nil. (ii) (a) *Parwa*. (b) N.A. (iii) N.A./10, 11.8.1954. (iv) (a) 6 ploughings by Watt plough. (b) Transplanting. (c) to (e) N.A. (v) Nil. (vi) T-36. (vii) Irrigated. (viii) N.A. (ix) 20.73". (x) 2, 3.12.1954.

**2. TREATMENTS :**

All combinations (1) and (2)

(1) 3 levels of N as A/S :  $N_0=0$ ,  $N_1=25$  and  $N_2=50$  lb./ac.

(2) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=50$  and  $P_2=100$  lb./ac.

Manures applied on 12.7.1954.

**3. DESIGN :**

(i) (a) Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) and (b) 33' × 33'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Poor due to scarcity of rainfall during the growth. (b) Attack of *chilari* disease. (iii) Yield of grain and straw. (iv) (a) 1953-1954. (b) No. (c) Nil. (v) (a) Bharari. (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1576 lb./ac. (ii) 133.2 lb./ac. [(iii) Main] effects of N and P are highly [significant. (iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	$P_2$	Mean
$N_0$	1237	1327	1337	1300
$N_1$	1450	1617	1560	1542
$N_2$	1747	1900	2010	1886
Mean	1478	1615	1636	1576

S.E. of any marginal mean = 31.4 lb./ac.

S.E. of body of any table = 54.4 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 54(118).**

**Site :- Govt. Agri. Farm, Atarra.**

**Type :- 'M'.**

**Object :-**To study the effect of N, P and calcium alone and in combinations on the yield of Paddy.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Gram. (c) N.A. (ii) (a) Light *kobar*. (b) N.A. (iii) N.A./5.8.1954. (iv) (a) N.A. (b) Transplanting. (c) 8 to 10 srs./ac. (d) 9" × 9". (e) 1 to 2. (v) Green manuring. (vi) T-36. (vii) Irrigated. (viii) and (ix) N.A. (x) 2.12.1954 to 3.12.1954.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 2 levels of N as A/S :  $N_0=0$  and  $N_1=75$  lb./ac.

(2) 2 levels of  $P_2O_5$  as Super :  $P_0=0$  and  $P_1=60$  lb./ac.

(3) 2 levels of CaO as gypsum :  $C_0=0$  and  $C_1=90$  lb./ac.

N applied at transplanting and at tillering in equal doses,  $P_2O_5$  by placement 3" to 4" deep in soil behind the plough and CaO as surface dressing 1 to 2 days before transplanting.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 41' × 28'. (b) 38' × 25'. (v) 1½' × 1½'. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Attack of *chilari* disease. (iii) Yield of grain. (iv) (a) 1944—1956. (b) No. (c) Nil. (v) (a) Conducted at many centres. (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1200 lb./ac. (ii) 72.9 lb./ac. (iii) Main effects of N, P and interactions  $N \times P$  and  $N \times P \times C$  are highly significant and that of C is significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	C <sub>0</sub>	C <sub>1</sub>
N <sub>0</sub>	1318	852	1085	1055	1114
N <sub>1</sub>	1158	1471	1315	1282	1347
Mean	1238	1161	1200	1169	1231
C <sub>0</sub>	1206	1132			
C <sub>1</sub>	1270	1191			

S.E. of any marginal mean = 18.2 lb./ac.  
S.E. of body of any table = 25.8 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 55(117).**

**Site :- Govt. Agri. Farm, Atarra.**

**Type :- 'M'.**

Object :- To study the effect of N, P and calcium on the yield of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Light *kabar*. (b) N.A. (iii) 3.8.1955. (iv) (a) 4 ploughings with Watt plough. (b) Transplanting. (c) 8 to 10 srs./ac. (d) and (e) N.A. (v) 100 mds./ac. of F.Y.M. on 9.6.1955. (vi) CH-4. (vii) Irrigated. (viii) to (x) N.A.

## 2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 54(118) on page 2.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1954—1956. (b) No. (c) Nil. (v) (a) Conducted at many centres. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 2333 lb./ac. (ii) 68.3 lb./ac. (iii) All effects except interaction  $N \times C$  are highly significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	C <sub>0</sub>	C <sub>1</sub>
N <sub>0</sub>	2124	2180	2152	2050	2254
N <sub>1</sub>	2314	2714	2514	2456	2572
Mean	2219	2447	2333	2253	2413
C <sub>0</sub>	2084	2422			
C <sub>1</sub>	2354	2472			

S.E. of any marginal mean = 17.1 lb./ac.  
S.E. of body of any table = 24.1 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 56(198).**

**Site :- Govt. Agri. Farm, Atarra.**

**Type :- 'M'.**

**Object :-** To study the effect of N, P and calcium on the yield of Paddy.

**1. BASAL CONDITIONS :**

(i) (a) Faddy—Gram—Wheat. (b) Wheat. (c) N.A. (ii) (a) Light *kabar*. (b) N.A. (iii) N.A./24.7.1956. (iv) (a) 2 ploughings by Watt plough. (b) Transplanting. (c) to (e) N.A. (v) 100 mds./ac. of F.Y.M. (vi) T-4. (vii) Irrigated. (viii) and (ix) N.A. (x) 21.10.1956.

**2. TREATMENTS and 3. DESIGN :**

Same as in expt. no. 54(118) on page 2.

**4. GENERAL :**

(i) N.A. (ii) Nil. (iii) Yield of grain. (iv) (a) 1954—1956. (b) No. (c) Nil. (v) (a) Conducted at many centres. (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1831 lb./ac. (ii) 32.9 lb./ac. (iii) Main effect of N, P, C and interaction  $N \times P$ ,  $N \times C$ ,  $P \times C$  and  $N \times P \times C$  are highly significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	C <sub>0</sub>	C <sub>1</sub>
N <sub>0</sub>	1484	1614	1549	1465	1632
N <sub>1</sub>	1895	2333	2114	1959	2269
Mean	1689	1973	1831	1712	1950
C <sub>0</sub>	1512	1911			
C <sub>1</sub>	1867	2035			

S.E. of any marginal mean = 8.2 lb./ac.  
S.E. of body of any table = 11.6 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 56(295).**

**Site :- Govt. Agri. Farm, Atarra.**

**Type :- 'M'.**

**Object :-** To study the effect of F.Y.M. and Super on the yield of Paddy.

**1. BASAL CONDITIONS :**

(i) (a) Paddy—Gram—Wheat. (b) Wheat. (c) N.A. (ii) Light *kabar*. (b) N.A. (iii) 19.6.1956/25.7.1956. (i) (a) 4 ploughings. (b) Transplanting. (c) N.A. (d) 9"×9". (e) N.A. (v) N.A. (vi) T-4. (vii) Irrigated. (viii) and (ix) N.A. (x) 22.10.1956.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 4 sources of 60 lb./ac. of N : S<sub>0</sub>=Control (no N), S<sub>1</sub>=F.Y.M., S<sub>2</sub>=A/S and S<sub>3</sub>=½ F.Y.M. + ½ A/S.  
(2) 2 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0 and P<sub>1</sub>=50 lb./ac.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 43'×29'. (b) 40'×28'. (v) 1½'×1½'. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Nil. (iii) Yield of grain. (iv) (a) 1956—N.A. (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1410 lb./ac. (ii) 21.9 lb./ac. (iii) All the effects are significant. (iv) Av. yield of grain in lb./ac.

	S <sub>0</sub>	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean
P <sub>0</sub>	857	1098	1533	1721	1302
P <sub>1</sub>	1086	1468	1760	1757	1518
Mean	971	1283	1646	1739	1410

S.E. of S marginal mean = 7.7 lb./ac.  
 S.E. of P marginal mean = 6.3 lb./ac.  
 S.E. of body of table = 10.9 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 58(309).**

**Site :- Govt. Agri. Farm, Atarra.**

**Type :- 'M'.**

Object :— To study the effect of different methods of application of fertilizers on the yield of Paddy.

**1. BASAL CONDITIONS :**

(i) (a) Paddy—Wheat. (b) Paddy. (c) N.A. (ii) (a) *Parwa* and light *kchar*. (b) N.A. (iii) N.A./22:8.1958.  
 (iv) (a) 4 ploughings by Watt plough and 1 ploughing by country plough. (b) Transplanting. (c) 8 to 10 srs./ac. (d) 9"×9". (e) 1 to 2. (v) Nil. (vi) CH—4. (vii) Irrigated. (viii) and (ix) N.A. (x) 21.11.1953.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 3 fertilizers : F<sub>1</sub>=60 lb./ac. of N as A/S, F<sub>2</sub>=40 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super and F<sub>3</sub>=30 lb./ac. of K<sub>2</sub>O as Pot. Sul.

(2) 2 methods of application : M<sub>1</sub>=Broadcast (surface application before sowing) and M<sub>2</sub>=Placement (surface application 3" to 4" deep in soil behind plough before transplanting).

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 54'×38'. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1958—N.A. (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1391 lb./ac. (ii) 22.1 lb./ac. (iii) Main effects of F, M and interaction F×M are highly significant. (iv) Av. yield of grain in lb./ac.

	F <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>	Mean
M <sub>1</sub>	1544	1329	1261	1378
M <sub>2</sub>	1505	1456	1253	1405
Mean	1524	1392	1257	1391

S.E. of M marginal mean = 6.4 lb./ac.  
 S.E. of F marginal mean = 7.8 lb./ac.  
 S.E. of body of table = 11.0 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 55(115).**

**Site :- Govt. Agri. Farm, Bahraich.**

**Type :- 'M'.**

Object :—To study the effect of N, P and calcium on the yield of Paddy.

**1. BASAL CONDITIONS:**

(i) (a) Paddy—*Masoor*. (b) *Masoor*. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Bahraich. (iii) N.A./3, 4.8.1955. (iv) (a) 4 ploughings. (b) to (e) N.A. (v) 100 mds./ac. of F.Y.M. (vi) T—15 (late). (vii) Irrigated. (viii) and (ix) N.A. (x) 2.12.1955.

**2. TREATMENTS and 3. DESIGN :**

Same as in expt. no. 54(118) on page 2.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1955—N.A. (b) No. (c) Nil. (v) (a) Conducted at many centres. (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 3608 lb./ac. (ii) 455.0 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	C <sub>0</sub>	C <sub>1</sub>
N <sub>0</sub>	3492	3622	3557	3562	3552
N <sub>1</sub>	3738	3580	3659	3864	3514
Mean	3615	3601	3608	3683	3533
C <sub>0</sub>	3747	3619			
C <sub>1</sub>	3483	3583			

S.E. of any marginal mean = 113.8 lb./ac.

S.E. of body of any table = 160.9 lb./ac.

**Crop :- Paddy (*Kharif*).**

**Ref :- U.P. 56(200).**

**Site :- Govt. Agri. Farm, Bahraich.**

**Type :- 'M'.**

**Object :—**To study the effect of N, P and calcium on the yield of Paddy.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Masoor*. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Bahraich. (iii) N.A./23, 24.7.1956. (iv) (a) 4 ploughings. (b) Transplanting. (c) to (e) N.A. (v) F.Y.M. at 100 mds./ac. (vi) T—15 (late). (vii) Irrigated. (viii) 5 weedings. (ix) N.A. (x) 24.11.1956.

**2. TREATMENTS and 3. DESIGN :**

Same as in expt. no. 54(118) on page 2.

**4. GENERAL :**

(i) N.A. (ii) Crop was affected by *gundhi* bug. (iii) Yield of grain. (iv) (a) 1955—N.A. (b) No. (c) Nil. (v) (a) Conducted at many centres. (b) N.A. (vi) Less rainfall affected the crop adversely. (vii) Nil.

**5. RESULTS :**

(i) 1297 lb./ac. (ii) 89.1 lb./ac. (iii) Main effect of N, P, C and interaction  $N \times P \times C$  are highly significant and interaction  $P \times C$  is significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	N <sub>0</sub>	N <sub>1</sub>
N <sub>0</sub>	1112	1389	1251	1156	1345
N <sub>1</sub>	1235	1453	1344	1247	1441
Mean	1173	1421	1297	1201	1393
C <sub>0</sub>	1038	1365			
C <sub>1</sub>	1309	1477			

S.E. of any marginal mean = 22.3 lb./ac.  
S.E. of body of any table = 31.5 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 55(114).**

**Site :- Govt. Agri. Farm, Bahraich.**

**Type :- 'M'.**

Object :—To study the effect of different levels of K on the yield of Paddy.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Bahraich. (iii) and (iv) N.A. (v) 291 lb./ac. of A/S in equal doses at transplanting and tillering + 250 lb./ac. of Super placed. 3 to 4" in soil behind the plough. (vi) to (x) N.A.

**2. TREATMENTS :**

6 levels of  $K_2O$  as Pot. Sul. :  $K_0=0$ ,  $K_1=15$ ,  $K_2=30$ ,  $K_3=45$ ,  $K_4=60$  and  $K_5=75$  lb./ac.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 56' × 27'. (b) 53' × 24'. (v) 1½' × 1½'. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1955 only. (b) No. (c) Nil. (v) (a) Conducted at many centres. (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 3592 lb./ac. (ii) 179.1 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$K_0$	$K_1$	$K_2$	$K_3$	$K_4$	$K_5$
Av. yield	3576	3558	3491	3560	3700	3665

S.E./mean = 89.5 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 54(113).**

**Site :- Govt. Agri. Farm, Bahraich.**

**Type :- 'M'.**

Object :—To study the effect of different levels of trace elements on the yield of Paddy.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Bahraich. (iii) and (iv) N.A. (v) G.M. + 30 lb./ac. of N as A/S + 30 lb./ac. of  $P_2O_5$  as Super + 15 lb./ac. of  $K_2O$  as Pot. Sul. + 15 lb./ac. of CaO as gypsum. (vi) to (x) N.A.

**2. TREATMENTS and 3. DESIGN :**

Same as in expt. no. 54(112) on page 1.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain, (iv) (a) 1954 only. (b) No. (c) Nil. (v) (a) Conducted at many centres. (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1628 lb./ac. (ii) 129.9 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$T_0$	$T_1$	$T_2$	$T_3$	$T_4$	$T_5$	$T_6$	$T_7$	$T_8$	$T_9$
Av. yield	1567	1647	1616	1573	1748	1674	1696	1647	1641	1595

S.E./mean (except  $T_0$ ) = 75.0 lb./ac.  
S.E. of  $T_0$  mean = 43.3 lb./ac.



**Crop :- Paddy (Kharif).**

**Ref :- U.P. 54(116).**

**Site : State Mechanised Farm, Bharari.**

**Type :- 'M'.**

Object :—To study the effect of different levels of trace elements on the yield of Paddy.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) *Parwa* soil. (b) Refer soil analysis, Bharari. (iii) N.A./2.8.1954. (iv) (a) 2 harrowings with tractor harrow. (b) Transplanting. (c) to (e) N.A. (v) G.M. +30 lb./ac. of N as A/S+30 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super+15 lb./ac. K<sub>2</sub>O as Pot. Sul.+15 lb./ac. of CaO as gypsum. (vi) T—43. (vii) Irrigated. (viii) 3 to 4 interculturings with hand hoe and weeding. (ix) N.A. (x) 1.11.1954.

**2. TREATMENTS and 3. DESIGN :**

Same as in expt. no. 54(112) on page 2.

Trace elements applied 3 days before transplanting.

**4. GENERAL :**

(i) N.A. (ii) Attack of *gundhi* bug. Dusting with insecticide at the very appearance of pest. (iii) Yield of grain. (iv) (a) 1954 only. (b) No. (c) Nil. (v) (a) Conducted at many centres. (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 2531 lb./ac. (ii) 686.8 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatments	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	T <sub>5</sub>	T <sub>6</sub>	T <sub>7</sub>	T <sub>8</sub>	T <sub>9</sub>
Av. yield	2331	2038	2636	2460	3268	2636	2460	2671	2886	2319

S.E./mean (except T<sub>0</sub>) = 396.5 lb./ac.

S.E. of T<sub>0</sub> mean = 228.9 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 54(117).**

**Site :- State Mechanised Farm, Bharari.**

**Type :- 'M'.**

Object —To study the effect of N, P and calcium on the yield of Paddy.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) *Parwa* soil. (b) Refer soil analysis, Bharari. (iii) 31.7.1954. (v) (a) 2 harrowings with tractor and 1 planking. (b) to (e) N.A. (v) N.A. (vi) T—43. (vii) Irrigated. (viii) and (ix) N.A. (x) 31.10.1954.

**2. TREATMENTS and 3. DESIGN :**

Same as in expt. no. 54(118) on page 2.

**4. GENERAL :**

(i) N.A. (ii) Slight attack of *gundhi* bug. Dusting with gammexane at the very appearance of the pest. (iii) Yield of grain. (iv) (a) 1954 only. (b) No. (c) Nil. (v) (a) Conducted at many centres. (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 2196 lb./ac. (ii) 348.6 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	C <sub>0</sub>	C <sub>1</sub>
N <sub>0</sub>	1981	2169	2075	2028	2122
N <sub>1</sub>	2417	2217	2317	2181	2452
Mean	2199	2193	2196	2105	2287
C <sub>0</sub>	2134	2075			
C <sub>1</sub>	2284	2311			

S.E. of any marginal mean = 87.1 lb./ac.

S.E. of body of any table = 123.2 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 54(192).**

**Site :- State Mechanised Farm, Bharari.**

**Type :- 'M'.**

Object :—To study the effect of different levels of N and P on the yield of Paddy.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) *Berseem*. (c) N.A. (ii) (a) *Kabar*. (b) Refer soil analysis, Bharari (iii) 22 to 24.7.1954. (iv) (a) 1 ploughing and 2 harrowings with tractor. (b) Transplanting. (c) to (e) N.A. (v) Nil. (vi) T-143. (vii) Unirrigated. (viii) 1 weeding. (ix) 29.41". (x) 31.10.1954 to 2.11.1954.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 3 levels of N as A/S : N<sub>0</sub>=0, N<sub>1</sub>=25 and N<sub>2</sub>=50 lb./ac.

(2) 3 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0, P<sub>1</sub>=50 and P<sub>2</sub>=100 lb./ac.

N and P applied on 6.7.1954 and 22 to 24.7.1954.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) and (b) 33'×33'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Satisfactory. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1954 only. (b) No. (c) Nil. (v) (a) Atarra. (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1607 lb./ac. (ii) 133.2 lb./ac. (iii) All effects are highly significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	1147	1413	1627	1396
N <sub>1</sub>	1347	1740	1827	1638
N <sub>2</sub>	1313	1887	2160	1787
Mean	1269	1680	1871	1607

S.E. of any marginal mean = 31.4 lb./ac.

S.E. of body of table = 54.4 lb./ac.

**Crop :- Paddy (Kharif).****Ref :- U.P. 58(383).****Site :- Usar Reclamation Farm, Chakeri.****Type :- 'M'.**

Object :- To study the residual effect of N, P and K applied to previous crop on Paddy.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Vegetable. (c) As per treatments. (ii) (a) Saline alkaline soil. (b) Refer soil analysis, Chakeri. (iii) to (ix) N.A. (x) 8, 9.11.1958.

**2. TREATMENTS :**

All combinations of (1), (2) and (3):

(1) 2 levels of N as A/S/N :  $N_0=0$  and  $N_1=30$  lb./ac.(2) 2 levels of  $P_2O_5$  as Super :  $P_0=0$  and  $P_1=40$  lb./ac.(3) 2 levels of  $K_2O$  as Mur. Pot. :  $K_0=0$  and  $K_1=60$  lb./ac.

Fertilizers applied to previous crop.

**3. DESIGN :**(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) and (b)  $45' \times 24'$ . (v) Nil. (vi) Yes.**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1958-1959. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 930 lb./ac. (ii) 220.5 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	Mean	$K_0$	$K_1$
$N_0$	923	902	912	943	882
$N_1$	1074	821	947	1011	882
Mean	998	861	930	978	882
$K_0$	1059	897			
$K_1$	938	826			

S.E. of any marginal mean

-- 57.1 lb. ac.

S.E. of body of any table

-- 77.9 lb. ac.

**Crop :- Paddy (Kharif).****Ref :- U.P. 57(345).****Site :- Instt. of Crop Physiology, Dilkusha.****Type :- 'M'.**

Object :- To study the effect of trace elements on the yield of Paddy.

**1. BASAL CONDITIONS :**

(i) (a) Paddy-Potato. (b) Potato. (c) N.A. (ii) Light sandy (b) Refer soil analysis, Dilkusha. (ii) N.A./16, 18.7.1957. (iv) (a) N.A. (b) Transplanting. (c) and (d) N.A. (e) 2. (v) N.A. (vi) T-136. (vii) Unirrigated. (viii) and (ix) N.A. (x) 30.9.1957.

**2. TREATMENTS :**

All combinations of (1), (2) and (3):

(1) 2 levels of Boron as Boric acid :  $B_0=0$  and  $B_1=1$  lb. ac.(2) 2 levels of Copper as C.S. :  $C_0=0$  and  $C_1=2$  lb./ac.(3) 2 levels of Manganese as  $MnSO_4$  :  $M_0=0$  and  $M_1=3$  lb./ac.

Trace elements applied on 6, 7.7.1957.

**3. DESIGN :**(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 3. (iv) (a) N.A. (b)  $21.5' \times 9'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1957—N.A. (b) No. (c) Nil. (v) to (vii) N.A.

## 5. RESULTS :

(i) 2306 lb./ac. (ii) 381.1 lb./ac. (iii) None of the effects is significant (iv) Av. yield of grain in lb./ac.

	C <sub>0</sub>	C <sub>1</sub>	Mean	M <sub>0</sub>	M <sub>1</sub>
B <sub>0</sub>	2114	2402	2258	2056	2460
B <sub>1</sub>	2258	2450	2354	2364	2344
Mean	2186	2426	2306	2210	2402
M <sub>0</sub>	2055	2365			
M <sub>1</sub>	2316	2489			

S.E. of any marginal mean = 110.0 lb./ac.  
S.E. of body of any table = 155.6 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 58(299).**

**Site :- Instt. of Crop Physiology, Dilkusha.**

**Type :- 'M'.**

Object :- To study the effect of trace elements on the yield of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Potato. (c) Nil. (ii) (a) Light loam. (b) Refer soil analysis, Dilkusha. (iii) 18.5.1958/15 to 17.7.1958. (iv) (a) 3 to 4 ploughings. (b) Transplanting. (c) N.A. (d) 9"×6". (e) 2. (v) 150 mcs./ac. of F.Y.M. (vi) T—136 (early). (vii) Irrigated. (viii) and (ix) N.A. (x) 29, 30.9.1958.

## 2. TREATMENTS :

12 trace element treatments : T<sub>0</sub>=Control, T<sub>1</sub>=B as Boric acid at 50 p.p.m., T<sub>2</sub>=Cu as C/S at 50 p.p.m., T<sub>3</sub>=Mn. as MnSO<sub>4</sub> at 100 p.p.m., T<sub>4</sub>=Zn as ZnSO<sub>4</sub> at 100 p.p.m., T<sub>5</sub>=T<sub>1</sub>+T<sub>2</sub>, T<sub>6</sub>=T<sub>1</sub>+T<sub>3</sub>, T<sub>7</sub>=T<sub>1</sub>+T<sub>4</sub>, T<sub>8</sub>=T<sub>2</sub>+T<sub>3</sub>, T<sub>9</sub>=T<sub>2</sub>+T<sub>4</sub>, T<sub>10</sub>=T<sub>3</sub>+T<sub>4</sub> and T<sub>11</sub>=T<sub>1</sub>+T<sub>2</sub>+T<sub>3</sub>.

Elements sprayed one month after transplanting.

## 3. DESIGN .

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 3. (iv) (a) 26'×13.25'. (b) 24'×11.25'. (v) 1'×1'. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Attack of *gundhi* bug. (iii) Yield of grain and straw. (iv) (a) 1958—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1724 lb./ac. (ii) 362.2 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	T <sub>5</sub>	T <sub>6</sub>	T <sub>7</sub>	T <sub>8</sub>	T <sub>9</sub>	T <sub>10</sub>	T <sub>11</sub>
Av. yield	1023	1521	1272	1756	2102	1300	2116	1618	1632	2116	2047	2185

S.E./mean = 209.1 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 59(337).**

**Site :- Instt. of Crop Physiology, Dilkusha.**

**Type :- 'M'.**

Object :- To study the effect of trace elements on the yield of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Potato+Onion. (c) N.A. (ii) (a) Light sandy loam. (b) Refer soil analysis, Dilkusha. (iii) N.A./6.7.1959. (iv) (a) 1 harrowing, 3 ploughings and 1 planking. (b) Transplanting. (c) N.A. (d) 9" × 6". (e) N.A. (v) N.A. (vi) T—136. (vii) Irrigated. (viii) 2 hoeings and 1 weeding. (ix) N.A. (x) 18.9.1959.

## 2. TREATMENTS :

Same as in expt. no. 58(299) on page 11.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 18.5' × 10.5'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Slight attack of *gundhi* bug. (iii) Yield of grain and straw. (iv) (a) 1959—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 2167 lb./ac. (ii) 298.9 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	T <sub>5</sub>	T <sub>6</sub>	T <sub>7</sub>	T <sub>8</sub>	T <sub>9</sub>	T <sub>10</sub>	T <sub>11</sub>
Av. yield	2230	2268	2237	2153	2480	1845	2403	2172	2326	1691	2018	2134

S.E./mean = 172.6 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 58(301).**

**Site :- Instt. of Crop Physiology, Dilkusha.**

**Type :- 'M'.**

Object :—To study the effect of F.Y.M., A/S and Super on the yield of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Wheat—*Berseem*. (c) N.A. (ii) (a) Light sandy loam. (b) Refer soil analysis, Dilkusha. (iii) N.A./28.6.1958. (iv) (a) 3 ploughings and 1 planking. (b) Transplanting. (c) N.A. (d) 9" × 6". (e) 2. (v) N.A. (vi) T—136 (early). (vii) Unirrigated. (viii) and (ix) N.A. (x) 28.9.1958.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0 and P<sub>1</sub>=50 lb./ac.

(2) 4 sources of 60 lb./ac. of N : S<sub>0</sub>=Control (no N application), S<sub>1</sub>=F.Y.M., S<sub>2</sub>=A/S and S<sub>3</sub>=½ as A/S + ½ as F.Y.M.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 3. (iv) (a) 12' × 25'. (b) 11' × 24'. (v) ½' × ½'. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Attack of *gundhi* bug. (iii) Yield of grain and straw. (iv) (a) 1958—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1766 lb./ac. (ii) 291.2 lb./ac. (iii) Main effect of S alone is highly significant. (iv) Av. yield of grain in lb./ac.

	S <sub>0</sub>	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean
P <sub>0</sub>	1358	1584	1711	2206	1715
P <sub>1</sub>	1414	1740	1810	2305	1817
Mean	1386	1662	1760	2255	1766

S.E. of P marginal mean	= 84.1 lb./ac.
S.E. of S marginal mean	= 118.9 lb./ac.
S.E. of body of table	= 168.1 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 59(334).**

**Site :- Instt. of Crop Physiology, Dilkusha.**

**Type :- 'M'.**

Object :—To study the effect of F.Y.M., A/S and Super on the yield of Paddy.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Potato. (c) N.A. (ii) (a) Light sandy loam. (b) Refer soil analysis, Dilkusha. (iii) N.A./7.7.1959. (iv) (a) 4 ploughings and 4 plankings. (b) Transplanting. (c) N.A. (d) 9"×6". (e) N.A. (v) Nil. (vi) T—136. (vii) Irrigated. (viii) 3 hoeings and 1 weeding. (ix) N.A. (x) 19.9.1959.

**2. TREATMENTS :**

Same as in expt. no. 58(301) on page 12.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 25'×18.5'. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Slight attack of *gundhi* bug. (iii) Yield of grain and straw. (iv) (a) 1959—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1872 lb./ac. (ii) 181.3 lb./ac. (iii) Main effect of S alone is highly significant. (iv) Av. yield of grain in lb./ac.

	S <sub>0</sub>	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean
P <sub>0</sub>	1461	1679	1913	2164	1804
P <sub>1</sub>	1493	1921	1970	2373	1939
Mean	1477	1800	1942	2268	1872

S.E. of P marginal mean	= 60.4 lb./ac.
S.E. of S marginal mean	= 74.0 lb./ac.
S.E. of body of table	= 104.7 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 55(180).**

**Site :- Govt. Agri. Farm, Faizabad.**

**Type :- 'M'.**

Object :—To study the residual effect of N and P applied to previous wheat crop on Paddy.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Wheat. (c) As per treatments. (ii) (a) Clay loam. (b) Refer soil analysis, Faizabad. (iii) N.A./18.7.1955. (iv) (a) 4 ploughings and 1 planking. (b) Transplanting. (c) to (e) N.A. (v) 25 lb./ac. of N as A/S on 4.8.1955. (vi) N—22 (early). (vii) Nil. (viii) 1 weeding. (ix) 48.3". (x) 4, 5.10.1955.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=30 and N<sub>2</sub>=60 lb./ac.

(2) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=60 and P<sub>2</sub>=120 lb./ac.

Fertilizers applied to previous wheat crop.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) and (b) 36' × 24'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Incidence of *makhi* and *gundhi* bug. Hexamane sprayed twice. (iii) Yield of grain and straw. (iv) (a) 1955—1957. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1278 lb./ac. (ii) 95.5 lb./ac. (iii) Main effect of P alone is highly significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	1166	1222	1498	1295
N <sub>1</sub>	1106	1237	1448	1264
N <sub>2</sub>	1111	1245	1473	1276
Mean	1128	1235	1473	1278

S.E. of any marginal mean = 22.5 lb./ac.

S.E. of body of table = 39.0 lb./ac.

**Crop :- Paddy (*Kharif*).**

**Ref :- U.P. 56(156).**

**Site :- Govt. Agri. Farm, Faizabad.**

**Type :- 'M'.**

Object :—To study the residual effect of N and P applied to previous wheat crop on Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) As per treatments. (ii) (a) Clay loam. (b) Refer soil analysis, Faizabad. (iii) N.A./22 and 23.7.1956. (iv) (a) 5 ploughings. (b) Transplanting (c) to (e) N.A. (v) 25 lb./ac. of N as A/S applied on 14.8.1956. (vi) T-137 (late). (vii) Irrigated. (viii) N.A. (ix) 23.0". (x) N.A.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=20 and N<sub>2</sub>=40 lb./ac.

(2) 4 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=20, P<sub>2</sub>=40 and P<sub>3</sub>=60 lb./ac.

Fertilizers applied to previous wheat crop.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) and (b) 26' × 42'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1955—1957. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1577 lb./ac. (ii) 138.41 lb./ac. (iii) Main effect of P alone is highly significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	Mean
N <sub>0</sub>	1463	1531	1476	1745	1554
N <sub>1</sub>	1507	1516	1513	1693	1557
N <sub>2</sub>	1587	1588	1611	1639	1619
Mean	1519	1545	1533	1709	1577

S.E. of N marginal mean	= 34.6 lb./ac.
S.E. of P marginal mean	= 39.9 lb./ac.
S.E. of body of table	= 69.2 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 57(247).**

**Site :- Govt. Agri. Farm, Faizabad.**

**Type :- 'M'.**

**Object :-**To study the residual effect of N and P applied to previous wheat crop on Paddy.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Wheat. (c) As per treatments. (ii) (a) Clay loam. (b) Refer soil analysis, Faizabad. (iii) N.A./28, 29.7.1957. (iv) 5 ploughings. (b) Transplanting. (c) to (e) N.A. (v) 20 lb./ac. of N as A/S. (vi) 32 (early). (vii) Unirrigated. (viii) N.A. (ix) 16.31". (x) 7.10.1957.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 3 levels of N :  $N_0=0$ ,  $N_1=20$  and  $N_2=40$  lb./ac.

(2) 4 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=20$ ,  $P_2=40$  and  $P_3=60$  lb./ac.

Fertilizers applied to previous wheat crop.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) and (b) 42' x 24'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1955—1957. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1024 lb./ac. (ii) 171.8 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	$P_2$	$P_3$	Mean
$N_0$	1052	1093	892	1007	1011
$N_1$	990	969	1097	1018	1018
$N_2$	1103	1120	882	1063	1042
Mean	1048	1061	957	1029	1024

S.E. of N marginal mean = 42.9 lb./ac.

S.E. of P marginal mean = 49.6 lb./ac.

S.E. of body of table = 85.9 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 54(114).**

**Site :- Govt. Agri. Farm, Faizabad.**

**Type :- 'M'.**

**Object :-**To study the effect of different levels of trace elements on the yield of Paddy.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, Faizabad. (iii) N.A./26.7.1954. (iv) (a) N.A. (b) Transplanting. (c) to (e) N.A. (v) G.M.+30 lb./ac. of N as A/S/+30 lb./ac. of  $P_2O_5$  as Super +15 lb./ac. of  $K_2O$  as Pot. Sul.+15 lb./ac. of CaO as gypsum. (vi) T—136. (vii) Irrigated. (viii) 3 to 4 interculturings by hand hoes and weedings. (ix) N.A. (x) 4 to 6.10.1954.



## 2. TREATMENTS :

10 trace element treatments :  $T_0$ =Control (3 plots),  $T_1$ =3 lb./ac. of Cu,  $T_2$ =6 lb./ac. of Cu,  $T_3$ =12 lb./ac. of Cu,  $T_4$ =1 lb./ac. of B,  $T_5$ =2 lb./ac. of B,  $T_6$ =4 lb./ac. of B,  $T_7$ =1 lb./ac. of Zn,  $T_8$ =4 lb./ac. of Zn and  $T_9$ =10 lb./ac. of Zn.

Cu as C/S, B as Borax and Zn as  $ZnSO_4$  were applied as surface dressing mixed with fine dry earth or sand, 2 days before transplanting.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 3. (iv) (a) 28'×37'. (b) 25'×34'. (v) 1½'×1½' (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Attack of *gundhi* bug. (iii) Yield of grain. (iv) (a) 1954—contd. (b) No. (c) Nil. (v) (a) Conducted at many centres. (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1535 lb./ac. (ii) 53.5 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$T_0$	$T_1$	$T_2$	$T_3$	$T_4$	$T_5$	$T_6$	$T_7$	$T_8$	$T_9$
Av. yield	1472	1318	1638	1195	1529	1573	1845	1366	1735	1805
	S.E./mean (excluding $T_0$ ) = 30.9 lb./ac.									
	S.E. of $T_0$ mean = 17.8 lb./ac.									

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 55(107).**

**Site :- Govt. Agri. Farm, Faizabad.**

**Type :- 'M'.**

Object :—To study the effect of different levels of trace elements on the yield of Paddy.

## 1. BASAL CONDITIONS :

(i) Paddy—*Berseem*. (b) *Berseem*. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, Faizabad. (iii) N.A./15.7.1955. (iv) (a) N.A. (b) Transplanting. (c) to (e) N.A. (v) N.A. (vi) N—22. (vii) Irrigated. (viii) and (ix) N.A. (x) 9 to 11.10.1955.

## 2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 54(114) on page 16.

## 4. GENERAL :

(i) N.A. (ii) Slight attack of *gundhi* bug. Gammexane dusted. (iii) Yield of grain and straw. (iv) (a) 1954—contd. (b) No. (c) Nil. (v) (a) Conducted at many centres. (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 2453 lb./ac. (ii) 59.3 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$T_0$	$T_1$	$T_2$	$T_3$	$T_4$	$T_5$	$T_6$	$T_7$	$T_8$	$T_9$
Av. yield	2546	2001	2475	2431	2519	2458	2475	2475	2475	2492
	S.E./mean (excluding $T_0$ ) = 34.2 lb./ac.									
	S.E. of $T_0$ mean = 19.8 lb./ac.									

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 58(372).**

**Site :- Govt. Agri. Farm, Faizabad.**

**Type :- 'M'.**

Object :—To study the residual effect of N, P and K applied to previous crop on Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) As per treatments. (ii) (a) Light loam. (b) Refer soil analysis, Faizabad. (iii) N.A./8.7.1958. (iv) (a) 2 ploughings by *sabash* plough, 1 cross ploughing by cultivator and planking. (b) Transplanting. (c) to (e) N.A. (v) 25 lb./ac. of N as A/S. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) 49.64". (x) 13.9.1958.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

- (1) 2 levels of N :  $N_0=0$  and  $N_1=30$  lb./ac.  
 (2) 2 levels of  $P_2O_5$  :  $P_0=0$  and  $P_1=40$  lb./ac.  
 (3) 2 levels of  $K_2O$  :  $K_0=0$  and  $K_1=60$  lb./ac.

Fertilizers applied to previous wheat crop.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) and (b)  $45' \times 23'$ . (v) Nil. (vi) Yes.

## 4. GENERAL ;

(i) Fair. (ii) Attack of *gundhi* bug. Gammexane dusting twice and 5% B.H.C. was sprayed twice. (iii) Yield of grain and straw. (iv) (a) 1958—only. (b) No. (c) Nil. (v) (a) Tissuhi and Varanasi. (b) Nil (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1703 lb./ac. (ii) 438.3 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	Mean	$K_0$	$K_1$
$N_0$	1832	1560	1696	1803	1589
$N_1$	1720	1700	1710	1647	1773
Mean	1776	1630	1703	1725	1681
$K_0$	1757	1693			
$K_1$	1795	1567			

S.E. of any marginal mean = 109.6 lb./ac.  
 S.E. of body of any table = 155.0 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 54(98).**

**Site :- Govt. Agri. Farm, Faizabad.**

**Type :- 'M'.**

Object :—To study the effects of N, P and Calcium on the yield of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Faizabad. (iii) 6.7.1954. (iv) (a) N.A. (b) Transplanting. (c) 8 to 10 srs./ac. (d) and (e) N.A. (v) Green manuring. (vi) T-136. (vii) Irrigated. (viii) and (ix) N.A. (x) 30.9.1954 to 2.10.1954.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

- (1) 2 levels of N as A/S :  $N_0=0$  and  $N_1=75$  lb./ac.  
 (2) 2 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=60$  lb./ac.  
 (3) 2 levels of CaO as gypsum :  $C_0=0$ ,  $C_1=90$  lb./ac.

Super applied by placement 3" to 4" deep in soil behind the plough, gypsum as surface dressing, 1 to 2 days before transplanting and A/S as top dressing 2 weeks after transplanting.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a)  $41' \times 28'$ . (b)  $38' \times 25'$ . (v)  $1\frac{1}{2}' \times 1\frac{1}{2}'$ . (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Attack of *gundhi* bug. (iii) Yield of grain. (iv) (a) 1954—N.A. (b) No. (c) Nil. (v) (a) Conducted at many centres. (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1379 lb./ac. (ii) 56.3 lb./ac. (iii) All effects are highly significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	C <sub>0</sub>	C <sub>1</sub>
N <sub>0</sub>	1636	1518	1577	1512	1642
N <sub>1</sub>	1353	1008	1181	1400	961
Mean	1494	1263	1379	1456	1301
C <sub>0</sub>	1657	1256			
C <sub>1</sub>	1332	1270			

S.E. of any marginal mean = 14.1 lb./ac.

S.E. of body of any table = 19.9 lb./ac.

**Crop :- Paddy (Kharif).****Ref :- U.P. 58(14).****Site :- Reg. Res. Stn., Hardoi.****Type :- 'M'.**

Object :—To study the effect of P and different sources of N on the yield of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Hardoi. (iii) 11 to 13.8.1958. (iv) to (vi) N.A. (ix) 31.86%. (annual). (x) 29, 30.11.1958 and 1.12.1958.

## 2. TREATMENTS :

**Main-plot treatments :**

All combinations of (1) and (2) + Control (3 plots).

(1) 3 sources of 18 lb./ac. of N : S<sub>1</sub>=A/S, S<sub>2</sub>=Urea and S<sub>3</sub>=A/S/N.(2) 3 methods of application of N : M<sub>1</sub>=Basal dressing, M<sub>2</sub>=Top dressing and M<sub>3</sub>=½ as basal dressing + ½ as top dressing.**Sub-plot treatments :**2 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0 and P<sub>1</sub>=18 lb./ac.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 12 main-plots/replication ; 2 sub-plots/main-plot. (b) Nil. (iii) 2. (iv) (a) N.A. (b) 50' × 16'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) 1958—only. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1006 lb./ac. (ii) (a) 339.6 lb./ac. (b) 523.1 lb./ac. (iii) Only S × P interaction is significant. (iv) Av. yield of grain in lb./ac.

Control (P<sub>0</sub>+P<sub>1</sub>) = 930 lb./ac.

	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>
S <sub>1</sub>	1249	819	1052	1040	730	1350
S <sub>2</sub>	1607	920	980	1169	1191	1147
S <sub>3</sub>	824	1209	1083	1039	1397	681
Mean	1227	983	1038	1083	1106	1059
P <sub>0</sub>	1475	737	1106			
P <sub>1</sub>	979	1229	970			

## S.E. of difference of two

1. S or M marginal means	= 138.6 lb./ac.
2. P marginal means	= 174.4 lb./ac.
3. P means at the same level of S or M	= 302.0 lb./ac.
4. S or M means at the same level of P	= 254.6 lb./ac.
S.E. of body of S×M table	= 169.8 lb./ac.

**Crop :- Paddy (Kharif).****Ref :- U.P. 54(188)****Site :- State Mechanised Farm, Hempur.****Type :- 'M'.**

Object :—To study the effect of N and P on the yield of Paddy.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Wheat. (c) Nil. (ii) (a) *Dumat* loam. (b) Refer soil analysis, Hempur. (iii) 24.7.1954. (iv) (a) Ploughing and harrowing by tractor. (b) Broadcast. (c) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) 3 weedings. (ix) 46.24". (x) 2, 3.11.1954.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 3 levels of N as A/S :  $N_0=0$ ,  $N_1=25$  and  $N_2=50$  lb./ac.(2) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=50$  and  $P_2=100$  lb./ac.

N broadcast and Super applied in furrows behind the Victory plough on 24.6.1954.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 9. (b) 49.5'×222'. (iii) 6. (iv) (a) and (b) 49.5'×22'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1954 only. (b) No. (c) Nil. (a) Conducted at many centres. (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 2341 lb./ac. (ii) 236.5 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	$P_2$	Mean
$N_0$	2127	2387	2393	2302
$N_1$	2413	2453	2367	2411
$N_2$	2347	2167	2413	2309
Mean	2296	2336	2391	2341

S.E. of any marginal mean = 55.7 lb./ac.

S.E. of body of table = 96.6 lb./ac.

**Crop :- Paddy (Kharif).****Ref :- U.P. 56(199).****Site :- Govt. Agri. Farm, Kalai.****Type :- 'M'.**

Object :—To study the effect of N, P and Calcium on the yield of Paddy.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Wheat and Gram. (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kalai. (iii) N.A./10 and 11.7.1956. (iv) (a) 3 ploughings. (b) Transplanting. (c) to (e) N.A. (v) 100 mds./ac. of F.Y.M. (vi) T—9. (vii) Irrigated. (viii) and (ix) N.A. (x) 28, 29.11.1956.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 2 levels of N as A/S :  $N_0=0$  and  $N_1=75$  lb./ac.

(2) 2 levels of  $P_2O_5$  as Super :  $P_0=0$  and  $P_1=60$  lb./ac.

(3) 2 level of CaO as gypsum :  $C_0=0$  and  $C_1=90$  lb./ac.

N applied at transplanting and at tillreing in equal doses,  $P_2O_5$  by placement 3" to 4" deep in soil behind the plough and CaO as surface dressing 1 to 2 days before transplanting.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a)  $41' \times 28'$ . (b)  $38' \times 25'$ . (v)  $1\frac{1}{2}' \times 1\frac{1}{2}'$ . (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1956—N.A. (b) No. (c) Nil. (v) (a) Conducted at many centres. (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1718 lb./ac. (ii) 121.0 lb./ac. (iii) Main effect of C, interaction  $N \times P$ ,  $P \times C$  are highly significant and intraction  $N \times C$  is significant. (iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	Mean	$C_0$	$C_1$
$N_0$	1683	1779	1731	1590	1872
$N_1$	1781	1630	1705	1661	1749
Mean	1732	1704	1718	1625	1810
$C_0$	1579	1672			
$C_1$	1885	1736			

S.E. of any marginal mean = 30.2 lb./ac.

S.E. of body of any table = 42.8 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 55(116).**

**Site :- Govt. Agri. Res. Farm, Kalianpur.**

**Type :- 'M'.**

Object :—To study the effect of N, P and Calcium on the yield of Paddy.

**1. BASAL CONDITIONS :**

(i) (a) Paddy—Pea. (b) Pea. (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Kalianpur. (iii) N.A. (iv) (a) 5 ploughings. (b) to (e) N.A. (v) 100 mds./ac. of F.Y.M. (vi) T—9. (vii) Irrigated. (viii) and (ix) N.A. (x) 3, 4.12.1955.

**2. TREATMENTS and 3. DESIGN :**

Same as in expt. no. 56(199) on page 19.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1955—N.A. (b) No. (c) Nil. (v) (a) Conducted at many centres. (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 2348 lb./ac. (ii) 220.5 lb./ac. (iii) Only main effect of N is highly significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	C <sub>0</sub>	C <sub>1</sub>
N <sub>0</sub>	2818	2848	2833	2830	2836
N <sub>1</sub>	1798	1928	1863	1786	1940
Mean	2308	2388	2348	2308	2388
C <sub>0</sub>	2228	2388			
C <sub>1</sub>	2388	2388			

S.E. of any marginal mean = 55.1 lb./ac.  
S.E. of body of any table = 78.0 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 56(197).**

**Site :- Govt. Agri. Res. Farm, Kalianpur.**

**Type :- 'M'.**

Object :- To study the effect of N, P and Calcium on the yield of Paddy.

**1. BASAL CONDITIONS :**

(i) (a) Paddy—Pea. (b) Pea. (c) N.A. (ii) (a) Heavy loam. (b) Refer soil analysis, Kalianpur. (iii) N.A./3.8.1956. (iv) (a) 3 ploughings. (b) Transplanting. (c) to (e) N.A. (v) 100 mds./ac. of F.Y.M. (vi) T—9. (vii) Irrigated. (viii) and (ix) N.A. (x) 17.12.1956.

**2. TREATMENTS and 3. DESIGN :**

Same as in expt. no. 56(199) on page 19.

**4. GENERAL :**

(i) N.A. (ii) Nil. (iii) Yield of grain. (iv) (a) 1955—N.A. (b) No. (c) Nil. (v) (a) Conducted at many centres. (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 3004 lb./ac. (ii) 233.7 lb./ac. (iii) Main effect of P alone is highly significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	C <sub>0</sub>	C <sub>1</sub>
N <sub>0</sub>	2963	3114	3038	3081	2996
N <sub>1</sub>	2741	3198	2969	3058	2881
Mean	2852	3156	3004	3069	2939
C <sub>0</sub>	2897	3241			
C <sub>1</sub>	2808	3070			

S.E. of any marginal mean = 58.4 lb./ac.  
S.E. of body of any table = 82.6 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 55(120).**

**Site :- Govt. Agri. Res. Farm, Kalianpur.**

**Type :- 'M'.**

Object :- To study the effect of soaking seeds in nutrient solutions on the yield of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Paddy—Pea. (b) Pea. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, Kalianpur. (iii) July, 1955. (iv) (a) 2 ploughings with watts and Punjab plough each and cultivator once. (b) Behind the plough. (c) 30 srs./ac. (d) and (e) N.A. (v) 100 mds./ac. of F.Y.M.+20 lb./ac. of N as A/S+30 lb./ac. of  $P_2O_5$  as Super+20 lb./ac. of  $K_2O$  as Pot. Sul. (vi) T—21. (vii) Irrigated. (viii) to (x) N.A.

## 2. TREATMENTS :

8 nutrient solutions for soaking seeds :  $S_0$ =Unsoaked (dry),  $S_1$ =Water,  $S_2$ =Potassium di-hydrogen phosphate (0.5%),  $S_3$ =Sodium chloride (5.0%),  $S_4$ =Boric acid (0.1%),  $S_5$ =C/S (0.2%),  $S_6$ =Zn. Sul. (0.2%) and  $S_7$ =A/S (1.0%).

Salt solution of given concentration is prepared in water 1 to 2 days before sowing. Seed is allowed to soak in the solution for 18 hours and dried in shade before sowing.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a)  $41' \times 25'$ . (b)  $38' \times 22'$ . (v)  $1\frac{1}{2}' \times 1\frac{1}{2}'$ . (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Attack of *gundhi* bug was observed. (iii) Yield of grain. (iv) (a) 1955—N.A. (b) No (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 3079 lb./ac. (ii) 162.0 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$S_0$	$S_1$	$S_2$	$S_3$	$S_4$	$S_5$	$S_6$	$S_7$
Av. yield	3293	2951	3323	3041	2985	3323	2780	2934

S.E./mean = 81.0 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 56(163).**

**Site :- Govt. Agri. Res. Farm, Kalianpur.**

**Type :- 'M'.**

Object :—To study the effect of soaking seeds in nutrient solutions on the yield of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Paddy—Pea, (b) Pea. (c) N.A. (ii) (a) Heavy loam. (b) Refer soil analysis, Kalianpur. (iii) 24.7.1956. (iv) (a) 2 ploughings with watts plough and planking after each ploughing. (b) Behind the plough. (c) 20 srs./ac. (d) and (e) N.A. (v) 100 mds./ac. of F.Y.M.+20 lb./ac. of N as A/S+30 lb./ac. of  $P_2O_5$  as Super+20 lb./ac. of  $K_2O$  as Pot. Sul. (vi) T—21. (vii) Irrigated (viii) and (ix) N.A. (A) 7.11.1956.

## 2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 55(120) on page 21.

## 5. RESULTS :

(i) 3329 lb./ac. (ii) 248.5 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$S_0$	$S_1$	$S_2$	$S_3$	$S_4$	$S_5$	$S_6$	$S_7$
Av. yield	3376	3189	3430	3108	3591	3323	3376	3242

S.E./mean = 124.2 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 58(259).**

**Site :- New Dairy Farm, Kalianpur.**

**Type :- 'M'.**

Object :—To study the effect of split application of N on Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Pea. (c) N.A. (ii) (a) Loamy. (b) Refer soil analysis, Kalianpur. (iii) N.A./24, 25.7.1958. (iv) (a) 1 ploughing. (b) Transplanting. (c) N.A. (d) 9"×9". (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) 2 weedings. (ix) 23.47". (x) 23.11.1958.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 levels of N :  $N_1=30$  and  $N_2=60$  lb./ac.

(2) 4 methods of application of N :  $M_1=In$  2 instalments after 10 and 70 days of transplanting,  $M_2=In$  3 instalments after 10, 40 and 70 days of transplanting,  $M_3=In$  4 instalments after 10, 30, 50 and 70 days of transplanting and  $M_4=In$  7 instalments after 10, 20, 30, 40, 50, 60 and 70 days of transplanting.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 30'×22'. (b) 27'×20.2'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good growth. (ii) Attack of rice *fundhi* bug and stem-borer. (iii) Height of shoots, number of tillers and yield of grain. (iv) (a) 1958—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 2721 lb./ac. (ii) 144.2 lb./ac. (iii) Main effect of N is highly significant and S effect is significant. (iv) Av. yield of grain in lb./ac.

	$M_1$	$M_2$	$M_3$	$M_4$	Mean
$N_1$	2520	2613	2697	2684	2629
$N_2$	2702	2844	2728	2975	2812
Mean	2611	2729	2713	2830	2721

S.E. of N marginal mean = 36.1 lb./ac.

S.E. of M marginal mean = 51.0 lb./ac.

S.E. of body of table = 72.1 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 58(267).**

**Site :- New Dairy Farm, Kalianpur.**

**Type :- 'M'.**

Object :—To study the effect of different levels of N and P on Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Pea. (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kalianpur. (iii) 27.8.1958. (iv) (a) Ploughings. (b) Transplanting. (c) N.A. (d) 9"×9". (e) 1. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) 2 weedings. (ix) 20.4". (x) 24, 25.11.1958.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 6 levels of N as A/S :  $N_0=0$ ,  $N_1=20$ ,  $N_2=40$ ,  $N_3=60$ ,  $N_4=80$  and  $N_5=100$  lb./ac.

(2) 6 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=20$ ,  $P_2=40$ ,  $P_3=60$ ,  $P_4=80$  and  $P_5=100$  lb./ac.

Super applied in single dose by placement at plough sole and  $\frac{1}{2}$  A/S in open furrows along with Super on 27.7.1958.  $\frac{1}{2}$  of A/S mixed with 5 parts of soil and applied as top dressing on 3.9.1958.

## 3. DESIGN ;

(i) R.B.D. (ii) (a) 36. (b) N.A. (iii) 2. (iv) (a) and (b) 18'×35'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Height of shoot, number of tillers and yield of grain. (iv) (a) 1958—N.A. (b) No. (c) Nil. (v) to (vii) Nil.



## 5. RESULTS :

(i) 2303 lb./ac. (ii) 146.5 lb./ac. (iii) Main effect of N is highly significant and interaction  $N \times P$  is significant. (iv) Av. yield of grain in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	N <sub>4</sub>	N <sub>5</sub>	Mean
P <sub>0</sub>	1345	2386	2651	2488	2553	2157	2263
P <sub>1</sub>	1844	2345	2432	2525	2325	2144	2269
P <sub>2</sub>	1692	2155	2357	2775	2219	2223	2237
P <sub>3</sub>	1963	1964	2559	2780	2372	2459	2351
P <sub>4</sub>	2011	2283	2598	2626	2403	2203	2354
P <sub>5</sub>	2081	2325	2652	2557	2406	2034	2342
Mean	1823	2243	2541	2625	2380	2205	2303

S.E. of any marginal mean = 42.3 lb./ac.

S.E. of body of table = 103.6 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 58(310).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'M'.**

Object :—T study the effect of G.M. crops grown in previous season on Paddy.

## 1. BASAL CONDITIONS :

(i) (a) and (b) As per treatments. (c) N.A. (ii) (a) Alluvial loam. (b) Refer soil analysis, Kanpur. (iii) N.A./21.7.1958. (iv) (a) N.A. (b) Transplanting. (c) to (e) N.A. (v) N.A. (vi) T-9 (late). (vii) to (x) N.A.

## 2. TREATMENTS :

**Main-plot treatments :**

5 G.M. crops grown in the previous season : G<sub>0</sub>=Fallow, G<sub>1</sub>=Berseem, G<sub>2</sub>=Metha, G<sub>3</sub>=Chatrimari and G<sub>4</sub>=Hubbam clover.

**Sub-plot treatments :**

2 manurial treatments : M<sub>0</sub>=Previous G.M. crop harvested for seed and M<sub>1</sub>=Previous G.M. crop turned in the soil.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 5 main-plots/replication ; 2 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) and (b) 56' × 13'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (vi) (a) 1958—contd. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1501 lb./ac. (ii) (a) 158.6 lb./ac. (b) 129.3 lb./ac. (iii) Main effect of G alone is significant. (iv) Av. yield of grain in lb./ac.

	G <sub>0</sub>	G <sub>1</sub>	G <sub>2</sub>	G <sub>3</sub>	G <sub>4</sub>	Mean
M <sub>0</sub>	—	1410	1437	1555	1585	1497
M <sub>1</sub>	—	1445	1436	1684	1633	1550
Mean	1411	1428	1436	1620	1609	—

S.E. of difference of two

1. G marginal means = 79.3 lb./ac.

2. M marginal means = 45.7 lb./ac.

3. M means at the same level of G = 91.4 lb./ac.

4. G means at the same level of M = 102.3 lb./ac.

**Crop :- Paddy (Kharif).****Ref :- U.P. 59(339).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'M'.**

Object :—To study the effect of G M. crops grown in previous season on Paddy.

**1. BASAL CONDITIONS :**

(i) (a) and (b) As per treatments. (c) N.A. (ii) (a) Alluvial loam. (b) Refer soil analysis, Kanpur. (iii) N.A./27.7.1959. (iv) (a) N.A. (b) Transplanting. (c) to (e) N.A. (v) N.A. (vi) T—9 (late). (vii) to (ix) N.A. (x) 30.11.1959.

**2. TREATMENTS :****Main-plot treatments :**6 G.M. crops grown in the previous season :  $G_0$ =Fallow,  $G_1$ =Berseem,  $G_2$ =Metha,  $G_3$ =Chatrimatri,  $G_4$ =Hubbam clover and  $G_5$ =Pea.**Sub-plot treatments :**2 manurial treatments :  $M_0$ =Previous G.M. crops harvested for seed and  $M_1$ =Previous G.M. crops turned in the soil.**3. DESIGN :**

(i) Split-plot. (ii) (a) 6 main-plots/replication ; 2 sub-plots/main-plot. (b) 56.5' × 76'. (iii) 4. (iv) (a) and (b) 56.5' × 11'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1958—contd. (b) No. (c) Nil. (v) to (v) Nil.

**5. RESULTS :**

(i) 1492 lb./ac. (ii) (a) 141.6 lb./ac. (b) 78.8 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	$G_0$	$G_1$	$G_2$	$G_3$	$G_4$	$G_5$	Mean
$M_0$	—	1441	1580	1468	1487	1503	1496
$M_1$	—	1476	1483	1630	1537	1537	1533
Mean	1383	1458	1532	1549	1512	1520	—

S.E. of difference of two

- |                                    |                |
|------------------------------------|----------------|
| 1. G marginal means                | = 70.8 lb./ac. |
| 2. M marginal means                | = 24.9 lb./ac. |
| 3. M means at this same level of G | = 55.7 lb./ac. |
| 4. G means at the same level of M  | = 81.0 lb./ac. |

**Crop :- Paddy (Kharif).****Ref :- U.P. 58(294).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'M'.**

Object :—To study the effect of A/S and G.M. crops on Paddy.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) As per treatments. (c) N.A. (ii) (a) Alluvial loam. (b) Refer soil analysis, Kanpur. (ii) N.A./22.7.1958. (iv) (a) N.A. (b) Transplanting. (c) to (e) N.A. (v) N.A. (vi) T—1. (vii) to (ix) N.A. (x) 16.10.1958.

**2. TREATMENTS :**5 sources of 30 lb./ac. of N :  $M_0$ =Control,  $M_1$ =A/S,  $M_2$ =Dhaincha,  $M_3$ =Leaves and lopping from *pongamia glabera* and  $M_4$ =Leaves and lopping from *cassia fistula*.

Dhaincha sown on 13.6.1958. G.M. crops are turned on 20.7.1958 and A/S applied on 7.8.1958.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) and (b) 13.75' × 35'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1958--contd. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1725 lb./ac. (ii) 208.0 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	M <sub>0</sub>	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	M <sub>4</sub>
Av. yield	1443	1845	1910	1664	1765

S.E./mean = 104.0 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 59(327).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'M'.**

Object :- To study the effect of A/S and G.M. crops on Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) As per treatments. (c) N.A. (ii) (a) Alluvial loam. (b) Refer soil analysis, Kanpur. (iii) N.A./17.7.1959. (iv) (a) N.A. (b) Transplanting. (c) to (e) N.A. (v) Nil. (vi) T-3. (vii) to (x) N.A. (x) 27.10.1959.

## 2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 58(294) on page 25.

*Dhaincha* was sown on 5.6.1959. A/S on 6.8.1959. Green matter was turned in on 14.7.1959.

## 5. RESULTS :

(i) 3043 lb./ac. (ii) 363.6 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	M <sub>0</sub>	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	M <sub>4</sub>
Av. yield	2749	3238	2903	3238	3083

S.E./mean = 181.8 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 58(292).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'M'.**

Object :- To study the effect of G.M. crops on succeeding Paddy Crop.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) As per treatments. (c) N.A. (ii) (a) Alluvial loam. (b) Refer soil analysis, Kanpur. (iii) N.A./13.8.1958. (iv) (a) N.A. (b) Transplanting. (c) to (e) N.A. (v) N.A. (vi) T-9. (vii) to (ix) N.A. (x) 25.11.1958.

## 2. TREATMENTS :

5 G.M. crops grown in previous season : M<sub>0</sub> = Fallow, M<sub>1</sub> = *Dhaincha*, M<sub>2</sub> = *Aeschynomone americana*, M<sub>3</sub> = *Sesbania speciosa*, M<sub>4</sub> = *Crotalaria usamoensis* and M<sub>5</sub> = *Crotalaria browine*.

G.M. crops sown on 1.7.1958 and truned on 11.8.1958.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) 34.5' x 118'. (iii) 4. (iv) (a) and (b) 18' x 34.5'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1958 - contd. (b) No. (c) Nil. (v) and (vi) Nil. (vii) There was no yield of green matter in treatments M<sub>2</sub>, M<sub>4</sub> and M<sub>5</sub>.

## 5. RESULTS :

(i) 3401 lb./ac. (ii) 268.0 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	M <sub>0</sub>	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	M <sub>4</sub>	M <sub>5</sub>
Av. yield	3223	3868	3234	3543	3284	3251

S.E./mean = 134.0 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 59(326).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'M',**

Object :- To study the effect of G.M. crops on succeeding Paddy crop.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) As per treatments. (c) Nil. (ii) (a) Alluvial loam. (b) Refer soil analysis, Kanpur. (iii) N.A./21.8.1959. (iv) (a) N.A. (b) Transplanting. (c) to (e) N.A. (v) Nil. (vi) T-9. (vii) to (ix) N.A. (x) 30.11.1959.

## 2. TREATMENTS :

7 G.M. crops : G<sub>0</sub>=Fallow, G<sub>1</sub>=*Aeschynomone americana*, G<sub>2</sub>=*Sesbania speciosa*, G<sub>3</sub>=*Sesbania sericea*, G<sub>4</sub>=*Sesbania macracarpa*, G<sub>5</sub>=*Sesbania Aculeata* and G<sub>6</sub>=*Phasiolus semierrectus*.

G.M. crops to be sown in half portion of the plots after summer ploughing and in the other half after rains. All G.M. crops turned in on 19.8.1959.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) and (b) 36' × 15'2". (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1958—contd. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1710 lb./ac. (ii) 228.6 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	G <sub>0</sub>	G <sub>1</sub>	G <sub>2</sub>	G <sub>3</sub>	G <sub>4</sub>	G <sub>5</sub>	G <sub>6</sub>
Av. yield	1385	1552	1460	2018	1961	2040	1552

S.E./mean = 114.3 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 55(249).**

**Site :- Student's Instructional Farm, Govt. Agri. College, Kanpur. Type :- 'M'.**

Object :- To study the effect of gypsum on the lodging of Paddy crop under different levels of N.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Berseem*. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Kanpur. (iii) 14.6.1955/6.8.1955. (iv) (a) 2 ploughings with victory plough, 2 ploughings with *desi* plough and puddling. (b) Transplanting. (c) N.A. (d) 9" between rows. (e) 1. (v) Nil. (vi) T-21. (vii) Irrigated. (viii) N.A. (ix) 36.6". (x) N.A.

## 2. TREATMENTS :

**Main-plot treatments :**

3 levels of N as A/S : N<sub>1</sub>=25, N<sub>2</sub>=50 and N<sub>3</sub>=75 lb./ac.

**Sub-plot treatments :**

3 levels of gypsum : G<sub>0</sub>=0, G<sub>1</sub>=3 and G<sub>2</sub>=6 mds./ac.

A/S and gypsum applied on 6.8.1955.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication and 3 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a) N.A. (b) 16' × 12'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N A. (ii) Nil. (iii) Yield of grain. (iv) (a) 1955—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 756 lb./ac. (ii) (a) 77.7 lb./ac. (b) 14.9 lb./ac. (iii) Main effect of G alone is highly significant. (iv) Av. yield of grain in lb./ac.

	G <sub>0</sub>	G <sub>1</sub>	G <sub>2</sub>	Mean
N <sub>1</sub>	695	822	837	785
N <sub>2</sub>	631	759	794	728
N <sub>3</sub>	695	780	794	756
Mean	674	787	808	756

S.E. of difference of two

1. N marginal means = 44.9 lb./ac.
2. G marginal means = 8.6 lb./ac.
3. G means at the same level of N = 14.9 lb./ac.
4. N means at the same level of G = 46.5 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 57(88).**

**Site :- Rice Res. Sub-Station, Kunraghat.**

**Type :- 'M'.**

Object :- To find out the manurial value of Dhaincha when sown in mixture with Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Light loam. (b) Refer soil analysis, Kunraghat. (iii) 17.6.1957. (iv) (a) 1 ploughing by soil turning plough and 2 to 3 ploughings by *desi* plough. (b) Broaccas. (c) 35 srs./ac. (d) and (e) N.A. (v) 8 lb./ac. of N as A/S top dressed on 6.8.1957. (vi) N-22 (early). (vii) Unirrigated. (viii) 2 weedings and 2 hoeings. (ix) 42.19". (x) 6.10.1957.

## 2. TREATMENTS :

2 G.M. treatments : G<sub>0</sub>—Control (no G.M.) and G<sub>1</sub>—*Dhaincha* for G.M. sown at 5 srs./ac. with Paddy. *Dhaincha* buried on 6.8.1957.

## 3. DESIGN :

(i) Paired-plot. (ii) (a) 2. (b) N.A. (iii) 6. (iv) (a) and (b) 30' × 13'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good, lodging occurred on 2.10.1957. (ii) Nil. (iii) Yield of grain. (iv) (a) 1957—1959. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 684 lb./ac. (ii) 75.9 lb./ac. (iii) Treatment difference is not significant. (iv) Av. yield of grain in lb./ac.

Treatment	G <sub>0</sub>	G <sub>1</sub>
Av. yield	641	727

S.E./mean = 31.0 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 58(83).**

**Site :- Rice Res. Sub-Stn., Kunarghat.**

**Type :- 'M'.**

Object :—To find the manurial value of Dhaincha when sown in mixture with Paddy.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Masoor*. (c) Nil. (ii) (a) Light loam. (b) Refer soil analysis, Kunraghat. (iii) 18.6.1958. (iv) (a) 1 ploughing by soil turning plough and 2 to 3 ploughings by *desi* plough. (b) Broadcast. (c) 35 srs./ac. (d) and (e) N.A. (v) 8 lb./ac. of N as A/S top dressing on 1.8.1958. (vi) N—22 (early) (viii) N.A. (ix) Weedings. (ix) 35.28". (x) Last week of September, 1958.

**2. TREATMENTS :**

2 G.M. treatments :  $G_0$ =Control (no G.M.) and  $G_1$ =*Dhaincha* as G.M. sown at 5 srs./ac. with Paddy.

**3. DESIGN :**

(i) Paired-plot. (ii) (a) 2. (b) N.A. (iii) 6. (iv) (a) and (b) 30'×12'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Attack of *gundhi* bug. (iii) Yield of grain. (iv) (a) 1957—1959. (b) No. (c) Nil. (v) and (vii) Nil.

**5. RESULTS :**

(i) 84 lb./ac. (ii) 26.3 lb./ac. (iii) Treatment difference is not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$G_0$	$G_1$
Av. yield	70	98

S.E./mean = 10.7 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 59(101).**

**Site :- Rice Res. Sub-Stn., Kunraghat.**

**Type :- 'M'.**

Object :—To find out the manurial value of Dhaincha when sown in mixture with Paddy.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Gram. (c) Nil. (ii) (a) Light loam. (b) Refer soil analysis, Kunraghat. (iii) 5.6.1959 (iv) (a) 1 ploughing by soil turning plough and 2 to 3 ploughings by *desi* plough. (b) Broadcast. (c) 40 srs./ac. (d) and (e) N.A. (v) Top dressing with A/S at 8 lb./ac. of N on 30.8.1959. (vi) N—22 (early) (vii) N.A. (viii) 1 weeding. (ix) 25.54". (x) 3rd week of September, 1959.

**2. TREATMENTS :**

2 G.M. treatments :  $G_0$ =Control (no G.M.) and  $G_1$ =*Dhaincha* for G.M. sown at 5 srs./ac. with Paddy.

**3. DESIGN :**

(i) Paired-plot. (ii) (a) 2. (b) N.A. (iii) 6. (iv) (a) and (b) 37'×6'9". (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1957—1959. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 840 lb./ac. (ii) 90.5 lb./ac. (iii) Treatment difference is not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$G_0$	$G_1$
Av. yield	799	881

S.E./mean = 36.9 lb./ac.

**Crop :- Paddy (Kharif).****Ref :- U.P. 57(87).****Site :- Rice Res. Sub-Stn., Kunraghat.****Type :- 'M'.**

Object :—To study the effect of different G.M. crops on succeeding Paddy crop.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) As per treatments. (c) Nil. (ii) (a) Light loam. (b) Refer soil analysis, Kunraghat. (iii) N.A./18.7.1957. (iv) (a) 1 ploughing by soil turning plough and 2 to 3 ploughings by *desi* plough. (b) Transplanting. (c) N.A. (d) 6" × 9". (e) 4 to 5. (v) A/S as top dressing on 6.8.1957. (vi) N-22 (early). (vii) Unirrigated. (viii) 1 weeding. (ix) 39.50". (x) 11.10.1957.

**2. TREATMENTS :**

4. G.M. crops grown in previous season :  $G_0$ =Fallow,  $G_1$ =*Glyricedea Maculata*,  $G_2$ =*Dhaincha* and  $G_3$ =*Sanai*.

**3. DESIGN :**

(i) L. Sq. (ii) (a) 4. (b) 175' × 29'. (iii) 4. (iv) (a) and (b) 41.5' × 29'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1957-1959. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1449 lb./ac. (ii) 213.9 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$G_0$	$G_1$	$G_2$	$G_3$
Av. yield	1433	1587	1424	1350

S.E./mean = 106.9 lb./ac.

**Crop :- Paddy (Kharif).****Ref :- U.P. 58(82).****Site :- Rice Res. Sub-Stn., Kunraghat.****Type :- 'M'.**

Object :—To study the effect of different G.M. crops on succeeding Paddy crop.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) As per treatments. (c) Nil. (ii) (a) Medium loam. (b) Refer soil analysis, Kunraghat. (iii) N.A./20.7.1958. (iv) (a) 1 ploughing by soil turning plough and 2 to 3 ploughings by *desi* plough. (b) Transplanting. (c) N.A. (d) 6" to 7" × 6" to 7". (e) 2 to 3. (v) A/S as top dressing on 31.8.1958. (vi) N-22 (early) (vii) Irrigated. (viii) 1 weeding. (ix) 33.9". (x) Last week of September, 1958.

**2. TREATMENTS :**

Same as in expt. no. 57(87) above.

**3. DESIGN :**

(i) L. Sq. (ii) (a) 4. (b) 175' × 29'. (iii) 4. (iv) (a) and (b) 43' × 29'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Attack of *gundhi* bug. (iii) Yield of grain. (iv) (a) 1957-1959. (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 258 lb./ac. (ii) 118.8 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$G_0$	$G_1$	$G_2$	$G_3$
Av. yield	139	202	323	368

S.E./mean = 59.4 lb./ac.

**Crop :- Paddy (Kharif).****Ref :- U.P. 59(103).****Site :- Rice Res. Sub-Stn., Kunraghat.****Type :- 'M'.**

Object :—To study the effect of different G.M. crops on succeeding Paddy crop.

**1. BASAL CONDITIONS :**

(i) Nil. (b) As per treatments. (c) Nil. (ii) (a) Medium loam. (b) Refer soil analysis, Kunraghat. (iii) N.A./16, 17.7.1959. (iv) (a) 1 ploughing by soil turning plough and 2 to 3 ploughings by *desi* plough (b) Transplanting. (c) N.A. (d) 6" to 7" × 6" to 7". (e) 2 to 3. (v) Nil. (vi) N—22 (early). (vii) Unirrigated (viii) 1 weeding. (ix) 36.8". (x) 2nd week of October, 1959.

**2. TREATMENTS :**

Same as in expt. no. 57(87) on page 30.

**3. DESIGN and 4. GENERAL :**

Same as in expt. no. 58(82) on page 30.

**5. RESULTS :**

(i) 647 lb./ac. (ii) 105.9 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	G <sub>0</sub>	G <sub>1</sub>	G <sub>2</sub>	G <sub>3</sub>
Av. yield	566	692	651	678

S.E./mean = 52.9 lb./ac.

**Crop :- Paddy (Kharif).****Ref :- U.P. 58(81).****Site :- Rice Res. Sub-Stn., Kunraghat.****Type :- 'M'.**

Object :—To find out the most suitable method of application of A/S on Paddy.

**1. BASAL CONDITIONS :**

(i) (a) Paddy—Pea. (b) Pea. (c) Nil. (ii) (a) Medium loam. (b) Refer soil analysis, Kunraghat. (iii) N.A./14.7.1958. (iv) (a) 1 ploughing by soil turning plough and 2 to 3 ploughings by *desi* plough. (b) Transplanting. (c) N.A. (d) 6" to 7" × 6" to 7". (e) 2 to 3. (v) Nil. (vi) T-136 (early). (vii) Irrigated (viii) 1 weeding and 1 hoeing. (ix) 33.9". (x) Last week of September, 1958.

**2. TREATMENTS :**

4 methods of application of N : M<sub>1</sub>=Pillow system, field ploughed in water and N applied by broadcast followed by planking before transplanting, M<sub>2</sub>=At the time of last planking to the field before transplanting, M<sub>3</sub>=Top dressing in two doses followed by Japanese weeder and M<sub>4</sub>=Full dose before flowering followed by Japanese weeder.

N applied at 60 lb./ac. as A/S on 13.7.1958, 16, 30.8.1958.

**3. DESIGN :**

(i) L. Sq. (ii) (a) 4. (b) 175' × 29'. (iii) 4. (iv) (a) and (b) 43' × 29'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good, lodging occurred. (ii) Attack of *gundhi* bug. (iii) Yield of grain. (iv) (a) 1958—1959. (b) Yes. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1253 lb./ac. (ii) 196.5 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	M <sub>4</sub>
Av. yield	1136	1285	1334	1258

S.E./mean = 98.2 lb./ac.



**Crop :- Paddy (Kharif).****Ref :- U.P. 59(102).****Site :- Rice Res. Sub-Stn., Kunraghat.****Type :- 'M'.**

Object :—To find out the most suitable method of application of A/S on Paddy.

**1. BASAL CONDITIONS :**

(i) (a) Paddy—Pea. (b) Pea. (c) Nil. (ii) (a) Medium loam. (b) Refer soil analysis, Kunraghat. (iii) N.A./2 to 6.7.1959. (iv) (a) 1 ploughing by soil turning plough and 2 to 3 *desi* ploughings. (b) Transplanting. (c) N.A. (d) 6" to 7" × 6" to 7". (e) 2 to 3. (v) Nil. (vi) T—136 (early). (vii) Unirrigated. (viii) 1 weeding. (ix) 25.67". (x) 2nd or 3rd week of September, 1959.

**2. TREATMENTS and 3. DESIGN :**

Same as in expt. no. 58(81) on page 31.

N applied on 2.7.1959; 21, 27.8.1959.

**4. GENERAL :**

(i) Good. (ii) Attack of smut and *gundhi* bug. (iii) Yield of grain. (iv) (a) 1958—1959. (b) Yes. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1329 lb./ac. (ii) 425.0 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	M <sub>4</sub>
Av. yield	1689	1824	514	1289

S.E./mean = 212.5 lb./ac.

**Crop :- Paddy (Kharif).****Ref :- U.P. 59(164).****Site :- Hill Paddy Res. Sub-Stn., Majhera.****Type :- 'M'.**

Object :—To study the effect of N and P on Paddy.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Gram. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Majhera. (iii) 11.4 1959. (iv) (a) 3 ploughings by *desi* plough. (b) Broadcast. (c) 36 srs./ac. (d) and (e) N.A. (v) Nil. (vi) N—22 (early). (vii) Unirrigated. (viii) 3 weedings. (ix) N.A. (x) 6, 7 and 8.9.1959.

**2. TREATMENTS :****Main-plot treatments :**4 levels of N as A/S : N<sub>0</sub>=0, N<sub>1</sub>=20, N<sub>2</sub>=30 and N<sub>3</sub>=40 lb./ac.**Sub-plot treatments :**4 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0, P<sub>1</sub>=20, P<sub>2</sub>=30 and P<sub>3</sub>=40 lb./ac.**3. DESIGN :**

(i) Spl t-plot. (ii) (a) 4 main-plots/replications ; 4 sub-plots/main-plot. (b) 30' × 87½'. (iii) 3. (iv) (a) and (b) 19' × 5'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Normal. (ii) Attack of helminthosporium and blast diseases in all the treatments in spite of treatment of seeds with agrosan G.N. before sowing. (iii) Germination, tillers, height and yield of grain. (iv) (a) 1959—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 2305 lb./ac. (ii) (a) 924.8 lb./ac. (b) 337.9 lb./ac. (iii) None of the effects is significant. (iv) Av yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	Mean
N <sub>0</sub>	2024	1896	1926	1572	1854
N <sub>1</sub>	2270	2044	2299	2162	2194
N <sub>2</sub>	2437	2063	2166	2506	2292
N <sub>3</sub>	2849	3223	2633	2810	2879
Mean	2395	2306	2255	2262	2305

S.E. of difference of two

1. N marginal means = 377.9 lb./ac.
2. P marginal means = 137.9 lb./ac.
3. P means at the same level of N = 275.9 lb./ac.
4. N means at the same level of P = 446.8 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 57(37).**

**Site :- Reg. Res. Stn., Meerut.**

**Type :- 'M'.**

Object :—To study the effect of N, P and Calcium on the yield of Paddy.

#### BASAL CONDITIONS :

(i) (a) *Berseem*—Paddy. (b) *Berseem*. (c) Nil. (ii) (a) Silt loam. (b) Refer soil analysis, Meerut. (iii) 3.6.1957/11, 12.7.1957. (iv) (a) 2 ploughings by *desi* plough and 1 by soil turning plough. (b) Transplanting. (c) 8 to 10 srs./ac. (d) 9"×9". (e) 1 or 2. (v) Nil. (vi) Ch.—4 (medium). (vii) Irrigated. (viii) 5 weedings. (ix) 41.89". (x) 17.10.1957.

#### 2. TREATMENTS :

All combinations of (1), (2) and (3)

- (1) 2 levels of N as A/S : N<sub>0</sub>=0 and N<sub>1</sub>=75 lb./ac.
- (2) 2 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0 and P<sub>1</sub>=60 lb./ac.
- (3) 2 levels of CaO as gypsum : C<sub>0</sub>=0 and C<sub>1</sub>=90 lb./ac.

Method of application : A/S applied  $\frac{1}{2}$  dose at transplanting as basal dressing and  $\frac{1}{2}$  at tillering on 17.8.1957 as top dressing, Super by placement 3" to 4" deep in soil behind the plough on 6.7.1957 and gypsum as surface dressing on 10.7.1957.

#### 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) 81'×115'. (iii) 4. (iv) (a) 39'×28'. (b) 36'×25'. (v) 14½'×14½'. (vi) Yes.

#### 4. GENERAL :

(i) Good. (ii) Attack of *gundhi* bug. Dusting of Gammexane at 5% and B.H.C. at 25 lb./ac. (iii) No. of tillers, height of tillers, yield of grain and straw. (iv) (a) 1957 only. (b) No. (c) Nil. (v) to (vii) Nil.

#### 5. RESULTS :

(i) 1580 lb./ac. (ii) 242.9 lb./ac. (iii) Main effect of N is highly significant. P effect is significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	C <sub>0</sub>	C <sub>1</sub>
N <sub>0</sub>	1291	1456	1374	1416	1332
N <sub>1</sub>	1680	1892	1786	1714	1858
Mean	1486	1674	1580	1565	1595
C <sub>0</sub>	1469	1662			
C <sub>1</sub>	1503	1686			

S.E. of any marginal mean = 60.7 lb./ac.  
S.E. of body of any table = 85.9 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 59(35).**

**Site :- Reg. Res. Stn., Meerut.**

**Type :- 'M'.**

Object :—To study the effect of A/S, F.Y.M. and Super on Paddy.

**1. BASAL CONDITIONS :**

(i) (a) *Berseem*—Paddy. (b) *Berseem*. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Meerut. (iii) 2nd week of June, 1959/13, 14.7.1959. (iv) (a) 1 ploughing by soil turning plough and 2 to 3 ploughings by *desi* plough. (b) Transplanting. (c) 10 srs./ac. (d) 9"×6". (e) 2. (v) Nil. (vi) Ch—4 (medium). (vii) Irrigated. (viii) 3 weedings with *khurpi*. (ix) 16.66". (x) 22.10.1959.

**2. TREATMENTS :**

10 manurial treatments :  $M_0$ =Control,  $M_1$ =40 lb./ac. of  $P_2O_5$  as Super,  $M_2$ =20 lb./ac. of N as A/S,  $M_3$ =40 lb./ac. of N as A/S,  $M_4$ = $M_1+M_2$ ,  $M_5$ =20 lb./ac. of N as F.Y.M.,  $M_6$ =40 lb./ac. of N as F.Y.M.,  $M_7$ = $M_1+M_5$ ,  $M_8$ = $M_2+M_5$ , and  $M_9$ = $M_1+M_2+M_5$ .

Super applied through funnel at a depth of 3" to 4" in bands on 7.7.1959, followed by planking and then transplanted. F.Y.M. broadcast on 7.7.1959, and A/S  $\frac{1}{2}$  dose broadcast before sowing and  $\frac{1}{2}$  as top dressing.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 10. (b) 39'×234 $\frac{1}{2}$ '. (iii) 4. (iv) (a) 39'×20'. (b) 36'×17'. (v) 1 $\frac{1}{2}$ '×1 $\frac{1}{2}$ '. (vi) Yes.

**4. GENERAL :**

(i) Normal. (ii) Attack of *gundhi* bug. Dusting of Gammexane and 6% B.H.C. at 25 lb./ac. (iii) Number of tillers, height of main shoot, yield of grain and straw. (iv) (a) 1959—contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1530 lb./ac. (ii) 283.8 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$M_0$	$M_1$	$M_2$	$M_3$	$M_4$	$M_5$	$M_6$	$M_7$	$M_8$	$M_9$
Av. yield	1292	1570	1468	1459	1752	1473	1559	1461	1530	1731

S.E./mean = 141.9 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 59(29).**

**Site :- Reg. Res. Stn., Meerut.**

**Type :- 'M'.**

Object :—To study the effect of manure mixture, A/S and Super on Paddy.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Berseem* fodder. (c) Nil. (ii) (a) Clay loam. (b) Refer soil analysis, Meerut. (iii) 2nd week of June, 1959/19.7.1959. (iv) (a) 1 ploughing by soil turning plough and 2 ploughings by *desi* plough (b) Transplanting. (c) 10 srs./ac. (d) 9"×6". (e) 2. (v) Nil. (vi) Ch—4 (medium). (vii) Irrigated. (viii) 2 weedings. (ix) 18.66". (x) 21.10.1959.

**2. TREATMENTS :**

2 manurial treatments :  $M_1$ =Departmental mixture No. 1. (contains 16% N and 9%  $P_2O_5$  and applied to give 50 lb./ac. of N and 28 lb./ac. of  $P_2O_5$ ) and  $M_2$ =50 lb./ac. of N as A/S+28 lb./ac. of  $P_2O_5$  as Super.

Departmental Mixture and Super applied in furrows through funnel 3" to 4" deep before transplanting on 18.7.1959. A/S applied in two equal doses at transplanting (18.7.1959) as broadcast and top dressed at tillering (17.8.1959.)

**3. DESIGN :**

(i) R.B.D. (ii) (a) 2. (b) 35'×37'. (iii) 12. (iv) (a) 35'×17'3". (b) 32'×14'3". (v) 1 $\frac{1}{2}$ '×1 $\frac{1}{2}$ '. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Attack of *gundhi* bug. Dusting of Gammexane and B.H.C. 5% at 25 lb./ac. (iii) Yield of grain. (iv) (a) 1959—contd. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 2108 lb./ac. (ii) 260.2 lb./ac. (iii) Treatment difference is not significant. (iv) Av. yield of grain in lb./ac.

Treatment	M <sub>1</sub>	M <sub>2</sub>
Av. yield	2119	2096

S.E./mean = 75.1 lb./ac.

**Corp :- Paddy (Kharif).**

**Ref :- U.P. 59(30).**

**Site :- Reg. Res. Stn., Meerut.**

**Type :- 'M'.**

Object :- To study the effect of different levels of N on the yield of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Berseem* fodder. (c) Nil. (ii) (a) Clayey loam. (b) Refer soil analysis, Meerut. (iii) 1st week of June, 1959/29, 30.6.1959. (iv) (a) 1 ploughing by soil turning plough and 2 ploughings by *desi* plough. (b) Transplanting. (c) 10 srs./ac. (d) 9"×6". (e) 2. (v) Nil. (vi) T-21 (late). (vii) Irrigated. (viii) 1 weeding. (ix) 18.66". (x) 16.10.1959.

## 2. TREATMENTS :

3 levels of N as A/S : N<sub>1</sub>=40, N<sub>2</sub>=60 and N<sub>3</sub>=80 lb./ac.

A/S applied  $\frac{1}{2}$  at sowing as broadcast and  $\frac{1}{2}$  as top dressing on 13.8.1959.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) 40'×46'. (iii) 8. (iv) (a) 40'×14'. (b) 37'×11'. (v) 1 $\frac{1}{2}$ '×1 $\frac{1}{2}$ '. (vi) Yes.

## 4. GENERAL :

(i) Good. Lodging occurred. (ii) Attack of *gundhi* bug. Dusting of Gammexane and 5% B.H.C. at 25 lb./ac. (iii) Yield of grain and straw. (iv) (a) 1959—N.A. (b) N.A. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 2341 lb./ac. (ii) 213.6 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>
Av. yield	2141	2361	2522

S.E./mean = 75.5 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 58(38).**

**Site :- Reg. Res. Stn., Meerut.**

**Type :- 'M'.**

Object :- To study the effect of trace-elements on the yield of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Meerut. (iii) 1st week of June, 1958/5, 6.7.1958. (iv) (a) 1 ploughing by soil turning plough and 2 ploughings by *desi* plough. (b) Transplanting. (c) 8 to 10 srs./ac. (d) 9"×9". (e) 1 to 2. (v) 40 lb./ac. of N as A/S surface dressing in 2 equal doses, 3 days before sowing and at tillering. (vi) CH-4 (medium). (vii) Irrigated. (viii) 3 weedings and 2 roughings. (ix) 51.32". (x) 24, 25.10.1958.

## 2. TREATMENTS :

12 trace-element treatments : T<sub>0</sub>=Control (spraying with water) T<sub>1</sub>=B as Boric acid at 50 p.p.m., T<sub>2</sub>=Cu as C/S at 50 p.p.m., T<sub>3</sub>=Mn as MnSO<sub>4</sub> at 100 p.p.m., T<sub>4</sub>=Zn as ZnSO<sub>4</sub> at 100 p.p.m., T<sub>5</sub>=T<sub>1</sub>+T<sub>2</sub>, T<sub>6</sub>=T<sub>1</sub>+T<sub>3</sub>, T<sub>7</sub>=T<sub>1</sub>+T<sub>4</sub>, T<sub>8</sub>=T<sub>2</sub>+T<sub>3</sub>, T<sub>9</sub>=T<sub>2</sub>+T<sub>4</sub>, T<sub>10</sub>=T<sub>3</sub>+T<sub>4</sub> and T<sub>11</sub>=T<sub>1</sub>+T<sub>2</sub>+T<sub>3</sub>.

Solution of trace elements of given concentration was prepared in water and sprayed by a sprayer at 60 to 100 gallons/ac. twice, at tillering and at pre-flowering stage.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) 77'×175'. (iii) 3. (iv) (a) 42'×25'. (b) 39'×22'. (v) 1½'×1½'. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Dusting of B.H.C. 5% at 20 lb./ac. against *gundhi* bug attack. (iii) Germination, height of plant, number of tillers, yield of grain and straw. (iv) (a) 1958—only. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 850 lb./ac. (ii) 114.8 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	T <sub>5</sub>	T <sub>6</sub>	T <sub>7</sub>	T <sub>8</sub>	T <sub>9</sub>	T <sub>10</sub>	T <sub>11</sub>
Av. yield	888	872	829	948	728	829	812	812	880	804	888	914

S.E./mean = 66.3 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 57(430).**

**Site :- Rice Res. Stn., Nagina.**

**Type :- 'M'.**

Object :- To study the effect of N, P and calcium on the yield of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Paddy—*Berseem*. (b) *Berseem*. (c) Nil. (ii) (a) Loam. (b) Refer soil analysis, Nagina. (iii) 22.5.1957/1.8.1957. (iv) (a) 1 deep and 2 shallow ploughings. (b) Transplanting. (c) N.A. (d) 9"×6". (e) 2 to 3. (v) and (vi) N.A. (vii) Irrigated. (viii) 1 weeding and 1 hoeing. (ix) N.A. (x) 21.11.1957.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 2 levels of N as A/S : N<sub>0</sub>=0 and N<sub>1</sub>=75 lb./ac.

(2) 2 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0 and P<sub>1</sub>=60 lb./ac.

(3) 2 levels of CaO as gypsum : C<sub>0</sub>=0 and C<sub>1</sub>=90 lb./ac.

N applied in two equal doses at transplanting and 2 to 3 weeks after transplanting. P<sub>2</sub>O<sub>5</sub> applied by placement 3" to 4" deep in soil and CaO applied as surface dressing 1 to 2 days before transplanting.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 36'×27'. (b) 33'×24'. (v) 1½'×1½'. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Mild attack of helminthosporium and *gundhi* bug. (iii) Yield of grain. (iv) (a) 1957 only. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1714 lb./ac. (ii) 306.3 lb./ac. (iii) Main effect of N is highly significant and effect of P is significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	C <sub>0</sub>	C <sub>1</sub>
N <sub>0</sub>	1230	1514	1372	1339	1405
N <sub>1</sub>	1942	2170	2056	1987	2125
Mean	1586	1842	1714	1663	1765
C <sub>0</sub>	1482	1844			
C <sub>1</sub>	1690	1840			

S.E. of any marginal mean  
S.E. of body of any table

= 76.6 lb./ac.  
= 108.3 lb./ac.

**Crop :- Paddy (Kharif).****Ref :- U.P. 54(86).****Site :- Rice Res. Stn., Nagina.****Type :- 'M'.**

Object :—To study the effect of A/S and F.Y.M. on the yield of Paddy.

**1. BASAL CONDITIONS :**

(i) (a) Paddy—*Berseem*. (b) *Berseem*. (c) Nil. (ii) (a) Silt loam. (b) Refer soil analysis, Nagina. (iii) N.A./26.7.1954. (iv) (a) to (e) N.A. (v) Nil. (vi) T—100 (late). (vii) Irrigated. (viii) N.A. (ix) 34.0". (x) N.A.

**2. TREATMENTS :**

6 manurial treatments :  $M_0$ =Control (no manure),  $M_1$ =60 lb./ac. of N as A/S,  $M_2$ =120 lb./ac. of N as A/S,  $M_3$ =60 lb./ac. of N as F.Y.M.,  $M_4$ = $M_3$ +30 lb./ac. of N as A/S and  $M_5$ = $M_1$ + $M_3$ .

F.Y.M. applied on 14.7.1954.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 37'×18'. (b) 35'×16'. (v) 1'×1'. (vi) Yes.

**4. GENERAL :**

(i) Normal. (ii) Nil. (iii) Yield of grain. (iv) (a) 1955 only. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1866 lb./ac. (ii) 288.9 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$M_0$	$M_1$	$M_2$	$M_3$	$M_4$	$M_5$
Av. yield	1737	1984	1830	1849	1935	1886

S.E./mean = 144.4 lb./ac.

**Crop :- Paddy (Kharif).****Ref :- U.P. 58(143).****Site :- Rice Res. Stn., Nagina.****Type :- 'M'.**

Object :—To find out the most suitable method of application of A/S on Paddy.

**1. BASAL CONDITIONS :**

(i) (a) Paddy—*Berseem*. (b) *Berseem*. (c) Nil. (ii) (a) Loamy soil. (b) Refer soil analysis, Nagina. (iii) N.A./30.7.1958. (iv) (a) 1 deep and 2 shallow ploughings. (b) Transplanting. (c) 10 srs./ac. (d) 9"×8". (e) N.A. (v) N.A. (vi) CH—4 (medium). (vii) N.A. (viii) 1 interculturing and 1 weeding. (ix) 51.5". (x) 13.11.1958.

**2. TREATMENTS :**

5 methods of application of N :  $M_1$ =Pillow system *i.e.* field ploughed in water and N applied by broadcast followed by planking before transplanting,  $M_2$ =Pellet system *i.e.* N mixed with soil and placed below the seed in the form of small pellets,  $M_3$ =At the time of last planking before transplanting,  $M_4$ =Top-dressing in two doses followed by Japanese cultivator and  $M_5$ =Full dose before flowering followed by Japanese cultivator.

N applied at 60 lb./ac. as A/S.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 33'4"×27'9". (b) 32'×26'3". (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) Normal. (ii) Mild attack of *gundhi* bug. (iii) Yield of grain. (iv) (a) 1958 only. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1562 lb./ac. (ii) 207.1 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	M <sub>4</sub>	M <sub>5</sub>
Av. yield	1540	1370	1750	1444	1705

S.E./mean = 103.6 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 59(159).**

**Site :- Rice Res. Stn., Nagina.**

**Type :- 'M'.**

Object :- To find out the most suitable method of application of A/S on Paddy.

**1. BASAL CONDITIONS :**

(i) (a) Paddy—Pea—Paddy—*Berseem*. (b) Pea. (c) Nil. (ii) (a) Loam. (b) Refer soil analysis, Nagina. (iii) N.A./25.7.1959. (iv) (a) N.A. (b) Transplanting. (c) N.A. (d) 9" × 6". (e) N.A. (v) N.A. (vi) CH—4 (medium). (vii) and (viii) N.A. (ix) 30.5". (x) 25.10.1959.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 2 levels of N as A/S : N<sub>1</sub>=30 and N<sub>2</sub>=60 lb./ac.

(2) 4 methods of application of N : M<sub>1</sub>=Pillow system i.e. field ploughed in water and N applied by broadcast followed by planking before transplanting, M<sub>2</sub>=Pellet system i.e. N mixed with soil and placed below the seed in the form of small pellets, M<sub>3</sub>=At the time of last planking before transplanting, M<sub>4</sub>=Top dressing in two equal doses on 20.8.1959 and 15.9.1959, M<sub>5</sub>=Full doses top dressed at flowering on 15.9.1959.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) 27' × 15'. (b) 25' × 13½'. (v) 12" × 9". (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) N.A. (iii) Yield of grain. (iv) (a) 1959—contd. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 2807 lb./ac. (ii) 197.9 lb./ac. (iii) Main effect of M alone is highly significant. (iv) Av. yield of grain in lb./ac.

	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	M <sub>4</sub>	M <sub>5</sub>	Mean
N <sub>1</sub>	3072	2807	2762	2820	2433	2779
N <sub>2</sub>	3056	2833	2988	2798	2501	2835
Mean	3064	2820	2875	2809	2467	2807

S.E. of M marginal mean = 70.0 lb./ac.

S.E. of N marginal mean = 44.2 lb./ac.

S.E. of body of table = 98.9 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 59(160).**

**Site :- Rice Res. Stn., Nagina.**

**Type :- 'M'.**

Object :- To study the effect of methods of placement of P on Paddy.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loamy soil. (b) Refer soil analysis, Nagina. (iii) N.A./25.7.1959. (iv) (a) N.A. (b) Transplanting. (c) to (e) N.A. (v) 60 lb./ac. of N. (vi) CH—4 (medium). (vii) and (viii) N.A. (ix) 39.5". (x) 26.10.1959.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 levels of  $P_2O_5$  as Super :  $P_1=40$  and  $P_2=60$  lb./ac.

(2) 2 methods of placement of Super :  $M_1$ =Broadcasting at last puddling and  $M_2$ =In the form of pellets at transplanting.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b)  $90' \times 39'$ . (iii) 4. (iv) (a)  $39' \times 18'$ . (b)  $37' \times 16.5'$ . (v)  $12'' \times 9''$ . (vi) Yes.

## 4. GENERAL :

(i) Good. Lodging occurred. (ii) N.A. (iii) Yield of grain. (iv) (a) 1959—contd. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 2588 lb./ac. (ii) 150.0 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	$M_1$	$M_2$	Mean
$P_1$	2578	2531	2554
$P_2$	2611	2631	2621
Mean	2594	2581	2588

S.E. of any marginal mean = 53.0 lb./ac.

S.E. of body of table = 75.0 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 54(189).**

**Site :- Tarai State Farm, Nagla.**

**Type :-M'.**

Object :— To study the effect of different levels of N and P on the yield of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Tarai loam. (b) N.A. (iii) 10.7.1954. (iv) (a) 1 ploughing and 1 harrowing. (b) Broadcasting. (c) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) 2 weedings. (ix) 45.4". (x) 20.10.1954.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N as A/S :  $N_0=0$ ,  $N_1=25$  and  $N_2=50$  lb./ac.

(2) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=50$  and  $P_2=100$  lb./ac.

N and  $P_2O_5$  applied on 9.7.1954.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 9. (b)  $49.5' \times 222'$ . (iii) 6. (iv) (a) and (b)  $49.5' \times 22'$ . (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1954—only. (b) No. (c) Nil. (v) (a) Hempur. (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1744 lb./ac. (ii) 701.6 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.



	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	1807	1873	1820	1833
N <sub>1</sub>	1433	1893	2213	1846
N <sub>2</sub>	1293	1753	1613	1553
Mean	1511	1840	1882	1744

S.E. of any marginal mean = 165.4 lb./ac.

S.E. of body of table = 286.4 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 57(219).**

**Site :- Tarai State Farm, Nagla.**

**Type :- 'M'.**

Object :— To study the effect of N and P on the yield of Paddy.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Wheat. (c) N.A. (ii) (a) Clay loam. (b) N.A. (iii) 4.8.1957. (iv) (a) 5 harrowings and 1 hot weather cultivation. (b) Transplanting. (c) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) Weeding. (ix) 40.57". (x) 30.10.1957.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 3 levels of N as A/S : N<sub>0</sub>=0, N<sub>1</sub>=20 and N<sub>2</sub>=40 lb./ac.

(2) 3 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0, P<sub>1</sub>=20 and P<sub>2</sub>=40 lb./ac.

N broadcast before sowing and P<sub>2</sub>O<sub>5</sub> placed in furrows behind the plough.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 9. (b) 49.5' × 222'. (iii) 4. (iv) (a) and (b) 49.5' × 22'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1957 on'y. (b) No. (c) Nil. (v) (a) Phool bagh. (b) Nil. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 3241 lb./ac. (ii) 534.4 lb./ac. (iii) Main effect of N alone is significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	2390	3000	3160	2850
N <sub>1</sub>	3200	3410	3310	3307
N <sub>2</sub>	3240	3840	3620	3567
Mean	2943	3417	3363	3241

S.E. of any marginal mean = 154.2 lb./ac.

S.E. of body of table = 267.2 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 56(146).**

**Site :- Tarai State Farm, Nagla.**

**Type :- 'M'.**

Object :— To study the residual effect of N and P applied to previous wheat crop on the yield of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Paddy—Wheat—Paddy. (b) Wheat. (c) As per treatments. (ii) (a) Loamy soil. (b) N.A. (iii) 23.6.1956. (iv) (a) 1 ploughing with tractor, 2 harrows and 2 plankings. (b) In furrows behind the plough. (c) 32 srs./ac. (d) and (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) 3 weedings. (ix) N.A. (x) 23.10.1956.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N as A/S :  $N_0=0$ ,  $N_1=20$  and  $N_2=40$  lb./ac.

(2) 4 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=20$ ,  $P_2=40$  and  $P_3=60$  lb./ac.

N broadcast and  $P_2O_5$  placed behind the victory plough in furrows.

Fertilizer applied to previous wheat crop.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. (b)  $44' \times 330'$ . (iii) 4. (iv) (a) and (b)  $44' \times 24.75'$ . (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1956—N.A. (b) No. (c) Nil. (v) (a) Phoolbagh. (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 2318 lb./ac. (ii) 91.5 lb./ac. (iii) All effects are highly significant. (iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	$P_2$	$P_3$	Mean
$N_0$	1710	1520	2920	2450	2150
$N_1$	2380	2790	2730	2610	2628
$N_2$	2010	2200	2450	2050	2177
Mean	2033	2170	2700	2370	2318

S.E. of N marginal mean = 22.9 lb./ac.

S.E. of P marginal mean = 26.4 lb./ac.

S.E. of body of table = 45.7 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 58(193).**

**Site :- Tarai State Farm, Nagla.**

**Type :- 'M'.**

Object :—To study the residual effect of N and P applied to previous wheat crop on the yield of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Paddy—Wheat. (b) Wheat. (c) As per treatments. (ii) (a) Clay loam. (b) N.A. (iii) 28.7.1958. (iv) (a) 1 ploughing by tractor, 2 harrows and 3 plankings. (b) Drilling. (c) to (e) N.A. (v) 25 lb./ac. of N as A/S applied on 16.8.1958. (vi) and (vii) N.A. (viii) 2 weedings. (ix)  $44.7''$ . (x) 16.10.1958.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N as A/S :  $N_0=0$ ,  $N_1=25$  and  $N_2=50$  lb./ac.

(2) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=30$  and  $P_2=60$  lb./ac.

Fertilizers applied to previous wheat crop.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 9. (b)  $49.5' \times 222'$ . (iii) 4. (iv) (a) and (b)  $49.5' \times 22'$ . (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. Lodging occurred. (ii) Weeds affected the crop. (iii) Yield of grain and straw. (iv) (a) 1958—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1342 lb./ac. (ii) 130.3 lb./ac. (iii) Main effects of N and P are highly significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
M <sub>0</sub>	1120	1200	1220	1180
M <sub>1</sub>	1240	1350	1440	1343
M <sub>2</sub>	1330	1510	1670	1503
Mean	1230	1353	1443	1342

S.E. of any marginal mean = 37.6 lb./ac.  
S.E. of body of table = 65.1 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 55(119).**

**Site :- Reg. Res. Stn., Nawabganj.**

**Type :- 'M'.**

Object :--To study the effect of N, P and calcium on Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Gram. (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Nawabganj. (iii) 20.8.1956. (iv) (a) 5 ploughings. (b) Transplanting. (c) 8 to 10 srs./ac. (d) 9'×9". (e) N.A. (v) and (vi) N.A. (vii) Irrigated. (viii) and (ix) N.A. (x) 12.12.1955.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

- (1) 2 levels of N as A/S : N<sub>0</sub>=0 and N<sub>1</sub>=75 lb./ac.  
(2) 2 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0 and P<sub>1</sub>=60 lb./ac.  
(3) 2 levels of CaO as gypsum : C<sub>0</sub>=0 and C<sub>1</sub>=90 lb./ac.

N applied in equal doses at transplanting and 2 to 3 weeks after, P<sub>2</sub>O<sub>5</sub> by placement 3" to 4" deep in soil and CaO as Surface dressing 1 to 2 days before transplanting.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 41'×28'. (b) 38'×25'. (v) 1½'×1½'. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Slight effect of stem borer. (iii) Yield of grain. (iv) (a) 1955—N.A. (b) No. (c) Nil. (v) (a) Conducted at many centres. (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 3405 lb./ac. (ii) 347.5 lb./ac. (iii) Interaction N×P is highly significant and interaction N×C is significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	C <sub>0</sub>	C <sub>1</sub>
N <sub>0</sub>	3207	3501	3354	3443	3265
N <sub>1</sub>	3673	3239	3456	3265	3647
Mean	3440	3370	3405	3354	3456
C <sub>0</sub>	3443	3266			
C <sub>1</sub>	3437	3474			

S.E. of any marginal mean = 86.9 lb./ac.  
S.E. of body of table = 122.9 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 56(76).**

**Site :- Reg. Res. Stn., Nawabganj.**

**Type :- 'M'.**

Object :— To study the effect of N, P and calcium on the yield of Paddy.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Nawabganj. (iii) N.A./11.7.1956. (iv) (a) N.A. (b) Transplanting. (c) 8 srs./ac. (d) 9"×9". (e) 1. (v) 2 mds./ac. of F.Y.M. (vi) 22-A (late). (vii) to (x) N.A.

**2. TREATMENTS :**

All combinations at (1), (2) and (3)

(1) 2 levels of N as A/S :  $N_0=0$  and  $N_1=75$  lb./ac.

(2) 2 levels of  $P_2O_5$  as Super :  $P_0=0$  and  $P_1=60$  lb./ac.

(3) 2 levels of CaO as gypsum :  $C_0=0$  and  $C_1=90$  lb./ac.

Super applied by placement 3" to 4" deep in soil behind plough a week before transplanting on 6.7.1956., gypsum as surface dressing 1 to 2 days before transplanting on 11.9.1956 and A/S in split doses : a: transplanting and  $\frac{1}{2}$  at tillering on 11.7.1956 and 31.7.1956.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 41'×28'. (b) 38'×25'. (v) 1½'×1½'. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1956—N.A. (b) N.A. (c) Nil. (v) (a) Conducted at many centres. (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 3595 lb./ac. (ii) 377.8 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac

	$P_0$	$P_1$	Mean	$C_0$	$C_1$
$N_0$	3694	3544	3619	3672	3611
$N_1$	3578	3564	3571	3508	3634
Mean	3636	3554	3595	3567	3623
$C_0$	3588	3546			
$C_1$	3684	3562			

S.E. of any marginal mean

= 94.5 lb./ac.

S.E. of body of any table

= 133.6 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 57(105).**

**Site :- Reg. Res. Stn., Nawabganj.**

**Type :- 'M'.**

Object :—To study the effect of trace-elements on the yield of Paddy.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Nawabganj. (iii) N.A./31.7.1957. (iv) (a) 3 ploughings. (b) Transplanting. (c) N.A. (d) 9" between rows. (e) 1 to 2. (v) 40 lb./ac. of N as A/S. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) 33.55". (x) 30.11.1957 and 1.12.1957.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 2 levels of B as Boric acid :  $B_0=0$  and  $B_1=1$  lb./ac.

(2) 2 levels of Cu as C/S :  $C_0=0$  and  $C_1=2$  lb./ac.

(3) 2 levels of Mn as  $MnSO_4$  :  $M_0=0$  and  $M_1=3$  lb./ac.

Trace-elements applied as surface dressing mixed with fine dry earth or sand before transplanting.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) 39'×28'. (b) 36'×25'. (v) 1½'×1½'. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1957—N.A. (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 2290 lb./ac. (ii) 180.0 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	M <sub>0</sub>	M <sub>1</sub>	Mean	C <sub>0</sub>	C <sub>1</sub>
B <sub>0</sub>	2315	2377	2346	2390	2302
B <sub>1</sub>	2215	2253	2234	2228	2240
Mean	2265	2315	2290	2309	2271
C <sub>0</sub>	2366	2252			
C <sub>1</sub>	2164	2378			

S.E. of any marginal mean = 45.0 lb./ac.

S.E. of body of any table = 63.6 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 58(110).**

**Site :- Reg. Res. Stn., Nawabganj.**

**Type :- 'M'.**

**Object :-** To study the effect of sowing Paddy mixed with dhaincha in lines on growth and yield of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Paddy—Sugarcane—Paddy—*Dhaincha*. (b) Sugarcane. (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Nawabganj. (iii) 5.7.1958. (iv) (a) N.A. (b) In lines behind the plough. (c) 25 hrs./ac. (d) 9" between rows. (e) N.A. (v) Nil. (vi) M—32 (early). (vii) and (viii) N.A. (ix) 36.39". (x) 25 to 27.9.1958.<sup>†</sup>

## 2. TREATMENTS :

5 treatments : M<sub>1</sub>=Paddy alone, M<sub>2</sub>=Paddy and *dhaincha* in alternate lines, M<sub>3</sub>=2 rows of paddy after every alternate rows of *dhaincha*, M<sub>4</sub>=3 rows of paddy after every row of *dhaincha* and M<sub>5</sub>=4 rows of paddy after every row of *dhaincha*.

*Dhaincha* turned in the soil on 10.8.1958, 4 to 6 weeks after germination followed by light irrigation in the absence of rains.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 57'×34'. (b) 54'×31'. (v) 1½'×1½'. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Mild attack of *gundhi* bug. (iii) Height tillers and yield of grain and straw. (iv) (a) 1958—N.A. (b) N.A. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 583 lb./ac. (ii) 65.3 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	M <sub>4</sub>	M <sub>5</sub>
Av. yield	602	562	582	616	584

S.E./mean = 32.6 lb./ac.

**Crop :- Paddy (Kharif).****Ref :- U.P. 59(134).****Site :- Res. Res. Stn., Nawabganj.****Type :- 'M'.**

Object :—To study the effect of organic and inorganic manures on the yield of Paddy.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Nawabganj. (iii) N.A./6.8.1959. (iv) (a) N.A. (b) Transplanting. (c) N.A. (d) 9" between rows. (e) 2. (v) Nil. (vi) T—9 (late) (vii) 20.9.1959. (viii) N.A. (ix) 26.26". (x) 2.12.1959.

**2. TREATMENTS :**

10 manurial treatments :  $M_0$ =Control (no manure),  $M_1$ =40 lb./ac. of  $P_2O_5$  as Super,  $M_2$ =20 lb./ac. of N as A/S,  $M_3$ =40 lb./ac. of N as A/S,  $M_4$ = $M_1+M_2$ ,  $M_5$ =20 lb./ac. of N as F.Y.M.,  $M_6$ =40 lb./ac. of N as F.Y.M.,  $M_7$ = $M_1+M_5$ ,  $M_8$ = $M_2+M_5$ ,  $M_9$ = $M_1+M_2+M_5$ .

**3. DESIGN :**

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) 36'×15'. (b) 31.5'×13.5'. (v) 2'3"×9". (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1959—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1364 lb./ac. (ii) 284.5 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$M_0$	$M_1$	$M_2$	$M_3$	$M_4$	$M_5$	$M_6$	$M_7$	$M_8$	$M_9$
Av. yield	1152	1301	1344	1500	1559	1122	1266	1434	1285	1676

S.E./mean = 142.2 lb./ac.

**Crop :- Paddy (Kharif).****Ref :- U.P. 59(137).****Site :- Reg. Res. Stn., Nawabganj.****Type :- 'M'.**

Object :—To study the effect of dhaincha G.M. on the Paddy crop.

**1. BASAL CONDITIONS :**

(i) to (a) (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Nawabganj. (iii) N.A./27.8.1959. (iv) (a) N.A. (b) Transplanting. (c) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) 13.49". (x) 9.12.1959.

**2. TREATMENTS :**

4 ages of dhaincha plant at the time of applications as G.M. :  $T_1=3$ ,  $T_2=4$ ,  $T_3=5$  and  $T_4=3$  weeks.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) and (b) 36'×15'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) No. (iii) Yield of grain and straw. (iv) (a) 1959—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 812 lb./ac. (ii) 161.6 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	$T_1$	$T_2$	$T_3$	$T_4$
Av. yield	606	689	866	1089

S.E./mean = 80.8 lb./ac.

**Crop :- Paddy (Kharif).****Ref :- U.P. 59(115).****Site :- Reg. Res. Stn., Nawabganj.****Type :- 'M'.**

Object :—To study the effect of different manures on Paddy.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Nawabganj. (iii) N.A./8.8.1959. (iv) (a) N.A. (b) Transplanting. (c) N.A. (d) 9" between rows. (e) 2. (v) As per treatments. (vi) T-9. (vii) and (viii) N.A. (ix) 26.21". (x) 4.12.1959 and 7.12.1959.

**2. TREATMENTS :**

2 manurial treatments :  $M_1$  = Departmental mixture to add 50 lb./ac. of N + 25 lb./ac. of  $P_2O_5$ , and  $M_2$  = 50 lb./ac. of N as A/S + 25 lb./ac. of  $P_2O_5$  as Super.  
A/S applied at planting and as top dressing in equal doses. Super applied at planting.

**3. DESIGN :**

(i) Paired-plot. (ii) (a) 2. (b) N.A. (iii) 12. (iv) (a) 36' × 15'. (b) 33' × 13.5'. (v) 1'6" × 9". (vi) Yes.

**4. GENERAL :**

(i) Lodged on 11.11.1959. (ii) No. (iii) Yield of grain and straw. (iv) (a) 1959- N.A. (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1543 lb./ac. (ii) 75.0 lb./ac. (iii) Treatment difference is not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$M_1$	$M_2$
Av. yield	1509	1577

S.E./mean = 21.6 lb./ac.

**Crop :- Paddy (Kharif).****Ref :- U.P. 59(124).****Site :- Reg. Res. Stn., Nawabganj.****Type :- 'M'.**

Object :—To study the effect of F.Y.M., A/S and Super on the yield of Paddy.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Nawabganj. (iii) N.A./15.7.1956. (iv) (a) N.A. (b) Transplanting. (c) 8 srs./ac. (d) and (e) N.A. (v) N.A. (vi) 22--A (late). (vii) to (x) N.A.

**2. TREATMENTS :**

8 manurial treatments :  $M_0$  = Control,  $M_1$  = 60 lb./ac. of N as F.Y.M.,  $M_2$  = 60 lb./ac. of N as A/S,  $M_3$  = 50 lb./ac. of  $P_2O_5$  as Super,  $M_4$  =  $M_1 + M_3$ ,  $M_5$  =  $M_2 + M_3$ ,  $M_6$  =  $\frac{1}{2} M_1 + \frac{1}{2} M_2$  and  $M_7$  =  $M_3 + M_6$ .

Super applied by placement 3" to 4" deep in soil behind the plough before transplanting on 12.7.1956, A/S in split doses half at transplanting and  $\frac{1}{2}$  at tillering 2 to 3 weeks after planting.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 41' × 28'. (b) 38' × 25'. (v) 1½' × 1½'. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1959- N.A. (b) N.A. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 3103 lb./ac. (ii) 197.7 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$M_0$	$M_1$	$M_2$	$M_3$	$M_4$	$M_5$	$M_6$	$M_7$
Av. yield	3018	3042	2959	3278	3225	3207	2865	3231

S.E./mean = 98.8 lb./ac.

**Crop :- Paddy (Kharif).****Ref :-U.P 54(115).****Site :- Reg. Res. Stn., Nawabganj.****Type :- 'M'.**

Object :—To study the effect of differnt levels of trace-elements on the yield of Paddy.

**1. BASAL CONDITIONS**

(i) (a) to (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, Nawabganj. (iii) N.A./30.7.1954. (iv) (a) N.A. (b) Transplanting. (c) 8 srs./ac. (d) and (e) N.A. (v) G.M.+30 lb./ac. of N as A/S+30 lb./ac. of  $P_2O_5$  as Super+15 lb./ac. of  $K_2O$  as Pot. Sul.+15 lb./ac. of CaO as gypsum+F.Y.M. (v.) Ch—4. (vii) Irrigated. (viii) and (ix) N.A. (x) 13.11.1954.

**2. TREATMENTS :**

10 trace-elements treatments ;  $T_0$ =Control (3 plots),  $T_1$ =3 lb./ac. of Cu,  $T_2$ =6 lb./ac. of Cu,  $T_3$ =12 lb./ac. of Cu,  $T_4$ =1 lb./ac. of B,  $T_5$ =2 lb./ac. of B,  $T_6$ =4 lb./ac. of B,  $T_7$ =1 lb./ac. of Zn,  $T_8$ =4 lb./ac. of Zn and  $T_9$ =10 lb./ac. of Zn.

Cu as C/S, B as Borax and Zn as  $ZnSO_4$  applied as surface dressing mixed with fine dry earth or sand 2 days before transplanting.

**3. DESIGN**

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 3. (iv) (a) 28'×37'. (b) 25'×34' (v)  $1\frac{1}{2}'\times 1\frac{1}{2}'$ . (vi) Yes.

**4. GENERAL**

(i) N.A. (ii) Nil. (iii) Yied of grain. (iv) 1954-1955. (b) No. (c) Nil. (v) (a) Conducted at many centres. (b) Nil. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1870 lb./ac. (ii) 186.5 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$T_0$	$T_1$	$T_2$	$T_3$	$T_4$	$T_5$	$T_6$	$T_7$	$T_8$	$T_9$
Av. yield	1923	1814	1783	1823	1968	1933	1933	2023	1862	1529

S.E./mean (except  $T_0$ ) = 107.7 lb./ac.

S.E. of  $T_0$  mean = 62.2 lb./ac.

**Corp :- Paddy (Kharif).****Ref :- U.P. 55(106).****Site :- Reg. Res. Stn. Nawabganj****Type :- 'M'.**

Object :—To study the effect of trace-element on the yield of Paddy.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Pea. (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Nawabganj. (iii) N.A./4.8.1955. (iv) (a) 3 ploughings by *desi* plough. (b) Transplanting. (c) N.A. (d) 9"×9". (e) N.A. (v) *Dhaincha* as G.M. ploughed on 24.7.1955+30 lb./ac. of N as A/S+30 lb./ac. of  $P_2O_5$  as Super+15 lb./ac.  $K_2O$  as Pot. Sul. (vi) 22—A. (vii) Irrigated. (viii) to (x) N.A.

**2. TREATMENTS to 4. GENERAL :**

Same as in expt. no. 54(115) above.

**5. RESULTS :**

(i) 3700 lb./ac. (ii) 250.1 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$T_0$	$T_1$	$T_2$	$T_3$	$T_4$	$T_5$	$T_6$	$T_7$	$T_8$	$T_9$
Av. yield	3431	4041	3866	3760	4217	4287	3549	3567	3479	3339

S.E./mean (except  $T_0$ ) = 144.4 lb./ac.

S.E. of  $T_0$  mean = 83.4 lb./ac.



**Crop :- Paddy (Kharif).****Ref :- U.P. 58(101).****Site :- Reg. Res. Stn., Nawabganj.****Type :- 'M'.**

Object :- To study the effect of applying trace-elements as foliar spray on the yield of Paddy.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Nawabganj. (iii) N.A./25.7.1958. (iv) (a) N.A. (b) Transplanting (c) 8 srs./ac. (d) 9' × 9'. (e) 1 to 2 (v) 40 lb./ac. of N as A/S on 24.7.1958 and 9.9.1958 in equal doses. (vi) T-9 (early). (vii) and (viii) N.A. (ix) 41.32". (x) 18.12.1958.

**2. TREATMENTS :**

12 trace-elements treatments :  $T_0$ =Control,  $T_1$ =B as Boric acid at 50 p.p.m.,  $T_2$ =Cu as C/S at 50 p.p.m.,  $T_3$ =Mn as  $MnSO_4$  at 100 p.p.m.,  $T_4$ =Zn as  $ZnSO_4$  at 100 p.p.m.,  $T_5$ = $T_1$ + $T_2$ ,  $T_6$ = $T_1$ + $T_3$ ,  $T_7$ = $T_1$ + $T_4$ ,  $T_8$ = $T_2$ + $T_3$ ,  $T_9$ = $T_2$ + $T_4$ ,  $T_{10}$ = $T_3$ + $T_4$  and  $T_{11}$ = $T_1$ + $T_2$ + $T_3$ .

Solution of trace-elements of given concentration to be prepared in water and sprayed by a sprayer at 60 to 100 gallons/ac. twice, at tillering and at pre-flowering stage.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 3. (iv) (a) 42' × 25'. (b) 39' × 22'. (v) 1½' × 1½'. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1958 - N.A. (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1943 lb./ac. (ii) 260.9 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$T_0$	$T_1$	$T_2$	$T_3$	$T_4$	$T_5$	$T_6$	$T_7$	$T_8$	$T_9$	$T_{10}$	$T_{11}$
Av. yield	1636	1853	1952	2065	2013	2058	1882	2163	1715	2067	1958	1954

S.E./mean = 150.6 lb./ac.

**Crop :- Paddy (Kharif).****Ref :- U.P. 57(420).****Site :- Reg. Res. Stn., Nawabganj.****Type :- 'M'.**

Object :- To find out the best source and method of application of N in combination with P on Paddy.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Nawabganj. (iii) N.A./29.7.1957. (iv) (a) N.A. (b) Transplanting. (c) 5 srs./ac. (d) and (e) N.A. (v) Nil. (vi) T-22. (vii) to (x) N.A.

**2. TREATMENTS :****Main-plot treatments :**

All combinations of (1) and (2)+control (3 plots)

3 sources of 18 lb./ac. of N :  $S_1$ =A/S,  $S_2$ =Urea and  $S_3$ =A,S,N.

3 methods of application of N :  $M_1$ =Basal dressing,  $M_2$ =Top dressing and  $M_3$ =½ as basal+½ as top dressing.

**Sub-plot treatments :**

2 levels of  $P_2O_5$  as Super :  $P_0$ =0 and  $P_1$ =18 lb./ac.

**3. DESIGN :**

(i) Split-plot. (ii) (a) 12 main-plots/replication and 2 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a) and (b) 36' × 15'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1957--contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 754 lb./ac. (ii) (a) 183.6 lb./ac. (b) 76.0 lb./ac. (iii) Main effect of P and 'control vs. others' are highly significant. Interaction  $P \times M$  is significant. (iv) Av. yield of grain in lb./ac.

Control ( $P_0+P_1$ ) = 585 lb./ac.

	$M_1$	$M_2$	$M_3$	Mean	$P_0$	$P_1$
$S_1$	948	776	706	810	800	820
$S_2$	797	817	807	807	787	827
$S_3$	776	887	787	817	726	908
Mean	840	827	767	811	771	852
$P_0$	800	787	726			
$P_1$	881	867	807			

S.E. of difference of two

1. M or S marginal means = 74.9 lb./ac.
  2. P marginal means = 25.3 lb./ac.
  3. P means at the same level of M or S = 43.9 lb./ac.
  4. M or S means at the same level of P = 81.1 lb./ac.
- S.E. of body of  $M \times S$  table = 91.8 lb./ac.

**Crop :- Paddy (Kharif).****Ref :-U .P. 58(137).****Site :- Reg. Res. Stn., Nawabganj.****Type :- 'M'.**

Object :— To find out the best source and method of application of N in combination with P on Paddy.

**1. BASAL CONDITIONS :**

- (i) (a) to (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Nawabganj. (iii) N.A. 14.8.1958. (iv) (a) N.A. (b) Transplanting. (c) 8 srs./ac. (d) and (e) N.A. (v) N.A. (vi) T-9. (vii) and (viii) N.A. (ix) 25.86". (x) 9, 10.12.1958.

**2. TREATMENTS :****Main-plot treatments :**

All combinations of (1) and (2)+control (3 plots)

(1) 3 sources of 36 lb./ac. of N :  $S_1=A/S$ ,  $S_2=Urea$  and  $S_3=A/S/N$ .(2) 3 methods of application of N :  $M_1=Basal$  dressing,  $M_2=Top$  dressing and  $M_3=\frac{1}{2}$  as basal +  $\frac{1}{2}$  as top dressing.**Sub-plot treatments :**2 levels of  $P_2O_5$  as Super :  $P_0=0$  and  $P_1=18$  lb./ac.**DESIGN :**

- (i) Split-plot. (ii) (a) 12 main-plots/replication and 2 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a) 19.5' x 35'. (b) 18' x 30'. (v) 2'6" x 9". (vi) Yes.

**4. GENERAL :**

- (i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1957—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

- (i) 1780 lb./ac. (ii) (a) 230.7 lb./ac. (b) 110.0 lb./ac. (iii) Main effect of P and 'control vs. others' are highly significant. Effect of S is significant. (iv) Av. yield of grain in lb./ac.

Control ( $P_0+P_1$ ) = 1545 lb./ac.

	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>
S <sub>1</sub>	1996	1898	2162	2019	1964	2074
S <sub>2</sub>	1836	1662	2079	1859	1799	1919
S <sub>3</sub>	1587	1784	1724	1698	1583	1813
Mean	1806	1781	1988	1858	1782	1935
P <sub>0</sub>	1701	1710	1936			
P <sub>1</sub>	1912	1853	2041			

S.E. of difference of two

1. M or S marginal means = 94.2 lb./ac.
  2. P marginal means = 36.7 lb./ac.
  3. P means at the same level of M or S = 63.5 lb./ac.
  4. M or S means at the same level of P = 104.3 lb./ac.
- S.E. of body of M × S table = 115.3 lb./ac.

**Crop :- Paddy (Kharif).****Ref :- U.P. 59(151).****Site :- Reg. Res. Stn., Nawabganj.****Type :- 'M'.**

Object :— To find out the best source and method of application of N in combination with P on Paddy.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Nawabganj. (iii) N.A./14.8.1959. (iv) (a) N.A. (b) Transplanting. (c) N.A. (d) 9" between rows. (e) 2. (v) N.A. (vi) T-9. (vii) and (viii) N.A. (ix) 25.10". (x) 14.12.1959.

**2. TREATMENTS :**

Same as in expt. no. 53(137) on page 49.

Basal dressing done on 13.8.1959 and top dressing on 14.10.1959.

**3. DESIGN :**

(i) Split-plot. (ii) (a) 12 main-plots/replication and 2 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a) 36' × 15'. (b) 31' × 13.5'. (v) 2'6" × 9". (vi) Yes.

**4. GENERAL :**

(i) Normal. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1957—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 943 lb./ac. (ii) (a) 149.2 lb./ac. (b) 285.9 lb./ac. (iii) Main effect of M and 'control vs. others' are highly significant. Effect of S and interaction S × M are significant. (iv) Av. yield of grain in lb./ac.

Control ( $P_0+P_1$ ) = 826 lb./ac.

	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>
S <sub>1</sub>	1256	1223	1275	1251	1249	1253
S <sub>2</sub>	472	872	867	737	677	797
S <sub>3</sub>	932	799	1148	960	876	1043
Mean	887	965	1097	983	934	1031
P <sub>0</sub>	823	927	1052			
P <sub>1</sub>	950	1002	1142			

S.E. of difference of two

1. M or S marginal means	= 60.9 lb./ac.
2. P marginal means	= 95.3 lb./ac.
3. P means at the same level of M or S	= 165.1 lb./ac.
4. M or S means at the same level of P	= 131.7 lb./ac.
S.E. of body of M×S table	= 74.6 lb./ac.

**Crop :- Paddy (Kharif).****Ref :- U.P. 56(75).****Site :- Reg. Res. Stn., Nawabganj.****Type :- 'M'.**

Object :—To study the effect of different levels of K on the yield of Paddy.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Nawabganj. (iii) N.A./10.7.1956. (iv) (a) N.A. (b) Transplanting. (c) 8 srs./ac. (d) 9"×9". (e) 1. (v) 60 lb./ac. of N as A/S+40 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super. (vi) 22—A (late). (vii) to (x) N.A.

**2. TREATMENTS :**

6 levels of K<sub>2</sub>O as Pot. Sul. : K<sub>0</sub>=0, K<sub>1</sub>=15, K<sub>2</sub>=30, K<sub>3</sub>=45, K<sub>4</sub>=60 and K<sub>5</sub>=75 lb./ac.  
Pot. Sul. applied as surface dressing 2 or 3 days before transplanting.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 56'×27'. (b) 53'×24'. (v) 1½'×1½'. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1956 only. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 3404 lb./ac. (ii) 212.3 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	K <sub>0</sub>	K <sub>1</sub>	K <sub>2</sub>	K <sub>3</sub>	K <sub>4</sub>	K <sub>5</sub>
Av. yield	3267	3505	3452	3558	3452	3192

S.E./mean = 106.2 lb./ac.

**Crop :- Paddy (Kharif).****Ref :- U.P. 55(139).****Site :- Reg. Res. Stn., Nawabganj.****Type :- 'M'.**

Object :—To study the effect of N and P on the yield of Paddy.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Nawabganj. (iii) N.A./2, 3.8.1955. (iv) (a) N.A. (b) Transplanting. (c) N.A. (d) 9"×9". (e) N.A. (v) N.A. (vi) T—22 (late). (vii) to (x) N.A.

**2. TREATMENTS :**

3 manurial treatments : M<sub>0</sub>=Control (no manure), M<sub>1</sub>=36 lb./ac. of N+18 lb./ac. of P<sub>2</sub>O<sub>5</sub> and M<sub>2</sub>=54 lb./ac. of N+27 lb./ac. of P<sub>2</sub>O<sub>5</sub>.  
N as A/S and P<sub>2</sub>O<sub>5</sub> as Super applied on 30.7.1955.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) and (b) 90'×24'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1955 only. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 2577 lb./ac. (ii) 108.1 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	M <sub>0</sub>	M <sub>1</sub>	M <sub>2</sub>
Av. yield	2337	2524	2869

S.E./mean = 44.1 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 55(140).**

**Site :- Reg. Res. Stn., Nawabganj.**

**Type :- 'M'.**

Object :—To study the effect of different sources of N on the yield of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Nawabganj. (iii) N.A./8.8.1955. (iv) (a) N.A. (b) Transplanting. (c) N.A. (d) 9"×9". (e) 2. (v) N.A. (vi) T--22 (late). (vii) to (x) N.A.

## 2. TREATMENTS :

3 sources of 36 lb./ac. of N : S<sub>0</sub>=Control (no application), S<sub>1</sub>=Urea and S<sub>2</sub>=A/S/N. N applied on 8.8.1955.

## 3. DESIGN and 4. GENERAL :

Same as in expt. no. 55(139) on page 51.

## 5. RESULTS :

(i) 1662 lb./ac. (ii) 163.4 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	S <sub>0</sub>	S <sub>1</sub>	S <sub>2</sub>
Av. yield	1673	1500	1812

S.E./mean = 66.7 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 58(425).**

**Site :- Reg. Res. Stn., Nawabganj.**

**Type :- 'M'.**

Object :—To study the effect of compost and P on Paddy.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Nawabganj. (iii) N.A./8.8.1958. (iv) (a) N.A. (b) Transplanting. (c) to (e) N.A. (v) Nil. (vi) T--3. (vii) to (ix) N.A. (x) 17.11.1958.

## 2. TREATMENTS :

11 manurial treatments : M<sub>0</sub>=Control, M<sub>1</sub>=45 lb./ac. of P<sub>2</sub>O<sub>5</sub>, M<sub>2</sub>=90 lb./ac. of P<sub>2</sub>O<sub>5</sub>, M<sub>3</sub>=135 lb./ac. of P<sub>2</sub>O<sub>5</sub>, M<sub>4</sub>=100 mds./ac. of compost, M<sub>5</sub>=M<sub>4</sub>+45 lb./ac. of P<sub>2</sub>O<sub>5</sub> placed deep in furrows below the seed, M<sub>6</sub>=M<sub>4</sub>+90 lb./ac. of P<sub>2</sub>O<sub>5</sub> placed deep in furrows below the seed, M<sub>7</sub>=M<sub>4</sub>+135 lb./ac. of P<sub>2</sub>O<sub>5</sub> placed deep in furrows below the seed, M<sub>8</sub>=100 mds./ac. of compost containing 45 lb./ac. of P<sub>2</sub>O<sub>5</sub>, M<sub>9</sub>=100 mds./ac. of compost containing 90 lb./ac. of P<sub>2</sub>O<sub>5</sub> and M<sub>10</sub>=100 mds./ac. of compost containing 135 lb./ac. of P<sub>2</sub>O<sub>5</sub>.

P<sub>2</sub>O<sub>5</sub> applied as Super on 12.7.1958 and compost on 30.6.1958.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 11. (b) N.A. (iii) 4. (iv) (a) 41'×13.25'. (b) 39.5'×11.75'. (v) 9"×9". (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) 1958—only. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 2104 lb./ac. (ii) 188.3 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	M <sub>0</sub>	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	M <sub>4</sub>	M <sub>5</sub>	M <sub>6</sub>	M <sub>7</sub>	M <sub>8</sub>	M <sub>9</sub>	M <sub>10</sub>
Av. yield	1882	1979	1931	2076	2076	2293	2220	2293	2027	2148	2220

S.E./mean = 94.1 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 58(96).**

**Site :- Reg. Res. Stn., Nawabganj.**

**Type :- 'M'.**

Object :—To study the residual effect of N and P applied to previous wheat crop on Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Wheat—Paddy. (b) Wheat. (c) As per treatments. (ii) (a) Clayey loam. (b) Refer soil analysis, Nawabganj. (iii) N.A./9, 10.7.1958. (iv) (a) N.A. (b) Transplanting. (c) N.A. (d) 9" between rows. (e) 1 to 2. (v) 25 lb./ac. of N as A/S. (vi) T—21 (medium). (vii) and (viii) N.A. (ix) 45.14". (x) 19.10.1958.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N as A/S : N<sub>0</sub>=0, N<sub>1</sub>=25 and N<sub>2</sub>=50 lb./ac.

(2) 3 levels of P as Super : P<sub>0</sub>=0, P<sub>1</sub>=30 and P<sub>2</sub>=60 lb./ac.

Fertilizers applied to previous Wheat crop.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 2. (iv) (a) and (b) 42' × 25½'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1958—only. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) The expt. was planned with 4 replications but due to the construction of irrigational channel 2 replications were dropped.

## 5. RESULTS :

(i) 2013 lb./ac. (ii) 82.1 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	1888	2034	2052	1991
N <sub>1</sub>	2042	1964	2094	2033
N <sub>2</sub>	1987	2092	1961	2013
Mean	1972	2030	2036	2013

S.E. of any marginal mean = 33.5 lb./ac.  
S.E. of body of table = 58.1 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 58(100).**

**Site :- Reg. Res. Stn., Nawabganj.**

**Type :- 'M'.**

Object :—To study the effect of different levels of P on Paddy.

## 1. BASAL CONDITIONS :

(i) Paddy—Wheat. (b) Wheat. (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Nawabganj. (iii) 8.6.1958. (iv) (a) N.A. (b) Behind the plough. (c) 30 srs./ac. (d) 9" between rows. (e) N.A. (v) 25 lb./ac. of N as A/S. (vi) N—27 (early). (vii) and (viii) N.A. (ix) 49.88". (x) 24.9.1958.

## 2. TREATMENTS :

5 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=30$ ,  $P_2=60$ ,  $P_3=90$  and  $P_4=120$  lb./ac.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) and (b) 40'6" × 27'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1958—only. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 733 lb./ac. (ii) 88.3 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$P_0$	$P_1$	$P_2$	$P_3$	$P_4$
Av. yield	778	707	737	727	717

S.E./mean = 44.1 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 58(98).**

**Site :- Reg. Res. Stn., Nawabganj.**

**Type :- 'M'.**

**Object :-** To study the effect of different methods of application of N, P and K on the yield of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Nawabganj. (iii) N.A./29, 30.7.1958. (iv) (a) N.A. (b) Transplanting. (c) 8 srs./ac. (d) 9" between rows. (e) 1 to 2. (v) Nil. (vi) T-9 (late). (vii) and (viii) N.A. (ix) 40.59". (x) 20.12.1958.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of fertilizers :  $F_1=60$  lb./ac. of N as A/S,  $F_2=40$  lb./ac. of  $P_2O_5$  as Super and  $F_3=30$  lb./ac. of  $K_2O$  as Pot. Sul.

(2) 2 methods of application :  $M_1$ =Broadcast (surface application) and  $M_2$ =Placement (behind the plough 3" to 4" deep in soil before transplanting).

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 42' × 36'. (b) 39' × 33'. (v) 1½' × ½'. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1958—N.A. (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 2054 lb./ac. (ii) 123.2 lb./ac. (iii) Main effect of F is highly significant and effect of M is significant. (iv) Av. yield of grain in lb./ac.

	$F_1$	$F_2$	$F_3$	Mean
$M_1$	2150	1812	2010	1991
$M_2$	2332	2054	1967	2118
Mean	2241	1933	1988	2054

S.E. of F marginal mean = 43.6 lb./ac.

S.E. of M marginal mean = 35.6 lb./ac.

S.E. of body of table = 61.6 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 57(217).**

**Site :- Tarai State Farm, Phoolbagh.**

**Type :- 'M'.**

Object :— To study the effect of N and P on the yield of Paddy.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Wheat. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 19 to 21.7.1957. (iv) (a) 1 hot weather cultivation, 2 harrowings, 1 ploughing and 4 plankings. (b) Broadcast. (c) 25 srs./ac. (d) and (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) 2 weedings. (ix) 48.58". (x) 11.11.1957.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 3 levels of N as A/S :  $N_0=0$ ,  $N_1=20$  and  $N_2=40$  lb./ac.

(2) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=20$  and  $P_2=40$  lb./ac.

N broadcast before sowing and  $P_2O_5$  applied behind the victory plough in furrows on 16 and 17.7.1957.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 9. (b)  $49.5' \times 222'$ . (iii) 4. (iv) (a) and (b)  $49.5' \times 22'$ . (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1957 only. (b) No. (c) Nil. (v) (a) Nagla. (b) Nil. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1472 lb./ac. (ii) 219.5 lb./ac. (iii) Main effect of P alone is highly significant. (iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	$P_2$	Mean
$N_0$	1210	1620	1350	1393
$N_1$	1370	1560	1400	1443
$N_2$	1530	1740	1470	1580
Mean	1370	1640	1407	1472

S.E. of any marginal mean = 63.4 lb./ac.

S.E. of body of table = 109.7 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 54(314).**

**Site :- Govt. Res. Farm, Pura.**

**Type :- 'M'.**

Object :—To study the residual effect of N through different sources and P applied to previous wheat crop on the yield of Paddy.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Wheat. (c) As per treatments. (ii) (a) Sandy loam. (b) Refer soil analysis, Pura. (iii) 18.5.1954. (iv) (a) 1 *Palewa* and 2 ploughings. (b) to (e) N.A. (v) 10 lb./ac. of N as A/S on 5.8.1954. (vi) N.A. (vii) Irrigated. (viii) 7 weedings. (ix) N.A. (x) 28, 29.9.1954.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=20$  and  $P_2=40$  lb./ac.

(2) 5 levels of N :  $F_0=$ No application,  $F_1=20$  lb./ac. of N as A/S,  $F_2=40$  lb./ac. of N as A/S,  $F_3=20$  lb./ac. of N as Urea and  $F_4=40$  lb./ac. of N as Urea.

Fertilizers applied to previous wheat crop.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 15. (b)  $54.5' \times 314'$ . (iii) 3. (iv) (a) and (b)  $54.5' \times 20'$ . (v) Nil. (vi) Yes.



## 4. GENERAL :

(i) Good. (ii) N.A. (iii) Yield of grain. (iv) (a) 1954 only. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 2771 lb./ac. (ii) 458.6 lb./ac. (iii) Interaction  $P \times F$  alone is highly significant. (iv) Av. yield of grain in lb./ac.

	F <sub>0</sub>	F <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>	F <sub>4</sub>	Mean
P <sub>0</sub>	2811	2691	2238	3117	2837	2739
P <sub>1</sub>	2518	3077	3117	2305	2278	2659
P <sub>2</sub>	2771	2464	3210	3051	3077	2915
Mean	2700	2744	2855	2824	2731	2771

S.E. of P marginal mean = 118.4 lb./ac.

S.E. of F marginal mean = 152.9 lb./ac.

S.E. of body of table = 264.8 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 57(381).**

**Site :- Govt. Res. Farm, Pura.**

**Type :- 'M'.**

Object :—To study the residual effect of N, P and K applied to previous wheat crop on Paddy.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Wheat. (c) As per treatments. (ii) (a) Sandy loam. (b) Refer soil analysis, Pura. (ii) 31.5.1957. (iv) (a) 1 *palewa*, 1 ploughing by victory plough and 2 ploughings by *desi* plough. (b) to (e) N.A. (v) N.A. (vi) T-21. (vii) N.A. (viii) 2 weedings. (ix) N.A. (x) 22.9.1957.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 2 levels of N as A/S/N : N<sub>0</sub>=0 and N<sub>1</sub>=30 lb./ac.

(2) 2 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0 and 40 lb./ac.

(3) 2 levels of K<sub>2</sub>O as Mur. Pot. : K<sub>0</sub>=0 and K<sub>1</sub>=60 lb./ac.

Fertilizers applied to previous wheat crop.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) and (b) 87.1' × 12.5'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1957—1958. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 2493 lb./ac. (ii) 414.7 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac

	P <sub>0</sub>	P <sub>1</sub>	Mean	K <sub>0</sub>	K <sub>1</sub>
N <sub>0</sub>	2401	2431	2416	2456	2376
N <sub>1</sub>	2415	2725	2570	2466	2674
Mean	2408	2578	2493	2461	2525
K <sub>0</sub>	2281	2641			
K <sub>1</sub>	2535	2515			

S.E. of any marginal mean = 103.7 lb./ac.

S.E. of body of any table = 146.6 lb./ac.

**Crop :- Paddy (Kharif).****Ref :- U P. 58(352).****Site :- Govt. Res. Farm, Pura.****Type :- 'M'.**

Object :—To study the residual effect of N, P and K applied to wheat crop on Paddy.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Wheat. (c) As per treatments. (ii) (a) Sandy loam. (b) Refer soil analysis, Pura. (iii) May, 1958. (iv) (a) N.A. (b) Behind the plough. (c) to (e) N.A. (v) to (ix) N.A. (x) 23 and 24.9.1958.

**2. TREATMENTS to 4. GENERAL :**

Same as in expt. no. 57(381) on page 56.

**5. RESULTS :**(i) 2129 lb./ac. (ii) 237.7 lb./ac. (iii) Main effects of N and P are highly significant. Main effect of K and interaction  $N \times K$  are significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	K <sub>0</sub>	K <sub>1</sub>
N <sub>0</sub>	1770	2230	2000	1805	2195
N <sub>1</sub>	2034	2482	2258	2245	2271
Mean	1902	2356	2129	2025	2233
K <sub>0</sub>	1848	2202			
K <sub>1</sub>	1956	2510			

S.E. of any marginal mean = 59.4 lb./ac.

S.E. of body of any table = 84.0 lb./ac.

**Crop :- Paddy (Kharif).****Ref :- U.P. 55(363).****Site :- Govt. Res. Farm, Pura.****Type :- 'M'.**

Object :—To study the effect of P and different sources of N on the yield of Paddy.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Pura. (iii) 30.6.1955. (iv) and (v) N.A. (vi) T—22. (vii) to (ix) N.A. (x) 25.9.1955.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 3 sources of N : S<sub>1</sub>=A/N, S<sub>2</sub>=A/S and S<sub>3</sub>=Urea.(2) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=20 and N<sub>2</sub>=40 lb./ac.(3) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=20 and P<sub>2</sub>=40 lb./ac.**3. DESIGN :**(i) 3<sup>3</sup> confd. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A. (iii) 1. (iv) (a) and (b) 51'×21.35'. (v) Nil. (vi) Yes.**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1954—1955. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Experiment conducted in 1954 is not available and as the layout plan of the experiment is not available, it is analysed as R.B.D.

**5. RESULTS :**

(i) 1187 lb./ac. (ii) 171.8 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

$N_0P_0 = 1004$ ,  $N_0P_1 = 1201$  and  $N_0P_2 = 1273$  lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
N <sub>1</sub>	998	1181	1213	1131	1251	1233	908
N <sub>2</sub>	1193	1231	1390	1272	1260	1275	1280
Mean	1096	1206	1301	1201	1255	1254	1094
P <sub>0</sub>	1262	1239	1267				
P <sub>1</sub>	1129	1136	1497				
P <sub>2</sub>	896	1244	1141				

S.E. of P or S marginal mean = 70.1 lb./ac.  
 S.E. of N marginal mean = 57.3 lb./ac.  
 S.E. of body of N × S or N × P table = 99.2 lb./ac.  
 S.E. of body of P × S table = 121.5 lb./ac.  
 S.E. of N<sub>0</sub>P mean = 99.2 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 59(388).**

**Site :- Govt. Res. Farm, Pura.**

**Type :- 'M'.**

Object :—To study the effect of different levels and sources of N on the yield of Paddy.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Pura. (iii) N.A./5.8.1959. (iv) (a) N.A. (b) Transplanting. (c) to (e) N.A. (v) N.A. (vi) T-9 (late). (vii) to (ix) N.A. (x) 16.12.1959.

**2. TREATMENTS :**

All combinations of (1) and (2) + a control

(1) 2 sources of N : S<sub>1</sub> = A/S and S<sub>2</sub> = Urea.

(2) 2 levels of N : N<sub>1</sub> = 20 and N<sub>2</sub> = 40 lb./ac.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) and (b) 50' × 20'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1959—contd. (b) N.A. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 827 lb./ac. (ii) 236.6 lb./ac. (iii) 'Control vs. others' alone is significant. (iv) Av. yield of grain in lb./ac.

Control = 544 lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	Mean
N <sub>1</sub>	904	730	817
N <sub>2</sub>	925	1035	980
Mean	915	882	898

S.E. of any marginal mean = 83.6 lb./ac.  
 S.E. of body of table or control mean = 118.3 lb./ac.

**Crop :- Paddy (Kharif).****Ref :- U.P. 58(353).****Site :- Govt. Res. Farm, Pura.****Type :- 'M'.**

Objet :-To study the effect of different methods of application of N on Paddy crop.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Pura. (iii) N.A./22 and 23.7.1958. (iv) (a) N.A. (b) Transplanting. (c) to (e) N.A. (v) Nil. (vi) T-9 (late). (vii) to (ix) N.A. (x) 27,28.11.1958.

**2. TREATMENTS :**5 methods of application of N :  $M_0$ =Control,  $M_1$ =Broadcast just before sowing,  $M_2$ =Drilled just before sowing,  $M_3$ =Placed in the form of pellets near the plant root and  $M_4$ =Top dressed.

N as A/S applied at 40 lb./ac.

 $M_1$ ,  $M_2$  and  $M_3$  applied on 21.7.1958 and  $M_4$  on 23.9.1958.**3. DESIGN :**(i) R.B.D. (ii) (a) 5. (b)  $40' \times 189.5'$ . (iii) 4. (iv) (a) and (b)  $40' \times 36.3'$ . (v) Nil. (vi) Yes.**4. GENERAL .**

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1958—contd. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1868 lb./ac. (ii) 168.7 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$M_0$	$M_1$	$M_2$	$M_3$	$M_4$
Av. yield	1238	1935	2078	1898	2190

S.E./mean = 84.3 lb./ac.

**Crop :- Paddy (Kharif).****Ref :- U.P. 57 (372).****Site :- Govt. Res. Farm, Pura.****Type :- 'M'.**

Object :-To study the residual effect of industrial waste products, A/S/N and F.Y.M. applied to previous wheat crop on Paddy.

**1. BASAL CONDITIONS :**(i) (a) N.A. (b) Wheat. (c) As per treatments. (ii) (a) Sandy loam. (b) Refer soil analysis, Pura. (iii) 6.6.1957. (iv) (a) 1 *palewa*, 1 ploughing by victory plough and 2 ploughings by *desi* plough. (b) to (e) N.A. (v) 1 md./ac. of A/S applied on 18.7.1957. (vi) T-136. (vii) N.A. (viii) 2 weedings. (ix) N.A. (x) 23.9.1957.**2. TREATMENTS :**9 manurial treatments :  $M_0$ =Control,  $M_1$ =50 lb./ac. of N as horn and hoof,  $M_2$ =50 lb./ac. of N as blood meal,  $M_3$ =50 lb./ac. of N as wool waste,  $M_4$ =50 lb./ac. of N as A/S/N,  $M_5$ = $M_4$ +60 lb./ac. of  $P_2O_5$  as Super,  $M_6$ = $M_4$ +60 lb./ac. of  $P_2O_5$  as B.M.,  $M_7$ =50 lb./ac. of N as F.Y.M. and  $M_8$ =25 lb./ac. of N as F.Y.M.+25 lb./ac. of N as A/S/N.

Treatments applied to previous wheat crop.

**3. DESIGN :**(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) and (b)  $50' \times 20'$ . (v) Nil. (vi) Yes.**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1957-1958. (modified in 1958). (b) No. (c) Nil (v) to (vii) Nil.

**5. RESULTS :**

(i) 1984 lb./ac. (ii) 378.6 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	M <sub>0</sub>	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	M <sub>4</sub>	M <sub>5</sub>	M <sub>6</sub>	M <sub>7</sub>	M <sub>8</sub>
Av. yield	1753	1938	2134	1764	1819	2058	2309	2069	2015

S.E./mean = 189.3 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 58(338).**

**Site :- Govt. Res. Farm, Pura.**

**Type :- 'M'.**

Object :—To study the residual effect of industrial waste products, A/S and F.Y.M. applied to previous wheat crop on Paddy.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Wheat. (c) As per treatments. (ii) (a) Sandy loam. (b) Refer soil analysis, Pura. (iii) June, 1958. (iv) (a) N.A. (b) Behind the *desi* plough. (c) to (e) N.A. (v) 1 mc./ac. of A/S. (v) to (x) N.A. (x) 25 and 29.9.1958.

**2. TREATMENTS :**

8 manurial treatments : M<sub>0</sub>—Control, M<sub>1</sub>—50 lb./ac. of N as blood meal, M<sub>2</sub>—50 lb./ac. of N as wool waste, M<sub>3</sub>—50 lb./ac. of N as A/S, M<sub>4</sub>—M<sub>1</sub>+60 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super, M<sub>5</sub>—M<sub>3</sub>+60 lb./ac. of P<sub>2</sub>O<sub>5</sub> as B.M., M<sub>6</sub>—50 lb./ac. of N as F.Y.M. and M<sub>7</sub>—25 lb./ac. of N as F.Y.M. + 25 lb./ac. of N as A/S.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) and (b) 50' x 20'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1957—1958 (modified in 1958). (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1673 lb./ac. (ii) 306.5 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	M <sub>0</sub>	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	M <sub>4</sub>	M <sub>5</sub>	M <sub>6</sub>	M <sub>7</sub>
Av. yield	1416	1819	1231	1503	2254	1949	1448	1764

S.E./mean = 153.2 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 54(182).**

**Site :- Govt. Res. Farm, Pura.**

**Type :- 'M'.**

Object :—To study the effect of different levels and sources of P along with N on Paddy.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Pura. (iii) 20.5.1954. (iv) and (v) N.A. (vi) T—21. (vii) to (ix) N.A. (x) 23.9.1954.

**2. TREATMENTS :**

All combinations of (1) and (2) + 2 extra treatments

(1) 2 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>1</sub>—15 and P<sub>2</sub>—30 lb./ac.

(2) 3 sources of P<sub>2</sub>O<sub>5</sub> : S<sub>1</sub>—Ammono. Phos., S<sub>2</sub>—Super and S<sub>3</sub>—Nitro. Phos.

Extra treatments : T<sub>0</sub>—Control and T<sub>1</sub>—30 lb./ac. of N as A/S.

Fertilizers applied on 19.5.1954.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 8. (b) 38' x 229'4". (iii) 4. (iv) (a) and (b) 38' x 28'8". (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1954—1955. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 3029 lb./ac. (ii) 426.0 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

$$T_0 = 3099 \text{ lb./ac. and } T_1 = 3059 \text{ lb./ac.}$$

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean
P <sub>1</sub>	3184	3019	2949	3051
P <sub>2</sub>	2919	2914	3089	2974
Mean	3052	2966	3019	3012

S.E. of P marginal mean = 123.0 lb./ac.

S.E. of S marginal mean = 150.6 lb./ac.

S.E. of body of table or T mean = 213.0 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 55(165)-**

**Site :- Govt. Res. Farm, Pura.**

**Type :- 'M'.**

Object :- To study the effect of different levels and sources of P along with N on Paddy.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Pura. (iii) 30.6.1955. (iv) and (v) N.A. (vi) T—22. (vii) to (ix) N.A. (x) 27.9.1955.

## 2. TREATMENTS :

Same as in expt. no. 54(182) on page 60.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) and (b) 44'×20'. (v) Nil. (vi) Yes.

## 4. GENERAL :

Same as in expt. no. 54(182) on page 60.

## 5. RESULTS :

(i) 2076 lb./ac. (ii) 65.9 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

$$T_0 = 2085 \text{ and } T_1 = 2042 \text{ lb./ac.}$$

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean
P <sub>1</sub>	2053	2078	2051	2061
P <sub>2</sub>	2107	2059	2130	2099
Mean	2080	2069	2090	2080

S.E. of P marginal mean = 19.0 lb./ac.

S.E. of S marginal mean = 23.3 lb./ac.

S.E. of body of table or T mean = 32.9 lb./ac.

**Crop :- Paddy (Kharif).****Ref :- U.P. 59(83).****Site :- Sahupuri Agri. Expt. Farm, Sahupuri.****Type :- 'M'.**

Object :—To study the effect of different levels and sources of N with and without P on Paddy.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Bajra. (c) Nil. (ii) (a) Medium sandy loam. (b) N.A. (iii) 15.7.1959. (iv) (a) 3 ploughings and 2 plankings. (b) Line sowing by Japanese method. (c) 15 srs./ac. (d) 6"×6". (e) 2 to 3. (v) 3 tons/ac. of M.C. (vi) T-9 (late). (vii) Irrigated. (viii) 1 weeding and 1 hoeing. (ix) N.A. (x) 16.12.1959.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 2 sources of N:  $S_1=A/C$  and  $S_2=A/S$ .(2) 3 levels of N:  $N_0=0$ ,  $N_1=25$  and  $N_2=50$  lb./ac.(3) 3 levels of  $P_2O_5$  as Super:  $P_0=0$ ,  $P_1=25$  and  $P_2=50$  lb./ac. $P_2O_5$  applied evenly on 13.7.1959 over ploughed field and puddled in. N applied by broadcast after mixing with some dry earth on the standing crop in two equal doses on 22.7.1959 and 15.10.1959.**3. DESIGN :**

(i) R.B.D. (ii) (a) 18. (b) 133'×105'. (iii) 4. (iv) (a) and (b) 15'×40'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Normal. (ii) Light attack of paddy fly. Gammexane and 5% B.H.C. dusted. (iii) Length of plant, number of tillers and yield of grain. (iv) (a) 1959—contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**(i) 1548 lb./ac. (ii) 341.6 lb./ac. (iii) Main effect of N is highly significant. Interaction  $P \times N$  is significant. (iv) Av. yield of grain in lb./ac. $N_0P_0 = 835$ ,  $N_0P_1 = 982$  and  $N_0P_2 = 971$  lb./ac.

	$N_1$	$N_2$	Mean	$P_0$	$P_1$	$P_2$
$S_1$	1718	2154	1936	1987	2042	1779
$S_2$	1634	1918	1776	1779	1715	1833
Mean	1676	2036	1856	1883	1878	1806
$P_0$	1506	2260				
$P_1$	1724	2033				
$P_2$	1797	1815				

S.E. of N or S marginal mean = 69.7 lb./ac.

S.E. of P marginal mean = 85.4 lb./ac.

S.E. of body of  $N \times S$  table = 98.6 lb./ac.S.E. of body of  $P \times N$  or  $P \times S$  table or  $N_0P$  mean = 120.8 lb./ac.**Crop :- Paddy (Kharif).****Ref :- U.P. 56(294).****Site :- Rice Res. Sub-Stn., Tissuhi.****Type :- 'M'.**

Object :—To study the effect of F.Y.M., A/S and Super on the yield of Paddy.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Hard clay. (b) Refer soil analysis, Tissuhi. (iii) N.A./2.8.1956. (iv) (a) Hot weather cultivation and 3 ploughings. (b) Transplanting. (c) N.A. (d) 9"×9". (e) N.A. (v) Nil. (vi) T-36. (vii) Irrigated. (viii) and (ix) N.A. (x) 25 to 28.11.1956.

## 2. TREATMENTS :

All combinations of (1) and (2)+2 extra treatments

(1) 3 sources of 60 lb./ac. of N :  $S_1$ =F.Y.M.,  $S_2$ =A/S and  $S_3$ = $\frac{1}{2}$  F.Y.M.+ $\frac{1}{2}$  A/S.

(2) 2 levels of  $P_2O_5$  as Super :  $P_0$ =0, and  $P_1$ =50 lb./ac.

Extra treatments :  $T_0$ =Control and  $T_1$ =50 lb./ac. of  $P_2O_5$  as Super.

F.Y.M. applied 2 to 3 weeks before transplanting. A/S in split application half at transplanting and half at tillering. Super applied 3" to 4" deep in soil behind the plough a week before transplanting.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 41'×28'. (b) 38'×25'. (v) 1½'×1½'. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Yield of grain. (iv) (a) 1956—N.A. (b) N.A. (c) Nil. (v) (a) Atarra. (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 2350 lb./ac. (ii) 548.2 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

$T_0$ =2423 lb./ac. and  $T_1$ =2275 lb./ac.

	$S_1$	$S_2$	$S_3$	Mean
$P_0$	2075	2405	2240	2240
$P_1$	2228	2547	2611	2462
Mean	2152	2476	2426	2351

S.E. of S marginal mean = 193.8 lb./ac.

S.E. of P marginal mean = 158.2 lb./ac.

S.E. of body of table or T mean = 274.1 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 55(350).**

**Site :- Rice Res. Sub-Stn., Tissuhi.**

**Type :- 'M'.**

Object :—To study the residual effect of N, P and K applied to previous wheat crop on Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) As per treatments. (ii) (a) Hard clay. (b) Refer soil analysis, Tissuhi. (iii) N.A./18, 19.8.1955. (iv) (a) 4 ploughings and 1 *palewa*. (b) Transplanting. (c) to (e) N.A. (v) 25 lb./ac. of N as A/S. (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 2 levels of N as A/S :  $N_0$ =0 and  $N_1$ =30 lb./ac.

(2) 2 levels of  $P_2O_5$  as Super :  $P_0$ =0 and  $P_1$ =60 lb./ac.

(3) 3 levels of  $K_2O$  as Pot. Sul. :  $K_0$ =0,  $K_1$ =60 and  $K_2$ =120 lb./ac.

Fertilizers applied to previous wheat crop.

## 3. DESIGN :

(i) Partially confd. (ii) (a) 6 plots/block ; 2 blocks/replication. (b) N.A. (iii) 4. (iv) (a) and (b) 42'×25'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1955 only. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 917 lb./ac. (ii) 191.7 lb./ac. (iii) Main effect of P is highly significant. Effect of K and interaction N×P are significant. (iv) Av. yield of grain in lb./ac.



	K <sub>0</sub>	K <sub>1</sub>	K <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>
N <sub>0</sub>	952	748	985	895	562	1127
N <sub>1</sub>	989	852	977	939	834	1045
Mean	970	800	981	917	748	1086 <sub>1</sub>
P <sub>0</sub>	817	625	802			
P <sub>1</sub>	1124	975	1160			

S.E. of N or P marginal mean = 39.1 lb./ac.  
 S.E. of K marginal mean = 47.9 lb./ac.  
 S.E. of body of N×K or P×K table = 67.8 lb./ac.  
 S.E. of body of N×P table = 55.3 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 56(172).**

**Site :- Rice Res. Sub-Stn., Tissuhi.**

**Type :- 'M'.**

**Object :-** To study the residual effect of N, P and K applied to previous wheat crop on the yield of Paddy.

#### 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) As per treatments. (ii) (a) Loam to clayey loam. (b) Refer soil analysis, Tissuhi. (iii) N.A. (iv) (a) 3 ploughings by *desi* plough and 1 planking. (b) to (e) N.A. (v) 2<sup>1</sup>/<sub>2</sub> lb./ac. of N as A/S. (vi) to (viii) N.A. (ix) 34.48%. (x) 28, 29.11.1956.

#### 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 2 levels of N as A/S : N<sub>0</sub> = 0 and N<sub>1</sub> = 30 lb./ac.

(2) 2 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub> = 0 and P<sub>1</sub> = 40 lb./ac.

(3) 2 levels of K<sub>2</sub>O as Pot. Sul. : K<sub>0</sub> = 0 and K<sub>1</sub> = 60 lb./ac.

Fertilizers applied to previous wheat crop.

#### 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) and (b) 40°/27.3°. (v) Nil. (vi) Yes.

#### 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Yield of grain and fodder. (iv) (a) 1956-1958. (b) No. (c) Nil. (v) to (vii) Nil.

#### 5. RESULTS :

(i) 1624 lb./ac. (ii) 333.8 lb./ac. (iii) Main effect of K is highly significant and effect of P is significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	K <sub>0</sub>	K <sub>1</sub>
N <sub>0</sub>	1523	1659	1591	1441	1741
N <sub>1</sub>	1447	1867	1657	1474	1843
Mean	1485	1763	1624	1456	1792
K <sub>0</sub>	1314	1598			
K <sub>1</sub>	1656	1928			

S.E. of any marginal mean = 83.4 lb./ac.  
 S.E. of body of any table = 118.0 lb./ac.

**Crop :- Paddy (Kharif).****Ref :- U.P. 57(246).****Site :- Rice Res. Sub-Stn., Tissuhi.****Type :- 'M'.**

Object :—To study the residual effect of N, P and K applied to previous wheat crop on the yield of Paddy.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Wheat. (c) As per treatments. (ii) (a) Clayey loam. (b) Refer soil analysis, Tissuhi. (iii) 8.6.1957. (iv) (a) 7 ploughings. (b) Broadcasting. (c) 32 srs./ac. (d) and (e) N.A. (v) 20 lb./ac. of N as A/S/N. (vi) N—22 (early). (vii) Irrigated. (viii) N.A. (ix) 39.35". (x) 25.9.1957.

**2. TREATMENTS :**

Same as in expt. no. 56(172) on page 64.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 2. (iv) (a) 26'×42'. (b) 1/60 ac. (v) N.A. (vi) No.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1956—1958. (b) No. (c) Nil. (v) and (vi) Nil. (vii) There were actually 4 replications, 2 with variety N—22 and one each with T—36 and 22—A. The results for only N—22 variety with 2 replications are given. The treatments have not been randomised independently with 2 replications.

**5. RESULTS :**

(i) 1384 lb./ac. (ii) 68.9 lb./ac. (iii) Main effect of P and interaction N×K are highly significant. Main effect of N is significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	K <sub>0</sub>	K <sub>1</sub>
N <sub>0</sub>	1256	1410	1333	1372	1294
N <sub>1</sub>	1370	1500	1435	1340	1530
Mean	1313	1455	1384	1356	1412
K <sub>0</sub>	1250	1462			
K <sub>1</sub>	1376	1448			

S.E. of any marginal mean = 24.4 lb./ac.

S.E. of body of any table = 34.5 lb./ac.

**Crop :- Paddy (Kharif).****Ref :- U.P. 58(370).****Site :- Rice Res. Sub-Stn., Tissuhi.****Type :- 'M'.**

Object :—To study the residual effect of N, P and K applied to previous wheat crop on the yield of Paddy.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Wheat. (c) As per treatments. (ii) (a) Clayey soil. (b) Refer soil analysis, Tissuhi. (iii) 28.6.1958. (iv) (a) 1 *palewa* and 4 ploughings by *desi* plough. (b) Behind the plough. (c) 30 srs./ac. (d) and (e) N.A. (v) 25 lb./ac. of N as A/S. (vi) N—22 (early). (vii) Irrigated. (viii) N.A. (ix) 50.8". (x) 1.10.1958.

**2. TREATMENTS :**

Same as in expt. no. 56(172) on page 64.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) and (b) 30'×36'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Satisfactory. (ii) The crop was dusted thrice with gammexane to check the attack of *gundhi* bug. (iii) Yield of grain and straw. (iv) (a) 1956—1958. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 795 lb./ac. (ii) 222.0 lb./ac. (iii) Main effect of P alone is highly significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	K <sub>0</sub>	K <sub>1</sub>
N <sub>0</sub>	560	868	714	690	738
N <sub>1</sub>	706	1046	876	880	872
Mean	633	957	795	785	805
K <sub>0</sub>	577	993			
K <sub>1</sub>	689	921			

S.E. of any marginal mean = 55.5 lb./ac.  
S.E. of body of any table = 78.5 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 58(199).**

**Site :- Rice Res. Sub-Stn., Tissuhi.**

**Type :- 'M'.**

Object :—To study the residual effect of different levels of P applied to previous wheat crop on the yield of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) As per treatments. (ii) (a) Clayey soil. (b) Refer soil analysis, Tissuhi. (iii) 30.6.1958. (iv) (a) 1 *palewa* and 4 ploughings by *desi* plough. (b) Behind the plough. (c) 30 srs./ac. (d) Rows 9" apart. (e) N.A. (v) 25 lb./ac. of N as A/S. (vi) N-22 (early). (vii) Irrigated. (viii) N.A. (ix) 32.8". (x) 30.9.1958.

## 2. TREATMENTS :

5 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=30, P<sub>2</sub>=60, P<sub>3</sub>=90 and P<sub>4</sub>=120 lb./ac.  
P<sub>2</sub>O<sub>5</sub> applied to previous wheat crop.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) and (b) 26' × 42'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Attack of *gundhi* bug ; dusted with gammexane. (iii) Yield of grain and straw. (iv) (a) 1958 only. (b) No. (c) Nil. (v) (a) Varanasi. (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1502 lb./ac. (ii) 310.8 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	P <sub>4</sub>
Av. yield	855	1434	1642	1655	1923

S.E./mean = 155.4 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 56(173).**

**Site :- Rice Res. Sub-Stn., Tissuhi.**

**Type :- 'M'.**

Object :— To study the effect of N, P and K on the yield of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Paddy—Fallow. (b) Fallow. (c) Nil. (ii) (a) Clayey loam. (b) Refer soil, analysis, Tissuhi. (iii) 1.8.1956. (iv) (a) 4 ploughings and 1 planking. (b) Transplanting. (c) 10 srs./ac. (d) and (e) N.A. (v) Nil. (vi) N—36 (late). (vii) and (viii) N.A. (ix) 47.51". (x) 29.11.1956.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 2 levels of N as A/S :  $N_0=0$  and  $N_1=30$  lb./ac.

(2) 2 levels of  $P_2O_5$  as Super :  $P_0=0$  and  $P_1=40$  lb./ac.

(2) 2 levels of  $K_2O$  as Pot. Sul. :  $K_0=0$  and  $K_1=60$  lb./ac.

N broadcast on 1.8.1956.  $P_2O_5$  and  $K_2O$  applied behind the plough on 31.7.1956.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) and (b) 26' × 42'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1956—1957 (Residual effect studied in 1957 and 1958). (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1423 lb./ac. (ii) 303.2 lb./ac. (iii) Main effect of N is significant and effect of P is highly significant. Av. yield of grain in lb./ac.

	$P_0$	$P_1$	Mean	$K_0$	$K_1$
$N_0$	1169	1381	1275	1256	1294
$N_1$	1253	1889	1571	1466	1676
Mean	1211	1635	1423	1361	1485
$K_0$	1144	1578			
$K_1$	1278	1692			

S.E. of any marginal mean = 75.8 lb./ac.  
S.E. of body of any table = 107.2 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 57(389).**

**Site :- Rice Res. Sub-Stn., Tissuhi.**

**Type :- 'M'.**

Object :- To study the effect of N, P and K on the yield of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Pea. (c) N.A. (ii) (a) Clayey soil. (b) Refer soil analysis, Tissuhi. (iii) N.A. '17 to 19.7.1957. (iv) (a) 4 ploughings by *desi* plough. (b) Transplanting. (c) 12 srs./ac. (d) and (e) N.A. (v) Nil. (vi) 22—A (late). (vii) and (viii) N.A. (ix) 35.7". (x) 13 and 14.11.1957.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 2 levels of N as A/S/N :  $N_0=0$  and  $N_1=30$  lb./ac.

(2) 2 levels of  $P_2O_5$  as trip Super :  $P_0=0$  and  $P_1=40$  lb./ac.

(2) 2 levels of  $K_2O$  as Mur. Pot. :  $K_0=0$  and  $K_1=60$  lb./ac.

A/S/N broadcast on surface on 17.5.1957. Super and Mur. Pot. placed deep in furrows. on 16.7.1957.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) and (b) 26' × 42'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1956—1957 (Residual effect studied in 1957 and 1958). (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1946 lb./ac. (ii) 360.5 lb./ac. (iii) Main effect of P alone is significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	K <sub>0</sub>	K <sub>1</sub>
N <sub>0</sub>	1664	2024	1844	1838	1850
N <sub>1</sub>	1910	2186	2048	1994	2102
Mean	1787	2105	1946	1916	1976
K <sub>0</sub>	1772	2060			
K <sub>1</sub>	1802	2150			

S.E. of any marginal mean = 90.1 lb./ac.  
S.E. of body of any table = 127.5 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 57(388).**

**Site :- Rice Res. Sub-Stn., Tissuhi.**

**Type :- 'M'.**

**Object :-** To study the residual effect of N, P and K applied to previous Paddy crop on succeeding Paddy crop.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Clayey soil. (b) Refer soil analysis, Tissuhi. (iii) N.A./20 and 21.7.1957. (iv) (a) 5 ploughings by *desi* plough. (b) Transplanting. (c) 15 srs./ac. (d) and (e) N.A. (v) 20 lb./ac. of N as A/S/N. (vi) N-36 (late). (vii) Irrigated. (viii) N.A. (ix) 28.45". (x) 24.11.1957.

## 2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 56(173) on page 66.

Fertilizers applied to previous paddy crop.

## 5. RESULTS :

(i) 1913 lb./ac. (ii) 492.0 lb./ac. (iii) Main effect of P alone is highly significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	K <sub>0</sub>	K <sub>1</sub>
N <sub>0</sub>	1677	2199	1938	2099	1777
N <sub>1</sub>	1531	2245	1888	1955	1821
Mean	1604	2222	1913	2027	1799
K <sub>0</sub>	2033	2021			
K <sub>1</sub>	1175	2423			

S.E. of any marginal mean = 123.0 lb./ac.  
S.E. of body of any table = 174.0 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 58(369).**

**Site :- Rice Res. Sub-Stn., Tissuhi.**

**Type :- 'M'.**

**Object :-** To study the residual effect of N, P and K applied to previous Paddy crop on succeeding crop of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Clayey soil. (b) Refer soil analysis, Tissuhi. (iii) N.A./18, 19.8.1957. (iv) (a) 2 *palewa*, 1 hot weather cultivation and 2 ploughings by *desi* plough. (b) Transplanting. (c) 10 srs./ac. (d) and (e) N.A. (v) 25 lb./ac. of N as A/S. (vi) T-26 (late). (vii) Irrigated. (viii) N.A. (ix) 36.7". (x) 18.11.1958.

## 2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 57(389) on page 67.

Fertilizer applied to previous paddy crop.

## 5. RESULTS :

(i) 1312 lb./ac. (ii) 254.4 lb./ac. (iii) Main effect of P alone is highly significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	K <sub>0</sub>	K <sub>1</sub>
N <sub>0</sub>	1168	1410	1289	1338	1240
N <sub>1</sub>	1138	1532	1335	1326	1344
Mean	1153	1471	1312	1332	1292
K <sub>0</sub>	1189	1475			
K <sub>1</sub>	1117	1467			

S.E. of any marginal mean = 63.6 lb./ac.

S.E. of body of any table = 89.9 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 55(122).**

**Site :- Rice Res. Sub-Stn., Tissuhi.**

**Type :- 'M'.**

Object :- To study the effect of different levels of K on the yield of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Clayey soil. (b) Refer soil analysis, Tissuhi. (iii) N.A./23, 24.8.1955. (iv) (a) 2 hot weather cultivations and 3 ploughings. (b) Transplanting. (c) 8 to 10 srs./ac. (d) 9"×9". (e) N.A. (v) 291 lb./ac. of A/S+250 lb./ac. of Super. (vi) N.A. (vii) Irrigated. (viii) and (ix) N.A. (x) 14.12.1955.

## 2. TREATMENTS :

6 levels of K<sub>2</sub>O as Pot. Sul. : K<sub>0</sub>=0, K<sub>1</sub>=15, K<sub>2</sub>=30, K<sub>3</sub>=45, K<sub>4</sub>=60 and K<sub>5</sub>=75 lb./ac.

K<sub>2</sub>O applied as surface dressing 2 to 3 days before transplanting.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 56'×27'. (b) 53'×24'. (v) 1½'×1½'. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Attack of *banka* disease. (iii) Yield of grain and straw. (iv) (a) 1955—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1048 lb./ac. (ii) 166.8 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	K <sub>0</sub>	K <sub>1</sub>	K <sub>2</sub>	K <sub>3</sub>	K <sub>4</sub>	K <sub>5</sub>
Av. yield	1057	1206	1013	1110	951	951

S.E./mean = 83.4 lb./ac.

**Crop :- Paddy (Kharif).****Ref :- U.P. 56(167).****Site :- Rice Res. Sub-Stn., Tissuhi.****Type :- 'M'.**

Object :—To study the effect of different levels of K on the yield of Paddy.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Hard clay. (b) Refer soil analysis, Tissuhi. (iii) N.A./2 8.1956. (iv) (a) Hot weather cultivations and 3 ploughings. (c) N.A. (d) 9" x 9". (e) N.A. (v) 40 lb./ac. of  $F_2C_3$  as Super+60 lb./ac. of N as A/S (vi) T-36. (vii) Irrigated. (viii) and (ix) N.A. (x) 25 to 28.11.1956.

**2. TREATMENTS :**

6 levels of  $K_2O$  as Pot. Sul. :  $K_0=0$ ,  $K_1=15$ ,  $K_2=30$ ,  $K_3=45$ ,  $K_4=60$  and  $K_5=75$  lb./ac.  
 $K_2O$  applied as surface dressing 2 to 3 days before transplanting.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 56' x 27'. (b) 53' x 24'. (v) 1½' x 1½'. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Nil. (iii) Yield of grain. (iv) (a) 1956—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 2048 lb./ac. (ii) 242 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$K_0$	$K_1$	$K_2$	$K_3$	$K_4$	$K_5$
Av. yield	2078	2043	1841	1981	2202	2144

S.E./mean = 121.0 lb./ac.

**Crop :- Paddy (Kharif).****Ref :- U.P. 54(100).****Site :- Rice Res. Sub-Stn., Tissuhi.****Type :- 'M'.**

Object :—To study the effect of different levels of trace elements on the yield of Paddy.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Tissuhi. (iii) N.A. (iv) (a) 5 ploughings with *desi* plough and 5 plankings. (b) to (e) N.A. (v) G.M.+30 lb./ac. of N as A/S+30 lb./ac. of  $P_2O_5$  as Super+15 lb./ac. of CaO as gypsum. (vi) T-22 A. (vii) Irrigated. (viii) 3 to 4 interculturings and 1 weeding. (ix) N.A. (x) 25.11.1954.

**2. TREATMENTS :**

10 trace element treatments :  $T_0$ =Control (3 plots),  $T_1=3$ ,  $T_2=6$ ,  $T_3=12$  lb./ac. of Cu as C/S,  $T_4=1$ ,  $T_5=2$ ,  $T_6=4$  lb./ac. of B as Borax,  $T_7=1$ ,  $T_8=4$  and  $T_9=10$  lb./ac. of Zn as  $ZnSO_4$ .

Elements applied as surface dressing mixed with fine dry earth or sand 2 days before transplanting so as to secure uniform distribution within the plots.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 3. (iv) (a) 28' x 37'. (b) 25' x 34'. (v) 1½' x 1½'. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Nil. (iii) Yield of grain. (iv) (a) 1954—1955. (b) No. (c) Nil. (v) (a) Conducted at many centres. (b) Nil. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1783 lb./ac. (ii) 364.8 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$T_0$	$T_1$	$T_2$	$T_3$	$T_4$	$T_5$	$T_6$	$T_7$	$T_8$	$T_9$
Av. yield	1792	1898	2231	2003	1854	1564	1511	1889	1643	1432

S.E./mean (except  $T_0$ ) = 210.6 lb./ac.

S.E. of  $T_0$  mean = 121.6 lb./ac.

**Crop :- Paddy (Kharif).****Ref :- U.P. 55(123).****Site :- Rice Res. Sub-Stn., Tissuhi.****Type :- 'M'.**

Object :—To study the effect of different levels of trace elements on the yield of Paddy.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Clayey soil. (b) Refer soil analysis, Tissuhi. (iii) N.A./30.7.1955. (iv) (a) 2 hot weather cultivations and 3 ploughings. (b) Transplanting. (c) 8 to 10 srs./ac. (d) 9"×9". (e) N.A. (v) G.M.+30 lb./ac. of N as A/S+30 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super+15 lb./ac. of K<sub>2</sub>O as Pot. Sul. (vi) T—36. (vii) Irrigated. (viii) and (ix) N.A. (x) 2.12.1955.

**2. TREATMENTS and 3. DESIGN :**

Same as in expt no. 54(100) on page 70.

**4. GENERAL :**

(i) N.A. (ii) Attack of *banka* disease. (iii) Yield of grain. (iv) (a) 1954—1955. (b) No. (c) Nil. (v) (a) Conducted at many centres. (b) Nil. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 2123 lb./ac. (ii) 439.2 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	T <sub>5</sub>	T <sub>6</sub>	T <sub>7</sub>	T <sub>8</sub>	T <sub>9</sub>
Av. yield	1898	2179	2390	2355	2460	2214	1898	2179	1581	2530

S.E./mean (except T<sub>0</sub>) = 253.6 lb./ac.S.E. of T<sub>0</sub> mean = 146.4 lb./ac.**Crop :- Paddy (Kharif).****Ref :- U.P. 54(198).****Site :- Rice Res. Sub-Stn., Tissuhi.****Type :- 'M'.**

Object :—To study the effect of N and P alone and in combinations on the yield of Paddy.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Clayey soil. (b) Refer soil analysis, Tissuhi. (iii) N.A./20,7.1954. (iv) (a) 1 *palewa*, 5 ploughings and 5 plankings. (b) Transplanting. (c) N.A. (d) 9"×9". (e) N.A. (v) Nil. (vi) T—36 (late). (vii) Irrigated. (viii) N.A. (ix) 15.33". (x) 11.11.1954.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 3 levels of N as A/S : N<sub>0</sub>=0, N<sub>1</sub>=25 and N<sub>2</sub>=50 lb./ac.(2) 3 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0, P<sub>1</sub>=50 and P<sub>2</sub>=100 lb./ac.P<sub>2</sub>O<sub>5</sub> placed deep in furrows behind the plough on 19.7.1954.

N broadcast after sowing on 17.8.1954.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) and (b) 18'×58'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1954 only. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 2170 lb./ac. (ii) 390.1 lb./ac. (iii) Main effect of N is highly significant and effect of P is significant. (iv) Av. yield of grain in lb./ac.



	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	1645	1989	2104	1913
N <sub>1</sub>	2003	2124	2437	2188
N <sub>2</sub>	2364	2267	2594	2408
Mean	2004	2127	2378	2170

S.E. of any marginal mean = 91.9 lb./ac.

S.E. of body of table = 159.2 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 54(199).**

**Site :- Rice Res. Sub-Stn., Tisuh.**

**Type :- 'M'.**

**Object :-** To study the residual effect of N and P applied to previous wheat crop on Paddy.

#### 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) As per treatments. (ii) (a) Clayey soil. (b) Refer soil analysis, Tisuh. (iii) N.A./15.7.1954. (iv) (a) 3 ploughings and 2 *palawa*. (b) Transplanting. (c) N.A. (d) 9' x 9'. (e) N.A. (v) 20 lb./ac. of N applied on 18.8.1954. (vi) 22--A (late). (vii) Irrigated. (viii) N.A. (ix) 15.46%. (x) 11.11.1954.

#### 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N as A/S : N<sub>0</sub>=0, N<sub>1</sub>=30 and N<sub>2</sub>=60 lb./ac.

(2) 3 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0, P<sub>1</sub>=60 and P<sub>2</sub>=120 lb./ac.

P<sub>2</sub>O<sub>5</sub> placed deep in furrows behind double *desi* plough and A,S broadcast on surface on 23 and 24.11.1953. N and P applied to previous wheat crop.

#### 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) and (b) 26' x 42'. (v) Nil. (vi) Yes.

#### 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) 1954 only. (b) No. (c) Nil. (v) to (vii) N.I.

#### 5. RESULTS :

(i) 1889 lb./ac. (ii) 464.3 lb./ac. (iii) Main effect of P alone is highly significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	1577	1855	2350	1927
N <sub>1</sub>	1326	1985	1938	1750
N <sub>2</sub>	1378	2064	2528	1990
Mean	1427	1968	2272	1889

S.E. of any marginal mean = 109.4 lb./ac.

S.E. of body of table = 189.5 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 55(214).**

**Site :- Agri. College Farm, B.H.U., Varanasi.**

**Type :- 'M'.**

**Object :-** To study the effect of different methods of application of A/S on the yield of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Gram. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, Varanasi. (iii) N.A./21.7 1955. (iv) (a) 5 ploughings by *desi* and 2 by *mestor* plough. (b) Transplanting. (c) 15 srs./ac. (d) 6"×6". (e) 3. (v) 100 mds./ac. of F.Y.M. in nursery. (vi) N—22. (vii) Irrigated. (viii) 2 weedings and 1 hoeing. (ix) 22.78". (x) 17.10.1955.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

- (1) 3 levels of N as A/S :  $N_0=0$ ,  $N_1=20$  and  $N_2=40$  lb./ac.  
 (2) 2 times of application :  $T_1=2$  days before transplanting and  $T_2=15$  days after transplanting.  
 (3) 2 methods of application :  $M_1$ =Fertilizers placed 3" deep in the form of pellets in the soil with 3" water standing in the field and  $M_2$ =Broadcasting with 3" water standing in the field.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 1/58.23 ac. (b) 173.95 ac. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Growth characters and yield of grain. (iv) (a) 1955—1956 (modified in 1956). (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1140 lb./ac. (ii) 283.2 lb./ac. (iii) Main effects of N and T are highly significant. Effect of M and interaction  $N \times T$  are significant. (iv) Av. yield of grain in lb./ac.

	$N_0$	$N_1$	$N_2$	Mean	$M_1$	$M_2$
$T_1$	813	1590	1504	1302	1463	1141
$T_2$	730	929	1276	978	1047	909
Mean	771	1259	1390	1140	1255	1125
$M_1$	822	1414	1530			
$M_2$	720	1104	1250			

S.E. of N marginal mean = 70.8 lb./ac.  
 S.E. of T or M marginal mean = 57.8 lb./ac.  
 S.E. of body of  $N \times T$  or  $N \times M$  table = 100.1 lb./ac.  
 S.E. of body of  $T \times M$  table = 81.7 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 56(180).**

**Site :- Agri. College Farm, B.H.U., Varanasi.**

**Type :- 'M'.**

Object :—To study the effect of different methods of placement of different levels of N on Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, Varanasi. (iii) 7.6.1956/22.7.1956. (iv) (a) 1 ploughing by soil inverting plough and 5 ploughings by *desi* plough. (b) Transplanting (c) N.A. (d) 8"×6". (e) 3. (v) 100 mds./ac. of F.Y.M. in nursery. (vi) N—22. (vii) Irrigated. (viii) 3 weedings at an interval of 15 days after transplanting. (ix) N.A. (x) 18.10.1956.

## TREATMENTS :

All combinations of (1), (2) and (3)

- (1) 3 levels of N as A/S :  $N_1=20$ ,  $N_2=40$  and  $N_3=60$  lb./ac.  
 (2) 2 methods of placement of fertilizers :  $M_1$ =Broadcasting the fertilizers with 3" water standing in the field and  $M_2$ =Fertilizers placed 3" deep in the form of pellets in the soil with 3" water standing in the field.  
 (3) 2 times of applications :  $T_1$ =At the time of transplanting and  $T_2=21$  days after transplanting.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 3. (iv) (a) 40' × 20'. (b) 31' × 17'. (v) 4.5' × 1.5'. (v) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Growth character and yield of grain. (iv) (a) 1955—1956 (modified in 1956). (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 2024 lb./ac. (ii) 91.3 lb./ac. (iii) Main effect of N, M and interaction N × M are highly significant and effect of T is significant. (iv) Av. yield of grain in lb./ac.

	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	Mean	T <sub>1</sub>	T <sub>2</sub>
M <sub>1</sub>	1782	1994	2139	1972	2005	1939
M <sub>2</sub>	2015	2188	2024	2076	2114	2038
Mean	1898	2091	2082	2024	2059	1988
T <sub>1</sub>	1932	2123	2123			
T <sub>2</sub>	1865	2060	2040			

S.E. of N marginal mean = 26.4 lb./ac.

S.E. of T or M marginal mean = 21.5 lb./ac.

S.E. of body of N × T or N × M table = 37.3 lb./ac.

S.E. of body of T × M table = 30.4 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 54(99).**

**Site :- Reg. Res. Stn., Varanasi.**

**Type :- 'M'.**

Object :— To study the effect of different levels of trace elements on the yield of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loamy soil. (b) Refer soil analysis, Varanasi. (iii) 12.6.1954/25, 27.7.1954. (iv) (a) N.A. (b) Transplanting. (c) to (e) N.A. (v) G.M. + 30 lb./ac. of N as A/S, 30 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super, 15 lb./ac. of K<sub>2</sub>O as Pot. Sul. and 15 lb./ac. of CaO as gypsum. (vi) N—22. (vii) Irrigated. (viii) 3 to 4 intercultures with hand hoe and 1 weeding. (ix) N.A. (x) 23.10.1954.

## 2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 54 (100) on page 70.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Yield of grain. (iv) (a) 1954—N.A. (b) No. (c) Nil. (v) (a) Conducted at many centres. (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 917 lb./ac. (ii) 213.0 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	T <sub>5</sub>	T <sub>6</sub>	T <sub>7</sub>	T <sub>8</sub>	T <sub>9</sub>
Av. yield	808	1265	1089	905	887	756	1195	835	791	852

S.E./mean = 123.0 lb./ac.

**Crop :- Paddy (Kharif).****Ref :- U.P. 58(84).****Site :- Reg. Res. Stn., Varanasi.****Type :- 'M'.**

Object :— To study the effect of trace elements applied as foliar spray on the yield of Paddy.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Pea. (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Varanasi. (iii) N.A. / 14.8.1958. (iv) (a) 2 ploughings. (b) Transplanting. (c) N.A. (d) 9" between rows. (e) 1. (v) 40 lb./ac. of N as A/S. (vi) T—136 (medium). (vii) Irrigated. (viii) 1 weeding and 1 hoeing. (ix) 18.38". (x) 15.11.1958.

**2. TREATMENTS :**

12 trace element treatments :  $T_0$ =Control,  $T_1$ =Boron as boric acid at 50 ppm,  $T_2$ =Copper as C/S at 50 ppm,  $T_3$ =Manganese as  $MnSO_4$  at 100 ppm,  $T_4$ =Zn as  $ZnSO_4$  at 100 ppm,  $T_5=T_1+T_2$ ,  $T_6=T_1+T_3$ ,  $T_7=T_1+T_4$ ,  $T_8=T_2+T_3$ ,  $T_9=T_2+T_4$ ,  $T_{10}=T_3+T_4$  and  $T_{11}=T_2+T_3+T_4$ .

Trace elements sprayed on 29.8.1958 and 25.9.1958. Solution of trace elements prepared in water and sprayed at tillering and pre-flowering.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 3. (iv) (a) 42'×25'. (b) 39'×22'. (v) 1½'×1½'. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1958 only. (b) N.A. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 2022 lb./ac. (ii) 132.0 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$T_0$	$T_1$	$T_2$	$T_3$	$T_4$	$T_5$	$T_6$	$T_7$	$T_8$	$T_9$	$T_{10}$	$T_{11}$
Av. yield	1775	2363	2293	1834	1962	1677	2409	2220	1942	2030	1901	1857

S.E./mean = 76.2 lb./ac.

**Crop :- Paddy (Kharif).****Ref :- U.P. 58(201).****Site :- Reg. Res. Stn., Varanasi.****Type :- 'M'.**

Object :— To study the residual effect of different levels of P applied to previous wheat crop on the yield of Paddy.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Wheat. (c) As per treatments+25 lb./ac. of N+*dhaincha* as G.M. (ii) (a) Loamy soil. (b) Refer soil analysis, Varanasi. (iii) N.A./2.8.1958. (iv) (a) 1 ploughing. (b) Transplanting. (c) 10 srs./ac. (d) and (e) N.A. (v) 25 lb./ac. of N as A/S. (vi) N—22 (early). (vii) N.A. (viii) Weeding. (ix) 34.2". (x) 15.10.1958.

**2. TREATMENTS :**

5 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=30$ ,  $P_2=60$ ,  $P_3=90$  and  $P_4=120$  lb./ac.  
 $P_2O_5$  applied to previous wheat crop.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) and (b) 27'×42'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1958 only. (b) No. (c) Nil. (v) (a) Tissuhi. (b) Nil. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1813 lb./ac. (ii) 319.9 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	P <sub>4</sub>
Av. yield	1745	1839	1821	1691	1970

S.E./mean = 159.9 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 55(121).**

**Site :- Reg. Res. Stn., Varanasi.**

**Type :- 'M'.**

Object :— To study the effect of soaking seeds in nutrient solutions on the yield of Paddy.

#### 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Pea. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Varanasi. (iii) 3.7.1955. (iv) (a) 1 ploughing. (b) Behind the plough. (c) 20 srs./ac. (d) and (e) N.A. (v) 100 md./ac. of F.Y.M. + 30 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super + 20 lb./ac. of N as A.S. (vi) N-22. (vii) Irrigated. (viii) and (ix) N.A. (x) 6.10.1955.

#### 2. TREATMENTS :

8 nutrient solutions for soaking seeds : S<sub>0</sub>—Unsoaked (dry), S<sub>1</sub>—Water, S<sub>2</sub>—Potassium di-hydrogen phosphate (0.5%), S<sub>3</sub>—Sodium chloride (5%), S<sub>4</sub>—Boric acid (0.1%), S<sub>5</sub>—C/S (0.2%), S<sub>6</sub>—Zn. Sul. (0.2%) and S<sub>7</sub>—A.S. (1.0%).

Seed is soaked in the salt solution for 18 hours and dried in shade before sowing.

#### 3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 41' × 25'. (b) 23' × 17'. (v) N.A. (vi) Yes.

#### 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Yield of grain. (iv) (a) 1955—1957. (b) No. (c) Nil. (v) (a) Kalianpur. (b) Nil. (vi) and (vii) Nil.

#### 5. RESULTS :

(i) 1722 lb./ac. (ii) 249.7 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>	S <sub>5</sub>	S <sub>6</sub>	S <sub>7</sub>
Av. yield	1318	1677	1662	1346	1747	1891	2091

S.E./mean = 120.3 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 56(72).**

**Site :- Reg. Res. Stn., Varanasi.**

**Type :- 'M'.**

Object :—To study the effect of soaking seeds in nutrient solutions on the yield of Paddy.

#### 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Barley + Pea. (c) N.A. (ii) (a) Light loam. (b) Refer soil analysis, Varanasi. (iii) 12.7.1956. (iv) (a) 2 ploughings. (b) Behind the plough. (c) 20 srs./ac. (d) and (e) N.A. (vi) N.A. (vii) N-22 (early). (viii) Irrigated. (ix) 4 weedings. (x) 38.6". (xi) 2.10.1956.

#### 2. TREATMENTS :

Same as in expt. no. 55(121) above.

#### 3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 41' × 25'. (b) 38' × 22'. (v) 1½' × 1½'. (vi) Yes.

#### 4. GENERAL :

(i) N.A. (ii) Attack of *gundhi* bug. (iii) Yield of grain and straw. (iv) (a) 1955—1957. (b) No. (c) Nil. (v) (a) Kalianpur. (b) Nil. (vi) Heavy rains in September, 1956. (vii) Nil.

## 5. RESULTS :

(i) 969 lb./ac. (ii) 78.8 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	S <sub>0</sub>	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>	S <sub>5</sub>	S <sub>6</sub>	S <sub>7</sub>
Av. yield	797	998	1079	911	1012	1025	924	1005

S.E./mean = 39.4 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 57(93).**

**Site :- Reg. Res. Stn., Varanasi.**

**Type :- 'M'.**

Object :—To study the effect of soaking seeds in nutrient solutions on the yield of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat + Gram. (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Varanasi. (iii) 6.8 1957. (iv) (a) 2 ploughings. (b) Broadcasting. (c) 20 srs./ac. (d) and (e) N.A. (v) N.A. (vi) N—22 (early) (vii) Irrigated. (viii) 3 weedings. (ix) 11.83". (x) 28.10.1957.

## 2. TREATMENTS :

Same as in expt. no. 55(121) on page 76.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 24' × 20'. (b) 21' × 17'. (v) 1½' × 1½'. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Attack of *gundhi* bug, grass hoppers and blast. (iv) (a) 1955—1957. (b) No. (c) Nil. (v) (a) Kalianpur. (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1756 lb./ac. (ii) 110.7 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	S <sub>0</sub>	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>	S <sub>5</sub>	S <sub>6</sub>	S <sub>7</sub>
Av. yield	1750	1859	1655	1815	1792	1750	1752	1676

S.E./mean = 55.3 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 58(371).**

**Site :- Reg. Res. Stn., Varanasi.**

**Type :- 'M'.**

Object :—To study the residual effect of N, P and K applied to previous wheat crop on the yield of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) As per treatments. (ii) (a) Loamy soil. (b) Refer soil analysis, Varanasi. (iii) 3.8.1958. (iv) (a) 1 double ploughing. (b) Transplanting. (c) to (e) N.A. (v) 25 lb./ac. of N as A/S. (vi) N—22 (early). (vii) N.A. (viii) Weeding. (ix) 34.19". (x) 30.10.1958.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 2 levels of N as A/S : N<sub>0</sub>=0 and N<sub>1</sub>=30 lb./ac.

(2) 2 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0 and P<sub>1</sub>=40 lb./ac.

(3) 2 levels of K<sub>2</sub>O as Mur. Pot. : K<sub>0</sub>=0 and K<sub>1</sub>=60 lb./ac.

Fertilizers applied to previous wheat crop.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) and (b) 25' × 41'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) 5% gammexane was applied as a precaution. (iii) Yield of grain and straw. (iv) (a) 1958 only. (b) No. (c) Nil. (v) (a) Tissuhi and Faizabad. (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 2469 lb./ac. (ii) 127.9 lb./ac. (iii) Main effect of N and interaction  $N \times P \times K$  are significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	K <sub>0</sub>	K <sub>1</sub>
N <sub>0</sub>	2436	2404	2420	2487	2353
N <sub>1</sub>	2452	2584	2518	2517	2519
Mean	2444	2494	2469	2502	2436
K <sub>0</sub>	2483	2521			
K <sub>1</sub>	2405	2467			

S.E. of any marginal mean = 32.0 lb./ac.

S.E. of body of any table = 45.2 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 54(97).**

**Site :- Reg. Res. Stn., Varanasi.**

**Type :- 'M'.**

Object :- To study the effect of N, P and calcium on the yield of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Gram. (c) N.A. (ii) (a) Loamy soil. (b) Refer soil analysis, Varanasi. (iii) 24.7.1954. (iv) (a) and (b) N.A. (c) 12 srs./ac. (d) and (e) N.A. (v) G.M. (vi) N-22. (vii) Irrigated. (viii) and (ix) N.A. (x) 21.10.1954.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 2 levels of N as A/S : N<sub>0</sub>=0 and N<sub>1</sub>=75 lb./ac.

(2) 2 levels of P<sub>2</sub>O as Super : P<sub>0</sub>=0 and P<sub>1</sub>=60 lb./ac.

(3) 2 levels of CaO as gypsum : C<sub>0</sub>=0 and C<sub>1</sub>=90 lb./ac.

Super applied by placement 3" to 4" deep in soil behind the plough at sowing of green manure crop, gypsum as surface dressing 1 to 2 days before transplanting and A/S applied in equal doses half at transplanting and half at tillering.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 41'×28'. (b) 38'×25'. (v) 1½'×1½'. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Yield of grain. (iv) (a) 1954-contd. (b) No. (c) Nil. (v) (a) Atarra, Bharari and Faizabad. (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1450 lb./ac. (ii) 201.3 lb./ac. (iii) Main effect of N alone is highly significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	C <sub>0</sub>	C <sub>1</sub>
N <sub>0</sub>	1307	1310	1309	1287	1331
N <sub>1</sub>	1542	1639	1590	1543	1637
Mean	1424	1475	1450	1415	1484
C <sub>0</sub>	1340	1490			
C <sub>1</sub>	1509	1459			

S.E. of any marginal mean = 50.3 lb./ac.  
S.E. of body of any table = 71.2 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 55(130).**

**Site :- Reg. Res. Stn., Varanasi.**

**Type :- 'M'.**

**Object :-**To study the effect of N, P and Calcium on the yield of Paddy.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Barley. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Varanasi. (iii) N.A., 9.7.1955. (iv) (a) 1 ploughing. (b) Transplanting. (c) 8 to 10 srs./ac. (d) 9" between rows. (e) 1 to 2. (v) G.M. (vi) N—22 (early). (vii) Irrigated. (viii) N.A. (ix) 27.36". (x) 27.9.1956.

**2. TREATMENTS to 4. GENERAL :**

Same as in expt. no. 54(97) on page 78.

**5. RESULTS :**

(i) 2408 lb./ac. (ii) 258.8 lb./ac. (iii) Main effects of N, C and interaction  $N \times P \times C$  are highly significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	C <sub>0</sub>	C <sub>1</sub>
N <sub>0</sub>	2252	2086	2169	2790	1548
N <sub>1</sub>	2606	2688	2647	2420	2874
Mean	2429	2387	2408	2605	2211
C <sub>0</sub>	2947	2263			
C <sub>1</sub>	1911	2511			

S.E. of any marginal mean = 64.7 lb./ac.  
S.E. of body of any table = 91.5 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 56(63).**

**Site :- Reg. Res. Stn., Varanasi.**

**Type :- 'M'.**

**Object :-**To study the effect of N, P and Calcium on the yield of Paddy.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Oats. (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Varanasi. (iii) N.A./13, 14.7.1956. (iv) (a) 3 ploughings. (b) Transplanting. (c) N.A. (d) 9" between rows. (e) 1 to 2. (v) 100 mds./ac. of F.Y.M. (vi) N—22. (vii) Irrigated. (viii) 2 weedings. (ix) N.A. (x) 27.9.1956.

**3. TREATMENTS and 3. DESIGN :**

Same as in expt. no. 54(97) on page 78.

**4. GENERAL :**

(i) N.A. (ii) Attack of *gundhi* bug. (iii) Yield of grain and straw. (iv) (a) 1956—1957. (b) Yes. (c) Nil. (v) (a) and (b) Nil. (vi) Sept., 1956. (vii) Nil.

**5. RESULTS :**

(i) 2178 lb./ac. (ii) 147.0 lb./ac. (iii) Main effect of N and interaction  $N \times P \times C$  are highly significant. Main effect of C and interaction  $P \times C$  are significant. (iv) Av. yield of grain in lb./ac.



	P <sub>0</sub>	P <sub>1</sub>	Mean	C <sub>0</sub>	C <sub>1</sub>
N <sub>0</sub>	1610	1632	1621	1530	1712
N <sub>1</sub>	2676	2794	2735	2696	2774
Mean	2143	2213	2178	2113	2243
C <sub>0</sub>	2137	2089			
C <sub>1</sub>	2149	2337			

S.E. of any marginal mean  
S.E. of body of any table

= 36.8 lb./ac.  
= 52.0 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 55(131).**

**Site :- Reg. Res. Stn., Varanasi.**

**Type :- 'M'.**

Object :—To study the direct effect of N, P and Calcium on the yield of Paddy.

#### 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Barley+Pea. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Varanasi. (iii) 31.10.1955. (iv) (a) 2 ploughings. (b) Drilling. (c) to (e) N.A. (v) and (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) 0.71". (x) 21.3.1956.

#### 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 2 levels of N as A/S : N<sub>0</sub>=0 and N<sub>1</sub>=75 lb./ac.

(2) 2 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0 and P<sub>1</sub>=60 lb./ac.

(3) 2 levels of CaO as gypsum : C<sub>0</sub>=0 and C<sub>1</sub>=90 lb./ac.

A/S applied in equal doses at transplanting and at tillering, Super by placement 3" to 4" deep in soil behind the plough and CaO by surface dressing 1 to 2 days before transplanting.

#### 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 36'×25'. (v) N.A. (vi) Yes.

#### 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1955--1957. (b) No. (c) N.I. (v) to (vii) Nil.

#### 5. RESULTS :

(i) 2340 lb./ac. (ii) 239.8 lb./ac. (iii) Main effects of N, C and interaction N×P×C are highly significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	C <sub>0</sub>	C <sub>1</sub>
N <sub>0</sub>	2141	2103	2122	1954	2290
N <sub>1</sub>	2521	2589	2558	2340	2776
Mean	2334	2346	2340	2147	2533
C <sub>0</sub>	2116	2178			
C <sub>1</sub>	2552	2514			

S.E. of any marginal mean  
S.E. of body of any table

= 60.0 lb./ac.  
= 84.8 lb./ac.

**Crop :- Paddy (Kharif).****Ref :- U.P. 56(67).****Site :- Reg. Res. Stn., Varanasi.****Type :- 'M'.**

Object :—To study the effect of N, P and Calcium on the yield of Paddy.

**1. BASAL CONDITIONS :**

(i) (a) Paddy—Wheat. (b) Wheat. (c) N.A. (ii) (a) Light loam. (b) Refer soil analysis, Varanasi. (iii) 6, 7.7.1956. (iv) (a) 3 ploughings. (b) to (e) N.A. (v) and (vi) N.A. (vii) Irrigated. (viii) 5 weedings. (ix) 39.16". (x) 18, 21.9.1956.

**2. TREATMENTS to 4. GENERAL :**

Same as in expt. no. 55(131) on page 80.

**5. RESULTS :**

(i) 2253 lb./ac. (ii) 183.2 lb./ac. (iii) Main effects of N and C are highly significant. Main effect of P and interaction  $P \times C$  are significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	C <sub>0</sub>	C <sub>1</sub>
N <sub>0</sub>	1851	1960	1906	1798	2014
N <sub>1</sub>	2477	2724	2600	2980	2222
Mean	2164	2342	2253	2389	2117
C <sub>0</sub>	2378	2400			
C <sub>1</sub>	1950	2284			

S.E. of any marginal mean

= 45.8 lb./ac.

S.E. of body of any table

= 64.8 lb./ac.

**Crop :- Paddy (Kharif).****Ref :- U.P. 57(90).****Site :- Reg. Res. Stn., Varanasi.****Type :- 'M'.**

Object :—To study the effect of N, P and Calcium on the yield of Paddy.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Oats. (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Varanasi. (iii) N.A./ 6.8.1957. (iv) (a) 1 *desi* ploughing. (b) Transplanting. (c) 8 to 10 srs./ac. (d) 9" between rows. (e) 1 to 2. (v) 100 mds./ac. of F.Y.M. (vi) N—22 (early). (vii) Irrigated. (viii) 3 weedings. (ix) 11.83". (x) 10.11.1957.

**2. TREATMENTS and 3. DESIGN :**

Same as in expt. no. 55(131) on page 80.

**4. GENERAL :**

(i) N.A. (ii) Attack of *gundhi* bug, grass hoppers and blast. (iii) Yield of grain and straw. (iv) (a) 1955—1957. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 832 lb./ac. (ii) 102.8 lb./ac. (iii) Main effect of N and interaction  $N \times P$  are highly significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	C <sub>0</sub>	C <sub>1</sub>
N <sub>0</sub>	689	756	723	725	720
N <sub>1</sub>	1047	836	941	1001	882
Mean	868	796	832	863	801
C <sub>0</sub>	881	845			
C <sub>1</sub>	855	747			

S.E. of any marginal mean = 25.7 lb./ac.  
S.E. of body of any table = 36.3 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 59(91).**

**Site :- Reg. Res. Stn., Varanasi.**

**Type :- 'M'.**

**Object :-** To study the effect of growing dhaincha mixed with Paddy on the yield of Paddy.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Varanasi. (iii) 26.7.1959. (iv) (a) 1 ploughing. (b) As per treatments. (c) 40 srs./ac. (d) 9" between rows. (e) N.A. (v) 80 srs./ac. of A/S. (vi) N-22 (early). (vii) Irrigated. (viii) 2 weedings and 2 hoeings. (ix) 19.53". (x) 20.10.1959.

**2. TREATMENTS :**

4 methods of growing paddy : M<sub>1</sub>=Paddy alone, M<sub>2</sub>=*Dhaincha* and paddy broadcast, M<sub>3</sub>=*Dhaincha* sown in between 2 rows of paddy and M<sub>4</sub>=Paddy alone but *dhaincha* turned in as G.M. from another plot. *Dhaincha* is uprooted and turned in at the time of first weeding.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 40' × 15'. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1959—N.A. (b) N.A. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1633 lb./ac. (ii) 314.7 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	M <sub>4</sub>
Av. yield	1605	1680	1605	1643

S.E./mean = 157.3 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 59(92).**

**Site :- Reg. Res. Stn., Varanasi.**

**Type :- 'M'.**

**Object :-** To compare the effects of departmental manure mixture and application of A/S and Super on Paddy.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Varanasi. (iii) N.A./2.8.1959. (iv) (a) 2 ploughings. (b) Transplanting. (c) to (e) N.A. (v) Nil. (vi) T-136 (medium). (vii) Irrigated. (viii) N.A. (ix) 18.50". (x) 20.10.1959.

## 2. TREATMENTS :

$M_1$ =Departmental mixture No. 1 [a mixture of N (16%) and  $P_2O_5$  (9%) prescribed by the Agricultural chemist] and  $M_2$ =48 lb./ac. of N as A/S+27 lb./ac. of  $P_2O_5$  as Super.

Departmental mixture broadcast on 1.8.1959, Super behind the plough through a seed drill placed about 6" deep on 1.8.1959 and A/S applied  $\frac{1}{2}$  on 7.8.1959 and  $\frac{1}{2}$  on 21.9.1959.

## 3. DESIGN :

(i) Paired-plot. (ii) (a) 2. (b) N.A. (iii) 12. (iv) (a) N.A. (b) 40'×8'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1959—N.A. (b) N.A. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 2242 lb./ac. (ii) 307.3 lb./ac. (iii) Treatment difference is significant. (iv) Av. yield of grain in lb./ac.

Treatment	$M_1$	$M_2$
Av. yield	2414	2071

S.E./mean = 88.7 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 59(87).**

**Site :- Reg. Res. Stn., Varanasi.**

**Type :- 'M'.**

Object :-To study the effect of A/S, F.Y.M. and Super on the yield of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Varanasi. (iii) 31.7.1959. (iv) (a) 2 ploughings. (b) Transplanting. (c) to (e) N.A. (v) Nil. (vi) T—9 (late). (vii) Irrigated. (viii) N.A. (ix) 18.75". (x) 18.11.1959.

## 2. TREATMENTS :

10 manurial treatments :  $M_0$ =Control,  $M_1$ =40 lb./ac. of  $P_2O_5$  as Super,  $M_2$ =20 lb./ac. of N as A/S,  $M_3$ =40 lb./ac. of N as A/S,  $M_4$ = $M_1$ + $M_2$ ,  $M_5$ =20 lb./ac. of N as F.Y.M.,  $M_6$ =40 lb./ac. of N as F.Y.M.,  $M_7$ = $M_1$ + $M_5$ ,  $M_8$ = $M_2$ + $M_5$  and  $M_9$ = $M_1$ + $M_2$ + $M_5$ .

F.Y.M. broadcast on 16.7.1959, Super applied behind the plough through a seed drill placed about 6" deep on 16.7.1959 and A/S broadcast  $\frac{1}{2}$  on 7.8.1959 and  $\frac{1}{2}$  on 22.9.1959.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 40'×15'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Grain yield. (iv) (a) 1959—N.A. (b) N.A. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 2079 lb./ac. (ii) 196.4 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$M_0$	$M_1$	$M_2$	$M_3$	$M_4$	$M_5$	$M_6$	$M_7$	$M_8$	$M_9$
Av. yield	1792	2072	2009	2179	2655	1797	2072	1881	2002	2333

S.E./mean = 98.2 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 58(86).**

**Site :- Reg. Res. Stn., Varanasi.**

**Type :- 'M'.**

Object :-To study the effect of different methods of application of P with and without compost on Paddy.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Varanasi. (iii) N.A./12.8.1958. (iv) (a) 2 ploughings. (b) Transplanting. (c) N.A. (d) 9" between rows. (e) N.A. (v) Nil. (vi) T-136. (vii) Irrigated. (viii) 1 weeding. (ix) 18.38". (x) 2.11.1958.

## 2. TREATMENTS :

11 manurial treatments :  $M_0$ =Control,  $M_1$ =45 lb./ac. of  $P_2O_5$ ,  $M_2$ =90 lb./ac. of  $P_2O_5$ ,  $M_3$ =135 lb./ac. of  $P_2O_5$ ,  $M_4$ =100 mds./ac. of compost,  $M_5$ = $M_4$ +45 lb./ac. of  $P_2O_5$  placed deep in furrows below the seed,  $M_6$ = $M_4$ +90 lb./ac. of  $P_2O_5$  placed deep in furrows below the seed,  $M_7$ = $M_4$ +135 lb./ac. of  $P_2O_5$  placed deep in furrows below the seed,  $M_8$ = $M_4$ +45 lb./ac. of  $P_2O_5$  mixed with composting material,  $M_9$ = $M_4$ +90 lb./ac. of  $P_2O_5$  mixed with composting material and  $M_{10}$ = $M_4$ +135 lb./ac. of  $P_2O_5$  mixed with composting material.

$P_2O_5$  applied as Super.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 11. (b) N.A. (iii) 4. (iv) (a) and (b) 40'×18'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1958—N.A. (b) N.A. (c) Nil (v) (a) Nawabganj (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1021 lb./ac. (ii) 48.8 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$M_0$	$M_1$	$M_2$	$M_3$	$M_4$	$M_5$	$M_6$	$M_7$	$M_8$	$M_9$	$M_{10}$
Av. yield	790	931	993	1026	1042	1035	1122	1153	993	1044	1106

S.E./mean = 24.4 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 58(89).**

**Site :- Reg. Res. Stn. Varanasi.**

**Type :- 'M'.**

Object :—To study the effect of A/S and compost on the yield of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Varanasi. (iii) N.A./5.8.1958. (iv) (a) 2 ploughings. (b) Transplanting. (c) N.A. (d) 9" between rows. (e) N.A. (v) Nil. (vi) T-136 (medium). (vii) Irrigated. (viii) 1 weeding and 2 hoeings. (ix) 24.24". (x) 28.10.1958.

## 2. TREATMENTS :

6 manurial treatments :  $M_0$ =Control,  $M_1$ =20 lb./ac. of N as compost+40 lb./ac. of N as A/S,  $M_2$ =30 lb./ac. of N as compost+30 lb. ac. of N as A/S,  $M_3$ =40 lb./ac. of N as compost+20 lb./ac. of N as A/S,  $M_4$ =50 lb./ac. of N as compost+10 lb./ac. of N as A/S, and  $M_5$ =55 lb./ac. of N as compost+5 lb./ac. of N as A/S.

Compost broadcast on 1.8.1958 and ploughed down on 5.8.1958. A/S broadcast on 26.8.1958.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) and (b) 30'×16'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1958—N.A. (b) N.A. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1426 lb./ac. (ii) 65.6 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$M_0$	$M_1$	$M_2$	$M_3$	$M_4$	$M_5$
Av. yield	865	1743	1632	1578	1453	1287

S.E./mean = 32.8 lb./ac.

**Crop :- Paddy (Kharif).****Ref :- U.P. 58(90).****Site :- Reg. Res. Stn., Varanasi.****Type :- 'M'.**

Object :- To study the effect of different methods of application of N, P and K on the yield of Paddy.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Pea. (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Varanasi. (iii) N.A./16.8.1958. (iv) (a) 1 ploughing. (b) Transplanting. (c) N.A. (d) 9" between rows. (e) 1 to 2. (v) Nil. (vi) T-136 (medium). (vii) Irrigated. (viii) 2 weedings and 1 hoeing. (iv) 18.38". (x) 15.11.1958.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 3 fertilizers :  $F_1=60$  lb./ac. of N as A/S,  $F_2=40$  lb./ac. of  $P_2O_5$  as Super and  $F_3=30$  lb./ac. of  $K_2O$  as Pot. Sul.

(2) 2 methods of application :  $M_1$ =Broadcast (surface dressing before sowing), and  $M_2$ =Placement (sub-surface application 3" to 4" deep in soil behind the plough before sowing).

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 41'×38'. (b) 38'×35'. (v) 1½'×1½'. (vi) Yes.

**4. GENERAL :**

(i) and (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1958—N.A. (b) N.A. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1996 lb./ac. (ii) 162.6 lb./ac. (iii) Main effect of F alone is highly significant. (iv) Av. yield of grain in lb./ac.

	$F_1$	$F_2$	$F_3$	Mean
$M_1$	2253	1780	1820	1951
$M_2$	2391	1937	1795	2041
Mean	2322	1858	1808	1996

S.E. of F marginal mean = 57.5 lb./ac.

S.E. of M marginal mean = 46.9 lb./ac.

S.E. of body of table = 81.3 lb./ac.

**Crop :- Paddy (Kharif).****Ref :- U.P. 58(135).****Site :- Reg. Res. Stn., Varanasi.****Type :- 'M'.**

Object :—To study the effect of methods of application of different sources of N with and without P on the yield of Paddy.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Varanasi. (iii) N.A./ 8.8.1958. (iv) (a) 1 tractor harrowing and 1 *desi* ploughing. (b) Transplanting. (c) N.A. (d) 9" between rows. (e) N.A. (v) Nil. (vi) T-136 (medium). (vii) Irrigated. (viii) 3 weedings. (ix) 21.61". (x) 29.10.1958.

**2. TREATMENTS :****Main-plot treatments :**

All combinations of (1) and (2)+control (3 plots)

(1) 3 sources of 36 lb./ac. of N :  $S_1=A/S$ ,  $S_2=Urea$  and  $S_3=A/S/N$ .

(2) 3 methods of application of N :  $M_1$ =Basal dressing,  $M_2$ =Top dressing and  $M_3$ =Basal+top dressing.

**Sub-plot treatments :**

2 levels of  $P_2O_5$  as Super :  $P_0=0$  and  $P_1=15$  lb./ac.

N applied by broadcast, basal dressing on 7.8.1958 and top dressing on 8.9.1958. Super placed behind the plough in furrows on 8.8.1958.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 12 main-plots/replication ; 2 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a) N.A. (b) 40' × 15'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1957—contd. (b) N.A. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1692 lb./ac. (ii) (a) 146.0 lb./ac. (b) 77.8 lb./ac. (iii) Main effect of P is highly significant. Effect of S, M and interaction S × M are significant. (iv) Av. yield of grain in lb./ac.

Control ( $P_0 + P_1$ ) = 1481 lb./ac.

	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>
S <sub>0</sub>	1756	1908	2138	1934	1780	2088
S <sub>1</sub>	1658	2153	1797	1869	1747	1992
S <sub>2</sub>	1386	1631	1438	1485	1394	1576
Mean	1600	1897	1791	1763	1640	1885
P <sub>0</sub>	1476	1771	1674			
P <sub>1</sub>	1724	2024	1908			

S.E. of difference of two

- |  |                |
|--|----------------|
| 1. S or M marginal means               | = 59.6 lb./ac. |
| 2. P marginal means                    | = 25.9 lb./ac. |
| 3. P means at the same level of M or S | = 44.9 lb./ac. |
| 4. M or S means at the same level of P | = 67.5 lb./ac. |
| S.E. of body of M × S table            | = 73.0 lb./ac. |

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 56(83).**

**Site :- Reg. Res. Stn., Varanasi.**

**Type :- 'M'.**

Object :- To study the effect of P and different sources of N on the yield of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loamy soil. (b) Refer soil analysis, Varanasi. (iii) N.A. (iv) (a) N.A. (b) Transplanting. (c) to (e) N.A. (v) to (viii) N.A. (ix) 52.34%. (x) N.A.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 sources of 36 lb./ac. of N : S<sub>0</sub>=Control, S<sub>1</sub>=A/S, S<sub>2</sub>=A/S/N and S<sub>3</sub>=Urea.

(2) 2 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0 and P<sub>1</sub>=18 lb./ac.

Sources of N applied by broadcast,  $\frac{1}{2}$  dose immediately before transplanting and  $\frac{1}{2}$  dose 3 weeks after transplanting and P<sub>2</sub>O<sub>5</sub> applied before transplanting.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) 8. (b) N.A. (iii) 4. (iv) (a) and (b) 34' × 16'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. Lodging occurred. (ii) N.A. (iii) Yield of grain. (iv) (a) 1956—N.A. (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) Heavy rain on 19.9.1956. (vii) Nil.

## 5. RESULTS :

(i) 2271 lb./ac. (ii) 110.5 lb./ac. (iii) Main effect of S alone is highly significant. (iv) Av. yield of grain in lb./ac.

	S <sub>0</sub>	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean
P <sub>0</sub>	1503	2409	2574	2646	2283
P <sub>1</sub>	1709	2244	2430	2656	2260
Mean	1606	2326	2502	2651	2271

S E. of P marginal mean = 27.6 lb./ac.  
 S.E. of S marginal mean = 39.1 lb./ac.  
 S.E. of body of table = 55.2 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 59(SFT).**

**Centre :- Allahabad (c.f.).**

**Type :- 'M'.**

Object :—Type A—To study the response of Paddy to levels of N, P and K, applied individually and in combination.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) Alluvial. (iii) to (v) N.A. (vi) June—July, 1959. (vii) to (ix) N.A. (x) October—November, 1959.

**2. TREATMENTS :**

0 =Control (no manure).  
 n =20 lb./ac. of N as A/S.  
 p =20 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.  
 np =20 lb./ac. of N as A/S+20 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.  
 k =20 lb./ac. of K<sub>2</sub>O as Mur. Pot.  
 nk =20 lb./ac. of N as A/S+20 lb./ac. of K<sub>2</sub>O as Mur. Pot.  
 pk =20 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super+20 lb./ac. of K<sub>2</sub>O as Mur. Pot.  
 npk =20 lb./ac. of N as A/S+20 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super+20 lb./ac. of K<sub>2</sub>O as Mur. Pot.

**3. DESIGN :**

(i) and (ii) The district has been divided into four agriculturally homogenous zones and one field assistant has been posted in each zone. The field assistant conducts the trials in one revenue circle or *thana* in the zone and the circle/*thana* is changed once in two years within the same zone. Each field assistant is required to conduct 31 trials in a year, 8 on a *kharif* cereal, 8 on *rabi* cereal, 8 on cash crops, 4 on an oil-seed crop and 3 on a leguminous crop. Half the number of trials conducted are of type A and the other half of type B on crops other than the legumes. The three trials on legumes are of type C. Residual effects of phosphate application are studied on type C trials in two out of the four zones in each district every year. The above experiments are laid out in randomly located fields in randomly selected villages in each of the 4 zones at the rate of one experiment per village. (iii) (a) N.A. (b) 1/80 ac. (iv) Yes.

**4. GENERAL :**

(i) Normal. (ii) N.A. (iii) Grain yield. (iv) (a) 1959—contd. (b) No. (c) N.A. (v) As per design. (vi) and (vii) N.A.

**5. RESULTS :**

Effect	n	p	k	S.E.	np	nk	pk	npk	S.E.
Av. response of grain in lb./ac.	304	165	115	30.4	8	0	33	16	21.4

Control yield = 1531 lb./ac. and no. of trials = 15.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 59(SFT).**

**Centre :- Deoria (c.f.).**

**Type :- 'M'.**

Object :—Type A—To study the response of Paddy to levels of N, P and K, applied individually and in combination.



## 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 59 (SFT) type A on page 87 conducted at Allahabad.

## 5. RESULTS :

Effect	n	p	k	S.E.	np	nk	pk	npk	S.E.
Av. response of grain in lb./ac.	453	206	99	18.9	58	-16	16	0	8.2

Control yield = 1029 lb./ac. and no. of trials = 15.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 59(SFT).**

**Centre :- Fatehpur (c.f.).**

**Type :- 'M'.**

Object :—Type A—To study the response of Paddy to levels of N, P and K, applied individually and in combination.

## 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 59(SFT) type A on page 87 conducted at Allahabad.

## 5. RESULTS :

Effect	n	p	k	S.E.	np	nk	pk	npk	S.E.
Av. response of grain in lb./ac.	280	140	74	31.3	-41	25	74	-8	32.1

Control yield = 1448 lb./ac. and no. of trials = 16.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 59(SFT).**

**Centre :- Gorakhpur (c.f.).**

**Type :- 'M'.**

Object :—Type A—To study the response of Paddy to levels of N, P and K, applied individually and in combination.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Tarai and sub-mountain. (iii) to (v) N.A. (vi) June—July, 1959. (vii) to (ix) N.A. (x) October—November, 1959.

## 2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 59(SFT) type A on page 87 conducted at Allahabad.

## 5. RESULTS :

Effect	n	p	k	S.E.	np	nk	pk	npk	S.E.
Av. response of grain in lb./ac.	329	132	123	30.4	74	16	74	66	31.3

Control yield = 864 lb./ac. and no. of trials = 12.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 59(SFT).**

**Centre :- Jaunpur (c.f.).**

**Type :- 'M'.**

Object :—Type A—To study the response of Paddy to levels of N, P and K, applied individually and in combination.

## 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 59 (SFT) type A on page 87 conducted at Allahabad.

## 5. RESULTS :

Effect	n	p	k	S.E.	np	nk	pk	npk	S.E.
Av. response of grain in lb./ac.	214	107	49	21.4	-8	8	-25	33	10.7

Control yield = 1037 lb./ac. and no. of trials = 15.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 59(SFT).**

**Centre :- Kanpur (c.f.).**

**Type :- 'M'.**

Object :—Type A—To study the response of Paddy to levels of N, P and K, applied individually and in combination.

## 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 59(SFT) type A on page 87 conducted at Allahabad.

## 5. RESULTS :

Effect	n	p	k	S.E.	np	nk	pk	npk	S.E.
Av. response of grain in lb./ac.	263	107	0	14.8	16	8	74	91	16.5

Control yield = 1440 lb./ac. and no. of trials = 16.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 59(SFT).**

**Centre :- Lucknow (c.f.).**

**Type :- 'M'.**

Object :—Type A—To study the response of Paddy to levels of N, P and K, applied individually and in combination.

## 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 59(SFT) type A on page 87 conducted at Allahabad.

## 5. RESULTS :

Effect	n	p	k	S.E.	np	nk	pk	npk	S.E.
Av. response of grain in lb./ac.	239	189	148	80.6	173	-25	16	49	44.4

Control yield = 1144 lb./ac. and no. of trials = 12.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 59(SFT).**

**Centre :- Moradabad (c.f.).**

**Type :- 'M'.**

Object :—Type A—To study the response of Paddy to levels of N, P and K, applied individually and in combination.

## 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 59(SFT) type A on page 87 conducted at Allahabad.

## 5. RESULTS :

Effect	n	p	k	S.E.	np	nk	pk	npk	S.E.
Av. response of grain in lb./ac.	362	156	91	23.9	-41	-33	33	74	15.6

Control yield = 1646 lb./ac. and no. of trials = 16.

**Crop :- Paddy (Kharif).****Ref :- U.P. 59(SFT).****Centre :- Muzaffarnagar (c.f.).****Type :- 'M'.**

Object :—Type A—To study the response of Paddy to levels of N, P and K, applied individually and in combination.

## 1. BASAL CONDITIONS to 4 GENERAL :

Same as in expt. no. 59(SFT) type A on page 87 conducted at Allahabad.

## 5. RESULTS :

Effect	n	p	k	S.E.	np	rk	pk	npk	S.E.
Av. response of grain in lb./ac.	494	337	337	48.5	0	15	33	49	21.4

Control yield = 1168 lb./ac. and no. of trials = 11.

**Crop :- Paddy (Kharif).****Ref :- U.P. 59(SFT).****Centre :- Rai-Bareilly (c.f.).****Type :- 'M'.**

Object :—Type A—To study the response of Paddy to levels of N, P and K, applied individually and in combination.

## 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 59(SFT) type A on page 87 conducted at Allahabad.

## 5. RESULTS :

Effect	n	p	k	S.E.	np	nk	pk	npk	S.E.
Av. response of grain in lb./ac.	214	222	66	15.6	115	82	66	91	14.0

Control yield = 1086 lb./ac. and no. of trials = 8.

**Crop :- Paddy (Kharif).****Ref :- U.P. 59(SFT).****Centre :- Rampur (c.f.).****Type :- 'M'.**

Object :—Type A—To study the response of Paddy to levels of N, P and K, applied individually and in combination.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Tarai and Sub-mountain. (iii) to (v) N.A. (vi) June–July, 1959. (vii) to (ix) N.A. (x) October–November, 1959.

## 2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 59(SFT) type A on page 87 conducted at Allahabad.

## 5. RESULTS :

Effect	n	p	k	S.E.	np	nk	pk	npk	S.E.
Av. response of grain in lb./ac.	313	370	206	27.2	33	—16	—8	82	19.7

Control yield = 1399 lb./ac. and no. of trials = 16.

**Crop :- Paddy (Kharif).****Ref :- U.P. 59(SFT).****Centre :- Varanasi (c.f.).****Type :- 'M'.**

Object :—Type A—To study the response of Paddy to levels of N, P and K, applied individually and in combination.

**1. BASAL CONDITIONS to 4. GENERAL :**

Same as in expt. no. 59(SFT) type A on Page 87 conducted at Allahabad.

**5. RESULTS :**

Effect	n	p	k	S.E.	np	nk	pk	npk	S.E.
Av. response of grain in lb./ac.	346	222	74	51.0	82	16	8	41	28.0

Control yield = 1136 lb./ac. and no. of trials = 11.

**Crop :- Paddy (Kharif).****Ref :- U.P. 59(SFT).****Centre :- Allahabad (c.f.).****Type :- 'M'.**

Object :—Type B—To investigate the relative efficiency of different nitrogenous fertilizers at different doses.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) Alluvial. (iii) to (v) N.A. (vi) June—July, 1959. (vii) to (ix) N.A. (x) October—November, 1959.

**2. TREATMENTS :**

0 = Control (no manure).

$n_1$  = 20 lb./ac. of N as A/S.

$n_2$  = 40 lb./ac. of N as A/S.

$n_1'$  = 20 lb./ac. of N as Urea.

$n'$  = 40 lb./ac. of N as Urea.

$n_1''$  = 20 lb./ac. of N as A/S/N.

$n_2''$  = 40 lb./ac. of N as A/S/N.

**3. DESIGN :**

(i) and (ii) The district has been divided into four agriculturally homogeneous zones and one field assistant posted in each zone. The field assistant conducts the trials in one Revenue circle or *thana* in the zone and the circle/*thana* is changed once in two years within the same zone. Each field assistant is required to conduct 31 trials in a year, 8 on *kharif* cereal, 8 on *rabi* cereal, 8 on cash crops, 4 on an oilseed crop and 3 on a leguminous crop. Half the number of trials conducted are of type A and the other half of type B on crops other than the legumes. The three trials on legumes are of type C. Residual effects of phosphate application are studied on type C trials in two out of the four zones in each district every year. The above experiments are laid out in randomly located fields in randomly selected villages in each of the 4 zones at the rate of one experiment per village. (iii) (a) N.A. (b) 1/80 ac. (iv) Yes.

**4. GENERAL :**

(i) Normal. (ii) N.A. (iii) Grain yield. (iv) (a) 1959—contd. (b) No. (c) N.A. (v) As per design. (vi) and (vii) N.A.

**5. RESULTS :**

Treatment	0	$n_1$	$n_2$	$n_1'$	$n_2'$	$n_1''$	$n_2''$
Av. yield of grain in lb./ac.	1580	1983	2172	1942	2139	1958	2156

G.M. = 1990 lb./ac. ; S.E./mean = 61.1 lb./ac. and no. of trials = 16.

**Crop :- Paddy (Kharif).****Ref :- U.P. 59(SFT).****Centre :- Deoria (c.f.).****Type :- 'M'.**

Object :—Type B—To investigate the relative efficiency of different nitrogenous fertilizers at different doses.

## 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 59(SFT) type B on page 91 conducted at Allahabad.

## 5. RESULTS :

Treatment	0	n <sub>1</sub>	n <sub>2</sub>	n <sub>1</sub> '	n <sub>2</sub> '	n <sub>1</sub> ''	n <sub>2</sub> ''
Av. yield of grain in lb./ac.	1160	1448	1942	1580	1860	1539	1983

G.M. = 1645 lb./ac. ; S.E./mean = 25.6 lb./ac. and no. of trials = 15.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 59(SFT).**

**Centre :- Fatehpur (c.f.).**

**Type :- 'M'.**

Object :—Type B—To investigate the relative efficiency of different nitrogenous fertilizers at different doses.

## 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 59(SFT) type B on page 91 conducted at Allahabad.

## 5. RESULTS :

Treatment	0	n <sub>1</sub>	n <sub>2</sub>	n <sub>1</sub> '	n <sub>2</sub> '	n <sub>1</sub> ''	n <sub>2</sub> ''
Av. yield of grain in lb./ac.	1399	1621	1777	1629	1761	1662	1835

G.M. = 1669 lb./ac. ; S.E./mean = 25.6 lb./ac. and no. of trials = 16.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 59(SFT).**

**Centre :- Gorakhpur (c.f.).**

**Type :- 'M'.**

Object :—Type B—To investigate the relative efficiency of different nitrogenous fertilizers at different doses.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Tarai and Sub-mountain. (iii) to (v) N.A. (vi, June—July, 1959. (vii) to (ix) N.A. (x) October—November, 1959.

## 2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 59(SFT) type B on page 91 conducted at Allahabad.

## 5. RESULTS :

Treatment	0	n <sub>1</sub>	n <sub>2</sub>	n <sub>1</sub> '	n <sub>2</sub> '	n <sub>1</sub> ''	n <sub>2</sub> ''
Av. yield of grain in lb./ac.	1053	1292	1514	1333	1605	1275	1522

G.M. = 1371 lb./ac. ; S.E./mean = 33.2 lb./ac. and no. of trials = 11.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 59(SFT).**

**Centre :- Jaunpur (c.f.).**

**Type :- 'M'.**

Object :—Type B—To investigate the relative efficiency of different nitrogenous fertilizers at different doses

## 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 59(SFT) type B on page 91 conducted at Allahabad.

## 5. RESULTS :

Treatment	0	n <sub>1</sub>	n <sub>2</sub>	n <sub>1</sub> '	n <sub>2</sub> '	n <sub>1</sub> ''	n <sub>2</sub> ''
Av. yield of grain in lb./ac.	1037	1218	1432	1243	1506	1234	1489

G.M. = 1308 lb./ac. ; S.E./mean = 25.6 lb./ac. and no. of trials = 14.

**Crop :- Paddy (Kharif).****Ref :- U.P. 59(SFT).****Centre :- Kanpur (c.f.).****Type :- 'M'.**

Object :-Type B—To investigate the relative efficiency of different nitrogenous fertilizers at different doses.

**1. BASAL CONDITIONS to 4. GENERAL :**

Same as in expt. no. 59(SFT) type B on page 91 conducted at Allahabad.

**5. RESULTS :**

Treatment	0	$n_1$	$n_2$	$n_1'$	$n_2'$	$n_1''$	$n_2''$
Av. yield of grain in lb./ac.	1407	1539	1695	1596	1712	1662	1777

G.M. = 1627 lb./ac. ; S.E./mean = 17.5 lb./ac. and no. of trials = 16.

**Crop :- Paddy (Kharif).****Ref :- U.P. 59(SFT).****Centre :- Lucknow (c.f.).****Type :- 'M'.**

Object :-Type B—To investigate the relative efficiency of different nitrogenous fertilizers at different doses.

**1. BASAL CONDITIONS to 4. GENERAL :**

Same as in expt. no. 59(SFT) type B on page 91 conducted at Allahabad.

**5. RESULTS :**

Treatment	0	$n_1$	$n_2$	$n_1'$	$n_2'$	$n_1''$	$n_2''$
Av. yield of grain in lb./ac.	1078	1465	1555	1531	1588	1358	1563

G.M. = 1448 lb./ac. ; S.E./mean = 65.2 lb./ac. and no. of trials = 12.

**Crop :- Paddy (Kharif).****Ref :- U.P. 59(SFT).****Centre :- Moradabad (c.f.).****Type :- 'M'.**

Object :-Type B—To investigate the relative efficiency of different nitrogenous fertilizers at different doses.

**1. BASAL CONDITIONS to 4. GENERAL :**

Same as in expt. no. 59(SFT) type B on page 91 conducted at Allahabad.

**5. RESULTS :**

Treatment	0	$n_1$	$n_2$	$n_1'$	$n_2'$	$n_1''$	$n_2''$
Av. yield of grain in lb./ac.	1786	2074	2386	2090	2403	2082	2329

G.M. = 2164 lb./ac. ; S.E./mean = 29.7 lb./ac. and no. of trials = 16.

**Crop :- Paddy (Kharif).****Ref :- U.P. 59(SFT).****Centre :- Muzaffarnagar (c.f.).****Type :- 'M'.**

Object :-Type B—To investigate the relative efficiency of different nitrogenous fertilizers at different doses.

## 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 59(SFT) type B on page 91 conducted at Allahabad.

## 5. RESULTS :

Treatment	0	$n_1$	$n_2$	$n_1'$	$n_2'$	$n_1''$	$n_2''$
Av. yield of grain in lb./ac.	1300	1456	1794	1481	1786	1489	1893

G.M. = 1600 lb./ac. ; S.E./mean = 89.0 lb./ac. and no. of trials = 12

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 59(SFT).**

**Centre :- Rai-Bareilly (c.f.).**

**Type :- 'M'.**

Object :- Type B--To investigate the relative efficiency of different nitrogenous fertilizers at different doses.

## 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 59(SFT) type B on page 91 conducted at Allahabad.

## 5. RESULTS :

Treatment	0	$n_1$	$n_2$	$n_1'$	$n_2'$	$n_1''$	$n_2''$
Av. yield of grain in lb./ac.	872	1119	1234	1144	1234	1111	1168

G.M. = 1126 lb./ac. ; S.E./mean = 46.5 lb./ac. and no. of trials = 8.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 59(SFT).**

**Centre :- Rampur (c.f.).**

**Type :- 'M'.**

Object :- Type B--To investigate the relative efficiency of different nitrogenous fertilizers at different doses.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Tarai and Sub-mountain. (iii) to (v) N.A. (vi) June--July, 1959. (vii) to (ix) N.A. (x) October--November, 1959.

## 2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 59(SFT) type B on page 91 conducted at Allahabad.

## 5. RESULTS :

Treatment	0	$n_1$	$n_2$	$n_1'$	$n_2'$	$n_1''$	$n_2''$
Av. yield of grain in lb./ac.	1407	1786	2205	1753	2246	1868	2320

G.M. = 1941 lb./ac. ; S.E./mean = 54.7 lb./ac. and no. of trials = 14.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 59(SFT)**

**Centre :- Varanasi (c.f.).**

**Type :- 'M'.**

Object :- Type B--To investigate the relative efficiency of different nitrogenous fertilizers at different doses.

## 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 59(SFT) type B on page 91 conducted at Allahabad.

## 5. RESULTS :

Treatment	0	$n_1$	$n_2$	$n_1'$	$n_2'$	$n_1''$	$n_2''$
Av. yield of grain in lb./ac.	938	1210	1580	1243	1489	1317	1432

G.M. = 1316 lb./ac. ; S.E./mean = 54.7 lb./ac. and no. of trials = 12.

**Crop :- Paddy (Kharif).****Ref :- U.P. 54(330).****Centre :- Chakia (Varanasi, c.f.).****Type :- 'M'.**

Object :—To study the effect of N and P on the yield of Paddy.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Fallow for 3 trials, gram for 1 trial. (c) N.A. (ii) Clay loam. (iii) and (iv) N.A. (v) (a) N.A. (b) Transplanting. (c) to (e) N.A. (vi) 31.7.1954 to 24.8.1954. (vii) Irrigated. (viii) and (ix) N.A. (x) 22 to 30.11.1954.

**2. TREATMENTS :**

4 manurial treatments :  $M_0$ =Control,  $M_1$ =25 lb./ac. of N as A/S,  $M_2$ = $M_1$ +25 lb./ac. of  $P_2O_5$  as Super and  $M_3$ = $M_1$ +50 lb./ac. of  $P_2O_5$  as Super.

A/S broadcast and Super placed deep in furrows.

**3. DESIGN :**

(i) and (ii) 2 fields in each of the 2 villages of the *tehsil* were selected randomly. (iii) (a) N.A. (b) 33' × 33'. (iv) Yes.

**4. GENERAL :**

(i) Fair in 1 trial. Draught affected the crop in 3 trials and lodging occurred in 2 trials. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1954—N.A. (b) and (c) N.A. (v) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 2580 lb./ac. (ii) 228.7 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$M_0$	$M_1$	$M_2$	$M_3$
Av. yield	2100	2355	2830	3035

S.E./mean = 114.4 lb./ac.

**Crop :- Paddy (Kharif).****Ref :- U.P. 54(328).****Site :- Ghazipur (Ghazipur, c.f.).****Type :- 'M'.**

Object :—To study the effect of N and P on the yield of Paddy.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Fallow for 5 trials and pea for 1 trial. (c) N.A. (ii) Clayey loam to clayey. (iii) and (iv) N.A. (v) (a) N.A. (b) Transplanting. (c) to (e) N.A. (vi) 14.7.1954 to 8.8.1954. (vii) Irrigated. (viii) and (ix) N.A. (x) 15.10.1954 to 14.11.1954.

**2. TREATMENTS :**

Same as in expt. no. 54(330) above.

**3. DESIGN :**

(i) and (ii) 3 fields in 1 village, 2 fields in 1 village and 1 field in 1 village were selected randomly from 3 villages in the *tehsil*. (iii) (a) N.A. (b) 33' × 33'. (iv) Yes.

**4. GENERAL :**

(i) 4 trials fair, 1 trial good and 1 trial poor. Draught affected the crop and lodging occurred in 1 trial. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1954—only. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) 4 trials were conducted on early paddy and 2 trials on late paddy.

**5. RESULTS :**

(i) 813 lb./ac. (ii) 80.8 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$M_0$	$M_1$	$M_2$	$M_3$
Av. yield	553	767	880	1053

S.E./mean = 33.0 lb./ac.



**Crop :- Paddy (Kharif).****Ref :- U.P. 54(326).****Centre :- Kashipur (Nainital, c.f.).****Type :- 'M'.**

Object :- To study the effect of N and P on the yield of Paddy.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Sugarcane and Wheat. (c) N.A. (ii) Loam to clay loam. (iii) and (iv) N.A. (v) (a) 5 to 6 ploughings and 3 plankings. (c) 24 srs./ac. (d) and (e) N.A. (vi) 12 to 15.7.1954. (vii) Irrigated. (viii) and (ix) N.A. (x) 4 to 14.11.1954.

**2. TREATMENTS :**

4 manurial treatments :  $M_0$  = Control,  $M_1$  = 25 lb./ac. of N as A/S,  $M_2$  =  $M_1$  + 30 lb./ac. of  $P_2O_5$  as Super and  $M_3$  =  $M_1$  + 60 lb./ac. of  $P_2O_5$  as Super.

A/S as top dressing, 15 days to 1 month after transplanting and Super placed deep in the soil just before transplanting.

**3. DESIGN :**

(i) and (ii) 1 field in 1 village. 2 fields in 1 village and 3 fields in 1 village were selected randomly from 3 villages in the *tehsil*. (iii) (a) 55' × 49.5'. (b) 33' × 33'. (vi) Yes.

**4. GENERAL :**

(i) Good, lodging occurred. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1954--N.A. (b) and (c) N.A. (v) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1445 lb./ac. (ii) 66.7 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$M_0$	$M_1$	$M_2$	$M_3$
Av. yield	1339	1368	1456	1617

S.E./mean = 31.2 lb./ac.

**Crop :- Paddy (Kharif).****Ref :- U.P. 57(433).****Centre :- Karchana (Allahabad, c.f.).****Type :- 'M'.**

Object :- To study the effect of N and P on the yield of Paddy.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Fallow. (c) Nil. (ii) Black soil (clayey). (iii) to (v) N.A. (vi) 22 to 31.8.1957. (vii) 4 trials irrigated and 2 trials unirrigated. (viii) and (ix) N.A. (x) 22 to 26.11.1957.

**2. TREATMENTS :**

Same as in expt. no. 54(330) on page 95.

**3. DESIGN :**

(i) and (ii) 3 fields in each of the 2 villages of the *tehsil* were selected randomly. Crop in 2 trials failed completely and hence only 4 trials are taken up for analysis. (iii) (a) N.A. (b) 1/40 ac. (iv) Yes.

**4. GENERAL :**

(i) Fair for 3 trials and very poor for 3 trials. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1957--N.A. (b) and (c) N.A. (v) N.A. (vi) 2 trials was badly affected by drought and have failed completely. (vii) Nil.

**5. RESULTS :**

(i) 639 lb./ac. (ii) 85.0 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	$M_0$	$M_1$	$M_2$	$M_3$
Av. yield	490	545	740	780

S.E./mean = 42.5 lb./ac.

**Crop :- Paddy (Kharif).****Ref :- U.P. 54(325).****Centre :- Kichha (Nainital, c.f.).****Type :- 'M'.**

Object :— To study the effect of N and P on the yield of Paddy.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Wheat. (c) N.A. (ii) Light loam to clay loam. (iii) and (iv) N.A. (v) (a) 5 to 6 *desi* ploughings and 3 plankings. (b) Transplanting. (c) N.A. (d) 6"×9". (e) N.A. (vi) 30.6.1954 to 24.7.1954. (vii) Irrigated. (viii) and (ix) N.A. (x) 16.10.1954 to 2.11.1954.

**2. TREATMENTS :**

Same as in expt. no. 54(326) on page 96.

**3. DESIGN :**

(i) and (ii) 2 fields in each of 2 village and 1 field in 1 village were selected randomly from 3 villages in the *tehsil*. (iii) (a) 55'×49.5'. (b) 33'×33'. (iv) Yes.

**4. GENERAL :**

(i) Normal. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1954—contd (with changed treatments). (b) and (c) N.A. (v) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 808 lb./ac. (ii) 249 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	M <sub>0</sub>	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>
Av. yield	704	751	928	848

S.E./mean = 111.4 lb./ac.

**Crop :- Paddy (Kharif).****Ref :- U.P. 55(373).****Centre :- Kichha (Nainital, c.f.).****Type :- 'M'.**

Object :— To study the effect of different sources and levels of N with and without P on Paddy.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Wheat—Gram—*Sanai*. (c) N.A. (ii) Loam to clay loam. (iii) and (iv) N.A. (v) (a) 5 to 6 *de i* ploughings and 3 plankings. (b) Transplanting. (c) N.A. (d) 6"×9". (e) N.A. (vi) 6.7.1955 to 21.8.1955. (vii) Irrigated. (viii) Weedings in two trials. (ix) N.A. (x) 21.10.1955 to 26.11.1955.

**2. TREATMENTS :**

4 manurial treatments : M<sub>0</sub>=Control, M<sub>1</sub>=25 lb./ac. of N as A/S, M<sub>2</sub>=25 lb./ac. of N as A/S/N+30 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super and M<sub>3</sub>=25 lb./ac. of N as A/S/N+60 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.

N applied as top dressing and Super behind the plough.

**3. DESIGN :**

(i) and (ii) 4 fields in 1 village, 3 fields in each of 2 villages, 2 fields in each of 2 villages and 1 field in 1 village were selected randomly from 6 villages in the *tehsil*. (iii) (a) N.A. (b) 33'×33'. (iv) Yes.

**4. GENERAL :**

(i) Good in 12 trials, poor in 3 trials. Lodging due to rains and winds. (ii) Red spot disease observed. (iii) Yield of grain and straw. (iv) (a) 1954—contd (with changed treatments). (b) and (c) N.A. (v) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1922 lb./ac. (ii) 394.2 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	M <sub>0</sub>	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>
Av. yield	1587	1829	2067	2204

S.E./mean = 101.8 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 56(409).**

**Centre :- Kichha (Nainital, c.f.).**

**Type :- 'M'.**

Object :— To study the effect of N and P on Paddy.

#### 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Wheat and Sugarcane. (c) N.A. (ii) Loam. (iii) and (iv) N.A. (v) (a) 5 to 6 *de:i* ploughings and 3 plankings. (b) Transplanting. (c) N.A. (d) 6"×9". (e) N.A. (vi) 14.7.1956 to 10.8.1956. (vii) Irrigated. (viii) and (ix) N.A. (x) 23.10.1956 to 14.11.1956.

#### 2. TREATMENTS :

4 manurial treatment : M<sub>0</sub>=Control, M<sub>1</sub>=25 lb./ac. of N as A/S, M<sub>2</sub>=M<sub>1</sub>+10 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super and M<sub>3</sub>=M<sub>1</sub>+20 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.  
A/S by broadcast and Super placed deep behind the plough.

#### 3. DESIGN :

(i) and (ii) 4 fields in 1 village and 1 field in 1 village were selected randomly from 2 villages in the *tehsil*. (iii) (a) 49.5'×55'. (b) 1/40 ac. (iv) Yes.

#### 4. GENERAL :

(i) Good, lodging occurred. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1954—contd. (with changed treatments). (b) and (c) N.A. (v) N.A. (vi) and (vii) Nil.

#### 5. RESULTS :

(i) 1874 lb./ac. (ii) 291.6 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	M <sub>0</sub>	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>
Av. yield	1603	1734	1971	2186

S.E./mean = 130.4 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 57(432).**

**Centre :- Soraon (Allahabad, c.f.).**

**Type :- 'M'**

Object :— To study the effect of N and P on the yield of Paddy.

#### 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow. (c) Nil. (ii) Clay loam. (iii) to (v) N.A. (vi) 4, to 5.3.1957. (vii) Irrigated. (viii) and (ix) N.A. (x) 19 to 29.11.1957.

#### 2. TREATMENTS :

Same as in expt. no 54(330) on page 95.

#### 3. DESIGN :

(i) and (ii) 3 fields in each of the 2 villages in the *tehsil* were selected randomly. (iii) (a) N.A. (b) 1/40. (iv) Yes.

#### 4. GENERAL :

(i) Good in 3 trials and poor in 3 trials due to draught. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1957—N.A. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The monsoon period was dry this year particularly towards the end, so the crop was badly affected.

## 5. RESULTS :

(i) 897 lb./ac. (ii) 35.1 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	M <sub>0</sub>	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>
Av. yield	750	883	963	993

S.E./mean = 14.3 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 54(329)**

**Center :- Zamaina (Ghazipur, c.f.).**

**Type :- 'M'**

Object :—To study the effect of N and P on the yield of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Gram for 3 trials and fallow for 2 trials. (c) N.A. (ii) Clayey loam. (iii) and (iv) N.A. (v) N.A. (b) Transplanted. (c) to (e) N.A. (vi) 8.7.1954 to 6.8.1954. (vii) 4 trials unirrigated and 2 trials irrigated. (viii) and (ix) N.A. (x) 26.9.1954 to 13.10.1954.

## 2. TREATMENTS :

Same as in expt. no. 54(330) on page 95.

## DESIGN :

(i) and (ii) 3 fields in each of the 3 villages in the *tehsil* were selected randomly. (iii) (a) N.A. (b) 33' × 33' (iv) Yes.

## GENERAL :

(i) 4 trials completely failed, 2 trials affected badly due to drought. Lodging occurred in one trial. (ii) Nil (iii) Yield of grain and straw. (iv) (a) 1954 only. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) Only 2 trials are taken up for analysis.

## RESULTS :

(i) 840 lb./ac. (ii) 23.1 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	M <sub>0</sub>	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>
Av. yield	600	780	880	1100

S.E./mean = 16.3 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 56(431).**

**Centre :- Rasra (Ballia, c.f.).**

**Type :- 'M'**

Object :—To study the residual effect of N and P applied to previous wheat crop on the yield of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Wheat. (c) As per treatments. (ii) Loam to heavy loam. (iii) 25 lb./ac. of N as A/S. (iv) and (v) N.A. (vi) 23 to 25.7.1956. (vii) Irrigated. (viii) and (ix) N.A. (x) 29 and 30.9.1956.

## 2. TREATMENTS :

5 manurial treatments : M<sub>0</sub>=Control, M<sub>1</sub>=25 lb./ac. of N as A/S, M<sub>2</sub>=M<sub>1</sub>+30 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super. M<sub>3</sub>=M<sub>1</sub>+60 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super and M<sub>4</sub>=M<sub>1</sub>+60 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Ammo. Phos.

Fertilizers applied to previous wheat crop.

## 3. DESIGN :

(i) and (ii) 1 field in each of the 2 villages in the *tehsil* were selected randomly for studying residual effect. (iii) (a) N.A. (b) 33' × 33'. (iv) Yes.

## 4. GENERAL :

(i) Fair. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1956—N.A. (b) and (c) N.A. (v) N.A. (vi) Crop was affected due to draught (vii) Nil

## 5. RESULTS :

(i) 608 lb./ac. (ii) 56.3 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	M <sub>0</sub>	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	M <sub>4</sub>
Av. yield	520	560	625	705	630

S.E./mean = 39.8 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 57(466).**

**Centre :- Rasra (Ballia, c.f.).**

**Type :- 'M'.**

Object :—To study the residual effect of N and P applied to previous barley crop on the yield of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Barley. (c) As per treatments. (ii) Clayey. (iii) 20 lb./ac. of N as A/S. (iv) and (v) N.A. (vi) 10 to 16.7.1957. (vii) Irrigated. (viii) and (ix) N.A. (x) 25.9.1957 to 6.10.1957.

## 2. TREATMENTS :

5 manurial treatments : M<sub>0</sub>=Control, M<sub>1</sub>=25 lb./ac. of N as A/S/N, M<sub>2</sub>=M<sub>1</sub>+30 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super  
M<sub>3</sub>=M<sub>1</sub>+60 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super and M<sub>4</sub>=M<sub>1</sub>+60 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Arimo.  
Phos.

Fertilizers applied to previous Barley crop.

## 3. DESIGN :

(i) and (ii) 2 fields in each of 3 villages and 1 field in 1 village were selected randomly from 4 villages in the *tehsil* for studying residual effect. (iii) (a) N.A. (b) 33'×33'. (iv) Yes.

## 4. GENERAL :

(i) Normal in 4 trials and good in 3 trials. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1957—N.A. (b) and (c) N.A. (v) N.A. (vi) The yield corresponding to control treatment has not been recorded for all the trials. (vii) Nil.

## 5. RESULTS :

(i) 1408 lb./ac. (ii) 30.7 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatments	M <sub>0</sub>	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	M <sub>4</sub>
Av. yield	—	1280	1364	1509	1480

S.E./mean = 11.6 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 57(447).**

**Centre :- Bajpur (Nainital, c.f.).**

**Type :- 'M'.**

Object :—To study the effect of N, P and K on the yield of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Wheat. (b) and (c) N.A. (ii) Loam. (iii) and (iv) N.A. (v) (a) 5 to 6 *desi* ploughings and 3 plankings. (b) Transplanting. (c) N.A. (d) 6"×9". (e) N.A. (vi) 21 to 30.7.1957. (vii) Irrigated. (viii) and (ix) N.A. (x) 19.10.1957 to 1.11.1957.

## 2. TREATMENTS :

5 manurial treatments :  $M_0$ =Control,  $M_1$ =30 lb./ac. of N as A/S/N,  $M_2$ = $M_1$ +40 lb./ac. of  $K_2O$  as Mur. Pot.,  $M_3$ = $M_1$ +40 lb./ac. of  $P_2O_5$  as Super and  $M_4$ = $M_3$ +40 lb./ac. of  $K_2O$  as Mur. Pot.

A/S/N by broadcast, Super and Mur. Pot. applied behind the plough before planting.

## 3. DESIGN :

(i) and (ii) 1 field in each of the 2 villages in the *tehsil* were selected randomly. (iii) (a)  $49.5' \times 55'$ . (b)  $33' \times 33'$ . (iv) Yes.

## 4. GENERAL :

(i) Good. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1957—not contd. (b) and (c) N.A. (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1005 lb./ac. (ii) 56.9 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$M_0$	$M_1$	$M_2$	$M_3$	$M_4$
Av. yield	824	936	1040	1008	1216

S.E./mean = 40.2 lb./ac.

**Crop :- Paddy (*Kharif*).**

**Centre :- Kichha (Nainital, c.f.).**

**Ref :- U.P. 57(448).**

**Type :- 'M'.**

Object :—To study the effect of N, P and K on the yield of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Wheat. (c) N.A. (ii) Loam and clay loam. (iii) and (iv) N.A. (v) (a) 5 to 6 *desi* ploughings and 3 plankings. (b) Transplanting. (c) N.A. (d)  $6'' \times 9''$ . (e) N.A. (vi) 20 to 26.7.1957. (vii) Irrigated. (viii) and (ix) N.A. (x) 17.10.1957 to 22.11.1957.

## 2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 57(447) on page 100.

## 4. GENERAL :

(i) In 1 trial good and in 1 trial poor. Lodging occurred. (ii) Crop damaged by rats. (iii) Yield of grain and straw. (iv) (a) 1957—N.A. (b) and (c) N.A. (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1130 lb./ac. (ii) 225.6 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$M_0$	$M_1$	$M_2$	$M_3$	$M_4$
Av. yield	1081	1126	1154	1200	1088

S.E./mean = 159.6 lb./ac.

**Crop :- Paddy (*Kharif*).**

**Centre :- Rasra (Ballia, c.f.).**

**Ref :- U.P. 57(464).**

**Type :- 'M'.**

Object :—To study the residual effect of N, P and K applied to previous wheat crop on Paddy.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Wheat. (c) As per treatments. (ii) Clayey. (iii) 20 lb./ac. of N as A/S. (iv) and (v) N.A. (vi) 14 to 16.7.1957. (vii) Irrigated. (viii) and (ix) N.A. (x) 27.9.1957 to 7.10.1957.

## 2. TREATMENTS :

5 manurial treatments :  $M_0$ =Control,  $M_1$ =30 lb./ac. of N as A/S/N,  $M_2$ = $M_1$ +40 lb./ac. of  $K_2O$  as Mur. Pot.,  $M_3$ = $M_1$ +40 lb./ac. of  $P_2O_5$  as Super and  $M_4$ = $M_2$ +40 lb./ac. of  $P_2O_5$  as Super.

Fertilizers applied to previous wheat crop.

## 3. DESIGN :

(i) and (ii) 1 field in each of 4 villages in the *tehsil* were selected randomly. (iii) (a) N.A. (b) 32' × 33'. (iv) Yes.

## 4. GENERAL :

(i) Normal. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1957—N.A. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The yield corresponding to  $M_0$  has not been recorded for all the trials.

## 5. RESULTS :

(i) 1008 lb./ac. (ii) 42.0 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$M_0$	$M_1$	$M_2$	$M_3$	$M_4$
Av. yield	—	890	950	1070	1120

S.E./mean = 21.0 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 59(482).**

**Centre :- Dehra Dun (Dehra Dun, c.f.).**

**Type :- 'M'.**

Object :—To study the effect of N through different sources in combination with P.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) Nil. (iv) T-3 (improved). (v) (a) 6 to 7 ploughings by *desi* plough. (b) Transplanting. (c) N.A. (d) 10" × 10". (e) 2 seedlings/hole. (vi) 10.7.1959/ 8.8.1959. (vii) Irrigated. (viii) 3 weedings. (ix) N.A. (x) 3rd week of Nov., 1959.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 sources of N :  $S_0$ =0 (no application),  $S_1$ =18 lb./ac. of N as A/S  $S_2$ =18 lb./ac. of N as meat meal and  $S_3$ =9 lb./ac. of N as A/S+9 lb./ac. of N as meatmeal.

(2) 2 levels of  $P_2O_5$  as B.M. :  $P_0$ =0 and  $P_1$ =18 lb./ac.

## 3. DESIGN :

(i) and (ii) R.B.D. with 4 replications. (iii) (a) and (b) 45' × 24'. (iv) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1959—1960. (b) and (c) N.A. (v) N.A. (vi) Hailstorm affected the crop at the time of harvesting. (vii) Nil.

## 5. RESULTS :

(i) 1402 lb./ac. (ii) 207.4 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	$S_0$	$S_1$	$S_2$	$S_3$	Mean
$P_0$	1363	1396	1557	1327	1411
$P_1$	1212	1400	1460	1498	1393
Mean	1288	1398	1509	1413	1402

S.E. of S marginal mean = 73.3 lb./ac.

S.E. of P marginal mean = 51.8 lb./ac.

S.E. of body of table = 103.7 lb./ac.

**Crop :- Paddy (Kharif).****Ref :- U.P. 58(308).****Site :- Govt. Agri. Farm, Barabanki.****Type :- 'C'.**

Object :—To study the effect of pruning of roots and defoliation of seedlings on Paddy.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Moong*. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) N.A./8, 9.7.1958. (iv) (a) 1 ploughing. (b) Transplanting. (c) 8 to 10 srs./ac. (d) 9'×9'. (e) 2 to 3. (v) *Moong* as G.M. (vi) N—22. (vii) Irrigated. (viii) and (ix) N.A. (x) 10, 11.10.1958.

**2. TREATMENTS :**

5 cultural treatments : C<sub>1</sub>=Whole seedlings (plant kept intact), C<sub>2</sub>=Seedlings with  $\frac{1}{2}$  root removed, C<sub>3</sub>=Seedlings with full root removed (leaving a small portion), C<sub>4</sub>=Seedlings with  $\frac{1}{2}$  shoot removed and C<sub>5</sub>=Seedlings with  $\frac{1}{2}$  leaves removed.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 5. (b) 176'×26'. (iii) 4. (iv) (a) 34'×26'. (b) 31'×23'. (v) 1 $\frac{1}{2}$ '×1 $\frac{1}{2}$ '. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Slight attack of *gundhi* bug. (iii) Yield of grain. (iv) (a) 1958—N.A. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Yield was less due to late planting and lack of water.

**5. RESULTS :**

(i) 1396 lb./ac. (ii) 178.1 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	C <sub>4</sub>	C <sub>5</sub>
Av. yield	1375	1532	1335	1390	1347

S.E./mean = 89.0 lb./ac.

**Crop :- Paddy (Kharif).****Ref :- U.P. 54(105).****Site :- State Mechanised Farm, Bharari.****Type :- 'C'.**

Object :—To find out the optimum seed rate for Paddy.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) *Parwa* soil. (b) Refer soil analysis, Bharari. (iii) N.A./30.7.1954. (iv) (a) 2 harrowings. (b) N.A. (c) As per treatments. (d) and (e) N.A. (v) 40 lb./ac. of N as F.Y.M. + 50 lb./ac. of N as A/S + 30 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super + 20 lb./ac. of K<sub>2</sub>O as Pot. Sul. + 20 lb./ac. of CaO as gypsum. (vi) T—43. (vii) Irrigated. (viii) to (x) N.A.

**2. TREATMENTS :**

6 seed rates : R<sub>1</sub>=10, R<sub>2</sub>=15, R<sub>3</sub>=20, R<sub>4</sub>=25, R<sub>5</sub>=30 and R<sub>6</sub>=35 srs./ac.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 41'×38'. (b) 38'×35'. (v) 1 $\frac{1}{2}$ '×1 $\frac{1}{2}$ '. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Slight attack of *gundhi* bug. Gammexane was sprayed. (iii) Yield of grain. (iv) (a) 1954—contd. (b) No. (c) Nil. (v) (a) Kalianpur and Varanasi. (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1631 lb./ac. (ii) 326.1 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	R <sub>1</sub>	R <sub>2</sub>	R <sub>3</sub>	R <sub>4</sub>	R <sub>5</sub>	R <sub>6</sub>
Av. yield	1668	1735	1600	1583	1752	1449

S.E./mean = 163.1 lb./ac.



**Crop :- Paddy (Kharif).****Ref :- U.P. 55(111).****Site :- State Mechanised Farm, Bharari.****Type :- 'C'.**

Object :—To find out the optimum seed rate for Paddy.

**1. BASAL CONDITIONS:**

(i) (a) Paddy—*Berseem*. (b) *Berseem*. (c) N.A. (ii) (a) *Parwa* soil. (b) Refer soil analysis, Bharari. (iii) N.A./25.7.1955. (iv) (a) N.A. (b) Broadcast. (c) As per treatments. (d) and (e) N.A. (v) F.Y.M. or compost at 100 mds./ac. + 190 lb./ac. of Super + 100 lb./ac. of A/S + 100 lb./ac. of Pot. Sul. (vi) T—100. (vii) Irrigated. (viii) and (ix) N.A. (x) 27.11.1955.

**2. TREATMENTS to 4. GENERAL :**

Same as in expt. no. 54(105) on page 103.

**5. RESULTS :**

(i) 2445 lb./ac. (ii) 561.9 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	R <sub>1</sub>	R <sub>2</sub>	R <sub>3</sub>	R <sub>4</sub>	R <sub>5</sub>	R <sub>6</sub>
Av. yield	2164	3508	1827	2446	1752	2973

S.E./mean = 281.0 lb./ac.

**Crop :- Paddy (Kharif).****Ref :- U.P. 56(164).****Site :- State Mechanised Farm, Bharari.****Type :- 'C'.**

Object :—To find out the optimum seed rate for Paddy.

**1. BASAL CONDITIONS :**

(i) (a) Paddy—*Berseem*. (b) *Berseem*. (c) N.A. (ii) (a) *Parwa* soil. (b) Refer soil analysis, Bharari. (iii) N.A./12.7.1956. (iv) (a) 1 ploughing, 1 cultivator, 1 planking and 1 harrowing. (b) Line sowing by seed drill. (c) As per treatments. (d) and (e) N.A. (v) 100 mds./ac. of F.Y.M. or compost + 20 lb./ac. of N as A/S + 30 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super + 20 lb./ac. of K<sub>2</sub>O as Pot. Sul. (vi) T—100. (vii) Irrigated. (viii) and (ix) N.A. (x) 15.10.1956.

**2. TREATMENTS to 4. GENERAL:**

Same as in expt. no. 54(105) on page 103.

**5. RESULTS :**

(i) 2609 lb./ac. (ii) 533.4 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	R <sub>1</sub>	R <sub>2</sub>	R <sub>3</sub>	R <sub>4</sub>	R <sub>5</sub>	R <sub>6</sub>
Av. yield	2266	3626	1979	2581	2013	3192

S.E./mean = 266.7 lb./ac.

**Crop :- Paddy (Kharif).****Ref :- U.P. 54(149).****Site :- State Usar Reclamation Farm, Dhakuni.****Type :- 'C'.**

Object :—To study the effect of leaching with water on saline alkali soils.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Dhaincha* (G.M.). (c) Nil. (ii) (a) Saline alkali. (b) Refer soil analysis, Dhakuni. (iii) N.A./7, 8.8.1954. (iv) (a) N.A. (b) Transplanting. (c) and (d) N.A. (e) 1. (v) G.M. (*dhaincha*) + 20 srs./ac. of A/S. (vi) T—100. (vii) Irrigated. (viii) 2 weedings. (ix) 20.68". (x) 28.11.1954.

## 2. TREATMENTS :

2 cultural treatments :  $L_0$ =No leaching and  $L_1$ =Leaching with water alone.

## 3. DESIGN :

(i) Paired-plot. (ii) (a) 2. (b) N.A. (iii) 2. (iv) (a) and (b) Rep. I :  $L_0=0.48$  ac.,  $L_1=0.59$  ac. and Rep. II :  $L_0=0.59$  ac. and  $L_1=0.37$  ac. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Yield of grain. (iv) (a) 1951—1955. (b) Yes. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 806 lb./ac. (ii) 38.7 lb./ac. (iii) Treatment difference is significant. (iv) Av. yield of grain in lb./ac.

Treatment	$L_0$	$L_1$
Av. yield	405	1207

S.E./mean = 27.4 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 55(133).**

**Site :- State Usar Reclamation Farm, Dhakuni.**

**Type :- 'C'.**

Object :—To study the effect of leaching with water on saline alkali soils.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) *Dhaincha* (G.M.). (c) Nil. (ii) (a) Saline alkali. (b) Refer soil analysis, Dhakuni. (iii) N.A./10 to 12.7.1955. (iv) (a) 1 ploughing. (b) Transplanting. (c) and (d) N.A. (e) 1. (v) G.M. (*dhaincha*) +20 srs./ac. of A/S. (vi) T—100. (vii) Unirrigated. (viii) 1 rouging. (ix) 41.71". (x) 18.11.1955.

## 2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 54(149) on page 104.

## 5. RESULTS :

(i) 896 lb./ac. (ii) 111.6 lb./ac. (iii) Treatment difference is not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$L_0$	$L_1$
Av. yield	440	1351

S.E./mean = 78.9 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 54(148).**

**Site :- State Usar Reclamation Farm, Dhakuni.**

**Type :- 'C'.**

Object :—To study the effect of leaching with water on saline alkali soils.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Saline alkali. (b) Refer soil analysis, Dhakuni. (iii) N.A./4 to 6.8.1954 and 9, 10.8.1954. (iv) (a) 2 ploughings. (b) Transplanting. (c) and (d) N.A. (e) 1. (v) 20 srs./ac. of A/S top dressed. (vi) T—100 (late). (vii) Irrigated. (viii) 2 weedings and 1 rouging. (ix) 20.68". (x) 27.11.1954 and 28.11.1954.

## 2. TREATMENTS :

2 cultural treatments :  $L_0$ =No leaching and  $L_1$ =Leaching with water alone.

## 3. DESIGN :

(i) Paired-plot. (ii) (a) 2. (b) N.A. (iii) 8. (iv) (a) and (b) 0.50 ac. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1952-1956. (b) Yes. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 542 lb./ac. (ii) 130.6 lb./ac. (iii) Treatment difference is highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	L <sub>0</sub>	L <sub>1</sub>
Av. yield	362	721

S.E./mean = 46.2 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 55(132).**

**Site :- State Usar Reclamation Farm, Dhakuni.**

**Type :- 'C'.**

Object :— To study the effect of leaching with water on saline alkali soils.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Saline alkali. (b) Refer soil analysis, Dhakuni. (iii) N.A./13 to 16.7.1955 and 19 to 27.7.1955. (iv) (a) 2 ploughings. (b) Transplanting. (c) and (d) N.A. (e) 1 (v) 20 srs./ac. of A/S top dressed. (vi) T-100 (late). (vii) Irrigated. (viii) 2 rougings. (ix) 41.71%. (x) 19 to 23.11.1955.

## 2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 54(148) on page 105.

## 5. RESULTS :

(i) 791 lb./ac. (ii) 158.5 lb./ac. (iii) Treatment difference is highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	L <sub>0</sub>	L <sub>1</sub>
Av. yield	468	1115

S.E./mean = 56.0 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 56(73).**

**Site :- State Usar Reclamation Farm, Dhakuni.**

**Type :- 'C'.**

Object :— To study the effect of leaching with water on saline alkali soils.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Dhaincha* (G.M.). (c) Nil. (ii) (a) Saline alkali. (b) Refer soil analysis, Dhakuni. (iii) N.A./23, 24, 25.7.1956. (iv) (a) 1 ploughing by meston plough. (b) Transplanting. (c) and (d) N.A. (e) 1. (v) G.M. with *dhaincha*+20 srs./ac. of A/S. (vi) T-9 (late). (vii) Irrigated. (viii) 2 weedings and 1 rouging. (ix) 35.71%. (x) 1.12.1956.

## 2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 54(148) on page 105.

## 5. RESULTS :

(i) 757 lb./ac. (ii) 60.2 lb./ac. (iii) Treatment difference is highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	L <sub>0</sub>	L <sub>1</sub>
Av. yield	585	929

S.E./mean = 21.3 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 57(338).**

**Site :- Instt. of Crop Physiology, Dilkusha.**

**Type :- 'C'.**

Object :- To find out the optimum seed rate for Paddy.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Wheat—Gram. (c) N.A. (ii) (a) Light sandy loam. (b) Refer soil analysis, Dilkusha. (iii) 12.7.1957. (iv) (a) N.A. (b) Behind the plough. (c) As per treatments. (d) 9" between rows. (e) N.A. (v) N.A. (vi) T—136. (vii) Irrigated. (viii) and (ix) N.A. (x) 9.10.1957.

**2. TREATMENTS :**

6 seed rates : R<sub>1</sub>=10, R<sub>2</sub>=15, R<sub>3</sub>=20, R<sub>4</sub>=25, R<sub>5</sub>=30 and R<sub>6</sub>=35 srs./ac.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 32'×27'. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Grain and straw yield. (iv) (a) 1957—contd. (with modification). (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 451 lb./ac. (ii) 57.9 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	R <sub>1</sub>	R <sub>2</sub>	R <sub>3</sub>	R <sub>4</sub>	R <sub>5</sub>	R <sub>6</sub>
Av. yield	314	386	425	493	535	554

S.E./mean = 28.9 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 58(306).**

**Site :- Instt. of Crop Physiology, Dilkusha.**

**Type :- 'C'.**

Object :- To find out the optimum seed rate and suitable method of sowing for Paddy.

**1. BASAL CONDITIONS :**

(i) (a) Paddy—Wheat—Gram. (b) Wheat. (c) N.A. (ii) (a) Light sandy loam. (b) Refer soil analysis, Dilkusha. (ii) 3.7.1958. (iv) (a) 4 harrowings and 4 ploughings. (b) and (c) As per treatments. (d) and (e) N.A. (v) 100 mds./ac. of F.Y.M., +20 lb./ac. of N as A/S+30 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super. (vi) T—136. (early). (vii) Unirrigated. (viii) and (ix) N.A. (x) 21 to 23.10.1958.

**2. TREATMENTS :**

**Main-plot treatments :**

2 methods of sowing : M<sub>1</sub>=Broadcasting and M<sub>2</sub>=Line sowing behind the plough.

**Sub-plot treatments :**

6 seed rates : R<sub>1</sub>=15, R<sub>2</sub>=20, R<sub>3</sub>=25, R<sub>4</sub>=30, R<sub>5</sub>=35 and R<sub>6</sub>=40 srs./ac.

**3. DESIGN :**

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 6 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 32'×27'. (b) 29'×24'. (v) 1½'×1½'. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Attack of *gundhi* bug. (iii) Yield of grain and straw. (iv) (a) 1957—contd. (with modifications). (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

- (i) 721 lb./ac. (ii) (a) 135.2 lb./ac. (b) 124.7 lb./ac. (iii) Main effect of R alone is highly significant.  
 (iv) Av. yield of grain in lb./ac.

	R <sub>1</sub>	R <sub>2</sub>	R <sub>3</sub>	R <sub>4</sub>	R <sub>5</sub>	R <sub>6</sub>	Mean
M <sub>1</sub>	370	606	687	730	810	874	680
M <sub>2</sub>	574	703	778	821	864	837	763
Mean	472	654	732	775	837	855	721

## S.E. of difference of two

1. M marginal means = 45.1 lb./ac.
2. R marginal means = 72.0 lb./ac.
3. R means at the same level of M = 101.8 lb./ac.
4. M means at the same level of R = 103.3 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 59(336).**

**Site :- Instt. of Crop Physiology, Dilkusha.**

**Type :- 'C'.**

**Object :-** To find out the optimum seed rate and suitable method of sowing for Paddy.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) Potato. (c) N.A. (ii) (a) Light sandy loam. (b) Refer soil analysis, Dilkusha. (iii) 17.1959. (iv) (a) 4 ploughings and 4 plankings. (b) and (c) As per treatments. (d) and (e) N.A. (v) 30 srs./ac. of P<sub>2</sub>O<sub>5</sub> as Super + 20 lbs./ac. of N as A/S. (vi) T-136. (vii) Irrigated. (viii) 3 hoeings and 1 weeding. (ix) N.A. (x) 13.10.1959.

## 2. TREATMENTS :

Same as in expt. no. 58(306) on page 107.

## 3. DESIGN :

- (i) Split-plot. (ii) (a) 2 main-plots/replication; 6 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 22' x 15.5'. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1957 - contd. (with modification) (b) No. (c) Nil. (v) and (vi) Nil. (vii) Yield was affected by late sowing and lack of rains.

## 5. RESULTS :

- (i) 867 lb./ac. (ii) (a) 136.2 lb./ac. (b) 70.9 lb./ac. (iii) Main effect of R is highly significant and interaction R x M is significant. (iv) Av. yield of grain in lb./ac.

	R <sub>1</sub>	R <sub>2</sub>	R <sub>3</sub>	R <sub>4</sub>	R <sub>5</sub>	R <sub>6</sub>	Mean
M <sub>1</sub>	657	690	799	832	920	1051	825
M <sub>2</sub>	745	766	843	898	1182	1018	909
Mean	701	728	821	865	1051	1035	867

## S.E. of difference of two

1. M marginal means = 45.4 lb./ac.
2. R marginal means = 40.9 lb./ac.
3. R means at same level of M = 57.9 lb./ac.
4. M means at the same level of R = 69.7 lb./ac.

**Crop :- Paddy (Kharif).****Ref :- U.P. 55(112).****Site :- Govt. Agri. Farm, Faizabad.****Type :- 'C'.**

Object :—To find out the optimum seed rate for Paddy.

**1. BASAL CONDITIONS :**

(i) (a) Paddy—*Berseem*. (b) *Berseem*. (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Faizabad. (iii) 15.7.1955. (iv) (a) N.A. (b) Sown behind the plough. (c) As per treatments. (d) and (e) N.A. (v) 100 mds./ac. of F.Y.M. +20 lb./ac. of N as A/S+30 lb./ac. of  $P_2O_5$  as Super+20 lb./ac. of  $K_2O$  as Pot. Sul. (vi) N—22. (vii) to (ix) N.A. (x) 12 to 14.10.1955.

**2. TREATMENTS :**6 seed rates :  $R_1=10$ ,  $R_2=15$ ,  $R_3=20$ ,  $R_4=25$ ,  $R_5=30$  and  $R_6=35$  srs./ac.**3. DESIGN :**(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a)  $41' \times 38'$ . (b)  $38' \times 35'$ . (v)  $1\frac{1}{2}' \times 1\frac{1}{2}'$ . (vi) Yes.**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1955—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1762 lb./ac. (ii) 26.7 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$R_1$	$R_2$	$R_3$	$R_4$	$R_5$	$R_6$
Av. yield	1952	1634	1533	1819	1752	1882

S.E./mean = 13.4 lb./ac.

**Crop :- Paddy (Kharif).****Ref :- U.P. 56(165).****Site :- Govt. Agri. Farm, Faizabad.****Type :- 'C'.**

Object :—To find out the optimum seed rate for Paddy.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Faizabad. (iii) N.A. (iv) (a) and (b) N.A. (c) As per treatments. (d) and (e) N.A. (v) 100 mds./ac. of F.Y.M. or compost+20 lb./ac. of N as A/S+30 lb./ac. of  $P_2O_5$  as Super+20 lb./ac. of  $K_2O$  as Pot. Sul. (vi) N—22. (vii) to (x) N.A.

**2. TREATMENTS to 4. GENERAL :**

Same as in expt. no. 55(112) above.

**5. RESULTS :**

(i) 1307 lb./ac. (ii) 132.6 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$R_1$	$R_2$	$R_3$	$R_4$	$R_5$	$R_6$
Av. yield	1303	1316	1217	1602	1244	1160

S.E./mean = 66.3 lb./ac.

**Crop :- Paddy (Kharif).****Ref :- U.P. 58(15).****Site :- Reg. Res. Stn., Hardoi.****Type :- 'C'.**

Object :—To study the effect of different methods of sowing, raising nursery and pruning of roots at transplanting on Paddy yield.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loamy soil. (b) Refer soil analysis, Hardoi. (iii) N.A./1 to 3.8.1958. (iv) (a) N.A. (b) As per treatments. (c) to (e) N.A. (v) N.A. (vi) *Satha* (local) and T-9. (vii) Irrigated. (viii) and (ix) N.A. (x) 2 to 4.12.1958

## 2. TREATMENTS :

All combinations of (1), (2) and (3).

(1) 2 types of seed bed :  $C_1$ =Raised bed and  $C_2$ =Flat bed.

(2) 2 methods of sowing :  $M_1$ =Line sowing and  $M_2$ =Broadcast.

(3) 2 methods of pruning of roots :  $P_1$ =Leaving the roots normal and  $P_2$ = $\frac{1}{2}$  the roots pruned at planting.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) and (b)  $29' \times 26\frac{1}{2}'$ . (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) to (vii) Nil.

## 5. RESULTS :

(i) 1844. (ii) 576.1. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	$M_1$	$M_2$	Mean	$P_1$	$P_2$
$C_1$	1726	1880	1803'	1892	1713
$C_2$	2069	1699	1884	2102	1666
Mean	1898	1790	1844	1997	1690
$P_1$	2157	1837			
$P_2$	1638	1742			

S.E. of any marginal mean = 144.2 lb./ac.

S.E. of body of any table = 203.7 lb./ac.

**Crop :- Paddy (*Kharif*).**

**Ref :- U.P. 54(106).**

**Site :- Govt. Agri. Res. Farm, Kalianpur.**

**Type :- 'C'.**

Object :—To find out the optimum seed rate for Paddy.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Gram. (c) N.A. (ii) (a) Heavy loam. (b) Refer soil analysis, Kalianpur. (ii) N.A. (iv) (a) 1 soil turning plough, 1 *desi* plough and 1 watt plough. (b) Sown behind the plough. (c) As per treatments. (d) and (e) N.A. (v) 40 lb./ac. of N as F.Y.M. or compost +50 lb./ac. of N as A/S +30 lb./ac. of  $P_2O_5$  as Super +20 lb./ac. of  $K_2O$  as Pot. Sul. +20 lb./ac. of CaO as gypsum applied on 15.6.1954. (vi) T-21. (vii) Irrigated. (viii) and (ix) N.A. (x) 19 to 21.10.1954.

## 2. TREATMENTS :

6 seed rates :  $R_1=10$ ,  $R_2=15$ ,  $R_3=20$ ,  $R_4=25$ ,  $R_5=30$  and  $R_6=35$  srs./ac.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a)  $41' \times 38'$ . (b)  $38' \times 35'$ . (v)  $1\frac{1}{2}' \times 1\frac{1}{2}'$ . (vi) Yes.

## 4. GENERAL :

(i) Lodging due to excessive manuring. (ii) N.A. (iii) Yield of grain (iv) (a) 1954—contd. (b) No. (c) Nil. (v) (a) Bharari and Varanasi. (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1890 lb./ac. (ii) 291.8 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	R <sub>1</sub>	R <sub>2</sub>	R <sub>3</sub>	R <sub>4</sub>	R <sub>5</sub>	R <sub>6</sub>
Av. yield	1933	2150	2489	1646	1514	1606

S.E./mean = 145.9 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 55(113).**

**Site :- Govt. Agri. Res. Farm, Kalianpur.**

**Type :- 'C'.**

Object :—To find out the optimum seed rate for Paddy.

**1. BASAL CONDITIONS :**

(i) (a) Paddy-Pea. (b) Pea. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, Kalianpur. (iii) 11.7.1955. (iv) (a) 5 ploughings. (b) Sown behind the plough. (c) As per treatments. (d) and (e) N.A. (v) 100 mds./ac. of F.Y.M. or compost+20 lb./ac. of N as A/S+30 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super+20 lb./ac. of K<sub>2</sub>O as Pot. Sul. (vi) T—21. (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 30, 31.10.1955.

**2. TREATMENTS and 3. DESIGN :**

Same as in expt. no. 54(106) on page 110.

**4. GENERAL :**

(i) N.A. (ii) Attack of *gundhi* bug. Gammexane was dusted. (iii) Yield of grain and straw. (iv) (a) 1954—contd. (b) No. (c) Nil. (v) (a) Bharari and Varanasi. (b) Nil. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 2703 lb./ac. (ii) 210.9 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	R <sub>1</sub>	R <sub>2</sub>	R <sub>3</sub>	R <sub>4</sub>	R <sub>5</sub>	R <sub>6</sub>
Av. yield	2320	2501	2796	2695	2969	2939

S.E./mean = 105.4 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 56(166).**

**Site :- Govt. Agri. Res. Farm, Kalianpur.**

**Type :- 'C'.**

Object :—To find out the optimum seed rate for Paddy.

**1. BASAL CONDITIONS :**

(i) (a) Paddy—Pea. (b) Pea. (c) N.A. (ii) (a) Loamy soil. (b) Refer soil analysis, Kalianpur. (iii) 7.7.1956. (iv) (a) 2 ploughings each with watt plough and cultivator and 1 planking. (b) Sown behind the plough. (c) As per treatments. (d) and (e) N.A. (v) 100 mds./ac. of F.Y.M. or compost+20 lb./ac. of N as A/S+30 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super+20 lb./ac. of K<sub>2</sub>O as Pot. Sul. (vi) T—21. (vii) Irrigated. (viii) and (ix) N.A. (x) 28.10.1956.

**2. TREATMENTS and 3. DESIGN :**

Same as in expt. no. 54(106) on page 110.

**4. GENERAL :**

(i) N.A. (ii) Attack of *gundhi* bug. (iii) Yield of grain. (iv) (a) 1954—1956. (b) No. (c) Nil. (v) (a) Bharari and Varanasi. (b) Nil. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 3407 lb./ac. (ii) 242.5 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.



Treatment	R <sub>1</sub>	R <sub>2</sub>	R <sub>3</sub>	R <sub>4</sub>	R <sub>5</sub>	R <sub>6</sub>
Av. yield	3209	3268	3344	3605	3495	3521

S.E./mean = 121.2 lb./ac.

**Crop :- Paddy (*Kharif*).**

**Ref :- U.P. 54(4).**

**Site :- Student's Instrl. Farm, Govt. Agri. College, Kanpur. Type :- 'C'.**

**Object :-** To study the effect of hoeing on the yield of Paddy.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Barley. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Kanpur. (iii) 10, 11.7.1954. (iv) (a) N.A. (b) Transplanting. (c) to (e) N.A. (v) G.M. (*sanai*). (vi) T-9 (late). (vii) Irrigated. (viii) As per treatments. (ix) N.A. (x) 22.11.1954.

**2. TREATMENTS :**

3 types of hoeing : H<sub>0</sub>=No hoeing, H<sub>1</sub>=Hoeing by Sharma hoe and H<sub>2</sub>=Hoeing by Japanese rotary hoe.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 4. (iv) (a) 80' × 39'. (b) 77' × 36'. (v) 1½' × 1½'. (vi) Yes.

**4. GENERAL :**

(i) Normal. (ii) Nil. (iii) Yield of grain. (iv) (a) 1954—1955. (b) Yes. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1721 lb./ac. (ii) 22.2 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	H <sub>0</sub>	H <sub>1</sub>	H <sub>2</sub>
Av. yield	1729	1721	1714

S.E./mean = 11.1 lb./ac.

**Crop :- Paddy (*Kharif*).**

**Ref :- U.P. 55(239).**

**Site :- Student's Instrl. Farm, Govt. Agri. College, Kanpur. Type :- 'C'.**

**Object :-** To study the effect of hoeing on the yield of Paddy.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Kanpur. (iii) N.A. (iv) (a) N.A. (b) Transplanting. (c) to (e) N.A. (v) N.A. (vi) T-9. (vii) irrigated. (viii) As per treatments. (ix) 36.63%. (x) N.A.

**2. TREATMENTS :**

Same as in expt. no. 54(4) above.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 4. (iv) (a) and (b) 80' × 39'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain. (iv) 1954—1955. (b) Yes. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 2260 lb./ac. (ii) 142.8 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	H <sub>0</sub>	H <sub>1</sub>	H <sub>2</sub>
Av. yield	2237	2306	2237

S.E./mean = 71.4 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 54(147).**

**Site :- Rice Res. Sub-Stn., Kunraghat.**

**Type :- 'C'.**

Object :— To study the effect of broadcasting against the usual method of raising Paddy crop by transplanting.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Pea. (c) Nil. (ii) (a) Medium loam. (b) Refer soil analysis, Kunraghat. (iii) P<sub>1</sub> and P<sub>2</sub> on 16.6.1954, P<sub>3</sub> and P<sub>4</sub> on 7.7.1954. (iv) (a) 3 to 4 ploughings by *desi* plough. (b) to (e) As per treatments. (v) 20 srs./ac. of A/S top dressed. (vi) N—22 (early). (vii) Unirrigated. (viii) 3 weedings. (ix) 31.03'. (x) 6.10.1954.

**2. TREATMENTS :**

4 methods of raising the crop : P<sub>1</sub>=Broadcasting at 70 lb./ac., P<sub>2</sub>=Sown in lines 10" apart at 70 lb./ac., P<sub>3</sub>=Transplanting in lines with 4 to 6 seedlings per hole at a spacing of 6" and P<sub>4</sub>=Transplanting by Japanese method with 2 to 3 seedlings per hole at a spacing of 9".

**3. DESIGN :**

(i) L. Sq. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) 42.5'×29'. (b) 40.5'×27'. (v) 1'×1'. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Nil. (iii) Height, tillering and yield of grain. (iv) (a) 1954 only. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1439 lb./ac. (ii) 286.4 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	P <sub>4</sub>
Av. yield	1188	1609	1547	1411

S.E./mean = 143.2 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 57(86).**

**Site :- Rice Res. Sub-Stn., Kunraghat.**

**Type :- 'C'.**

Object :— To study the effect of different methods of raising the Paddy crop.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Gram. (c) Nil. (ii) (a) Medium loam. (b) Refer soil analysis, Kunraghat. (iii) P<sub>1</sub> on 30.6.1957, P<sub>2</sub> on 31.5.1957, P<sub>3</sub> and P<sub>4</sub> on 14.7.1957. (iv) (a) 1 ploughing by soil turning plough followed by 2 or 3 *desi* ploughings. (b) to (e) As per treatments. (v) A/S top dressed on 19.3.1957. (vi) N—22 (early). (vii) Unirrigated. (viii) 2 weedings and 2 hoeings. (ix) 39.50". (x) 12, 13.10.1957.

**2. TREATMENTS :**

4 methods of raising the crop : P<sub>1</sub>=Broadcasting at 36 srs./ac., P<sub>2</sub>=Sown in lines 10" apart behind the plough at 36 srs./ac., P<sub>3</sub>=Transplanting with 4 to 6 seedlings per hole at a spacing of 4" to 6" and P<sub>4</sub>=Transplanting with 4 to 6 seedlings per hole at a spacing of 4" to 6" followed by earthing up.

## 3. DESIGN :

(i) L. Sq. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) and (b) 41.5'×29'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good, lodging occurred on 12.10.1957. (ii) Nil. (iii) Yield of grain. (iv) (a) 1957—contd (with modification). (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1648 lb./ac. (ii) 141.2 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	P <sub>4</sub>
Av. yield	1489	1564	1685	1852

S.E./mean = 70.6 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 58(80).**

**Site :- Rice Res. Sub-Stn., Kunraghat.**

**Type :- 'C'.**

Object :- To study the effect of different methods of raising the Paddy crop.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Pea. (c) Nil. (ii) (a) Medium loam. (b) Refer soil analysis, Kunraghat. (iii) P<sub>1</sub>, P<sub>2</sub> and P<sub>3</sub> on 29.6.1958 and P<sub>4</sub> on 15.7.1958. (iv) (a) One ploughing by soil turning plough and 2 to 3 ploughings by *desi* plough. (b) to (e) As per treatments. (v) A/S top dressed on 21, 26.8.1958. (vi) N--22 (early). (vii) N.A. (viii) 1 weeding and 2 hoeings. (ix) 35.77". (x) 1st week of Oct., 1958.

## 2. TREATMENTS :

4 methods of raising the crop : P<sub>1</sub>=Broadcasting at 36 srs./ac., P<sub>2</sub>=Sown in lines 10" apart behind the plough at 36 srs./ac., P<sub>3</sub>=Broadcasting at 36 srs./ac. followed by ploughing after 6 to 8 week and P<sub>4</sub>=Transplanting in lines with spacing 9"×6" to 9" and 3 to 4 seedlings per hole.

## 3. DESIGN :

(i) L. Sq. (ii) (a) 4. (b) 29'×175'. (iii) 4. (iv) (a) and (b) 29'×41.5'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Normal, crop lodged. (ii) Attack of *gundhi* bug. (iii) Yield of grain. (iv) (a) 1957—1958 (with changed treatments). (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 534 lb./ac. (ii) 240.3 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	P <sub>4</sub>
Av. yield	465	526	386	758

S.E./mean = 120 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 58(145).**

**Site :- Hill Paddy Res. Sub-Stn., Majhera.**

**Type :- 'C'.**

Object :- To study the effect of different methods of raising Paddy crop.

## 1. BASAL CONDITIONS :

(i) (a) to (c) Uncultivated land. (ii) (a) Sandy loam. (b) Refer soil analysis, Majhera. (iii) 4.4.1958. (iv) (a) 2 ploughings with *desi* plough. (b) As per treatments. (c) 60 lb./ac. (d) As per treatments. (e) N.A. (v) Nil. (vi) N--22 (early). (vii) Unirrigated. (viii) 2 weedings. (ix) N.A. (x) 16.9.1958 and 22.9.1958.

## 2. TREATMENTS :

4 methods of sowing : P<sub>1</sub>=Broadcasting, P<sub>2</sub>=Sown in lines 6" apart, P<sub>3</sub>=Sown in lines 9" apart and P<sub>4</sub>=Broadcasting and thorough ploughing after 6 or 7 weeks.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) 64.5'×12'. (iii) 4. (iv) (a) and (b) 15'×12'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Blight and blast observed. (iii) Germination, plant height and yield of grain. (iv) (a) 1958—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1519 lb./ac. (ii) 60.3 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	P <sub>4</sub>
Av. yield	1602	1182	1680	1610

S.E./mean = 30.2 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 57(165).**

**Site :- Hill Paddy Res. Sub-Stn., Majhera.**

**Type :- 'C'.**

Object :—To study the effect of different methods of raising Paddy crop.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Gram. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Majhera. (iii) 5.4.1959. (iv) (a) 3 ploughings with *desi* plough. (b) As per treatments. (c) 60 lb./ac. (d) As per treatments. (e) N.A. (vi) 66 srs./ac. of Super+76 mds./ac. of compost+10 mds./ac. of Castor cake. (vi) N—22 (early). (vii) Unirrigated. (viii) 3 weedings. (ix) N.A. (x) 4.9.1959.

## 2. TREATMENTS :

4 methods of sowing : P<sub>1</sub>=Broadcasting, P<sub>1</sub>=Sown in lines 6" apart, P<sub>3</sub>=Sown in lines 9" apart and P<sub>4</sub>=Sown in lines 12" apart.

## 3. DESIGN :

(i) L. Sq. (ii) (a) 4. (b) 37½'×16'. (iii) 4. (iv) (a) and (b) 16'×8'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Attack of blast and blight. Seeds were treated with agrosan. (iii) Germination, tillers, height and yield of grain. (iv) (a) 1958—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 2136 lb./ac. (ii) 229.4 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	P <sub>4</sub>
Av. yield	2188	1980	2166	2210

S.E./mean = 114.7 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 58(146).**

**Site :- Hill Paddy Res. Sub-Stn., Majhera.**

**Type :- 'C'.**

Object :—To find out the suitable time of sowing and optimum seed rate for Paddy.

## 1. BASAL CONDITIONS :

(i) (a) to (c) Uncultivated land. (ii) (a) Sandy loam. (b) Refer soil analysis. Majhera. (iii) As per treatments. (iv) (a) 2 ploughings by *desi* plough. (b) By broadcast. (c) As per treatments. (d) and (e) N.A. (v) N.A. (vi) N-22 (early). (vii) Unirrigated. (viii) 2 weedings. (ix) N.A. (x) 17, 23.9.1958 and 5.10.1958.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 dates of sowing :  $D_1=31.3.1958$ ,  $D_2=15.4.1958$  and  $D_3=30.4.1958$ .

(2) 4 seed rates :  $S_1=25$ ,  $S_2=30$ ,  $S_3=35$  and  $S_4=40$  srs./ac.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) and (b)  $14.5' \times 11'$ . (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Slight attack of blight and blast. (iii) Germination, tiller counts, plant height and yield of grain. (iv) (a) 1958—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1370 lb./ac. (ii) 744.3 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	$S_1$	$S_2$	$S_3$	$S_4$	Mean
$D_1$	702	1194	1475	1422	1198
$D_2$	1255	1843	1488	1361	1487
$D_3$	1189	1422	1229	1861	1425
Mean	1049	1486	1397	1548	1370

S.E. of D marginal mean = 186.1 lb./ac.

S.E. of S marginal mean = 214.8 lb./ac.

S.E. of body of table = 372.1 lb./ac.

**Crop :- Paddy (*Kharif*).**

**Ref :- U.P. 59(163).**

**Site :- Hill Paddy Res. Sub-Stn., Majhera.**

**Type :- 'C'.**

Object :—To find out the suitable time of sowing and optimum seed rate for Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Gram. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Majhera. (iii) As per treatments. (iv) (a) 3 ploughings with *desi* plough. (b) By broadcast. (c) As per treatments. (d) and (e) N.A. (v) 75 mds./ac. of compost + 11 mds./ac. of Castor cake + 3.64 mds./ac. of Super. (vi) N-22 (early). (vii) Unirrigated. (viii) 3 weedings. (ix) N.A. (x) 11, 12.9.1959.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 dates of sowing :  $D_1=31.3.1959$ ,  $D_2=15.4.1959$  and  $D_3=30.4.1959$ .

(2) 4 seed rates :  $S_1=25$ ,  $S_2=30$ ,  $S_3=35$  and  $S_4=40$  srs./ac.

As it was raining on 31.3.1959, the sowing was done on 1 and 2.4.1959.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. (b)  $29\frac{1}{2}' \times 67\frac{1}{2}'$ . (iii) 4. (iv) (a) and (b)  $14' \times 10'$ . (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Rabbit attack in the early stage. Attack of blight and blast observed. Seed was treated with Agrosan G.N. before sowing. (iii) Germination, tiller counts, height and yield of grain. (iv) (a) 1958—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1982 lb./ac. (ii) 414.7 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>	Mean
D <sub>1</sub>	1860	1910	1860	2020	1912
D <sub>2</sub>	1740	1850	2280	2010	1970
D <sub>3</sub>	1970	2190	2090	2000	2062
Mean	1857	1983	2077	2010	1982

S.E. of D marginal mean = 103.7 lb./ac.  
 S.E. of S marginal mean = 119.7 lb./ac.  
 S.E. of body of table = 207.4 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 58(40).**

**Site :- Reg. Res. Stn., Meerut.**

**Type :- 'C'.**

Object :—To find out the suitable method of raising Paddy crop.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Berseem*. (c) Nil. (ii) (a) Clayey loam. (b) Refer soil analysis, Meerut. (iii) 30.6.1958, 2.7.1958/3.8.1958 and 19.8.1958. (iv) (a) 1 ploughing by soil turning plough and 2 ploughings by *desi* plough. (b) to (e) As per treatments. (v) 50 mds./ac. of F.Y.M.+20 lb./ac. of N as A/S+30 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super. (vi) Ch.—4 (medium). (vii) Irrigated. (viii) 4 weedings and 2 rougings (ix) 53.44". (x) 6 to 14.11.1958.

**2. TREATMENTS :**

4 methods of raising the crop : P<sub>1</sub>=Broadcasting at 25 srs./ac. of seed rate, P<sub>2</sub>=Sown in lines 10" apart behind the plough at 25 srs./ac. of seed rate, P<sub>3</sub>=Transplanting with 4 to 6 seedling per hole at a spacing of 6" and P<sub>4</sub>=Double transplanting 4 weeks old seedlings in rows 2" apart at 1 to 2 seedlings per hole. After a fortnight they were transplanted in the field in rows 9" apart.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 4. (b) 83'×117'. (iii) 4. (iv) (a) 57'×41'. (b) 54'×38'. (v) 1½'×1½'. (v) Yes.

**4. GENERAL :**

(i) Normal. (ii) Attack of *gundhi* bug. B.H.C. dusted at 20 lb./ac. (iii) Germination, height, tillers counts and yield of grain and straw. (iv) (a) 1958—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1096 lb./ac. (ii) 210.9 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	P <sub>4</sub>
Av. yield	1062	1215	1337	772

S.E./mean = 105.5 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 58(144).**

**Site :- Rice Res. Stn., Nagina.**

**Type :- 'C'.**

Object :—To find out the suitable method of raising Paddy crop.

**1. BASAL CONDITIONS :**

(i) (a) Paddy—*Berseem*. (b) *Berseem*. (c) Nil. (ii) (a) Loamy. (b) Refer soil analysis, Nagina. (iii) 31.5.1958. (iv) (a) N.A. (b) to (e) As per treatments. (v) to (vii) N.A. (viii) 1 interculturing and 1 weeding (ix) 55.69". (x) 17.10.1958.

## 2. TREATMENTS :

4 methods of raising the crop :  $P_1$ =Broadcasting at 20 to 30 srs./ac. of seed rate,  $P_2$ =Sown in line behind the plough at 20 to 30 srs./ac. of seed rate,  $P_3$ =Transplanting with 4 to 6 seedlings per hole at a spacing of 6" and  $P_4$ =Transplanting by Japanese method with 2 to 3 seedlings per hole at a spacing of 9" x 8".

## 3. DESIGN :

(i) L. Sq. (ii) (a) 4. (b) 42' x 123'. (iii) 4. (iv) (a) 42' x 27.75'. (b) 40' x 25.75'. (v) 1' x 1'. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) N.A. (iii) Yield of grain. (iv) (a) 1958—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 814 lb./ac. (ii) 157.3 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$P_1$	$P_2$	$P_3$	$P_4$
Av. yield	1170	528	902	657

S.E./mean = 78.6 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 57(98).**

**Site :- Reg. Res. Stn., Nawabganj.**

**Type :- 'C'.**

Object :—To find out the optimum seed rate for Paddy.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Nawabganj. (iii) 4.7.1957. (v) (a) Ploughings. (b) In lines behind the plough. (c) As per treatments. (d) 9" between rows. (e) N.A. (v) 100 mds./ac. of F.Y.M. + 20 lb./ac. of N as A/S + 50 lb./ac. of  $P_2O_5$  as Super + 20 lb./ac. of  $K_2O$  as Pot. Su. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) 31.87%. (x) 10.10.1957.

## 2. TREATMENTS :

6 seed rates :  $R_1=10$ ,  $R_2=15$ ,  $R_3=20$ ,  $R_4=25$ ,  $R_5=30$  and  $R_6=35$  srs./ac.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 39' x 38'. (b) 36' x 35'. (v) 1½' x 1½'. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Height, tiller counts and yield of grain and straw. (iv) (a) 1957—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1561 lb./ac. (ii) 179.7 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$R_1$	$R_2$	$R_3$	$R_4$	$R_5$	$R_6$
Av. yield	1551	1373	1531	1573	1702	1636

S.E./mean = 89.9 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 58(99).**

**Site :- Reg. Res. Stn. Nawabganj.**

**Type :- 'C'**

Object :—To study the effect of different methods of raising Paddy crop.

## 1. BASAL CONDITIONS :

(i) (a) Paddy—Pea—Paddy. (b) Pea. (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Nawabganj, (iii) Treatments 1 and 2 on 14.6.1958, 3 on 18.7.1958 and 4 on 9.8.1958. (iv) (a) N.A. (b) to (e) As per treatments. (v) 100 mds./ac. of F.Y.M.+20 lb./ac. of N as A/S+30 lb./ac.  $P_2O_5$  as Super applied before sowing. (vi) T—21 (medium). (vii) and (viii) N.A. (ix) 50.87". (x) 14.10.1958.

## 2. TREATMENTS :

4 methods of raising the crop :  $P_1$ =Broadcasting at 24 srs./ac. of seed rate at a spacing of 9",  $P_2$ =Behind the plough through funnel 9" apart at 24 srs./ac. of seed rate,  $P_3$ =Transplanting 9" apart at 1 to 2 seedlings/hole and  $P_4$ =Double transplanting (4 weeks old seedlings transplanted in rows 2" apart at 1 to 2 seedlings/hole. After a fortnight they were transplanted in the field in rows 9" apart.)

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) 57'×41'. (b) 54'×38'. (v)  $1\frac{1}{2}'\times 1\frac{1}{2}'$ . (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Mild attack of *gundhi* bug. (iii) Height, tiller counts and yield of grain and straw. (iv) (a) 1958—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1080 lb./ac. (ii) 300.0 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	$P_1$	$P_2$	$P_3$	$P_4$
Av. yield	750	740	1497	1331

S.E./mean = 150.0 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 58(97).**

**Site :- Reg. Res. Stn., Nawabganj.**

**Type :- 'C'.**

Object :- To study the effect of pruning of roots and defoliation of seedlings on Paddy.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Nawabganj. (iii) 26.7.1958. (iv) (a) N.A. (b) Transplanting. (c) 8 srs./ac. (d) 9"×9". (e) 2 to 3. (v) 10 mds./ac. of castor cake before transplanting—20 lb./ac. of N as A/S top dressed. (vi) T—9 (late). (vii) and (viii) N.A. (ix) 40.59". (x) 19.12.1959.

## 2. TREATMENTS :

5 cultural treatments :  $C_1$ =Whole seedlings (plants intact),  $C_2$ =Seedlings with  $\frac{1}{2}$  root removed,  $C_3$ =Seedlings with full root removed (leaving a small portion),  $C_4$ =Seedlings with  $\frac{1}{2}$  shoot removed and  $C_5$ =Seedlings with  $\frac{1}{2}$  leaves removed.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 34'×26'. (b) 31'×23'. (v)  $1\frac{1}{2}'\times 1\frac{1}{2}'$ . (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1958—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 2107 lb./ac. (ii) 293.6 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$C_1$	$C_2$	$C_3$	$C_4$	$C_5$
Av. yield	2258	2066	1971	2168	2073

S.E./mean = 146.8 lb./ac.



**Crop :- Paddy (Kharif).**

**Ref :- U.P. 59.(119).**

**Site :- Reg. Res. Stn., Nawabganj.**

**Type :- 'C'.**

**Object :-**To study the effect of different crops grown in previous season on Paddy.

**1. BASAL CONDITIONS :**

(i) (a) and (b) As per treatments. (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Nawabganj (iii) N.A./11.8.1958. (iv) (a) N.A. (b) Transplanting. (c) N.A. (d) 9" × 8". (e) 2. (v) A/S at 1 sr./bed on 5.9.1959 as top dressing. (vi) V-100 (late). (vii) and (viii) N.A. (ix) 25.52". (x) 5.12.1959.

**2. TREATMENTS :**

6 crops grown before Paddy : C<sub>1</sub>=Pea, C<sub>2</sub>=*Chatri-matri*, C<sub>3</sub>=*Masoor*, C<sub>4</sub>=Linseed, C<sub>5</sub>=*Berseem* and C<sub>6</sub>=Fallow (control).

**3. DESIGN :**

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 40' × 18'. (b) 36' × 16'. (v) 2' × 1'9". (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1959—contd. (b) N.A. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 2029 lb./ac. (ii) 288.4 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	C <sub>4</sub>	C <sub>5</sub>	C <sub>6</sub>
Av. yield	2092	2027	2046	2013	2035	1963

S.E./mean = 144.2 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 59(118).**

**Site :- Reg. Res. Stn., Nawabganj.**

**Type :- 'C'.**

**Object :-**To find out if Wheat—Paddy rotation is feasible if wheat is sown with *hubum* clover.

**1. BASAL CONDITIONS :**

(i) (a) and (b) As per treatments. (c) N.A. (ii) Clayey loam. (b) Refer soil analysis, Nawabganj. (iii) 23.7.1959. (iv) (a) N.A. (b) Transplanting. (c) N.A. (d) 9" × 6". (e) N.A. (v) A/S at 1 sr./bed on 6.9.1959 as top dressing. (vi) T-3 (medium). (vii) Irrigated. (viii) 1 weeding by *khurpi* and 1 rouging. (ix) 29.31". (x) 4.11.1959.

**2. TREATMENTS :**

R<sub>1</sub> = Alternate strips of wheat cum *hubum* clover as in *rabi* followed by paddy in *kharif* and R<sub>2</sub> = Wheat sown alone in *rabi* followed by paddy in *kharif*.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 6. (iv) (a) and (b) 50' × 20'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Dates of flowering, tiller counts and yield of grain and straw. (iv) (a) 1959—contd. (b) N.A. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 342 lb./ac. (ii) 28.6 lb./ac. (iii) Treatment difference is not significant. (iv) Av. yield of grain in lb./ac.

Treatment	R <sub>1</sub>	R <sub>2</sub>
Av. yield	343	341

S.E./mean = 11.7 lb./ac.

**Crop :- Paddy (Kharif).****Ref :- U.P. 59(117).****Site :- Reg. Res. Stn., Nawabganj.****Type :- 'C'.**

Object :—To find out if Wheat—Paddy rotation is feasible if wheat is sown with berseem.

**1. BASAL CONDITIONS :**

Same as in expt. no. 59(118) on page 120.

**2. TREATMENTS :** $R_1$  = Alternate strips of wheat cum berseem in rabi followed by paddy in kharif and  $R_2$  = Wheat sown alone in rabi followed by paddy in kharif.**3. DESIGN and 4. GENERAL :**

Same as in expt. no. 59(118) on page 120.

**5. RESULTS :**

(i) 366 lb./ac. (ii) 42.4 lb./ac. (iii) Treatment difference is not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$R_1$	$R_2$
Av. yield	382	351

S.E./mean = 17.3 lb./ac.

**Crop :- Paddy (Kharif).****Ref :- U.P. 58(91).****Site :- Reg. Res. Stn., Varanasi.****Type :- 'C'.**

Object :—To study the effect of different methods of raising Paddy crop.

**1. BASAL CONDITIONS :**(i) (a) Pea—Paddy—Wheat—Paddy. (b) Pea. (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Varanasi. (iii) 16.8.1958 and 30.8.1956. (iv) (a) 1 ploughing. (b) to (e) As per treatments. (v) 100 mds./ac. of F.Y.M.+20 lb./ac. of N as A/S+30 lb./ac. of  $P_2O_5$  as Super. (vi) T—136 (medium). (vii) Irrigated. (viii) 1 weeding and 1 hoeing. (ix) 18.38". (x) 2.11.1958.**2. TREATMENTS and 3. DESIGN :**

Same as in expt. no. 58(99) on page 118.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1958—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 2411 lb./ac. (ii) 131.9 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$P_1$	$P_2$	$P_3$	$P_4$
Av. yield	2007	2231	2621	2784

S.E./mean = 66.0 lb./ac.

**Crop :- Paddy (Kharif).****Ref :- U.P. 55(110).****Site :- Reg. Res. Stn., Varanasi.****Type :- 'C'.**

Object :—To study the effect of pruning of roots and defoliation of seedlings on Paddy.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Pea. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Varanasi. (iii) 14.7.1955  
 (iv) (a) 2 principal cultivations. (b) Transplanting. (c) N.A. (d) 9" between rows. (e) 1 to 2. (v) 100  
 mds./ac. of F.Y.M. + 20 lb./ac. of N as A/S + 30 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super + 20 lb./ac. of K<sub>2</sub>O as Pot. Sul. (vi)  
 T-136. (vii) Irrigated. (viii) and (ix) N.A. (x) 29.9.1955.

## 2. TREATMENTS :

Same as in expt. no. 58(97) on page 119.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 56' × 36'. (b) 53' × 33'. (v) 1½' × 1½'. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1955—contd. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 977 lb./ac. (ii) 36.3 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain  
 in lb./ac.

Treatment	C	C <sub>2</sub>	C <sub>3</sub>	C <sub>4</sub>	C <sub>5</sub>
Av. yield	865	1050	1006	967	999

S.E./mean = 18.2 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 56(64).**

**Site :- Reg. Res. Stn., Varanasi.**

**Type :- 'C'.**

Object :—To study the effect of pruning of root and defoliation of seedlings on Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Barley + Pea. (c) N.A. (ii) (a) Light loam. (b) Refer soil analysis, Varanasi. (iii)  
 15.7.1956 (iv) (a) 2 ploughings. (b) Transplanting. (c) N.A. (d) 9" between rows. (e) 1 to 2. (v) 100  
 mds./ac. of F.Y.M. + 20 lb./ac. of N as A/S + 30 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super + 20 lb./ac. of K<sub>2</sub>O as Pot. Sul. (vi)  
 N-22. (vii) Irrigated. (viii) to (x) N.A.

## 2. TREATMENTS :

Same as in expt. no. 58(97) on page 119.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 56' × 34'. (b) 53' × 31'. (v) 1½' × 1½'. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Attack of *gundhi* bug. (iii) Yield of grain and straw. (iv) (a) 1955—contd. (b) No. (c) Nil.  
 (v) (a) and (b) N.A. (vi) Crop suffered badly due to heavy rains during September. (vii) Nil.

## 5. RESULTS :

(i) 716 lb./ac. (ii) 72.1 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain  
 in lb./ac.

Treatment	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	C <sub>4</sub>	C <sub>5</sub>
Av. yield	685	740	757	695	702

S.E./mean = 36.0 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 57(85).**

**Site :- Reg. Res. Stn., Varanasi.**

**Type :- 'C'.**

Object :—To study the effect of pruning of root and defoliation of seedlings on Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat+Gram. (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Varanasi. (iii) 9.8.1957. (iv) (a) Ploughings and plankings. (b) Transplanting. (c) N.A. (d) 9" between rows. (e) 1 to 2. (v) 100 mds./ac. of F.Y.M.+20 lb./ac. of N as A/S+30 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super+20 lb./ac. of K<sub>2</sub>O as Pct. Sul. (vi) N—22 (early). (vii) Irrigated. (viii) 2 weedings. (ix) N.A. (x) 31.10.1957.

## 2. TREATMENTS :

Same as in expt. no. 58(97) on page 119.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 41'×21'. (b) 37'×18'. (v) 2'×1½'. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Slight attack of *gundhi* bug and blast. (iii) Germination count, yield of grain and straw. (iv) (a) 1955—contd. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1141 lb./ac. (ii) 121.0 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	C <sub>4</sub>	C <sub>5</sub>
Av. yield	1044	1097	1150	1332	1082

S.E./mean = 60.5 lb./ac.

**Crop :- Paddy (*Kharif*).**

**Ref :- U.P. 58(75).**

**Site :- Reg. Res. Stn., Varanasi.**

**Type :- 'C'.**

Object :—To study the effect of pruning of root and defoliation of seedlings on Paddy.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Varanasi. (iii) 22.8.1958. (iv) (a) 2 ploughings and 2 harrowings. (b) Transplanting. (c) to (e) N.A. (v) 100 mds./ac. of F.Y.M.+20 lb./ac. of N as A/S+30 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super+20 lb./ac. of K<sub>2</sub>O as Pot. Sul. (vi) T—9. (vii) Irrigated. (viii) 2 hoeings. (ix) N.A. (x) 19.11.1958.

## 2. TREATMENTS :

Same as in expt. no. 58(97) on page 119.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 34'×26'. (b) 31'×18'9". (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1955—contd. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 160 lb./ac. (ii) 11.7 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	C <sub>4</sub>	C <sub>5</sub>
Av. yield	143	166	178	149	166

S.E./mean = 5.8 lb./ac.

**Crop :- Paddy (*Kharif*).**

**Ref :- U.P. 55(109).**

**Site :- Reg. Res. Stn., Varanasi.**

**Type :- 'C'.**

Object :—To find out the optimum seed rate for Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Paddy—Pea—Paddy—Gram. (b) Pea. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Varanasi. (iii) 13.7.1955. (iv) (a) 3 principal cultivators. (b) Broadcasting: (c) As per treatments. (d) and (e) N.A. (v) 100 mds./ac. of F.Y.M. + 20 lb./ac. of N as A/S + 30 lb./ac. of  $P_2O_5$  as Super + 20 lb./ac. of  $K_2O$  as Pot. Sul. (vi) N—22. (vii) Irrigated. (viii) and (ix) N.A. (x) 17.10.1955.

## 2. TREATMENTS :

6 seed rates :  $R_1=10$ ,  $R_2=15$ ,  $R_3=20$ ,  $R_4=25$ ,  $R_5=30$  and  $R_6=35$  str./ac.

## 3. DESIGN :

(I) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a)  $41' \times 38'$ . (b)  $38' \times 35'$ . (v)  $1\frac{1}{2}' \times 1\frac{1}{2}'$ . (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Yield of grain. (iv) (a) 1955—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 686 lb./ac. (ii) 257.8 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$R_1$	$R_2$	$R_3$	$R_4$	$R_5$	$R_6$
Av. yield	808	716	876	623	573	522

S.E./mean = 128.9 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 56(62).**

**Site :- Reg. Res. Stn., Varanasi.**

**Type :- 'C'.**

Object :—To find out the optimum seed rate for Paddy.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Huban* clover. (c) N.A. (ii) (a) Light loam. (b) Refer soil analysis, Varanasi. (iii) 11.7.1956. (iv) (a) 1 ploughing. (b) Broadcasting. (c) As per treatments. (d) and (e) N.A. (v) 100 mds./ac. of F.Y.M. applied 3 weeks before sowing, 100 lb. ac. as of A/S + 42 lb./ac. of  $K_2O$  as Pot. Sul. mixed and applied as surface dressing 3 to 4 days before sowing and 190 lb./ac. of Super by placement 3" to 4" deep behind plough 6 to 7 days before sowing. (vi) N—22. (vii) Irrigated. (viii) 2 weedings. (ix) N.A. (x) 7.10.1956

## 2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 55(109) on page 123.

## 4. GENERAL :

(i) N.A. (ii) Attack of *gundhi* bug. (iii) Yield of grain and straw. (iv) 1955—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Crop suffered badly due to heavy rains in september. (vii) Nil.

## 5. RESULTS :

(i) 1266 lb./ac. (ii) 107.8 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$R_1$	$R_2$	$R_3$	$R_4$	$R_5$	$R_6$
Av. yield	830	1082	977	1339	1630	1736

S.E./meam = 53.9 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 57(84).**

**Site :- Reg. Res. Stn., Varanasi.**

**Type :- 'C'.**

Object :—To find out the optimum seed rate for Paddy.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Oats. (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Varanasi. (iii) 5.8.1957. (iv) (a) 2 ploughings. (b) Broadcasting. (c) As per treatments. (d) and (e) N.A. (v) 100 mds./ac. of F.Y.M. applied 3 weeks before sowing, 20 lb./ac. of N as A/S+20 lb./ac. of K<sub>2</sub>O as Pot. Sul. mixed and applied as surface dressing 3 to 4 days before sowing and 30 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super by placement 3" to 4" deep in soil behind the plough 6 to 7 days before sowing. (vi) N-22 (early) (vii) Irrigated. (viii) 2 weedings. (ix) N.A. (x) 27.10.1957.

## 2. TREATMENTS :

Same as in expt. no. 55(109) on page 123.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 39'×38'. (b) 36×35'. (v) 1½'×1½'. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Slight attack of *gundhi* bug, grass hoppers and blast. (iii) Germination count and yield of grain and straw. (iv) (a) 1955—contd. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1495 lb./ac. (ii) 161.7 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	R <sub>1</sub>	R <sub>2</sub>	R <sub>3</sub>	R <sub>4</sub>	R <sub>5</sub>	R <sub>6</sub>
Av. yield	1452	1374	1469	1512	1685	1478

S.E./mean = 80.9 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 55(108).**

**Site :- Reg. Res. Stn., Varanasi.**

**Type :- 'C'.**

Object :—To study the effect of interculturings on Paddy.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Pea. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Varanasi. (iii) 8.7.1955. (iv) (a) 2 ploughings. (b) Transplanting. (c) N.A. (d) 9" between rows. (e) 1 to 2. (v) 100 mds./ac. of F.Y.M. +20 lb./ac. of N as A/S+30 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super+20 lb./ac. of K<sub>2</sub>O as Pot. Sul. (vi) N-22. (vii) Irrigated. (viii) As per treatments. (ix) N.A. (x) 28, 29.6.1955.

## 2. TREATMENTS :

5 levels of interculturings : I<sub>0</sub>=No interculturing, I<sub>1</sub>=1 (at tillering), I<sub>2</sub>=2 (1 each at tillering and post tillering), I<sub>3</sub>=3 (1 each at tillering, post tillering and pre-flowering stages) and I<sub>4</sub>=4 (1 each at tillering, post tillering, pre-flowering and flowering stages).

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 56'×33'. (b) 53'×30'. (v) 1½'×1½'. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1955—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 2200 lb./ac. (ii) 129.1 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain, in lb./ac.

Treatment	I <sub>0</sub>	I <sub>1</sub>	I <sub>2</sub>	I <sub>3</sub>	I <sub>4</sub>
Av. yield	1564	1931	2107	2459	2938

S.E./mean = 64.5 lb./ac.

**Crop :- Paddy (Kharif).****Ref :- U.P. 56(65).****Site :- Reg. Res. Stn., Varanasi.****Type :- 'C'.**

Object :—To study the effect of interculturings on Paddy.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Oat. (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Varanasi. (iii) 11, 12.7.1956. (iv) (a) 1 ploughing. (b) Transplanting. (c) N.A. (d) 9" between rows. (e) 1 to 2. (v) 100 mds./ac. of F.Y.M. 2 to 3 weeks before transplanting, 97 lb./ac. of A/S + Pot. Sul. mixed with soil at transplanting and 188 lb./ac. of Super applied by placement 3" to 4" deep a week before planting. (vi) N-22 (early). (vii) Irrigated. (viii) As per treatments. (ix) N.A. (x) 26.9.1956.

**2. TREATMENTS :**

Same as in expt. no. 55(108) on page 125.

**3. DESIGN :**

(i) R.B.D.. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 56' × 34'. (b) 53' × 31'. (v) 14' × 14'. (vi) Yes.

**4. GENERAL :**

(i) and (ii) Attack of *gundhi* bug. (iii) Yield of grain and straw. (iv) (a) 1955—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Crop suffered badly due to heavy rains in September. (vii) Nil.

**5. RESULTS :**

(i) 1999 lb./ac. (ii) 192.4 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	I <sub>0</sub>	I <sub>1</sub>	I <sub>2</sub>	I <sub>3</sub>	I <sub>4</sub>
Av. yield	1895	2079	1939	2089	1994

S.E./mean = 96.2 lb./ac.

**Crop :- Paddy (Kharif).****Ref :- U.P. 56(286).****Site :- Govt. Agri. Farm, Atarra.****Type :- 'CM'.**

Object :—To study the effect of spacings and manures on the yield of Paddy.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Wheat. (c) N.A. (ii) (a) Light *kabar*. (iii) N.A./22.7.1956. (iv) (a) 4 ploughings by watt plough and 8 plankings. (b) Transplanting. (c) N.A. (d) As per treatments. (e) N.A. (v) 100 mds./ac. of F.Y.M. (vi) T-4. (vii) Irrigated. (viii) and (ix) N.A. (x) 21.10.1956.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 4 spacings : S<sub>1</sub>=5", S<sub>2</sub>=6", S<sub>3</sub>=7" and S<sub>4</sub>=12".(2) 3 manurial treatments : M<sub>0</sub>=Control (no manure), M<sub>1</sub>=20 lb./ac. of N+15 lb./ac. of P<sub>2</sub>O<sub>5</sub>+10 lb./ac. of K<sub>2</sub>O and M<sub>2</sub>=2 M<sub>1</sub>.N as A/S and K<sub>2</sub>O as Pot. Sul. top dressed, half at transplanting and half at tillering ; P<sub>2</sub>O<sub>5</sub> as Super placed 3" to 4" deep in the soil behind the plough.**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 3. (iv) (a) 42' × 25'. (b) 39' × 22'. (v) 14' × 14'. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1956—N.A. (b) N.A. (c) Nil. (v) (a) Bharari. (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1831 lb./ac. (ii) 45.7 lb./ac. (iii) Main effects of M, S and interaction M × S are highly significant. (iv) Av. yield of grain in lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>	Mean
M <sub>0</sub>	1771	1793	1815	1266	1661
M <sub>1</sub>	1937	1893	1984	1886	1925
M <sub>2</sub>	2071	1969	2111	1482	1908
Mean	1926	1885	1970	1545	1831

S.E. of S marginal mean = 15.2 lb./ac.  
 S.E. of M marginal mean = 13.2 lb./ac.  
 S.E. of body of table = 26.4 lb./ac.

**Crop :- Paddy (*Kharif*).**

**Ref :- U.P. 54(104).**

**Site :- State Mechanised Farm, Bharari.**

**Type :- 'CM'.**

Object :—To study the effect of spacings and manures on Paddy.

#### 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) *Parwa* soil. (b) Refer soil analysis, Bharari. (iii) 30.7.1954. (iv) (a) 2 harrowings. (b) Transplanting. (c) 8 to 10 srs./ac. (d) As per treatments. (e) N.A. (v) G.M. (vi) T-43. (vii) Irrigated. (viii) 3 hand hoeings. (ix) N.A. (x) 31.10.1954.

#### 2. TREATMENTS :

##### Main-plot treatments :

4 spacings between rows : S<sub>1</sub>=3", S<sub>2</sub>=6", S<sub>3</sub>=9" and S<sub>4</sub>=12".

##### Sub-plot treatments :

4 levels of manuring : M<sub>1</sub>=20 lb./ac. of P<sub>2</sub>O<sub>5</sub>+10 lb./ac. of CaO, M<sub>2</sub>=20 lb./ac. of N as F.Y.M.+30 lb./ac. of N as A/S+40 lb./ac. of P<sub>2</sub>O<sub>5</sub>+15 lb./ac. of K<sub>2</sub>O+20 lb./ac. of CaO, M<sub>3</sub>=20 lb./ac. of N as F.Y.M.+60 lb./ac. of N as A/S+60 lb./ac. of P<sub>2</sub>O<sub>5</sub>+30 lb./ac. of K<sub>2</sub>O+30 lb./ac. of CaO and M<sub>4</sub>=20 lb./ac. of N as F.Y.M.+90 lb./ac. of N as A/S+80 lb./ac. of P<sub>2</sub>O<sub>5</sub>+45 lb./ac. of K<sub>2</sub>O+40 lb./ac. of CaO.

P<sub>2</sub>O<sub>5</sub> as Super applied behind the plough on 28.7.1954, CaO as gypsum on 29.7.1954, K<sub>2</sub>O as Pot. Sul. on 15.8.1958 and A/S on 15.8.1954.

#### 3. DESIGN :

(i) Split-plot. (ii) 4 main-plots/replication and 4 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 18'×42'. (b) 15'×39'. (v) 1½'×1½'. (vi) Yes.

#### 4. GENERAL :

(i) N.A. (b) Slight attack of *gundhi* bug. Crop was dusted with Gammexane at the very appearance of the pest. (iii) Yield of grain. (iv) (a) 1954—N.A. (b) No. (c) Nil. (v) (a) Nawabganj, Kalianpur and Varanasi, (b) N.A. (vi) and (vii) Nil.

#### 5. RESULTS :

(i) 2993 lb./ac. (ii) (a) 794.4 lb./ac. (b) 763.1 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	M <sub>4</sub>	Mean
S <sub>1</sub>	2757	2449	3625	3474	3076
S <sub>2</sub>	2655	3319	2655	3370	3000
S <sub>3</sub>	3217	3319	2808	2400	2936
S <sub>4</sub>	2808	2553	3881	2604	2961
Mean	2859	2910	3242	2962	2993



## S.E. of difference of two

1. S marginal means	=	324.3 lb./ac.
2. M marginal means	=	311.5 lb./ac.
3. M means at the same level of S	=	623.1 lb./ac.
4. S means at the same level of M	=	629.6 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 56(293).**

**Site :- State Mechanised Farm, Bharari.**

**Type :- 'CM'.**

**Object :-**To study the effect of spacings and manures on Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Paddy—*Berseem*. (b) *Berseem*. (c) N.A. (ii) (a) *Parwa* soil. (b) Refer soil analysis, Bharari. (iii) 11.8.1956. (iv) (a) 2 harrowings, 1 ploughing by cultivator plough and 1 planking. (b) Transplanting. (c) N.A. (d) As per treatments. (e) N.A. (v) 100 mds/ac. of F.Y.M. (vi) T-36. (vii) Irrigated. (viii) and (ix) N.A. (x) 12.11.1956.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 spacings :  $S_1=3''$ ,  $S_2=6''$ ,  $S_3=9''$  and  $S_4=12''$ .

(2) 3 manurial treatments :  $M_0$ =Control,  $M_1$ =20 lb./ac. of N as A/S+15 lb./ac. of  $P_2O_5$  as Super+10 lb./ac. of  $K_2O$  as Pot. Sul. and  $M_2$ =40 lb./ac. of N as A/S+30 lb./ac. of  $P_2O_5$  as Super+20 lb./ac. of  $K_2O$  as Pot. Sul.

Super placed 3" to 4" deep in soil behind plough, A/S and Pot. Sul. applied as top dressing thoroughly mixed,  $\frac{1}{2}$  at transplanting and  $\frac{1}{2}$  at tillering.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 3. (iv) (a)  $42' \times 25'$ . (b)  $39' \times 22'$ . (v)  $1\frac{1}{2}' \times 1\frac{1}{2}'$ . (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Slight attack of *gundhi* bug. (iii) Yield of grain. (iv) (a) 1954—N.A. (b) No. (c) Nil. (v) (a) Atarra. (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 3099 lb./ac. (ii) 645.6 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	$S_1$	$S_2$	$S_3$	$S_4$	Mean
$M_0$	2907	2985	2942	2628	2866
$M_1$	3255	3116	3229	3159	3190
$M_2$	2872	2959	3638	3499	3242
Mean	3011	3020	3270	3095	3099

S.E. of S marginal mean = 215.2 lb./ac.

S.E. of M marginal mean = 186.4 lb./ac.

S.E. of body of table = 372.7 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 54(102).**

**Site :- Govt. Agri. Res. Farm, Kalianpur.**

**Type :- 'CM'.**

**Object :-**To study the effect of manures and spacings on Paddy.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Pea. (c) N.A. (ii) (a) Heavy loam. (b) Refer soil analysis, Kalianpur. (iii) 10.8.1954.  
 (iv) (a) 3 ploughings with watt plough and 1 cultivator ploughing. (b) Transplanting. (c) 8 to 10 srs./ac. (d)  
 As per treatments. (e) N.A. (v) G.M. (vi) T—9 (late). (vii) Irrigated. (viii) 3 to 4 interculturings  
 with hand hoe and weedings. (ix) N.A. (x) 7.12.1954.

## 2. TREATMENTS :

## Main-plot treatments :

4 spacings between rows :  $S_1=3''$ ,  $S_2=6''$ ,  $S_3=9''$  and  $S_4=12''$ .

## Sub-plot treatments :

4 levels of manures :  $M_1=20$  lb./ac. of  $P_2O_5+10$  lb./ac. of CaO,  $M_2=20$  lb./ac. of N as F.Y.M.+30  
 lb./ac. of N as A/S+40 lb./ac. of  $P_2O_5+15$  lb./ac. of  $K_2O+20$  lb./ac. of CaO,  
 $M_3=20$  lb./ac. of N as F.Y.M.+60 lb./ac. of N as A/S+60 lb./ac. of  $P_2O_5+$   
 30 lb./ac. of  $K_2O+30$  lb./ac. of CaO and  $M_4=20$  lb./ac. of N as F.Y.M.+  
 90 lb./ac. of N as A/S+80 lb./ac. of  $P_2O_5+45$  lb./ac. of  $K_2O+40$  lb./ac.  
 of CaO.

$P_2O_5$  as Super and F.Y.M. applied on 1.8.1954, CaO as gypsum on 5.8.1954 and mixture of A/S and  $K_2O$  as  
 Pot. Sul. on 25.8.1954.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 4 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a)  $18' \times 42'$ .  
 (b)  $15' \times 39'$ . (v)  $1\frac{1}{2}' \times 1\frac{1}{2}'$ . (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Yield of grain. (iv) and (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1996 lb./ac. (ii) (a) 238.6 lb./ac. (b) 364.8 lb./ac. (iii) Main effect of M is highly significant and effect  
 of S is significant. (iv) Av. yield of grain in lb./ac.

	$M_1$	$M_2$	$M_3$	$M_4$	Mean
$S_1$	1873	2630	1420	989	1728
$S_2$	2129	2572	2017	1276	1998
$S_3$	2109	2361	2298	1631	2100
$S_4$	2093	2336	2189	2004	2156
Mean	2051	2475	1981	1475	1996

S.E. of difference of two

1. S marginal means	= 94.7 lb./ac.
2. M marginal means	= 148.9 lb./ac.
3. M means at the same level of S	= 297.9 lb./ac.
4. S means at the same level of M	= 275.7 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 54(5).**

**Site :- Student's Instrl. Farm, Govt. Agri. College, Kanpur. Type :- 'CM'.**

Object :—To compare the effects of Japanese method of cultivation and ordinary method of cultivation of  
 Paddy crop.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Barley. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Kanpur. (iii) 21 to 23.7.1954.  
 (iv) (a) 2 ploughings and 1 planking. (b) Sown in lines. (c) 10 srs./ac. (d)  $10'' \times 10''$ . (e) N.A. (v) Nil.  
 (vi) T—9 (late). (vii) Irrigated. (viii) and (ix) N.A. (x) 13.12.1954.

## 2. TREATMENTS :

6 methods of cultivation :  $T_1$ =Nursery and cultivation both by ordinary method,  $T_2$ =Nursery by ordinary  
 method and cultivation by Japanese method. Manured with 90 lb./ac. of N  
 as F.Y.M. and A/S+15 lb./ac. of  $P_2O_5$  as Super,  $T_3$ =Nursery and cultivation

both by Japanese method. Manured as in  $T_2$ ,  $T_4$ =Nursery by Japanese method and cultivation by ordinary method,  $T_3$ = $T_1$  with 50 lb./ac. of N as A/S and  $T_6$ = $T_1$  with 100 lb./ac. of N as A/S.

In  $T_2$  and  $T_3$  fertilizers applied on 19, 20.7.1954 and in  $T_5$  and  $T_6$  on 25.7.1954 as top dressing.

### 3. DESIGN :

(i) L. Sq. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a)  $38' \times 16'$ . (b)  $35' \times 13'$ . (v)  $1\frac{1}{2}' \times 1\frac{1}{2}'$ . (vi) Yes.

### 4. GENERAL :

(i) Normal. Lodging occurred in  $T_5$  and  $T_6$  plots. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1954-1955. (b) Yes. (c) Nil. (v) to (vii) Nil.

### 5. RESULTS :

(i) 1950 lb./ac. (ii) 236.5 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$T_1$	$T_2$	$T_3$	$T_4$	$T_5$	$T_6$
Av. yield	2396	2757	2856	2331	804	558

S.E./mean = 96.6 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 55(289).**

**Site :- Student's Instrl Farm, Govt. Agri. College, Kanpur.**

**Type :- 'CM'.**

Object :- To compare the effect of Japanese method of cultivation and ordinary method of cultivation of Paddy.

### 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Pea. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Kanpur (iii) 13.6.1955/29, 31.7.1955. (iv) (a) 2 victory ploughings and 2 *desi* ploughings. (b) to (e) N.A. (v) Nil. (vi) T-9 (late). (vii) Irrigated. (viii) N.A. (ix) 41.15". (x) 8.12.1955.

### 2. TREATMENTS :

6 methods of cultivation :  $T_1$ =Nursery and cultivation both by ordinary method.  $T_2$ =Nursery by ordinary method and cultivation by Japanese method. Manured with 90 lb./ac. of N as F.Y.M. and A/S+15 lb./ac. of  $P_2O_5$  as Super,  $T_3$ =Nursery and cultivation both by Japanese method. Manured as in  $T_2$ ,  $T_4$ =Nursery by Japanese method and cultivation by ordinary method,  $T_5$ = $T_1$  with 20 lb./ac. of N as A/S and  $T_6$ = $T_1$  with 40 lb./ac. of N as A/S.

In  $T_2$  and  $T_3$ , F.Y.M. applied on 27, 28.7.1955 and A/S on 29 to 31.7.1955. A/S and Super top-dressed.

### 3. DESIGN and 4. GENERAL :

Same as in expt. no. 54(5) on page 129.

### 5. RESULTS :

(i) 2679 lb./ac. (ii) 540.1 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$T_1$	$T_2$	$T_3$	$T_4$	$T_5$	$T_6$
Av. yield	2425	2764	2808	2461	2673	2944

S.E./mean = 220.6 lb./ac.

**Crop :- Paddy (Kharif).****Ref :- U.P. 57(329).****Site :- Student's Instrl. Farm, Govt. Agri. College, Kanpur.****Type :- 'CM'.**

Object :- To compare different methods of Paddy cultivation.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Berseem*. (c) 8 to 10 C.L./ac. of F.Y.M. (ii) (a) Clay loam. (b) Refer soil analysis, Kanpur. (iii) 12.8.1957. (iv) (a) 2 ploughings and 1 planking. (b) Transplanting. (c) N.A. (d) As per treatments. (e) 1. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) As per treatments. (ix) 29.03. x) 19, 20.11.1957.

**2. TREATMENTS :**

6 methods of cultivation :  $M_0$ =Local method (no manuring),  $M_1$ =Japanese method of cultivation at 9"×9" spacing with 50 lb./ac. of N+30 lb./ac. of  $P_2O_5$ ,  $M_2$ =Japanese method of cultivation at 9"×9" spacing with 50 lb./ac. of N,  $M_3$ =Local method with 50 lb./ac. of N+30 lb./ac. of  $P_2O_5$ ,  $M_4$ =Local method with 50 lb./ac. of N and  $M_5$ =Local method with 75 lb./ac. of N.

N as A/S and  $P_2O_5$  as Super applied on 3.9.1957 and 11.8.1957.

Local method : Transplanting of paddy seedlings with 4" to 6" spacing each way and no interculturing.

Japanese method of cultivation : Transplanting of paddy seedling at a spacing of 9" each way. Paddy rotary weeder was used for interculture.

**3. DESIGN :**

(i) L. Sq. (ii) (a) 6. (b) 188'×182'. (iii) 6. (iv) (a) 30'×27'. (b) 26'×23'. (v) 2'×2'. (vi) Yes.

**4. GENERAL :**

(i) Normal. (ii) Attack of stem borer and *gundhi* bug. Blast incidence was severe. (iii) Yield of grain. (iv) (a) 1957—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1047 lb./ac. (ii) 213.4 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	$M_0$	$M_1$	$M_2$	$M_3$	$M_4$	$M_5$
Av. yield	1306	989	984	1010	1003	992

S.E./mean = 87.1 lb./ac.

**Crop :- Paddy (Kharif).****Ref :- U.P. 56(392).****Site :- State Usar Reclamation Farm, Katiyar.****Type :- 'CM'.**

Object :- To study the effect of leaching with water alone and in combination with gypsum on saline alkali soil.

**1. BASAL CONDITIONS :**

(i) (a) to (c) Uncultivated land. (ii) (a) Clay loam. (b) Refer soil analysis, Katiyar. (iii) April, 1956. (iv) (a) Harrowing and levelling. (b) Transplanting. (c) N.A. (d) 9"×9". (e) 1 to 2. (v) Nil. (vi) T-9 (late). (vii) Irrigated. (viii) Nil. (ix) 29.24". (x) 31.12.1956.

**2. TREATMENTS :****Main-plot treatments :**

3 levels of gypsum :  $G_0=0$ ,  $G_1=4$  and  $G_2=8$  tons/ac.

**Sub-plot treatments :**

2 levels of leaching :  $L_0$ =No leaching and  $L_1$ =Leaching with water.

Gypsum was thoroughly mixed and applied in soil in March before the start of the experiment.

**3. DESIGN :**

(i) Split-plot (main-plots in L. Sq.). (ii) (a) 2 L. Sq., 9 main-plots/L. Sq. and 2 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 198'×44'. (b) 194'×40'. (v) 2'×2'. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Yield of grain. (iv) (a) 1956—contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 194 lb./ac. (ii) (a) 156.4 lb./ac. (b) 195.4 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	G <sub>0</sub>	G <sub>1</sub>	G <sub>2</sub>	Mean
L <sub>0</sub>	131	208	254	198
L <sub>1</sub>	189	244	136	190
Mean	160	226	195	194

## S.E. of difference of two

1. G marginal means = 63.8 lb./ac.
2. L marginal means = 65.1 lb./ac.
3. L means at the same level of G = 112.8 lb./ac.
4. G means at the same level of L = 102.2 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 57(415).**

**Site :- State Usar Reclamation Farm, Katiyar.**

**Type :- 'CM'.**

Object :— To study the effect of leaching with water alone and in combination with gypsum on saline alkali soil.

## 1. BASAL CONDITIONS :

(i) (a) Paddy—Paddy. (b) Paddy. (c) As per treatments. (ii) (a) Clay loam. (b) Refer soil analysis, Katiyar. (iii) N.A./18 to 28.8.1957. (iv) (a) 1 ploughing. (b) Transplanting. (c) N.A. (d) 9"×9". (e) 1 to 2. (v) Nil. (vi) T—9 (late). (vii) Irrigated. (viii) 1 weeding. (ix) 30.51". (x) 24.11.1957.

## 2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 56(392) on page 131.

## 5. RESULTS :

(i) 444 lb./ac. (ii) (a) 286.3 lb./ac. (b) 324.2 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	G <sub>0</sub>	G <sub>1</sub>	G <sub>2</sub>	Mean
L <sub>0</sub>	370	442	360	391
L <sub>1</sub>	418	574	497	496
Mean	394	508	429	444

## S.E. of difference of two

1. G marginal means = 116.9 lb./ac.
2. L marginal means = 108.1 lb./ac.
3. L means at the same level of G = 187.2 lb./ac.
4. G means at the same level of L = 176.6 lb./ac.

**Crop :- Paddy (Kharif).****Ref :- U.P. 58(403).****Site :- State Usar Reclamation Farm, Katiyar.****Type :- 'CM'.**

Object :— To study the effect of leaching with water alone and in combination with gypsum on saline alkali soil.

**1. BASAL CONDITIONS :**

(i) (a) Paddy—Paddy. (b) Paddy. (c) As per treatments. (ii) (a) Clay loam. (b) Refer soil analysis, Katiyar. (iii) N.A./8 to 18.8.1958. (iv) (a) 2 ploughings. (b) Transplanting. (c) N.A. (d) 9"×9". (e) 1 to 2. (v) Nil. (vi) T—9 (late). (vii) Irrigated. (viii) 1 weeding. (ix) 38.31". (x) 23, 24.11.1958.

**2. TREATMENTS to 4. GENERAL :**

Same as in expt. no. 56(392) on page 131.

**5. RESULTS :**

(i) 674 lb./ac. (ii) (a) 431.1 lb./ac. (b) 313.6 lb./ac. (iii) Only main effect of L is highly significant. (iv) Av. yield of grain in lb./ac.

	G <sub>0</sub>	G <sub>1</sub>	G <sub>2</sub>	Mean
L <sub>0</sub>	310	552	559	474
L <sub>1</sub>	703	889	1031	874
Mean	506	720	795	674

S.E. of difference of two

1. G marginal means = 176.0 lb./ac.
2. L marginal means = 104.5 lb./ac.
3. L means at the same level of G = 181.1 lb./ac.
4. G means at the same level of L = 217.6 lb./ac.

**Crop :- Paddy (Kharif).****Ref :- U.P. 59(437).****Site :- State Usar Reclamation Fram, Katiyar.****Type :- 'CM'.**

Object :—To study effect of leaching with water alone and in combination with gypsum on saline alkali soil.

**1. BASAL CONDITIONS :**

(i) (a) Paddy—Paddy. (b) Paddy. (c) As per treatments. (ii) (a) Clay loam. (b) Refer soil analysis, Katiyar. (iii) N.A./24 to 28.7.1959. (iv) (a) Ploughings. (b) Transplanting. (c) N.A. (d) 9"×9". (e) 1 to 2. (v) Nil. (vi) T—9 (late). (vii) Irrigated. (viii) 1 weeding. (ix) 21.72". (x) 23.11.1959 to 6.12.1959.

**2. TREATMENTS to 4. GENERAL :**

Same as in expt no. 56(392) on page 131.

**5. RESULTS :**

(i) 1233 lb./ac. (ii) (a) 378.9 lb./ac. (b) 357.3 lb./ac. (iii) Only main effect of L is highly significant. (iv) Av. yield of grain in lb./ac.

	G <sub>0</sub>	G <sub>1</sub>	G <sub>2</sub>	Mean
L <sub>0</sub>	564	852	843	753
L <sub>1</sub>	1524	1731	1882	1712
Mean	1044	1292	1362	1233

## S.E. of difference of two

1. G marginal means = 154.7 lb./ac.
2. L marginal means = 119.1 lb./ac.
3. L means at the same level of G = 206.3 lb./ac.
4. G means at the same level of L = 212.6 lb./ac.

**Crop :- Paddy (Kharif).****Ref :- U.P. 58(32).****Site :- Reg. Res. Stn., Meerut.****Type :- 'CM'.**

Object :—To study the effect of manures in combination with seed rate on Paddy.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Berseem* (fodder). (c) Nil. (ii) (a) Clayey loam. (b) Refer soil analysis, Meerut. (i.) 3.7.1958. (iv) (a) 3 ploughings. (b) In lines behind the plough. (c) As per treatments. (d) 9" between rows. (e) N.A. (v) 30 mds./ac. of F.Y.M. applied 3 to 4 weeks before sowing. (vi) Ch.—4 (medium). (vii) Irrigated. (viii) 3 weedings. (ix) 51.66". (x) 16.11.1958.

**2. TREATMENTS :****Main-plot treatments :**4 seed rates :  $S_1=10$ ,  $S_2=20$ ,  $S_3=30$  and  $S_4=40$  srs./ac.**Sub-plot treatments :**3 levels of manuring :  $M_0$ =Control,  $M_1$ =30 lb./ac. of N as A/S+20 lb./ac. of  $P_2O_5$  as Super and  $M_2$ =60 lb./ac. of N as A/S+40 lb./ac. of  $P_2O_5$  as Super.

A/S applied as surface dressing at the time of sowing and Super applied 3" to 4" deep behind the plough 3 to 4 days before sowing.

**3. DESIGN :**

(i) Split-plot. (ii) (a) 4 main-plots/replication and 3 sub-plots/main-plot. (b) 42'×174'. (iii) 5. (iv) (a) 42'×14'. (b) 39'×11'. (v) 1½'×1½'. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Attack of *gundhi* bug. Dusting of B.H.C. and Gammexane at 20 lb./ac. (iii) Germination, height of plant, number of tillers, yield of grain and straw. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 545 lb./ac. (ii) (a) 284.6 lb./ac. (b) 160.0 lb./ac. (iii) Main effect of M alone is highly significant. (iv) Av yield of grain in lb./ac.

	$S_1$	$S_2$	$S_3$	$S_4$	Mean
$M_0$	426	401	340	574	435
$M_1$	421	513	696	645	569
$M_2$	457	680	670	716	631
Mean	435	531	569	645	545

## S.E. of difference of two

1. S marginal means = 103.9 lb./ac.
2. M marginal mean = 50.6 lb./ac.
3. M means at the same level of S = 101.2 lb./ac.
4. S means at the same level of M = 132.7 lb./ac.

**Crop :- Paddy (Kharif).****Ref :- U.P. 54(319).****Site :- Rice Res. Stn. Nagina.****Type :- 'CM'.**

Object :—To compare local method with Japanese method of Paddy cultivation.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Berseem*. (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Nagina. (iii) 12.6.1954/11.7.1954. (iv) (a) N.A. (b) Transplanting. (c) to (e) As per treatments. (v) N.A. (vi) Ch.—4 (medium). (vii) N.A. (viii) As per treatments. (ix) N.A. (x) 20 to 23.10.1954.

## 2. TREATMENTS :

All combinations of (1), (2), (3), (4), (5) and (6)

- (1) 2 seed rates :  $A_1$  = Local at 10 lb./ac. and  $A_2$  = Japanese method of seed rate at 20 lb./ac.  
 (2) 2 types of seedbed :  $B_1$  = Flat and  $B_2$  = Raised (Japanese).  
 (3) 2 levels of manuring of seedbed :  $C_1$  = Local method and  $C_2$  = Japanese method of manuring of seedbed.  
 (4) 2 types of transplanting :  $D_1$  = Local and  $D_2$  = Japanese method of transplanting.  
 (5) 2 levels of manuring of fields :  $E_1$  = Local (departmental) with 30 lb./ac. of N as A/S on 7.8.1954 and  $E_2$  = Japanese method of field manuring. with 2 mds./plot. of G.M. on 10.7.1954 + 100 lb./ac. of N as A/S + 100 lb./ac. of  $P_2C_2$  as Super on 12.7.1954.  
 (6) 2 levels of interculturing :  $F_1$  = Local and  $F_2$  = 3 interculturing by Japanese implements.

## 3. DESIGN :

(i) 2<sup>6</sup> confd. (ii) (a) 8 plots/block and 8 blocks/replication. (b) N.A. (iii) 1. (iv) (a) 59' × 20'. (b) 57' × 18' (v) 1' × 1'. (vi) Yes.

## 4. GENERAL :

(i) Severe lodging occurred. (ii) N.A. (iii) Yield of grain. (iv) to (vii) Nil.

## 5. RESULTS :

(i) 2577 lb./ac. (ii) 304.2 lb./ac. (iii) Main effects of B, C and E are highly significant. (iv) Table of mean and differential responses in lb./ac.

Mean response	Differential response												
	A		B		C		D		E		F		
	—	+	—	+	—	+	—	+	—	+	—	+	
A —123	—	—	—119	—127	—133	—112	+103	—350	—134	—113	—	—88	—158
B —182	—178	—186	—	—	—185	—180	—233	—130	—258	—105	—	—19	—344
C —358	—369	—348	—361	—356	—	—	—327	—388	—404	—312	—	—333	—384
D +119	+346	—107	+68	+171	+150	+89	—	—	—255	—16	—	+43	+195
E +251	+240	+261	+174	+327	+205	+297	+387	+116	—	—	—	+115	+386
F —25	+10	—60	+138	—187	+1	—50	—100	+51	—160	+111	—	—	—

S.E. of mean response = 76.1 lb./ac.

S.E. of differential response = 107.5 lb./ac.

**Crop :- Paddy (*Kharif*).**

**Ref :- U.P. 57(429).**

**Site :- Rice Res. Stn , Nagina.**

**Type :- 'CM'.**

Object :—To compare local method with Japanese method of Paddy cultivation.

## 1. BASAL CONDITIONS :

(i) Paddy—*Berseem*. (b) *Berseem*. (c) Nil. (ii) (a) Loamy soil. (b) Refer soil analysis, Nagina. (iii) 12.6.1957./1.8.1957. (iv) (a) 3 ploughings. (b) Transplanting. (c) to (e) As per treatments. (v) N.A. (vi) Ch.—4 (medium). (vii) N.A. (viii) 1 weeding and 1 hoeing. (ix) and (x) N.A.

## 2. TREATMENTS :

All combinations of (1), (2), (3) and (4)

- (1) 2 seed rates :  $A_1$  = Local and  $A_2$  = Japanese method of seed rate.  
 (2) 2 levels of seed bed manuring :  $B_1$  = Local method and  $B_2$  = Japanese method of manuring of seedbed.  
 (3) 2 types of transplanting :  $C_1$  = Local and  $C_2$  = Japanese method of transplanting.  
 (4) 2 levels of field manuring :  $D_1$  = Local and  $D_2$  = Japanese method of field manuring.



## 3. DESIGN :

(i) 2<sup>4</sup> confd. (ii) (a) 8 plots/block and 2 blocks/replication. (b) N.A. (iii) 2. (iv) (a) and (b) 27.5' × 20' (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) N.A. (iii) Yield of grain. (iv) 1957—N.A. (b) N.A. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 2187 lb./ac. (ii) 253.8 lb./ac. (iii) Main effect of C and D are highly significant are interaction A × B × C is significant. (iv) Table of mean and differenced responses in lb./ac.

Mean response		Differential response							
		A		B		C		D	
		—	+	—	+	—	+	—	+
A	106	—	—	65	147	53	159	55	156
B	—94	—135	—53	—	—	—58	—130	—21	—167
C	—311	—364	—258	—275	—347	—	—	—241	—381
D	398	349	447	471	325	468	328	—	—

S.E. of mean response = 89.7 lb./ac.

S.E. of differenced response = 126.9 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 59(158).**

**Site :- Rice Res. Stn., Nagina.**

**Type :- 'CM'.**

**Object :-** To compare the merits of Chinese, Japanese and local method of Paddy cultivation.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Pea. (c) Nil. (ii) (a) Loamy soil. (b) Refer soil analysis, Nagina. (iii) 10.8.1959/5.8.1959. (iv) (a) 1 deep ploughing. (b) N.A. (c) 15 lb./ac. (d) and (e) N.A. (v) N.A. (vi) T—100 (late) (vii) Irrigated. (viii) As per treatments. (ix) 27.38". (x) 8, 9.12.1959.

## 2. TREATMENTS :

3 methods of cultivation : M<sub>1</sub>=Chinese method : 6" × 6" spacing and 60 lb./ac. of N as A/S in equal doses, at puddling, 3 to 4 weeks after transplanting and before flowering + 40 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super at puddling + 40 lb./ac. of K<sub>2</sub>O as Pot. Sul. M<sub>2</sub>=Japanese method : 10" × 10" spacing and 10 C.L./ac. of F.Y.M. + 10 (lb./ac. each of A/S, Super and Pot. Sul. at transplanting and one month after transplanting and M<sub>3</sub>=Local method : 9" × 6" spacing and 20 lb./ac. of N as castor cake + 30 lb./ac. of N as A/S in equal doses at tillering and flowering.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) 30' × 30'. (b) 28' × 28' for M<sub>1</sub>, 26 $\frac{2}{3}$ ' × 26 $\frac{2}{3}$ ' for M<sub>2</sub> and 28' × 27' for M<sub>3</sub>. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Lodged on 27.10.1959. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1959—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 2877 lb./ac. (ii) 242.7 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>
Av. yield	3038	2817	2777

S.E./mean = 99.1 lb./ac.

**Crop :- Paddy (Kharif).****Ref :- U.P. 54(317).****Site :- Reg. Res. Stn. Nawabganj.****Type :- 'CM'.**

Object:—To find out the best method of raising Paddy crop and to study the effect of N and P on the yield.

**1. BASAL CONDITIONS :**

- (i) (a) to (c) N.A. (ii) Clayey loam. (b) Refer soil analysis, Nawabganj. (iii) N.A./16. to 20.8.1954.  
 (iv) (a) N.A. (b) Transplanting. (c) As per treatments. (d) 10"×10". (e) N.A. (v) N.A. (vi) T-22 (A)  
 (vii) to (x) N.A.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

- (1) 3 levels of N as A/S :  $N_0=0$ ,  $N_1=30$  and  $N_2=60$  lb./ac.  
 (2) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=20$  and  $P_2=40$  lb./ac.  
 (3) 3 methods of raising nursery :  $M_1=5$  flat beds 16'×12' each sown with dry seed at 1 srs./ac. and manured with 2 to 4 srs./bed of G.N.C.,  $M_2=5$  flat beds 16'×12' each sown with wet seed at 1 srs./bed and manured with 2 to 4 srs./bed of G.N.C. and  $M_3=10$  raised nursery beds 25'×4' each sown as recommended in Japanese method of cultivation at 8 chks./bed.

A/S applied top-dressed on 3.9.1954 and Super at the time of puddling on 31.7.1954.

**3. DESIGN :**

- (i) 3<sup>3</sup> confd. (ii) (a) 9 plots/block and 3 blocks/replication. (b) N.A. (iii) 4. (iv) (a) and (b) 50'×14'6 $\frac{1}{2}$ ".  
 (v) Nil. (vi) Yes.

**4. GENERAL :**

- (i) Good, lodging occurred. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) Strong winds in the last week of October. Due to heavy floods proper tillering could not be done. (vii) Nil.

**5. RESULTS :**

- (i) 1441 lb./ac. (ii) 348.9 lb./ac. (iii) Main effect of M and interections  $N \times P$ ,  $P \times M$  and  $N \times P \times M$  are highly significant. Main effect of P and interaction  $N \times M$  are significant. (iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	$P_2$	Mean	$M_1$	$M_2$	$M_3$
$N_0$	1353	1435	1407	1398	1405	1481	1309
$N_1$	1407	1313	1389	1369	1414	1392	1301
$N_2$	1336	1934	1403	1557	1365	1953	1354
Mean	1365	1560	1399	1441	1395	1608	1321
$M_1$	1409	1334	1441				
$M_2$	1428	2024	1373				
$M_3$	1257	1323	1383				

S.E. of any marginal mean = 58.1 lb./ac.

S.E. of body of any table = 100.7 lb./ac.

**Crop :- Paddy (Kharif).****Ref :- U.P. 54(101).****Site :- Reg. Res. Stn., Nawabganj.****Type :- 'CM'.**

Object :—To study the effect of spacings and manuring on Paddy.

## 1. BASAL CONDITIONS

(i) (a) N.A. (b) Wheat. (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Nawabganj. (iii) 22.7.1954. (iv) (a) 2 ploughings. (b) Transplanting. (c) 8 to 10 srs./ac. (d) As per treatments. (e) N.A. (v) G.M. (vi) Ch.—4. (vii) Irrigated. (viii) 4 interculturings with hand hoe and 2 weedings. (ix) N.A. (x) 14.11.1954.

## 2. TREATMENTS :

## Main-plot treatments :

4 spacings :  $S_1=3''$ ,  $S_2=6''$ ,  $S_3=9''$  and  $S_4=12''$ .

## Sub-plot-treatments :

4 levels of manures :  $M_1=20$  lb./ac. of  $P_2O_5+10$  lb./ac. of CaO,  $M_2=20$  lb./ac. of N as F.Y.M. +30 lb./ac. of N as A/S +40 lb./ac. of  $P_2O_5+15$  lb./ac. of  $K_2O+20$  lb./ac. of CaO,  $M_3=20$  lb./ac. of N as F.Y.M. +60 lb./ac. of N as A/S +60 lb./ac. of  $P_2O_5+30$  lb./ac. of  $K_2O+30$  lb./ac. of CaO and  $M_4=20$  lb./ac. of N as F.Y.M. +90 lb./ac. of N as A/S +80 lb./ac. of  $P_2O_5+45$  lb./ac. of  $K_2O+40$  lb./ac. of CaO.

$P_2O_5$  as Super by placement 3" to 4" deep in soil behind the plough on 22.7.1954,  $K_2O$  as Pot. Sul. and A/S applied mixed as top dressing on 12.8.1954, F.Y.M. on 14.7.1954 and CaO as gypsum as surface dressing on 22.7.1954.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 4 sub-plots/main-plot. (c) N.A. (iii) 3. (iv) (a) 38' × 42'. (b) 15' × 39'. (v)  $1\frac{1}{2}' \times 1\frac{1}{2}'$ . (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Yield of grain. (iv) (a) 1954—N.A. (b) No. (c) Nil. (v) (a) Conducted at many centres. (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 2253 lb./ac. (ii) (a) 214.2 lb./ac. (b) 250.7 lb./ac. (iii) Main effects of S and M are highly significant. (iv) Av. yield of grain in lb./ac.

	$M_1$	$M_2$	$M_3$	$M_4$	Mean
$S_1$	2144	2464	2655	2617	2470
$S_2$	2030	2170	2598	2805	2401
$S_3$	1966	2259	2413	2540	2294
$S_4$	1468	1685	1953	2279	1846
Mean	1902	2144	2405	2560	2253

## S.E. of difference of two

1. S marginal means = 87.4 lb./ac.
2. M marginal means = 102.3 lb./ac.
3. M means at the same levels of S = 204.7 lb./ac.
4. S means at the same level of M = 197.7 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 56(81).**

**Site :- Reg. Res. Stn., Nawabganj.**

**Type :- 'CM'.**

**Object :-** To study the effect of spacings and manuring on the yield of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Nawabganj. (iii) N.A. 12.7.1956. (v) (a) N.A. (b) Transplanting. (c) 8 srs. ac. (d) As per treatments. (e) N.A. (v) G.M. (vi) 22—A late. (vii) and (viii) N.A. (ix) 30.0". (x) 26.11.1956.

## 2. TREATMENTS :

## Main-plot treatments :

4 spacings :  $S_1=3''$ ,  $S_2=6''$ ,  $S_3=9''$  and  $S_4=12''$ .

## Sub-plot treatments :

3 levels of manures :  $M_1=20$  lb./ac. of N as A/S,  $M_2=15$  lb./ac. of  $P_2O_5$  as Super +10 lb./ac. of  $K_2O$  as Pot. Sul. and  $M_3=40$  lb./ac. of N as A/S +30 lb./ac. of  $P_2O_5$  as Super +20 lb./ac. of  $K_2O$  as Pot. Sul.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 42' × 25'. (b) 39' × 22'. (v) 1½' × 1½'. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1956—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 3779 lb./ac. (ii) (a) 172.6 lb./ac. (b) 157.6 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>	Mean
M <sub>1</sub>	3951	3690	3742	3760	3786
M <sub>2</sub>	4004	3899	3742	3777	3856
M <sub>3</sub>	3708	3812	3699	3560	3695
Mean	3888	3800	3728	3699	3779

S.E. of difference of two

- |                                   |                 |
|-----------------------------------|-----------------|
| 1. S marginal means               | = 81.4 lb./ac.  |
| 2. M marginal means               | = 64.3 lb./ac.  |
| 3. M means at the same level of S | = 128.7 lb./ac. |
| 4. S means at the same level of M | = 132.9 lb./ac. |

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 58(113).**

**Site :- Reg. Res. Stn., Nawabganj.**

**Type :- 'CM'.**

Object :—To study the effect of levels of manure and seed rate on the yield of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Paddy—Sugarcane. (b) Sugarcane. (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Nawabganj. (iii) 19.7.1958. (iv) (a) N.A. (b) In lines behind the plough. (c) As per treatments. (d) 9" between rows. (e) N.A. (v) 50 mds./ac. of F. Y.M. applied 3 to 4 weeks before sowing. (vi) M—22 (early), (vii) and (viii) N.A. (ix) 42.47". (x) 15, 16.10.1958.

## 2. TREATMENTS :

**Main-plot treatments :**

4 seed rates : S<sub>1</sub>=10, S<sub>2</sub>=20, S<sub>3</sub>=30 and S<sub>4</sub>=40 srs./ac.

**Sub-plot treatments :**

3 levels of manure : M<sub>0</sub>=No manure, M<sub>1</sub>=30 lb./ac. of N as A/S+20 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super and M<sub>2</sub>=60 lb./ac. of N as A/S+40 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.

A/S applied as surface dressing at the time of sowing. Super 3" to 4" deep behind the plough before sowing.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 5. (iv) (a) 42' × 14'. (b) 39' × 11'. (v) 1½' × 1½'. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1958—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1295 lb./ac. (ii) (a) 351.7 lb./ac. (b) 230.7 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>	Mean
M <sub>0</sub>	1065	1457	1143	1480	1286
M <sub>1</sub>	1138	1470	1357	1321	1322
M <sub>2</sub>	1206	1350	1422	1132	1278
Mean	1136	1426	1307	1311	1295

S.E. of difference of two

1. S marginal means = 128.4 lb./ac.
2. M marginal means = 72.9 lb./ac.
3. M means at the same level of S = 145.9 lb./ac.
4. S means at the same level of M = 175.2 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 59(139).**

**Site :- Reg. Res. Stn., Nawabganj.**

**Type :- 'CM'.**

**Object :-** To study the effect of dates of sowing, seed rates and levels of fertility on Paddy.

### 1. BASAL CONDITIONS :

(i) (a) Gram—Paddy. (b) Gram. (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Nawabganj (iii) As per treatments. (iv) (a) N.A. (b) In lines behind the plough. (c) As per treatments. (d) 9' between rows. (e) N.A. (v) Nil. (vi) N-32 (early). (vii) Irrigated. (viii) 4 interculturations. (ix) 36.09%. (x) 18.10.1959.

### 2. TREATMENTS :

**Main-plot treatments :**

All combinations of (1) and (2)

(1) 2 dates of sowing : D<sub>1</sub>=Normal (10.7.1959) and D<sub>2</sub>=10 days late (24.7.1959).

(2) 2 levels of fertility : L<sub>1</sub>=High fertility (50 lb./ac. of N as A/S + 50 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super) and L<sub>2</sub>=Low fertility (25 lb./ac. of N as A/S + 25 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super).

**Sub-plot treatments :**

3 seed rates : S<sub>1</sub>=10, S<sub>2</sub>=20 and S<sub>3</sub>=30 srs./ac.

### 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) and (b) 12' × 45'. (v) Nil. (vi) Yes.

### 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1959—N.A. (b) N.A. (c) Nil. (v) to (vii) Nil.

### 5. RESULTS :

(i) 445 lb./ac. (ii) (a) 246.7 lb./ac. (b) 76.8 lb./ac. (iii) Main effect of S and interaction L × S are highly significant. (iv) Av. yield of grain in lb./ac.

	L <sub>1</sub>	L <sub>2</sub>	Mean	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>
D <sub>1</sub>	411	414	412	368	432	457
D <sub>2</sub>	456	501	478	369	470	595
Mean	433	457	445	359	451	526
S <sub>1</sub>	395	322				
S <sub>2</sub>	367	536				
S <sub>3</sub>	538	514				

S.E. of difference of two

1. D or L marginal means	=	71.2 lb./ac.
2. S marginal means	=	27.1 lb./ac.
3. S means at the same level of D or L	=	38.4 lb./ac.
4. D or L means at the same level of S	=	77.8 lb./ac.
S.E. of body of D×L table	=	71.2 lb./ac.

**Crop :- Paddy (Kharif).****Ref :- U.P. 59(138).****Site :- Reg. Res. Stn., Nawabganj.****Type :- 'CM'.**

Object :—To find out the suitable time of transplanting and best spacing for Paddy.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Nawabganj. (iii) As per treatments. (iv) (a) N.A. (b) Transplanting. (c) N.A. (d) As per treatments. (e) N.A. (v) N.A. (vi) T—9 (late). (vii) Irrigated. (viii) 1 interculturing. (ix) 29.11". (x) 9.12.1959.

**2. TREATMENTS :****Main-plot treatments :**

All combinations of (1) and (2)

(1) 2 dates of transplanting : D<sub>1</sub>=Early (1.8.1959), and D<sub>2</sub>=Late (18.8.1959).(2) 2 levels of fertility : L<sub>1</sub>=High fertility (50 lb./ac. of N as A/S+50 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super) and L<sub>2</sub>=Low fertility (25 lb./ac. of N as A/S+25 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.)**Sub-plot treatments :**3 spacings : S<sub>1</sub>=3", S<sub>2</sub>=6" and S<sub>3</sub>=9".

A/S top dressed.

**3. DESIGN :**

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) and (b) 15'×36'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1959—N.A. (b) N.A. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1122 lb./ac. (ii) (a) 232.1 lb./ac. (b) 144.4 lb./ac. (iii) Main effects of D and S are highly significant. (iv) Av. yield of grain in lb./ac.

	L <sub>1</sub>	L <sub>2</sub>	Mean	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>
D <sub>1</sub>	995	978	986	899	938	1122
D <sub>2</sub>	1262	1252	1257	1143	1165	1462
Mean	1128	1115	1122	1021	1052	1292
S <sub>1</sub>	1003	1039				
S <sub>2</sub>	1071	1033				
S <sub>3</sub>	1312	1273				

S.E. of difference of two

1. D or L marginal means	=	67.0 lb./ac.
2. S marginal means	=	51.1 lb./ac.
3. S means at the same level of D or L	=	72.2 lb./ac.
4. D or L means at the same of S	=	89.3 lb./ac.
S.E. of body of D×L table	=	67.0 lb./ac.

**Crop :- Paddy (Kharif).**  
**Site :- Reg. Res. Stn., Nawabganj.**

**Ref :- U.P. 58(118).**  
**Type :- 'CM'.**

Object :—To find out the suitable method of cultivation of Paddy.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Nawabganj. (iii) 6.6.1958/17.7.1958 (iv) (a) N.A. (b) to (e) As per treatments. (v) Nil. (vi) N—27 (early) (vii) Irrigated. (viii) N.A. (ix) 50.87%. (x) 9.10.1958.

**2. TREATMENTS :**

4 methods of raising the crop : P<sub>1</sub>—Transplanting by Japanese method with 2 to 3 seedlings per hole at a spacing of 9", P<sub>2</sub>—Up land cultivation (high fertilization with 60 lb./ac. of N, sown in straight lines 1' to 2' apart, intercultivation in between lines, earthing up along the lines and seed rate at 30 srs./ac.), P<sub>3</sub>—Transplanting by *deci* method with 4 to 6 seedlings per hole at a spacing of 6' and P<sub>4</sub>—Broadcasting by local method at 20 lb./ac. of seed rate and 60 lb./ac. of N.

N in P<sub>2</sub> and P<sub>4</sub> treatments applied as F.Y.M.+A'S in 1 : 1 ratio.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 41'×15'. (b) 39.5'×13.5'. (v) 9"×9". (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Attack of *gundhi* bug. (iii) Height, tiller counts and yield of grain. (iv) (a) 1958—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 328 lb./ac. (ii) 101.9 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	P <sub>4</sub>
Av. yield	293	291	361	368

S.E./mean = 41.6 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 59(331).**

**Site :- Govt. Res. Farm, Pura.**

**Type :- 'CM'.**

Object :— To study the effect of growing dhaincha for G.M. with early Paddy either by broadcast or line sowing on the yield of Paddy.

**1. BASAL CONDITIONS :**

(i) (a) to (c) Nil. (ii) (a) Loam. (b) Refer soil analysis, Pura. (iii) 12.7.1959. (iv) (a) N.A. (b) and (c) As per treatments. (d) 12" between rows. (e) N.A. (v) Nil. (vi) and (vii) N.A. (viii) 2 weedings. (ix) and (x) N.A.

**2. TREATMENTS :**

T<sub>1</sub>—Paddy alone at 30 srs./ac. and no G.M., T<sub>2</sub>—*Dhaincha* at 10 srs./ac. and paddy at 30 srs./ac. broadcast, T<sub>3</sub>—*Dhaincha* at 10 srs./ac. and paddy at 30 srs./ac. line sowing and T<sub>4</sub>—Paddy alone at 18 srs./ac. line sowing and *dhaincha* as G.M. applied from outside. *Dhaincha* turned in as G.M. at the time of 1st weeding.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 4. (b) 36'×68'2". (iii) 4. (iv) (a) and (b) 36'×15'2". (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1959—contd. (b) N.A. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 234.4 lb./ac. (ii) 73.1 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>
Av. yield	239	219	219	259

S.E./mean = 36.5 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 57(414).**

**Site :- State Usar Reclamation Farm, Rahimabad.**

**Type :- 'CM'.**

Object :— To study the effect of organic and inorganic manures along with leaching with water on Paddy grown in saline alkali soils.

**1. BASAL CONDITIONS :**

(i) (a) to (c) Uncultivated land. (ii) (a) Saline alkaline soil. (b) Refer soil analysis, Rahimabad. (iii) N.A./ Last week of July, 1957. (iv) (a) Ploughing and levelling. (b) Transplanting. (c) N.A. (d) 9"×4" to 5". (e) 2 to 3. (v) N.A. (vi) T-9 (late). (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) Third week of December, 1957.

**2. TREATMENTS :**

**Main-plot treatments :**

M<sub>0</sub>=Control (no manure), M<sub>1</sub>=Paddy straw at 10 tons./ac., M<sub>2</sub>=Gypsum at 5 tons./ac. and M<sub>3</sub>=Gypsum at 5 tons./ac.+Paddy straw at 10 tons./ac.

**Sub-plot treatments :**

L<sub>0</sub>=No leaching and L<sub>1</sub>=Leaching with water alone.

**3. DESIGN :**

(i) Split-plot. (ii) (a) 4 main-plots/replication and 2 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 165'×33'. (b) 161'×29'. (v) 2'×2'. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Nil. (iii) Yield of grain. (iv) (a) 1957—contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 338 lb./ac. (ii) (a) 364.7 lb./ac. (b) 218.3 lb./ac. (iii) Main effect of L alone is significant. (iv) Av. yield of grain in lb./ac.

	M <sub>0</sub>	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	Mean
L <sub>0</sub>	56	466	195	277	248
L <sub>1</sub>	43	696	380	593	428
Mean	49	581	288	435	338

S.E. of difference of two

- |                                   |                 |
|-----------------------------------|-----------------|
| 1. M marginal means               | = 182.3 lb./ac. |
| 2. L marginal means               | = 77.2 lb./ac.  |
| 3. L means at the same level of M | = 154.4 lb./ac. |
| 4. M means at the same level of L | = 212.5 lb./ac. |

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 58(402).**

**Site :- State Usar Reclamation Farm, Rahimabad.**

**Type :- 'CM'.**

Object :— To study the effect of organic and inorganic manures along with leaching with water on Paddy grown in saline alkali soils.



## 1. BASAL CONDITIONS :

(i) (a) Fallow—Paddy. (b) Fallow. (c) Nil. (ii) (a) Saline alkali soil. (b) Refer soil analysis, Rahimabad. (iii) N.A. (iv) (a) Ploughing and levelling. (b) Transplanting. (c) N.A. (d) 9"×4" to 5". (e) 2 to 3. (v) Nil. (vi) T—9 (late). (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 16 to 18.12.1958.

## 2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 57(414) on page 143.

Gypsum in  $M_2$  and  $M_3$  treatments applied at the start of the expt. in 1957.

## 5. RESULTS :

(i) 967 lb./ac. (ii) (a) 513.4 lb./ac. (b) 303.3 lb./ac. (iii) Main effect of M and L are highly significant and interaction  $M \times L$  is significant. (iv) Av. yield of grain in lb./ac.

	$M_0$	$M_1$	$M_2$	$M_3$	Mean
$L_0$	154	946	428	1211	685
$L_1$	151	2132	903	1813	1250
Mean	152	1539	666	1512	967

S.E. of difference of two

1. M marginal means = 256.7 lb./ac.
2. L marginal means = 108.3 lb./ac.
3. L means at the same level of M = 216.6 lb./ac.
4. M means at the same level of L = 298.9 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 59(136).**

**Site :- State Usar Reclamation Farm, Rahimabad.**

**Type :- 'CM'.**

Object :— To study the effect of organic and inorganic manures along with leaching with water on Paddy grown in saline alkali soils.

## 1. BASAL CONDITIONS :

(i) (a) Fallow—Paddy. (b) Fallow. (c) Nil. (ii) Saline alkaline soil. (b) Refer soil analysis, Rahimabad. (iii) N.A. (iv) (a) Ploughing and levelling. (b) Transplanting. (c) N.A. (d) 9"×4½". (e) 2 to 3. (v) 20 srs./ac. of A/S. (vi) T—9 (late). (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) Third week of December, 1959.

## 2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 57(414) on page 143.

Gypsum in  $M_2$  and  $M_3$  treatments applied at the start of the expt. in 1957.

## 5. RESULTS :

(i) 665 lb./ac. (ii) (a) 587.3 lb./ac. (b) 303.2 lb./ac. (iii) Main effect of L is highly significant and interaction  $M \times L$  is significant. (iv) Av. yield of grain in lb./ac.

	$M_0$	$M_1$	$M_2$	$M_3$	Mean
$L_0$	299	612	252	732	474
$L_1$	87	1357	679	1305	857
Mean	193	985	466	1018	665

S.E. of difference of two

1. M marginal means = 293.6 lb./ac.
2. L marginal means = 107.2 lb./ac.
3. L means at the same level of M = 214.4 lb./ac.
4. M means at the same level of L = 330.4 lb./ac.

**Crop :- Paddy (Kharif).****Ref :- U.P. 54(103).****Site :- Reg. Res. Stn., Varanasi.****Type :- 'CM'.**

Object :—To study the effect of spacings and manures on Paddy.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Wheat. (c) N.A. (ii) (a) Loamy soil. (b) Refer soil analysis, Varanasi. (iii) 12.6.1954/25.7.1954. (iv) (a) N.A. (b) Transplanting. (c) 8 to 10 srs./ac. (d) As per treatments. (e) N.A. (v) N.A. (vi) N-22. (vii) Irrigated. (viii) 3 and 4 interculturings with hand hoe and 1 weeding. (ix) N.A. (x) 21.10.1954.

**2. TREATMENTS :****Main-plot treatments :**4 spacings :  $S_1=3''$ ,  $S_2=6''$ ,  $S_3=9''$  and  $S_4=12''$ .**Sub-plot treatments .**

4 levels of manure :  $M_1=20$  lb./ac. of  $P_2O_5+10$  lb./ac. of CaO,  $M_2=20$  lb./ac. of N as F.Y.M.+30 lb./ac. of N as A/S+40 lb./ac. of  $P_2O_5+15$  lb./ac. of  $K_2O+20$  lb./ac. of CaO,  $M_3=20$  lb./ac. of N as F.Y.M.+60 lb./ac. of N as A/S+0 lb./ac. of  $P_2O_5+30$  lb./ac. of  $K_2O+30$  lb./ac. of CaO and  $M_4=20$  lb./ac. of N as F.Y.M.+90 lb./ac. of N as A/S+80 lb./ac. of  $P_2O_5+45$  lb./ac. of  $K_2O+40$  lb./ac. of CaO.

 $P_2O_5$  applied as Super, CaO as gypsum and  $K_2O$  as Pot. Sul.**3. DESIGN :**

(i) Split-plot. (ii) (a) 4 main-plots/replication and 4 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a)  $18' \times 42'$ . (b)  $15' \times 39'$ . (v)  $1\frac{1}{2}' \times 1\frac{1}{2}'$ . (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Nil. (iii) Yield of grain. (iv) (a) 1954—N.A. (b) No. (c) Nil. (v) (a) Conducted at many centres. (b) Nil. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1446 lb./ac. (ii) (a) 399.1 lb./ac. (b) 237.0 lb./ac. (iii) Only main effect of M is highly significant. (iv) Av. yield of grain in lb./ac.

	$M_1$	$M_2$	$M_3$	$M_4$	Mean
$S_1$	1289	1857	2093	2004	1811
$S_2$	951	1596	1576	1296	1355
$S_3$	1047	1251	1602	1628	1382
$S_4$	989	1206	1123	1631	1237
Mean	1069	1478	1598	1640	1446

S.E. of difference of two

1. S marginal means = 162.9 lb./ac.
2. M marginal means = 96.7 lb./ac.
3. M means at the same level of S = 193.5 lb./ac.
4. S means at the same level of M = 233.7 lb./ac.

**Crop :- Paddy (Kharif).****Ref :- U.P. 58(87).****Site :- Reg. Res. Stn., Varanasi.****Type :- 'CM'.**

Object :—To study the effect of seed rate and levels of manure on Paddy.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Pea. (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Varanasi. (iii) 18.8.1958 (iv) (a) 2 ploughings. (b) Behind the plough through funnel. (c) As per treatments. (d) 9" between rows. (e) N.A. (v) 30 mds./ac. of F.Y.M. (vi) N—22 (early). (vii) Irrigated. (viii) 1 weeding. (ix) 18.13". (x) 2.11.1958.

## 3. TREATMENTS :

**Main-plot treatments :**

4 seed rates :  $S_1=10$ ,  $S_2=20$ ,  $S_3=30$  and  $S_4=40$  srs./ac.

**Sub-plot treatments :**

3 levels of manure :  $M_0$ =No manure,  $M_1=30$  lb./ac. of N as A/S+20 lb./ac. of  $P_2O_5$  as Super, and  $M_2=60$  lb./ac. of N as A/S+40 lb./ac. of  $P_2O_5$  as Super.

N applied as surface dressing and  $P_2O_5$  applied 3" to 4" deep in soil behind the plough 3 to 4 days before sowing.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 5. (iv) (a) 42' × 14' (b) 39' × 11'. (v) 1½' × 1½'. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1958—N.A. (b) No. (c) Nil. (v) to (vi) Nil.

## 5. RESULTS :

(i) 1619 lb./ac. (ii) (a) 344.7 lb./ac. (b) 167.6 lb./ac. (iii) Main effects of S and M are highly significant. (iv) Av. yield of grain in lb./ac.

	$S_1$	$S_2$	$S_3$	$S_4$	Mean
$M_0$	839	943	1130	1294	1052
$M_1$	1386	1616	1858	2012	1718
$M_2$	1862	1993	2191	2310	2089
Mean	1362	1517	1726	1872	1619

S.E. of difference of two

1. S marginal means = 125.9 lb./ac.
2. M marginal means = 53.0 lb./ac.
3. M means at the same level of S = 106.0 lb./ac.
4. S means at the same level of M = 142.7 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 59(88).**

**Site :- Reg. Res. Stn., Varanasi.**

**Type :- 'CM'.**

Object :—To study the effect of seed rate, dates of sowing and levels of fertility on Paddy.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Varanasi. (iii) 27.7.1959 and 5.8.1959. (iv) (a) N.A. (b) Broadcast. (c) As per treatments. (d) and (e) N.A. (v) Nil. (vi) N—22 (early). (vii) to (x) N.A.

## 2. TREATMENTS :

**Main-plot treatments :**

2 levels of fertility :  $F_1$ =Low fertility (25 lb./ac. of N as A/S+25 lb./ac. of  $P_2O_5$  as Super) and  $F_2$ =High fertility (50 lb./ac. of N as A/S+50 lb./ac. of  $P_2O_5$  as Super).

**Sub-plot treatments :**

All combinations of (1) and (2)

(1) 3 seed rates :  $S_1=10$ ,  $S_2=20$  and  $S_3=30$  srs./ac.

(2) 2 dates of sowing :  $D_1$ =Normal (27.7.1959) and  $D_2$ =9 days after normal sowing (5.8.1959).

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication and 6 sub-plots/main-plot. (b) N.A. (iii) 4. (v) (a) N.A. (b) 30' × 30'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1959—N.A. (b) N.A. (c) Nil. (v) to (vii) N.A.

## 5. RESULTS :

(i) 881 lb./ac. (ii) (a) 16.5 lb./ac. (b) 16.7 lb./ac. (ii) Main effects of F, S, D and interaction  $F \times D$  are highly significant. (iv) Av. yield of grain in lb./ac.

	D <sub>1</sub>	D <sub>2</sub>	Mean	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>
F <sub>1</sub>	884	787	835	780	841	885
F <sub>2</sub>	952	901	926	861	929	989
Mean	918	844	881	821	885	937
S <sub>1</sub>	857	784				
S <sub>2</sub>	930	840				
S <sub>3</sub>	968	907				

S.E. of difference of two

- |                                   |                |                                    |                |
|-----------------------------------|----------------|------------------------------------|----------------|
| 1. F marginal means               | = 4.75 lb./ac. | 5. F means at the same level of D  | = 6.78 lb./ac. |
| 2. D marginal means               | = 4.83 lb./ac. | 6. S means at the same level of F  | = 8.36 lb./ac. |
| 3. S marginal means               | = 5.91 lb./ac. | 7. F means at the same level of S  | = 8.33 lb./ac. |
| 4. D means at the same level of F | = 6.83 lb./ac. | S.E. of body of $S \times D$ table | = 5.91 lb./ac. |

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 59(282).**

**Centre :- Chaka (Allahabad, c.f.).**

**Type :- 'CM'.**

Object :—To study the effect of farmer's method and improved method of Paddy cultivation along with application of manures.

## 1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) Nil. (iv) N.A. (v) (a) 3 to 4 ploughings and 1 planking. (b) Transplanting. (c) N.A. (d) 9"×9". (e) N.A. (vi) Last week of July, 1959. (viii) to (ix) N.A. (x) 3rd week of October, 1959.

## 2. TREATMENTS :

4 methods of cultivation : M<sub>1</sub>=Farmer's method without manure, M<sub>2</sub>=Improved method without manures, M<sub>3</sub>=Farmer's method with N, P<sub>2</sub>O<sub>5</sub> and K<sub>2</sub>O each at 30 lb./ac. M<sub>4</sub>=Improved method with N, P<sub>2</sub>O<sub>5</sub> and K<sub>2</sub>O each at 30 lb./ac.

## 3. DESIGN :

(j) and (ii) R.B.D. with 2 replications. (iii) (a) N.A. (b) 40'×40'. (iv) Yes.

## 4 GENERAL :

(i) Lodged in the last week of October. (ii) N.A. (iii) Yield of grain. (iv) (a) 1959—N.A. (b) and (c) N.A. (v) (a) and (b) N.A. (vi) Heavy rains damaged the crop. (vii) Nil.

## 5. RESULTS :

(i) 1434 lb./ac. (ii) 133.6 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	M <sub>4</sub>	M <sub>5</sub>
Av. yield	1126	1212	1472	1626	1735

S.E./mean = 94.5 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 58(204).**

**Site :- Agri. College Farm, B.H.U., Varanasi.**

**Type :- 'CMV'.**

Object :—To study the effect of different dates of transplanting and sources of N on different varieties of Paddy.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Mustard. (c) N.A. (ii) (a) Medium alluvial soil. (b) Refer soil analysis, Varanas. (iii) As per treatments. (iv) (a) 1 ploughing with Punjab plough, 2 discings and 2 *desi* ploughings. (b) Transplanting. (c) N.A. (d) 10"×10". (e) N.A. (v) 3 C.L./ac. of decomposed F.Y.M. (vi) As per treatments. (vii) Irrigated. (viii) Hoeings and weedings. (ix) N.A. (x) 31.8.1958; 18.9.1958 and 14.10.1958.

**2. TREATMENTS :****Main-plot treatments :**

3 dates of transplanting :  $D_1=15.6.1958$ ,  $D_2=6.7.1958$  and  $D_3=27.7.1958$ .

**Sub-plot treatments :**

All combinations of (1) and (2)

(1) 2 varieties :  $V_1=N-22$  and  $V_2=T-136$ .

(2) 2 sources of N :  $S_1=A/S$  and  $S_2=Urea$ .

Level of N applied—N.A.

**3. DESIGN :**

(i) Split-plot. (ii) (a) 3 main-plots/replication and 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 33'×20'. (b) 29×16'. (v) 2'×2'. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Measurement of growth characters, maturity and yield of grain. (iv) (a) 1958 only. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 2074 lb./ac. (ii) (a) 586.7 lb./ac. (b) 398.6 lb./ac. (iii) Only main effect of D is significant. (iv) Av. yield of grain in lb./ac.

	$V_1$	$V_2$	Mean	$S_1$	$S_2$
$D_1$	2383	2441	2412	2484	2340
$D_2$	1815	2480	2148	2240	2056
$D_3$	1630	1694	1662	1582	1742
Mean	1943	2205	2074	2102	2046
$S_1$	2030	2173			
$S_2$	1856	2236			

**S.E. of difference of two**

1. D marginal means	= 207.4 lb./ac.
2. V or S marginal means	= 115.1 lb./ac.
3. V or S means at the same level of D	= 199.3 lb./ac.
4. D means at the same level of V or S	= 250.8 lb./ac.
S.E. of body of V×S table	= 115.1 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 59(404).**

**Site :- Usar Reclamation Farm, Chakeri.**

**Type :- 'D'.**

**Object :-** To study the control measures for blast disease on Paddy.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Saline alkali soil. (b) Refer soil analysis, Chakeri. (iii) N.A./12 to 14.8.1959. (iv) (a) N.A. (b) Transplanting. (c) to (e) N.A. (v) N.A. (vi) T—9. (vii) and (viii) N.A. (ix) 11.5". (x) N.A.

## 2. TREATMENTS :

10 seed treatments :  $T_0$  = Untreated seed, no dipping and no dusting,  $T_1$  = Seed treated with Agrosan G.N., no dipping and no dusting,  $T_2$  = Seedling from untreated seed, dipped in 0.3% Fytolan,  $T_3$  = Seedling from treated seed, dipped in 0.3% Fytolan,  $T_4$  = Seedling from untreated seed, undipped,  $T_5$  = Seedling from treated seed, undipped,  $T_6$  = Seed untreated, seedling dipped and crop dusted with Ceresan and lime,  $T_7$  = Seed treated, seedling dipped and crop dusted with Ceresan and lime,  $T_8$  = Seed untreated, seedling undipped and crop dusted with Ceresan and lime, and  $T_9$  = Seed treated, seedling undipped and crop dusted with Ceresan and lime.

Seedlings were dipped in 0.3% Fytolan though the symptoms of blast were not visible on the Paddy seedlings at the time of transplanting from 12.8.1959 to 14.8.1959.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) and (b) 12' × 32'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1959—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 2088 lb./ac. (ii) 400.8 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$T_0$	$T_1$	$T_2$	$T_3$	$T_4$	$T_5$	$T_6$	$T_7$	$T_8$	$T_9$
Av. yield	1633	2129	2056	2013	1896	2392	2100	2304	2246	2115

S.E./mean = 200.4 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U P. 59(405).**

**Site :- Usar Reclamation Farm, Chakeri.**

**Type :- 'D'.**

Object :—To study the effect of mercury dust to control blast and blight diseases.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Saline alkali soil. (b) Refer soil analysis, Chakeri. (iii) N.A./23.7.1959. (iv) (a) N.A. (b) Transplanting. (c) to (e) N.A. (v) to (viii) N.A. (ix) 15.67". (x) N.A.

## 2. TREATMENTS :

5 dusting treatments with mercury 2% :  $T_0$  = Control,  $T_1$  = Preventive dusting before the disease appears,  $T_2$  =  $T_1$  + dusting just at the appearance of the disease,  $T_3$  = Dusting just at the appearance of disease and  $T_4$  =  $T_2$  + further dusting according to requirement.

Preventive mercury dusting is done on 25.8.1959.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) and (b) 100' × 10'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1959—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 3201 lb./ac. (ii) 633.4 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$T_0$	$T_1$	$T_2$	$T_3$	$T_4$
Av. yield	3271	3371	2677	3024	3663

S.E./mean = 316.7 lb./ac.

**Crop :- Paddy (Kharif).****Ref :- U.P. 56(361).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'D'.**

Object :—To test the efficacy of various seed dressings against blight and blast disease of Paddy.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Alluvial loam. (b) Refer soil analysis, Kanpur. (iii) N.A./17.7.1956. (iv) (a) N.A. (b) Transplanting. (c) to (e) N.A. (v) N.A. (vi) N--22 (A). (vii) to (ix) N.A. (x) 6.12.1956.

**2. TREATMENTS :**7 seed treatments : T<sub>0</sub>=Control, T<sub>1</sub>=Agrosan G.N., T<sub>2</sub>=Ceresan, T<sub>3</sub>=Harvesan, T<sub>4</sub>=Tillex, T<sub>5</sub>=Perenox (wet treatment) and T<sub>6</sub>=Fernoxon.**3. DESIGN :**

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) and (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Blight and blast disease. (iii) Germination and blight infection. (iv) (a) 1956 only. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 9.48 degrees. (ii) 1.63 degrees. (iii) Treatment differences are significant. (iv) Av. blight infection in degrees.

Treatment	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	T <sub>5</sub>	T <sub>6</sub>
Mean angle	11.67	11.38	9.90	7.45	8.96	9.11	7.88

S.E./mean = 0.82 degrees.

Mean percentage infection of blight (after biased correction).

Treatment	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	T <sub>5</sub>	T <sub>6</sub>
Mean percentage	4.55	4.35	3.42	2.16	3.46	2.97	2.36

**Crop :- Paddy (Kharif).****Ref :- U.P. 57(122).****Site :- Reg. Res. Stn., Nawabganj.****Type :- 'D'.**

Object :—To study the efficacy of various seed dressings against blight and blast disease of Paddy.

**1. BASAL CONDITIONS :**

(i) (a) Pea—Paddy. (b) Pea. (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Nawabganj. (iii) N.A./9.8.1957. (iv) (a) N.A. (b) Transplanting. (c) to (e) N.A. (v) 10 lb./ac. of N as A/S top dressed. (vi) N--27 (early). (vii) to (x) N.A.

**2. TREATMENTS :**7 chemical treatments : T<sub>0</sub>=Control, T<sub>1</sub>=Ceresan 1 : 300, T<sub>2</sub>=Ceresan 1 : 500, T<sub>3</sub>=Harvesan 1 : 300, T<sub>4</sub>=Harvesan 1 : 500, T<sub>5</sub>=Agrosan G.N. 1 : 300 and T<sub>6</sub>=Agrosan G.N. 1 : 500.**3. DESIGN :**

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) and (b) 9'×6'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Normal. (ii) Crop affected by disease. (iii) Disease incidence and yield of grain. (iv) (a) 1957--N.A. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 928.7 lb./ac. (ii) 311.0 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	T <sub>5</sub>	T <sub>6</sub>
Av. yield	1025	880	942	1045	1128	680	801

S.E./mean = 155.5 lb./ac.

**Crop :- Paddy (Kharif).****Ref :- U.P. 58(123).****Site :- Reg. Reg. Stn., Nawabganj.****Type :- 'D'.**

Object :—To study the effect of insecticidal sprays against stem borer of Paddy.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Nawabganj. (iii) N.A./4 to 6.8.1958. (iv) (a) N.A. (b) Transplanting. (c) to (e) N.A. (v) N.A. (vi) T—9 (late). (vii) and (viii) N.A. (ix) 35.63". (x) 7, 10.12.1958.

**2. TREATMENTS :**7 spraying treatments : T<sub>0</sub>=Control (ordinary water sprayed), T<sub>1</sub>=0.1% Diazinon, T<sub>2</sub>=Mixture of 0.05% Diazinon+0.25% D.D.T., T<sub>3</sub>=A mixture of 0.05% Diazinon+0.75 lb./ac. of Endrine, T<sub>4</sub>=Mixture of 0.125% Parathion+1 : 99 Ovicide, T<sub>5</sub>=Mixture of 0.25% D.D.T.+1 : 99 Ovicide and T<sub>6</sub>=0.1% Lindane.

All insecticides were sprayed at 40 gallons/ac. in two instalments on 3.9.1958 and 20.9.1958.

**3. DESIGN :**

(i) R B.D. (ii) (a) 7. (b) N.A. (iii) 5. (iv) (a) and (b) 52'×21'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Stem borer attack. (iii) Mortality, height, tillers, yield of grain, straw and number of stem borer attacked ears. (iv) (a) 1958—1959 (treatments modified in 1959). (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 2402 lb./ac. (ii) 146.3 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	T <sub>5</sub>	T <sub>6</sub>
Av. yield	2289	2314	2462	2445	2380	2560	2363

S.E./mean = 65.4 lb./ac.

**Crop :- Paddy (Kharif).****Ref :- U.P. 59(475).****Site :- Reg. Res. Stn., Nawabganj.****Type :- 'D'.**

Object :—To study the effect of insecticidal sprays against stem borer of Paddy.

**1. BASAL CONDITIONS :**(i) (a) Nil. (b) Barley+Oats. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Nawabganj. (iii) N.A./24.7.1959. (iv) (a) N.A. (b) Transplanting. (c) to (e) N.A. (v) *Dhaincha* G.M.+B.M. at 4 mds. 'ac. (vi) T—9. (vii) to (x) N.A.**2. TREATMENTS :**8 spraying treatments : T<sub>0</sub>=Control (2 plots), T<sub>1</sub>=0.1% Diazinon, T<sub>2</sub>=Mixture of 0.05 Diazinon+0.25% D.D.T., T<sub>3</sub>=Mixture of 0.05% Diazinon+0.75 lb./ac. of actual Endrine, T<sub>4</sub>=Mixture of 0.125% Parathion+1 : 99 Ovicide, T<sub>5</sub>=Mixture of 0.25% D.D.T.+1 : 99 Ovicide, T<sub>6</sub>=0.1% Melathion emulsion and T<sub>7</sub>=0.1% Lindane+0.25% D.D.T.

1st application on 23.7.1959 at 50 gal./ac., 2nd application on 26.9.1959 at 50 gal./ac. and 3rd application on 19.10.1959 at 75 gal./ac.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) and (b) 56'3"×19'6". (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good. Lodging due to rains and storm on 26.10.1959 and 7.11.1959. (ii) Stem-borer attack. (iii) Yield of grain and number of dead hearts. (iv) (a) 1958—1959 (modified). (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :****Grain**

(i) 2093 lb./ac. (ii) 165.6 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.



Treatment	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	T <sub>5</sub>	T <sub>6</sub>	T <sub>7</sub>
Av. yield	2023	1118	2147	2156	2166	1956	1952	2294
	S.E./mean (except T <sub>0</sub> )					= 82.8 lb./ac.		
	S.E. of T <sub>0</sub> mean					= 58.5 lb./ac.		

**Dead heart count (stem-borer)**

(i) 55.7 dead hearts/plot. (ii) 16.5 dead hearts/plot. (iii) Treatment differences are not significant (v) number of dead hearts/plot.

Treatment	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	T <sub>5</sub>	T <sub>6</sub>	T <sub>7</sub>
Av. number	70.2	49.0	53.7	43.3	46.5	61.0	56.3	51.0
	S.E./mean (except T <sub>0</sub> )					= 8.2 dead hearts/plot.		
	S.E. of T <sub>0</sub> mean					= 5.8 dead hearts/plot.		

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 58(119).**

**Site :- Reg. Res. Stn., Nawabganj**

**Type :- 'D'.**

Object :—To study the effect of insecticidal sprays against gundhi bug on Paddy.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Nawabganj. (iii) N.A./17.7.1958. (iv) (a) N.A. (b) Transplanting. (c) to (e) N.A. (v) N.A. (vi) T—21 (medium). (vii) and (viii) N.A. (ix) 43.39°. (x) 31.10.1958.

**2. TREATMENTS :**

4 spraying treatments : T<sub>0</sub>=Control, T<sub>1</sub>=0.15% Nicotine sulphate + *til* oil and a little quantity of soda scap and alcohol, T<sub>2</sub>=0.2% Nicotine sulphate + *til* oil and a little quantity of soda scap and alcohol and T<sub>3</sub>=Dusting with 5% B.H.C. at 20 lb./ac.

Treatments applied on 28.9.1958. In T<sub>1</sub> and T<sub>2</sub> treatments the spraying is done with 40 gal./ac. of solution.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 5. (iv) (a) and (b) 33' × 33'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1958 only. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1101 lb./ac. (ii) 177.6 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>
Av. yield	1070	1103	1127	1103

S.E./mean = 79.4 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 56(399).**

**Site :- Govt. Late Paddy Res. Sub-Stn., Pachperwa.**

**Type :- 'D'.**

Object :—To study the effect of insecticidal sprayings against stem borer of Paddy.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Light loam to loam. (b) N.A. (iii) 23.6.1956/25. 26.7.1956. (iv) (a) N.A. (b) Transplanting. (c) to (e) N.A. (v) N.A. (vi) T—9. (vii) to (ix) N.A. (x) 8.12.1956.

## 2. TREATMENTS :

6 spraying treatments :  $T_0$ =Control,  $T_1$ =D.D.T. 0.5% suspension,  $T_2$ =Parathion 0.25%,  $T_3$ =Dieldrin 0.75 lb./ac.,  $T_4$ =Endrine 1.00 lb./ac. and  $T_5$ =Diazinon 0.1%.

1st application in nursery beds on 23.7.1956 and 2nd application in field on 21.9.1956.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 5. (iv) (a) and (b) 1/40 ac. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Number of plants, adults, larvae, egg mass and yield of grain. (iv) (a) 1956—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

## Grain

(i) 1546 lb./ac. (ii) 126.8 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$T_0$	$T_1$	$T_2$	$T_3$	$T_4$	$T_5$
Av. yield	1437	1421	1659	1456	1731	1573

S.E./mean = 56.7 lb./ac.

## Dead heart counts (stem borer)

(i) 65.5 dead hearts/plot. (ii) 15.7 dead hearts/plot. (iii) Treatment differences are significant. (iv) Av. number of dead hearts/plot.

Treatment	$T_0$	$T_1$	$T_2$	$T_3$	$T_4$	$T_5$
Av. number	82.8	68.4	53.4	69.2	50.2	69.0

S.E./mean = 7.0 dead hearts/plot.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 57(407).**

**Site :- Govt. Late Paddy Res. Sub-Stn., Pachperwa. Type :- 'D'.**

Object :—To study the effect of insecticidal sprays to control stem borer of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Light loam to loam. (b) N.A. (iii) 1.7.1957/4, 5.8.1957. (iv) (a) N.A. (b) (b) Transplanting. (c) to (e) N.A. (v) N.A. (vi) T—9. (vii) to (ix) N.A. (x) 5.12.1957.

## 2. TREATMENTS :

6 insecticidal sprays :  $T_0$ =Control,  $T_1$ =0.25% Parathion,  $T_2$ =0.5% D.D.T.,  $T_3$ =1.3 lb./ac. of actual Endrine,  $T_4$ =0.1% Diazinon and  $T_5$ =Mixture of 0.75 lb./ac. of actual Endrine and 0.05% Diazinon.

Insecticides sprayed at 40 gallons/ac.

4 applications in field on 8.9.1957, 28.9.1957, 16.10.1957 and 1.11.1957.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 5. (iv) (a) and (b) 60' × 18' 1½". (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Number of adults, larvae and egg mass, dead heart counts and yield of grain. (iv) (a) 1956—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

## Grain

(i) 1955 lb./ac. (ii) 228.0 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$T_0$	$T_1$	$T_2$	$T_3$	$T_4$	$T_5$
Av. yield	1699	2041	2020	1968	2086	1917

S.E./mean = 101.9 lb./ac.

## Dead heart counts

(i) 141 dead hearts/plot. (ii) 25.5 dead hearts/plot. (iii) Treatment differences are not significant. (iv) Av. number of dead hearts/plot.

Treatment	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	T <sub>5</sub>
Av. number	201	128	129	136	121	134

S.E./mean = 11.4 dead hearts/plot.

**Crop :- Paddy (Kharif).**

**Ref :- 56(400).**

**Site :- Tarai State Farm, Phool bagh.**

**Type :- 'D'.**

Object :—To study the effect of insecticidal sprays against stem borer of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Clay loam. (b) N.A. (iii) N.A./12 and 13.7.1956. (iv) (a) N.A. (b) Transplanting. (c) to (e) N.A. (v) N.A. (vi) N. B—12. (vii) to (x) N.A.

## 2. TREATMENTS :

6 insecticidal sprays : T<sub>0</sub>=Control, T<sub>1</sub>=0.5% D.D.T. suspension, T<sub>2</sub>=0.25% Parathion, T<sub>3</sub>=Dieldrine emulsion at 0.75 lb./ac. of actual Dieldrine, T<sub>4</sub>=Endrine emulsion at 1 lb./ac. of actual Endrine and T<sub>5</sub>=0.1% Diazinon.

1st spraying was done in the nursery on 18.7.1956., 2nd spraying was done in the field on 7.9.1956.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 5. (iv) (a) 60'×18'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain and number of dead hearts. (iv) (a) 1956—N.A. (b) No (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

## Grain

(i) 1577 lb./ac. (ii) 376.6 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	T <sub>5</sub>
Av. yield	1702	1525	1525	1589	1549	1573

S.E./mean = 168.4 lb./ac.

## Dead heart counts (stem-borer)

(i) 23.6 dead hearts/plot. (ii) 15.5 dead hearts/plot. (iii) Treatment differences are not significant (iv) Av. number of dead hearts/plot.

Treatment	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	T <sub>5</sub>
Av. number	40.8	30.4	13.4	19.6	15.2	22.0

S.E./mean = 6.9 dead hearts/plot.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 54(232).**

**Site :- Allahabad Agri. Instt., Allahabad.**

**Type :- 'M'.**

Object :—To study the effect of N, P, K and MgSO<sub>4</sub> on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Wheat—Cowpea—Wheat. (b) Cowpea. (c) As per treatments. (ii) (a) Fine sandy loam. (b) Refer soil analysis, Allahabad. (iii) N.A. (iv) (a) N.A. (b) In lines. (c) to (e) N.A. (v) Cowpea as G.M. (vi) Kanpur—13. (vii) to (x) N.A.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)+one extra treatment.

(1) 2 levels of A/S :  $N_0=0$  and  $N_1=200$  lb./ac.

(2) 2 levels of Super :  $P_0=0$  and  $P_1=250$  lb./ac.

(3) 2 levels of Potash :  $K_0=0$   $K_1=100$  lb./ac.

Extra treatment : T= 300 lb./ac. of Magnesium sulphate with N.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) N.A. (b)  $36' \times 9'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Lodging due to rain on 22nd January to 4th February (ii) N.A. (iii) Yield of grain and straw and height of mature plants. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 2325 lb./ac. (ii) 109.9 lb./ac. (iii) Main effects of N, P and interactions  $N \times P$ , 'T vs. others' are highly significant. Interaction  $N \times P \times K$  is significant. (iv) Av. yield of grain in lb./ac.

T= 2172 lb./ac.

	$P_0$	$P_1$	Mean	$K_0$	$K_1$
$N_0$	2119	2436	2278	2337	2218
$N_1$	2428	2394	2411	2428	2394
Mean	2273	2415	2344	2382	2306
$K_0$	2312	2452			
$K_1$	2234	2378			

S.E. of any marginal mean = 27.5 lb./ac.

S.E. of body of any table = 38.9 lb./ac.

S.E. of T mean = 55.0 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 54(238).**

**Site :- Allahabad Agri. Instt., Allahabad.**

**Type :- 'M'.**

Object :-To study the effect of N, P and K on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sannhemp*. (c) Nil. (ii) (a) Fine sandy loam. (b) Refer soil analysis, Allahabad. (iii) N.A./29.10.1954 (iv) (a) N.A. (b) In lines. (c) to (e) N.A. (v) *Sannhemp* as G.M. (vi) N.P.—720. (vii) Irrigated. (viii) to (x) N.A.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 2 levels of A/S :  $N_0=0$  and  $N_1=200$  lb./ac.

(2) 2 levels of Super :  $P_0=0$  and  $P_1=250$  lb./ac.

(3) 2 levels of Potash :  $K_0=0$  and  $K_1=100$  lb./ac.

Fertilizers applied by broadcast.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) N.A. (b)  $36' \times 9'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yied of grain and straw and height of plants. (iv) (a) 1953—N.A. (b) and (c) N.A. (v) to (vii) Nil.

## 5. RESULTS :

(i) 2863 lb./ac. (ii) and (iii) N.A. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	K <sub>0</sub>	K <sub>1</sub>
N <sub>0</sub>	2839	2929	2884	2934	2834
N <sub>1</sub>	2880	2802	2841	2720	2962
Mean	2860	2866	2863	2827	2898
K <sub>0</sub>	2860	2794			
K <sub>1</sub>	2860	2937			

S.E. — N.A.

**Crop :- Wheat (Rabi).****Ref :- U.P. 58(255).****Site :- Allahabad Agri. Instt., Allahabad.****Type :- 'M'.**

Object :—To study the effect of trace elements and N on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Maize. (c) As per treatments. (ii) (a) Fine sandy loam. (b) Refer soil analysis, Allahabad. (iii) and (iv) N.A. (v) Super at 124 gms./litre + C/N at 144 gms./litre. (vi) to (ix) N.A. (x) 20.4.1959.

## 2. TREATMENTS :

**Main-plot treatments :**4 concentrations of N as A/S : N<sub>1</sub>=405, N<sub>2</sub>=437, N<sub>3</sub>=462 and N<sub>4</sub>=486 gms./litre.**Sub-plot treatments :**2 applications of trace elements : T<sub>1</sub>—With trace elements and T<sub>2</sub>—Without trace elements.In treatment T<sub>1</sub> a mixture of 3 trace elements (C/S, Borax and Ammo. Molybdate) at 156 gms./litre was applied.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots, replication ; 2 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 31' × 20'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Grain yield. (iv) (a) 1958—N.A. (b) and (c) N.A. (v) to (vii) Nil.

## 5. RESULTS :

(i) 606.0 lb./ac. (ii) (a) 228.5 lb./ac. (b) 148.4 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	N <sub>4</sub>	Mean
T <sub>1</sub>	574	674	669	624	635
T <sub>2</sub>	664	529	565	551	577
Mean	619	602	617	588	606

S.E. of difference of two

1. N marginal means = 114.2 lb./ac.
2. T marginal means = 52.5 lb./ac.
3. T means at the same level of N = 104.9 lb./ac.
4. N means at the same level of T = 136.2 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 59(283).****Site :- Allahabad Agri. Instt., Allahabad.****Type :- 'M'.**

Object :—To study the effect of trace-elements and N on Wheat

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Maize. (c) As per treatments. (ii) (a) Fine sandy loam. (b) Refer soil analysis, Allahabad. (iii) and (iv) N.A. (v) Super at 124 gms/litre+C/N at 144 gms./litre. (vi) to (x) N.A.

**2. TREATMENTS to 4. GENERAL :**

Same as in expt. no. 58(255) on page 156.

**5. RESULTS :**

(i) 1878 lb./ac. (ii) (a) 385.6 lb./ac. (b) 252.8 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	N <sub>4</sub>	Mean
T <sub>1</sub>	1780	2069	1567	1771	1797
T <sub>2</sub>	2015	2087	1952	1784	1960
Mean	1898	2078	1760	1778	1878

S.E. of difference of two

1. N marginal means = 192.8 lb./ac.
2. T marginal means = 89.4 lb./ac.
3. T means at the same level of N = 178.8 lb./ac.
4. N means at the same level of T = 230.5 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 58(258).****Site :- Allahabad Agri. Instt., Allahabad.****Type :- 'M'.**

Object :— To study the effect of N and P on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Maize. (c) N.A. (ii) (a) Fine sandy loam. (b) Refer soil analysis, Allahabad. (iii) N.A. (iv) (a) and (b) N.A. (c) 35 srs./ac. (d) 24 rows/plot. (e) N.A. (v) to (ix) N.A. (x) 23.4.1959.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 3 levels of N as A/S : N<sub>0</sub>=0, N<sub>1</sub>=42.5 and N<sub>2</sub>=47.5 lb./ac.(2) 3 levels of P<sub>2</sub>O<sub>5</sub> as Super P<sub>0</sub>=0, P<sub>1</sub>=16.6 and P<sub>2</sub>=22.6 lb./ac.**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 9. (b) 58'×56'. (iii) 4. (iv) (a) N.A. (b) 18'×16'. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1958 only. (b) and (c) N.A. (v) to (vii) Nil.

**5. RESULTS :**

(i) 851 lb./ac. (ii) 295.1 lb./ac. (iii) Main effect of N alone is significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	886	915	749	850
N <sub>1</sub>	619	691	769	693
N <sub>2</sub>	939	1017	1070	1009
Mean	815	874	863	851

S.E. of any marginal mean = 85.2 lb./ac.  
S.E. of body of table = 147.6 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 59(277).**

**Site :- Allahabad Agri. Instt., Allahabad.**

**Type :- 'M'.**

Object :— To study the effect of different methods of urea application on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Fine sandy loam. (b) Refer soil analysis, Allahabad. (iii) to (x) N.A.

**2. TREATMENTS :**

7 methods of application of 50 lb./ac. of N as Urea :  $M_0$ =Control,  $M_1$ =Full dose at pre-sowing,  $M_2$ =Full dose as top dressing,  $M_3$ =Full dose as foliar application,  $M_4$ = $\frac{1}{2}$  dose at pre-sowing+ $\frac{1}{2}$  dose as top dressing,  $M_5$ = $\frac{1}{2}$  dose at pre-sowing+ $\frac{1}{2}$  dose as foliar application and  $M_6$ = $\frac{1}{2}$  dose as top dressing+ $\frac{1}{2}$  dose as foliar application.

Foliar spray of 6% solution of Urea applied on leaves.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 7. (b)  $117' \times 36'$ . (iii) 4. (iv) (a) and (b)  $36' \times 15'$ . (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Plant height, tillers, dry weight, final stand, and grain yield. (iv) (a) 1959—N.A. (b) and (c) N.A. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1366 lb./ac. (ii) 265.1 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	$M_0$	$M_1$	$M_2$	$M_3$	$M_4$	$M_5$	$M_6$
Av. yield	925	1574	1392	1413	1431	1376	1452

S.E./mean = 132.6 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 54(146).**

**Site :- Reg. Res. Stn., Amrukh.**

**Type :- 'M'.**

Object :— To study the effect of N, P and lime on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) *Parwa* and *kabar*. (b) N.A. (iii) N.A. (iv) (a) 2 ploughings (b) Drilling. (c) 25 to 30 srs./ac. (d) and (e) N.A. (v) 40 lb./ac. of  $K_2O$  as Pot. Sul. (vi) P<sub>5</sub>—591. (vii) Irrigated. (viii) and (ix) N.A. (x) 9.4.1955.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

- (1) 2 levels of N as A/S :  $N_0=0$  and  $N_1=75$  lb./ac.
- (2) 2 levels of  $P_2O_5$  as Super :  $P_0=0$  and  $P_1=50$  lb./ac.
- (3) 2 levels of lime as gypsum :  $C_0=0$  and  $C_1=60$  lb./ac.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a)  $41' \times 29'$ . (b)  $38' \times 26'$ . (v)  $1\frac{1}{2}' \times 1\frac{1}{2}'$ . (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Light attack of smut and rust. (iii) Grain yield. (iv) (a) and (b) N.A. (c) Nil. (v) (a) Varanasi, Atarra and Kalianpur. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1602 lb./ac. (ii) 418.9 lb./ac. (iii) Main effect of P alone is highly significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	C <sub>0</sub>	C <sub>1</sub>
N <sub>0</sub>	1115	1951	1533	1484	1582
N <sub>1</sub>	1382	1958	1670	1662	1678
Mean	1248	1955	1602	1573	1630
C <sub>0</sub>	1171	1975			
C <sub>1</sub>	1326	1934			

S.E. of any marginal mean = 104.7 lb./ac.

S.E. of body of any table = 148.1 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 55(198).**

**Site :- Reg. Res. Stn., Amrukh.**

**Type :- 'M'.**

Object :— To study the effect of N, P and lime on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) *Parwa* and *kabar*. (b) N.A. (iii) N.A. (iv) (a) 8 ploughings by *bakhar*. and one by *desi* plough. (b) By *desi* seed drill. (c) 41.6 srs./ac. (d) and (e) N.A. (v) Compost at 100 mds./ac. (vi) Pb.—591. (vii) Irrigated. (viii) and (ix) N.A. (x) 9.4.1956.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 2 levels of N as A/S : N<sub>0</sub>=0 and N<sub>1</sub>=50 lb./ac.

(2) 2 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0 and P<sub>1</sub>=40 lb./ac.

(3) 2 levels of lime as gypsum : C<sub>0</sub>=0 and C<sub>1</sub>=60 lb./ac.

Half of N applied at sowing and half at tillering (3 weeks after germination) P<sub>2</sub>O<sub>5</sub> applied by placen ert 3" to 4" deep in soil behind the plough 6 to 7 days before sowing. Lime applied 2 to 3 days before sowing.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 1/44.4 ac. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Slight attack by orange rust. (iii) Yield of grain. (iv) (a) 1955—contd. (b) and (c) N.A (v) (a) Bahraich, Faizabad, Atarra, Dilkusha and Kalianpur. (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1771 lb./ac. (ii) 113.1 lb./ac. (iii) Main effects of N, P and interaction N×P are highly significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	C <sub>0</sub>	C <sub>1</sub>
N <sub>0</sub>	1083	2146	1615	1618	1612
N <sub>1</sub>	1536	2320	1928	1943	1913
Mean	1310	2233	1771	1780	1762
C <sub>0</sub>	1306	2255			
C <sub>1</sub>	1314	2211			



S.E. of any marginal mean = 28.3 lb./ac.  
S.E. of body of any table = 40.0 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 56(397).**

**Site :- Reg. Res. Stn., Amrukh.**

**Type :- 'M'.**

Object :—To study the effect of N, P and lime on the yield of Wheat.

**1. BASAL CONDITION :**

(i) (a) to (c) N.A. (ii) (a) *Kabar*. (b) N.A. (iii) to (x) N.A.

**2. TREATMENTS :**

Same as in expt. no. 55(198) on page 159.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 38'×31'. (b) 35'×28'. (v) 1½'×1½'. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain. (iv) 1955—contd. (b) and (c) N.A. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1870 lb./ac. (ii) 133.1 lb./ac. (iii) Main effect of P and interactions N×P, N×C, P×C and N×P×C are highly significant. Main effects of N and C are significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	C <sub>0</sub>	C <sub>1</sub>
N <sub>0</sub>	1710	1916	1813	1954	1672
N <sub>1</sub>	1286	2569	1928	1902	1953
Mean	1498	2242	1870	1928	1812
C <sub>0</sub>	1811	2046			
C <sub>1</sub>	1185	2439			

S.E. of any marginal mean = 33.3 lb./ac.  
S.E. of body of any table = 47.1 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 56(99)**

**Site :- Reg. Res. Stn., Amrukh.**

**Type :- 'M'.**

Object :—To study the effect of N and P on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) and (c) N.A. (ii) (a) *Kabar*. (b) N.A. (iii) to (x) N.A.

**2. TREATMENTS :**

All combinations of (1) and (2),

(1) 4 sources of N applied at 18 lb./ac. : S<sub>0</sub>=0 (control), S<sub>1</sub>=A/S, S<sub>2</sub>=A/N and S<sub>3</sub>=Urea.

(2) 2 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0 and P<sub>1</sub>=25 lb./ac.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 1/80 ac. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) to (vii) N.A.

## 5. RESULTS :

(i) 4330 lb./ac. (ii) 97.6 lb./ac. (iii) Main effects of S and P are highly significant. (vi) Av. yield of grain in lb./ac.

	S <sub>0</sub>	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean
P <sub>0</sub>	3019	3523	3849	4143	3634
P <sub>1</sub>	3998	5111	5313	5683	5026
Mean	3508	4317	4581	4913	4330

S.E. of S marginal mean = 34.5 lb./ac.

S.E. of P marginal mean = 24.4 lb./ac.

S.E. of body of table = 48.8 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 57(139).**

**Site :- Reg. Res. Stn., Amrukh.**

**Type :- 'M'.**

Object :- To study the effect of P on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) *Kabar*. (b) N.A. (iii) 27.10.1957. (iv) (a) 2 *bakharings* and 1 ploughing by victory plough. (b) Line sowing. (c) 40 srs./ac. (d) and (e) N.A. (v) Nil. (vi) Pb—591. (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 28.3.1958.

## 2. TREATMENTS :

5 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0, P<sub>1</sub>=30, P<sub>2</sub>=60, P<sub>3</sub>=90 and P<sub>4</sub>=120 lb./ac.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) and (b) 36' × 16½'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) and (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 987 lb./ac. (ii) 97.9 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	P <sub>4</sub>
Av. yield	881	832	1038	1001	1185

S.E./mean = 49.0 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 57(128).**

**Site :- Reg. Res. Stn., Amrukh.**

**Type :- 'M'.**

Object :- To study the effect of P on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai*. (c) N.A. (ii) (a) Light *kabar*. (b) N.A. (iii) 27.10.1957. (iv) (a) 2 ploughings, 3 plankings and 1 *palewa*. (b) In lines behind the plough by local seed drill. (c) 45 srs./ac. (d) and (e) N.A. (v) G.M. by *sanai* at 9000 lb./ac. (vi) Pb—591. (vii) Irrigated. (viii) N.A. (ix) Nil. (x) 28.3.1958.

## 2. TREATMENTS :

Same as in expt. no. 57(139) on page 161.

$P_2O_5$  placed deep in bands in *sanai* manured field on 20.10.1957.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b)  $66' \times 102.5'$ . (iii) 4. (iv) (a) and (b)  $66' \times 16.5'$ . (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. (b) N.A. (ii) Yield of grain and straw. (iv) to (vii) Nil.

## 5. RESULTS :

(i) 1976 lb./ac. (ii) 194.4 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$P_0$	$P_1$	$P_2$	$P_3$	$P_4$
Av. yield	1760	1670	2080	2010	2360

S.E./mean = 97.2 lb./ac.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 57(356).**

**Site :- Reg. Res. Stn., Amrukh.**

**Type :- 'M'.**

Object :- To study the effect of P on moong and residual effect thereof on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Moong*. (c) As per treatments. (ii) (a) *Parwa* and *kabar*. (b) N.A. (iii) 9.11.1957. (iv) (a) 2 principal cultivations and 2 plankings. (b) By *desi* seed drill. (c) 82.4 srs./ac. (d) and (e) N.A. (v) *Moong* as G.M. (vi) Pb—591. (vii) Irrigated. (viii) and (ix) N.A. (x) 29.3.1958.

## 2. TREATMENTS :

4 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=40$ ,  $P_2=80$  and  $P_3=120$  lb./ac.

$P_2O_5$  applied to *moong* during *kharif* 1957.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 1/39.6 ac. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Orange rust (leaf smut). (iii) Yield of grain and straw. (iv) to (vii) Nil.

## 5. RESULTS :

(i) 1648 lb./ac. (ii) 198.0 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$P_0$	$P_1$	$P_2$	$P_3$
Av. yield	1382	1522	1742	1945

S.E./mean = 80.8 lb./ac.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 57(221).**

**Site :- Reg. Res. Stn., Amrukh.**

**Type :- 'M'.**

Object :- To study the effect of N and P on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow. (c) Nil. (ii) (a) Light *kabar*. (b) N.A. (iii) N.A. (iv) (a) 1 ploughing by victory plough, 2 *desi* ploughings and 1 *palewa*. (b) In lines behind the plough by local seed drill. (c) 45 srs./ac. (d) and (e) N.A. (v) Nil. (vi) Pb—591. (vii) Irrigated. (viii) N.A. (ix) Nil. (x) 28.3.1958.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N as A/S :  $N_0=0$ ,  $N_1=25$  and  $N_2=50$  lb./ac.

(2) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=30$  and  $P_2=60$  lb./ac.

Manures applied on 26.10.1957. N applied as surface dressing and  $P_2O_5$  placed deep in bands.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 9. (b)  $66' \times 169'$ . (iii) 4. (iv) (a) and (b)  $66' \times 16.5'$ . (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) N.A. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1501 lb./ac. (ii) 137.8 lb./ac. (iii) Main effects of N and P are highly significant. (iv) Av. yield of grain lb./ac.

	$P_0$	$P_1$	$P_2$	Mean
$N_0$	1160	1330	1600	1363
$N_1$	1370	1660	1680	1570
$N_2$	1300	1600	1810	1570
Mean	1277	1530	1697	1501

S.E. of any marginal mean = 39.8 lb./ac.

S.E. of body of table = 68.9 lb./ac.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 57(140).**

**Site :- Reg. Res. Stn., Amrukh.**

**Type :- 'M'.**

Object :—To study the effect of N and P on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) *Kabar* soil. (b) N.A. (iii) 26.10.1957. (iv) (a) 2 *bakharings* and 1 ploughing by *desi* plough. (b) Line sowing. (c) 40 srs./ac. (d) and (e) N.A. (v) Nil. (vi) Pb—591. (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 28.3.1958.

## 2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 57(221) on page 162.

Time and method of application N.A.

## 4. GENERAL :

(i) Good. (ii) Smut and rust. (iii) Yield of grain. (iv) to (vii) Nil.

## 5. RESULTS :

(i) 750 lb./ac. (ii) 69.8 lb./ac. (iii) Main effects of N and P are highly significant. (iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	$P_2$	Mean
$N_0$	581	678	650	636
$N_1$	668	830	802	767
$N_2$	804	834	905	848
Mean	684	781	786	750

S.E. of any marginal mean

= 20.1 lb./ac.

S.E. of body of table

= 34.9 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 57(138).****Site :- Reg. Res. Stn , Amrukh.****Type :- 'M'.**

Object :—To study the effect of N and P on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Jowar*. (c) Nil. (ii) (a) *Kabar* soil. (b) N.A. (iii) 23.11.1957. (iv) (a) 1 ploughing by *desi* plough and 3 *bakharings*. (b) Line sowing. (c) 40 srs./ac. (d) 9" between rows. (e) N.A. (v) N.A. (vi) Pb.—591. (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 2.4.1958.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 3 levels of N as A/S :  $N_0=0$ ,  $N_1=30$  and  $N_2=60$  lb./ac.(2) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=20$  and  $P_2=40$  lb./ac.**3. DESIGN :**(i) Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a)  $42' \times 26'$ . (b)  $39' \times 23'$ . (v)  $1\frac{1}{2}' \times 1\frac{1}{2}'$ . (vi) Yes.**4. GENERAL :**

(i) Good. (ii) Smut rust. (iii) Yield of grain. (iv) to (vii) Nil.

**5. RESULTS :**

(i) 1457 lb./ac. (ii) 128.2 lb./ac. (iii) Main effect of N is highly significant and main effect of P is significant. (iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	$P_2$	Mean
$N_0$	1125	1250	1103	1159
$N_1$	1508	1558	1591	1552
$N_2$	1465	1759	1754	1659
Mean	1366	1522	1483	1457

S.E. of any marginal mean

= 37.0 lb./ac.

S.E. of body of table

= 64.1 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 57(135).****Site :- Reg. Res. Stn., Amrukh.****Type :- 'M'.**

Object :—To study the effect of different methods of application of N, P and K on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Cotton. (c) N.A. (ii) (a) *Kabar* and *parwa* soil. (b) N.A. (iii) 4.11.1957. (iv) (a) 2 *bakharings*. (b) Line sowing. (c) 40 srs./ac. (d) and (e) N.A. (v) N.A. (vi) Pb.—591. (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 2.4.1958.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 3 fertilizers :  $F_1=50$  lb./ac. of N as A/S,  $F_2=40$  lb./ac. of  $P_2O_5$  as Super and  $F_3=40$  lb./ac. of  $K_2O$  as Pot. Sul.(2) 3 methods of application :  $M_1$ =Broadcast,  $M_2$ =Placement and  $M_3$ =Mixed with seed.

## 3 DESIGN :

(i) Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 42'×26'. (b) 39'×23'. (v) 1½'×1½'. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) to (vii) Nil.

## 5. RESULTS :

(i) 1399 lb./ac. (ii) 336.2 lb./ac. (iii) Main effect of F alone is significant. (iv) Av. yield of grain in lb./ac.

	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	Mean
F <sub>1</sub>	1687	1603	1673	1654
F <sub>2</sub>	1273	1308	1064	1215
F <sub>3</sub>	1216	1369	1395	1327
Mean	1392	1427	1377	1399

S.E. of any marginal mean = 97.1 lb./ac.  
 S.E. of body of table = 168.1 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 58(130).****Site :- Reg. Res. Stn., Amrukh.****Type :- 'M'.**

Object :—To study the effect of N and P on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) *Kabar* soil. (b) N.A. (iii) 23.10.1958, (iv) (a) 3 *bakharings*. (b) Line sowing. (c) 40 srs /ac. (d) and (e) N.A. (v) 11 mds./ac. of compost. (vi) Pb.—591. (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 12.4.1959.

## 2. TREATMENTS :

All combinations of (1) and (2)+one control

(1) 3 sources of N at 30 lb./ac. : S<sub>1</sub>=A/S, S<sub>2</sub>=F.Y.M. and S<sub>3</sub>=½ A/S+½ F.Y.M.(2) 2 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0 and P<sub>1</sub>=40 lb./ac.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) and (b) 34'×16'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Poor. (ii) N.A. (iii) Yield of grain. (iv) to (vii) N.A.

## 5. RESULTS :

(i) 361 lb./ac. (ii) 143.7 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

Control= 358 lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean
P <sub>0</sub>	366	295	348	336
P <sub>1</sub>	396	400	361	386
Mean	381	348	354	361

S.E. of S marginal mean = 50.8 lb./ac.  
 S.E. of P marginal mean = 41.5 lb./ac.  
 S.E. of body of table or control mean = 71.8 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 59(147).****Site :- Reg. Res. Stn., Amrukh.****Type :- 'M'.**

Object :—To study the effect of N and P on the yield of Wheat.

**1. BASAL CONDITIONS :**(i) (a) to (c) N.A. (ii) (a) *Kabar* soil. (b) N.A. (iii) 27.10.1959. (iv) (a) 1 ploughing, 4 *bakharings* and 3 plankings. (b) Line sowing. (c) 40 srs./ac. (d) Rows 1' apart. (e) N.A. (v) Nil. (vi) Pb.—591. (vii) Irrigated. (viii) and (ix) N.A. (x) 18.4.1960.**2. TREATMENTS :**2 manurial treatments :  $M_1=50$  lb./ac. of N+28 lb./ac. of  $P_2O_5$  in the form of fertilizer mixture and  $M_2=50$  lb./ac. of N as A/S+28 lb./ac. of  $P_2O_5$  as Super.**3. DESIGN :**

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 12. (iv) (a) and (b) 35'×21'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain. (iv) to (vii) N.A.

**5. RESULTS :**

(i) 1496 lb./ac. (ii) 251.2 lb./ac. (iii) Treatment difference is not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$M_1$	$M_2$
Av. yield	1491	1502

S.E./mean = 72.5 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 59(148).****Site :- Reg. Res. Stn., Amrukh.****Type :- 'M'.**

Object :—To study the effect of organic and inorganic manures on the yield of Wheat.

**1. BASAL CONDITIONS :**(i) (a) to (c) N.A. (ii) (a) *Kabar* soil. (b) N.A. (iii) 28.10.1959. (iv) (a) 1 ploughing, 4 *bakharings* and 3 plankings. (b) Line sowing. (c) 40 srs./ac. (d) Rows 1' apart. (e) N.A. (v) Nil. (vi) Pb.—591. (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 19.4.1960.**2. TREATMENTS :**10 manurial treatments :  $M_0$ =Control,  $M_1=25$  lb./ac. of N as A/S,  $M_2=50$  lb./ac. of N as A/S,  $M_3=25$  lb./ac. of N as A/S+40 lb./ac. of  $P_2O_5$  as Super,  $M_4=25$  lb./ac. of N as F.Y.M.,  $M_5=50$  lb./ac. of N as F.Y.M.,  $M_6=M_4+40$  lb./ac. of  $P_2O_5$  as Super.  $M_7=50$  lb./ac. of N half as F.Y.M and half as A/S,  $M_8=M_7+40$  lb./ac. of  $P_2O_5$  as Super and  $M_9=40$  lb./ac. of  $P_2O_5$  as Super.**3. DESIGN :**

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) and (b) 35'×21'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) and (b) N.A. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1270 lb./ac. (ii) 335.0 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$M_0$	$M_1$	$M_2$	$M_3$	$M_4$	$M_5$	$M_6$	$M_7$	$M_8$	$M_9$
Av. yield	1388	1181	1284	1196	1272	1309	1295	1113	1306	1358

S.E./mean = 167.5 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 54(100).****Site :- Reg. Res. Stn., Amrukh.****Type :- 'M'.**

Object :- To study the effect of N, P and F.Y.M. on the yield of Wheat.

**1. BASAL CONDITIONS :**(i) (a) Nil. (b) and (c) N.A. (ii) (a) *Kabar* soil. (b) N.A. (iii) to (x) N.A.**2. TREATMENTS :**8 manurial treatments :  $M_0$ =Control,  $M_1$ =60 lb./ac. of N as F.Y.M.,  $M_2$ =60 lb./ac. of N as A/S,  $M_3$ =50 lb./ac. of  $P_2O_5$  as Super,  $M_4$ =60 lb./ac. of N as A/S+50 lb./ac. of  $P_2O_5$  as Super,  $M_5$ =60 lb./ac. of N as F.Y.M.+50 lb./ac. of  $P_2O_5$  as Super,  $M_6$ =60 lb./ac. of N as F.Y.M.+60 lb./ac. of N as A/S and  $M_7$ =30 lb./ac. of N as F.Y.M.+30 lb./ac. of N as A/S+25 lb./ac. of  $P_2O_5$  as Super.**3. DESIGN :**

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 41'×28'. (b) 38'×25. (v) 1½'×1½'. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain. (iv) to (vii) N.A.

**5. RESULTS :**

(i) 2112 lb./ac. (ii) 124.8 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$M_0$	$M_1$	$M_2$	$M_3$	$M_4$	$M_5$	$M_6$	$M_7$
Av. yield	1391	1829	1836	1781	2186	2331	2694	2844

S.E./mean = 62.4 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 59(149).****Site :- Reg. Res. stn., Amrukh.****Type :- 'M'.**

Object :- To study the effect of N and different sources of P on the yield of Wheat.

**1. BASAL CONDITIONS :**(i) (a) to (c) N.A. (ii) (a) *Kabar* soil. (b) N.A. (iii) N.A. (iv) (a) 1 ploughing by *desi* plough and 1 *bakharing*. (b) Line sowing. (c) 50 srs./ac. (d) Rows 1' apart. (e) N.A. (v) 50 mds./ac. of F.Y.M. (vi) NP-198. (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 17.4.1960.**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 2 levels of N as A/S/N :  $N_0=0$  and  $N_1=25$  lb./ac.(2) 6 sources of  $P_2O_5$  at 25 lb./ac. :  $P_0=0$  (control),  $P_1$ =Super,  $P_2$ =B.M. (raw),  $P_3$ =B.M. (steamed),  $P_4=\frac{1}{2}$  Super +  $\frac{1}{2}$  B.M. (raw) and  $P_5=\frac{1}{2}$  Super +  $\frac{1}{2}$  B.M. (steamed).**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) and (b) 27'×20'. (v) Nil. (vi) Yes.

**GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain. (iv) to (vii) Nil.

**5. RESULTS :**

(i) 206 lb./ac. (ii) 69.9 lb./ac. (iii) Main effect of N alone is significant. (iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	$P_2$	$P_3$	$P_4$	$P_5$	Mean
$N_0$	166	178	233	202	140	142	177
$N_1$	256	249	181	222	251	248	234
Mean	211	214	207	212	196	195	206



S.E. of N marginal mean	= 14.3 lb./ac.
S.E. of P marginal mean	= 24.7 lb./ac.
S.E. of body of table	= 35.0 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 57(507).**

**Site :- Reg. Res. Stn., Amrukh.**

**Type :- 'M'.**

**Object :-**To study the effect of different methods of application of N with and without P on Wheat.

### 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) Nil. (ii) (a) *Kabar* and *Parwa* soil. (b) N.A. (iii) 29.10.1957. (iv) (a) 1 ploughing by victory plough. (b) Line sowing. (c) 40 srs./ac. (d) and (e) N.A. (v) N.A. (vi) Pb. -551. (vii) Irrigated. (viii) No. (ix) N.A. (x) 26.3.1958.

### 2. TREATMENTS :

**Main-plot treatments :**

All combinations at (1) and (2)

(1) 4 sources of N at 36 lb./ac. :  $S_0$ =Control,  $S_1$ =A/S,  $S_2$ =Urea and  $S_3$ =A/S/N.

(2) 3 methods of application :  $M_1$ =Broadcast,  $M_2$ =Top dressed,  $M_3$ = $\frac{1}{2}$  broadcast+ $\frac{1}{2}$  top dressed.

**Sub-plot treatments :**

2 levels of  $P_2O_5$  as Super :  $P_0$ =0 and  $P_1$ =18 lb./ac.

### 3. DESIGN :

(i) Split-plot. (ii) (a) 12 main-plots/replication ; 2 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a) and (b) 25'×22'. (v) Nil. (vi) Yes.

### 4. GENERAL :

(i) Good. (ii) Attack of smut and rust. (iii) Yield of grain. (iv) to (vii) N.A.

### 5. RESULTS :

(i) 1319 lb./ac. (ii) (a) 160.1 lb./ac. (b) 198.3 lb./ac. (iii) 'Control vs. others' is highly significant. Main effect of M and interaction  $S \times M \times P$  are significant. (iv) Av. yield of grain in lb./ac.

$S_0P_0$ =993 lb./ac. and  $S_0P_1$ =897 lb./ac.

	$S_1$	$S_2$	$S_3$	Mean	$M_1$	$M_2$	$M_3$
$P_0$	1410	1369	1381	1387	1284	1451	1425
$P_1$	1543	1438	1523	1501	1373	1536	1595
Mean	1476	1404	1452	1444	1329	1493	1510
$M_1$	1479	1204	1303				
$M_2$	1469	1586	1425				
$M_3$	1481	1421	1629				

S.E. of difference of two

1. S or M marginal means	= 65.3 lb./ac.
2. P marginal means	= 57.3 lb./ac.
3. S or M means at the same level of P	= 198.3 lb./ac.
4. P means at the same level of S or M	= 180.2 lb./ac.
S.E. of body of $S \times M$ table	= 80.0 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 59(540).****Site :- Reg. Res. Stn., Amrukh.****Type :- 'M'.****Object :-**To find out the most suitable time of application of N on Wheat.**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) *Kabar* and *parwa* soil. (b) N.A. (iii) 28.10.1959. (iv) (a) 1 ploughing by *desi* plough, 3 plankings and 3 *bakharings*. (b) Line sowing. (c) 50 srs./ac. (d) Rcws 1' apart. (e) N.A. (v) 20 lb./ac. of  $P_2O_5$  as Super. (vi) Pb-591. (vii) Irrigated. (viii) to (x) N.A.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)+ one control in each block

(1) 3 times of application of N :  $T_1$ =At sowing,  $T_2$ =At 1st irrigation and  $T_3$ = $\frac{1}{2}$  at scwiring +  $\frac{1}{2}$  at 1st irrigation.

(2) 3 sources of N :  $S_1$ =A/S,  $S_2$ =A/S/N and  $S_3$ =Urea.

(3) 2 levels of N :  $N_1$ =20 and  $N_2$ =40 lb./ac.

**3. DESIGN :**

(i)  $3^2 \times 2$  fact. confd. (ii) (a) 7 plots/block ; 3 blocks/replication. (b) N.A. (iii) 4. (iv) (a) and (b)  $30' \times 18'$ . (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain. (iv) to (vii) N.A.

**5. RESULTS :**

(i) 1350 lb./ac. (ii) 233.2 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

Control = 1327 lb./ac.

	$T_1$	$T_2$	$T_3$	Mean	$N_1$	$N_2$
$S_1$	1457	1305	1273	1345	1357	1333
$S_2$	1377	1373	1324	1358	1311	1404
$S_3$	1377	1263	1438	1359	1294	1424
Mean	1404	1314	1345	1354	1321	1387
$N_1$	1331	1298	1333			
$N_2$	1476	1329	1357			

S.E. of T or S marginal mean = 47.6 lb./ac.

S.E. of N marginal mean = 38.9 lb./ac.

S.E. of body of T×S table = 82.4 lb./ac.

S.E. of body of T×N or S×N table = 67.3 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 54(299).****Site :- Govt. Agri. Farm, Atarra.****Type :- 'M'.****Object :-**To study the effect of N, P and K on Wheat crop.**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Fallow. (c) Nil. (ii) (a) *Parwa* soil. (b) N.A. (iii) 3.11.1954. (iv) (a) 5 ploughings and 1 harrowing. (b) Local seed drill. (c) 45 srs./ac. (d) and (e) N.A. (v) Nil. (vi) Pb-591. (vii) Irrigated. (viii) N.A. (ix) 2.21". (x) 29.3.1955.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 2 levels of N as A/S :  $N_0=0$ , and  $N_1=30$  lb./ac.

(2) 2 levels of  $P_2O_5$  as Super :  $P_0=0$  and  $P_1=60$  lb./ac.

(3) 3 levels of  $K_2O$  as Pot. Sul. :  $K_0=0$ ,  $K_1=60$  and  $K_2=120$  lb./ac.

Manures applied on 22.10.1954.

## 3. DESIGN :

(i)  $2^2 \times 3$  fact. confd. (ii) (a) 6 plots/block ; 2 blocks/replication. (b) N.A. (iii) 4. (iv) (a) and (b)  $51'5\frac{1}{2}'' \times 21'2''$ . (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) and (b) No. (c) Nil. (v) (a) Bharari, Raya, Kalai, Matkota and Tissuhi. (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1405 lb./ac. (ii) 201.9 lb./ac. (iii) Main effect of N, P and interactions  $N \times P$  and  $P \times K$  are highly significant. (iv) Av. yield of grain in lb./ac.

	$K_0$	$K_1$	$K_2$	Mean	$P_0$	$P_1$
$N_0$	1349	1154	1109	1204	1029	1379
$N_1$	1474	1684	1659	1606	1449	1762
Mean	1412	1419	1384	1405	1239	1571
$P_0$	1099	1274	1344			
$P_1$	1724	1564	1424			

S.E. of K marginal mean	= 50.5 lb./ac.
S.E. of N or P marginal mean	= 41.2 lb./ac.
S.E. of body of $N \times K$ or $P \times K$ table	= 71.4 lb./ac.
S.E. of body of $N \times P$ table	= 58.3 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 55(174).**

**Site :- Govt. Agri. Farm, Atarra.**

**Type :- 'M'.**

**Object :-** To study the effect of different levels of N, P and K on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai*. (c) Nil. (ii) (a) *Parwa* soil. (b) N.A. (iii) 8.11.1955. (iv) (a) 5 ploughings. (b) In lines behind the plough. (c) 40 srs./ac. (d) and (e) N.A. (v) G.M. by *sanai*. (vi) Pb—591. (vii) Irrigated. (viii) N.A. (ix) 3.52". (x) 5.4.1956.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 2 levels of N as A/S :  $N_0=0$  and  $N_1=30$  lb./ac.

(2) 2 levels of  $P_2O_5$  as Super :  $P_0=0$  and  $P_1=40$  lb./ac.

(3) 2 levels of  $K_2O$  as Pot. Sul. :  $K_0=0$  and  $K_1=60$  lb./ac.

Manures applied on 7, 8.11.1955.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) and (b)  $66' \times 16.5'$ . (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1955—1957. (b) N.A. (c) Ni. (v) (a) Bharari. (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1598 lb./ac. (ii) 309.3 lb./ac. (iii) Main effect of N is highly significant and main effect of P is significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	K <sub>0</sub>	K <sub>1</sub>
N <sub>0</sub>	1360	1485	1422	1430	1415
N <sub>1</sub>	1585	1960	1773	1845	1700
Mean	1472	1723	1598	1638	1558
K <sub>0</sub>	1500	1775			
K <sub>1</sub>	1445	1670			

S.E. of any marginal mean = 77.3 lb./ac.

S.E. of body of table = 109.4 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 56(151).**

**Site :- Govt. Agri. Farm, Atarra.**

**Type :- 'M'.**

Object :—To study the effect of different levels of N, P and K on Wheat crop.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy nursery. (c) Cowdung, A/S and Super (doses—N.A.). (ii) (a) *Parwa* soil. (b) N.A. (iii) 15.11.1956. (iv) (a) 3 ploughings with watt plough, 2 harrowings with tractor and 1 ploughing by *desi* plough. (b) Line sowing behind the plough. (c) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) 2.15' (x) 11.4.1957.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 2 levels of N as A/S/N : N<sub>0</sub>=0 and N<sub>1</sub>=30 lb./ac.

(2) 2 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0 and P<sub>1</sub>=40 lb./ac.

(3) 2 levels of K<sub>2</sub>O as Mur. Pot. : K<sub>0</sub>=0 and K<sub>1</sub>=60 lb./ac.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) and (b) 66'×16.5'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Growth was good upto Feb., 1957. After that, due to rust, the growth was checked. (ii) Heavily infested with rust. (iii) Yield of grain and straw. (iv) (a) 1955—1957. (b) N.A. (c) Nil. (v) (a) Bharari. (b) N.A. (vi) N.A. (vii) Nil.

## 5. RESULTS :

(i) 629 lb./ac. (ii) 69.0 lb./ac. (iii) Main effects of N and P are highly significant and main effect of K is significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	K <sub>0</sub>	K <sub>1</sub>
N <sub>0</sub>	440	480	460	420	500
N <sub>1</sub>	740	855	798	780	815
Mean	590	668	629	600	658
K <sub>0</sub>	550	650			
K <sub>1</sub>	630	685			

S.E. of any marginal mean = 17.3 lb./ac.  
S.E. of body of table = 24.4 lb./ac.

**Crop :-** Wheat (*Rabi*).

**Ref :-** U.P. 57(224).

**Site :-** Govt. Agri. Farm, Atarra.

**Type :-** 'M'.

**Object :-** To study the effect of different levels of N, P and K on Wheat crop.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Maize. (c) N.A. (ii) (a) *Parwa* soil. (b) N.A. (iii) 30, 31.10.1957. (iv) (a) 5 ploughings by watt plough, 2 plankings and 1 *palewa*. (b) In lines behind the plough by local seed drill. (c) 40 srs./ac. (d) and (e) N.A. (v) Nil. (vi) Pb.—591. (vii) Irrigated. (viii) N.A. (ix) 1.25". (x) 30.3.1958.

**2. TREATMENTS :**

Same as in expt. no. 56(151) on page 171.

N applied as surface dressing, P<sub>2</sub>O<sub>5</sub> and K<sub>2</sub>O placed deep in bands.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 8. (b) 726' × 141'. (iii) 4. (iv) (a) and (b) 72.6' × 15'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Poor. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1955—1957. (b) No. (c) Nil. (v) (a) Bharari. (b) N.A. (vi) Nil. (vii) The yield was poor due to negligible rainfall, untimely irrigation and lack of weeding.

**5. RESULTS :**

(i) 475 lb./ac. (ii) 93.3 lb./ac. (iii) Main effect of N is highly significant. Main effects of P, K and interactions N × K and N × P × K are significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	K <sub>0</sub>	K <sub>1</sub>
N <sub>0</sub>	205	355	280	275	285
N <sub>1</sub>	655	685	670	590	750
Mean	430	520	475	432	518
K <sub>0</sub>	375	490			
K <sub>1</sub>	485	550			

S.E. of any marginal mean = 23.3 lb./ac.  
S.E. of body of any table = 33.0 lb./ac.

**Crop :-** Wheat (*Rabi*).

**Ref :-** U.P. 54(144).

**Site :-** Govt. Agri. Farm, Atarra.

**Type :-** 'M'.

**Object :-** To study the effect of N, P and lime on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) *Moong*. (c) N.A. (ii) (a) Light *kabar* soil. (b) N.A. (iii) 3.11.1954. (iv) (a) N.A. (b) Local seed drill. (c) 25 to 30 srs./ac. (d) and (e) N.A. (v) 40 lb./ac. of K<sub>2</sub>O as Pot. Sul. as surface dressing 2 to 3 days before sowing. *Moong* as G.M. ploughed in. (vi) N.A. (vii) Irrigated. (viii) and (ix) N.A. (x) 18.4.1955.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 2 levels of N :  $N_0=0$  and  $N_1=75$  lb./ac.

(2) 2 levels of  $P_2O_5$  :  $P_0=0$  and  $P_1=50$  lb./ac.

(3) 2 levels of lime :  $C_0=0$  and  $C_1=60$  lb./ac.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a)  $41' \times 32'$ . (b)  $38' \times 29'$ . (v)  $1\frac{1}{2}' \times 1\frac{1}{2}'$ . (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Nil. (iii) Yield of grain. (iv) (a) and (b) N.A. (c) Nil. (v) (a) Kalianpur, Jhansi and Varanasi. (b) Nil. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 343 lb./ac. (ii) 13.8 lb./ac. (iii) Main effects of N, P, C and interactions  $N \times P$ ,  $N \times C$  and  $N \times P \times C$  are highly significant. (iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	Mean	$C_0$	$C_1$
$N_0$	274	326	300	316	284
$N_1$	454	316	385	348	422
Mean	364	321	343	332	353
$C_0$	351	312			
$C_1$	377	330			

S.E. of any marginal mean = 3.4 lb./ac.

S.E. of body of any table = 4.9 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 55(201).**

**Site :- Govt. Agri. Farm, Atarra.**

**Type :- 'M'.**

Object :—To study the effect of N, P and lime on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Parwa soil. (b) N.A. (iii) 18.11.1955. (iv) (a) N.A. (b) Behind the plough. (c) 34 srs./ac. (d) and (e) N.A. (v) G.M. or F.Y.M. at 100 mds./ac. (vi) Pb.—591. (vii) Irrigated. (viii) and (ix) N.A. (x) 11.4.1956.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 2 levels of N as A/S :  $N_0=0$  and  $N_1=50$  lb./ac.

(2) 2 levels of  $P_2O_5$  as Super :  $P_0=0$  and  $P_1=40$  lb./ac.

(3) 2 levels of lime as gypsum :  $C_0=0$  and  $C_1=60$  lb./ac.

Half of N applied at sowing and half at germination.  $P_2O_5$  applied by placement 3" to 4" deep in soil behind the plough 6 to 7 days before sowing. Lime applied as surface dressing 2 to 3 days before sowing.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a)  $35' \times 34'$ . (b)  $32' \times 31'$ . (v)  $1\frac{1}{2}' \times 1\frac{1}{2}'$ . (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Affect of rust. (iii) Yield of grain. (iv) (a) 1955--contd. (b) and (c) N.A. (v) (a) Bahraich, Faizabad, Kalianpur, Amruk and Dilkusha. (b) Nil. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 689 lb./ac. (ii) 44.5 lb./ac. (iii) Main effects of N, P and C are highly significant and interactions  $P \times C$  and  $N \times P \times C$  are significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	C <sub>0</sub>	C <sub>1</sub>
N <sub>0</sub>	530	648	589	549	629
N <sub>1</sub>	738	838	788	776	800
Mean	634	743	689	663	714
C <sub>0</sub>	627	698			
C <sub>1</sub>	642	787			

S.E. of any marginal mean = 11.1 lb./ac.  
 S.E. of body of any table = 15.7 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 56(250).**

**Site :- Govt. Agri. Farm, Atarra.**

**Type :- 'M'.**

**Object :-**To study the effect of N, P and lime on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Moong*. (c) N.A. (ii) (a) *Parwa* soil. (b) N.A. (iii) 20.11.1956. (iv) (a) 4 ploughings by watt plough. (b) N.A. (c) 30 srs./ac. (d) and (e) N.A. (v) G.M. or F.Y.M. at 100 mds./ac. (vi) Pb.--591. (vii) Irrigated. (viii) and (ix) N.A. (x) 20.4.1957.

**2. TREATMENTS and 3. DESIGN :**

Sama as in expt. no. 55(201) on page 173.

**4. GENERAL :**

(i) N.A. (ii) Badly attacked by rust. (iii) Yield of grain. (iv) (a) 1955--contd. (b) and (c) N.A. (v)(a) Dilkusha, Faizabad, Bahraich, Kalianpur and Pratapgarh. (b) Nil. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 795 lb./ac. (ii) 14.0 lb./ac. (iii) Main effects of N, P and interactions N×P, N×C, P×C and N×P×C are highly significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	C <sub>0</sub>	C <sub>1</sub>
N <sub>0</sub>	583	666	625	660	585
N <sub>1</sub>	977	953	965	919	1011
Mean	780	810	795	790	800
C <sub>0</sub>	809	770			
C <sub>1</sub>	751	849			

S.E. of any marginal mean = 3.5 lb./ac.  
 S.E. of body of any table = 5.0 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 55(190).**

**Site :- Govt. Agri. Farm, Atarra.**

**Type :- 'M'.**

**Object :-**To study the effect of different levels of trace-elements on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) *Parwa* soil. (b) N.A. (iii) 18.11.1955. (iv) (a) 6 ploughings by watt plough and plankings. (b) Behind the plough. (c) 30.25 srs./ac. (d) and (e) N.A. (v) 60 lb./ac of N as A/S+40 lb./ac. of  $P_2O_5$  as Super. (vi) Pb.—591. (vii) Irrigated. (viii) and (ix) N.A. (x) 12.4.1956.

## 2. TREATMENTS :

10 trace-element treatments :  $T_0$ =Control,  $T_1$ =3 lb./ac. Cu as C/S,  $T_2$ =6 lb./ac. Cu as C/S,  $T_3$ =12 lb./ac. Cu as C/S,  $T_4$ =1 lb./ac. of B as borax,  $T_5$ =2 lb./ac. of B as borax,  $T_6$ =4 lb./ac. B as borax,  $T_7$ =1 lb./ac. of Zinc as Zn. Sul.,  $T_8$ =4 lb./ac. Zinc as Zn. Sul. and  $T_9$ =10 lb./ac. Zinc as Zn. Sul.

Trace element applied mixed with fine dry earth as surface dressing before sowing.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) 35'×27'. (b) 32'×24'. (v) 1½'×1½'. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Attack of rust. (iii) Yield of grain. (iv) (a) 1955—contd. (b) and (c) N.A. (v) (a) Kalianpur, Kalai and Etawah. (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 970 lb./ac. (ii) 56.7 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$T_0$	$T_1$	$T_2$	$T_3$	$T_4$	$T_5$	$T_6$	$T_7$	$T_8$	$T_9$
Av. yield	927	979	997	1023	740	813	1141	1028	992	1057

S.E./mean = 28.4 lb./ac.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 56(205).**

**Site :- Govt. Agri. Farm, Atarra.**

**Type :- 'M'.**

Object :—To study the effect of different levels of trace elements on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Moong*. (c) N.A. (ii) (a) *Parwa* soil. (b) N.A. (iii) 20.11.1956. (iv) (a) 4 ploughings by watt plough. (b) Behind the plough. (c) 30 srs./ac. (d) and (e) N.A. (v) 60 lb./ac. of N as A/S+40 lb./ac. of  $P_2O_5$  as Super+30 lb./ac. of  $K_2O$  as Pot. Sul. or Mur. Pot. (v) Pb.—591. (vii) Irrigated. (viii) and (ix) N.A. (x) 21.4.1951.

## 2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 55(190) on page 174

## 4. GENERAL :

(i) N.A. (ii) Severe attack of rust. (iii) Yield of grain. (iv) (a) 1955—contd. (b) and (c) N.A. (v) (a) Kalianpur, Bharari and Kalai. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 968 lb./ac. (ii) 25.9 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$T_0$	$T_1$	$T_2$	$T_3$	$T_4$	$T_5$	$T_6$	$T_7$	$T_8$	$T_9$
Av. yield	861	930	726	1079	892	859	1034	1114	1149	1032

S.E./mean = 13.0 lb./ac.



**Crop :- Wheat (Rabi).****Ref :- U.P. 54(122).****Site :- Govt. Agri. Farm, Bahraich.****Type :- 'M'.**

Object :—To study the effect of N, P and lime on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Bahraich. (ii) 4.11.1954. (iv) (a) 4 ploughings (b) N.A. (c) 25 to 30 srs./ac. (d) and (e) N.A. (v) 40 lb./ac. of  $K_2O$  as Pot. Sul. as surface dressing 2 to 3 days before sowing. (vi) C—13 (early). (vii) Irrigated. (viii) and (ix) N.A. (x) 6.4.1955.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 2 levels of N as A/S :  $N_0=0$  and  $N_1=75$  lb./ac.(2) 2 levels of  $P_2O_5$  as Super :  $P_0=0$  and  $P_1=50$  lb./ac.(3) 2 levels of CaO as gypsum :  $L_0=0$  and  $L_1=60$  lb./ac.

Lime, Super and A/S applied on 31.10.1954, 2.11.1954 and 22.1.1955 respectively.

**3. DESIGN :**(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a)  $41' \times 29'$ . (b)  $38' \times 26'$ . (v)  $1\frac{1}{2}' \times 1\frac{1}{2}'$ . (v) Yes.**4. GENERAL :**

(i) N.A. (ii) Wheat Yellow rust affected the crop. (iii) Yield of grain. (iv) (a) and (b) No. (c) N.I. (v) (a) Pratapgarh and Faizabad. (b) Nil. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1305 lb./ac. (ii) 176.1 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	Mean	$L_0$	$L_1$
$N_0$	1163	1342	1252	1246	1258
$N_1$	1319	1396	1358	1341	1375
Mean	1241	1369	1305	1294	1316
$L_0$	1224	1363			
$L_1$	1258	1375			

S.E. of any marginal mean

= 44.0 lb./ac.

S.E. of body of any table

= 63.2 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 55(202).****Site :- Govt. Agri. Farm, Bahraich.****Type :- 'M'.**

Object :— To study the effect of N, P and lime on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Sandy loam soil. (b) Refer soil analysis, Bahraich. (iii) 8.11.1955. (iv) (a) 6 ploughings. (b) By seed drill. (c) 25 to 30 srs./ac. (d) and (e) N.A. (v) F.Y M. at 100 md./ac. (vi) NP—760. (vii) Unirrigated. (viii) 1 weeding. (ix) N.A. (x) 5 to 10.4.1956.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 2 levels of N as A/S :  $N_0=0$ , and  $N_1=50$  lb./ac.(2) 2 levels of  $P_2O_5$  as Super :  $P_0=0$  and  $P_1=40$  lb./ac.(3) 2 levels of CaO as gypsum :  $L_0=0$  and  $L_1=60$  lb./ac.

Half of N applied at sowing and half at tillering (3 weeks after germination).  $P_2O_5$  applied by placement 3" to 4" deep in soil behind the plough 6 to 7 days before sowing and CaO applied as surface dressing 2 to 3 days before sowing.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 41'×28'. (b) 38'×25'. (v) 1½'×1½'. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1955—contd. (b) No. (c) Nil. (v) (a) Faizabad, Kalianpur, Atarra, Dilkusha and Amrukh. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1059 lb./ac. (ii) 148.0 lb./ac. (iii) Interaction N×P alone is significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	L <sub>0</sub>	L <sub>1</sub>
N <sub>0</sub>	1087	1000	1044	1090	997
N <sub>1</sub>	1010	1141	1075	1062	1089
Mean	1048	1070	1059	1076	1043
L <sub>0</sub>	1088	1064			
L <sub>1</sub>	1009	1077			

S.E. of any marginal mean = 37.0 lb./ac.  
S.E. of body of any table = 52.3 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 56(201).**

**Site :- Govt. Agri. Farm, Bahraich.**

**Type :- 'M'.**

Object :- To study the effect of N, P and lime on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Bahraich. (iii) to (x) N.A.

## 2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 55(202) on page 176.

## 5. RESULTS :

(i) 636 lb./ac. (ii) 155.9 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	L <sub>0</sub>	L <sub>1</sub>
N <sub>0</sub>	609	671	640	581	699
N <sub>1</sub>	583	684	633	649	617
Mean	596	677	636	615	658
L <sub>0</sub>	581	650			
L <sub>1</sub>	611	705			

S.E. of any marginal mean = 39.0 lb./ac.  
S.E. of body of any table = 55.1 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 54(109).**

**Site :- Govt. Agri. Farm, Bahraich.**

**Type :- 'M'.**

Object :- To study the effect of fertilizers applied by different methods on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Bahraich. (iii) 4.11.1954. (iv) (a) 3 ploughings. (b) By seed drill. (c) 40 srs./ac. (d) and (e) N.A. (v) G.M. (vi) C-13 (early). (vii) N.A. (viii) 4 weedings. (ix) N.A. (x) 4.4.1955.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 3 methods of application of fertilizers :  $M_1$ =Broadcast,  $M_2$ =Placement behind the plough in furrows and  $M_3$ =Drilled after mixing with seed.

(2) 4 fertilizers :  $F_1$ =60 lb./ac. of N as A/S,  $F_2$ =50 lb./ac. of  $P_2O_5$  as Super,  $F_3$ =40 lb./ac. of  $K_2O$  as Pot. Sul. and  $F_4$ =60 lb./ac. of CaO as gypsum.

Fertilizers applied on 3.10.1954, 2.11.1954 and 4.11.1954.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 3. (iv) (a)  $56' \times 19'$ . (b)  $53' \times 16'$ . (v)  $1\frac{1}{2}' \times 1\frac{1}{2}'$ . (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Yellow wheat rust appeared. (iii) Yield of grain. (iv) (a) 1954--contd. (b) No. (c) Nil. (v) (a) Pratapgarh and Faizabad. (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 799 lb./ac. (ii) 139.3 lb./ac. (iii) Main effect of M alone is highly significant. (iv) Av. yield of grain in lb./ac.

	$F_1$	$F_2$	$F_3$	$F_4$	Mean
$M_1$	689	742	647	687	691
$M_2$	755	810	801	839	801
$M_3$	872	1006	837	907	905
Mean	772	853	762	811	799

S.E. of M marginal mean = 40.2 lb./ac.  
 S.E. of F marginal mean = 46.4 lb./ac.  
 S.E. of body of table = 80.4 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 55(196).**

**Site :- Govt. Agri. Farm, Bahraich.**

**Type :- 'M'.**

Object :— To study the effect of fertilizers applied by different methods on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Bahraich. (iii) 9.11.1955. (iv) (a) 5 ploughings and 1 harrowing. (b) By seed drill. (c) 25 srs./ac. (d) and (e) N.A. (v) Nil. (vi) NP-76C. (vii) to (ix) N.A. (x) 4.4.1956.

**2. TREATMENTS :**

Same as in expt. no. 54(109) on page 177.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 3. (iv) (a)  $56' \times 18'$ . (b)  $55' \times 15'$ . (v)  $1\frac{1}{2}' \times 1\frac{1}{2}'$ . (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1954--contd. (b) No. (c) Nil. (v) (a) Pratapgarh, Hardoi and Faizabad. (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 503 lb./ac. (ii) 93.2 lb./ac. (iii) Main effect of F is highly significant and interaction  $M \times F$  is significant. (iv) Av. yield of grain in lb./ac.

	F <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>	F <sub>4</sub>	Mean
M <sub>1</sub>	462	615	468	412	489
M <sub>2</sub>	405	548	482	498	483
M <sub>3</sub>	342	842	462	498	536
Mean	403	668	471	469	503

S.E. of M marginal mean = 26.9 lb./ac.  
 S.E. of F marginal mean = 31.1 lb./ac.  
 S.E. of body of table = 53.8 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 56(252).**

**Site :- Govt. Agri. Farm, Bahraich.**

**Type :- 'M'.**

Object :—To study the effect of different methods of application of fertilizers on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Bahraich. (iii) 22.11.1956. (iv) (a) N.A. (b) By seed drill. (c) 34 srs./ac. (d) and (e) N.A. (v) Nil. (vi) NP—710. (vii) Unirrigated. (viii) and (ix) N.A. (x) 14.4.1957.

**2. TREATMENTS :**

Same as in expt. no. 54(109) on page 177.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 3. (iv) (a) 56'×18'. (b) 53'×15'. (v) 1½'×1½'. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Attacked by rust. (iii) Yield of grain. (iv) (a) 1954—contd. (b) No. (c) Nil. (v) (a) Pratapgarh, Hardoi and Faizabad. (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 429 lb./ac. (ii) 134.8 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	F <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>	F <sub>4</sub>	Mean
M <sub>1</sub>	352	366	423	413	389
M <sub>2</sub>	423	517	510	488	484
M <sub>3</sub>	404	397	387	467	414
Mean	393	427	440	456	429

S.E. of F marginal mean = 44.9 lb./ac.  
 S.E. of M marginal mean = 38.9 lb./ac.  
 S.E. of body of table = 77.8 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 56(160).**

**Site :- Govt. Agri. Farm, Bahraich.**

**Type :- 'M'.**

Object :—To study the residual effect of different levels of P applied in kharif on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Wheat—*Moong*—Wheat. (b) *Moong*. (c) As per treatments. (ii) (a) Sandy loam. (b) Refer soil analysis, Bahraich. (iii) to (x) N.A.

**2. TREATMENTS :**

4 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=40$ ,  $P_2=80$  and  $P_3=120$  lb./ac.

$P_2O_5$  applied by placement 3 to 4 inches deep in soil behind the plough 2 to 3 days before sowing of *moong* in *kharif*.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a)  $43' \times 36'$ . (b)  $40' \times 33'$ . (v)  $1\frac{1}{2}' \times 1\frac{1}{2}'$ . (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1956—N.A. (b) No. (c) Nil. (v) to (vii) N.A.

**5. RESULTS :**

(i) 518 lb./ac. (ii) 60.2 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$P_0$	$P_1$	$P_2$	$P_3$
Av. yield	238	340	611	883

S E./mean = 24.6 lb./ac.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 57(392).**

**Site :- Baradari Farm, Baradari.**

**Type :- 'M'.**

Object :—To study the effect of N, P and K on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Sandy loam to loam. (b) Refer soil analysis, Baradari. (iii) 7.11.1957. (iv) (a) 1 ploughing by tractor, 4 harrowings and 1 planking. (b) Behind the plough. (c) to (e) N.A. (v) Nil. (vi) and (vii) N.A. (viii) Nil. (ix) N.A. (x) 3rd week of April, 1958.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 2 levels of N :  $N_0=0$  and  $N_1=30$  lb./ac.

(2) 2 levels of  $P_2O_5$  :  $P_0=0$  and  $P_1=40$  lb./ac.

(3) 2 levels of  $K_2O$  :  $K_0=0$  and  $K_1=60$  lb./ac.

Manures applied on 6.11.1957.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 8. (b)  $49.5' \times 197'$ . (iii) 4. (iv) (a) and (b)  $49.5' \times 22'$ . (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Ordinary. (ii) Brownish rust observed. Some plants in each plot attacked by black smut. (iii) Yield of grain and straw. (iv) (a) 1957 only. (b) No. (c) Nil. (a) Phoolbagh. (b) N.A. (vi) Nil. (vii) Crop harvested too late. Rats damaged the crop. Weeds were observed in the field.

**5. RESULTS :**

(i) 1664 lb./ac. (ii) 187.0 lb./ac. (iii) Main effects of N and K are highly significant. (iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	Mean	$K_0$	$K_1$
$N_0$	1565	1425	1495	1430	1560
$N_1$	1870	1795	1832	1700	1965
Mean	1718	1610	1664	1565	1762
$K_0$	1590	1540			
$K_1$	1845	1680			

S.E. of any marginal mean = 46.7 lb./ac.  
S.E. of body of any table = 66.1 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 54(298).**

**Site :- State Mechanised Farm, Bharari.**

**Type :- 'M'.**

Object :—To study the effect of N, P and K on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Fallow. (c) Nil. (ii) (a) *Parwa* soil. (b) Refer soil analysis, Bharari. (iii) 21.10.1954.  
(iv) (a) 4 ploughings and 1 harrowing with tractor. (b) Behind the plough in lines. (c) 32 srs./ac. (d) and  
(e) N.A. (v) Nil. (vi) Pb.—591 (medium). (vii) Irrigated. (viii) and (ix) N.A. (x) 28.3.1955.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 2 levels of N as A/S :  $N_0=0$  and  $N_1=30$  lb./ac.

(2) 2 levels of  $P_2O_5$  as Super :  $P_0=0$  and  $P_1=60$  lb./ac.

(3) 3 levels of  $K_2O$  as Pot. Sul. :  $K_0=0$ ,  $K_1=60$  and  $K_2=120$  lb./ac.

Fertilizers applied on 13.10.1954 and 21.10.1954.

**3. DESIGN :**

(i)  $2^2 \times 3$  fact. confd. ( $N \times P$  and  $N \times P \times K$  are partially confd.). (ii) (a) 6 plots/block ; 2 blocks/replication.  
(b) N.A. (iii) 4. (iv) (a) and (b)  $33' \times 33'$ . (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1953—1954. (b) N.A. (c) Nil. (v) (a) Atarra, Raya, Kalai, Matkota and Tissuhi. (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1253 lb./ac. (ii) 161.7 lb./ac. (iii) Main effects of N, P and interaction  $N \times P$  are highly significant. (iv) Av. yield of grain in lb./ac.

	$K_0$	$K_1$	$K_2$	Mean	$P_0$	$P_1$
$N_0$	1145	1135	1210	1163	1.80	1147
$N_1$	1295	1405	1330	1343	1170	1517
Mean	1220	1270	1270	1253	1175	1332
$P_0$	1150	1200	1175			
$P_1$	1290	1340	1365			

S.E. of N or P marginal mean = 33.0 lb./ac.  
S.E. of K marginal mean = 40.4 lb./ac.  
S.E. of body of  $N \times K$  or  $P \times K$  table = 57.2 lb./ac.  
S.E. of body of  $N \times P$  table = 46.7 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 55(172).**

**Site :- State Mechanised Farm, Bharari.**

**Type :- 'M'.**

Object :—To study the effect of different levels of N, P and K on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) *Sanai*. (c) Nil. (ii) (a) *Parwa* soil. (b) Refer soil analysis, Bharari. (iii) 10.11.1955. (iv) (a) 1 ploughing and 2 harrowings by tractor. (b) In lines behind the plough. (c) 40 srs./ac. (d) and (e) N.A. (v) G.M. with *sanai*. (vi) Pb.—591. (vii) Irrigated. (viii) N.A. (ix) 2.27". (x) 18.4.1956.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 2 levels of N as A/S :  $N_0=0$  and  $N_1=30$  lb./ac.

(2) 2 levels of  $P_2O_5$  as Super :  $P_0=0$  and  $P_1=40$  lb./ac.

(3) 2 levels of  $K_2O$  as Pot. Sul. :  $K_0=0$  and  $K_1=60$  lb./ac.

Manuring done on 9.11.1955.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) and (b)  $66' \times 16.5'$ . (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Not satisfactory. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1955—1957. (b) N.A. (c) Nil. (v) (a) *Atarra*. (b) N.A. (vi) Nil. (vii) Heavy weeds, no proper irrigation arrangement, water lodging and low moisture content in the field resulted in poor germination and growth.

**5. RESULTS :**

(i) 787 lb./ac. (ii) 114.1 lb./ac. (iii) Main effects of N and P are highly significant. (iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	Mean	$K_0$	$K_1$
$N_0$	580	735	657	660	655
$N_1$	790	1045	917	955	880
Mean	685	890	787	807	767
$K_0$	680	935			
$K_1$	690	845			

S.E. of any marginal mean = 28.5 lb./ac.

S.E. of body of any table = 40.2 lb./ac.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 56(149).**

**Site :- State Mechanised Farm, Bharari.**

**Type :- 'M'.**

**Object :-** To study the effect of N, P and K on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) *Sanai*. (c) Nil. (ii) (a) Heavy *parwa* soil. (b) Refer soil analysis, Bharari. (iii) 6.11.1956. (iv) (a) 1 tractor ploughing, 2 harrowings and 1 intercultural operation with spike tooth harrow. (b) In lines. (c) 40 srs./ac. (d) and (e) N.A. (v) *Sanai* as G.M. (vi) Pb.—591. (vii) Irrigated. (viii) N.A. (ix) 1.79". (x) 8 to 20.4.1957.

**2. TREATMENTS :**

Same as in expt. no. 55(172) on page 181.

N applied as surface dressing,  $P_2O_5$  and  $K_2O$  placed in bands.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 8. (b)  $66' \times 153'$ . (iii) 4. (iv) (a) and (b)  $66' \times 16.5'$ . (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Very good. (ii) Infested with rust. (iii) Yield of grain and straw. (iv) (a) 1955—1957. (b) N.A. (c) Nil. (v) (a) *Atarra*. (b) N.A. (vi) The season became wet and cloudy in the month of March, 1957. (vii) Nil.

## 5. RESULTS :

(i) 1561 lb./ac. (ii) 101.8 lb./ac. (iii) Main effects of N and P are highly significant and effect of K is significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	K <sub>0</sub>	K <sub>1</sub>
N <sub>0</sub>	1310	1490	1400	1330	1470
N <sub>1</sub>	1600	1845	1722	1695	1750
Mean	1455	1667	1561	1512	1610
K <sub>0</sub>	1400	1625			
K <sub>1</sub>	1510	1710			

S.E. of any marginal mean = 25.4 lb./ac.

S.E. of body of any table = 36.0 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 57(225).**

**Site :- State Mechanised Farm, Bharari.**

**Type :- 'M'.**

Object :—To study the effect of N, P and K on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Maize. (c) N.A. (ii) (a) *Parwa* soil. (b) Refer soil analysis, Bharari. (iii) 3, 4.11.1957. (iv) (a) 1 disc ploughing, 2 offset harrowings, 1 cultivator, 1 harrowing and 1 *palewa*. (b) In lines behind the plough by local seed drill. (c) 40 srs./ac. (d) and (e) N.A. (v) Nil. (vi) Pb.—591. (vii) Irrigated. (viii) 1 hoeing and 1 interculturing. (ix) 0.52". (x) 3.4.1958.

## 2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 55(172) on page 181.

## 4. GENERAL :

(i) Good. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1955—1957. (b) N.A. (c) Nil. (v) (a) Atarra. (b) N.A. (vi) Low rainfall. (vii) Nil.

## 5. RESULTS :

(i) 1547 lb./ac. (ii) 164.9 lb./ac. (iii) Main effect of N is highly significant and interaction N×K is significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	K <sub>0</sub>	K <sub>1</sub>
N <sub>0</sub>	1390	1354	1372	1229	1515
N <sub>1</sub>	1654	1790	1722	1745	1699
Mean	1522	1572	1547	1487	1607
K <sub>0</sub>	1470	1504			
K <sub>1</sub>	1574	1640			

S.E. of any marginal mean = 41.2 lb./ac.

S.E. of body of any table = 58.1 lb./ac.



**Crop :- Wheat (Rabi).****Ref :- U.P. 54(138).****Site :- State Mechanised Farm, Bharari.****Type :- 'M'.**

Object :—To study the effect of different levels of trace-elements on the yield of Wheat.

**1. BASAL CONDITIONS :**

i) (a) to (c) N.A. (ii) (a) *Parwa* soil. (b) Refer soil analysis, Bharari. (iii) 25.10.1954. (iv) (a) 1 ploughing with *desi* plough and 2 harrowings. (b) Behind the plough. (c) 25 to 30 srs./ac. (d) and (e) N.A. (v) 60 lb./ac. of N as A/S+40 lb./ac. of  $P_2O_5$  as Super+30 lb./ac. of  $K_2O$  as Pot. Sul. and 30 lb./ac. of CaO as gypsum. (vi) N.A. (vii) Irrigated. (viii) and (ix) N.A. (x) 9.4.1958.

**2. TREATMENTS :**

10 trace-element treatments :  $T_0$ =Control,  $T_1$ =3 lb./ac. of Cu,  $T_2$ =6 lb./ac. of Cu,  $T_3$ =12 lb./ac. of Cu,  $T_4$ =1 lb./ac. of B,  $T_5$ =2 lb./ac. of B,  $T_6$ =4 lb./ac. of B,  $T_7$ =1 lb./ac. of Zn,  $T_8$ =4 lb./ac. of Zn and  $T_9$ =10 lb./ac. of Zn.

Cu applied as C/S, B as Borax and Zn as Zinc Sul. mixed with fine dry earth as surface dressing a day before sowing.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) 42'×23'. (b) 39'×20'. (v) 1½'×1½'. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1954—contd. (b) N.A. (c) Nil. (v) (a) Lucknow, Kalianpur, Atarra and Kalai. (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1941 lb./ac. (ii) 27.4 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	$T_0$	$T_1$	$T_2$	$T_3$	$T_4$	$T_5$	$T_6$	$T_7$	$T_8$	$T_9$
Av. yield	2334	1849	1838	1817	2011	1784	2341	1788	1587	2061

S.E./mean = 13.7 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 55(192).****Site :- State Mechanised Farm, Bharari.****Type :- 'M'.**

Object :—To study the effect of different levels of trace-elements on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) *Sanai*—Wheat. (b) *Sanai*. (c) N.A. (ii) (a) *Parwa* soil. (b) Refer soil analysis, Bharari. (iii) 28.11.1955. (iv) (a) 1 ploughing and 3 harrowings. (b) Broadcasting. (c) 30 srs./ac. (d) and (e) N.A. (v) 60 lb./ac. of N as A/S. (b) Pb.—591. (vii) Irrigated. (viii) and (ix) N.A. (x) 26.4.1956.

**2. TREATMENTS and 3. DESIGN :**

Same as in expt. no. 54(138) above.

C/S, Borax and Zinc Sul. contain 25.4%, 9.4% and 22.7% of Cu, B and Zn respectively.

**4. GENERAL :**

(i) N.A. (ii) Attack of orange rust on the leaves in latter stage. (iii) Yield of grain. (iv) (a) 1954—contd. (b) No. (c) Nil. (v) (a) Kalianpur, Atarra and Kalai. (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 946 lb./ac. (ii) 181.3 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$T_0$	$T_1$	$T_2$	$T_3$	$T_4$	$T_5$	$T_6$	$T_7$	$T_8$	$T_9$
Av. yield	948	919	855	1005	962	1063	969	984	854	898

S.E./mean = 90.6 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 56(206).****Site :- State Mechanised Farm, Bharari.****Type :- 'M'.**

Object :—To study the effect of different levels of trace-elements on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) *Sanai*—Wheat. (b) *Sanai*. (c) N.A. (ii) (a) *Parwa* soil. (b) Refer soil analysis, Bharari. (iii) 12.11.1956. (iv) (a) 1 ploughing and 2 harrowings. (b) Behind the plough. (c) 25 to 30 srs./ac. (d) and (e) N.A. (v) 60 lb./ac. of N as A/S+40 lb./ac. of  $P_2O_5$  as Super+30 lb./ac. of  $K_2O$  as Mur. Pot. (vi) Pb.—591. (vii) Irrigated. (viii) and (ix) N.A. (x) 6.4.1957.

**2. TREATMENTS to 4. GENERAL :**

Same as in expt. no. 54(138) on page 184.

**5. RESULTS :**

(i) 960 lb./ac. (ii) 267.2 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	T <sub>5</sub>	T <sub>6</sub>	T <sub>7</sub>	T <sub>8</sub>	T <sub>9</sub>
Av. yield	1034	1300	951	937	858	743	1066	1091	1056	560

S.E./mean = 133.6 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 54(212).****Site :- B.R. College Insttl. Res. Farm, Bichpuri.****Type :- 'M'.**

Object :—To study the effect of different G.M. crops grown with and without P on the yield of succeeding crop of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) and (c) As per treatments. (ii) (a) Sandy loam. (b) Refer soil analysis, Bichpuri. (iii) 4.10.1954. (iv) (a) 4 harrowings with tractor driven disc harrow. (b) Behind the plough. (c) 80 lb./ac. (d) and (e) N.A. (v) G.M. crops turned in. (vi) Pb.—591. (vii) Irrigated (viii) Ridge making. (ix) 21.2". (x) 11.4.1955.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 6 G.M. crops :  $G_1=Sanai$ ,  $G_2=Moong$ ,  $G_3=Lobia$ ,  $G_4=Urd$ ,  $G_5=Lobia$  and  $G_6=Guar$ .(2) 2 levels of  $P_2O_5$  as Super :  $P_0=0$  and  $P_1=60$  lb./ac.Fertilizers applied in *kharif* to G.M. crops.**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 15'×36', (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1954-1955 (treatments changed in 1955). (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1656 lb./ac. (ii) 84.9 lb./ac. (iii) All effects are highly significant. (iv) Av. yield of grain in lb./ac.

	G <sub>1</sub>	G <sub>2</sub>	G <sub>3</sub>	G <sub>4</sub>	G <sub>5</sub>	G <sub>6</sub>	Mean
P <sub>0</sub>	1925	1568	1449	1345	1264	1180	1455
P <sub>1</sub>	2455	1856	1731	1674	1794	1634	1857
Mean	2190	1712	1590	1510	1529	1407	1656

S.E. of G marginal mean = 30.0 lb./ac.

S.E. of P marginal mean = 17.3 lb./ac.

S.E. of body of table = 42.4 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 55(206).****Site :- B.R. College Insttl. Res. Farm, Bichpuri.****Type :- 'M'.**

Object :—To study the effect of different G.M. crops grown with and without P on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) N.A. (b) and (c) As per treatments. (ii) (a) Sandy loam. (b) Refer soil analysis, Bichpuri. (iii) 7.11.1955. (iv) (a) 1 summer plough by soil turning plough, 2 ploughings by tractor harrow and 3 cultivations by tractor drawn harrow. (b) Behind the plough with bamboo spout. (c) 30 srs./ac. (d) N.A. (e) Nil. (v) G.M. turned in on 15.9.1955. (vi) Pb.—591. (vii) Irrigated. (viii) Ridge making and 1 weeding by *khurpi*. (ix) N.A. (x) 16.4.1956.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 6 G.M. crops :  $G_1 = \text{Smai}$ ,  $G_2 = \text{Cowpea}$ ,  $G_3 = \text{Moong (local)}$ ,  $G_4 = \text{Moong T-1}$ ,  $G_5 = \text{Urd}$  and  $G_6 = \text{Guar}$ .(2) levels of  $P_2O_5$  as Super :  $P_0 = 0$  and  $P_1 = 40$  lb./ac. $P_2O_5$  applied to previous G.M. crops.**3. DESIGN :**(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) N.A. (b)  $36' \times 15'$ . (v)  $1.5' \times 1.5'$ . (vi) Yes.**4. GENERAL :**

(i) Good. (ii) N.A. (iii) Height, number of leaves and yield grain. (iv) (a) 1954—1955. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) No original data and two way tables are available.

**5. RESULTS :**

(i) 1611 lb./ac. (ii) 119.7 lb./ac. (iii) Main effects of G and P are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$G_1$	$G_2$	$G_3$	$G_4$	$G_5$	$G_6$	$P_0$	$P_1$
Av. yield	1794	1814	1619	1553	1471	1414	1541	1681

S.E. of G marginal mean = 42.3 lb./ac.

S.E. of P marginal mean = 24.4 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 56(178).****Site :- B.R. College Insttl. Res. Farm, Bichpuri.****Type :- 'M'.**

Object :—To study the effect of different methods of application of Urea on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Jowar*. (c) N.A. (ii) (a) Light loam soil. (b) Refer soil analysis, Bichpuri. (iii) 1.11.1956. (iv) (a) 3 ploughings by tractor driven offset disc harrow and 3 plankings. (b) In furrows behind the plough. (c) 40 srs./ac. (d) 9" between rows. (e) N.A. (v) Nil. (vi) Pb.—591. (vii) Irrigated. (viii) 2 weedings. (ix) 4.98". (x) 6.4.1957.

**2. TREATMENTS :**

7 methods of application of N :  $M_0 = \text{Control}$ ,  $M_1 = \text{Full dose at pre-sowing}$ ,  $M_2 = \text{Full dose as top dressing}$ ,  $M_3 = \text{Full dose as leaf spray}$ ,  $M_4 = \frac{1}{2}$  dose at pre-sowing +  $\frac{1}{2}$  dose as top dressing  $M_5 = \frac{1}{2}$  dose at pre-sowing +  $\frac{1}{2}$  dose as leaf spray and  $M_6 = \frac{1}{2}$  dose as top dressing +  $\frac{1}{2}$  dose as leaf spray.

40 lb./ac. of N as Urea broadcast in pre-sowing and top dressing (4.12.1956) applications. 6% solution of Urea prepared in water sprayed on leaves in spray applications on 24, 31.12.1956 and 12, 15.1.1957.

**3. DESIGN :**(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a)  $26' \times 15'$ . (b)  $18' \times 12'$ . (v)  $4' \times 1.5'$ . (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Tillers, plant height and yield of grain. (iv) (a) 1956—1957. (b) No. (b) N.I. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1530 lb./ac. (ii) 124.5 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	M <sub>0</sub>	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	M <sub>4</sub>	M <sub>5</sub>	M <sub>6</sub>
Av. yield	1066	1461	1851	1633	1461	1539	1699

S.E./mean = 62.2 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 58(238).**

**Site :- B.R. College Insttl. Res. Farm, Bichpuri.**

**Type :- 'M'.**

**Object :-** To study the comparative efficiency of N applied direct to Wheat and G.M. with two legumes raised with and without P.

## 1. BASAL CONDITIONS :

(i) (a) Wheat—Urd+Moong—Wheat. (b) Urd+Moong. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Bichpuri. (iii) 1.11.1958. (iv) (a) 2 ploughings with tractor driven offset disc harrow and 1 *palewa*. (b) In lines behind the plough. (c) 35 srs./ac. (d) 9" apart. (e) N.A. (v) G.M. turned in. (vi) P<sub>t</sub>—591. (vii) Irrigated. (viii) Ridge making and 2 weedings. (ix) 30.43". (x) 13.4.1959.

## 2. TREATMENTS :

**Main-plot treatments :**

All combinations of (1) and (2)+a control (fallow)

(1) 2 legume crops : L<sub>1</sub>=Urd and L<sub>2</sub>=Moong.

(2) 3 levels of P<sub>2</sub>O<sub>5</sub> as Super applied to legumes : P<sub>0</sub>=0, P<sub>1</sub>=40 and P<sub>2</sub>=80 lb./ac.

**Sub-plot treatments :**

3 levels of N as A/S applied to Wheat : N<sub>0</sub>=0, N<sub>1</sub>=15 and N<sub>2</sub>=30 lb./ac.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 7 main-plots/block and 3 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 32'×18'. (b) 29'×15'. (v) 1.5'×1.5'. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) N.A. (iii) Grain and straw yield. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) No original data and two way tables are available.

## 5. RESULTS :

(i) 1471 lb./ac. (ii) (a) 185.0 lb./ac. (b) 222.0 lb./ac. (iii) Main effect of N and 'control vs. L' are highly significant. Other effects are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	Control	L <sub>1</sub>	L <sub>2</sub>	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>
Av. yield	1706	1447	1418	1457	1460	1381	1185	1479	1750

S.E. of difference of two

- |                     |                |
|---------------------|----------------|
| 1. L marginal means | = 50.3 lb./ac. |
| 2. P marginal means | = 61.7 lb./ac. |
| 3. N marginal means | = 74.0 lb./ac. |

**Crop :- Wheat (Rabi).**

**Ref :- U P. 58(240).**

**Site :- B.R. College Insttl. Res. Farm, Bichpuri.**

**Type :- 'M'.**

**Object :—** To study the effect of different methods of application of P at different levels on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) *Jowar*. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Bichpuri. (iii) 8, 9.11.1958. (iv) (a) 3 ploughings with tractor driven offset disc harrow followed by planking. (b) In lines behind the plough. (c) 30 srs./ac. (d) Lines 9" apart. (e) N.A. (v) As per treatments. (vi) Pb.—591 (late). (vii) Irrigated. (viii) Ridge making and 2 weedings. (ix) N.A. (x) 17.4.1959.

**2. TREATMENTS :**

All combinations of (1), (2) and (3) + a control

(1) 2 sources of P :  $S_1$  = Super and  $S_2$  = Ammo. Phos.

(2) 2 levels of  $P_2O_5$  :  $P_1$  = 20 and  $P_2$  = 40 lb./ac.

(3) 3 methods of application :  $M_1$  = Fertilizers were evenly sprinkled by broadcast,  $M_2$  = Fertilizers were drilled 2" to 5" deep in the soil with wooden spout attached in a country plough and  $M_3$  = The fertilizers were drilled as in  $M_2$  on both sides of the rows used for sowing

30 lb./ac. of N broadcast at sowing as A/S in plots treated with Super and control plot while in plots treated with Ammo. Phos. its N content was taken into consideration to make 30 lb./ac. of N.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 13. (b) N.A. (iii) 3. (iv) (a) 32' × 18'. (b) 29' × 15'. (v) 1½' × 1½'. (vi) Yes.

**4. GENERAL :**

(i) Normal. (ii) N.A. (iii) Grain and straw yield. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) No original data and two ways tables are available.

**5. RESULTS :**

(i) 1668 lb./ac. (ii) 166.2 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

Treatment	Control	$S_1$	$S_2$	$P_1$	$P_2$	$M_1$	$M_2$	$M_3$
Av. yield	1559	1665	1689	1644	1709	1650	1715	1666

S.E. of S or P marginal mean = 39.2 lb./ac.

S.E. of M marginal mean = 48.0 lb./ac.

S.E. of control mean = 96.0 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 59(402).**

**Site :- Usar Reclamation Farm, Chakeri.**

**Type :- 'M'.**

**Object :—** To study the effect of G.M. crops on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) and (c) As per treatments. (ii) (a) Saline alkaline soil. (b) Refer soil analysis, Chakeri. (iii) 24.11.1959. (iv) (a) 1 *pulewa*, 2 ploughings by meston plough followed by planking. (b) Behind the plough. (c) to (e) N.A. (v) to (x) N.A.

**2. TREATMENTS :**

6 G.M. treatments :  $G_1$  = *Sesbainia acculeata* (*dhaincha*) treated with culture of root nodules of *S. acculeata*,  $G_2$  = *S. speciosa*, treated with culture of root nodules of *S. speciosa*,  $G_3$  = *Crotalaria juncea* (*sanai*) treated with culture of root nodules of *sanai*,  $G_4$  = *Sesbainia acculeata* (seed sown as such),  $G_5$  = *S. speciosa* (seed sown as such) and  $G_6$  = *Crotalaria juncea* (seed sown as such).

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) and (b) 20'×22.5'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1959—contd. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 2644 lb./ac. (ii) 532.8 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	G <sub>1</sub>	G <sub>2</sub>	G <sub>3</sub>	G <sub>4</sub>	G <sub>5</sub>	G <sub>6</sub>
Av. yield	2688	2856	2564	2648	2806	2305

S.E./mean = 266.4 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 54(134).**

**Site :- Instt. of Crop Physiology, Dilkusha.**

**Type :- 'M'.**

Object :— To study the effect of trace-elements on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Dilkusha. (iii) N.A. (iv) (a) N.A. (b) Improved seed drill. (c) 25 to 30 srs./ac. (d) and (e) N.A. (v) N.A. (vi) Pb—591. (vii) to (x) N.A.

## 2. TREATMENTS :

10 trace-element treatments : T<sub>0</sub>=Control, T<sub>1</sub>=3 lb./ac. of Cu, T<sub>2</sub>=6 lb./ac. of Cu, T<sub>3</sub>=12 lb./ac. of Cu, T<sub>4</sub>=1 lb./ac. of B, T<sub>5</sub>=2 lb./ac. of B, T<sub>6</sub>=4 lb./ac. of B, T<sub>7</sub>=1 lb./ac. of Zn, T<sub>8</sub>=4 lb./ac. of Zn and T<sub>9</sub>=10 lb./ac. of Zn.

Trace-elements mixed with fine dry earth and applied as surface dressing a day before sowing.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) and (b) 35'×24'. (v) 1.5'×1.5'. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) and (b) No. (c) Nil. (v) (a) Bharari. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 695 lb./ac. (ii) 66.1 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	T <sub>5</sub>	T <sub>6</sub>	T <sub>7</sub>	T <sub>8</sub>	T <sub>9</sub>
Av. yield	640	847	573	809	697	670	710	767	703	590

S.E./mean = 33.0 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 55(197).**

**Site :- Instt. of Crop Physiology, Dilkusha.**

**Type :- 'M'.**

Object :—To study the effect of N, P<sub>2</sub>O<sub>5</sub> and Calcium on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai*. (c) N.A. (ii) (a) Sandy loam soil. (b) Refer soil analysis, Dilkusha. (iii) 28.10.1955. (iv) (a) N.A. (b) By seed drill. (c) to (e) N.A. (v) F.Y.M. at 100 mds./ac. (vi) C—13. (vii) Irrigated. (viii) and (ix) N.A. (x) 23 to 25.3.1956.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 2 levels of N as A/S :  $N_0=0$  and  $N_1=50$  lb./ac.

(2) 2 levels of  $P_2O_5$  as Super :  $P_0=0$  and  $P_1=40$  lb./ac.

(3) 2 levels of CaO as gypsum :  $C_0=0$  and  $C_1=60$  lb./ac.

N applied half at sowing and half at tillering (3 weeks after germination).  $P_2O_5$  applied by placement 3" to 4" deep in soil behind the plough 6 to 7 days before sowing and CaO applied as surface dressing 2 to 3 days before sowing.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 38' × 27'. (b) 34' × 23'. (v) 2' × 2'. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1955—contd. (b) and (c) N.A. (v) (a) Atarra, Bahraich, Faizabad, Kalianpur and Pratapgarh. (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 2276 lb./ac. (ii) 218.8 lb./ac. (iii) Main effect of N alone is highly significant. (iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	Mean	$C_0$	$C_1$
$N_0$	2004	2172	2088	2009	2166
$N_1$	2409	2519	2464	2406	2522
Mean	2206	2346	2276	2208	2344
$C_0$	2132	2283			
$C_1$	2280	2408			

S.E. of any marginal mean = 54.7 lb./ac.  
S.E. of body of any table = 77.3 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 56(203).**

**Site :- Instt. of Crop Physiology, Dilkusha.**

**Type :- 'M'.**

Object :—To study the effect of N, P and Calcium on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) G.M. crops. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Dilkusha. (i) 30.10.1956. (iv) (a) N.A. (b) Improved seed drill. (c) 35 srs./ac. (d) and (e) N.A. (v) G.M. (vi) G—3. (vii) to (x) N.A.

**2. TREATMENTS :**

Same as in expt. no. 55(197) on page 189.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 1/55.7 ac. (v) N.A. (vi) Yes.

**4. GENERAL :**

Same as in expt. no. 55(197) on page 189.

**5. RESULTS :**

(i) 1677 lb./ac. (ii) 198.3 lb./ac. (iii) Main effect of N and C are significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	C <sub>0</sub>	C <sub>1</sub>
N <sub>0</sub>	1497	1681	1589	1495	1683
N <sub>1</sub>	1749	1781	1765	1681	1849
Mean	1623	1731	1677	1588	1766
C <sub>0</sub>	1468	1708			
C <sub>1</sub>	1778	1755			

S.E. of any marginal mean = 49.6 lb./ac.  
S.E. of body of any table = 70.1 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 55(244).**

**Site :- Instt. of Crop Physiology, Dilkusha.**

**Type :- 'M'.**

Object :—To study the effect of soaking wheat seeds in nutrient solution on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) *Sanai*. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Dilkusha. (iii) 3.11.1955. (iv) (a) 7 ploughings. (b) Behind the plough through funnel. (c) 35 srs./ac. (d) N.A. (e) Nil. (v) G.M. + P<sub>2</sub>O<sub>5</sub> at 10 lb./ac. (vi) NP—710. (vii) Irrigated. (viii) and (ix) N.A. (x) 1.4.1956.

**2. TREATMENTS :**

8 seed soaking treatments : S<sub>1</sub>= Seeds unsoaked, S<sub>2</sub>= Seeds soaked in water, S<sub>3</sub>=Seeds soaked in boric acid 0.2% solution, S<sub>4</sub>=Seeds soaked in C/S 0.5% solution, S<sub>5</sub>=Seeds soaked in Zn. Sul. 0.5% solution, S<sub>6</sub>=Seeds soaked in Manganese sulphate 0.2% solution, S<sub>7</sub>=Seeds soaked in dihydrogen phosphate 2.5% solution and S<sub>8</sub>=Seeds soaked in A/N 2.5% solution.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 3. (iv) (a) 35'×23'. (b) 31'×19'. (v) 2'×2'. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Rust attack on lower leaves of the plants. (iii) Grain yield. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1552 lb/ac. (ii) 386.1 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>	S <sub>5</sub>	S <sub>6</sub>	S <sub>7</sub>	S <sub>8</sub>
Av. yield	1559	1452	1521	1014	1597	2028	1553	1693

S.E./mean = 222.9 lb/ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 56(195).**

**Site :- Instt. of Crop Physiology, Dilkusha.**

**Type :- 'M'.**

Object :—To study the effect of soaking wheat seeds in nutrient solution on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Dilkusha, (iii) N.A. (iv) (a) N.A. (b) Behind the plough in lines. (c) 25 to 30 srs./ac. (d) and (e) N.A. (v) N.A. (vi) NP—710. (vii) to (x) N.A.



**2. TREATMENTS :**

8 seed soaking treatments :  $S_1$  = Seeds unsoaked,  $S_2$  = Seeds soaked in water,  $S_3$  = Seeds soaked in boric acid solution.  $S_4$  = Seeds soaked in C/S solution,  $S_5$  = Seeds soaked in Zn. Sul. solution,  $S_6$  = Seeds soaked in Manganese Sulphate solution,  $S_7$  = Seeds soaked in Potassium dihydrogen phosphate solution and  $S_8$  = Seed soaked in A/N solution.

The concentrations of the solution are : Boric acid (0.1% solution), C/S (0.2% solution) and Manganese sulphate (0.1% solution)

Nutrient solution : Prepare solution by dissolving the required quantity of salt in water 1 to 2 days before sowing.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 1/73.9 ac. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1956—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1876 lb./ac. (ii) 470.0 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$S_1$	$S_2$	$S_3$	$S_4$	$S_5$	$S_6$	$S_7$	$S_8$
Av. yield	2040	1843	1685	1647	1957	2103	1907	1824

S.E./mean = 271.3 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 58(300).**

**Site :- Instt. of Crop Physiology, Dilkusha.**

**Type :- 'M'.**

Object :- To study the effect of N and P on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) *Sanai*—Wheat. (b) *Sanai*. (c) Nil. (ii) (a) Light sandy loam. (b) Refer soil analysis, Dilkusha. (iii) 8 to 10.11.1958, (iv) (a) 13 ploughings, cultivation and planking. (b) B<sub>2</sub> seed drill. (c) 35 srs./ac. (d) and (e) N.A. (v) *Sanai* as G.M. (vi) NP 110. (vii) Irrigated. (viii) and (ix) N.A. (x) 17, 18.4.1959.

**2. TREATMENTS :**

8 manurial treatments :  $M_0$  = Control,  $M_1$  = 50 lb./ac. of N as A/S,  $M_2$  = 50 lb./ac. of N as F.Y.M.,  $M_3$  = 40 lb./ac. of  $P_2O_5$  as Super,  $M_4$  =  $M_2 + M_3$ ,  $M_5$  =  $M_1 + M_3$ ,  $M_6$  = 25 lb./ac. of N as A/S + 25 lb./ac. of N as F.Y.M. and  $M_7$  =  $M_6 + M_3$ .

Manures applied on 10.11.1958.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 36' × 26'. (b) 33' × 23'. (v) 1.5' × 1.5'. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1215 lb./ac. (ii) 161.5 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$M_0$	$M_1$	$M_2$	$M_3$	$M_4$	$M_5$	$M_6$	$M_7$
Av. yield	1061	1183	1249	1170	1245	1236	1231	1345

S.E./mean = 80.7 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 58(303).****Site :- Instt. of Crop Physiology, Dilkusha.****Type :- 'M'.**

Object :—To study the effect of hormones and nutrients applied as foliar spray on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) *Sanai—Moong—Wheat*. (b) *Moong*. (c) N.A. (ii) (a) Light sandy loam. (b) Refer soil analysis, Dilkusha. (iii) 7.11.1958. (iv) (a) ploughings and cultivation. (b) By seed drill. (c) 35 srs./ac. (d) and (e) N.A. (v) *Moong* turned in +20 lb./ac. of  $P_2O_5$  as Super applied in two sprayings, at tillering and at pre flowering stage. (vi) NP—710. (vii) Irrigated. (viii) and (ix) N.A. (x) 20.4.1959.

**2. TREATMENTS :**

8 nutrient solutions :  $M_0$ =Control,  $M_1$ =I.A.A 0.005% solution,  $M_2$ =2, 4—D 0.05% solution  $M_3$ =Urea 0.2% solution,  $M_4$ =A/S 0.45% solution,  $M_5$ = $KH_2PO_4$  0.50% solution,  $M_6$ =Mn 0.02% solution and  $M_7$ =Cu 0.02% solution.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 27'×21'. (b) 24'×18'. (v) 1.5'×1.5'. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1362 lb./ac. (ii) 150.0 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$M_0$	$M_1$	$M_2$	$M_3$	$M_4$	$M_5$	$M_6$	$M_7$
Av. yield	1436	1264	1293	1313	1478	1329	1478	1309

S.E./mean = 75.0 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 57(351).****Site :- Instt of Crop Physiology, Dilkusha.****Type :- 'M'.**

Object :—To study the effect of different levels of N on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) *Sanai—Wheat*. (b) *Sanai*. (c) N.A. (ii) (a) Light sandy loam. (b) Refer soil analysis, Dilkusha. (iii) 29.10.1957. (iv) (a) 6 cultivations. (b) Behind the plough. (c) 35 srs./ac. (d) and (e) N.A. (v) *Sanai* as G.M. (vi) C—13. (vii) Irrigated. (viii) and (ix) N.A. (x) 7.4.1958.

**2. TREATMENTS :****Main-plot treatments :**

2 dates of application of N :  $D_1$ =28.10.1957 and  $D_2$ =20.11.1957.

**Sub-plot treatments :**

3 levels of N as A/S :  $N_0$ =0,  $N_1$ =25 and  $N_2$ =50 lb./ac.

**3. DESIGN :**

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 40'×25'. (b) 37'×22'. (v) 1½'×1½'. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1500 lb./ac. (ii) (a) 142.1 lb./ac. (b) 226.1 lb./ac. (iii) Main effect of N alone is significant. (iv) Av. yield of grain in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean
D <sub>1</sub>	—	1455	1668	1561
D <sub>2</sub>	—	1514	1975	1745
Mean	1194	1484	1822	—

S.E. of difference of two

1. D marginal means = 71.1 lb./ac.
2. N marginal means = 113.0 lb./ac.
3. N means at the same level of D = 159.9 lb./ac.
4. D means at the same level of N = 142.8 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 57(349).**

**Site :- Instt. of Crop Physiology, Dilkusha.**

**Type :- 'M'.**

Object :—To study the effect of different levels of N and P on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) *Sanai*—Wheat. (b) *Sanai*. (c) Nil. (ii) (a) Sandy loam soil. (b) Refer soil analysis, Dilkusha. (iii) 28.10.1957. (iv) (a) 9 ploughings. (b) By seed drill. (c) 30 srs. ac. (d) Rows 9" apart. (e) N.A. (v) N.A. (vi) NP—710. (vii) Irrigated. (viii) 1 hoeing. (ix) Nil. (x) 2 and 3.4.1958.

**2. TREATMENTS :**

All combinations of (1) and (2)

- (1) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=30 and N<sub>2</sub>=60 lb./ac.
- (2) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=20 and P<sub>2</sub>=40 lb./ac.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 37'×22'. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1540 lb./ac. (ii) 368.0 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	1331	1383	1407	1374
N <sub>1</sub>	1472	1541	1514	1509
N <sub>2</sub>	1698	1754	1765	1739
Mean	1500	1559	1562	1540

S.E. of any marginal mean = 106.2 lb./ac.

S.E. of body of table = 184.0 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 59(333).**

**Site :- Instt. of Crop Physiology, Dilkusha.**

**Type :- 'M'.**

Object :—To study the effect of different levels of N and P on the yield of Wheat.

## 1. BASAL CONDITIONS :

- (i) (a) Nil. (b) and (c) N.A. (ii) (a) Light sandy loam. (b) Refer soil analysis, Dilkusha. (iii) 3.11.1959.  
 (iv) (a) Ploughings, cultivations and plankings. (b) By seed drill. (c) 35 srs./ac. (d) and (e) N.A. (v) Nil.  
 (vi) NP—710. (vii) Irrigated. (viii) to (x) N.A.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N as A/S :  $N_0=0$ ,  $N_1=25$  and  $N_2=50$  lb./ac.

(2) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=20$  and  $P_2=40$  lb./ac.

Manures applied on 26.10.1959.

## 3. DESIGN :

- (i) Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a)  $24' \times 18'$ . (b)  $21' \times 15'$ . (v)  $1.5' \times 1.5'$ . (vi) Yes.

## 4. GENERAL :

- (i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1959—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

- (i) 990 lb./ac. (ii) 90.6 lb./ac. (iii) Main effects of N, P and interaction  $N \times P$  are highly significant. (iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	$P_2$	Mean
$N_0$	631	938	978	849
$N_1$	1000	1022	942	988
$N_2$	1093	1133	1169	1132
Mean	908	1031	1030	990

S.E. of any marginal mean = 26.2 lb./ac.

S.E. of body of table = 45.3 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 54(110).**

**Site :- Govt. Agri. Farm, Faizabad.**

**Type :- 'M'.**

Object :—To study the effect of application of fertilizers by different methods on the yield of Wheat.

## 1. BASAL CONDITIONS :

- (i) (a) to (c) N.A. (ii) (a) Loamy soil. (b) Refer soil analysis, Faizabad. (iii) 21.11.1954. (iv) (a) N.A. (b) By seed drill. (c) 25 to 30 srs./ac. (d) and (e) N.A. (v) N.A. (vi) NP—52. (vii) to (ix) N.A. (x) 26 to 29.4.1955.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 methods of application of fertilizers :  $M_1$ =Broadcast,  $M_2$ =Placement behind the plough in furrows, and  $M_3$ =Drilled and mixed with seed.

(2) 4 fertilizers :  $F_1=60$  lb./ac. of N as A/S,  $F_2=50$  lb./ac. of  $P_2O_5$  as Super,  $F_3=40$  lb./ac. of  $K_2O$  as Pot. Sul. and  $F_4=60$  lb./ac. of CaO as Gypsum.

Fertilizers applied on 20, 21.11.1954.

## 3. DESIGN :

- (i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 3. (iv) (a)  $56' \times 19'$ . (b)  $53' \times 16'$ . (v)  $1\frac{1}{2}' \times 1\frac{1}{2}'$ . (vi) Yes.

## 4. GENERAL :

- (i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1954—contd. (b) No. (c) Nil. (v) (a) Bahraich, Pratapgarh and Hardoi. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 186 lb./ac. (ii) 30.5 lb./ac. (iii) Main effect of M and interaction  $F \times M$  are highly significant. (iv) Av. yield of grain in lb./ac.

	F <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>	F <sub>4</sub>	Mean
M <sub>1</sub>	231	220	233	220	226
M <sub>2</sub>	225	161	93	110	147
M <sub>3</sub>	126	207	214	198	186
Mean	194	196	180	176	186

S.E. of F marginal mean = 14.36 lb./ac.  
 S.E. of M marginal mean = 12.44 lb./ac.  
 S.E. of body of table = 17.59 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 56(287).**

**Site :- Govt. Agri. Farm, Faizabad.**

**Type :- 'M'.**

Object :—To study the effect of application of fertilizers by different methods on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sugarcane. (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Faizabad. (iii) and (iv) N.A. (v) Nil. (vi) NP—760. (vii) Irrigated. (viii) and (ix) N.A. (x) 22 to 26.4.1957.

## 2. TREATMENTS :

Same as in expt. no. 54(110) on page 195.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 3. (iv) (a) 47'×21'. (b) 44'×18'. (v) 1½'×1½'. (vi) Yes.

## 4. GENERAL :

Same as in expt. no. 54(110) on page 195.

## 5. RESULTS :

(i) 818 lb./ac. (ii) 33.0 lb./ac. (iii) Main effect of M, F and interaction  $F \times M$  are highly significant. (iv) Av. yield of grain in lb./ac.

	F <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>	F <sub>4</sub>	Mean
M <sub>1</sub>	931	910	856	785	871
M <sub>2</sub>	884	846	891	653	818
M <sub>3</sub>	684	844	809	717	763
Mean	833	867	852	718	818

S.E. of M marginal mean = 9.5 lb./ac.  
 S.E. of F marginal mean = 11.0 lb./ac.  
 S.E. of body of table = 19.0 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 54(123).**

**Site :- Govt. Agri. Farm, Faizabad.**

**Type :- 'M'.**

Object :—To study the effect of N, P and Calcium on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loamy soil. (b) Refer soil analysis, Faizabad. (iii) 21.11.1954. (iv) (a) 5 ploughings. (b) N.A. (c) 25 to 30 srs./ac. (d) and (e) N.A. (v) 40 lb./ac. of  $K_2O$  as Pot. Sul. as surface dressing 2 to 3 days before sowing. (vi) N.A. (vii) Irrigated. (viii) and (ix) N.A. (x) 22 to 25.4.1955.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

- (1) 2 levels of N :  $N_0=0$  and  $N_1=75$  lb./ac.  
 (2) 2 levels of  $P_2O_5$  :  $P_0=0$  and  $P_1=50$  lb./ac.  
 (3) 2 levels of CaO :  $C_0=0$  and  $C_1=60$  lb./ac.

Super applied by placement 3" to 4" deep in soil behind the plough 6 to 7 days before sowing. Gypsum applied as surface dressing 2 to 3 days before sowing and A/S applied half at sowing and half at tillering stage (3 weeks after germination).

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 41'×29'. (b) 38'×26'. (v) 1½'×1½'. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1954—contd. (treatments changed in 1955). (t) No. (c) Nil. (v) (a) Bahraich, Kalianpur, Amrukh, Dilkusha and Atarra. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 283 lb./ac. (ii) 48.2 lb./ac. (iii) Main effect of N, P and interactions  $N \times P$ ,  $N \times P \times C$  are highly significant and effect of C is significant. (iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	Mean	$C_0$	$C_1$
$N_0$	152	141	146	157	136
$N_1$	294	546	420	455	385
Mean	223	343	283	306	260
$C_0$	235	377			
$C_1$	211	310			

S.E. of any marginal mean = 12.0 lb./ac.  
 S.E. of body of any table = 17.0 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 55(199).**

**Site :- Govt. Agri. Farm, Faizabad.**

**Type :- 'M'.**

Object :—To study the effect of N, P and Calcium on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Faizabad. (iii) 11.11.1955. (iv) (a) N.A. (b) By seed drill. (c) 25 to 30 srs./ac. (d) and (e) N.A. (v) F.Y.M. at 100 mds./ac. of F.Y.M. (vi) NP—760 (vii) Irrigated. (viii) and (ix) N.A. (x) 24 to 26.4.1956.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

- (1) 2 levels of N as A/S :  $N_0=0$  and  $N_1=50$  lb./ac.  
 (2) 2 levels of  $P_2O_5$  as Super :  $P_0=0$  and  $P_1=40$  lb./ac.  
 (3) 2 levels of CaO as gypsum :  $C_0=0$  and  $C_1=60$  lb./ac.

N applied half at sowing and half at tillering (3 weeks after germination),  $P_2O_5$  applied by placement 3" to 4" deep in soil behind the plough 6 to 7 days before sowing and CaO applied as surface dressing 2 to 3 days before sowing.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 41'×28'. (b) 38'×25'. (v) 1½'×1½'. (vi) Yes.

**4. GENERAL :**

Same as in expt. no. 54(123) on page 196.

**RESULTS :**

(i) 1479 lb./ac. (ii) 216.5 lb./ac. (iii) Main effect of P is highly significant and main effect of N is significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	C <sub>0</sub>	C <sub>1</sub>
N <sub>0</sub>	1276	1522	1399	1394	1405
N <sub>1</sub>	1413	1704	1558	1531	1586
Mean	1345	1613	1479	1462	1495
C <sub>0</sub>	1338	1587			
C <sub>1</sub>	1352	1639			

S.E. of any marginal mean = 54.1 lb./ac.

S.E. of body of any table = 76.5 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 56(204).**

**Site :- Govt. Agri. Farm, Faizabad.**

**Type :- 'M'.**

Object :—To study the effect of N, P and Calcium on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Wheat. (c) As per treatments. (ii) (a) Clayey loam soil. (b) Refer soil analysis, Faizabad. (iii) 10.11.1956. (iv) (a) N.A. (b) By seed drill. (c) 25 to 30 srs./ac. (d) and (e) N.A. (v) 100 mds./ac. of F.Y.M. (vi) NP—710. (vii) Irrigated. (viii) and (ix) N.A. (x) 17, 18.4.1957.

**2. TREATMENTS and 3. DESIGN :**

Same as in expt. no. 55(199) on page 197.

**4. GENERAL :**

(i) N.A. (ii) Attack of yellow rust. (iii) Yield of grain and *bhusa*. (iv) (a) 1954—contd. (b) No. (c) Nil. (v) (a) Dilkusha, Atarra, Bahraich, Kalianpur and Pratapgarh. (b) Nil. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 602 lb./ac. (ii) 95.0 lb./ac. (iii) Main effects of N, C and interactions N×C and N×P×C are highly significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	C <sub>0</sub>	C <sub>1</sub>
N <sub>0</sub>	498	546	522	541	503
N <sub>1</sub>	646	720	683	563	803
Mean	572	633	602	552	653
C <sub>0</sub>	531	574			
C <sub>1</sub>	613	692			

S.E. of any marginal mean = 23.8 lb./ac.

S.E. of body of any table = 33.6 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 54(202) .****Site :- Govt. Agri. Farm, Faizabad.****Type :- 'M'.**

Object :- To study the effect of N and P on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Clay loam soil. (b) Refer soil analysis, Faizabad. (iii) 9.11.1954.  
 (iv) (a) 7 ploughings and planking after every ploughing. (b) By seed drill. (c) 40 srs./ac. (d) 9" between rows. (e) N.A. (v) Nil. (vi) NP-52 (medium). (vii) Irrigated. (viii) N.A. (ix) 0.2".  
 (x) 3, 4.5.1955.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 3 levels of N as A/S :  $N_0=0$ ,  $N_1=30$  and  $N_2=60$  lb./ac.(2) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=60$  and  $P_2=120$  lb./ac.N applied by broadcast and  $P_2O_5$  behind the plough in bands on 8, 9.11.1954.**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) and (b) 36' x 24'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) and (b) No. (c) Nil. (v) (a) Pilkhini and Vararasi.  
 (b) Nil. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 630.5 lb./ac. (ii) 106.6 lb./ac. (iii) Main effect of N and P are highly significant. (iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	$P_2$	Mean
$N_0$	349	439	443	410
$N_1$	602	661	789	684
$N_2$	638	870	884	797
Mean	530	657	705	631

S.E. of any marginal mean = 25.1 lb./ac.

S.E. of body of table = 43.5 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 55(182).****Site :- Govt. Agri. Farm, Faizabad.****Type :- 'M'.**

Object :- To study the effect of N and P on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Loam soil. (b) Refer soil analysis, Faizabad. (iii) 10.11.1955. (iv)  
 (a) 4 ploughings by *praja* and 5 by *desi* plough. (b) By seed drill. (c) N.A. (d) Rows 9" apart. (e) N.A.  
 (v) Nil. (vi) NP-60 (medium). (vii) Irrigated. (viii) N.A. (ix) 0.7". (x) 11.4.1956.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 3 levels of N as A/S :  $N_0=0$ ,  $N_1=20$  and  $N_2=40$  lb./ac.(2) 4 levels of  $P_2O_5$  as triple Super :  $P_0=0$ ,  $P_1=20$ ,  $P_2=40$  and  $P_3=60$  lb./ac.N broadcast before sowing and  $P_2O_5$  placed deep in furrows on 8 and 9.11.1955.**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) and (b) 26' x 42'. (v) Nil. (vi) Yes.



## 4. GENERAL :

(i) Uniform germination and good stand. (b) N.A. (iii) Yield of grain and straw. (iv) (a) 1955—1956. (b) No. (c) Nil. (v) (a) Pilkhini and Varanasi. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 821 lb./ac. (ii) 68.8 lb./ac. (iii) Main effect of N alone is highly significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	Mean
N <sub>0</sub>	550	602	576	536	566
N <sub>1</sub>	500	901	909	934	911
N <sub>2</sub>	976	967	974	1022	984
Mean	809	823	820	831	821

S.E. of N marginal mean = 17.2 lb./ac.

S.E. of P marginal mean = 19.9 lb./ac.

S.E. of body of table = 34.4 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 56(157).**

**Site :- Govt. Agri. Farm, Faizabad.**

**Type :- 'M'.**

Object :— To study the effect of N and P on the yield of Wheat.

## 1. BASAL CONDITIONS:

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Loam soil. (b) Refer soil analysis, Faizabad. (iii) 16.11.1956. (iv) (a) 4 ploughings by *praja* plough, 5 applications of cultivator and double ploughing by elephant. (b) Sown in lines by seed drill. (c) 30 srs./ac. (d) Rows 9' apart. (e) N.A. (v) Nil. (vi) NP—760 (medium). (vii) Irrigated. (viii) Nil. (ix) 1.60". (x) 18.4.1957.

## 2. TREATMENTS:

All combinations of (1) and (2)

(1) 3 levels of N as A/S/N : N<sub>0</sub>=0, N<sub>1</sub>=20 and N<sub>2</sub>=40 lb./ac.

(2) 4 levels of P<sub>2</sub>O<sub>5</sub> as triple Super : P<sub>0</sub>=0, P<sub>1</sub>=20, P<sub>2</sub>=40 and P<sub>3</sub>=60 lb./ac.

N broadcast on surface and P<sub>2</sub>O<sub>5</sub> applied deep in furrows behind the plough.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) and (b) 42' × 24'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Light damage by rats to treatments N<sub>0</sub> P<sub>0</sub> and N<sub>2</sub> P<sub>3</sub> in replication I and N<sub>0</sub> P<sub>3</sub> in replication II. (iii) Yield of grain and straw. (iv) (a) 1955—1956. (b) No. (c) Nil. (v) (a) Pilkhini and Varanasi. (b) N.A. (vi) Nil. (vii) The sowing was delayed by a fortnight which had some effect on growth.

## 5. RESULTS :

(i) 824 lb./ac. (ii) 129.6 lb./ac. (iii) Main effect of N alone is highly significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	Mean
N <sub>0</sub>	489	513	462	539	501
N <sub>1</sub>	804	814	928	975	880
N <sub>2</sub>	1048	1151	1066	1099	1091
Mean	780	826	819	871	824

S.E. of N marginal mean	= 32.4 lb./ac.
S.E. of P marginal mean	= 37.4 lb./ac.
S.E. of body of table	= 64.8 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 57(391).**

**Site :- Govt. Agri. Farm, Faizabad.**

**Type :- 'M'.**

Object :— To study the effect of N, P and K on the yield of Wheat.

**1. BASAL CONDITIONS:**

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Light loam soil. (b) Refer soil analysis, Faizabad. (iii) 6.11.1957. (iv) (a) 4 ploughings by cultivator, 1 ploughing by *sabash* plough, 1 harrowing with disc harrow and 1 *palewa*. (b) Sown by seed drill. (c) 40 srs./ac. (d) 9" between rows. (e) N.A. (v) Nil. (vi) NP-7.0 (medium). (vii) Irrigated. (viii) N.A. (ix) 2.35". (x) 9.4.1958.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 2 levels of N as A/S/N :  $N_0=0$  and  $N_1=30$  lb./ac.

(2) 2 levels of  $P_2O_5$  as Super :  $P_0=0$  and  $P_1=40$  lb./ac.

(3) 2 levels of  $K_2O$  as Mur. Pot. :  $K_0=0$  and  $K_1=60$  lb./ac.

A/S/N broadcast, Super and Mur. Pot. placed deep in bands on 5.11.1957.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) and (b) 45' x 23'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good stand. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) and (b) No. (c) Nil. (v) (s) Tissuh. and Varanasi. (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1152 lb./ac. (ii) 144.2 lb./ac. (iii) Main effect of N alone is highly significant. (iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	Mean	$K_0$	$K_1$
$N_0$	849	831	840	883	796
$N_1$	1435	1494	1465	1424	1506
Mean	1142	1162	1152	1154	1151
$K_0$	1096	1211			
$K_1$	1188	1114			

S.E. of any marginal mean	= 36.0 lb./ac.
S.E. of body of any table	= 51.0 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 57(250).**

**Site :- Govt. Agri. Farm, Faizabad.**

**Type :- 'M'.**

Object :— To study the effect of different levels of P on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Dhaincha*. (c) Nil. (ii) (a) Loamy soil. (b) Refer soil analysis. Faizabad. (iii) 8.11.1957. (iv) (a) 4 ploughings by cultivator, 1 ploughing by *sabash* plough and 1 harrowing with disc harrow (b) Behind the plough. (c) 40 srs./ac. (d) Rows 9" apart. (e) N.A. (v) G.M. by *dhaincha*. +25 lb./ac. of N as A/S. (vi) NP-710 (medium). (vii) Irrigated. (viii) 2.35". (x) 5.4.1958.

## 2. TREATMENTS :

5 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=30$ ,  $P_2=60$ ,  $P_3=90$  and  $P_4=120$  lb./ac.  
 $P_2O_5$  placed deep in furrows before sowing.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) and (b) 42'×26'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good stand. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1957--1958. (b) No. (c) Nil. (v) (a) Tissuhi and Varanasi. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1269 lb./ac. (ii) 143.6 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$P_0$	$P_1$	$P_2$	$P_3$	$P_4$
Av. yield	799	1205	1337	1464	1482

S.E./mean = 71.8 lb./ac.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 58(198).**

**Site :- Govt. Agri. Farm, Faizabad.**

**Type :- 'M'.**

Object :—To study the effect of different levels of P on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Loamy soil. (b) Refer soil analysis, Faizabad. (iii) 16.11.1958. (iv) (a) 5 ploughings by junior cultivator and 1 ploughing by disc harrow. (b) By seed drill. (c) 40 srs./ac. (d) Rows 9" apart. (e) N.A. (v) 25 lb./ac. of N as A/S. (vi) NP-710 (medium). (vii) Irrigated. (viii) 1 hoeing and 1 weeding. (ix) 2.15". (x) 6.4.1959.

## 2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 57(250) on page 201.

## 5. RESULTS :

(i) 660 lb./ac. (ii) 48.0 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain lb./ac.

Treatment	$P_0$	$P_1$	$P_2$	$P_3$	$P_4$
Av. yield	496	579	692	771	762

S.E./mean = 24.0 lb./ac.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 59(414).**

**Site :- Govt. Agri. Farm, Faizabad.**

**Type :- 'M'.**

Object :—To study the most suitable time of application of N on Wheat.

## 1. BASAL CONDITIONS:

(i) (a) Wheat—G.M. (b) *Dhaincha*. (c) Nil. (ii) (a) Loam soil. (b) Refer soil analysis, Faizabad. (iii) 9, 10.11.1959. (iv) (a) 3 ploughings by *sabash* plough, 3 by *desi* plough and 1 ploughing by cultivator. (b) By seed drill. (c) 40 srs./ac. (d) Rows 9" apart. (e) N.A. (v) *Dhaincha* turned in as G.M. in August, 1959. 20 lb./ac. of  $P_2O_5$  as Super placed deep in bands on 7.11.1959. (vi) NP—710 (medium). (vii) Irrigated. (viii) 1 weeding. (ix) 1.52". (x) 6.4.1960.

## 2. TREATMENTS:

All combinations of (1), (2) and (3)+3 controls (one in each block).

(1) 3 times of application of N :  $T_1=A$  at sowing,  $T_2=A$  at 1st irrigation and  $T_3=\frac{1}{2}$  at sowing +  $\frac{1}{2}$  at 1st irrigation.

(2) 3 sources of N :  $S_1=A/S$ ,  $S_2=A/S/N$  and  $S_3=Urea$ .

(3) 2 levels of N :  $N_1=20$  and  $N_2=40$  lb./ac.

N applied by broadcast on 7, 8.11.1959 and 5.12.1959.

## 3. DESIGN :

(i)  $3^2 \times 2 + 3$  fact. confd. (ii) (a) 7 plots/block and 3 blocks/replication. (b)  $253' \times 16'$ . (iii) 4. (iv) (a) and (b)  $16' \times 34'$ . (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1959—contd. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 556 lb./ac. (ii) 155.2 lb./ac. (iii) Main effect of N alone is significant. (iv) Av. yield of grain in lb./ac.

Control = 474 lb./ac.

	$S_1$	$S_2$	$S_3$	Mean	$N_1$	$N_2$
$T_1$	463	538	682	561	548	574
$T_2$	490	534	654	559	543	576
$T_3$	629	573	565	589	532	646
Mean	527	548	634	570	541	599
$N_1$	497	524	601			
$N_2$	558	572	666			

S.E. of T or S marginal mean	= 31.7 lb./ac.
S.E. of N marginal mean	= 25.8 lb./ac.
S.E. of body of T $\times$ S table	= 54.9 lb./ac.
S.E. of body of T $\times$ N or S $\times$ N table	= 44.8 lb./ac.
S.E. of control mean	= 44.8 lb./ac.

Crop :- Wheat (*Rabi*).

Site :- Reg. Res. Stn., Hardoi.

Ref :- U.P. 54(130).

Type :- 'M'.

Object :—To study the effect of different methods of application of fertilizers on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loamy soil. (b) Refer soil analysis, Hardoi. (iii) 8.11.1954. (iv) (a) 5 ploughings by *sabash* and 3 by *desi* plough. (b) By seed drill. (c) 35 to 65 srs./ac. (d) and (e) N.A. (v) T.C. (vi) NP—710. (vii) Irrigated. (viii) and (ix) N.A. (x) 14.4.1955.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 methods of application :  $M_1=$ Broadcast,  $M_2=$ Placement behind the plough,  $M_3=$ Drilled mixed with seed.

(2) 4 fertilizers :  $F_1=60$  lb./ac. of N as A/S,  $F_2=50$  lb./ac. of  $P_2O_5$  as Super,  $F_3=40$  lb./ac. of  $K_2O$  as Pot. Sul. and  $F_4=60$  lb./ac. of CaO as Gypsum.

## 3. DESIGN :

(i) Fact. in R.B.D (ii) (a) 12. (b) N.A. (iii) 3. (iv) (a) 24' × 43'. (b) 21' × 40'. (v) 1½' × 1½'. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Yield of grain. (iv) (a) 1954—contd. (b) N.A. (c) Nil. (v) (a) Bahraich, Pratapgarh and Faizabad. (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 2326 lb./ac. (ii) 148.3 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	F <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>	F <sub>4</sub>	Mean
M <sub>1</sub>	2258	2347	2311	2329	2311
M <sub>2</sub>	2471	2338	2338	2338	2371
M <sub>3</sub>	2294	2214	2267	2409	2296
Mean	2341	2300	2305	2359	2326

S.E. of F marginal mean = 49.4 lb./ac.

S.E. of M marginal mean = 42.8 lb./ac.

S.E. of body of table = 85.6 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 55(195).**

**Site :- Reg. Res. Stn., Hardoi.**

**Type :- 'M'.**

Object :—To study the effect of different methods of applications of fertilizer on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) *Moong*—Wheat. (b) *Moong*. (c) N.A. (ii) (a) Loamy soil. (b) Refer soil analysis, Hardoi. (ii) 8.11.1955. (iv) (a) 8 ploughings by *sabash* plough, 3 by *desi* plough and 2 harrowings. (b) N.A. (c) 32 srs./ac. (d) and (e) N.A. (v) *Moong* as G.M. (vi) NP—710. (vii) Irrigated. (viii) and (ix) N.A. (x) 8.4.1956.

## 2. TREATMENTS :

Same as in expt. no. 54(130) on page 203.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 3. (iv) (a) 48' × 21'. (b) 45' × 18'. (v) 1½' × 1½'. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Mild attack of yellow rust. (iii) Yield of grain. (iv) (a) 1954—contd. (b) No. (c) Nil. (v) (a) Bahraich, Pratapgarh and Faizabad. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 3734 lb./ac. (ii) 948.0 lb./ac. (iii) Main effect of F alone is highly significant. (iv) Av. yield of grain in lb./ac.

	F <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>	F <sub>4</sub>	Mean
M <sub>1</sub>	4240	4204	3135	1918	3374
M <sub>2</sub>	4610	5864	3983	2397	4214
M <sub>3</sub>	2950	4647	3762	3098	3614
Mean	3933	4905	3627	2471	3734

S.E. of M marginal mean	= 273.7 lb./ac.
S.E. of F marginal mean	= 316.0 lb./ac.
S.E. of body of table	= 547.3 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 56(285).**

**Site :- Reg. Res. Stn., Hardoi.**

**Type :- 'M'.**

Object :—To study the effect of different methods of application of fertilizers on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Dhaincha* (G.M.) (c) N.A. (ii) (a) Medium loam soil. (b) Refer soil analysis, Hardoi. (iii) 2.11.1956. (iv) (a) 7 ploughings by *sabash* plough. (b) By seed drill. (c) 25 srs./ac. (d) and (e) N.A. (v) Nil. (vi) C—13. (vii) Irrigated. (viii) and (ix) N.A. (x) 12.4.1956.

**2. TREATMENTS to 4. GENERAL :**

Same as in expt. no. 55(195) on page 204.

**5. RESULTS :**

(i) 2727 lb./ac. (ii) 134.3 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	F <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>	F <sub>4</sub>	Mean
M <sub>1</sub>	2803	2761	2692	2701	2739
M <sub>2</sub>	2683	2925	2600	2545	2688
M <sub>3</sub>	2747	2738	2720	2812	2754
Mean	2744	2808	2671	2686	2727

S.E. of F marginal mean	= 44.8 lb./ac.
S.E. of M marginal mean	= 38.7 lb./ac.
S.E. of body of table	= 77.5 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 56(291).**

**Site :- Reg. Res. Stn., Hardoi.**

**Type :- 'M'.**

Object :—To study the effect of F.Y.M., A/S and Super on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Dhaincha*. (c) N.A. (ii) (a) Medium loam soil. (b) Refer soil analysis, Hardoi. (iii) 2.11.1956. (iv) (a) 7 ploughings. (b) By seed drill. (c) 25 srs./ac. (d) and (e) N.A. (v) Nil. (vi) Pb.—591. (vii) Irrigated. (viii) and (ix) N.A. (x) 11.4.1957.

**2. TREATMENTS :**

All combinations of (1) and (2)+2 extra treatments

(1) 3 sources of 60 lb./ac. of N : S<sub>1</sub>=F.Y.M., S<sub>2</sub>=A/S and S<sub>3</sub>=½ F.Y.M.+½ A/S.

(2) 2 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0 and P<sub>1</sub>=50 lb./ac.

Extra treatments : T<sub>0</sub>=Control and T<sub>1</sub>=50 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.

P<sub>2</sub>O<sub>5</sub> applied by placement 3" to 4" deep behind the plough a week before sowing. F.Y.M. applied 2 to 3 weeks before sowing and A/S in split application ½ at sowing and ½ at tillering.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 41'×28'. (b) 38'×25'. (v) 1½'×1½'. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of wheat. (iv) (a) 1957—contd. (b) No. (c) Nil. (v) (a) Meerut. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 2429 lb./ac. (ii) 82.7 lb./ac. (iii) Main effect of S and 'T vs. others' are highly significant. Effect of P and interaction S×P are significant. (iv) Av. yield of grain in lb./ac.

$$T_0 = 2122 \text{ and } T_1 = 2217 \text{ lb./ac.}$$

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean
P <sub>0</sub>	2382	2547	2735	2555
P <sub>1</sub>	2429	2452	2547	2476
Mean	2406	2500	2641	2516

S.E. of S marginal mean = 29.2 lb./ac.  
 S.E. of P marginal mean = 23.9 lb./ac.  
 S.E. of body of table or T mean = 41.3 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 57(350).**

**Site :- Reg. Res. Stn., Hardoi.**

**Type :- 'M'.**

Object :—To study the effect of F.Y.M., A/S and Super on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar* (fodder). (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Hardoi. (iii) 15.11.1957. (iv) (a) 4 ploughings by *shabash* plough and 3 by *desi* plough. (b) Behind the plough in lines. (c) 25 to 30 srs./ac. (d) and (e) N.A. (v) Nil. (vi) NP--710. (vii) Irrigated. (viii) and (ix) N.A. (x) 14.4.1958.

## 2. TREATMENTS :

Same as in expt. no. 56(291) on page 205.

## 3. DESIGN :

(i) R.B.D (ii) (a) 8. (b) 43'×237'. (iii) 4. (iv) (a) 43'×29'. (b) 38'×24'. (v) 2½' around the net plot. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1957—contd. (b) No. (c) Nil. (v) (a) Meerut. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 772 lb./ac. (ii) 170.5 lb./ac. (iii) Main effect of S and 'T vs. others' are highly significant. (iv) Av. yield of grain in lb./ac.

$$T_0 = 516 \text{ and } T_1 = 574 \text{ lb./ac.}$$

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean
P <sub>0</sub>	531	1047	927	835
P <sub>1</sub>	620	1093	860	858
Mean	576	1070	894	847

S.E. of P marginal mean = 49.2 lb./ac.  
 S.E. of S marginal mean = 60.3 lb./ac.  
 S.E. of body of table or T mean = 85.3 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 57(197).**

**Site :- Reg. Res. Stn., Hardoi.**

**Type :- 'M'.**

Object :—To study the effect of N and P on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loamy soil. (b) Refer soil analysis, Hardoi. (iii) 1.11.1957. (iv) (a) 6 ploughings by *shabash* plough and 4 ploughings by *desi* plough. (b) Sown behind the plough in lines. (c) to (e) N.A. (v) N.A. (vi) NP—710. (vii) Irrigated. (viii) N.A. (ix) 0.73". (x) 2.4.1958.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 3 levels of N as A/S :  $N_0=0$ ,  $N_1=25$  and  $N_2=50$  lb./ac.

(2) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=30$  and  $P_2=60$  lb./ac.

Manuring done on 1.11.1957. Super applied deep in bands with the help of manure drill and A/S broadcast.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) and (b) 40'×27'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1957 only. (b) No. (c) Nil. (v) to (vii) Nil.

**4. RESULTS :**

(i) 1147 lb./ac. (ii) 190.0 lb./ac. (iii) Main effect of N alone is highly significant. (iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	$P_2$	Mean
$N_0$	827	948	1149	975
$N_1$	1190	1170	1109	1156
$N_2$	1301	1260	1371	1311
Mean	1106	1126	1210	1147

S.E. of any marginal mean = 54.8 lb./ac.

S.E. of body of table = 95.0 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 57(353).**

**Site :- Reg. Res. Stn., Hardoi.**

**Type :- 'M'.**

Object :—To study the effect of P applied to Moong on the succeeding Wheat crop.

**1. BASAL CONDITIONS :**

(i) (a) *Moong—Sanai—Wheat*. (b) *Moong*. (c) As per treatments. (ii) (a) Loamy soil. (b) Refer soil analysis, Hardoi. (iii) 30.10.1957. (iv) (a) 2 ploughings by *shabash* plough and 2 by *desi* plough. (b) Sown behind the plough. (c) to (e) N.A. (v) A/S applied on 16.12.1957. (vi) NP—710. (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 14.4.1958.

**2. TREATMENTS :**

4 levels of  $P_2O_5$  as Super applied to previous *moong* crop :  $P_0=0$ ,  $P_1=40$ ,  $P_2=80$  and  $P_3=120$  lb./ac.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 4. (b) 172'×39'. (iii) 6. (iv) (a) 43'×39'. (b) 40'×36'. (v) 1.5'×1.5'. (vi) Yes.

**4. GENERAL :**

(i) Poor. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1957—N.A. (b) and (c) N.A. (v) to (vii) Nil.



## 5. RESULTS :

(i) 612 lb./ac. (ii) 47.1 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>
Av. yield	540	576	648	683

S.E./mean = 19.2 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 57(364).**

**Site :- Reg. Res. Stn., Hardoi.**

**Type :- 'M'.**

Object :—To study the effect of different levels P on the Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai*. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Hardoi. (iii) 30.10.1957. (iv) (a) 3 ploughings by *shabash* plough and 3 by *desi* plough. (b) Behind the plough. (c) to (e) N.A. (v) 25 lb./ac. of N as Urea broadcast on 29.10.1957 + *sanai* as G.M. (vi) P<sub>5</sub>—591 (medium). (vii) Irrigated. (viii) and (ix) N.A. (x) 30.3.1958.

## 2. TREATMENTS :

5 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0, P<sub>1</sub>=30, P<sub>2</sub>=60, P<sub>3</sub>=90 and P<sub>4</sub>=120 lb./ac. P<sub>2</sub>O<sub>5</sub> applied in bands with the help of manure drill on 29.10.1957.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) 56' × 107.5'. (iii) 4. (iv) (a) and (b) 56' × 19.5'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1957—1958. (b) Yes. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 2028 lb./ac. (ii) 179.2 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	P <sub>4</sub>
Av. yield	1875	1935	2054	2064	2214

S.E./mean = 89.6 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 58(326).**

**Site :- Reg. Res. Stn., Hardoi.**

**Type :- 'M'.**

Object :—To study the residual effect of different levels of P applied to previous Wheat crop on Wheat

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Guar*. (c) N.A. (ii) (a) Heavy loam soil. (b) Refer soil analysis, Hardoi. (iii) 13.12.1958. (iv) (a) N.A. (b) Behind the plough. (c) N.A. (d) Rows 9" apart. (e) N.A. (v) N.A. (vi) P<sub>5</sub>—591 (medium). (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 1.5.1959.

## 2. TREATMENTS to 4. GENERAL :

Same as in expt. no 57(364) above.

P<sub>2</sub>O<sub>5</sub> applied to wheat in *rabi* 1957.

## 5. RESULTS :

(i) 349 lb./ac. (ii) 57.5 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	P <sub>4</sub>
Av. yield	359	374	305	392	315

S.E./mean = 28.8 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 58(3).**

**Site :- Reg. Res. Stn., Hardoi.**

**Type :- 'M'.**

Object :—To study the effect of P and different methods of application of N on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loamy soil. (b) Refer soil analysis, Hardoi. (iii) 13.11.1958. (iv) and (v) N.A. (vi) NP—710. (vii) N.A. (viii) 8 weedings by *khurpi*. (ix) N.A. (x) 24, 25, 26 and 28.4.1959.

**2. TREATMENTS :**

**Main-plot treatments :**

All combinations of (1) and (2)+control (3 plots).

(1) 3 sources of 36 lb./ac. of N : S<sub>1</sub>=A/S, S<sub>2</sub>=Urea and S<sub>3</sub>=A/S/N.

(2) 3 methods of application : M<sub>1</sub>=Basal dressing, M<sub>2</sub>=Top dressing and M<sub>3</sub>=Basal dressing+top dressing.

**Sub-plot treatments :**

2 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0 and P<sub>1</sub>=18 lb./ac.

**3. DESIGN :**

(i) Split-plot. (ii) (a) 12 main-plots/replication ; 2 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a) N.A. (b) 30'×18'. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Attack of yellow rust. (iii) Yield of grain. (iv) (a) 1958 only. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1174 lb./ac. (ii) (a) 290.3 lb./ac. (b) 129.9 lb./ac. (iii) Only 'control vs. others' is significant. (iv) Av. yield of grain in lb./ac.

S<sub>0</sub>P<sub>0</sub> = 908 and S<sub>0</sub>P<sub>1</sub> = 1016 lb./ac.

	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>
S <sub>1</sub>	1452	1094	1193	1246	1244	1248
S <sub>2</sub>	1341	1182	1172	1232	1219	1245
S <sub>3</sub>	1177	1239	1255	1224	1162	1236
Mean	1323	1172	1207	1234	1208	1260
P <sub>0</sub>	1233	1203	1189			
P <sub>1</sub>	1414	1141	1224			

S.E. of difference of two

- |  |                 |
|--|-----------------|
| 1. M or S marginal means               | = 118.5 lb./ac. |
| 2. P marginal means                    | = 43.3 lb./ac.  |
| 3. P means at the same level of M or S | = 75.0 lb./ac.  |
| 4. M or S means at the same level of P | = 129.8 lb./ac. |
| S.E. of body of M×S table              | = 145.1 lb./ac. |
| S.E. of S <sub>0</sub> P mean          | = 118.5 lb./ac. |

**Crop :- Wheat (Rabi).****Ref :- U.P. 58(5).****Site :- Reg. Res. Stn., Hardoi.****Type :- 'M'.****Object :-**To study the effect of P and different levels and sources of N on the yield of Wheat.**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loamy soil. (b) Refer soil analysis, Hardoi. (iii) 30.10.1958. (iv) and (v) N.A. (vi) NP--710. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 7.4.1959.

**2. TREATMENTS :**7 manurial treatments :  $M_0$ =Control,  $M_1$ =50 lb./ac. of N as A/S,  $M_2$ = $M_1$ +40 lb./ac. of  $P_2O_5$  as Super,  $M_3$ =50 lb./ac. of N as F.Y.M.,  $M_4$ = $M_3$ +40 lb./ac. of  $P_2O_5$  as Super,  $M_5$ =25 lb./ac. of N as A/S+25 lb./ac. of N as F.Y.M. and  $M_6$ = $M_5$ +40 lb./ac. of  $P_2O_5$  as Super.**3. DESIGN :**

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 36'×15'. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1958 only. (b) No. (c) N.A. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1498 lb./ac. (ii) 275.9 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$M_0$	$M_1$	$M_2$	$M_3$	$M_4$	$M_5$	$M_6$
Av. yield	1156	1607	1727	1607	1364	1452	1571

S.E./mean = 137.9 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 58(6).****Site :- Reg. Res. Stn., Hardoi.****Type :- 'M'.****Object :-**To study the effect of organic and inorganic fertilizers on the yield of Wheat.**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loamy soil. (b) Refer soil analysis, Hardoi. (iii) 9,10,11.1958. (iv) and (v) N.A. (vi) NP--710. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 1, 2, 3,4.1959.

**2. TREATMENTS :**10 manurial treatments :  $M_0$ =Control,  $M_1$ =40 lb./ac. of  $P_2O_5$ ,  $M_2$ =25 lb. ac. of N as A/S,  $M_3$ =50 lb./ac. of N as A/S,  $M_4$ = $M_3$ + $M_1$ ,  $M_5$ =25 lb./ac. of N as F.Y.M. (T.C.),  $M_6$ =50 lb./ac. of N as F.Y.M. (T.C.),  $M_7$ = $M_6$ + $M_1$ ,  $M_8$ = $M_2$ + $M_6$  and  $M_9$ = $M_2$ + $M_5$ + $M_1$ .**3. DESIGN :**

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) and (b) 40'×18'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Attack of yellow rust. (iii) Yield of grain. (iv) (a) 1958--contd. (b) No. (c) N.A. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1371 lb./ac. (ii) 186.1 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$M_0$	$M_1$	$M_2$	$M_3$	$M_4$	$M_5$	$M_6$	$M_7$	$M_8$	$M_9$
Av. yield	1081	1272	1295	1503	1552	1165	1511	1295	1554	1486

S.E./mean = 93.0 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 59(23).****Site :- Reg. Res. Stn., Hardoi.****Type :- 'M'.**

Object :- To study the effect of organic and inorganic fertilizers on the yield of Wheat.

**1. BASAL CONDITIONS :**(i) (a) No. (b) *Sanai*. (c) No. (ii) (a) Loamy soil. (b) Refer soil analysis, Hardoi. (iii) 21.10.1959. (iv) (a) to (e) N.A. (v) *Sanai* as G.M. (vi) NP-710. (vii) Irrigated. (viii) N.A. (ix) and (x) N.A.**2. TREATMENTS :**

Same as in expt. no. 58(6) on page 210.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 34'×25'. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1959—contd. (b) Yes. (c) No. (v) (a) and (b) N.A. (vi) (vii) Nil.

**5. RESULTS :**

(i) 1707 lb./ac. (ii) 242.0 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	M <sub>0</sub>	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	M <sub>4</sub>	M <sub>5</sub>	M <sub>6</sub>	M <sub>7</sub>	M <sub>8</sub>	M <sub>9</sub>
Av. yield	1097	1193	1440	1809	2575	1306	1683	2128	1585	2255

S.E./mean = 121.0 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 59(3).****Site :- Reg. Res. Stn., Hardoi.****Type :- 'M'.**

Object :- To study the effect of N and different levels and sources of P on the yield of Wheat.

**1. BASAL CONDITIONS :**(i) (a) N.A. (b) *Sanai*. (c) No. (ii) (a) Loamy soil. (b) Refer soil analysis, Hardoi. (iii) 2.11.1959. (iv) (a) to (e) N.A. (v) *Sanai* as G.M. (vi) NP-710. (vii) Irrigated. (viii) to (x) N.A.**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 2 levels of N as A/S : N<sub>0</sub>=0 and N<sub>1</sub>=25 lb./ac.(2) 6 sources of 25 lb./ac. of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0 (no application), P<sub>1</sub>=Super, P<sub>2</sub>=B.M. (raw), P<sub>3</sub>=B.M. (steamed), P<sub>4</sub>=½ super+½ B.M. (raw) and P<sub>5</sub>=½ super+½ B.M. (steamed).**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) and (b) 17'×28'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1959—contd. (b) Yes. (c) No. (v) to (vii) Nil.

**5. RESULTS :**

(i) 15.9 lb./ac. (ii) 165.4 lb./ac. (iii) Main effect of N is highly significant and effect of P is significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	P <sub>4</sub>	P <sub>5</sub>	Mean
N <sub>0</sub>	1094	1259	1188	1409	1565	1406	1320
N <sub>1</sub>	1586	1818	1800	1806	1565	1733	1718
Mean	1340	1538	1494	1608	1565	1569	1519

S.E. of N marginal mean	=	33.8 lb./ac.
S.E. of P marginal mean	=	58.5 lb./ac.
S.E. of body of table	=	82.7 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 59(4).**

**Site :- Reg. Res. Stn., Hardoi.**

**Type :- 'M'.**

**Object :-** To study the effect of different levels of N and P on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) *Sanai*. (c) No. (ii) (a) Loamy soil. (b) Refer soil analysis, Hardoi. (iii) 30.10.1959. (iv) and (v) N.A. (vi) NP-710. (vii) Irrigated. (viii) Weeding with *khurpi*. (ix) and (x) N.A.

**2. TREATMENTS :**

9 manurial treatments :  $M_0$ =Control,  $M_1$ =30 lb./ac. of N,  $M_2$ =50 lb./ac. of N,  $M_3$ =17 lb./ac. of  $P_2O_5$ ,  $M_4$ =28 lb./ac. of  $P_2O_5$ ,  $M_5$ = $M_1+M_3$ ,  $M_6$ = $M_2+M_4$ ,  $M_7$ =Mixed fertilizer at 30 lb./ac. of N+17 lb./ac. of  $P_2O_5$  and  $M_8$ =Mixed fertilizer at 50 lb./ac. of N+28 lb./ac. of  $P_2O_5$ .

N applied as A/S and  $P_2O_5$  as Super. Mixed fertilizer contains 10% of N and 9% of  $P_2O_5$ .

**3. DESIGN :**

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 3. (iv) (a) and (b) 24' x 13½'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) N.A. (iii) Yield of grain. (iv) (a) 1959--contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 2410 lb./ac. (ii) 299.7 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$M_0$	$M_1$	$M_2$	$M_3$	$M_4$	$M_5$	$M_6$	$M_7$	$M_8$
Av. yield	1563	2345	3227	2076	2019	2579	2667	2625	2550

S.E./mean = 173.0 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 59(462).**

**Site :- Reg. Res. Stn., Hardoi.**

**Type :- 'M'.**

**Object :-** To study the effect of N applied at different times on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) *Sanai* and *moong*. (c) Nil. (ii) (a) Loamy soil. (b) Refer soil analysis, Hardoi. (iii) 29.10.1959. (iv) (a) to (e) N.A. (v) *Sanai* as G.M. (vi) NP-710. (vii) Irrigated. (viii) Weeding with *khurpi*. (ix) and (x) N.A.

**2. TREATMENTS :**

6 times of application of N :  $T_0$ =Control (2 plots),  $T_1$ =30 lb./ac. of N at sowing,  $T_2$ = $T_1$ +20 lb./ac. of N top dressed at 1st irrigation,  $T_3$ = $T_1$ +10 lb./ac. of N at 1st irrigation+10 lb./ac. of N at 2nd irrigation,  $T_4$ =60 lb./ac. of N at sowing,  $T_5$ = $T_4$ +20 lb./ac. of N at 1st irrigation and  $T_6$ = $T_1$ +10 lb./ac. of N at 1st irrigation+10 lb./ac. of N at 2nd irrigation.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) and (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1959--N.A. (b) and (c) N.A. (v) and (vi) Nil. (vii) As plot size is not available, the results have been given in lb./plot.

## 5. RESULTS :

(i) 16.35 lb./plot. (ii) 3.03 lb./plot. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./plot.

Treatment	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	T <sub>5</sub>	T <sub>6</sub>
Av. yield	13.84	14.04	15.23	17.49	17.61	19.92	18.80

S.E./mean (excluding T<sub>0</sub>) = 1.51 lb./plot.

S.E. of T<sub>0</sub> mean = 1.07 lb./plot.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 57(346).**

**Site :- Reg. Res. Stn., Hardoi.**

**Type :- 'M'.**

Object :— To study the effect of different times of application of N on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Hardoi. (iii) 6.11.1957. (iv) (a) 2 ploughings by *shabash* plough and 3 ploughing by *desi* plough. (b) Behind the plough in lines. (c) 25 to 30 srs./ac. (d) and (e) N.A. (v) F.Y.M. at 100 mds./ac. (vi) N.A. (vii) Irrigated. (viii) and (ix) N.A. (x) 13.4.1958.

## 2. TREATMENTS :

**Main-plot treatments :**

2 times of application : T<sub>1</sub>=Full dose before sowing and T<sub>2</sub>= $\frac{1}{2}$  dose at sowing+ $\frac{1}{2}$  dose at tillering.

**Sub-plot treatments :**

3 levels of N as A/S : N<sub>0</sub>=0, N<sub>1</sub>=20 and N<sub>2</sub>=40 lb./ac.

N as A/S applied on 5.11.1957 and top dressing with 1st irrigation on 8, 9.12.1957.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) N.A. (a) 44' x 36'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Damage due to rats in T<sub>1</sub> N<sub>1</sub>, T<sub>2</sub> N<sub>2</sub> and T<sub>1</sub> N<sub>2</sub> plots. (iii) Yield of grain and straw. (iv) (a) 1957—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 701 lb./ac. (ii) (a) 171.9 lb./ac. (b) 104.9 lb./ac. (iii) Main effect of N alone is highly significant. (iv) Av. yield of grain in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean
T <sub>1</sub>	—	684	840	762
T <sub>2</sub>	—	740	908	824
Mean	518	712	874	—

S.E. of difference of two

- |                                   |                |
|-----------------------------------|----------------|
| 1. T marginal means               | = 85.9 lb./ac. |
| 2. N marginal means               | = 52.4 lb./ac. |
| 3. N means at the same level of T | = 92.7 lb./ac. |
| 4. T means at the same level of N | = 74.2 lb./ac. |

**Crop :- Wheat (Rabi).****Ref :- U.P. 59(463).****Site :- Reg. Res. Stn., Hardoi.****Type :- 'M'.****Object :-** To study the effect of time of application of N through different sources on Wheat.**1. BASAL CONDITIONS :**(i) (a) N.A. (b) *Sanai*. (c) N.A. (ii) (a) Loamy soil. (b) Refer soil analysis, Hardoi. (iii) 9.11.1959. (iv) (a) to (e) N.A. (v) *Sanai* as G.M. (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.**2. TREATMENTS :**

All combinations of (1), (2) and (3)+control (3 plots)

(1) 3 times of application of N :  $T_1$ =At sowing time,  $T_2$ = $\frac{1}{2}$  at sowing +  $\frac{1}{2}$  at 1st irrigation and  $T_3$ =At 1st irrigation.(2) 3 sources of N :  $S_1$ =A/S,  $S_2$ =Urea and  $S_3$ =A/S/N.(3) 2 levels of N :  $N_1$ =20 and  $N_2$ =40 lb./ac.**3. DESIGN :**(i) Fact. confd. ( $T \times S$  and  $T \times N \times S$  are partially confd.) (ii) (a) 7 plots/block and 3 blocks/replication. (b) N.A. (iii) 4. (iv) and (v) N.A. (vi) Yes.**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1959—N.A. (b) N.A. (c) Nil. (v) and (vi) N.A. (vii) As plot size is not available the results have been given in lb./plot.

**5. RESULTS :**

(i) 14.28 lb./plot. (ii) 2.56 lb./plot. (iii) Main effect of N and 'control vs. others' are highly significant and effect of S is significant. (iv) Av. yield of grain in lb./plot.

Control = 10.08 lb./plot

	$S_1$	$S_2$	$S_3$	Mean	$N_1$	$N_2$
$T_1$	15.62	14.12	15.89	15.21	13.17	17.26
$T_2$	15.20	13.64	15.35	14.73	13.89	15.57
$T_3$	16.22	13.54	15.30	15.02	14.24	15.80
Mean	15.68	13.77	15.51	14.99	13.76	16.21
$N_1$	14.35	12.75	14.19			
$N_2$	17.00	14.79	16.83			

S.E. of T or S marginal mean = 0.52 lb./plot.  
 S.E. of N marginal mean = 0.43 lb./plot.  
 S.E. of body of  $T \times S$  table = 0.91 lb./plot.  
 S.E. of body of  $T \times N$  or  $S \times N$  table or control mean = 0.74 lb./plot.

**Crop :- Wheat (Rabi).****Ref :- U.P. 54(187).****Site :- State Mechanised Farm, Hempur.****Type :- 'M'.****Object :-** To study the residual effect of N and P applied to previous Paddy crop on Wheat.**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Paddy. (c) As per treatments. (ii) (a) Sandy loam. (b) Refer soil analysis, Hempur. (iii) 15.11.1954. (iv) (a) 4 ploughings and 1 harrowing. (b) Broadcast. (c) to (e) N.A. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) 4.68". (x) 23 to 25.4.1955.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 3 levels of N as A/S :  $N_0=0$ ,  $N_1=25$  and  $N_2=50$  lb./ac.

(2) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=50$  and  $P_2=100$  lb./ac.

N applied by broadcast and  $P_2O_5$  behind victory plough in furrows. Treatments applied to previous Paddy crop.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 9. (b)  $49.5' \times 222'$ . (iii) 6. (iv) (a) and (b)  $49.5' \times 22'$ . (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Uneven and scattered germination affected the growth. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1954 only. (b) No. (c) Nil. (v) (a) Nagla. (b) N.A. (vi) Nil. (vii) Damage due to weed infestation.

**5. RESULTS :**

(i) 1091 lb./ac. (ii) 306.2 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	$P_2$	Mean
$N_0$	1007	1100	1082	1063
$N_1$	1120	1053	1040	1071
$N_2$	1247	1007	1167	1140
Mean	1125	1053	1096	1091

S.E. of any marginal mean = 72.2 lb./ac.

S.E. of body of table = 125.0 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 54(196).**

**Site :- State Mechanised Farm, Hempur.**

**Type :- 'M'.**

Object :—To study the residual effect of P applied to G.M. crops on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) and (c) As per treatments. (ii) (a) Sandy loam. (b) Refer soil analysis, Hempur. (iii) 15.11.1954. (iv) (a) 3 ploughings and 1 harrowing. (b) Broadcast. (c) to (e) N.A. (v) Nil. (vi) N.A. (vii) Unirrigated, (viii) N.A. (ix) 4.38". (x) 26 to 28.4.1955.

**2. TREATMENTS :**

Strips in one direction :

2 levels of  $P_2O_5$  as Super :  $P_0=0$  and  $P_1=30$  lb./ac.

Strips in orthogonal direction :

8 G.M. crops :  $G_0$ =Fallow,  $G_1$ =Lobia,  $G_2$ =Maize,  $G_3$ =Guar,  $G_4$ =Sanai,  $G_5$ =Moong (early)  
 $G_6$ =Moong (G.M.) and  $G_7$ =Dhaincha.

**3. DESIGN :**

(i) Strip-plot. (ii) (a) 2 strips in one direction and 8 strips in orthogonal direction. (b) N.A. (iii) 6. (iv) (a) and (b)  $22' \times 66'$ . (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Normal. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1954—1955. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 753 lb./ac. (ii) S.E.(P)=119.6 lb./ac., S.E.(G)=144.7 lb./ac. and S.E.(P×G)=75.4 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.



	G <sub>0</sub>	G <sub>1</sub>	G <sub>2</sub>	G <sub>3</sub>	G <sub>4</sub>	G <sub>5</sub>	G <sub>6</sub>	G <sub>7</sub>	Mean
P <sub>1</sub>	700	660	685	660	730	765	725	860	723
P <sub>2</sub>	780	785	755	765	720	820	755	880	782
Mean	740	722	720	712	725	792	740	870	753

S.E. of difference of two

1. P marginal means = 24.4 lb./ac.
2. G marginal means = 59.1 lb./ac.
3. P means at the same level of G = 47.5 lb./ac.
4. G means at the same level of P = 66.6 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 55(178).**

**Site :- State Mechanised Farm, Hempur.**

**Type :- 'M'.**

**Object :-** To study the residual effect of P applied to G.M. crops on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) and (c) As per treatments. (ii) (a) Sandy loam. (b) Refer soil analysis, Hempur. (iii) 18.12.1955. (iv) (a) 5 ploughings and 1 harrowing. (b) Sown behind the plough in furrows. (c) to (e) N.A. (v) Nil. (vi) to (viii) N.A. (ix) 1.79". (x) 22.4.1956.

**2. TREATMENTS and 3. DESIGN :**

Same as in expt. no. 54(196) on page 215.

**4. GENERAL :**

(i) Poor. (ii) Rust and smut affected the crop. (iii) Yield of grain and straw. (iv) (a) 1954—1955. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 330.0 lb./ac. (ii) S.E. (P)=36.4 lb./ac., S.E.(G)=66.1 lb./ac. and S.E.(P×G)=36.0 lb./ac. (iii) Only main effects of P and G are highly significant. (iv) Av. yield of grain in lb./ac.

	G <sub>0</sub>	G <sub>1</sub>	G <sub>2</sub>	G <sub>3</sub>	G <sub>4</sub>	G <sub>5</sub>	G <sub>6</sub>	G <sub>7</sub>	Mean
P <sub>1</sub>	320	350	255	315	425	345	365	425	350
P <sub>2</sub>	275	295	215	325	370	315	335	350	310
Mean	298	322	235	320	398	330	350	388	330

S.E. of difference of two

1. P marginal means = 7.4 lb./ac.
2. G marginal means = 27.4 lb./ac.
3. P means at the same level of G = 20.8 lb./ac.
4. G means at the same level of P = 30.7 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 55(349).**

**Site :- Govt. Agri. Farm, Kalai.**

**Type :- 'M'.**

**Object :-** To study the effect of different methods of application of N and P on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loamy soil. (b) Refer soil analysis, Kalai. (iii) 18.11.1955. (iv) (a) 4 ploughings. (b) Seed drill. (c) 40 srs./ac. (d) 9" between rows. (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) Nil. (ix) 2.48". (x) 10.4.1956.

## 2. TREATMENTS :

## Main-plot treatments :

2 sources of 30 lb./ac. of  $P_2O_5$  :  $S_1$ =Super and  $S_2$ =Ammono. Phos.

## Sub-plot treatments :

2 methods of application of  $P_2O_5$  :  $M_1$ =Broadcast and  $M_2$ =Placed deep in bands.

## Sub-sub-plot treatments :

2 methods of application of 25 lb./ac. of N as A/S :  $N_1$ =Broadcast and  $N_2$ =Placed deep in bands.

Manures applied on 17.11.1955.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication, 2 sub-plots/main-plot and 2 sub-sub-plots/sub-plot. (b) 84'×116.5'. (iii) 3. (iv) (a) and (b) 40.5'×26'10.5". (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1955—1956. (b) No. (c) Nil. (v) to (vii) N.A.

## 5. RESULTS :

(i) 1414 lb./ac. (ii) (a) 191.4 lb./ac. (b) 105.6 lb./ac. (c) 94.9 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	$M_1$	$M_2$	Mean	$N_1$	$N_2$
$S_1$	1507	1421	1464	1447	1481
$S_2$	1401	1327	1364	1347	1381
Mean	1454	1374	1414	1397	1431
$N_1$	1414	1381			
$N_2$	1494	1367			

## S.E. of difference of two

- |                                   |                |                                   |                |
|-----------------------------------|----------------|-----------------------------------|----------------|
| 1. S marginal means               | = 78.1 lb./ac. | 6. N means at the same level of S | = 54.8 lb./ac. |
| 2. M marginal means               | = 43.1 lb./ac. | 7. S means at the same level of N | = 87.2 lb./ac. |
| 3. N marginal means               | = 38.7 lb./ac. | 8. N means at the same level of M | = 54.8 lb./ac. |
| 4. M means at the same level of S | = 61.0 lb./ac. | 9. M means at the same level of N | = 58.0 lb./ac. |
| 5. S means at the same level of M | = 89.2 lb./ac. |                                   |                |

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 56(376).**

**Site :- Govt. Agri. Farm, Kalai.**

**Type :- 'M'.**

Object :—To study the effect of different methods of application of N and P on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loamy soil. (b) Refer soil analysis, Kalai. (iii) 11.11.1956. (iv) (a) 4 ploughings by *desi* plough. (b) Seed drill. (c) 40 srs./ac. (d) 9" between rows. (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) 1 weeding. (ix) 3.45". (x) 17.4.1957.

## 2. TREATMENTS :

Same as in expt. no. 55(349) on page 216.

Manures applied on 10.11.1956.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 2 sub-plots/main-plot and 2 sub-sub-plots/sub-plot. (b) 56'×174'. (iii) 4. (iv) (a) and (b) 41'×26.5'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1955—1956. (b) No. (c) Nil. (v) to (vii) N.A.

## 5. RESULTS :

(i) 1148 lb./ac. (ii) (a) 130.8 lb./ac. (b) 173.4 lb./ac. (c) 183.5 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	M <sub>1</sub>	M <sub>2</sub>	Mean	N <sub>1</sub>	N <sub>2</sub>
S <sub>1</sub>	1052	1118	1085	987	1183
S <sub>2</sub>	1153	1270	1212	1198	1225
Mean	1102	1194	1148	1092	1204
N <sub>1</sub>	1052	1133			
N <sub>2</sub>	1153	1255			

## S.E. of difference of two

- |                                   |                |                                   |                |
|-----------------------------------|----------------|-----------------------------------|----------------|
| 1. S marginal means               | = 46.2 lb./ac. | 6. N means at the same level of S | = 91.8 lb./ac. |
| 2. M marginal means               | = 61.3 lb./ac. | 7. S means at the same level of N | = 79.7 lb./ac. |
| 3. N marginal means               | = 64.9 lb./ac. | 8. N means at the same level of M | = 91.8 lb./ac. |
| 4. M means at the same level of S | = 86.7 lb./ac. | 9. M means at the same level of N | = 89.3 lb./ac. |
| 5. S means at the same level of M | = 76.8 lb./ac. |                                   |                |

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 59(412).**

**Site :- Govt. Agri. Farm, Kalai.**

**Type :- 'M'.**

Object :—To find out the most suitable time of application of N at different levels for Wheat.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loamy soil. (b) Refer soil analysis, Kalai. (iii) 27.10.1959. (iv) (a) 1 ploughing. (b) Drilling. (c) 40 srs./ac. (d) 9" between rows. (e) N.A. (v) 20 lb./ac. of P<sub>2</sub>O<sub>5</sub> placed deep in bands on 24.10.1959 + G.M. (moong). (vi) Pb.—591 (medium). (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 10 and 11.4.1960.

## 2. TREATMENTS :

All combinations of (1), (2) and (3) + control (3 plots)

(1) 3 times of application of N : T<sub>1</sub> = At sowing, T<sub>2</sub> = At 1st irrigation and T<sub>3</sub> =  $\frac{1}{2}$  at sowing +  $\frac{1}{2}$  at 1st irrigation.

(2) 3 sources of N : S<sub>1</sub> = A/S, S<sub>2</sub> = A/S/N and S<sub>3</sub> = Urea.

(3) 2 levels of N : N<sub>1</sub> = 20 and N<sub>2</sub> = 40 lb./ac.

Manures applied on 25, 26.10.1959 and 1.12.1959,

## 3. DESIGN :

(i) Fact. confd. (ii) (a) 7 plots/block ; 3 blocks/replication. (b) 21.75' × 193'. (iii) 4. (iv) (a) and (b) 25' × 21.75'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1959—1961. (b) Yes. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1908 lb./ac. (ii) 194.6 lb./ac. (iii) Only main effect of N and 'control vs. others' are highly significant. (iv) Av. yield of grain in lb./ac.

Control = 1582 lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean	N <sub>1</sub>	N <sub>2</sub>
T <sub>1</sub>	1943	2023	1963	1976	1916	2036
T <sub>2</sub>	1913	1973	1983	1956	1889	2023
T <sub>3</sub>	1903	1953	2013	1956	1889	2023
Mean	1919	1983	1986	1963	1898	2027
N <sub>1</sub>	1782	1923	1989			
N <sub>2</sub>	2056	2043	1983			

S.E. of T or S marginal mean = 39.7 lb./ac.  
 S.E. of N marginal mean = 32.4 lb./ac.  
 S.E. of body of T×S table = 68.8 lb./ac.  
 S.E. of body of S×N or T×N table or control mean = 56.2 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 54(290).****Site :- Govt. Agri. Farm, Kalai.****Type :- 'M'.**

Object :- To study the effect of N and different sources of P on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loamy soil. (b) Refer soil analysis, Kalai. (iii) 5.11.1954. (iv) (a) 5 ploughings.  
 (b) Line sowing by drill. (c) 40 srs./ac. (d) Rows 9" apart. (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigatec.  
 (viii) 1 hoeing. (ix) 0.8". (x) 11.4.1955.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 2 levels of N as A/S : N<sub>0</sub>=0 and N<sub>1</sub>=30 lb./ac.(2) 5 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=60 lb./ac. as Super, P<sub>2</sub>=120 lb./ac. as Super, P<sub>3</sub>=60 lb./ac. as B.M. and P<sub>4</sub>=120 lb./ac. as B.M.

Manures applied on 4, 5.11.1954. Super and B.M. applied 3" to 4" deep in furrows by drill. A/S broadcast before sowing.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) and (b) 41'×26.56'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) and (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1952—1954. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1047 lb./ac. (ii) 152.2 lb./ac. (iii) Main effect of N alone is highly significant. (iv) Av yield of grain. in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	P <sub>4</sub>	Mean
N <sub>0</sub>	720	770	870	690	730	756
N <sub>1</sub>	1170	1300	1540	1390	1290	1338
Mean	945	1035	1205	1040	1010	1047

S.E. of N marginal mean = 34.0 lb./ac.  
 S.E. of P marginal mean = 53.8 lb./ac.  
 S.E. of body of table = 76.1 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 55(138).****Site :- Govt. Agri. Farm, Kalai.****Type :- 'M'.**

Object :- To study the effect of N and different sources of P on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loamy soil. (b) Refer soil analysis, Kalai. (iii) 13.11.1955. (iv) (a) N.A. (b) Sown in rows by seed drill. (c) 40 srs./ac. (d) Rows 9" apart. (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) Nil. (ix) 2.48". (x) 11.4.1956.

**2. TREATMENTS :**

All combinations of (1) and (2) + 2 extra treatments

(1) 2 sources of  $P_2O_5$  :  $S_1$  = Super and  $S_2$  = B.M.(2) 2 levels of  $P_2O_5$  :  $P_1$  = 30 and  $P_2$  = 60 lb./ac.Extra treatments :  $T_0$  = Control and  $T_1$  = 30 lb./ac. of N as A/S.30 lb./ac. of N as A/S broadcast on 11.11.1955 to all treatments except  $T_0$ .  $P_2O_5$  placed deep in bands just before sowing.**3. DESIGN :**(i) R.B.D. (ii) (a) 6. (b)  $41'7\frac{1}{2}" \times 172'$ . (iii) 6. (iv) (a) and (b)  $41'7\frac{1}{2}" \times 26'2"$ . (v) Nil. (vi) Yes.**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1955—1956. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**(i) 1428 lb./ac. (ii) 208.5 lb./ac. (iii) Main effect of P and ' $T_0$  vs. others' are highly significant. (iv) Av. yield of grain in lb./ac.

$$T_0 = 906 \text{ lb./ac. and } T_1 = 1333 \text{ lb./ac.}$$

	$S_1$	$S_2$	Mean
$P_1$	1480	1593	1536
$P_2$	1726	1533	1630
Mean	1603	1563	1583

S.E. of any marginal mean = 60.2 lb./ac.

S.E. of body of table or T mean = 85.1 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 56(87).****Site :- Govt. Agri. Farm, Kalai.****Type :- 'M'.**

Object :- To study the effect of N and different sources of P on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loamy soil. (b) Refer soil analysis, Kalai. (iii) 10.11.1955. (iv) (a) 4 ploughings by *desi* plough. (b) Sown in rows by seed drill. (c) 40 srs./ac. (d) Rows 9" apart. (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) 1 weeding. (ix) 3.45". (x) 18.4.1957.

**2. TREATMENTS :**

Same as in expt. no. 55(138) above.

**3. DESIGN :**(i) R.B.D. (ii) (a) 6. (b)  $39' \times 183'$ . (iii) 6. (iv) (a) and (b)  $39' \times 28'$ . (v) Nil. (vi) Yes.**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1955—1956. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**(i) 1030 lb./ac. (ii) 77.7 lb./ac. (iii) Main effects of P and S and ' $T_0$  vs. others' are highly significant. (iv) Av. yield of grain in lb./ac.

$$T_0 = 665 \text{ lb./ac. and } T_1 = 1054 \text{ lb./ac.}$$

	S <sub>1</sub>	S <sub>2</sub>	Mean
P <sub>1</sub>	1140	1094	1117
P <sub>2</sub>	1183	1047	1115
Mean	1161	1071	1116

S.E. of any marginal mean = 22.4 lb./ac.

S.E. of body of table or T mean = 31.7 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 54(288).**

**Site :- Govt. Agri. Farm, Kalai.**

**Type :- 'M'.**

Object :—To study the effect of N, P and K on the yield of Wheat.

### 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loamy soil. (b) Refer soil analysis, Kalai. (iii) 5.11.1954. (iv) (a) 6 ploughings by *desi* plough. (b) Line sowing by seed drill. (c) 40 srs./ac. (d) Rows 9" apart. (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) 1 hoeing, 1 interculturing and 1 weeding. (ix) 0.8". (x) 11.4.1955.

### 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 2 levels of N as A/S : N<sub>0</sub>=0 and N<sub>1</sub>=30 lb./ac.

(2) 2 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0 and P<sub>1</sub>=60 lb./ac.

(3) 3 levels of K<sub>2</sub>O as Potassium Chloride : K<sub>0</sub>=0, K<sub>1</sub>=60 and K<sub>2</sub>=120 lb./ac.

Manures applied on 3, 4.11.1954. N and K<sub>2</sub>O broadcast and P<sub>2</sub>O<sub>5</sub> placed 3" to 4" deep by drill.

### 3. DESIGN :

(i) 2<sup>2</sup> × 3 confd. (interactions P × N and N × P × K confd). (ii) (a) 6 plots/block ; 2 blocks/replication. (b) 41' × 174'. (iii) 4. (iv) (a) and (b) 41' × 26.56'. (v) Nil. (vi) Yes.

### 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) and (b) No. (c) Nil. (v) (a) Raya, Matkota Tissuh, Bharari and Atarra. (b) Nil. (vi) and (vii) Nil.

### 5. RESULTS :

(i) 1152 lb./ac. (ii) 171.3 lb./ac. (iii) Main effect of N is highly significant and main effect of P is significant. (iv) Av. yield of grain in lb./ac.

	K <sub>0</sub>	K <sub>1</sub>	K <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>
N <sub>0</sub>	870	875	880	875	850	900
N <sub>1</sub>	1470	1335	1485	1430	1333	1527
Mean	1170	1105	1182	1152	1092	1213
P <sub>0</sub>	1160	980	1135			
P <sub>1</sub>	1180	1230	1230			

S.E. of N or P marginal mean = 35.0 lb./ac.

S.E. of K marginal mean = 42.8 lb./ac.

S.E. of body of N × P table = 49.5 lb./ac.

S.E. of body of N × K or P × K table = 60.6 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 55(341).****Site :- Govt. Agri. Farm, Kalai.****Type :- 'M'.**

Object :— To study the effect of N, P and K on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loamy soil. (b) Refer soil analysis, Kalai. (iii) 11.11.1955. (iv) (a) 2 ploughings by watt plough and 1 ploughing by *desi* plough. (b) By seed drill in rows. (c) 40 srs./ac. (d) Rows 9" apart. (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) Nil. (ix) 2.40". (x) 11.4.1956.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 2 levels of N as A/S :  $N_0=0$  and  $N_1=30$  lb./ac.(2) 2 levels of  $P_2O_5$  as Super :  $P_0=0$  and  $P_1=40$  lb./ac.(3) 2 levels of  $K_2O$  as Pot. Sul. :  $K_0=0$  and  $K_1=60$  lb./ac.Manures applied on 9, 10.11.1955.  $P_2O_5$  and  $K_2O$  placed deep in bands with manure drill and N broadcast on 9, 10.11.1955.**3. DESIGN :**(i) Fact. in R.B.D. (ii) (a) 8. (b)  $84' \times 116.5'$ . (iii) 4. (iv) (a) and (b)  $40.5' \times 26.875'$ . (v) Nil. (vi) Yes.**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1955—1957. (b) No. (c) Nil. (v) (a) Raya. (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**(i) 970 lb./ac. (ii) 115.9 lb./ac. (iii) Main effect of N is highly significant and interaction  $N \times P$  is significant. (iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	Mean	$K_0$	$K_1$
$N_0$	825	725	775	790	760
$N_1$	1115	1215	1165	1160	1170
Mean	970	970	970	975	965
$K_0$	1000	950			
$K_1$	940	990			

S.E. of any marginal mean = 29.0 lb./ac.

S.E. of body of any table = 41.0 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 55(359).****Site :- Govt. Agri. Farm, Kalai.****Type :- 'M'.**

Object :—To study the effect of N, P and K on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loamy soil. (b) Refer soil analysis, Kalai. (iii) 10.11.1956. (iv) 4 ploughings by *desi* plough. (b) By seed drill in rows. (c) 40 srs./ac. (d) Rows 9" apart. (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) 1 weeding. (ix) 3.45". (x) 17.4.1957.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 2 levels of N as A/S :  $N_0=0$  and  $N_1=30$  lb./ac.(2) 2 levels of  $P_2O_5$  as Super :  $P_0=0$  and  $P_1=40$  lb./ac.(3) 2 levels of  $K_2O$  as Potassium Chloride :  $K_0=0$  and  $K_1=60$  lb./ac.N broadcast before sowing and  $P_2O_5$  and  $K_2O$  placed deep in bands with manure drill on 10.11.1956.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) 85'×106'. (iii) 4. (iv) (a) and (b) 41'×26.5'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1955—1957. (b) No. (c) Nil. (v) (a) Raya. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 802 lb./ac. (ii) 217.0 lb./ac. (iii) Main effect of N alone is highly significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	K <sub>0</sub>	K <sub>1</sub>
N <sub>0</sub>	586	554	570	561	579
N <sub>1</sub>	994	1072	1033	1110	957
Mean	790	813	802	835	768
K <sub>0</sub>	784	887			
K <sub>1</sub>	796	739			

S.E. of any marginal mean = 54.2 lb./ac.  
S.E. of body of any table = 76.7 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 57(395).**

**Site :- Govt. Agri. Farm, Kalai.**

**Type :- 'M'.**

Object :— To study the effect of N, P and K on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loamy soil. (b) Refer soil analysis, Kalai. (iii) 22.10.1957, resown on 30.10.1957 and 30.11.1957. (iv) (a) 1 ploughing by victory plough and 6 ploughings by *desi* plough. (b) By seed drill in rows. (c) 40 srs./ac. (d) Rows 9" apart. (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) 1 weed ng. (ix) 1.31". (x) 9.4.1958.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 2 levels of N as A/S/N : N<sub>0</sub>=0 and N<sub>1</sub>=30 lb./ac.

(2) 2 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0 and P<sub>1</sub>=40 lb./ac.

(3) 2 levels of K<sub>2</sub>O as Potassium Chloride : K<sub>0</sub>=0 and K<sub>1</sub>=60 lb./ac.

N applied as top dressing at the time of first irrigation on 22.11.1957. P<sub>2</sub>O<sub>5</sub> and K<sub>2</sub>O applied deep in bands with manure drill on 21.10.1957.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) 41'×233'. (iii) 4. (iv) (a) and (b) 41'×26.5'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1955—1957. (b) No. (c) Nil. (v) (a) Raya. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1004 lb./ac. (ii) 134.7 lb./ac. (iii) Main effects of N and K are highly significant and main effect of P is significant. (iv) Av. yield of grain in lb./ac.



	P <sub>0</sub>	P <sub>1</sub>	Mean	K <sub>0</sub>	K <sub>1</sub>
N <sub>0</sub>	872	927	900	802	997
N <sub>1</sub>	1017	1198	1108	1057	1158
Mean	944	1063	1004	930	1078
K <sub>0</sub>	882	977			
K <sub>1</sub>	1007	1148			

S.E. of any marginal mean = 33.7 lb./ac.

S.E. of body of any table = 47.6 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 55(191).**

**Site :- Govt. Agri. Farm, Kalai.**

**Type :- 'M'.**

Object :- To study the effect of different levels of trace-elements on the yield of Wheat

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loamy soil. (b) Refer soil analysis, Kalai. (iii) 6.11.1955. (iv) (a) 3 ploughings by watt plough and 2 ploughings by *desi* plough. (b) Behind the plough. (c) 36 srs./ac. (d) and (e) N.A. (v) 60 lb./ac. of N as A/S+40 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super+30 lb./ac. of K<sub>2</sub>O as Pot. Sul. (vi) Pb.—591. (vii) Irrigated. (viii) and (ix) N.A. (x) 11.4.1956.

**2. TREATMENTS :**

10 trace-element treatments : T<sub>0</sub>=Control, T<sub>1</sub>=3 lb./a. of copper as C/S, T<sub>2</sub>=6 lb./ac. of copper as C/S, T<sub>3</sub>=12 lb./ac. of copper as C/S, T<sub>4</sub>=1 lb./ac. of Boron as Borax, T<sub>5</sub>=2 lb./ac. of Boron as Borax, T<sub>6</sub>=4 lb./ac. of Boron as Borax, T<sub>7</sub>=1 lb./ac. of Zinc as Zinc Sul., T<sub>8</sub>=4 lb./ac. of Zinc as Zinc Sul. and T<sub>9</sub>=10 lb./ac. of Zinc as Zinc Sul.

Trace elements mixed with fine dry earth and applied as surface dressing a day before sowing.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) 42'×23'. (b) 39'×20'. (v) 1.5'×1.5'. (vi) Yes.

**4. GENERAL :**

(i) N.A. (iii) Nil. (iii) Yield of grain. (iv) (a) 1955—1956. (b) and (c) N.A. (v) (a) Kalianpur, Atarra and Etawah. (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1892 lb./ac. (ii) 60.1 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	T <sub>5</sub>	T <sub>6</sub>	T <sub>7</sub>	T <sub>8</sub>	T <sub>9</sub>
Av. yield	1792	1756	2248	1774	1748	1847	1932	2215	1826	1786

S.E./mean = 30.1 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 56(208).**

**Site :- Govt. Agri. Farm, Kalai.**

**Type :- 'M'.**

Object :- To study the effect of different levels of trace-elements on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loamy soil. (b) Refer soil analysis, Kalai. (iii) 6.11.1956. (iv) 6 ploughings. (b) Behind the plough (c) 36 srs./ac. (d) and (e) N.A. (v) 60 lb./ac. of N as A/S+40 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super+30 lb./ac. of K<sub>2</sub>O as Pot. Sul. (vi) Pb.—591. (vii) Irrigated. (viii) and (ix) N.A. (x) 14.4.1957

## 2. TREATMENTS and 3. DESIGN :

Same as expt. no. 55(191) on page 224.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Yield of grain. (iv) (a) 1955—1956. (b) and (c) N.A. (v) (a) Kalainpur, Atarra and Bharari. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 2936 lb./ac. (ii) 31.4 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	T <sub>5</sub>	T <sub>6</sub>	T <sub>7</sub>	T <sub>8</sub>	T <sub>9</sub>
Av. yield	3141	3368	3222	2795	2958	3097	2393	3247	2835	2300

S.E./mean = 15.7 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 56(159).**

**Site :- Govt. Agri. Farm, Kalai.**

**Type :- 'M'.**

Object :—To study the residual effect of different levels of P applied in kharif on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Wheat+Gram-Moong—Wheat. (b) Moong. (c) As per treatments. (ii) (a) Loamy soil. (b) Refer soil analysis, Kalai. (iii) to (x) N.A.

## 2. TREATMENTS :

4 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0, P<sub>1</sub>=40, P<sub>2</sub>=80 and P<sub>3</sub>=120 lb./ac.

P<sub>2</sub>O<sub>5</sub> applied by placement 3" to 4" deep in soil behind the plough 2 to 3 days before sowing of moong in kharif.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 43'×36'. (b) 40'×33'. (v) 1.5'×1.5'. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1956—N.A. (b) No. (c) Nil. (v) to (vii) N.A.

## 5. RESULTS :

(i) 1319 lb./ac. (ii) 30.3 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>
Av. yield	1094	1281	1383	1519

S.E./mean = 12.4 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 57(119).**

**Site :- Govt. Agri. Farm, Kalai.**

**Type :- 'M'.**

Object :—To study the effect of P on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loamy soil. (b) Refer soil analysis, Kalai. (iii) 22.10.1957, resown on 30.10.1957 and 30.11.1957. (iv) (a) 1 ploughing by victory plough and 6 ploughings by desi plough. (b) Sown in rows by seed drill. (c) 40 srs./ac. (d) Rows 9" apart. (e) N.A. (v) 25 lb./ac. of N as A/S applied as broadcast before sowing. (vi) N.A. (vii) Irrigated. (viii) 1 weeding. (ix) 1.31". (x) 9.4.1958.

**2. TREATMENTS :**

5 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=30$ ,  $P_2=60$ ,  $P_3=90$  and  $P_4=120$  lb./ac.  
 $P_2O_5$  placed in bands on 21.10.1957.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 5. (b)  $54.5' \times 112'$ . (iii) 4. (iv) (a) and (b)  $54.5' \times 20'$ . (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1957—1959. (b) Yes. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1163 lb./ac. (ii) 274.6 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$P_0$	$P_1$	$P_2$	$P_3$	$P_4$
Av. yield	1079	1129	1269	1089	1249

S.E./mean = 137.3 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 58(114).**

**Site :- Govt. Agri. Farm, Kalai.**

**Type :- 'M'.**

Object :—To study the residual effect of P over a number of years on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) *Lobia* fodder. (c) 15 lb./ac. of N as A/S. (ii) (a) Loamy soil. (b) Refer soil analysis, Kalai. (iii) N.A. (iv) (a) N.A. (b) Sown in lines by seed drill. (c) N.A. (d) Rows 9" apart. (e) N.A. (v) 25 lb./ac. of N as A/S. (vi) to (x) N.A.

**2. TREATMENTS and 3. DESIGN :**

Same as in expt. no. 57(119) on page 225.

Treatments applied in *rabi*, 1957.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1957—1959. (b) Yes (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1491 lb./ac. (ii) 418.0 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$P_0$	$P_1$	$P_2$	$P_3$	$P_4$
Av. yield	1549	1569	1289	1569	1479

S.E./mean = 209.0 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 59(126).**

**Site :- Govt. Agri. Farm, Kalai.**

**Type :- 'M'.**

Object :—To study the residual effect of P over a number of years on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) *Bajra*, *lobia* and *guar* for fodder. (c) 15 lb./ac. of N as A/S. (ii) (a) Loamy soil. (b) Refer soil analysis, Kalai. (iii) N.A. (iv) (a) N.A. (b) Sown in rows by seed drill. (c) 40 lb./ac. (d) Rows 9" apart. (e) N.A. (v) 25 lb./ac. of N as A/S. (vi) to (ix) N.A. (x) 8 and 9.4.1960.

**2. TREATMENTS to 4. GENERAL :**

Same as in expt. no. 57(119) on page 225.

Treatments applied during *rabi* 1957.

## 5. RESULTS :

(i) 926 lb./ac. (ii) 73.9 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	P <sub>4</sub>
Av. yield	929	924	1014	904	859

S.E./mean = 37.0 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 54(248).**

**Site :- Govt. Agri. Res. Farm, Kalianpur.**

**Type :- 'M'.**

Object :—To study the effect of different levels of trace-elements on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) *Moong*—Wheat. (b) *Moong*. (c) N.A. (ii) (a) Loamy soil. (b) Refer soil analysis, Kalianpur. (iii) 24.10.1954. (iv) (a) 7 ploughings by watt plough and 1 planking. (b) Behind the plough. (c) 25 to 30 srs./ac. (d) and (e) N.A. (v) 60 lb./ac. of N as A/S, 40 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super, 30 lb./ac. of lime as gypsum and 30 lb./ac. of K<sub>2</sub>O as Pot. Sul. (vi) N.A. (vii) Irrigated. (viii) and (ix) N.A. (x) 2.4.1955.

## 2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 55(191) on page 224.

## 5. RESULTS :

(i) 2288 lb./ac. (ii) 342.5 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	T <sub>5</sub>	T <sub>6</sub>	T <sub>7</sub>	T <sub>8</sub>	T <sub>9</sub>
Av. yield	2161	2344	2190	2183	2312	2527	2233	2219	2377	2334

S.E./mean = 171.3 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 55(189).**

**Site :- Govt. Agri. Res. Farm, Kalianpur.**

**Type :- 'M'.**

Object :—To study the effect of different levels of trace-elements on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) *Moong*—Wheat. (b) *Moong*. (c) N.A. (ii) (a) Loamy soil. (b) Refer soil analysis, Kalianpur. (iii) 12.11.1955. (iv) (a) N.A. (b) Improved seed drill. (c) 36 srs./ac. (d) and (e) N.A. (v) N.A. (vi) NP—710. (vii) Irrigated. (viii) and (ix) N.A. (x) 12.4.1956.

## 2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 55(191) on page 224.

## RESULTS :

(i) 1793 lb./ac. (ii) 305.1 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	T <sub>5</sub>	T <sub>6</sub>	T <sub>7</sub>	T <sub>8</sub>	T <sub>9</sub>
Av. yield	1738	1924	1695	1799	2003	2125	1910	1436	1652	1644

S.E./mean = 152.6 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 56(207).****Site :- Govt. Agri. Res. Farm, Kalianpur.****Type :- 'M'.****Object :-**To study the effect of different levels of trace-elements on the yield of Wheat.**1. BASAL CONDITIONS :**

(i) (a) *Moong*—Wheat. (b) *Moong*. (c) N.A. (ii) (a) Loamy soil. (b) Refer soil analysis, Kalianpur. (iii) 17.11.1956. (iv) (a) 1 ploughing by watt plough, 1 by cultivator, 1 by victory plough and 1 by tractor. (b) Behind the plough. (c) 25 to 30 srs./ac. (d) and (e) N.A. (v) 60 lb./ac. of N as A/S+40 lb./ac. of  $P_2O_5$  as Super+30 lb./ac. of  $K_2O$  as Pot. Sul. and Mur. Pot. (vi) NP—710. (vii) Irrigated. (viii) to (x) N.A.

**2. TREATMENTS to 4. GENERAL :**

Same as in expt. no. 55(191) on page 224.

**5. RESULTS :**

(i) 2862 lb./ac. (ii) 353.2 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	T <sub>5</sub>	T <sub>6</sub>	T <sub>7</sub>	T <sub>8</sub>	T <sub>9</sub>
Av. yield	2653	3019	2808	2987	2750	3228	2729	2725	3037	2689

S.E./mean = 176.6 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 54(278).****Site :- Govt. Agri. Res. Farm, Kalianpur.****Type :- 'M'.****Object :-**To study the effect of P in rotation on the yield of Wheat.**1. BASAL CONDITIONS :**

(i) (a) Wheat—*Moong*. (b) *Moong*. (c) N.A. (ii) (a) Loamy soil. (b) Refer soil analysis, Kalianpur. (iii) 5.11.1954. (iv) (a) 4 ploughings by *desi* plough, 2 ploughings by cultivator and 1 ploughing by Watt plough. (b) to (e) N.A. (v) G.M. by *moong*. (vi) N.A. (vii) Irrigated. (viii) 1 interculture. (ix) N.A. (x) 8.4.1955.

**2. TREATMENTS :**

All combinations of (1) and (2)+a control

(1) 2 levels of  $P_2O_5$  :  $P_1=120$  and  $P_2=240$  lb./ac.(2) 3 schedules of application of  $P_2O_5$  :  $S_1=$ Full dose in the first year of 4 year rotation,  $S_2=$ In two doses in alternate year and  $S_3=$ 1/4 dose each year. $P_2O_5$  as Super applied deep in furrows by modified manure drill.**3. DESIGN :**(i) R.B.D. (ii) (a) 7. (b)  $44' \times 191.25'$ . (iii) 6. (iv) (a) and (b)  $44' \times 24.75'$ . (v) Nil. (vi) Yes.**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1952—1955 (3rd year of expt.). (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1620 lb./ac. (ii) 184.9 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

Control = 1653 lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean
P <sub>1</sub>	1400	1627	1613	1547
P <sub>2</sub>	1673	1613	1760	1682
Mean	1536	1620	1686	1614

S.E. of P marginal mean	= 43.6 lb./ac.
S.E. of S marginal mean	= 53.4 lb./ac.
S.E. of body of table or control mean	= 75.5 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 55(325).**

**Site :- Govt. Agri. Res. Farm, Kalianpur.**

**Type :- 'M'.**

Object :—To study the effect of P in rotation on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Wheat—*Moong*. (b) *Moong*. (c) N.A. (ii) (a) Loamy soil. (b) Refer soil analysis, Kalianpur. (iii) 6.11.1955. (iv) (a) 2 ploughings by Watt plough, 1 ploughing by cultivator, 2 harrowings, 1 ploughing by *akola* plough and 4 plankings. (b) Behind the plough. (c) to (e) N.A. (v) G.M. by *moong*. (vi) NP—710. (vii) Irrigated. (viii) 1 hoeing and 2 weedings. (ix) N.A. (x) 11.4.1956.

**2. TREATMENTS to 4. GENERAL :**

Same as in expt. no. 54(278) on page 228.

**5. RESULTS :**

(i) 1419 lb./ac. (ii) 167.6 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

Control = 1424 lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean
P <sub>1</sub>	1428	1362	1504	1431
P <sub>2</sub>	1462	1390	1361	1404
Mean	1445	1376	1432	1418

S.E. of P marginal mean	= 39.6 lb./ac.
S.E. of S marginal mean	= 48.4 lb./ac.
S.E. of body of table or control mean	= 68.4 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 54(143).**

**Site :- Govt. Agri. Res. Farm, Kalianpur.**

**Type :- 'M'.**

Object :—To study the effect of N, P and lime on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) *Moong*—Wheat. (b) *Moong*. (c) N.A. (ii) (a) Loamy soil. (b) Refer soil analysis, Kalianpur. (iii) 12.12.1954. (iv) (a) 6 ploughings by Watt plough. (b) Behind the plough. (c) 25 to 30 srs./ac. (d) and (e) N.A. (v) 40 lb./ac. of K<sub>2</sub>O as Pot. Sul. as surface dressing all over 2 to 3 days before sowing. (vi) NP—710. (vii) to (ix) N.A. (x) 2.4.1955.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 2 levels of N as A/S : N<sub>0</sub>=0 and N<sub>1</sub>=75 lb./ac.

(2) 2 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0 and P<sub>1</sub>=50 lb./ac.

(3) 2 levels of lime as gypsum : C<sub>0</sub>=0 and C<sub>1</sub>=60 lb./ac.

N applied  $\frac{1}{2}$  at sowing and  $\frac{1}{2}$  at tillering. P<sub>2</sub>O<sub>5</sub> applied by placement 3" to 4" deep in soil behind the plough. Lime applied as surface dressing 2 to 3 days before sowing.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 41'×29'. (b) 38'×26'. (v) 1.5'×1.5'. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Yield of grain. (iv) (a) 1954 only. (b) and (c) N.A. (v) (a) Atarra, Jbansi and Varanasi. (b) N.A. (vi) N.A. (vii) Nil.

## 5. RESULTS :

(i) 2219 lb./ac. (ii) 274.6 lb./ac. (iii) Main effect of N and interaction  $N \times P$  are highly significant. Interaction  $N \times C$  is significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	C <sub>0</sub>	C <sub>1</sub>
N <sub>0</sub>	1960	2134	2047	1876	2218
N <sub>1</sub>	2608	2174	2391	2452	2330
Mean	2284	2154	2219	2164	2274
C <sub>0</sub>	2248	2080			
C <sub>1</sub>	2320	2228			

S.E. of any marginal mean

= 68.6 lb./ac.

S.E. of body of any table

= 97.1 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 55(200).**

**Site :- Govt. Agri. Res. Farm, Kalianpur.**

**Type :- 'M'.**

Object :- To study the effect of N, P and lime on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) *Moong*—Wheat. (b) *Moong*. (c) N.A. (ii) (a) Loamy soil. (b) Refer soil analysis Kalianpur. (iii) 11 and 12.11.1955. (iv) (a) 2 ploughings by victory plough and 3 ploughings by watt plough. (b) Behind the plough. (c) 38.7 srs./ac. (d) and (e) N.A. (v) G.M. or F.Y.M. at 100 mds./ac. (vi)  $N-P-710$ . (vii) Irrigated. (viii) and (ix) N.A. (x) 12.4.1956.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 2 levels of N as A/S : N<sub>0</sub>=0 and N<sub>1</sub>=50 lb./ac.

(2) 2 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0 and P<sub>1</sub>=40 lb./ac.

(3) 2 levels of lime as gypsum : C<sub>0</sub>=0 and C<sub>1</sub>=60 lb./ac.

N applied half at sowing and half at tillering (3 weeks after germination). P<sub>2</sub>O<sub>5</sub> applied by placement 3" to 4" deep in soil behind the plough 6 to 7 days before sowing. Lime applied as surface dressing 2 to 3 days before sowing.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 41'×28'. (b) 38'×25'. (v) 1.5'×1.5'. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) 1955—N.A. (b) and (c) N.A. (v) (a) Bahraich, Faizabad, Atarra, Amrukh and Dilkusha. (b) Nil. (vi) and (vii) N.A.

## 5. RESULTS :

(i) 1499 lb./ac. (ii) 175.6 lb./ac. (iii) Main effect of N is highly significant and main effect of P is significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	C <sub>0</sub>	C <sub>1</sub>
N <sub>0</sub>	1329	1414	1372	1420	1324
N <sub>1</sub>	1536	1718	1627	1604	1650
Mean	1432	1566	1499	1512	1487
C <sub>0</sub>	1417	1607			
C <sub>1</sub>	1448	1525			

S.E. of any marginal mean = 43.9 lb./ac.  
S.E. of body of any table = 62.1 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 56(202).**

**Site :- Govt. Agri. Res. Farm, Kalianpur.**

**Type :- 'M'.**

Object :—To study the effect of N, P and lime on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loamy soil. (b) Refer soil analysis, Kalianpur. (iii) to (x) N.A.

**2. TREATMENTS :**

Same as in expt. no. 55(200) on page 230.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 41'×29'. (b) 38'×26'. (v) 1.5'×1.5'. (vi) **Yes.**

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1955—N.A. (b) and (c) N.A. (v) (a) Dilkusha, Atarra, Bahraich, Faizabad and Pratapgarh. (b) Nil. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 2495 lb./ac. (ii) 373.4 lb./ac. (iii) Main effect of N alone is highly significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	C <sub>0</sub>	C <sub>1</sub>
N <sub>0</sub>	2194	2282	2238	2010	2466
N <sub>1</sub>	2721	2783	2752	2735	2769
Mean	2457	2532	2495	2372	2618
C <sub>0</sub>	2369	2375			
C <sub>1</sub>	2545	2690			

S.E. of any marginal mean = 93.4 lb./ac.  
S.E. of body of any table = 132.0 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 55(215).**

**Site :- Govt. Agri. Res. Farm, Kalianpur.**

**Type :- 'M'.**

Object :—To study the effect of pre-soaking wheat seed in nutrient solutions on growth and yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) *Moong*—Wheat. (b) *Moong*. (c) N.A. (ii) (a) Loamy soil. (b) Refer soil analysis, Kalianpur. (iii) 11.11.1956. (iv) (a) N.A. (b) Behind the plough. (c) 39.5 srs./ac. (d) and (e) N.A. (v) 120 mds./ac. of F.Y.M.+20 lb./ac. of N as A/S+30 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super. (vi) NP—710. (vii) Irrigated. (viii) and (ix) N.A. (x) 12.4.1956.

**2. TREATMENTS :**

8 seed soaking treatments : T<sub>0</sub>=No soaking, T<sub>1</sub>=Water, T<sub>2</sub>=0.1% Boric acid, T<sub>3</sub>=0.2% C/S, T<sub>4</sub>=0.1% Zn Sul., T<sub>5</sub>=0.1% Manganese Sul., T<sub>6</sub>=0.5% Potassium Dihydrogen Phosphate and T<sub>7</sub>=1.0% A/N.



**3. DESIGN :**

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 32'×22'. (b) 29'×19'. (v) 1.5'×1.5'. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Nil. (iii) Yield of grain. (iv) 755—N.A. (b) and (c) N.A. (v) (a) Dilkusha. (b) Nil. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 2062 lb./ac. (ii) 325.0 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	T <sub>5</sub>	T <sub>6</sub>	T <sub>7</sub>
Av. yield	1901	1952	1871	1972	2063	2358	2307	2074

S.E./mean = 162.5 lb./ac.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 56(251).**

**Site :- Govt. Agri. Res. Farm, Kalianpur.**

**Type :- 'M'.**

**Object :-** To study the effect of pre-soaking wheat seed in nutrient solutions on growth and yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loamy soil. (b) Refer soil analysis, Kalianpur. (iii) 17.11.1956. (iv) (a) Ploughings by watt plough, victory plough and tractor. (b) Behind the plough. (c) 25 to 30 mds./ac. (d) and (e) N.A. (v) 100 mds./ac. of F.Y.M.+20 lb./ac. of N as A/S+30 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super. (vi) NP—710. (vii) Irrigated. (viii) and (ix) N.A. (x) 23.4.1957.

**2. TREATMENTS to 4. GENERAL :**

Same as in expt. no. 55(215) on page 231.

**5. RESULTS :**

(i) 2182 lb./ac. (ii) 304.5 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	T <sub>5</sub>	T <sub>6</sub>	T <sub>7</sub>
Av. yield	2013	2053	2074	2409	2155	2175	2348	2226

S.E./mean = 152.2 lb./ac.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 54(21).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'M'.**

**Object :-** To study the effect of Calcium on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Sanai*. (c) Nil. (ii) (a) Loamy soil. (b) Refer soil analysis, Kanpur. (iii) 8.11.1954. (iv) (a) 1 ploughing by victory plough, 5 ploughings by *desi* plough, 2 ploughings by cultivator and 6 plankings. (b) Behind the plough. (c) 80 lb./ac. (d) Rows 9" apart. (e) N.A. (v) *Sanai* as G.M. (vi) C—13 (early). (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 5.4.1955.

**2. TREATMENTS :**

2 manurial treatments : M<sub>0</sub>=Control. M<sub>1</sub>=Application of Calcium in the form of lime in dilute solution of 2 lb./ac. after germination.

Lime applied on 4.12.1954.

**3. DESIGN :**

(i) Paired plot. (ii) (a) 2. (b) N.A. (iii) 6. (iv) (a) 39'×4.5'. (b) 35'×4.5'. (v) 2' at each end. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Slight attack of brown and yellow rust. (iii) Fresh and dry grain and straw yield. (iv) a No. (b) and (c) N.A. (v) to (vii) Nil.

## 5. RESULTS :

(i) 2981 lb./ac. (ii) 124.9 lb./ac. (iii) Treatment difference is not significant. (iv) Av. yield of grain in lb./ac.

Treatment	M <sub>0</sub>	M <sub>1</sub>
Av. yield	3011	2951

S.E./mean = 51.0 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 54(371).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'M'.**

Object :—To study the effect of Calcium on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanai*. (c) Nil. (ii) (a) Loamy soil. (b) Refer soil analysis, Kanpur. (iii) 8.11.1954. (iv) (a) 1 ploughing by victory plough, 5 ploughings by *desi* plough, 2 ploughings by cultivator and 6 plankings. (b) Behind the plough. (c) 80 lb./ac. (d) Rcws 9" apart. (e) N.A. (v) *Sanai* as G.M. (vi) C—13 (early). (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 5.4.1955.

## 2. TREATMENTS :

2 manurial treatments : M<sub>0</sub>=Control and M<sub>1</sub>=Application of Calcium in the form of lime in dilute solution of 10 lb./ac. after germination.

Lime applied on 4.11.1954.

## 3. DESIGN :

(i) Paired-plot. (ii) (a) 2. (b) N.A. (iii) 6. (iv) (a) 39'×4.5'. (b) 35'×4.5'. (v) 2' at each end. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Slight attack of brown and yellow rust. (iii) Fresh and dry grain and straw yield. (iv) (a) No. (b) and (c) N.A. (v) to (vii) Nil.

## 5. RESULTS :

(i) 2839 lb./ac. (ii) 137.4 lb./ac. (iii) Treatment difference is not significant. (iv) Av. yield of grain in lb./ac.

Treatment	M <sub>0</sub>	M <sub>1</sub>
Av. yield	2762	2916

S.E./mean = 56.1 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 54(15).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'M'.**

Object :—To study the effect of P through a legume on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) to (c) As per treatments. (ii) (a) Loamy soil. (b) Refer soil analysis, Kanpur. (iii) 31.10.1954. (iv) (a) 2 ploughings by victory plough, 1 by watt plough and 4 plankings. (b) Sown behind the plough. (c) 80 lb./ac. (d) Rows 9" apart. (e) N.A. (v) G.M. applied. (vi) Pb.—591 (medium). (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 6.4.1955.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 levels of  $P_2O_5$  as Super :  $P_0=0$  and  $P_1=50$  lb./ac.

(2) 3 G.M. crops :  $G_0$ =Fallow,  $G_1$ =Moong T-1 and  $G_2$ =Sanai.

Super applied by broadcast to Sanai and Moong. Sanai and Moong as G.M. applied to Wheat crop.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a)  $30' \times 15'$ . (b)  $26' \times 13.5'$ . (v)  $2' \times 9'$ . (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1951—1954. (b) Yes. (c) N.A. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1786 lb./ac. (ii) 294.1 lb./ac. (iii) Main effect of G and interaction  $P \times G$  are highly significant. (iv) Av. yield of grain in lb./ac.

	$G_0$	$G_1$	$G_2$	Mean
$P_0$	1424	2233	1671	1776
$P_1$	1724	1831	1835	1797
Mean	1574	2032	1753	1786

S E. of P marginal mean = 84.9 lb./ac.  
 S.E. of G marginal mean = 104.0 lb./ac.  
 S.E. of body of table = 147.0 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 54(159).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'M'.**

Object :—To study the effect of F.Y.M. and A/S on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Wheat—Jowar fodder. (b) Jowar fodder. (c) N.A. (ii) (a) Sandy loan. (b) Refer soil analysis, Kanpur. (iii) 19.10.1954. (iv) (a) and (b) N.A. (c) 50 lb./ac. (d) and (e) N.A. (v) N.A. (vi) C-13 (early). (vii) to (ix) N.A. (x) 20.4.1955.

## 2. TREATMENTS :

8 manurial treatments :  $T_0$ =Control,  $T_1$ =100 lb./ac. of N as F.Y.M.,  $T_2$ =125 lb./ac. of N as F.Y.M.,  $T_3$ =150 lb./ac. of N as F.Y.M.,  $T_4$ =175 lb./ac. of N as F.Y.M.,  $T_5$ =200 lb./ac. of N as F.Y.M.,  $T_6$ =225 lb./ac. of N as F.Y.M. and  $T_7$ =50 lb./ac. N as A/S.

Manures applied on 13, 14 and 19.10.1954.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b)  $27' \times 309'$ . (iii) 4. (iv) (a) and (b)  $36' \times 20'$ . (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1950—1954. (b) Yes. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 579 lb./ac. (ii) 164.6 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$T_0$	$T_1$	$T_2$	$T_3$	$T_4$	$T_5$	$T_6$	$T_7$
Av. yield	340	492	424	431	529	522	507	1384

S.E./mean = 82.3 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 54(157).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'M'.**

Object :—To study the effect of different times of application of P on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Wheat—*Sanai*. (b) *Sanai*. (c) As per treatments. (ii) (a) Loamy soil. (b) Refer soil analysis, Kanpur. (iii) 20.10.1954. (iv) (a) and (b) N.A. (c) 50 srs./ac. (d) and (e) N.A. (v) *Sanai* as G.M. (vi) C--13 (early). (vii) to (ix) N.A. (x) 12.4.1955.

**2. TREATMENTS :**

All combinations of (1) and (2)+2 extra treatments

(1) 3 levels of  $P_2O_5$  :  $P_1=75$ ,  $P_2=100$  and  $P_3=125$  lb./ac.(2) 2 times of application of  $P_2O_5$  :  $T_1=$ At sowing time of *Sanai* and  $T_2=$ At burying time of *Sanai*.Extra treatments :  $E_0=$ Control and  $E_1=$ *Sanai* alone (without  $P_2O_5$ ).**3. DESIGN :**(i) R.B.D. (ii) (a) 8. (b)  $80' \times 123'$ . (iii) 4. (iv) (a) and (b)  $28.5' \times 37.5'$ . (v) Nil. (vi) Yes.**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1954—1959. (b) Yes. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1434 lb./ac. (ii) 238.0 lb./ac. (iii) Only 'E vs. others' is significant. (iv) Av. yield of grain in lb./ac.

$$E_0 = 988 \text{ lb./ac. and } E_1 = 1330 \text{ lb./ac.}$$

	$P_1$	$P_2$	$P_3$	Mean
$T_1$	1391	1396	1625	1471
$T_2$	1498	1523	1722	1581
Mean	1444	1460	1674	1526

S.E. of P marginal mean = 84.1 lb./ac.

S.E. of T marginal mean = 68.7 lb./ac.

S.E. of body of table or E mean = 119.0 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 54(161).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'M'.**

Object :—To study the effect of different methods of application of P on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Wheat—*Jowar* fodder. (b) *Jowar* fodder. (c) N.A. (ii) (a) Loamy soil. (b) Refer soil analysis, Kanpur. (iii) 12.11.1954. (iv) (a) and (b) N.A. (c) 50 srs./ac. (d) and (e) N.A. (v) to (ix) N.A. (x) 19.4.1955.

**2. TREATMENTS :****Main-plot treatments :**2 levels of N as A/S :  $N_0=0$  and  $N_1=50$  lb./ac.**Sub-plot treatments :**4 methods of application of 100 lb./ac. of  $P_2O_5$  :  $M_0=$ No  $P_2O_5$ ,  $M_1=$ Broadcast,  $M_2=$ By victory plough and  $M_3=$ By U.P. plough with funnel.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 4 sub-plots/main-plot. (b) 20'×276'. (iii) 5. (iv) (a) and (b) 31'×20'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1442 lb./ac. (ii) (a) 592.3 lb./ac. (b) 149.0 lb./ac. (iii) Main effect of N alone is significant. (iv) Av. yield of grain in lb./ac.

	M <sub>0</sub>	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	Mean
N <sub>0</sub>	1012	892	1025	1131	1015
N <sub>1</sub>	1841	1813	1932	1890	1869
Mean	1426	1352	1479	1510	1442

S.E. of difference of two

1. N marginal means = 187.3 lb./ac.
2. M marginal means = 66.5 lb./ac.
3. M means at the same level of N = 94.2 lb./ac.
4. N means at the same level of M = 204.3 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 54(183).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'M'.**

**Object :-**To study the effect of spraying trace-elements on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Wheat—*Moong*. (b) *Moong*. (c) N.A. (ii) (a) Loamy soil. (b) Refer soil analysis, Kanpur. (iii) 20.10.1954. (iv) (a) and (b) N.A. (c) 50 srs./ac. (d) and (e) N.A. (v) N.A. (vi) C—13 (early). (vii) to (ix) N.A. (x) 12.4.1955.

## 2. TREATMENTS :

5 trace-element treatments : T<sub>0</sub>=Control, T<sub>1</sub>=5 lb./ac. of MaSO<sub>4</sub>, T<sub>2</sub>=5 lb./ac. of ZnCl<sub>2</sub>, T<sub>3</sub>=5 lb./ac. of C/S and T<sub>4</sub>=1 lb./ac. of Boric acid.

Trace-elements sprayed on 18.12.1954.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) 36.3'×116'. (iii) 4. (iv) (a) and (b) 36.3'×20'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1954 only. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 794 lb./ac. (ii) 421.2 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>
Av. yield	863	878	832	585	810

S.E./mean = 210.6 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 54(25).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'M'.**

Object :—To study the effect of N, P and K on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) *Chari*—Wheat. (b) *Chari* for fodder. (c) Nil. (ii) (a) Loamy soil. (b) Refer soil analysis, Kanpur. (iii) 11.11.1954. (iv) (a) 1 ploughing by *desi* plough, 3 by cultivator, 4 plankings and 1 light *palewa*. (b) Sown behind the plough. (c) 80 lb./ac. (d) Rows 9" apart. (e) N.A. (v) As per treatments. (vi) NP—125 (medium). (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 10.4.1955.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 3 levels of N as A/S :  $N_0=0$ ,  $N_1=25$  and  $N_2=50$  lb./ac.(2) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=50$  and  $P_2=100$  lb./ac.(3) 3 levels of  $K_2O$  as Pot. Sul. :  $K_0=0$ ,  $K_1=50$  and  $K_2=100$  lb./ac. <sup>1</sup>A/S and  $K_2O$  applied as broadcast and  $P_2O_5$  applied in furrows at sowing.**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 27. (b) N.A. (iii) 3. (iv) (a) 15'×10.5'. (b) 11'×9'. (v) 2'×9". (vi) Yes.

**4. GENERAL :**

(i) Very good. (ii) Slight attack of black, brown and yellow rust. (iii) Dry grain yield. (iv) (a) 1951—1955. (b) Yes. (c) N.A. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1540 lb./ac. (ii) 404.8 lb./ac. (iii) Main effect of N alone is highly significant. (iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	$P_2$	Mean	$K_0$	$K_1$	$K_2$
$N_0$	936	081	1119	1045	943	992	1201
$N_1$	1660	147	1420	1519	1578	1364	1615
$N_2$	2093	2062	2011	2055	2331	1879	1954
Mean	1563	1540	1517	1540	1617	1412	1590
$K_0$	1596	1660	1596				
$K_1$	1684	1295	1257				
$K_2$	1409	1665	1697				

S.E. of any marginal mean

= 77.9 lb./ac.

S.E. of body of any table

= 134.9 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 55(10).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'M'.**

Object :—To study the effect of N, P and K on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) *Chari*—Wheat. (b) *Chari* for fodder. (c) Cowdung. (ii) (a) Loamy soil. (b) Refer soil analysis, Kanpur. (iii) 14.11.1955. (iv) (a) 3 ploughings by victory plough, 4 by *desi* plough and 2 by cultivator. (b) Sown behind the plough. (c) 80 lb./ac. (d) Rows 9" apart. (e) N.A. (v) As per treatments. (vi) NP—125 (medium). (vii) Irrigated. (viii) 1 interculture. (ix) N.A. (x) 14.4.1956.

**2. TREATMENTS and 3. DESIGN :**

Same as in expt. no. 54(25) above.

## 4. GENERAL :

(i) Poor. (ii) Traces of rust. (iii) Yield of grain. (iv) (a) 1951-1955. (b) Yes. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 923 lb./ac. (ii) 444.4 lb./ac. (iii) Main effects of N and K are highly significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean	K <sub>0</sub>	K <sub>1</sub>	K <sub>2</sub>
N <sub>0</sub>	358	491	508	452	452	251	654
N <sub>1</sub>	936	899	987	941	974	616	1232
N <sub>2</sub>	1357	1382	1389	1376	1521	1219	1389
Mean	884	924	961	923	982	695	1092
K <sub>0</sub>	955	1131	861				
K <sub>1</sub>	867	534	684				
K <sub>2</sub>	830	1107	1338				

S.E. of any marginal mean = 85.5 lb./ac.

S.E. of body of any table = 148.1 lb./ac.

**Crop :-** Wheat (*Rabi*).

**Ref :-** U.P. 55(19).

**Site :-** Govt. Res. Farm, Kanpur.

**Type :-** 'M'.

**Object :-** To study the effect of different sources of N on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) *Chari* for fodder. (c) Cowdung. (ii) (a) Loamy soil. (b) Refer soil analysis, Kanpur. (iii) 20.11.1955. (iv) (a) 7 ploughings. (b) Sown behind the plough. (c) 80 lb./ac. (d) Rows 9" apart. (e) N.A. (v) Nil. (vi) NP-710 (medium). (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 14, 15.4.1956.

## 2. TREATMENTS :

9 sources of N at 50 lb./ac. : S<sub>0</sub>=Control (N<sub>0</sub> N), S<sub>1</sub>=Castor cake, S<sub>2</sub>=G.N.C., S<sub>3</sub>=F.Y.M., S<sub>4</sub>=A/S, S<sub>5</sub>=Urea, S<sub>6</sub>=A/C, S<sub>7</sub>=A/S/N and S<sub>8</sub>=C/N.

Manures broadcast at the time of sowing.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 24'×12'. (b) 20'×10'6". (v) 2'×9". (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Rust attack. (iii) Grain yield. (iv) (a) 1955-contd. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1223 lb./ac. (ii) 186.7 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	S <sub>0</sub>	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>	S <sub>5</sub>	S <sub>6</sub>	S <sub>7</sub>	S <sub>8</sub>
Av. yield	620	1240	1292	727	1373	1407	1580	1400	1366

S.E./mean = 93.4 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 56(264).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'M'.**

Object:—To study the effect of different sources of N on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) *Chari*—Wheat. (b) *Chari*. (c) Nil. (ii) (a) Loamy soil. (b) Refer soil analysis, Kanpur. (iii) 17.11.1956. (iv) (a) N.A. (b) Behind the plough. (c) 80 lb./ac. (d) Rows 9" apart. (e) N.A. (v) Nil. (vi) NP—710 (medium). (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 29.4.1957.

**2. TREATMENTS :**

Same as in expt. no. 55(19) on page 238.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 21.33'×13.5'. (b) 17.33'×12'. (v) 2'×9". (vi) Yes.

**4. GENERAL :**

(i) Good. Crop lodged. (ii) Rust attack. No control measures taken. Wide spread damage by rats and dogs. (iii) Grain and straw yield. (iv) (a) 1955—1957. (b) Yes. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1864 lb./ac. (ii) 331.0 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	S <sub>0</sub>	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>	S <sub>5</sub>	S <sub>6</sub>	S <sub>7</sub>	S <sub>8</sub>
Av. yield	2390	1771	1616	2168	2020	1851	1468	1784	1710

S.E./mean = 165.5 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 57(294).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'M'.**

Object:—To study the effect of different sources of N on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) *Chari*—Wheat. (b) *Chari*. (c) N.A. (ii) (a) Loamy soil. (b) Refer soil analysis, Kanpur. (iii) 6.11.1957. (iv) (a) N.A. (b) Behind the plough. (c) 80 lb./ac. (d) Rows 9" apart. (e) N.A. (v) Nil. (vi) NP—710 (mid-early). (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 17.4.1958.

**2. TREATMENTS and 3. DESIGN :**

Same as in expt. no. 56(264) above.

**4. GENERAL :**

(i) Good. (ii) Rust incidence. No control measures adopted. (iii) Grain and straw yield. (iv) (a) 1955—1957 (b) Yes. (c) No. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1546 lb./ac. (ii) 163.2 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	S <sub>0</sub>	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>	S <sub>5</sub>	S <sub>6</sub>	S <sub>7</sub>	S <sub>8</sub>
Av. yield	929	1461	1643	1239	1757	1461	1926	1831	1670

S.E./mean = 81.6 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 55(18).****Site :- Govt. Agri. Farm, Kanpur.****Type :- 'M'.**

Object:— To study the effect of different sources of N on Wheat.



## 1. BASAL CONDITIONS :

(i) (a) No. (b) *Chari* for fodder. (c) Cowdung. (ii) (a) Loamy soil. (b) Refer soil analysis, Kanpur. (iii) 20.11.1955. (iv) (a) 8 ploughings. (b) Sown behind the plough. (c) 80 lb./ac. (d) and (e) N.A. (v) Nil. (vi) NP-720 (medium). (vii) Irrigated. (viii) Weeding. (ix) N.A. (x) 15.4.1956.

## 2. TREATMENTS :

12 sources of 50 lb./ac. of N :  $N_0$ =Control ( $N_0$  N),  $N_1$ =A/S,  $N_2$ =Castor cake,  $N_3$ =F.Y.M.,  $N_4$ =A/S + Castor cake in 1 : 1 ratio,  $N_5$ =A/S+F.Y.M. in 1 : 1 ratio,  $N_6$ =A/S+Castor cake in 3 : 1 ratio,  $N_7$ =A/S+Castor cake in 1 : 3 ratio,  $N_8$ =A/S+F.Y.M. in 3 : 1 ratio,  $N_9$ =A/S+F.Y.M. in 1 : 3 ratio,  $N_{10}$ =A/S+Castor cake+F.Y.M. in 1 : 1 : 1 ratio and  $N_{11}$ =A/S+Castor cake+F.Y.M. in 2 : 1 : 1 ratio.

Manures broadcast at the time of sowing.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 18' × 12'. (b) 14' × 10½'. (v) 2' × 9". (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Slight attack of yellow and black rust. (iii) Grain yield. (iv) (a) 1955-1957. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1183 lb./ac. (ii) 231.1 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$N_0$	$N_1$	$N_2$	$N_3$	$N_4$	$N_5$	$N_6$	$N_7$	$N_8$	$N_9$	$N_{10}$	$N_{11}$
Av. yield	724	1391	1305	895	1324	1038	1267	1381	1314	990	1172	1391

S.E./mean = 115.6 lb./ac.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 56(263).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'M'.**

Object :— To study the effect of different sources of N on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) *Chari*-V/heat. (b) *Chari* for fodder. (c) Nil. (ii) (a) Loamy soil. (b) Refer soil analysis, Kanpur. (iii) 17.11.1956. (iv) (a) N.A. (b) Behind the plough. (c) 80 lb./ac. (d) Rows 9" apart. (e) N.A. (v) Nil. (vi) NP-720 (mid-early). (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 29.4.1957.

## 2. TREATMENTS :

Same as in expt. no. 55(18) on page 239.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 17' × 7.5'. (b) 13' × 6'. (v) 2' × 9". (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Yellow, brown and black rust appeared. No control measures adopted. (iii) Grain and straw yield. (iv) (a) 1955-1957. (b) Yes. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 2257 lb./ac. (ii) 277.2 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$N_0$	$N_1$	$N_2$	$N_3$	$N_4$	$N_5$	$N_6$	$N_7$	$N_8$	$N_9$	$N_{10}$	$N_{11}$
Av. yield	1867	2423	2046	2118	2369	2280	2262	2459	2513	2226	2316	2208

S.E./mean = 138.6 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 57(277).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'M'.**

Object :— To study the effect of different sources of N on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) *Chari*—Wheat. (b) *Chari* for fodder. (c) Nil. (ii) (a) Loam soil. (b) Refer soil analysis, Kanpur. (iii) 6.11.1957. (iv) (a) N.A. (b) Behind the plough. (c) 80 lb./ac. (d) Rows 9" apart. (e) N.A. (v) Nil. (vi) NP—720 (mid early). (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 17.4.1958.

**2. TREATMENTS to 4. GENERAL :**

Same as in expt. no. 56(263) on page 240.

**5. RESULTS :**

(i) 1568 lb./ac. (ii) 190.4 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	N <sub>4</sub>	N <sub>5</sub>	N <sub>6</sub>	N <sub>7</sub>	N <sub>8</sub>	N <sub>9</sub>	N <sub>10</sub>	N <sub>11</sub>
Av. yield	1005	1921	1490	1023	1921	1759	1759	1741	1723	1167	1651	1651

S.E./mean = 95.2 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 55(148).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'M'.**

Object :— To study the effect of different levels of N through different sources on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loam soil. (b) Refer soil analysis, Kanpur. (iii) 13.11.1955. (iv) to (ix) N.A. (x) April, 1956.

**2. TREATMENTS :**

All combinations of (1) and (2)+a control

(1) 2 sources of N : S<sub>1</sub>=Liquor Ammonia and S<sub>2</sub>=A/S.(2) 2 levels of N : N<sub>1</sub>=25 and N<sub>2</sub>=50 lb./ac.**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) and (b) 20' × 36' 3". (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1955—1957. (b) N.A. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 2553 lb./ac. (ii) 173.1 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

Control = 2486 lb./ac.

	N <sub>1</sub>	N <sub>2</sub>	Mean
S <sub>1</sub>	2602	2537	2570
S <sub>2</sub>	2569	2570	2570
Mean	2586	2554	2570

S.E. of any marginal mean = 61.2 lb./ac.

S.E. of body of table or control mean = 86.6 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 56(97).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'M'.**

Object :—To study the effect of different levels of N through different sources on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loam soil. (b) Refer soil analysis, Kanpur. (iii) 14.11.1956. (iv) to (x) N.A.

**2. TREATMENTS to 4. GENERAL :**

Same as in expt. no. 55(148) on page 241.

**5. RESULTS :**

(i) 2040 lb./ac. (ii) 134.5 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

Control = 2070 lb./ac.

	N <sub>1</sub>	N <sub>2</sub>	Mean
S <sub>1</sub>	1939	2145	2042
S <sub>2</sub>	2059	1984	2022
Mean	1999	2064	2032

S.E. of any marginal mean = 47.6 lb./ac.  
 S.E. of body of table or control mean = 67.2 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 57(133).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'M'.**

Object :—To study the effect of different levels of N through different sources on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loam soil. (b) Refer soil analysis, Kanpur. (iii) 29.10.1957. (iv) to (ix) N.A. (x) 9.4.1958.

**2. TREATMENTS to 4. GENERAL :**

Same as in expt. no. 55(148) on page 241.

**5. RESULTS :**

(i) 2207 lb./ac. (ii) 441.5 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

Control = 1974 lb./ac.

	N <sub>1</sub>	N <sub>2</sub>	Mean
S <sub>1</sub>	2023	2194	2108
S <sub>2</sub>	2567	2278	2422
Mean	2295	2236	2265

S.E. of any marginal mean = 156.1 lb./ac.  
 S.E. of body of table or control mean = 220.8 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 55(149).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'M'.**

Object :—To study the effect of different sources of N on Wheat.

**1. BASAL CONDITIONS :**(i) (a) N.A. (b) *Jowar* for fodder. (c) N.A. (ii) (a) Loam soil. (b) Refer soil analysis, Kanpur. (iii) to (x) N.A.**2. TREATMENTS :**6 manurial treatments:  $M_0$ =Control,  $M_1$ =50 lb./ac. of N as F.Y.M.,  $M_2$ =50 lb./ac. of N as A/S,  $M_3$ =25 lb./ac. of N as F.Y.M.+25 lb./ac. of N as A/S,  $M_4$ =37.5 lb./ac. of N as F.Y.M.+12.5 lb./ac. of N as A/S and  $M_5$ =12.5 lb./ac. of N as F.Y.M.+37.5 lb./ac. of N as A/S.**3. DESIGN :**

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) and (b) 25'×29'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1955—1957. (b) N.A. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1080 lb./ac. (ii) 329.6 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$M_0$	$M_1$	$M_2$	$M_3$	$M_4$	$M_5$
Av. yield	888	943	1455	993	943	1256

S.E./mean = 164.8 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 56(98).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'M'.**

Object :—To study the effect of different sources of N on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loam soil. (b) Refer soil analysis, Kanpur. (iii) 14.11.1956. (iv) and (v) N.A. (vi) C—13 (early). (vii) to (x) N.A.

**2. TREATMENTS to 4. GENERAL :**

Same as in expt. no. 55(149) above.

**5. RESULTS :**

(i) 2326 lb./ac. (ii) 216.7 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$M_0$	$M_1$	$M_2$	$M_3$	$M_4$	$M_5$
Av. yield	2435	2339	2307	2462	2202	2211

S.E./mean = 108.4 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 57(132).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'M'.**

Object :—To study the effect of different sources of N on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loam soil. (b) Refer soil analysis, Kanpur. (iii) 27.10.1957. (iv) (a) and (b) N.A. (c) 50 srs./ac. (d) and (e) N.A. (v) N.A. (vi) C—13 (early). (vii) to (x) N.A.

**2. TREATMENTS to 4. GENERAL :**

Same as in expt. no. 55(149) on page 243.

**5. RESULTS :**

(i) 2018 lb./ac. (ii) 350.4 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	M <sub>0</sub>	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	M <sub>4</sub>	M <sub>5</sub>
Av. yield	2111	1994	2131	1820	1965	2084

S.E./mean = 175.2 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 55(167).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'M'.**

Object :- To study the effect of inorganic catalyst and F.Y.M. on Wheat crop.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) *Jowar*—Fodder. (c) N.A. (ii) (a) Loam soil. (b) Refer soil analysis, Kanpur. (iii) to (x) N.A.

**2. TREATMENTS :**

All combinations of (1) and (2)+a control

(1) 3 catalysts : C<sub>1</sub>=KMnO<sub>4</sub>, C<sub>2</sub>=CuSO<sub>4</sub> and C<sub>3</sub>=FeSO<sub>4</sub>.

(2) 2 levels of catalyst : D<sub>1</sub>=12 and D<sub>2</sub>=24 ozs./ac.

Solution of these catalysts was made in water and sprayed on plants 50 lb./ac. of N as F.Y.M. applied to all plots except control.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) and (b) 20'×36'3". (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1955—1957. (b) N.A. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 612 lb./ac. (ii) 166.0 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

Control = 601 lb./ac.

	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	Mean
D <sub>1</sub>	687	568	714	656
D <sub>2</sub>	580	590	543	571
Mean	634	579	628	614

S.E. of C marginal mean = 58.7 lb./ac.

S.E. of D marginal mean = 47.9 lb./ac.

S.E. of body of table or control mean = 83.0 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 56(142).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'M'.**

Object :- To study the effect of inorganic catalyst and F.Y.M. on Wheat crop.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loam soil. (b) Refer soil analysis, Kanpur. (iii) 14.11.1956. (iv) to (x) N.A.

## 2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 55(167) on page 244.

## 5. RESULTS :

(i) 2082 lb./ac. (ii) 438.9 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

Control = 1905 lb./ac.

	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	Mean
D <sub>1</sub>	2029	2097	2107	2078
D <sub>2</sub>	2238	2199	2002	2146
Mean	2134	2148	2054	2112

S.E. of C marginal mean = 155.2 lb./ac.

S.E. of D marginal mean = 126.7 lb./ac.

S.E. of body of table or control mean = 219.4 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 57(198).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'M'.**

Object :—To study the effect of inorganic catalyst and F.Y.M. on Wheat crop.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loam soil. (b) Refer soil analysis, Kanpur. (iii) 30.10.1957. (iv) and (v) N.A. (vi) C-13 (early). (vii) to (x) N.A.

## 2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 55(167) on page 244.

## 5. RESULTS :

(i) 1671 lb./ac. (ii) 297.4 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

Control = 1509 lb./ac.

	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	Mean
D <sub>1</sub>	1710	1675	1886	1757
D <sub>2</sub>	1727	1607	1585	1640
Mean	1718	1641	1736	1698

S.E. of C marginal mean = 105.1 lb./ac.

S.E. of D marginal mean = 85.9 lb./ac.

S.E. of body of table or control mean = 148.7 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 56(220).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'M'.**

Object :—To study the effect of G.M. on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) and (b) As per treatments. (c) Nil. (ii) (a) Loam soil. (b) Refer soil analysis, Kanpur. (iii) 7.11.1956. (iv) (a) N.A. (b) Behind the plough. (c) 80 lb./ac. (d) Rows 9" apart. (e) N.A. (v) Nil. (vi) NP—125. (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 12.4.1957.

## 2. TREATMENTS :

8 G.M. treatments :  $T_0$ =Control,  $T_1$ =*Moong* turned in with pods (no picking),  $T_2$ =*Moong* turned in after one picking,  $T_3$ =*Moong* turned in after two pickings,  $T_4$ =*Moong* turned in after three pickings,  $T_5$ =*Moong* turned in after four pickings,  $T_6$ =*Moong* plants removed after four pickings and  $T_7$ =*Sanai* as G.M.

*Moong* sown on 2.7.1956, 1st picking on 24.8.1956, 2nd on 30, 31.8.1956, 3rd on 6.9.1956 and 4th on 17.9.1956.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 32'×10.5'. (b) 28'×9'. (v) 2'×9". (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Yellow, brown and black rust attack. (iii) Grain and straw yield. (iv) (a) 1956—1959. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1875 lb./ac. (ii) 215.7 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$T_0$	$T_1$	$T_2$	$T_3$	$T_4$	$T_5$	$T_6$	$T_7$
Av. yield	2089	1850	1939	1834	1656	1867	1695	2072

S.E./mean = 107.8 lb./ac.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 57(293).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'M'.**

Object :- To study the effect of G.M. on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) and (b) As per treatments. (c) Nil. (ii) (a) Loam soil. (b) Refer soil analysis, Kanpur. (iii) 4.11.1957. (iv) (a) N.A. (b) Behind the plough. (c) 80 lb./ac. (d) Rows 9" apart. (e) N.A. (v) Nil. (vi) NP—125 (mid early). (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 17.4.1958.

## 2. TREATMENTS :

7 G.M. treatments :  $T_0$ =Control,  $T_1$ =*Moong* turned in without picking,  $T_2$ =*Moong* turned in after 1 picking,  $T_3$ =*Moong* turned in after 2 pickings,  $T_4$ =*Moong* turned in after 3 pickings,  $T_5$ =*Moong* plants removed after 4 pickings and  $T_6$ =*Sanai* as G.M.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 32'×10.5'. (b) 28'×9'. (v) 2'×9". (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Brown rust appeared. (iii) Grain and straw yield. (iv) (a) 1956—1958. (b) No. (c) Nil. (v) to (vii) N.A.

## 5. RESULTS :

(i) 1117 lb./ac. (ii) 140.0 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$T_0$	$T_1$	$T_2$	$T_3$	$T_4$	$T_5$	$T_6$
Av. yield	439	1095	1022	1361	1411	1333	1156

S.E./mean = 70.0 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 58(215).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'M'.**

Object :—To study the effect of G.M. on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) As per treatments. (c) Nil. (ii) (a) Loam soil. (b) Refer soil analysis, Kanpur. (ii) N.A. (iv) (a) N.A. (b) Behind the plough. (c) 80 lb./ac. (d) Rows 9" apart. (e) N.A. (v) Nil. (vi) NP—125 (medium). (vii) and (viii) N.A. (ix) 1". (x) N.A.

**2. TREATMENTS to 4. GENERAL :**

Same as in expt. no. 57(293) on page 246.

**5. RESULTS :**

(i) 1318 lb./ac. (ii) 231.2 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	T <sub>5</sub>	T <sub>6</sub>
Av. yield	1022	1422	1389	1300	1389	1106	1600

S.E./mean 115.6 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 58(293).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'M'.**

Object :—To study the effect of G.M. crops on Wheat crop.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) As per treatments. (c) N.A. (ii) (a) Loam soil. (b) Refer soil analysis, Kanpur. (i.i) 4.11.1958. (iv) and (v) N.A. (vi) C—13. (vii) to (ix) N.A. (x) 9.4.1959.

**2. TREATMENTS :**

10 G.M. treatments : T<sub>0</sub>=Control, T<sub>1</sub>=*Sanai*, T<sub>2</sub>=*Early Urd*, T<sub>3</sub>=*Early Lobia*, T<sub>4</sub>=*Early Moong*, T<sub>5</sub>=*Cassiatora*, T<sub>6</sub>=*Cassia leschenaltina*, T<sub>7</sub>=*Crotolaria striata*, T<sub>8</sub>=*Crotolaria usramoensis*, and T<sub>9</sub>=*Crotolaria brownie*.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 10. (b) 26.33' × 122.5'. (iii) 4. (iv) (a) and (b) 10' × 36.33'. (v) Nil. (vi) Yes.

**4. GENERAL :**(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) and (b) No. (c) Nil. (v) and (vi) Nil. (vii) There was no germination and growth of G.M. crops in treatments T<sub>8</sub> to T<sub>9</sub>.**5. RESULTS :**

(i) 3429 lb./ac. (ii) 174.9 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	T <sub>5</sub>	T <sub>6</sub>	T <sub>7</sub>	T <sub>8</sub>	T <sub>9</sub>
Av. yield	3456	3426	3512	3426	3456	3450	3360	3542	3360	3298

S.E./mean = 87.4 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 59(328).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'M'.**

Object :—To study the effect of G.M. crops on Wheat crop.



## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) As per treatments. (c) Nil. (ii) (a) Loam soil. (b) Refer soil analysis, Kanpur (ii) 28.10.1959, (iv) (a) N.A. (b) Line sowing. (c) 40 srs./ac. (d) Rows 10" apart. (e) N.A. (v) Nil (v) C—13. (vii) to (x) N.A.

## 2. TREATMENTS :

11 G.M. treatments :  $T_0$ =Control,  $T_1$ =*Sanai* at 40 srs./ac.,  $T_2$ =Early *Urd* at 6 srs./ac.,  $T_3$ =Early *Moong* at 6 srs./ac.,  $T_4$ =Early *Lobia* at 12 srs./ac.,  $T_5$ =*Cassia tora* at 14 srs./ac.,  $T_6$ =Maize 3' in lines and *sanai* at 3 srs./ac. one month after in between the rows,  $T_7$ =*Crotalaria striata* at 6 srs./ac.,  $T_8$ =*Crotalaria ussamoensis* at 4 srs./ac.,  $T_9$ =*Crotalaria brownie* at 8 srs./ac. and  $T_{10}$ =*Indigofera* at 6 srs./ac.

Maize sown on 5.6.1959. Other crops sown on 26.6.1959 at the given seedrate and turned in on 29.8.1959.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 11. (b) 36.33' × 125'. (iii) 4. (iv) (a) and (b) 36.33' × 10'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1959—contd. (b) No. (c) Nil. (v) and (vi) Nil. (vii) There was no germination of G.M. crops in treatments  $T_7$  to  $T_9$ .

## 5. RESULTS :

(i) 1952 lb./ac. (ii) 242.3 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$T_0$	$T_1$	$T_2$	$T_3$	$T_4$	$T_5$	$T_6$	$T_7$	$T_8$	$T_9$	$T_{10}$
Av. yield	1890	2214	2372	2227	2293	1738	1910	1632	1738	1626	1837

S.E./mean = 121.2 lb./ac.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 56(221).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'M'.**

Object :—To study the effect of N and P on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanai*. (c) Nil. (ii) (a) Loam soil. (b) Refer soil analysis, Kanpur. (iii) 13.11.1956. (iv) (a) N.A. (b) Behind the plough. (c) 80 lb./ac. (d) Rows 9" apart. (e) N.A. (v) *Sanai* as G.M. (vi) C—13 (mid-early). (vii) Irrigated. (viii) 1 hoeing. (ix) N.A. (x) 16.4.1957.

## 2. TREATMENTS :

6 manurial treatments :  $M_1$ =25 lb./ac. of N as A/S,  $M_2$ =25 lb./ac. of N as A/S+25 lb./ac. of  $P_2O_5$  as Super applied by broadcast,  $M_3$ =25 lb./ac. of N as A/S+25 lb./ac. of  $P_2O_5$  as Super applied in furrows.,  $M_4$ =50 lb./ac. of N as A/S,  $M_5$ =50 lb./ac. of N as A/S+50 lb./ac.  $P_2O_5$  as Super applied by broadcast and  $M_6$ =50 lb./ac. of N as A/S+50 lb./ac. of  $P_2O_5$  as Super applied in furrows.

## 3. DESIGN :

(i) R.B.D (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) 20' × 9'. (b) 16' × 7.5'. (v) 2' × 9". (vi) Yes.

## 4. GENERAL :

(i) Good. Lodging in replication I. (ii) Yellow, brown and black rust appeared. No control measures adopted. (iii) Grain and straw yield. (iv) (a) and (b) No. (c) Nil. (v) to (vi) Nil.

## 5. RESULTS :

(i) 2100 lb./ac. (ii) 277.3 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$M_1$	$M_2$	$M_3$	$M_4$	$M_5$	$M_6$
Av. yield	2108	2217	2279	2077	1968	1952

S.E./mean = 113.2 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 57(295).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'M'.**

Object :- To study the effect of N and P on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Fallow—Wheat. (b) Fallow. (c) Nil. (ii) (a) Loam soil. (b) Refer soil analysis. Kanpur. (iii) 5.11.1957. (iv) (a) N.A. (b) Behind the plough. (c) 80 lb./ac. (d) Rows 9" apart. (e) N.A. (v) Nil. (vi) Pb.—591 (medium). (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 22.4.1958.

**2. TREATMENTS:**

All combinations of (1) and (2)+one extra treatment

(1) 4 sources of N at 25 lb./ac. :  $S_0$ =Control (No N),  $S_1$ =Castor cake,  $S_2$ =A/S and  $S_3$ =Urea.(2) 2 levels of  $P_2O_5$  as Super :  $P_0$ =0 and  $P_1$ =50 lb./ac.Extra treatment : E=100 lb./ac. of  $P_2O_5$  as Super.**3. DESIGN :**

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 16'×11.25'. (b) 12'×9.75'. (v) 2'×9". (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) N.A. (iii) Grain and straw yield. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1587 lb./ac. (ii) 198.6 lb./ac. (iii) Main effect of P alone is significant. (iv) Av. yield of grain in lb /ac.

E = 1580 lb./ac.

	$S_0$	$S_1$	$S_2$	$S_3$	Mean
$P_0$	1436	1424	1580	1580	1505
$P_1$	1508	1891	1556	1723	1670
Mean	1472	1658	1568	1652	1588

S.E. of S marginal mean = 70.2 lb./ac.

S.E. of P marginal mean = 49.6 lb./ac.

S.E. of body of table or E mean = 99.3 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 58(208).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'M'.**

Object :- To study the effect of A/S spray on Wheat crop.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loam soil. (b) Refer soil analysis, Kanpur. (iii) 15.11.1958. (iv) (a) N.A. (b) Behind the plough. (c) 60 lb./ac. (d) Rows 9" apart. (e) N.A. (v) N.A. (vi) C—13 (medium). (vii) and (viii) N.A. (ix) 1". (x) 25.4.1959.

**2. TREATMENTS :**4 levels of A/S dissolved in water and sprayed :  $L_0$ =0,  $L_1$ =4,  $L_2$ =6 and  $L_3$ =8 ozs./plot. Spraying done only once.**3. DESIGN :**

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 3. (iv) (a) and (b) 10'×4.5'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Rust infestation. (iii) Grain and straw yield. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 2043 lb./ac. (ii) 302.0 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	L <sub>0</sub>	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>
Av. yield	2116	2033	1950	2074

S.E./mean = 174.4 lb./ac.

**Crop :-** Wheat (*Rabi*).

**Ref :-** U.P. 54(6).

**Site :-** Student's Instrl. Farm, Govt. Agri. College, Kanpur.

**Type :-** 'M'.

**Object :-** To study the effect of short duration legume (Moong) in the fallow--Wheat rotation on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) and (b) As per treatments. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Kanpur. (iii) 25.10.1954. (iv) (a) 6 ploughings by turning plough and 3 ploughings by *desi* plough followed by planking. (b) Behind the plough. (c) 40 srs./ac. (d) and (e) N.A. (v) No. (vi) C-13. (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 31.3.1955 to 1.4.1955.

**2. TREATMENTS :**

3 crops grown in the previous season : R<sub>1</sub> = Fallow, R<sub>2</sub> = *Moong* unmanured and R<sub>3</sub> = *Moong* manured with 80 lb./ac. of P<sub>2</sub>O<sub>5</sub>.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) 132' × 21'. (b) 130' × 19'. (v) 1' × 1'. (vi) Yes.

**4. GENERAL :**

(i) Normal. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1953--1955. (b) Yes. (c) N.A. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1217 lb./ac. (ii) 140.1 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	R <sub>1</sub>	R <sub>2</sub>	R <sub>3</sub>
Av. yield	1217	1232	1202

S.E./mean = 57.2 lb./ac.

**Crop :-** Wheat (*Rabi*).

**Ref :-** U.P. 55(87).

**Site :-** Student's Instrl. Farm, Govt. Agri. College, Kanpur.

**Type :-** 'M'.

**Object :-** To study the effect of short duration legume (Moong) in the fallow--Wheat rotation on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) to (c) As per treatments. (ii) (a) Sandy loam. (b) Refer soil analysis, Kanpur. (iii) 10.11.1955. (iv) (a) 4 ploughings by *desi* plough, 1 cultivator and 1 planking. (b) Sown behind the plough. (c) 40 srs./ac. (d) and (e) N.A. (v) Nil. (vi) C-13 (early). (vii) Irrigated. (viii) to (x) N.A.

**2. TREATMENTS :**

Same as in expt. no. 54(6) above.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 130' × 19'. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) No. (iii) Grain yield. (iv) (a) 1953--1955. (b) Yes. (c) N.A. (v) to (vii) Nil.

## 5. RESULTS :

(i) 840 lb./ac. (ii) 179.0 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	R <sub>1</sub>	R <sub>2</sub>	R <sub>3</sub>
Av. yield	979	735	807

S.E./mean = 73.1 lb./ac.

**Crop :-** Wheat (*Rabi*).

**Ref :-** U.P. 58(265).

**Site :-** Student's Instrl. Farm, Govt. Agri. College, Kanpur.

**Type :-** 'M'.

**Object :-** To study the residual effect of N and P on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) As per treatments. (ii) (a) Sandy loam. (b) Refer soil analysis, Kanpur. (iii) 18.11.1958. (iv) (a) 1 planking and 1 ploughing. (b) In lines behind the plough. (c) 45 lb./ac. (d) 9" between rows. (e) N.A. (v) Nil. (vi) NP-125. (vii) Irrigated. (viii) N.A. (ix) 2.1" (x) 14.4.1959.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 6 levels of N as A/S : N<sub>0</sub>=0, N<sub>1</sub>=30, N<sub>2</sub>=60, N<sub>3</sub>=90, N<sub>4</sub>=120 and N<sub>5</sub>=150 lb./ac.

(2) 6 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0, P<sub>1</sub>=30, P<sub>2</sub>=60, P<sub>3</sub>=90, P<sub>4</sub>=120 and P<sub>5</sub>=150 lb./ac.

Manures applied to previous maize crop.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 36. (b) N.A. (iii) 2. (iv) (a) 22'×38'. (b) 19'×35'. (v) 1.5'×1.5'. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) N.A. (iii) Yield of grain. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1768 lb./ac. (ii) 337.2 lb./ac. (iii) Main effect of N alone is highly significant. (iv) Av. yield of grain in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	N <sub>4</sub>	N <sub>5</sub>	Mean
P <sub>0</sub>	1490	1776	1572	1744	2063	1965	1768
P <sub>1</sub>	1465	1359	2309	1981	1776	1858	1791
P <sub>2</sub>	1383	1588	1850	1507	2153	2186	1778
P <sub>3</sub>	1318	1171	1703	2206	1916	2227	1757
P <sub>4</sub>	1801	1826	1752	1703	1850	1858	1798
P <sub>5</sub>	1130	1457	1596	2169	2162	1793	1718
Mean	1431	1529	1797	1885	1987	1981	1768

S.E. of any marginal mean = 97.3 lb./ac.

S.E. of body of table = 238.4 lb./ac.

**Crop :-** Wheat (*Rabi*).

**Ref :-** U.P. 57(335).

**Site :-** Student's Instrl. Farm, Govt. Agri. College, Kanpur.

**Type :-** 'M'.

**Object :-** To study the effect of various methods of application of N and P on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize for fodder. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Kanpur. (iii) 7.11.1957. (iv) (a) 1 *palewa*, 1 ploughing with victory plough, 1 harrowing with spring tooth harrow followed by 2 plankings and 2 *desi* ploughings followed by planking. (b) Behind the plough. (c) 82 lb./ac. (d) 9" between rows. (e) N.A. (v) Nil. (vi) NP-125. (vii) Irrigated. (viii) 1 weeding. (ix) 1.24". (x) 23.3.1958.

## 2. TREATMENTS :

All combinations of (1) and (2)+one control

- (1) 3 manurial treatments :  $F_1=50$  lb./ac. of N as Urea,  $F_2=50$  lb./ac. of  $P_2O_5$  as Super and  $F_3=50$  lb./ac. of N as Urea + 50 lb./ac. of  $P_2O_5$  as Super  
 (2) 4 methods of application :  $M_1=Broadcast$  before sowing,  $M_2=Mixing$  with the seed,  $M_3=Placing$  below the seed and  $M_4=Top$  dressing at first irrigation.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 13. (b) 165'9" × 26'. (iii) 4. (iv) (a) 26' × 12'9". (b) 23' × 9'9". (v) 1.5' × 1.5'. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1992 lb./ac. (ii) 377.0 lb./ac. (iii) Main effect of F alone is highly significant. (iv) Av. yield of grain in lb./ac.

Control = 1779 lb./ac.

	$M_1$	$M_2$	$M_3$	$M_4$	Mean
$F_1$	1605	1467	1611	1642	1581
$F_2$	2357	1960	2513	2410	2310
$F_3$	1948	2060	2535	2010	2138
Mean	1970	1829	2220	2021	2010

S.E. of M marginal mean = 108.8 lb./ac.

S.E. of F marginal mean = 94.2 lb./ac.

S.E. of body of table = 188.5 lb./ac.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 58(226).**

**Site :- Student's Instrl. Farm, Govt. Agri. College, Kanpur.**

**Type :- 'M'.**

**Object :-** To study the residual effect of manures applied to Jowar and legumes on Wheat crop.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar* and legumes. (c) As per treatments. (ii) (a) Sandy loam. (b) Refer soil analysis, Kanpur. (iii) 16.11.1958. (iv) (a) 1 planking and 1 *palewa* and 2 ploughings followed by planking. (b) Drilling. (c) 40 srs./ac. (d) and (e) N.A. (v) Nil. (vi) C-13. (vii) Irrigated. (viii) Nil. (ix) 2.1". (x) 10, 11.4.1959.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

- (1) 4 mixtures :  $M_1=Jowar$  alone,  $M_2=Jowar+Guar$  in 1 : 1 ratio,  $M_3=Jowar+Lobia$  in 1 : 1 ratio and  $M_4=Jowar+Moith$  in 1 : 1 ratio.  
 (2) 2 levels of  $P_2O_5$  as Super before sowing :  $P_0=0$  and  $P_1=30$  lb./ac.  
 (3) 3 levels of N as A/S :  $N_0=0$ ,  $N_1=30$  and  $N_2=60$  lb./ac.

Manures applied to previous crops. N applied  $\frac{1}{2}$  before sowing and  $\frac{1}{2}$  on 6.9.1958.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 24. (b) N.A. (iii) 3. (iv) (a) 35.5' × 12.5'. (b) 33.5' × 10.5'. (v) 1' × 1'. (vi) Yes.

## 4. GENERAL :

(i) Normal growth. (ii) N.A. (iii) Yield of grain. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1514 lb./ac. (ii) 170.9 lb./ac. (iii) Main effect of M alone is highly significant. (iv) Av. yield of grain in lb./ac.

	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	M <sub>4</sub>	Mean	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>
P <sub>0</sub>	1407	1600	1596	1598	1550	1548	1577	1525
P <sub>1</sub>	1420	1508	1329	1651	1477	1530	1391	1510
Mean	1414	1554	1462	1625	1514	1539	1484	1518
N <sub>0</sub>	1358	1572	1570	1656				
N <sub>1</sub>	1415	1641	1248	1634				
N <sub>2</sub>	1468	1450	1568	1585				

S.E. of N marginal mean	= 34.9 lb./ac.
S.E. of P marginal mean	= 28.5 lb./ac.
S.E. of M marginal mean	= 40.3 lb./ac.
S.E. of body of N×P table	= 49.3 lb./ac.
S.E. of body of N×M table	= 69.8 lb./ac.
S.E. of body of P×M table	= 57.0 lb./ac.

**Crop :-** Wheat (*Rabi*).

**Ref :-** U.P. 55(137).

**Site :-** B.R. College Insttl. Res. Farm, Khandari.

**Type :-** 'M'.

**Object :-** To study the effect of N and P on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Jowar*. (c) Nil. (ii) (a) Sandy soil. (b) Refer soil analysis, Khandari. (iii) 21.11.1955. (iv) (a) 4 ploughings by *desi* plough and 1 ploughing by *shabash* plough. (b) Sown in rows by seed drill. (c) 40 srs./ac. (d) Rows 9" apart. (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) 1 weeding. (ix) 1.78" (x) 16.5.1956.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N as A/S : N<sub>0</sub>=0, N<sub>1</sub>=20 and N<sub>2</sub>=40 lb./ac.

(2) 3 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0, P<sub>1</sub>=40 and P<sub>2</sub>=60 lb./ac.

N by broadcast and P<sub>2</sub>O<sub>5</sub> applied 3" to 4" deep in furrows on 19 and 20.11.1955.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 9. (b) 220'3"×52'. (iii) 3. (iv) (a) and (b) 52'×20'11". (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1767 lb./ac. (ii) 368.8 lb./ac. (iii) Main effect of N alone is highly significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	881	1415	1108	1135
N <sub>1</sub>	1669	1869	1962	1833
N <sub>2</sub>	2283	2470	2243	2332
Mean	1611	1918	1771	1767

S.E. of any marginal mean = 122.9 lb./ac.

S.E. of body of table = 212.9 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 56(84).**

**Site :- B.R. College Insttl. Res. Farm, Khandari.**

**Type :- 'M'.**

Object :—To study the effect of N and P on the yield of Wheat.

### 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loamy soil. (b) Refer soil analysis, Khandari. (iii) 12.11.1955 (iv) (a) 4 ploughings by *desi* plough and 2 ploughings by watt plough. (b) Sown in rows by seed drill. (c) 40 srs./ac. (d) Rows 9" apart. (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) Nil. (ix) 5.45". (x) 23 and 24.4.1957.

### 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N as A/S : N<sub>0</sub>=0, N<sub>1</sub>=20 and N<sub>2</sub>=40 lb./ac.

(2) 3 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0, P<sub>1</sub>=20 and P<sub>2</sub>=60 lb./ac.

N applied by broadcast and P<sub>2</sub>O<sub>5</sub> in bands 3" to 4" deep on 11.11.1956.

### 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 9. (b) 234' × 40.6'. (iii) 3. (iv) (a) and (b) 46.6' × 23.3'. (v) Nil. (vi) Yes.

### 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

### 5. RESULTS :

(i) 2417 lb./ac. (ii) 277.6 lb./ac. (iii) Main effect of N alone is highly significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	2059	2300	2096	2152
N <sub>1</sub>	2514	2929	2661	2701
N <sub>2</sub>	2434	2247	2514	2398
Mean	2336	2492	2424	2417

S.E. of any marginal mean = 92.5 lb./ac.

S.E. of body of table = 160.3 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 57(121).****Site :- B.R. College Insttl. Res. Farm, Khandari.****Type :- 'M'.**

Object :—To study the effect of N and P on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Khandari. (iii) 29.10.1957. (iv) (a) 7 ploughings by *desi* plough and 1 ploughing by watt plough. (b) Sown in rows by seed drill. (c) 40 srs./ac. (d) Rows 9" apart. (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) 1 weeding. (ix) 1.19". (x) 14 and 15.4.1958.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 3 levels of N as A/S :  $N_0=0$ ,  $N_1=25$  and  $N_2=50$  lb./ac.(2) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=30$  and  $P_2=60$  lb./ac. $P_2O_5$  placed deep in bands and N applied by broadcast on 21.10.1957.**3. DESIGN :**(i) Fact. in R.B.D. (ii) (a) 9. (b)  $226.5' \times 38.7'$ . (iii) 4. (iv) (a) and (b)  $38.7' \times 22.5'$ . (v) Nil. (vi) Yes.**4. GENERAL :**

(i) Severe lodging. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**(i) 1478 lb./ac. (ii) 190.8 lb./ac. (iii) Main effect of P is significant and  $N \times P$  interaction is highly significant. (iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	$P_2$	Mean
$N_0$	1463	1576	1488	1509
$N_1$	1575	1476	1050	1367
$N_2$	1313	1738	1626	1559
Mean	1450	1597	1388	1478

S.E. of any marginal mean = 55.1 lb./ac.

S.E. of body of table = 95.4 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 58(364).****Site :- Reg. Res. Stn., Majhera.****Type :- 'M'.**

Object :—To study the effect of certain hormones and nutrients applied as foliar spray on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) *Maduwa*. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Majhera. (iii) 13.1.1958. (iv) (a) 2 ploughings. (b) Line sowing. (c) 40 srs./ac. (d) 9" between rows. (e) N.A. (v) Nil. (vi) NP—809. (vii) Unirrigated. (viii) and (ix) N.A. (x) 30.4.1959.

**2. TREATMENTS :**8 sprayings :  $S_0$ =Control (water spray),  $S_1=2$ , 4—D,  $S_2=I.A.A.$ ,  $S_3=C/S$ ,  $S_4$ =Manganese Sul.,  $S_5$ =Urea,  $S_6$ =Potassium Dihydro sulphate and  $S_7=A/S$ .

Spraying done on 22.1.1959 and 1.3.1959.

**3. DESIGN :**(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) and (b)  $12' \times 12'$ . (v) Nil. (vi) Yes.



## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Germination, height of plants and yield of grain. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1213 lb./ac. (ii) 165.5 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	S <sub>0</sub>	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>	S <sub>5</sub>	S <sub>6</sub>	S <sub>7</sub>
Av. yield	933	1371	1342	1342	1274	1264	1186	992

S.E./mean = 82.8 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 58(362).**

**Site :- Reg. Res. Stn., Majhera.**

**Type :- 'M'.**

Object :—To study the effect of P and different sources of N on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) Maize. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Majhera. (iii) 3 1.1958. (iv) (a) 2 ploughings. (b) Line sowing. (c) 50 srs./ac. (d) 9" between rows. (e) N.A. (v) Nil. (vi) Ridley (late). (vii) Unirrigated. (viii) 2 hoeings and 2 weedings. (ix) N.A. (x) 1.5.1959.

## 2. TREATMENTS :

All combinations of (1) and (2)+a control

(1) 3 sources of 50 lb./ac. of N : S<sub>1</sub>=Urea, S<sub>2</sub>=F.Y.M. and S<sub>3</sub>=½ at Urea+½ of F.Y.M.

(2) 2 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0 and P<sub>1</sub>=40 lb./ac.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) 145'×61'. (iii) 4. (iv) (a) and (b) 18'×12'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good (ii) Nil. (iii) Height of plants and yield of grain. (iv) (a) 1958—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1613 lb./ac. (ii) 270.2 lb./ac. (iii) Main effect of P is highly significant and 'control vs. others' is significant. (iv) Av. yield of grain in lb./ac.

Control = 1309 lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean
P <sub>0</sub>	1309	1394	1614	1439
P <sub>1</sub>	1841	1938	1886	1888
Mean	1575	1666	1750	1664

S.E. of P marginal mean = 78.0 lb./ac.

S.E. of S marginal mean = 95.5 lb./ac.

S.E. of body of table or control mean = 135.1 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 59(391).**

**Site :- Reg. Res. Stn., Majhera.**

**Type :- 'M'.**

Object :—To study the effect of P and different sources of N on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) *Maduwa*. (c) Nil. (ii) (a) Sandy loam. (b) N.A. (iii) 3.11.1959. (iv) (a) 2 ploughings. (b) Line sowing. (c) 40 srs./ac. (d) 9" between rows. (e) N.A. (v) Nil. (vi) NP-710 (medium). (vii) Unirrigated. (viii) and (ix) N.A. (x) April, 1960.

## 2. TREATMENTS :

Same as in expt. no. 58(362) on page 256.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) 192'×57'. (iii) 4. (iv) (a) and (b) 24'×9'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Germination percentage and yield of grain. (iv) (a) 1958—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 794 lb./ac. (ii) 127.5 lb./ac. (iii) Main effect of S and 'control vs. others' are significant. (iv) Av. yield of grain in lb./ac.

Control = 635 lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean
P <sub>0</sub>	914	655	758	776
P <sub>1</sub>	946	797	849	864
Mean	930	726	804	820

S.E. of P marginal mean = 36.8 lb./ac.

S.E. of N marginal mean = 45.1 lb./ac.

S.E. of body of table or control mean = 63.8 lb./ac.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 56(148).**

**Site :- State Mechanised Farm, Majhra.**

**Type :- 'M'.**

Object :—To study the effect of N and P on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow. (c) Nil. (ii) (a) Sandy loam. (b) N.A. (iii) 18.11.1956. (iv) 1 *desi* ploughing and 4 harrowings. (b) Behind the plough. (c) to (e) N.A. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) 2.98". (x) 25 and 26.4.1957.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=20 and N<sub>2</sub>=40 lb./ac.

(2) 4 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=20, P<sub>2</sub>=40 and P<sub>3</sub>=60 lb./ac.

Manures applied on 16, 17.11.1956.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. (b) 49.5'×297'. (iii) 4. (iv) (a) and (b) 22'×49.5'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Attack of rust. (iii) Yield of grain and straw. (iv) (a) and (b) No. (c) Nil. (v) (a) Nagla. (b) Nil. (vi) Nil. (vii) Crop was sown late due to late rains, weeds were prominent in the experiment.

## 5. RESULTS :

(i) 1015 lb./ac. (ii) 129.4 lb./ac. (iii) P effect is highly significant while N effect is significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	Mean
N <sub>0</sub>	690	910	990	1150	935
N <sub>1</sub>	940	1010	1150	1140	1060
N <sub>2</sub>	940	1030	1050	1180	1050
Mean	857	983	1063	1157	1015

S.E. of N marginal mean = 32.4 lb./ac.  
 S.E. of P marginal mean = 37.4 lb./ac.  
 S.E. of body of table = 64.7 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 57(216).**

**Site :- State Mechanised Farm, Majhra.**

**Type :- 'M'.**

**Object :-** To study the effect of N and P on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) G.M. (c) Nil. (ii) Sandy loam. (b) N.A. (iii) 30.10.1957. (iv) (a) Ploughing with *desi* plough. (b) Behind the plough. (c) to (e) N.A. (v) G.M. and sugarcane leaves were decomposed. (vi) N.A. (vii) Irrigated. (viii) and (ix) N.A. (x) 3 to 10.4.1958.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 3 levels of N as A/S : N<sub>0</sub>=0, N<sub>1</sub>=25 and N<sub>2</sub>=50 lb./ac.

(2) 3 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0, P<sub>1</sub>=30 and P<sub>2</sub>=60 lb./ac.

Fertilizers applied on 28, 29.10.1957.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 9. (b) 49.5'×222'. (iii) 4. (iv) (a) and (b) 49.5'×22'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Normal. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) No. (b) N.A. (c) Nil. (v) (a) Nagla. (b) Nil. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1482 lb./ac. (ii) 176.0 lb./ac. (iii) Main effects of N and P are highly significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	1000	1460	1550	1337
N <sub>1</sub>	1440	1520	1410	1457
N <sub>2</sub>	1410	1650	1900	1653
Mean	1283	1543	1620	1482

S.E. of any marginal mean = 50.8 lb./ac.  
 S.E. of body of table = 88.0 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 54(293).**

**Site :- Tarai State Farm, Matkota.**

**Type :- 'M'.**

**Object :-** To study the effect of N, P and K applied individually and in combination on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) *Berseem*. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Matkota. (ii) 21.11.1954.  
 (iv) (a) 1 *desi* ploughing and 3 harrowings. (b) Behind the plough. (c) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) 1 weeding. (ix) 2.6". (x) 1 to 7.5.1955.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 2 levels of N as A/S :  $N_0=0$  and  $N_1=30$  lb./ac.

(2) 2 levels of  $P_2O_5$  as Super :  $P_0=0$  and  $P_1=60$  lb./ac.

(3) 3 levels of  $K_2O$  as Pot. Sul. :  $K_0=0$ ,  $K_1=60$  and  $K_2=120$  lb./ac.

Super and Pot. Sul. placed deep in bands. Fertilizers applied on 21.11.1954.

**3. DESIGN :**

(i)  $3 \times 2 \times 2$  partially balanced design confounding interactions  $P \times N$  and  $N \times P \times K$ . (ii) (a) 6 plots/block ; 2 blocks/replication. (b)  $49.5' \times 147'$ . (iii) 4. (iv) (a) and (b)  $49.5' \times 22'$ . (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Normal growth. (ii) Smut attack to the extent of 10%. (iii) Yield of grain and straw. (iv) (a) 1953--1954. (b) No. (c) Nil. (v) (a) Raya, Kalai, Tissuhi, Bharari and Atarra. (b) Nil. (vi) Nil. (vii) Field could not be prepared well due to the presence of grass. Weed infestation severe in treatments  $N_0P_1K_1$ ,  $N_0P_0K_1$  and  $N_0P_0K_2$ .

**5. RESULTS :**

(i) 1148 lb./ac. (ii) 172.6 lb./ac. (iii) Only N effect is highly significant. (iv) Av. yield of grain in b./ac.

	$K_0$	$K_1$	$K_2$	Mean	$P_0$	$P_1$
$N_0$	970	1015	1005	997	980	1014
$N_1$	1300	1285	1315	1300	1270	1330
Mean	1135	1150	1160	1148	1125	1172
$P_0$	1150	1110	1115			
$P_1$	1120	1190	1205			

S.E. of N or P marginal mean	= 35.2 lb./ac.
S.E. of K marginal mean	= 43.2 lb./ac.
S.E. of body of $N \times K$ or $P \times K$ table	= 61.0 lb./ac.
S.E. of body of $N \times P$ table	= 49.8 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U P. 55(339).**

**Site :- Tarai State Farm, Matkota.**

**Type :- 'M'.**

Object :- To study the effect of N, P and K applied individually and in combinations on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Matkota. (iii) 20.11.1955. (iv) (a) 1 ploughing and 4 harrowings. (d) Behind the plough. (c) to (e) N.A. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) 1.02". (x) 16.4.1956.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 2 levels of N :  $N_0=0$  and  $N_1=30$  lb./ac.

(2) 2 levels of  $P_2O_5$  :  $P_0=0$  and  $P_1=40$  lb./ac.

(3) 2 levels of  $K_2O$  :  $K_0=0$  and  $K_1=60$  lb./ac.

Fertilizers applied on 19, 20.11.1955.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) and (b)  $49.5 \times 22'$ . (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Normal growth, lodging in certain plots due to wind. (ii) Badly attacked by rust and smut. (iii) Yield of grain and straw. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Wind affected the crop. (vii) Badly affected by weeds.

## 5. RESULTS :

(i) 935 lb./ac. (ii) 88.2 lb./ac. (iii) Main effect of P is highly significant and main effect of K is significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	K <sub>0</sub>	K <sub>1</sub>
N <sub>0</sub>	866	1050	958	945	971
N <sub>1</sub>	860	964	912	859	965
Mean	863	1007	935	902	968
K <sub>0</sub>	845	959			
K <sub>1</sub>	881	1055			

S.E. of any marginal mean = 22.1 lb./ac.  
S.E. of body of any table = 31.2 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 54(197).**

**Site :- Tarai State Farm, Matkota.**

**Type :- 'M'.**

Object :- To study the effect of Super and B.M. applied with and without N on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Berseem*. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Matkota. (iii) 29, 30.11.1954. (iv) (a) 1 ploughing by tractor, 3 harrowings and ploughing by victory plough. (b) Behind the plough. (c) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) 1 weeding. (ix) 2.6%. (x) 21.4.1955.

## 2. TREATMENTS :

**Main-plot treatments :**

2 levels of N as A/S : N<sub>0</sub>=0 and N<sub>1</sub>=30 lb./ac.

**Sub-plot treatments :**

5 phosphatic treatments : P<sub>0</sub>=Control (no manure), P<sub>1</sub>=60 lb./ac. as Super, P<sub>2</sub>=120 lb./ac. as Super, P'<sub>1</sub>=60 lb./ac. as B.M., and P'<sub>2</sub>=120 lb./ac. as B.M.

Manures applied on 27, 28 11.1954.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 5 sub-plots/main-plot. (b) 114' × 108'. (iii) 4. (iv) (a) and (b) 54.5' × 20'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Smut attack upto the extent of 10%. (iii) Yield of grain and straw. (iv) (a) 1954—1955. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Experiment conducted during the year 1955 modified.

## 5. RESULTS :

(i) 1072 lb./ac. (ii) (a) 348.0 lb./ac. (b) 189.2 lb./ac. (iii) Main effect of sources of P alone is significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P' <sub>1</sub>	P <sub>2</sub>	P' <sub>2</sub>	Mean
N <sub>0</sub>	929	939	919	959	789	907
N <sub>1</sub>	1159	1429	1079	1309	1209	1237
Mean	1044	1184	999	1134	999	1072

S.E. of difference of two

- |                                   |   |               |
|-----------------------------------|---|---------------|
| 1. N marginal means               | = | 110.0 lb./ac. |
| 2. P marginal means               | = | 94.6 lb./ac.  |
| 3. P means at the same level of N | = | 133.8 lb./ac. |
| 4. N means at the same level of P | = | 162.6 lb./ac. |

**Crop :- Wheat (Rabi).****Ref :- U.P. 55(179).****Site :- Tarai State Farm, Matkota.****Type :- 'M'.**

Object :— To study the effect of N, Super and B.M. on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) and (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Matkota. (iii) 24.11.1955. (iv) (a) 1 ploughing and 4 harrowings. (b) Behind the plough. (c) to (e) N.A. (v) Nil. (vi) N.A. (vi) Unirrigated. (viii) N.A. (ix) 1.02". (x) 17.4.1956.

**2. TREATMENTS :**

All combinations of (1) and (2)+2 extra treatments

(1) 2 sources of  $P_2O_5$  :  $S_1$ =Super and  $S_2$ =B.M.(2) 2 levels of  $P_2O_5$  :  $P_1$ =30 and  $P_2$ =60 lb./ac.

All treatment combinations required a basal dressing of 30 lb./ac. of N as A/S.

2 extra treatments :  $N_0$ =Control and  $N_1$ =30 lb./ac. of N as A/S.

A/S applied as broadcast. Super and B.M. applied in furrows behind the plough. Manures applied on 22.4.1955.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) and (b) 49.5'×22'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Germination poor due to weeds. (ii) Attack of rust and smut. (iii) Yield of grain and straw. (iv) (a) 1954—1955. (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) Winds affected the crop. (vii) Heavy growth of *katili* weeds.

**5. RESULTS :**

(i) 749 lb./ac. (ii) 102.4 lb./ac. (iii) ' $N_0$  vs.  $N_1$ ' and 'N vs. others' are highly significant. (iv) Av. yield of grain in lb./ac.

 $N_0 = 580$  lb./ac. and  $N_1 = 773$  lb./ac.

	$S_1$	$S_2$	Mean
$P_1$	720	853	786
$P_2$	780	787	784
Mean	750	820	785

S.E. of P or S marginal mean = 29.6 lb./ac.

S.E. of body of table or N mean = 41.8 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 58(37).****Site :- Reg. Res. Stn., Meerut.****Type :- 'M'.**

Object :—To study the efficiency of organic and inorganic nitrogenous manures with and without P on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) *Lobia*—Wheat. (b) *Lobia* (fodder). (c) No. (ii) (a) Silt loam. (b) Refer soil analysis, Meerut. (iii) 6.11.1958. (iv) 1 ploughing by soil turning plough and 4 to 5 ploughings by *desi* plough. (b) Behind the plough in rows. (c) 40 srs./ac. (d) 9" between rows. (e) N.A. (v) Nil. (vi) Pb.—591 (medium). (vii) Irrigated. (viii) Weeding with *khurpi*. (ix) 8.34". (x) 23.4.1959.

## 2. TREATMENTS :

10 manurial treatments :  $M_0$ =Control,  $M_1$ =25 lb./ac. of N as A/S,  $M_2$ =30 lb./ac. of N as A/S,  $M_3$ =25 lb./ac. of N as F.Y.M.,  $M_4$ =30 lb./ac. of N as F.Y.M.,  $M_5$ =40 lb./ac. of  $P_2O_5$  as Super,  $M_6$ = $M_2$ + $M_5$ ,  $M_7$ = $M_4$ + $M_5$ ,  $M_8$ =15 lb./ac. of N as A/S+15 lb./ac. of N as F.Y.M. and  $M_9$ = $M_5$ + $M_8$ .

Fertilizers applied at the time of sowing. F.Y.M. applied as broadcast and Super placed in bands 3" to 4" deep.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) 34'×201'. (iii) 4. (iv) (a) 16.5'×34'. (b) 13.5'×31'. (v) 1½'×1½'. (vi) Ycs.

## 4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of grain and straw and study of other physiological characters. (iv) (a) 1959—contd. (b) Yes. (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 2158 lb./ac. (ii) 299.2 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	$M_0$	$M_1$	$M_2$	$M_3$	$M_4$	$M_5$	$M_6$	$M_7$	$M_8$	$M_9$
Av. yield	2153	2165	2168	2134	1855	2322	2344	2249	2285	1901

S.E./mean = 104.6 lb./ac.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 59(40).**

**Site :- Reg. Res. Stn., Meerut.**

**Type :- 'M'.**

Object :—To study the efficiency of organic and inorganic nitrogenous manures with and without P on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) *Lobia*—Wheat. (b) *Lobia* (fodder). (c) Nil. (ii) (a) Silt loam. (b) Refer soil analysis, Meerut. (iii) 7.11.1959. (iv) (a) 1 ploughing by soil turning plough and 4 to 5 ploughings by *desi* plough. (b) Line sowing behind plough. (c) 80 lb./ac. (d) 10" between rows. (e) N.A. (v) Nil. (vi) Pb.—591 (medium). (vii) Irrigated. (viii) 1 weeding. (ix) 1.01". (x) 23.4.1960.

## 2. TREATMENTS :

10 manurial treatments :  $M_0$ =Control,  $M_1$ =25 lb./ac. of N as A/S,  $M_2$ =2  $M_1$ ,  $M_3$ =25 lb./ac. of N as F.Y.M.,  $M_4$ =2  $M_3$ ,  $M_5$ =40 lb./ac. of  $P_2O_5$  as Super,  $M_6$ = $M_2$ + $M_5$ ,  $M_7$ = $M_4$ + $M_5$ ,  $M_8$ = $M_1$ + $M_3$  and  $M_9$ = $M_1$ + $M_3$ + $M_5$ .

Manures applied at the time of sowing. N applied as broadcast and  $P_2O_5$  placed in bands 3" to 4" deep before sowing.

## 3. DESIGN :

Same as in expt. no. 58(37) on page 261.

## 4. GENERAL :

(i) Slight lodging. Germination good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1958—contd. (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) No. (vii) Nil.

## 5. RESULTS :

(i) 2282 lb./ac. (ii) 424.5 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$M_0$	$M_1$	$M_2$	$M_3$	$M_4$	$M_5$	$M_6$	$M_7$	$M_8$	$M_9$
Av. yield	1883	2338	2654	2215	1831	2202	2469	2231	2384	2515

S.E./mean = 212.2 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 57(35).****Site :- Reg. Res. Stn., Meerut.****Type :- 'M'.**

Object :—To study the residual effect of Super applied to previous crop of Moong on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) *Moong*—Wheat. (b) *Moong*. (c) As per treatments. (ii) (a) Silt loam. (b) Refer soil analysis, Meerut. (iii) 13.10.1957. (iv) (a) 1 ploughing by soil turning plough followed by 4 to 5 ploughings by *desi* plough. (b) Behind the plough. (c) 30 srs./ac. (d) 9" between rows. (e) N.A. (v) Nil. (vi) Pb.—592. (medium). (vii) Irrigated. (viii) Weeding. (ix) 1.31". (x) 20.4.1958.

**2. TREATMENTS :**4 levels of  $P_2O_5$  as Super applied to *moong* in *kharif*:  $P_0=0$ ,  $P_1=40$ ,  $P_2=80$  and  $P_3=120$  lb./ac.**3. DESIGN :**(i) R.B.D. (ii) (a) 4. (b)  $36' \times 172'$ . (iii) 6. (iv) (a)  $43' \times 36'$ . (b)  $40' \times 33'$ . (v)  $1\frac{1}{2}' \times 1\frac{1}{2}'$ . (vi) Yes.**4. GENERAL :**

(i) Good. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 748 lb./ac. (ii) 115.7 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$P_0$	$P_1$	$P_2$	$P_3$
Av. yield	725	742	802	722

S.E./mean = 47.2 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 57(36).****Site :- Reg. Res. Stn., Meerut.****Type :- 'M'.**

Object :—To study the effect of different levels of P on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) *Sanai*. (c) Nil. (ii) (a) Silt loam. (b) Refer soil analysis, Meerut. (iii) 29.10.1957. (iv) (a) 1 ploughing by soil turning plough and 4 to 5 ploughings by *desi* plough. (b) Behind the plough in rows. (c) 35 srs./ac. (d) 9" between rows. (e) N.A. (v) *Sanai* (G.M.) was turned in on 24.8.1957 and A/S broadcast before sowing at 25 lb./ac. of N. (vi) Pb.—591 (medium). (vii) Irrigated. (viii) Weedings. (ix) 1.31". (x) N.A.

**2. TREATMENTS :**5 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=30$ ,  $P_2=60$ ,  $P_3=90$  and  $P_4=120$  lb./ac.Super placed in bands 3" to 4" deep before sowing, in the first year *rabi* season only, and not thereafter.**3. DESIGN :**(i) R.B.D. (ii) (a) 5. (b)  $50' \times 92'8''$ . (iii) 4. (iv) (a)  $50' \times 17'4''$ . (b)  $47' \times 14'4''$ . (v)  $1\frac{1}{2}' \times 1\frac{1}{2}'$ . (vi) Yes.**4. GENERAL :**

(i) Good. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1957—1959. Residual effect alone is studied in 1958 and 1959. (b) Yes. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 2509 lb./ac. (ii) 310.4 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$P_0$	$P_1$	$P_2$	$P_3$	$P_4$
Av. yield	2344	2312	2780	2441	2667

S.E./mean = 155.2 lb./ac.



**Crop :- Wheat (Rabi).****Ref :- U.P. 58(25).****Site :- Reg. Res. Stn., Meerut.****Type :- 'M'.**

Object :—To study the residual effect of Super applied to the previous Wheat crop.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) *Guar* (fodder). (c) 15 lb./ac. of  $P_2O_5$  as Super applied at sowing of *guar*. (ii) (a) Silt loam. (b) Refer soil analysis, Meerut. (iii) 27.10.1958. (iv) (a) 1 ploughing by soil turning plough and 4 to 5 ploughings by *desi* plough. (b) Sown behind the plough. (c) 35 srs./ac. (d) 9" between rows. (e) N.A. (v) 25 lb./ac. of N as A/S broadcast before sowing. (vi) Pb.—591 (medium). (vii) Irrigated. (viii) 3 weedings. (ix) 12.13". (x) 16.4.1959.

**2. TREATMENTS :**

Same as in expt. no. 57(36) on page 263.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 5. (b) 50'×97.5'. (iii) 4. (iv) (a) 50'×17'6". (b) 47'×14'6". (v) 1½'×1½'. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Nil. (iii) Germination, yield of grain and straw. (iv) (a) 1957—1959. (b) Yes. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1877 lb./ac. (ii) 137.0 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	P <sub>4</sub>
Av. yield	1852	1972	1808	1839	1912

S.E./mean = 68.5 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 59(34).****Site :- Reg. Res. Stn., Meerut.****Type :- 'M'.**

Object :—To study the residual effect of Super applied to the previous Wheat crop.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) *Guar* (fodder). (c) 15 lb./ac. of N as A/S applied at sowing. (ii) (a) Silt loam. (b) Refer soil analysis, Meerut. (iii) 27.10.1959. (iv) (a) 1 ploughing by soil turning plough and 4 to 5 ploughings by *desi* plough. (b) Line sowing. (c) 80 lb./ac. (d) 10" between rows. (e) N.A. (v) 25 lb./ac. of N as A/S broadcast before sowing. (vi) Pb.—591 (medium). (vii) Irrigated. (viii) 1 weeding. (ix) 1.80". (x) 10.4.1960.

**2. TREATMENTS :**

Same as in expt. no. 57(36) on page 263.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 5. (b) 50'×97.5'. (iii) 4. (iv) (a) 50'×17.5'. (b) 47'×14.5'. (v) 1½'×1½'. (vi) Yes.

**4. GENERAL :**

(i) Germination about 80%. (ii) Slight attack of loose smut in treatment P<sub>1</sub>. (iii) Germination, number of tillers/plant, yield of grain and straw. (iv) (a) 1957—1959. (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 2489 lb./ac. (ii) 229.0 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	P <sub>4</sub>
Av. yield	2443	2459	2599	2637	2309

S.E./mean = 114.5 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 57(48).

Site :- Reg. Res. Stn., Meerut.

Type :- 'M'.

Object :- To study the effect of P and different methods of application of N on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Fallow—Wheat. (b) Fallow. (c) Nil. (ii) (a) Silt loam. (b) Refer soil analysis, Meerut. (ii) 3.11.1957. (iv) (a) 1 ploughing by soil turning plough and 4 to 5 ploughings by *desi* plough. (b) Behind the plough. (c) 35 srs./ac. (d) 9" between rows. (e) N.A. (v) Nil. (vi) Pb.—591 (medium). (vii) Irrigated. (viii) 1 weeding. (ix) 1.31". (x) 13.4.1958.

## 2. TREATMENTS :

## Main-plot treatments :

All combinations of (1) and (2)+control (3 plots)

(1) 3 sources of N at 36 lb./ac. :  $S_1=A/S$ ,  $S_2=Urea$  and  $S_3=A/N$ .(2) 3 methods of application :  $M_1=Basal$  dressing,  $M_2=Top$  dressing and  $M_3=\frac{1}{2}$  dose as basal dressing and  $\frac{1}{2}$  dose as top dressing.

## Sub-plot treatments

2 levels of  $P_2O_5$  :  $P_0=0$  and  $P_1=18$  lb./ac.

Basal dressing was given on 11.6.1959 and top dressing on 31.7.1959.

## 3. DESIGN :

(i) Split-plot. (ii) 12 main-plots/replication ; 2 sub-plots/main-plot. (b) 86' × 232'. (iii) 2. (iv) (a) 41.5' × 17.5'. (b) 38.5' × 14.5'. (v) 1½' × 1½'. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1957—1958. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1489 lb./ac. (ii) (a) 311.8 lb./ac. (b) 260.4 lb./ac. (iii) None of the effects is significant. (iv) Av yield of grain in lb./ac.

$$N_0P_0 = 1417 \text{ lb./ac. and } N_0P_1 = 1340 \text{ lb./ac.}$$

	$M_1$	$M_2$	$M_3$	Mean	$P_0$	$P_1$
$S_1$	1477	1334	1592	1468	1521	1415
$S_2$	1712	1602	1366	1560	1564	1556
$S_3$	1480	1579	1594	1551	1358	1744
Mean	1556	1505	1517	1526	1481	1572
$P_0$	1521	1454	1467			
$P_1$	1591	1556	1568			

## S.E. of difference of two

1. S or M marginal means	= 127.3 lb./ac.
2. P marginal means	= 86.8 lb./ac.
3. P means at the same level of S or M	= 150.3 lb./ac.
4. S or M means at the same level of P	= 165.8 lb./ac.
S.E. of $N_0P$ mean	= 127.3 lb./ac.
S.E. of body of S × M table	= 155.9 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 58(41).

Site :- Reg. Res. Stn., Meerut.

Type :- 'M'.

Object :- To study the effect of P and different methods of application of N on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Fallow—Wheat. (b) Fallow. (c) Nil. (ii) (a) Silt loam. (b) Refer soil analysis, Meerut. (iii) 13.11.1958. (iv) (a) 1 ploughing by soil turning plough. (b) Sown behind the plough. (c) 35 srs./ac. (d) 9' between rows. (e) N.A. (v) Nil. (vi) Pb.—591 (medium). (vii) Irrigated. (viii) Weeding by *khurpi*. (ix) 8.84". (x) 21.4.1959.

## 2. TREATMENTS :

## Main-plot treatments :

All combinations of (1) and (2) + control (3 plots)

(1) 3 sources of N at 36 lb./ac. :  $S_1 = A/S$ ,  $S_2 = Urea$  and  $S_3 = A/S, N$ .

(2) 3 methods of application :  $M_1 =$  Basal dressing,  $M_2 =$  Top dressing and  $M_3 = \frac{1}{2}$  dose as basal dressing +  $\frac{1}{2}$  dose as top dressing.

## Sub-plot treatments :

2 levels of  $P_2O_5$  :  $P_0 = 0$  and  $P_1 = 18$  lb./ac.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 12 main-plots/replication ; 2 sub-plots/main-plot. (b)  $56' \times 357'$ . (iii) 2. (iv) (a)  $27' \times 26'$ . (b)  $24' \times 23'$ . (v)  $1\frac{1}{2}' \times 1\frac{1}{2}'$ . (vi) Yes.

## 4. GENERAL :

(i) Growth good. Lodging occurred. (ii) Nil. (iii) Germination, number of tillers, yield of grain and straw. (iv) (a) 1957—1958. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 2275 lb./ac. (ii) (a) 380.7 lb./ac. (b) 180.3 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

$$N_0P_0 = 2146 \text{ lb./ac. and } N_0P_1 = 2294 \text{ lb./ac.}$$

	$M_1$	$M_2$	$M_3$	Mean	$P_0$	$P_1$
$S_1$	2319	2339	2505	2388	2334	2441
$S_2$	2208	2243	2275	2242	2198	2285
$S_3$	2133	2346	2420	2300	2343	2257
Mean	2220	2309	2400	2310	2292	2328
$P_0$	2146	2286	2444			
$P_1$	2294	2333	2357			

## S.E. of difference of two

1. S or M marginal means	= 155.4 lb./ac.
2. P marginal means	= 60.1 lb./ac.
3. P means at the same level of S or M	= 104.1 lb./ac.
4. S or M means at the same level of P	= 172.0 lb./ac.
S.E. of $N_0P$ mean	= 155.4 lb./ac.
S.E. of body of $S \times M$ table	= 190.4 lb./ac.

**Crop :-** Wheat (*Rabi*).

**Ref :-** U.P. 58(29).

**Site :-** Reg. Res. Stn, Meerut.

**Type :-** 'M'.

**Object :-** To study the comparative efficiency of different G.M. crops on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) As per treatment—Wheat. (b) As per treatments. (c) Nil. (ii) (a) Silt loam. (b) Refer soil analysis, Meerut. (iii) 26.10.1958. (iv) (a) 1 ploughing by soil turning plough and 4 to 5 ploughings by *desi* plough. (b) Sown behind the plough. (c) 35 srs./ac. (d) 9' between rows. (e) N.A. (v) Nil. (vi) Pb.—591 (medium). (vii) Irrigated. (viii) 1 weeding. (ix) 12.13". (x) 24.4.1959.

## 2. TREATMENTS :

7 G.M. treatments :  $G_0$ =Control (no G.M. crop),  $G_1$ =*Lobia* (G.M.)  $G_2$ =*Lobia* G.M. after taking one cutting for fodder,  $G_3$ =*Guar* (G.M.),  $G_4$ =*Guar* after taking one cutting for fodder  $G_5$ =*Dhaincha* (G.M.), and  $G_6$ =*Sanai* (G.M.).

G.M. sown on 29.5.1958 and ploughed in after 70 days.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b)  $236' \times 56'$ . (iii) 3. (iv) (a) and (b)  $56' \times 32'$ . (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Germination, yield of grain and straw. (iv) (a) 1958—1959. (b) Yes. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1331 lb./ac. (ii) 215.4 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	$G_0$	$G_1$	$G_2$	$G_3$	$G_4$	$G_5$	$G_6$
Av. yield	1080	1294	1193	1178	1204	1598	1768

S.E./mean = 124.4 lb./ac.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 59(24).**

**Site :- Reg. Res. Stn., Meerut.**

**Type :- 'M'.**

Object :—To study the comparative efficiency of different G.M. crops on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) As per treatments—Wheat. (b) As per treatments. (c) Nil. (ii) (a) Silt loam. (b) Refer soil analysis, Meerut. (iii) 26.10.1959. (iv) (a) 1 ploughing by soil turning plough and 4 to 5 ploughings by *desi* plough. (b) Line sowing behind the plough. (c) 80 lb./ac. (d) 10" between rows. (e) N.A. (v) 50 lb./ac. of N as A/S in two split doses as top dressing. (vi) Pb.—591 (medium). (vii) Irrigated. (viii) Thinning and gap filling on 5.12.1959 and 3.1.1960. 1 weeding on 22.12.1959. (ix) 2.78". (x) 13.4.1960.

## 2. TREATMENTS :

Same as in expt. no. 58(29) on page 266. G.M. crops were sown on 30.6.1959.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b)  $56' \times 236'$ . (iii) 3. (iv) (a)  $56' \times 32'$ . (b)  $53' \times 29'$ . (v)  $1\frac{1}{2}' \times 1\frac{1}{2}'$ . (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination, yield of grain and straw. (iv) (a) 1958—1959. (b) Yes. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1398 lb./ac. (ii) 303.0 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$G_0$	$G_1$	$G_2$	$G_3$	$G_4$	$G_5$	$G_6$
Av. yield	1547	1049	886	1217	1167	1920	2003

S.E./mean = 174.9 lb./ac.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 58(36).**

**Site :- Reg. Res. Stn., Meerut.**

**Type :- 'M'.**

Object :—To study the effect of different methods of application of A/S on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Fallow—Wheat (b) Fallow. (c) Nil. (ii) (a) Silt loam. (b) Refer soil analysis, Meerut. (iii) 6.11.1958. (iv) (a) 1 ploughing by soil turning plough and 4 to 5 ploughing by *desi* plough. (b) Behind the plough in rows. (c) 35 srs./ac. (d) 9" between rows. (e) N.A. (v) 40 lb./ac. of  $P_2O_5$  as Super was applied 3" to 4" deep along the sowing line at sowing. (vi) Pb.—591 (medium). (vii) Irriga.ed. (viii) 1 weeding. (ix) 8.84". (x) 21.4.1959.

## 2. TREATMENTS :

7 methods of application N :  $M_0$ =Control (No N),  $N_1$ =Applied in contact with seed,  $M_2$ =Broadcast at sowing,  $M_3$ = $\frac{1}{2}$  dose at sowing +  $\frac{1}{2}$  dose at tillering +  $\frac{1}{2}$  dose at pre-flowering,  $M_4$ = $\frac{1}{2}$  dose at tillering +  $\frac{1}{2}$  dose at pre-flowering,  $M_5$ =At tillering and  $M_6$ =At pre-flowering.

N applied as A/S at 30 lb./ac.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) 150' × 34'. (iii) 4. (iv) (a) 34' × 13'. (b) 30' × 14'. (v) 2' × 2'. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Germination, yield of grain and straw. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 2118 lb./ac. (ii) 231.9 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$M_0$	$M_1$	$M_2$	$M_3$	$M_4$	$M_5$	$M_6$
Av. yield	1690	2437	2256	2295	1899	2489	1763

S.E./mean = 101.0 lb./ac.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 57(32).**

**Site :- Reg. Res. Stn., Meerut.**

**Type :- 'M'.**

Object :- To study the effect of N and P applied alone and in combination on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Silt loam. (b) Refer soil analysis, Meerut. (iii) 28.10.1957. (iv) (a) 1 ploughing by soil turning plough and 4 to 5 ploughings by *desi* plough. (b) Behind the plough in rows. (c) 35 srs./ac. (d) Rows 9" apart. (e) N.A. (v) Nil. (vi) Pb.—591 (medium). (vii) Irriga.ed. (viii) 1 weeding. (ix) 1.31". (x) 11.4.1958.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N as A/S :  $N_0=0$ ,  $N_1=25$  and  $N_2=50$  lb./ac.

(2) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=30$  and  $P_2=60$  lb./ac.

Super placed deep in bands on both sides of the seed line. A/S was broadcast at sowing.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 9. (b) 41½' × 237'. (iii) 4. (iv) (a) 41' 6" × 25'. (b) 38' 6" × 22'. (v) 1½' × 1½'. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 2249 lb./ac. (ii) 323.0 lb./ac. (iii) Only P effect is highly significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	1839	1890	2507	2079
N <sub>1</sub>	1994	2404	2469	2289
N <sub>2</sub>	2121	2507	2507	2378
Mean	1985	2267	2494	2249

S.E. of any marginal mean = 93.2 lb./ac.

S.E. of body of table = 161.5 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 56(290).**

**Site :- Reg. Res. Stn., Meerut.**

**Type :- 'M'.**

Object :—To study the effect of F.Y.M, A/S and Super applied singly and in combination on Wheat.

### 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Meerut. (iii) 17.11.1956. (iv) (a) 9 ploughings. (b) Seed drill. (c) 25 to 30 srs./ac. (d) and (e) N.A. (v) Nil. (vi) Pb.—591. (vii) Irrigated. (viii) and (ix) N.A. (x) 30.4.1957.

### 2. TREATMENTS :

All combinations of (1) and (2)+2 extra treatments

(1) 3 sources of 60 lb./ac. of N : S<sub>1</sub>=F.Y.M., S<sub>2</sub>=A/S and S<sub>3</sub>=½ F.Y.M.+½ A/S.

(2) 2 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0, and P<sub>1</sub>=50 lb./ac.

Extra treatments : T<sub>0</sub>=Control and T<sub>1</sub>=50 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.

F.Y.M. applied 2 to 3 weeks before sowing : A/S in two doses : ½ at sowing and ½ at tillering and Super applied by placement one week before sowing.

### 3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 41'×28'. (b) 30'×25'. (v) 5½'×1½'. (vi) Yes.

### 4. GENERAL :

(i) N.A. (ii) Attack of rust. (iii) Yield of grain. (iv) (a) No. (b) N.A. (c) Nil. (v) (a) Hardoi. (b) Nil. (vi) and (vii) Nil.

### 5. RESULTS :

(i) 2154 lb./ac., (ii) 218.7 lb./ac. (iii) Main effect S is highly significant and 'T vs. others' is significant. (iv) Av. yield of grain in lb./ac.

$$T_0 = 1973 \text{ lb./ac. and } T_1 = 2031 \text{ lb./ac.}$$

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean
P <sub>0</sub>	1956	2367	2192	2712
P <sub>1</sub>	2076	2431	2210	2249
Mean	2016	2399	2201	2205

S.E. of S marginal mean = 77.3 lb./ac.

S.E. of P marginal mean = 63.1 lb./ac.

S.E. of body of table or T mean = 109.4 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 59(42).****Site :- Reg. Res. Stn., Meerut.****Type :- 'M'.**

Object :—To study the most suitable time for application of N for Wheat crop.

**1. BASAL CONDITIONS :**

(i) (a) Fallow—Wheat. (b) Fallow. (c) Nil. (ii) (a) Silt loam. (b) Refer soil analysis, Meerut. (iii) 9.11.1959. (iv) (a) 1 ploughing by soil turning plough and 3 to 4 ploughings by *desi* plough. (b) Line sowing. (c) 35 srs./ac. (d) Rows 9" apart. (e) N.A. (v) 20 lb./ac. of  $P_2O_5$  as Super placed in bands 3" to 4" deep in furrows before sowing. (vi) Pb.—591 (medium). (vii) Irrigated. (viii) 1 weeding. (ix) 1.01". (x) 20 and 21.4.1960.

**2. TREATMENTS :**

All combinations of (1), (2) and (3) + control (3 plots)

(1) 3 times of application :  $T_1$  = At sowing,  $T_2$  = At 1st irrigation and  $T_3$  =  $\frac{1}{2}$  at sowing +  $\frac{1}{2}$  at 1st irrigation.(2) 3 sources of N :  $S_1$  = A/S,  $S_2$  = A/S/N and  $S_3$  = Urea.(3) 2 levels of N :  $N_1$  = 20 and  $N_2$  = 40 lb./ac.**3. DESIGN :**(i)  $3^2 \times 2$  partially confd., confounding  $T \times N$  and  $T \times S \times N$  interactions. (ii) (a) 7 plots/block ; 3 blocks/replication. (b) N.A. (iii) 4. (iv) (a) 26'  $\times$  21'. (b) 23'  $\times$  18'. (v) 1 $\frac{1}{2}$ '  $\times$  1 $\frac{1}{2}$ '. (vi) Yes.**4. GENERAL :**(i) Germination good. Lodging in one block. (ii) Nil. (iii) Germination, yield of grain and *bhusa*. (iv) (a) 1959—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) No. (vii) Nil.**5. RESULTS :**(i) 2665 lb./ac. (ii) 256.9 lb./ac. (iii) Interaction  $T \times S \times N$  alone is significant. (iv) Av. yield of grain in lb./ac.

Control = 2654 lb./ac.

	$S_1$	$S_2$	$S_3$	Mean	$N_1$	$N_2$
$T_1$	2745	2757	2555	2686	2780	2663
$T_2$	2824	2668	2545	2679	2649	2709
$T_3$	2634	2602	2673	2636	2586	2686
Mean	2734	2676	2591	2667	2658	2686
$N_1$	2740	2630	2574			
$N_2$	2729	2722	2608			

S.E. of N marginal mean	= 42.8 lb./ac.
S.E. of T or S marginal mean	= 52.4 lb./ac.
S.E. of body of $T \times N$ or $S \times N$ table	= 74.2 lb./ac.
S.E. of body of $T \times S$ table	= 90.8 lb./ac.
S.E. of control mean	= 74.2 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 59(44).****Site :- Reg. Res. Stn., Meerut.****Type :- 'M'.**

Object :—To study the comparative fertilizer value of raw and steamed B.M. on Wheat crop.

**1. BASAL CONDITIONS :**

(i) (a) Wheat—Fallow. (b) Fallow. (c) Nil. (ii) (a) Silt loam. (b) Refer soil analysis, Meerut. (iii) 12.11.1959. (iv) (a) 1 ploughing by soil turning plough and 4 to 5 ploughings by *desi* plough. (b) Line sowing behind the plough. (c) 80 lb./ac. (d) Rows 10" apart. (e) N.A. (v) 50 lb./ac. of N as F.Y.M. (vi) NP—710 (medium). (vii) Irrigated. (viii) 1 weeding. (ix) 1.01". (x) 29, 30.4.1960.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 levels of N as A/S :  $N_0=0$  and  $N_1=50$  lb./ac.

(2) 6 sources of  $P_2O_5$  :  $S_0$ =Control (No  $P_2O_5$ ),  $S_1$ =Super,  $S_2$ =B.M. (raw),  $S_3$ =B.M. (steamed),  $S_4$ = $\frac{1}{2}$  dose as Super +  $\frac{1}{2}$  dose as B.M. (raw) and  $S_5$ = $\frac{1}{2}$  dose as Super +  $\frac{1}{2}$  dose as B.M. (steamed).

A/S applied  $\frac{1}{2}$  as top dressing and  $\frac{1}{2}$  as basal dressing at sowing. Basal dressing of Super and B.M. by placement 3" to 4" deep before sowing.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a)  $41' \times 21'3''$ . (b)  $38' \times 18'3''$ . (v)  $1\frac{1}{2}' \times 1\frac{1}{2}'$ . (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination, yield of grain and straw. (iv) (a) 1959—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) No. (vii) Nil.

## 5. RESULTS :

(i) 2220 lb./ac. (ii) 182.2 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	$S_0$	$S_1$	$S_2$	$S_3$	$S_4$	$S_5$	Mean
$N_0$	2220	2291	2163	2010	2283	2332	2216
$N_1$	2187	2193	2243	2161	2236	2316	2223
Mean	2204	2242	2203	2085	2260	2324	2220

S.E. of N marginal mean = 37.2 lb./ac.

S.E. of S marginal mean = 64.4 lb./ac.

S.E. of body of table = 91.1 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 59(33).**

**Site :- Reg. Res. Stn., Meerut.**

**Type :- 'M'.**

Object :- To study the efficiency of departmental mixture against A/S and Super.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Dhaincha* (G.M.). (c) Nil. (ii) (a) Silt loam. (b) Refer soil analysis, Meerut. (iii) 5 11.1959. (iv) (a) 1 ploughing by soil turning plough and 4 to 5 ploughings by *desi* plough. (b) Behind the plough in rows. (c) 80 lb./ac. (d) Rows 10" apart. (e) N.A. (v) *Dhaincha* (G.M.). (vi) Pb.—591 (medium). (vii) Irrigated. (viii) 1 hoeing and 1 weeding. (ix) 1.01". (x) 12.4.1960.

## 2. TREATMENTS :

2 manurial treatments :  $M_1$ =Departmental mixture : containing 16% N and 9%  $P_2O_5$  at 300 lb./ac. and  $M_2$ =50 lb./ac. of N as A/S + 28 lb./ac. of  $P_2O_5$  as Super.

Super and departmental mixture applied through funnel in bands 3" to 4" deep before sowing. A/S applied in two doses :  $\frac{1}{2}$  dose broadcast at sowing and  $\frac{1}{2}$  dose top-dressed at 1st irrigation.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b)  $40' \times 28'$ . (iii) 12. (iv) (a)  $40' \times 13'$ . (b)  $37' \times 10'$ . (v)  $1\frac{1}{2}' \times 1\frac{1}{2}'$ . (vi) Yes.

## 4. GENERAL :

(i) Growth and germination were good. (ii) Nil. (iii) Germination, yield of grain and straw. (iv) (a) 1959—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 2167 lb./ac. (ii) 217.3 lb./ac. (iii) Treatment difference is not significant. (iv) Av. yield of grain in lb./ac.



Treatment	M <sub>1</sub>	M <sub>2</sub>
Av. yield	2178	2156

S.E./mean = 62.7 lb./ac.

**Crop :-** Wheat (*Rabi*).

**Ref :-** U.P. 57(43).

**Site :-** Reg. Res. Stn., Meerut.

**Type :-** 'M'.

**Object :-** To study the effect of P and different sources of N on Wheat.

### 1. BASAL CONDITIONS :

(i) (a) Fallow—Wheat. (b) Fallow. (c) Nil. (ii) (a) Silt loam. (b) Refer soil analysis, Meerut. (iii) 8.11.1957. (iv) (a) 1 ploughing by soil turning plough followed by 4 to 5 ploughing by *desi* plough. (b) Behind the plough in rows. (c) 30 srs./ac. (d) Between rows 9". (e) N.A. (v) Nil. (vi) Pb.—591 (medium). (vii) Irrigated. (viii) 1 weeding. (ix) 1.31". (x) 19.4.1958.

### 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub> = 0 and P<sub>1</sub> = 40 lb./ac.

(2) 4 sources of N at 50 lb./ac. : S<sub>0</sub> = Control (No N), S<sub>1</sub> = F.Y.M., S<sub>2</sub> = A/S and S<sub>3</sub> =  $\frac{1}{2}$  dose as F.Y.M. +  $\frac{1}{2}$  dose as A/S.

Super applied by placement 3" to 4" deep behind the plough before sowing. F.Y.M. applied 2 to 3 weeks before sowing. A/S applied in two doses  $\frac{1}{2}$  at sowing (basal) and  $\frac{1}{2}$  at tillering (3 weeks after germination) as top dressing.

### 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) 88.5' × 116'. (iii) 4. (iv) (a) 43' × 29'. (b) 40' × 26'. (v) 1½ × 1½'. (vi) Yes.

### 4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1957—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

### 5. RESULTS :

(i) 937 lb./ac. (ii) 188.7 lb./ac. (iii) P and S effects are significant. (iv) Av. yield of grain in lb./ac.

	S <sub>0</sub>	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean
P <sub>0</sub>	799	910	940	756	851
P <sub>1</sub>	814	1010	1087	1181	1023
Mean	807	960	1013	963	937

S.E. of S marginal mean = 66.7 lb./ac.

S.E. of P marginal mean = 47.2 lb./ac.

S.E. of body of table = 94.4 lb./ac.

**Crop :-** Wheat (*Rabi*).

**Ref :-** U.P. 57(31).

**Site :-** Reg. Res. Stn., Meerut.

**Type :-** 'M'.

**Object :-** To study the effect of different methods of application A/S on Wheat.

### 1. BASAL CONDITIONS :

(i) (a) Fallow—Wheat. (b) Fallow. (c) Nil. (ii) (a) Silt loam. (b) Refer soil analysis, Meerut. (iii) 1.11.1957. (iv) (a) 1 ploughing by soil turning plough and 4 to 5 ploughing by *desi* plough. (b) Behind the plough in lines. (c) 35 srs./ac. (d) Between rows 9". (e) N.A. (v) 40 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super applied deep in bands before sowing. (vi) Pb.—591 (medium). (vii) Irrigated. (viii) 1 weeding. (ix) 1.31". (x) 3rd week of April, 1958.

## 2. TREATMENTS :

## Main-plot treatments :

2 methods of application :  $M_1$ =Broadcast and  $M_2$ =Placing in contact with seed through funnel.

## Sub-plot treatments :

4 levels of N as A/S :  $L_0=0$ ,  $L_1=20$ ,  $L_2=40$  and  $L_3=60$  lb./ac.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 4 sub-plots/main-plot. (b)  $100' \times 87'$ . (iii) 4. (iv) (a)  $41.5' \times 22'$ . (b)  $40' \times 18'$ . (v)  $2' \times 9''$ . (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1978 lb./ac. (ii) (a) 323.4 lb./ac. (b) 350.4 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	$L_0$	$L_1$	$L_2$	$L_3$	Mean
$M_0$	—	1789	1959	2352	2033
$M_1$	—	2054	1834	2057	1982
Mean	1888	1922	1896	2204	—

## S.E. for difference of two

1. M marginal means = 132.0 lb./ac.
2. L marginal means = 175.2 lb./ac.
3. L means at the same level of M = 247.8 lb./ac.
4. M means at the same level of L = 243.1 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 57(41).**

**Site :- Reg. Res. Stn., Meerut.**

**Type :- 'M'.**

Object :- To study the effect of different combinations of Super and compost on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Chari*. (c) Nil. (ii) (a) Silt loam. (b) Refer soil analysis, Meerut. (iii) 30.11.1957 and 1.12.1957. (iv) (a) 1 ploughing by soil turning plough and 4 to 5 ploughings by *desi* plough. (b) Behind the plough in rows. (c) 35 srs./ac. (d) Row to row 9". (e) N.A. (v) Nil. (vi) Pb.—591 (medium). (vii) Irrigated. (viii) 1 weeding. (ix) 0.71". (x) 28.4.1958.

## 2. TREATMENTS :

All combinations of (1) and (2)+3 extra treatments

(1) 4 levels of Super :  $P_0=0$ ,  $P_1=2.5$ ,  $P_2=5.0$  and  $P_3=7.5$  cwts./ac.

(2) 2 levels of compost :  $N_0=0$  and  $N_1=100$  mds./ac.

3 extra treatments : 100 mds./ac. of compost containing 3 different levels of Super in composting material as  $E_1=2.5$ ,  $E_2=5.0$  and  $E_3=7.5$  cwts./ac.

Super placed 3" to 4" deep in furrows below the seeds and compost broadcast before sowing. Extra treatments applied by broadcast. Manures applied on 30.11.1957.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 11. (b)  $27' \times 303.25'$ . (iii) 4. (iv) (a)  $27' \times 25'8''$ . (b)  $24' \times 22'8''$ . (v)  $1\frac{1}{2}' \times 1\frac{1}{2}'$ . (vi) Yes.

## 4. GENERAL :

(i) Poor growth due to late sowing. (ii) Nil. (iii) Yield of grain. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1133 lb./ac. (ii) 180.4 lb./ac. (iii) Main effect of N is highly significant and "E vs. others" is significant.  
 (iv) Av. yield of grain in lb./ac.

$$E_1 = 1212 \text{ lb./ac.}, E_2 = 1214 \text{ lb./ac. and } E_3 = 1252 \text{ lb./ac.}$$

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	Mean
N <sub>0</sub>	1196	788	994	1004	996
N <sub>1</sub>	1116	1152	1347	1187	1200
Mean	1156	970	1170	1096	1098

S.E. of N marginal mean = 45.1 lb./ac.  
 S.E. of P marginal mean = 63.3 lb./ac.  
 S.E. of body of table or E mean = 90.2 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 54(191).**

**Site :- Tarai State Farm, Nagla.**

**Type :- 'M'.**

**Object :-** To study the effect of N and P applied alone and in combination on Wheat.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) Paddy. (c) Nil. (ii) (a) Tarai loam (slightly calcareous). (b) N.A. (iii) 16.11.1954.  
 (iv) (a) 1 ploughing and 5 harrowings. (b) Sown by seed drill. (c) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) 1 weeding. (ix) 2 2". (x) 20, 21.4.1955.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N as A/S : N<sub>0</sub>=0, N<sub>1</sub>=30 and N<sub>2</sub>=60 lb./ac.

(2) 3 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0, P<sub>1</sub>=60 and P<sub>2</sub>=120 lb./ac.

N applied by broadcast and P<sub>2</sub>O<sub>5</sub> placed deep in furrows by victory plough. Manures applied from 13 to 15.11.1954.

## 3. DESIGN :

- (i) Fact. in R.B.D. (ii) (a) 9. (b) 54.5' × 204'. (iii) 6. (iv) (a) and (b) 54.5' × 20'. (v) Nil. (vi) Yes.

## 4. GENERAL :

- (i) Normal. (ii) N.A. (iii) Yield of grain. (iv) (a) and (b) No. (c) Nil. (v) (a) Phoolbagh. (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1832 lb./ac. (ii) 142.0 lb./ac. (iii) Effects of N and P alone are highly significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	1552	1745	1725	1674
N <sub>1</sub>	1885	2065	1972	1974
N <sub>2</sub>	1745	1878	1925	1849
Mean	1727	1896	1874	1832

S.E. of any marginal mean = 33.5 lb./ac.  
 S.E. of body of table = 58.0 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 55(171).****Site :- Tarai State Farm, Nagla.****Type :- 'M'.**

Object :—To study the effect of N and P applied alone and in combination on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Paddy. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 26, 27.11.1955. (iv) (a) 1 ploughing by chain tractor, 3 harrowings by tractor and 4 plankings. (b) Behind *desi* plough. (c) 32 srs./ac. (d) and (e) N.A. (v) Nil. (vi) Pb.—591. (vii) Irrigated. (viii) N.A. (ix) 2.74". (x) 18. to 21.4.1956.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 3 levels of N as A/S :  $N_0=0$ ,  $N_1=20$  and  $N_2=40$  lb./ac.(2) 4 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=20$ ,  $P_2=40$  and  $P_3=60$  lb./ac.N applied by broadcast and  $P_2O_5$  placed behind victory plough in furrows before sowing.**3. DESIGN :**(i) Fact. in R.B.D. (ii) (a) 12. (b)  $44' \times 333'$ . (iii) 4. (iv) (a) and (b)  $44' \times 24.75'$ . (v) Nil. (vi) Yes.**4. GENERAL :**

(i) Good. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1955—1956. (b) No. (c) Nil. (v) (a) Phoolbagh. (b) Nil. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1678 lb./ac. (ii) 184.7 lb./ac. (iii) No effect is significant. (iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	$P_2$	$P_3$	Mean
$N_0$	1590	1700	1600	1710	1650
$N_1$	1700	1720	1710	1720	1712
$N_2$	1710	1600	1700	1680	1672
Mean	1667	1673	1670	1703	1678

S.E. of N marginal mean = 46.2 lb./ac.

S.E. of P marginal mean = 53.3 lb./ac.

S.E. of body of table = 92.4 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 56(147).****Site :- Tarai State Farm, Nagla.****Type :- 'M'.**

Object :— To study the effect of N and P applied alone and in combination on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Paddy. (c) N.A. (ii) (a) Loam soil. (b) N.A. (iii) 20.11.1956. (iv) (a) 1 ploughing by tractor, 3 harrowings and 3 plankings. (b) Seed drill. (c) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) 6.33". (x) 21, 25.4.1957.

**2. TREATMENTS :**

Same as in expt. no. 55(171) above.

**3. DESIGN :**(i) Fact. in R.B.D. (ii) (a) 12. (b)  $49.5' \times 297'$ . (iii) 4. (iv) (a) and (b)  $49.5' \times 22'$ . (v) Nil. (vi) Yes.**4. GENERAL :**

(i) Normal growth. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1955—1956. (b) No. (c) Nil. (v) (a) Majhera. (b) N.A. (vi) Nil. (vii) Crop was slightly damaged by weeds like *bathna* and *katili*.

## 5. RESULTS :

(i) 1631 lb./ac. (ii) 248.4 lb./ac. (iii) Only N and P effects are highly significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	Mean
N <sub>0</sub>	1390	1530	1580	1500	1500
N <sub>1</sub>	1250	1590	1530	1750	1530
N <sub>2</sub>	1560	1870	1960	2060	1862
Mean	1400	1663	1690	1770	1631

S.E. of N marginal mean = 62.1 lb./ac.

S.E. of P marginal mean = 71.7 lb./ac.

S.E. of body of table = 124.2 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref:- U.P. 57(232).**

**Site :- Tarai State Farm, Nagla.**

**Type :- 'M'.**

Object :- To study the effect of N and P applied alone and in combination on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy. (c) Nil. (ii) (a) Clay loam. (b) N.A. (iii) 11.11.1957. (iv) (a) 1 ploughing by disc plough, 4 harrowings and 4 plankings. (b) By seed drill. (c) to (e) N.A. (v) Nil. (vi) and (vii) N.A. (viii) 2 weedings. (ix) 1.54". (x) 8 to 10.4.1958.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N as A/S ; N<sub>0</sub>=0, N<sub>1</sub>=25 and N<sub>2</sub>=50 lb./ac.

(2) 3 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0, P<sub>1</sub>=30 and P<sub>2</sub>=60 lb./ac.

N applied as broadcast before sowing and P<sub>2</sub>O<sub>5</sub> applied in furrows behind victory plough on 6.11.1957.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 9. (b) 49.5'×222'. (iii) 4. (iv) (a) and (b) 49.5'×22'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) and (b) No. (c) Nil. (v) (a) Majhara. (b) N.A. (vi) Late sowing, lack of rains and weeds damaged the crop. (vii) Nil.

## 5. RESULTS :

(i) 1406 lb./ac. (ii) 152.3 lb./ac. (iii) Main effect of N alone is highly significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	1090	1150	1190	1143
N <sub>1</sub>	1410	1360	1500	1427
N <sub>2</sub>	1620	1650	1670	1647
Mean	1373	1387	1457	1406

S.E. of any marginal mean = 44.0 lb./ac.

S.E. of body of table = 76.2 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 57(220).****Site :- Tarai State Farm, Nagla.****Type :- 'M'.**

Object :- To study the residual effect of N and P applied in kharif on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Wheat—Paddy—Wheat. (b) Paddy. (c) As per treatments. (ii) (a) Clay loam. (b) N.A. (iii) 4.12.1957. (iv) (a) Ploughing, harrowing and planking. (b) Behind seed drill. (c) to (e) N.A. (v) to (vii) Nil. (viii) Weeding. (ix) 1.14". (x) 7 to 9.4.1958.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 3 levels of N as A/S :  $N_0=0$  and  $N_1=20$  and  $N_2=40$  lb./ac.(2) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=20$  and  $P_2=40$  lb./ac.Fertilizers were applied in *kharif* to paddy.**3. DESIGN :**(i) Fact. in R.B.D. (ii) (a) 9. (b)  $49.5' \times 222'$ . (iii) 4. (iv) (a) and (b)  $49.5' \times 22'$ . (v) Nil. (vi) Yes.**4. GENERAL :**

(i) N.A. (ii) Slight damage by rats. (iii) Yield of grain and straw. (iv) (a) 1957—N.A. (b) N.A. (c) Nil. (v) (a) Phoolbagh. (b) N.A. (vi) Nil. (vii) Due to late sowing, the crop was not good.

**5. RESULTS :**

(i) 1241 lb./ac. (ii) 170.4 lb./ac. (iii) Only P effect is highly significant. (iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	$P_2$	Mean
$N_0$	1070	1320	1260	1217
$N_1$	1010	1370	1200	1193
$N_2$	1190	1370	1380	1313
Mean	1090	1353	1280	1241

S.E. of any marginal mean = 49.2 lb./ac.

S.E. of body of table = 85.2 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 54(153).****Site :- Tarai State Farm, Nagla.****Type :- 'M'.**

Object :- To study the effect of leaf mould in combination with F.Y.M. and A/S on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Paddy. (c) Nil. (ii) (a) Calcareous loam. (b) N.A. (iii) 27, 28.11.1954. (iv) (a) 1 ploughing by tractor and 4 harrowings. (b) Behind *desi* plough in rows. (c) 40 lb./ac. (d) and (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) 1 weeding. (ix) 2.2". (x) 20.4.1955.

**2. TREATMENTS :**5 sources of N at 50 lb /ac. :  $S_0$ =Control (no manure),  $S_1$ =Leaf mould,  $S_2$ =A/S,  $S_3$ =F.Y.M. and  $S_4$ =Wheat straw.

Leaf mould was collected and buried ; wheat straw was buried earlier and applied in plots before sowing. A/S and F.Y.M. were broadcast.

**3. DESIGN :**(i) R.B.D. (ii) (a) 5. (b)  $49.5' \times 122'$ . (iii) 4. (iv) (a) and (b)  $49.5' \times 22'$ . (v) Nil. (vi) Yes.**4. GENERAL :**

(i) Normal. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1954—1957. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Leaf mould and wheat straw were not applied at proper time, so sowing was delayed. Severe weed infestation.

## 5. RESULTS :

(i) 1404 lb./ac. (ii) 146.3 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	S <sub>0</sub>	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>
Av. yield	1270	1330	1530	1570	1320

S.E./mean = 73.2 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 55(141).**

**Site :- Tarai State Farm, Nagla.**

**Type :- 'M'.**

Object :—To study the effect of leaf mould in combination with F.Y.M. and A/S on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 20.11.1955. (iv) (a) 1 ploughing by chain tractor, 3 harrowings, 3 plankings and 1 *palewa*. (b) Behind the plough. (c) to (e) N.A. (v) Nil. (vi) Pb.—591. (vii) Irrigated. (viii) 2 weedings. (ix) 2.69". (x) 22.4.1956.

## 2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 54(153) on page 277.

## 4. GENERAL :

(i) Normal growth. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1954—1957. (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) N.A. (vii) Leaf mould and wheat straw could not be applied well in advance of sowing.

## 5. RESULTS :

(i) 1352 lb./ac. (ii) 159.6 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	S <sub>0</sub>	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>
Av. yield	1190	1370	1420	1450	1330

S.E./mean = 79.8 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 56(92).**

**Site :- Tarai State Farm, Nagla.**

**Type :- 'M'.**

Object :—To study the effect of leaf mould in combination with F.Y.M. and A/S on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy. (c) N.A. (ii) (a) Loam soil. (b) N.A. (iii) 20.11.1956. (iv) (a) 1 ploughing by tractor, 3 harrowings by tractor, and 3 plankings. (b) By seed drill. (c) 70 lb./ac. (d) and (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) 6.33". (x) 25 and 26.4.1957.

## 2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 54(153) on page 277.

## 4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1954—1957. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Crop slightly damaged by weeds.

## 5. RESULTS :

(i) 1618 lb./ac. (ii) 185.3 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	S <sub>0</sub>	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>
Av. yield	1430	1640	1850	1620	1550

S.E./mean = 92.6 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 57(124).**

**Site :- Tarai State Farm, Nagla.**

**Type :- 'M'.**

Object :—To study the effect of leaf mould in combination with F.Y.M. and A/S on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Paddy. (c) Nil. (ii) (a) Clay loam soil. (b) N.A. (iii) 11.11.1957. (iv) (a) 1 ploughing with disc plough, 4 harrowings and 4 plankings. (b) By seed drill. (c) to (e) N.A. (v) Nil. (vi) N—809 (vii) N.A. (viii) 2 weedings. (ix) 1.54". (x) 8.4.1958.

**2. TREATMENTS and 3. DESIGN :**

Same as in expt. no. 54(153) on page 277.

**4. GENERAL :**

(i) Good. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1954—1957. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Crop was damaged due to lack of moisture and *bathwa* weeds. Leaf mould manure could not be applied at proper time.

**5. RESULTS :**

(i) 1352 lb./ac. (ii) 129.1 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	S <sub>0</sub>	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>
Av. yield	1140	1230	1580	1310	1500

S.E./mean = 64.5 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 54(152).**

**Site :- Reg. Res. Stn., Nawabganj.**

**Type :- 'M'.**

Object :—To study the residual effect of G.M. with and without P<sub>2</sub>O<sub>5</sub> on succeeding Wheat crop.

**1. BASAL CONDITIONS :**

(i) (a) to (c) As per treatments. (ii) (a) Clayey loam. (b) Refer soil analysis, Nawabganj. (iii) 21.11.1954. (iv) (a) to (e) N.A. (v) G.M. (vi) Pb.—591 (late). (vii) to (x) N.A.

**2. TREATMENTS :**

6 treatments in *kharif*: T<sub>1</sub>=Fallow, T<sub>2</sub>=*Moong* pods were removed and leaves and stem ploughed in, T<sub>3</sub>=G.M., T<sub>4</sub>=Fallow+150 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super, T<sub>5</sub>=*Moong* (G.M.) was ploughed in+150 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super and T<sub>6</sub>=G.M.+150 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.

Residual effect studied this year.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) and (b) 66'×22'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1951—1954. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1290 lb./ac. (ii) 132.8 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.



Treatment	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	T <sub>5</sub>	T <sub>6</sub>
Av. yield	1076	1255	1265	1329	1486	1331

S.E./mean = 66.4 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 56(88).**

**Site :- Reg. Res. Stn., Nawabganj.**

**Type :- 'M'.**

Object :—To test the relative merits of A/C and A/S on Wheat.

### 1. BASAL CONDITIONS :

(i) (a) Sugarcane—Sugarcane—*Dhaincha*—Wheat. (b) *Dhaincha*. (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Nawabganj. (iii) 15.11.1956. (iv) (a) N.A. (b) Behind the plough. (c) 82 lb./ac. (d) Rows 9" apart. (e) N.A. (v) G.M. (*dhaincha*). (vi) Pb.—591 (late). (vii) Irrigated. (viii) Weeding. (ix) and (x) N.A.

### 2. TREATMENTS :

3 manurial treatments : M<sub>0</sub>=Control (no manure), M<sub>1</sub>=24 lb./ac. of N as A/C and M<sub>2</sub>=24 lb./ac. of N as A/S.

A/C and A/S applied as top-dressing on 30.12.1956.

### 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) 40'×27'. (b) 1/61 ac. (v) N.A. (vi) Yes.

### 4. GENERAL :

(i) N.A. (ii) Yellow rot and stem rust in traces. (iii) Yield of grain and straw. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

### 5. RESULTS :

(i) 1255 lb./ac. (ii) 212.6 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	M <sub>0</sub>	M <sub>1</sub>	M <sub>2</sub>
Av. yield	1026	1445	1293

S.E./mean = 86.8 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 56(94).**

**Site :- Reg. Res. Stn., Nawabganj.**

**Type :- 'M'.**

Object :—To study the effect of P and different sources of N on Wheat.

### 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Nawabganj. (iii) 16 to 19.11.1956. (iv) (a) N.A. (b) By dibbling. (c) 12.5 srs/ac. (d) N.A. (e) 2. (v) G.M. (vi) Pb.—591. (vii) and (viii) N.A. (ix) 4.78". (x) 28.4.1957.

### 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0 and P<sub>1</sub>=25 lb./ac.

(2) 4 sources of N at 18 lb./ac. : S<sub>0</sub>=Control (No N), S<sub>1</sub>=A/S, S<sub>2</sub>=A/S/N and S<sub>3</sub>=Urea.

Fertilizers applied as top dressing. N on 30.12.1956 and P<sub>2</sub>O<sub>5</sub> on 16.11.1956.

### 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 40'×27'. (b) 54'×21'. (v) 3'×3'. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Yellow rust, brown rust and stem black. (iii) Yield of grain and straw. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1020 lb./ac. (ii) 179.0 lb./ac. (iii) Main effect of P alone is significant. (iv) Av. yield of grain in lb./ac.

	S <sub>0</sub>	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean
P <sub>0</sub>	729	1049	1096	894	942
P <sub>1</sub>	988	1204	1106	1098	1099
Mean	858	1126	1101	996	1020

S.E. of P marginal mean = 44.8 lb./ac.  
 S.E. of S marginal mean = 63.3 lb./ac.  
 S.E. of body of table = 89.5 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 57(109).**

**Site :- Reg. Res. Stn., Nawabganj.**

**Type :- 'M'.**

Object :—To study the effect of different methods of application of N, P and K on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Nawabganj. (iii) 22.11.1957. (iv) (a) N.A. (b) Behind the plough in lines. (c) 30 srs./ac. (d) and (e) N.A. (v) Nil. (vi) NP-720 (early). (vii) Irrigated. (viii) N.A. (ix) 0.59". (x) 25.4.1958.

## 2. TREATMENTS :

**Main-plot treatments :**

3 manurial treatments : T<sub>1</sub>=50 lb./ac. of N as A/S, T<sub>2</sub>=40 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super and T<sub>3</sub>=40 lb./ac. of K<sub>2</sub>O as Pot. Sul.

**Sub-plot treatments :**

3 methods of application : M<sub>1</sub>=Broadcast (surface dressing before sowing), M<sub>2</sub>=Placemer.t (sub-surface application 3" to 4" deep in soil behind plough before sowing) and M<sub>3</sub>=Seeds mixed with fertilizers and sown.

Manures applied on 21, 22.11.1957.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 38' × 28'. (b) 35' × 25'. (v) 1½' × 1½'. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Germination, yield of grain and straw. (iv) (a) 1957—N.A. (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 454 lb./ac. (ii) (a) 59.7 lb./ac. (b) 129.1 lb./ac. (iii) Main effect of T alone is highly significant, (iv) Av. yield of grain in lb./ac.

	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	Mean
T <sub>1</sub>	563	697	537	599
T <sub>2</sub>	358	390	371	373
T <sub>3</sub>	377	392	403	391
Mean	433	493	437	454

## S.E. of difference of two

1. T marginal means	= 24.4 lb./ac.
2. M marginal means	= 52.7 lb./ac.
3. M means at the same level of T	= 91.3 lb./ac.
4. T means at the same level of M	= 78.4 lb./ac.

**Crop :- Wheat (Rabi).**  
**Site :- Reg. Res. Stn., Nawabganj.**

**Ref :- U.P. 57(100).**  
**Type :- 'M'.**

Object :—To study the effect of different levels of P on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) *Dhaincha* (G.M.)—Wheat. (b) *Dhaincha* (G.M.). (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Nawabganj. (iii) 6.11.1957. (iv) (a) N.A. (b) Behind the plough. (c) 40 srs./ac. (d) Rows 9" apart. (e) N.A. (v) 25 lb./ac. of N as A/S+G.M. (vi) Pb.—591 (late). (vii) Irrigated. (viii) N.A. (ix) 0.59". (x) 12.4.1958.

## 2. TREATMENTS :

5 levels of  $P_2O_5$  as Super:  $P_0=0$ ,  $P_1=30$ ,  $P_2=60$ ,  $P_3=90$  and  $P_4=120$  lb./ac.  
Super placed in bands on 5.11.1957.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 40'6"×27'. (b) 37'6"×24'. (v) 1½'×1½'. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Loose smut and brown rust. (iii) Germination, intensity of rust, yield of grain and straw. (iv) (a) 1957—N.A. (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) N.I.

## 5. RESULTS :

(i) 1397 lb./ac. (ii) 48.0 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$P_0$	$P_1$	$P_2$	$P_3$	$P_4$
Av. yield	1157	1294	1383	1462	1685

S.E./mean = 24.0 lb./ac.

**Crop :- Wheat (Rabi).**  
**Site :- Reg. Res. Stn., Nawabganj.**

**Ref :- U.P. 57(101).**  
**Type :- 'M'.**

Object :— To study the effect of F.Y.M. and G.M. on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) *Dhaincha*—Wheat. (b) *Dhaincha*. (c) A/S. (ii) (a) Clayey loam. (b) Refer soil analysis, Nawabganj. (iii) 2.11.1957. (iv) (a) and (b) N.A. (c) 40 srs./ac. (d) Rows 9" apart. (e) N.A. (v) *Dhaincha* (G.M.) A/S on 27.7.1957 and 30 lb./ac. of  $P_2O_5$  as Super on 31.10.1957. (vi) Pb.—591 (late). (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 8.4.1958.

## 2. TREATMENTS :

5 manurial treatments:  $M_0$ =Control,  $M_1$ =A/S,  $M_2$ =100 mds./ac. of F.Y.M.,  $M_3$ =*Dhaincha* (G.M.),  $M_4$ = $M_2+M_3$  and  $M_5$ =*Moong* (G.M.).

Levels of manures applied—N.A.

## 3. DESIGN :

(i) R.B.D. (ii) 6. (b) N.A. (iii) 2. (iv) (a) and (b) 29'×16'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1191 lb./ac. (ii) 233.2 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	M <sub>0</sub>	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	M <sub>4</sub>	M <sub>5</sub>
Av. yield	1255	1593	1038	1110	1086	1062

S.E./mean = 164.9 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 57(103).**

**Site :- Reg. Res. Stn., Nawabganj.**

**Type :- 'M'.**

Object :- To study the residual effect of N and P applied to Jowar crop on succeeding Wheat crop.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Jowar*. (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Nawabganj. (iii) 30.10.1957. (iv) (a) N.A. (b) Behind the plough. (c) 1 md./ac. (d) and (e) N.A. (v) Nil. (vi) Pb.—591 (late). (vii) Irrigated. (viii) N.A. (ix) 0.59". (x) 19.4.1958.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N as A/S . N<sub>0</sub>=0; N<sub>1</sub>=20 and N<sub>2</sub>=40 lb./ac.

(2) 3 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0, P<sub>1</sub>=20 and P<sub>2</sub>=40 lb./ac.

Super placed deep in bands on both side of the seed line and A/S was applied as broadcast at the time of sowing of *kharif* crop of *jowar* on 17.7.1957.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) and (b) 30' × 36'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Brown rust. (iii) Germination, yield of grain and straw. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 679 lb./ac. (ii) 75.9 lb./ac. (iii) Main effect of P alone is significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	588	633	705	642
N <sub>1</sub>	643	690	737	690
N <sub>2</sub>	690	669	757	705
Mean	640	663	733	679

S.E. of any marginal mean = 21.9 lb./ac.

S.E. of body of table = 38.0 lb./ac.

**Crop Wheat (Rabi).**

**Ref :- U.P. 57(102).**

**Site :- Reg. Res. Stn., Nawabganj.**

**Type :- 'M'.**

Object :- To study the effect of N and P applied singly and in combination on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Nawabganj. (iii) 19.11.1957. (iv) (a) N.A. (b) Behind the plough in lines. (c) 30 srs./ac. (d) and (e) N.A. (v) Nil. (vi) NP-720 (early). (vii) Irrigated. (viii) N.A. (ix) 0.32'. (x) 24.4.1958.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N as A/S :  $N_0=0$ ,  $N_1=30$  and  $N_2=60$  lb./ac.

(2) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=20$  and  $P_2=40$  lb./ac.

Super applied by placement 3" to 4" deep in soil behind the plough a week before sowing. A/S applied in two instalments  $\frac{1}{2}$  at sowing and  $\frac{1}{2}$  at tillering.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a)  $38' \times 28'$ . (b)  $35' \times 25'$ . (v)  $1\frac{1}{2}' \times 1\frac{1}{2}'$ . (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Brown rust and smutted ears (iii) Germination, yield of grain and straw. (iv) (a) 1957—contd. (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 39 lb./ac. (ii) 126.6 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	$P_2$	Mean
$N_0$	307	454	422	394
$N_1$	429	525	467	474
$N_2$	448	499	397	448
Mean	395	493	429	439

S.E. of any marginal mean = 36.5 lb./ac.

S.E. of body of table = 63.3 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 57(107).**

**Site :- Reg. Res. Stn., Nawabganj.**

**Type :- 'M'.**

**Object :-** To study the effect of N and P applied singly and in combination on Wheat crop.

## 1. BASAL CONDITIONS :

(i) (a) (a) Paddy-Wheat. (b) Paddy. (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Nawabganj. (iii) 18.11.1957. (iv) (a) N.A. (b) Behind the plough in rows. (c)  $37\frac{1}{2}$  srs./ac. (d) Rows 9" apart. (e) N.A. (v) Nil. (vi) NP-720 (early). (vii) Irrigated. (viii) N.A. (ix) 0.59'. (x) 23.4.1958.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N as A/S :  $N_0=0$ ,  $N_1=25$  and  $N_2=50$  lb./ac.

(2) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=30$  and  $P_2=60$  lb./ac.

Super placed deep in bands on 17.11.1957 and A/S applied broadcast on 18.11.1957.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) and (b)  $42' \times 25\frac{1}{2}'$ . (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Loose smut in traces and brown rust. (iii) Germination, yield of grain and straw. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 320 lb./ac. (ii) 82.6 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	299	262	367	309
N <sub>1</sub>	342	297	350	330
N <sub>2</sub>	308	319	339	322
Mean	316	293	352	320

S.E. of any marginal mean = 23.8 lb./ac.

S.E. of body of table = 41.3 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 57(421).**

**Site :- Reg. Res. Stn., Nawabganj.**

**Type :- 'M'.**

Object :—To study the effect of P and different sources of N on the yield of Wheat.

### 1. BASAL CONDITIONS :

(i) (a) *Dhaincha*—Wheat. (b) *Dhaincha*. (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Nawabganj. (iii) 13.11.1957. (iv) (a) N.A. (b) Behind the plough in rows. (c) 35 srs./ac. (d) Rows 9" apart. (e) N.A. (v) *Dhaincha*. (G.M.) (vi) Pb.—591. (vii) Irrigated. (viii) and (ix) N.A. (x) 23.4.1958.

### 2. TREATMENTS :

**Main-plot treatments :**

All combinations (1) and (2)+control (3 plots).

(1) 3 sources of N at 18 lb./ac. : S<sub>1</sub>=A/S, S<sub>2</sub>=Urea and S<sub>3</sub>=A/S/N,

(2) 3 methods of application of N : M<sub>1</sub>=Basal dressing, M<sub>2</sub>=Top dressing and M<sub>3</sub>=Basal+top dressing.

**Sub-plot treatments :**

2 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0 and P<sub>1</sub>=18 lb./ac.

Basal dressing on 12.11.1957 and top dressing done on 28.12.1957.

### 3. DESIGN :

(i) Split-plot. (ii) (a) 12 main-plots/replication and 2 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a) and (b) 36' × 15'. (v) Nil. (vi) Yes.

### 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain, straw and germination counts. (iv) (a) 1957—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

### 5. RESULTS :

(i) 998 lb./ac. (ii) (a) 109.4 lb./ac. (b) 133.6 lb./ac. (iii) Only 'control vs. others' is highly significant. (iv) Av. yield of grain in lb./ac.

$$N_0P_0 = 844 \text{ lb./ac. and } N_1P_1 = 802 \text{ lb./ac.}$$

	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>
S <sub>1</sub>	1079	944	1079	1034	940	1127
S <sub>2</sub>	1110	1110	1130	1117	1086	1148
S <sub>3</sub>	996	1079	985	1020	1009	1030
Mean	1062	1044	1065	1057	1012	1102
P <sub>0</sub>	1065	989	982			
P <sub>1</sub>	1058	1099	1148			

## S.E. of difference of two

1. S or M marginal means	=	44.7 lb./ac.
2. P marginal means	=	44.5 lb./ac.
3. P means at the same level of S or M	=	77.1 lb./ac.
4. S or M means at the same level of P	=	70.5 lb./ac.
S.E. of $N_0P$ mean	=	44.7 lb./ac.
S.E. of body of $S \times M$ table	=	54.7 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 58(138).

Site :- Reg. Res. Stn., Nawabganj.

Type :- 'M'.

Object :- To study the effect of P and different sources of N on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Paddy—Wheat. (b) Paddy. (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Nawabganj. (iii) 6.11.1958. (iv) (a) N.A. (b) Behind the plough in rows. (c) 35 srs./ac. (d) Rows 9" apart. (e) N.A. (v) N.A. (vi) Pb.—591. (vii) Irrigated. (viii) N.A. (ix) 2.93%. (x) 24.4.1959.

## 2. TREATMENTS :

## Main-plot treatments :

All combinations of (1) and (2) + control (3 plots)

(1) 3 sources of N at 36 lb./ac. :  $S_1$  = A/S,  $S_2$  = Urea and  $S_3$  = A/S/N.(2) 3 methods of application of N :  $M_1$  = Basal dressing,  $M_2$  = Top dressing and  $M_3$  = Basal dressing + top dressing.

## Sub-plot treatments :

2 levels of  $P_2O_5$  as Super :  $P_0$  = 0 and  $P_1$  = 18 lb./ac.

Top dressing done on 27.12.1958.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 12 main-plots/replication ; 2 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a) 42' × 18'. (b) 36' × 15'. (v) 3' × 1½'. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) No. (iii) Yield of grain, straw and germination counts. (iv) (a) 1957--contd. (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1102 lb./ac. (ii) (a) 266.2 lb./ac. (b) 204.6 lb./ac. (iii) Main effect of P alone is highly significant. (iv) Av. yield of grain in lb./ac.

$$N_0P_0 = 1044 \text{ lb./ac. and } N_0P_1 = 1137 \text{ lb./ac.}$$

	$M_1$	$M_2$	$M_3$	Mean	$P_0$	$P_1$
$S_1$	1343	1120	1255	1239	1124	1355
$S_2$	825	1317	1245	1129	1075	1182
$S_3$	809	1073	965	949	906	992
Mean	992	1170	1155	1106	1035	1176
$P_0$	690	1113	1086			
$P_1$	1078	1227	1224			

## S.E. of difference of two

1. S or M marginal means	=	108.7 lb./ac.
2. P marginal means	=	68.2 lb./ac.
3. P means at the same level of S or M	=	118.1 lb./ac.
4. S or M means at the same level of P	=	137.1 lb./ac.
S.E. of $N_0P$ mean	=	108.7 lb./ac.
S.E. of body of $S \times M$ table	=	133.1 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 59(152).****Site :- Reg. Res. Stn., Nawabganj.****Type :- 'M'.**

Object :—To study the effect of P and different sources of N on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Nawabganj. (iii) 30.11.1959. (iv) (a) N.A. (b) Behind the plough in rows. (c) 40 srs./ac. (d) Rows 9" apart. (e) N.A. (v) N.A. (vi) C—13(early). (vii) Irrigated. (viii) 1 weeding. (ix) 1.95". (x) 22.4.1960.

**2. TREATMENTS :**

Same as in expt. no 58(138) on page 286.

**3. DESIGN :**

(i) Split-plot. (ii) (a) 12 main-plots/replication and 2 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a) 1/80 ac. (b) 32' × 13½'. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Germination counts, yield of grain and straw. (iv) (a) 1957—contd. (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 908 lb./ac. (ii) (a) 192.8 lb./ac. (b) 117.1 lb./ac. (iii) Main effect of P and 'control vs. others' are highly significant. Main effect of S and interaction S × P are significant. (iv) Av. yield of grain in lb./ac.

$$N_0P_0 = 512 \text{ lb./ac. and } N_0P_1 = 515 \text{ lb./ac.}$$

	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>
S <sub>1</sub>	953	1120	1002	1025	920	1129
S <sub>2</sub>	1241	1141	1154	1179	1111	1247
S <sub>3</sub>	891	898	953	914	712	1116
Mean	1028	1053	1036	1039	914	1164
P <sub>0</sub>	936	958	849			
P <sub>1</sub>	1121	1147	1223			

S.E. of difference of two

1. S or M marginal means	= 78.7 lb./ac.
2. P marginal means	= 39.0 lb./ac.
3. P means at the same level of S or M	= 67.6 lb./ac.
4. S or M means at the same level of P	= 92.1 lb./ac.
S.E. of N <sub>0</sub> P mean	= 78.7 lb./ac.
S.E. of body of S × M table	= 96.4 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 58(120).****Site :- Reg. Res. Stn., Nawabganj.****Type :- 'M'.**

Object :—To study the effect of P and different sources of N on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) *Lobia* for G.M.—Wheat. (b) *Lobia*. (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Nawabganj. (iii) 5.11.1958. (iv) (a) N.A. (b) Behind the plough in rows. (c) 40 srs./ac. (d) Rows 9" apart. (e) N.A. (v) *Lobia* as G.M. (vi) Pb.—591 (late). (vii) Irrigated. (viii) N.A. (ix) 2.93". (x) 14.4.1959.



**2. TREATMENTS :**

10 manurial treatments :  $M_0$ =Control,  $M_1$ =25 lb./ac. of N as A/S,  $M_2$ =30 lb./ac. of N as A/S,  $M_3$ =25 lb./ac. of N as F.Y.M.,  $M_4$ =30 lb./ac. of N as F.Y.M.,  $M_5$ =40 lb./ac. of  $P_2O_5$  as Super,  $M_6$ = $M_2$ + $M_5$ ,  $M_7$ = $M_4$ + $M_5$ ,  $M_8$ =15 lb./ac. of N as A/S+15 lb./ac. of  $P_2O_5$  as Super and  $M_9$ = $M_5$ + $M_8$ .

**3. DESIGN:**

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) 36'×15'. (b) 1/101 ac. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) No. (iii) Germination counts, yield of grain and straw. (iv) (a) 1958—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 854 lb./ac. (ii) 102.2 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$M_0$	$M_1$	$M_2$	$M_3$	$M_4$	$M_5$	$M_6$	$M_7$	$M_8$	$M_9$
Av. yield	646	925	928	671	636	698	1278	733	922	1107

S.E./mean = 51.1 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 59(129).**

**Site :- Reg. Res. Stn., Nawabganj.**

**Type :- 'M'.**

Object :—To study the effect of P and different sources of N on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) *Lobia*. (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Nawabganj. (iii) 26 and 27.11.1959. (iv) (a) N.A. (b) Behind the plough in rows. (c) 40 srs./ac. (d) Rows 9' apart. (e) N.A. (v) N.A. (vi) Pb.—591 (late). (vii) Irrigated. (viii) N.A. (ix) 3.65". (x) 16.4.1960.

**2. TREATMENTS :**

10 manurial treatments :  $M_0$ =Control,  $M_1$ =25 lb./ac. of N as A/S,  $M_2$ =2  $M_1$ ,  $M_3$ =25 lb./ac. of N as F.Y.M.,  $M_4$ =2  $M_3$ ,  $M_5$ =40 lb./ac. of  $P_2O_5$  as Super,  $M_6$ = $M_2$ + $M_5$ ,  $M_7$ = $M_4$ + $M_5$ ,  $M_8$ = $M_1$ + $M_3$  and  $M_9$ = $M_1$ + $M_3$ + $M_5$ .

**3. DESIGN :**

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) 36'×15'. (b) 32'×13½'. (v) 2'×9". (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) No. (iii) Germination counts, yield of grain and straw. (iv) (a) 1958 - contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 781 lb./ac. (ii) 167.6 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$M_0$	$M_1$	$M_2$	$M_3$	$M_4$	$M_5$	$M_6$	$M_7$	$M_8$	$M_9$
Av. yield	509	722	745	617	726	604	1126	688	814	1262

S.E./mean = 83.8 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 59(456).**

**Site :- Reg. Res. Stn., Nawabganj.**

**Type :- 'M'.**

Object :—To study the effect of B.M. (raw and steamed), Super and A/S on Wheat.

## 1. BASAL CONDITIONS :

(a) to (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Nawabganj. (iii) 29.11.1959. (iv) (a) to (e) N.A. (v) 50 mds./ac. of F.Y.M. on 28.11.1959 and 25 lb./ac. of A/S on 24.12.1959. (vi) NP-710. (vii) Irrigated. (viii) and (ix) N.A. (x) 19.4.1960.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 levels of N as A/S :  $N_0=0$  and  $N_1=50$  lb./ac.

(2) 6 sources of 25 lb./ac. of  $P_2O_5$  :  $S_0$ =Control (No  $P_2O_5$ ),  $S_1$ =Super,  $S_2$ =B.M. (raw)  $S_3$ =B.M. (steamed),  $S_4$ = $\frac{1}{2}$  Super+ $\frac{1}{2}$  B.M. (raw) and  $S_5$ = $\frac{1}{2}$  Super+ $\frac{1}{2}$  B.M. (steamed).

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a)  $40' \times 18'$ . (b)  $36' \times 16.5'$ . (v)  $2' \times 9''$ . (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Brown rust and smutted heads. (iii) Germination, yield of grain and straw. (iv) (a) 1959—contd. (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 877 lb./ac. (ii) 149.7 lb./ac. (iii) Main effect of N is highly significant and main effect of S is significant. (iv) Av. yield of grain in lb./ac.

	$S_0$	$S_1$	$S_2$	$S_3$	$S_4$	$S_5$	Mean
$N_0$	738	830	664	746	771	688	740
$N_1$	1046	1226	962	980	947	920	1014
Mean	892	1028	813	863	859	804	877

S.E. of N marginal mean = 30.6 lb./ac.  
 S.E. of S marginal mean = 52.9 lb./ac.  
 S.E. of body of table = 74.8 lb./ac.

**Crop :-** Wheat (*Rabi*).

**Ref :-** U.P. 59(113).

**Site :-** Reg. Res. Stn., Nawabganj.

**Type :-** 'M'.

**Object :-** To find out the efficiency of blood meal as compared with other manures on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Paddy—Wheat. (b) Paddy. (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Nawabganj. (iii) 24.11.1959. (iv) (a) N.A. (b) Behind the plough in rows. (c) 1 md./ac. (d) Rows  $9''$  apart. (e) N.A. (v) As per treatments. (vi) Pb.—591. (vii) Irrigated. (viii) 1 weeding. (ix)  $1.95''$ . (x) 12.4.1960.

## 2. TREATMENTS :

4 sources of 50 lb./ac. of N applied as basal dressing :  $S_0$ =Control (No N),  $S_1$ =Blood meal,  $S_2$ =A/S and  $S_3$ =F.Y.M.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a)  $26' \times 18'$ . (b)  $22' \times 16\frac{1}{2}'$ . (v)  $2' \times 9''$ . (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Growth, yield of grain and straw. (iv) (a) 1959—contd. (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 708 lb./ac. (ii) 89.2 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	S <sub>0</sub>	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>
Av. yield	507	839	980	506

S.E./mean = 36.4 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 59(114).**

**Site :- Reg. Res. Stn., Nawabganj.**

**Type :- 'M'.**

**Object :-**To compare departmental mixture with A/S and Super applied separately to Wheat crop.

### 1. BASAL CONDITIONS :

(i) (a) Paddy—Wheat. (b) Paddy. (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Nawabganj. (iii) 24.11.1959. (iv) (a) N.A. (b) Behind the plough in rows. (c) 1 md./ac. (d) Rows 9" apart. (e) N.A. (v) As per treatments. (vi) Pb.—591. (vii) Irrigated. (viii) N.A. (ix) 1.95". (x) 12.4.1960.

### 2. TREATMENTS :

2 manurial treatments : M<sub>1</sub>=Departmental mixture 50 lb./ac. of N+28 lb./ac. of P<sub>2</sub>O<sub>5</sub> and M<sub>2</sub>=50 lb./ac. of N as A/S+ 28 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.

Manures applied on 24.11.1959 as basal dressing.

### 3. DESIGN :

(i) Paired plot. (ii) (a) 2. (b) N.A. (iii) 12. (iv) (a) 1/80 ac. (b) 1/100 ac. (v) N.A. (vi) Yes.

### 4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination, yield of grain and straw. (iv) (a) 1959—contd. (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

### 5. RESULTS :

(i) 1222 lb./ac. (ii) 183.7 lb./ac. (iii) Treatment difference is significant. (iv) Av. yield of grain in lb./ac.

Treatment	M <sub>1</sub>	M <sub>2</sub>
Av. yield	1128	1316

S.E./mean = 53.0 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 59(455).**

**Site :- Reg. Res. Stn., Nawabganj.**

**Type :- 'M'.**

**Object :-**To determine the best time of application of N for Wheat crop.

### 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy. (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Nawabganj. (iii) 25.11.1959. (iv) (a) N.A. (b) In rows behind the plough. (c) 40 srs./ac. (d) Rows 9" apart. (e) N.A. (v) 2 lb./ac. of P<sub>2</sub>O<sub>5</sub> applied deep in bands on 24 and 25.11.1959. (vi) Pb.—591 (late). (vii) Irrigated. (viii) and (ix) N.A. (x) 18.4.1960.

### 2. TREATMENTS :

All combinations of (1), (2) and (3)+control (3 plots)

(1) 2 levels of N : N<sub>1</sub>=20 and N<sub>2</sub>=40 lb./ac.

(2) 3 sources of N : S<sub>1</sub>=A/S, S<sub>2</sub>=A/S/N and S<sub>3</sub>=Urea.

(3) 3 times of application of N : T<sub>1</sub>=At sowing, T<sub>2</sub>=At 1st irrigation and T<sub>3</sub>=½ at sowing+½ at 1st irrigation.

Manures applied at sowing and 25.11.1959.

### 3. DESIGN :

(i) 3<sup>2</sup>×2 partially confd., confounding interactions T×S and T×N×S. (ii) (a) 7 plots/block ; 3 blocks/replication. (b) N.A. (iii) 4. (iv) (a) 22.5'×24'. (b) 21'×20'. (v) 2'×9". (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Germination, yield of grain and straw. (iv) (a) 1959—contd. (b) N.A. (c) Nil. (v) (a) Rudrapur, Kalai, Meerut, Faizabad and Hardoi. (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 704 lb./ac. (ii) 163.4 lb./ac. (iii) Main effect of N, interaction T×S and 'control vs. others' are significant. (iv) Av. yield of grain in lb./ac.

Control= 609 lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean	N <sub>1</sub>	N <sub>2</sub>
T <sub>1</sub>	627	735	769	710	644	776
T <sub>2</sub>	708	645	685	679	642	716
T <sub>3</sub>	822	750	743	772	755	789
Mean	719	710	732	720	680	760
N <sub>1</sub>	648	699	694			
N <sub>2</sub>	790	721	770			

S.E. of T or S marginal mean = 33.4 lb./ac.  
 S.E. of N marginal mean = 27.2 lb./ac.  
 S.E. of body of T×S table = 57.8 lb./ac.  
 S.E. of body of T×N or S×N table or control mean = 47.2 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 54(190).**

**Site :- Tarai State Farm, Phoolbagh.**

**Type :- 'M'.**

Object :—To study the effect of N and P on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy. (c) Nil. (ii) (a) Sandy loam. (b) N.A. (iii) 24.11.1955. (iv) (a) 1 ploughing by victory plough, 3 harrowings and 1 levelling. (b) Seed drill. (c) 36 srs./ac. (d) and (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) 1 weeding. (ix) 2.55". (x) 16 and 17.4.1955.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N as A/S : N<sub>0</sub>=0, N<sub>1</sub>=30 and N<sub>2</sub>=60 lb./ac.

(2) 3 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0, P<sub>1</sub>=60 and P<sub>2</sub>=120 lb./ac.

N broadcast over the top soil and P<sub>2</sub>O<sub>5</sub> placed deep in furrows by victory plough. Manures applied on 22, 23.11.1954.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 9. (b) 49.5'×222'. (iii) 6. (iv) (a) and (b) 22'×49.5'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Attack of rats. (iii) Yield of grain and straw. (iv) (a) and (b) No. (c) Nil. (v) (a) Nagla. (b) N.A. (vi) Nil. (vii) Heavy infestation of weeds.

## 5. RESULTS :

(i) 1545 lb./ac. (ii) 330.1 lb./ac. (iii) Main effect of N alone is significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	1613	1713	1387	1571
N <sub>1</sub>	1560	1700	1813	1691
N <sub>2</sub>	1440	1307	1373	1373
Mean	1538	1573	1524	1545

S.E. of any marginal mean = 77.8 lb./ac.  
S.E. of body of table = 134.8 b./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 55(170).**

**Site :- Tarai State Farm, Phoolbagh.**

**Type :- 'M'.**

**Object :—**To study the effect of N and P on Wheat crop.

#### 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Maize. (c) Nil. (ii) (a) Sandy loam. (b) N.A. (iii) 12.11.1955. (iv) (a) 1 ploughing by tractor, 3 harrowings with tractor and 4 plankings. (b) By seed drill. (c) 30 srs./ac. (d) and (e) N.A. (v) Nil. (vi) NP-710. (vii) Irrigated. (viii) 1 weeding. (ix) 2.74". (x) 12 to 14 4.1956.

#### 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N as A/S : N<sub>0</sub>=0, N<sub>1</sub>=20 and N<sub>2</sub>=40 lb./ac.

(2) 4 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0, P<sub>1</sub>=20, P<sub>2</sub>=40 and P<sub>3</sub>=60 lb./ac.

N broadcast in field before sowing and P<sub>2</sub>O<sub>5</sub> placed in furrows behind the plough. Manures applied on 10.11.1955.

#### 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. (b) 49.5' × 297'. (iii) 4. (iv) (a) and (b) 49.5' × 22'. (v) Nil. (vi) Yes.

#### 4. GENERAL :

(i) Satisfactory growth. Lodging due to wind. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) and (b) No. (c) Nil. (v) (a) Nagla. (b) N.A. (vi) Nil. (vii) Some plots affected by weeds and damaged by rats.

#### 5. RESULTS :

(i) 1952 lb./ac. (ii) 204.3 lb./ac. (iii) Main effect of N alone is significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	Mean
N <sub>0</sub>	1780	2110	2160	1960	2002
N <sub>1</sub>	1930	2060	2020	2030	2010
N <sub>2</sub>	1840	1830	1930	1780	1845
Mean	1850	2000	2037	1923	1952

S.E. of N marginal mean = 51.1 lb./ac.  
S.E. of P marginal mean = 59.0 lb./ac.  
S.E. of body of table = 102.2 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 57(218).****Site :- Tarai State Farm, Phoolbagh.****Type :- 'M'.**

Object :—To study the residual effect of N and P applied in kharif on Wheat crop.

**1. BASAL CONDITIONS :**

(i) (a) Wheat—Paddy. (b) Paddy. (c) As per treatments. (ii) (a) Loam. (b) N.A. (iii) 6.12.1957. (iv) (a) 1 ploughing by tractor, 2 harrowings by tractor and 3 plankings. (b) Seed drill. (c) to (e) N.A. (v) to (vii) N.A. (viii) 2 weedings. (ix) 1.14". (x) 20 to 22.4.1958.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 3 levels of N as A/S :  $N_0=0$ ,  $N_1=20$  and  $N_2=40$  lb./ac.(2) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=20$  and  $P_2=40$  lb./ac.N applied by broadcast before sowing and  $P_2O_5$  applied behind victory plough in furrows. Fertilizers applied in *kharif*.**3. DESIGN :**(i) Fact. in R.B.D. (ii) (a) 9. (b)  $49.5' \times 222'$ . (iii) 4. (iv) (a) and (b)  $49.5' \times 22'$ . (v) Nil. (vi) Yes.**4. GENERAL :**

(i) Satisfactory. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) and (b) No. (c) Nil. (v) (a) Nagla. (b) N.A. (vi) Nil. (vii) *Bathua* and *Kaethi* weeds damaged the crop in general, wild animals *i.e.* pigs and *chithals* damaged the crop.

**5. RESULTS :**

(i) 1221 lb./ac. (ii) 240.3 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	$P_2$	Mean
$N_0$	1260	1270	1330	1287
$N_1$	1010	1260	1160	1143
$N_2$	1020	1320	1360	1233
Mean	1097	1283	1283	1221

S.E. of any marginal mean = 69.4 lb./ac.

S.E. of body of table = 120.2 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 56(153).****Site :- Tarai State Farm, Phoolbagh.****Type :- 'M'.**

Object :— To study the effect of N, P and K applied singly and in combinations on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Maize. (c) N.A. (ii) (a) Loam soil. (b) N.A. (iii) 9, 10.11.1956. (iv) (a) 1 ploughing with tractor, 2 harrowings and 3 plankings. (b) Behind the plough. (c) 32 srs./ac. (d) and (e) N.A. (v) Nil. (vi) NP—710. (vii) Irrigated. (viii) 2 weedings. (ix) 6.15". (x) 10 to 15.4.1957.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 2 levels of N as A/S :  $N_0=0$  and  $N_1=30$  lb./ac.(2) 2 levels of  $P_2O_5$  as Super :  $P_0=0$  and  $P_1=40$  lb./ac.(3) 2 levels of  $K_2O$  as Mur. Pot. :  $K_0=0$  and  $K_1=60$  lb./ac.N applied by broadcast and  $P_2O_5$  applied behind victory plough in furrows. Manures applied on 5.11.1956.**3. DESIGN :**(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) and (b)  $49.5' \times 22'$ . (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Attack of rust. (iii) Yield of grain and straw. (iv) (a) 1956—1957. (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) Heavy rains after irrigation slightly damaged the crop. (vii) *Bathua* and *katili* weeds affected the crop.

## 5. RESULTS :

(i) 2255 lb./ac. (ii) 292.8 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	K <sub>0</sub>	K <sub>1</sub>
N <sub>0</sub>	2055	2320	2188	2085	2290
N <sub>1</sub>	2255	2390	2322	2220	2425
Mean	2155	2355	2255	2152	2358
K <sub>0</sub>	1955	2350			
K <sub>1</sub>	2355	2360			

S.E. of any marginal mean = 73.2 lb./ac.  
S.E. of body of any table = 103.5 lb./ac.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 57(393).**

**Site :- Tarai State Farm, Phoolbagh.**

**Type :- 'M'.**

**Object :-** To study the effect of N, P and K applied singly and in combinations on Wheat.

## 1. BASAL CONDITIONS :

(i) N.A. (b) Fallow. (c) Nil. (ii) (a) Sandy loam. (b) N.A. (iii) 31.10.1957. (iv) (a) 1 ploughing by tractor, 2 levellings, 3 harrowings and 3 plankings. (b) Seed drill. (c) to (e) N.A. (v) Nil. (vi) Pb.—591 (medium). (vii) N.A. (viii) 2 weedings. (ix) 1.54". (x) 31.3.1958 to 4.4.1953.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

- (1) 2 levels of N as A/S/N : N<sub>0</sub>=0 and N<sub>1</sub>=30 lb./ac.
- (2) 2 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0 and P<sub>1</sub>=40 lb./ac.
- (3) 2 levels of K<sub>2</sub>O as Mur. Pot. : K<sub>0</sub>=0 and K<sub>1</sub>=60 lb./ac.

N applied by broadcast, P<sub>2</sub>O<sub>5</sub> applied behind victory plough in furrows and K<sub>2</sub>O applied behind victory plough on 20.11.1957.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) 49.5' × 197'. (iii) 4. (iv) (a) and (b) 49.5' × 22'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Growth not good for want of moisture. (ii) N.A. (iii) Yield of grain. (iv) (a) 1956—1957. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Heavy weeds, rats and pigs damaged the crop.

## 5. RESULTS :

(i) 1706 lb./ac. (ii) 164.5 lb./ac. (iii) Main effect of K is highly significant and main effect of N is significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	K <sub>0</sub>	K <sub>1</sub>
N <sub>0</sub>	1565	1715	1640	1555	1725
N <sub>1</sub>	1765	1780	1772	1660	1885
Mean	1665	1748	1706	1608	1805
K <sub>0</sub>	1525	1690			
K <sub>1</sub>	1805	1805			

S.E. of any marginal mean = 41.1 lb./ac.  
S.E. of body of any table = 58.2 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 56(154).**

**Site :- Tarai State Farm, Phoolbagh.**

**Type :- 'M'.**

Object :— To study the effect of N and different sources of P on the yield of Wheat.

#### 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Chari*. (c) Nil. (ii) (a) Sandy loam. (b) N.A. (iii) 10, 11.1.1956. (iv) (a) 1 ploughing by tractor, 3 harrowings and 4 plankings. (b) Behind the plough. (c) 32 srs./ac. (d) and (e) N.A. (v) Nil. (vi) NP—710. (vii) Irrigated. (viii) 3 weedings. (ix) 6.09". (x) 16 to 19.4.1957.

#### 2. TREATMENTS :

All combinations of (1) and (2) + 2 extra treatments

(1) 2 sources of P<sub>2</sub>O<sub>5</sub> : S<sub>1</sub>=Super and S<sub>2</sub>=B.M.

(2) 2 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>1</sub>=30 and P<sub>2</sub>=60 lb./ac.

All treatment combinations received a basal dose of 30 lb./ac. of N as A/S.

Extra treatments : N<sub>0</sub>=Control and N<sub>1</sub>=30 lb./ac. of N as A/S. Manures applied on 7, 8.11.1956. N as broadcast and P<sub>2</sub>O<sub>5</sub> applied behind victory plough in furrows.

#### 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) 49.5' × 147'. (iii) 6. (iv) (a) and (b) 49.5' × 22'. (v) Nil. (vi) Yes.

#### 4. GENERAL :

(i) Good. (ii) Slight attack of rust. (iii) Yield of grain and straw. (iv) (a) 1956—1957. (b) No. (c) N.I. (v) (a) and (b) Nil. (vi) After irrigation heavy rains changed the colour of the plants from greenish to yellowish. (vii) Weeds damaged the crop.

#### 5. RESULTS :

(i) 1856 lb./ac. (ii) 283.5 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

N<sub>0</sub> = 1713 lb./ac. and N<sub>1</sub> = 1793 lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	Mean
P <sub>1</sub>	1833	1880	1856
P <sub>2</sub>	1920	2000	1960
Mean	1876	1940	1908

S.E. of any marginal mean = 81.8 lb./ac.  
S.E. of body of table or N mean = 115.7 lb./ac.



**Crop :- Wheat (Rabi).****Ref :- U.P. 57(233).****Site :- Tarai State Farm, Phoolbagh.****Type :- 'M'.**

Object :— To study the effect of N and different sources of P on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Fallow. (c) Nil. (ii) (a) Sandy loam. (b) N.A. (iii) 31.10.1957. (iv) (a) 1 ploughing by tractor, 2 levellings, 3 harrowings and 3 plankings. (b) Seed drill. (c) to (e) N.A. (v) Nil. (vi) Pb.—551. (vii) N.A. (viii) 2 weedings. (ix) Nil. (x) 31.3.1958 to 3.4.1958.

**2. TREATMENTS :**

Same as in expt. no. 56(154) on page 295.

Manures applied on 30, 31.10.1957.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 6. (b) 44' × 155'. (iii) 6. (iv) (a) and (b) 44' × 24.75'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Growth not good due to lack of moisture. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1956—1957. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Weeds and wild pigs damaged the crop.

**5. RESULTS :**

(i) 1602 lb./ac. (ii) 250.0 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

$$N_0 = 1413 \text{ lb./ac. and } N_1 = 1573 \text{ lb./ac.}$$

	S <sub>1</sub>	S <sub>2</sub>	Mean
P <sub>1</sub>	1653	1733	1693
P <sub>2</sub>	1667	1573	1620
Mean	1660	1653	1656

S.E. of any marginal mean = 72.2 lb./ac.

S.E. of body of table or N mean = 102.1 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 54(201).****Site :- Pilkhini Farm, Pilkhini.****Type :- 'M'.**

Object :— To study the effect of N and P on the yield of Wheat crop.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Sugarcane (ratoon). (c) N.A. (ii) (a) *Domat* (loam). (b) Refer soil analysis, Pilkhini. (iii) 21.10.1954. (iv) (a) 1 hot weather cultivation, 1 ploughing and 3 harrowings. (b) Sown in lines by tractor and seed drill. (c) 50 srs./ac. (d) Rows 9" apart. (e) N.A. (v) Nil. (vi) C—13 (early). (vii) Irrigated. (viii) N.A. (ix) 1.92". (x) 25.3.1955.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 3 levels of N as A/S : N<sub>0</sub>=0, N<sub>1</sub>=30 and N<sub>2</sub>=60 lb./ac.(2) 3 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0, P<sub>1</sub>=60 and P<sub>2</sub>=120 lb./ac.P<sub>2</sub>O<sub>5</sub> applied on 20 and 21.10.1954 (deep in furrows) and N applied on 22.10.1954 (broadcast after sowing).**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) and (b) 41' × 25'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Damage by rats. (iii) Yield of grain and straw. (iv) (a) and (b) No. (c) Nil. (v) (a) Faizabad. (b) Nil. (vi) The crop suffered in the early stage due to drought. (vii) Nil.

## 5. RESULTS :

(i) 1527 lb./ac. (ii) 281.4 lb./ac. (iii) Main effect of N alone is highly significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	1076	1108	1169	1118
N <sub>1</sub>	1464	1661	1667	1597
N <sub>2</sub>	1743	1880	1977	1867
Mean	1428	1550	1604	1527

S.E. of any marginal mean = 66.3 lb./ac.  
S.E. of body of table = 114.9 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 55(183).**

**Site :- Pilkhini Farm, Pilkhini.**

**Type :- 'M'.**

Object :—To study the effect of N and P on the yield of Wheat crop.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) *Domot* (loam). (b) Refer soil analysis, Pilkhini. (iii) 5.11.1955. (iv) (a) 8 ploughings and 8 plankings. (b) Seed drill. (c) 45 srs./ac. (d) Rows 9' apart. (e) N.A. (v) Nil. (vi) C—13 (early). (vii) Irrigated, (viii) and (ix) N.A. (x) 2.4.1956.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N as A/S : N<sub>0</sub>=0, N<sub>1</sub>=20 and N<sub>2</sub>=40 lb./ac.

(2) 4 levels of P<sub>2</sub>O<sub>5</sub> as triple Super : P<sub>0</sub>=0, P<sub>1</sub>=20, P<sub>2</sub>=40 and P<sub>3</sub>=60 lb./ac.

N applied by broadcast and P<sub>2</sub>O<sub>5</sub> placed deep in furrows on 3 and 4.11.1955.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) and (b) 39' × 28'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Germination was good. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1955—1956. (b) No. (c) Nil. (v) (a) Faizabad. (b) Nil (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1431 lb./ac. (ii) 194.4 lb./ac. (iii) Main effect of N alone is highly significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	Mean
N <sub>0</sub>	1057	1018	1174	1194	1111
N <sub>1</sub>	1406	1426	1624	1598	1514
N <sub>2</sub>	1659	1579	1651	1781	1668
Mean	1374	1341	1483	1524	1431

S.E. of N marginal mean = 48.6 lb./ac.  
S.E. of P marginal mean = 56.1 lb./ac.  
S.E. of body of table = 97.2 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 56(158).****Site :- Pilkhni Farm, Pilkhni.****Type :- 'M'.**

Object :—To study the effect of N and P on the yield of Wheat crop.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) *Domat* (loam). (b) Refer soil analysis, Pilkhni. (iii) 16.11.1956.  
 (iv) (a) 7 ploughings by *desi* plough. (b) Sown behind the plough. (c) 45 srs./ac. (d) Rows 9" apart. (e) N.A. (v) Nil. (vi) NP—760 (medium). (vii) Irrigated. (viii) and (ix) N.A. (x) 28 to 30.3.1957.

**2. TREATMENTS :**

Same as in expt. no. 55(183) on page 297.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) and (b) 26' × 42'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1955—1956. (b) No. (c) Nil. (v) (a) Faizabad. (b) Nil. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1167 lb./ac. (ii) 65.9 lb./ac. (iii) Main effects of N and P are highly significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	Mean
N <sub>0</sub>	927	1139	1154	1154	1094
N <sub>1</sub>	1112	1174	1306	1286	1220
N <sub>2</sub>	1067	1167	1209	1311	1188
Mean	1035	1160	1223	1250	1167

S.E. of N marginal mean = 16.5 lb./ac.  
 S.E. of P marginal mean = 19.0 lb./ac.  
 S.E. of body of table = 33.0 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 54(108).****Site :- Govt. Agri. Farm, Pratapgarh.****Type :- 'M'.**

Object :—To study the effect of fertilizer placement on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) *Dhaincha* for G.M. (c) N.A. (ii) (a) Sandy. (b) N.A. (iii) 30.10.1954. (iv) (a) N.A. (b) Behind the plough. (c) 25 to 30 srs./ac. (d) 1 r d (e) N.A. (v) to (ix) N.A. (x) 30.3.1955.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 3 methods of fertilizer placement : M<sub>1</sub>—Broadcast, M<sub>2</sub>—Placement behind the plough in furrows and M<sub>3</sub>—Drilled mixed with seed.(2) 4 fertilizers : F<sub>1</sub>=60 lb./ac. of N as A/S, F<sub>2</sub>=50 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super, F<sub>3</sub>=40 lb./ac. of K<sub>2</sub>O as Pot. Sul. and F<sub>4</sub>=60 lb./ac. of lime as gypsum.

Manures applied on 27.10.1954.

In treatment M<sub>1</sub> the fertilizers were applied by broadcast mixed with fine earth to give a surface dressing, just before sowing. In treatment M<sub>2</sub> the fertilizers were placed 3" to 4" in furrows behind plough just before sowing and in treatment M<sub>3</sub> the fertilizers were mixed with seed and drilled through seed drill at sowing.**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 3. (iv) (a) 56' × 19'. (b) 53' × 16'. (v) 1½ × 1½'. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Yield of grain. (iv) (a) 1954--N.A. (b) N.A. (c) Nil. (v) (a) Bahraich and Faizabad. (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1324 lb./ac. (ii) 273.8 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	F <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>	F <sub>4</sub>	Mean
M <sub>1</sub>	1438	1004	1453	1255	1288
M <sub>2</sub>	1182	1372	1541	1356	1363
M <sub>3</sub>	1413	1385	1066	1424	1322
Mean	1344	1254	1353	1345	1324

S.E. of F marginal mean = 91.3 lb./ac.

S.E. of M marginal mean = 79.0 lb./ac.

S.E. of body of table = 158.1 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 56(288).**

**Site :- Govt. Agri. Farm, Pratapgarh.**

**Type :- 'M'.**

Object :—To study the effect of fertilizer placement on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Dhaincha* for G.M. (c) N.A. (ii) (a) Light soil. (b) N.A. (iii) 27.11.1956. (iv) (a) 8 ploughings. (b) Behind the plough. (c) 32 srs./ac. (d) and (e) N.A. (v) Nil. (vi) C—13. (vii) Irrigated. (viii) and (ix) N.A. (x) 5.4.1957.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 methods of application : M<sub>1</sub>=Broadcast, M<sub>2</sub>=Placement behind plough and M<sub>3</sub>=Placement mixed with seed.

(2) 4 fertilizers : F<sub>1</sub>=60 lb./ac. of N as A/S, F<sub>2</sub>=50 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super, F<sub>3</sub>=40 lb./ac. of K<sub>2</sub>O as Pot. Sul. or Mur. Pot. and F<sub>4</sub>=60 lb./ac. of lime as gypsum.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 3. (iv) (a) 56'×18'. (b) 53'×15'. (v) 1½'×1½'. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Attack of rust. (iii) Yield of grain. (iv) (a) to (c) N.A. (v) (a) Hardoi and Faizabad. (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 605 lb./ac. (ii) 137.9 lb./ac. (iii) Main effect of M alone is highly significant. (iv) Av. yield of grain in lb./ac.

	F <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>	F <sub>4</sub>	Mean
M <sub>1</sub>	545	639	639	601	606
M <sub>2</sub>	789	883	639	845	789
M <sub>3</sub>	470	432	376	404	420
Mean	601	651	551	617	605

S.E. of F marginal mean = 46.0 lb./ac.

S.E. of M marginal mean = 39.8 lb./ac.

S.E. of body of table = 79.6 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 54(119).****Site :- Govt. Agri. Farm, Pratapgarh.****Type :- 'M'.**

Object :- To study the effect of N, P and Calcium on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) *Dhaincha* for G.M. (c) Nil. (ii) (a) Sandy. (b) N.A. (iii) 2.11.1954. (iv) (a) 1 ploughing. (b) N.A. (c) 25 to 30 srs./ac. (d) and (e) N.A. (v) 40 lb./ac. of  $K_2O$  as Pot. Sul. applied as surface dressing 2 to 3 days before sowing. + G.M. (*dhaincha*). (vi) N.A. (vii) Irrigated. (viii) and (ix) N.A. (x) 29.3.1955

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 2 levels of N as A/S :  $N_0=0$  and  $N_1=75$  lb./ac.(2) 2 levels of  $P_2O_5$  as Super :  $P_0=0$  and  $P_1=50$  lb./ac.(3) 2 levels of CaO as gypsum :  $C_0=0$  and  $C_1=60$  lb./ac.

Manures applied on 28.10.1954.

**3. DESIGN :**(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a)  $41' \times 29'$ . (b)  $38' \times 26'$ . (v)  $1\frac{1}{2}' \times 1\frac{1}{2}'$ . (vi) Yes.**4. GENERAL :**

(i) N.A. (ii) No. (iii) Yield of grain. (iv) (a) 1954--N.A. (b) N.A. (c) Nil. (v) (a) Faizabad and Bahraich. (b) Nil. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1798 lb./ac. (ii) 295.6 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	Mean	$C_0$	$C_1$
$N_0$	1810	1837	1823	1825	1821
$N_1$	1814	1730	1772	1642	1903
Mean	1812	1783	1798	1733	1862
$C_0$	1834	1633			
$C_1$	1789	1934			

S.E. of any marginal mean = 73.9 lb./ac.

S.E. of body of any table = 104.5 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 56(249).****Site :- Govt. Agri. Farm, Pratapgarh.****Type :- 'M'.**

Object :- To study the effect of N, P and Calcium on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Dhaincha* for G.M. (c) N.A. (ii) (a) Light soil. (b) N.A. (iii) 27.11.1956. (iv) (a) 8 ploughings. (b) Behind the plough. (c) 25 to 30 srs./ac. (d) and (e) N.A. (v) 10 mds./ac. of G.M. or F.Y.M. (vi) C-13. (vii) Irrigated. (viii) to (x) N.A.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 2 levels of N as A/S :  $N_0=0$  and  $N_1=50$  lb. ac.(2) 2 levels of  $P_2O_5$  as Super :  $P_0=0$  and  $P_1=40$  lb./ac.(3) 2 levels of CaO as gypsum :  $C_0=0$  and  $C_1=60$  lb./ac.N applied in two doses half at sowing and half at tillering.  $P_2O_5$  applied by placement 3' to 4' deep in soil behind plough 6 to 7 days before sowing. CaO applied as surface dressing 2 to 3 days before sowing.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 41'×28'. (b) 38'×25'. (v) 1½'×1½'. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Rust attack. (iii) Yield of grain. (iv) (a) to (c) N.A. (v) (a) Dilkusha, Atarra, Faizabad, Bahraich and Kalianpur. (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 368 lb./ac. (ii) 138.7 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	C <sub>0</sub>	C <sub>1</sub>
N <sub>0</sub>	253	380	317	315	318
N <sub>1</sub>	398	439	418	395	442
Mean	326	410	368	355	380
C <sub>0</sub>	298	413			
C <sub>1</sub>	354	407			

S.E. of any marginal mean = 34.7 lb./ac.

S.E. of body of any table = 49.1 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 54(267).**

**Site :- Govt. Res. Farm, Pura.**

**Type :- 'M'.**

Object :- To study the effect of F.Y.M., lime and ferrous sulphate on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Pura. (iii) to (x) N.A.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 levels of ferrous sulphate+lime : F<sub>0</sub>=Control and F<sub>1</sub>=6½ lb./ac. of ferrous sulphate+15 lb./ac. of lime.

(2) 2 levels of N as F.Y.M. : N<sub>0</sub>=0 and N<sub>1</sub>=50 lb./ac.

Manures applied by broadcast and mixed up well before sowing into the soil.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) and (b) 45.5'×24'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) The actual layout was of L. Sq. but as the yields were not given in columns and rows, the experiment has been analysed as R.B.D.

## 5. RESULTS :

(i) 1184 lb./ac. (ii) 95.0 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	F <sub>0</sub>	F <sub>1</sub>	Mean
N <sub>0</sub>	1127	1167	1147
N <sub>1</sub>	1197	1247	1222
Mean	1162	1207	1184

S.E. of any marginal mean = 33.6 lb./ac.

S.E. of body of table = 47.5 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 55(324).****Site :- Govt. Res. Farm, Pura.****Type :- 'M'.****Object :-**To study the effect of P and K on the yield of Wheat.**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) *Sanai* for G.M. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Pura. (iii) 12.11 1955.  
 (iv) (a) 8 ploughings by *desi* plough. (b) Behind the plough. (c) to (e) N.A. (v) G.M. (*sanai*) + 40 lb./ac. of N as A/S. (vi) C-13 (early). (vii) Irrigated. (viii) and (ix) N.A. (x) 7.4.1956.

**2. TREATMENTS :**

All combinations of (1) and (2) + 2 extra treatments

(1) 2 levels of  $K_2O$  as Pot. Sul. :  $K_1=60$  and  $K_2=80$  lb./ac.(2) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=60$  and  $P_2=80$  lb./ac.Extra treatments :  $E_1=60$  and  $E_2=80$  lb./ac of  $P_2O_5$ .

Fertilizers applied on 11.11.1955.

**3. DESIGN :**(i) R.B.D. (ii) (a) 8. (b)  $199' \times 45'$ . (iii) 3. (iv) (a) and (b)  $45' \times 24'$ . (v) Nil. (vi) Yes.**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1393 lb./ac. (ii) 282.1 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

 $E_1 = 1573$  lb./ac. and  $E_2 = 1358$  lb./ac.

	$P_0$	$P_1$	$P_2$	Mean
$K_1$	1425	1344	1371	1380
$K_2$	1250	1412	1412	1358
Mean	1338	1378	1392	1369

S.E. of K marginal mean = 94.0 lb./ac.

S.E. of P marginal mean = 115.2 lb./ac.

S.E. of body of table or E mean = 162.9 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 54(268).****Site :- Govt. Res. Farm, Pura.****Type :- 'M'.****Object :-**To study the manurial value of different industrial waste products for Wheat crop as compared to A/S and F.Y.M.**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Pura. (iii) 7.11.1954. (iv)  
 (a) 2 ploughings by victory plough, 10 ploughings by *desi* plough and 1 *palewa*. (b) to (e) N.A. (v) and  
 (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

**2. TREATMENTS :**

9 manurial treatments :  $T_0$ =Control (no manure),  $T_1$ =50 lb./ac. of N as horn and hoat,  $T_2$ =50 lb./ac. of N as Blood meal,  $T_3$ =50 lb./ac. of N as Wool waste,  $T_4$ =50 lb./ac. of N as A/S,  $T_5$ =50 lb./ac. of N as A/S+60 lb./ac. of  $P_2O_5$  as Super,  $T_6$ =50 lb./ac. of N as A/S+60 lb./ac. of  $P_2O_5$  as B.M.,  $T_7$ =50 lb./ac. of N as F.Y.M. and  $T_8$ =25 lb./ac. of N as F.Y.M.+25 lb./ac. of N as A/S.

Super and B.M. applied in ridges, A/S broadcast on 6.11 1954 and wool waste and blood meal on 23.10.1954.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) 45'6"×224'. (iii) 4. (iv) (a) and (b) 45.5'×24'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Germination was good. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1954—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1401 lb./ac. (ii) 182.8 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	T <sub>5</sub>	T <sub>6</sub>	T <sub>7</sub>	T <sub>8</sub>
Av. yield	1296	1117	1306	1416	1536	1735	1586	1227	1386

S.E./mean = 91.4 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 55(304).**

**Site :- Govt. Res. Farm, Pura.**

**Type :- 'M'.**

Object :—To study the manurial value of different industrial waste products for Wheat crop as compared to A/S and F.Y.M.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Dhaincha* for G.M. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Pura. (iii) 8.11.1955. (iv) (a) 1 hot weather cultivation by victory plough and 7 ploughings by *desi* plough. (b) Behind the plough. (c) to (e) N.A. (v) G.M. (*dhaincha*). (vi) NP—710 (medium). (vii) Irrigated. (viii) and (ix) N.A. (x) 6.4.1956.

## 2. TREATMENTS :

Same as in expt. no. 54(268) on page 302.

B.M. and Super placed deep behind the plough. All other manures by broadcast. T<sub>1</sub> on 6.11.1955, T<sub>2</sub> and T<sub>3</sub> on 12.10.1955, F.Y.M. on 6.11.1955, A/S, Super and B.M. on 7.11.1955.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) 40'×254'. (iii) 4. (iv) (a) and (b) 40'×27.33'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1954—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1188 lb./ac. (ii) 190.4 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	T <sub>5</sub>	T <sub>6</sub>	T <sub>7</sub>	T <sub>8</sub>
Av. yield	1136	1086	996	1116	1265	1385	1395	1066	1245

S.E./Mean = 95.2 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 56(338).**

**Site :- Govt. Res. Farm, Pura.**

**Type :- 'M'.**

Object :—To study the manurial value of different industrial waste products for Wheat crop as compared to A/S/N and F.Y.M.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai* for G.M. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Pura. (iii) 9.11.1956. (iv) (a) 3 ploughings by *desi* plough. (b) to (e) N.A. (v) G.M. (*sanai*). (vi) N.A. (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 10 and 11.4.1957.



## 2. TREATMENTS :

9 manurial treatments :  $T_0$ =Control (no manure),  $T_1$ =50 lb./ac. of N as horn and hoof,  $T_2$ =50 lb./ac. of N as Blood meal,  $T_3$ =50 lb./ac. of N as Wool waste,  $T_4$ =50 lb./ac. of N as A/S/N,  $T_5$ =50 lb./ac. of N as A/S/N+60 lb./ac. of  $P_2O_5$  as Super,  $T_6$ =50 lb./ac. of N as A/S/N+60 lb./ac. of  $P_2O_5$  as B.M.,  $T_7$ =50 lb./ac. of N as F.Y.M. and  $T_8$ =25 lb./ac. of N as A/S/N+25 lb./ac. of N as F.Y.M.

N applied by broadcast. B.M. and Super applied in furrows with the help of a funnel. Manures applied on 1 and 8.11.1956.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) and (b) 50'×20'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Germination good. (ii) N.A. (iii) Yield of grain. (iv) (a) 1954—1956. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1110 lb./ac. (ii) 138.8 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$T_0$	$T_1$	$T_2$	$T_3$	$T_4$	$T_5$	$T_6$	$T_7$	$T_8$
Av. yield	806	1133	1024	1002	1165	1503	1394	893	1067

S.E./mean = 69.4 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 57(373).**

**Site :- Govt. Res. Farm, Pura.**

**Type :- 'M'.**

Object :—To study the manurial value of different industrial waste products for Wheat crop as compared to A/S and F.Y.M.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sunai* for G.M. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Pura. (iii) 21.10.1957. (iv) (a) 2 *desi* ploughings and 1 harrowing by tractor. (b) to (e) N.A. (v) G.M. (*sunai*). (vi) N.A. (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 25.3.1958.

## 2. TREATMENTS :

8 manurial treatments :  $T_0$ =Control (no manure),  $T_1$ =50 lb./ac. of N as Blood meal,  $T_2$ =50 lb./ac. of N as Wool waste,  $T_3$ =50 lb./ac. of N as A/S,  $T_4$ =50 lb./ac. of N as A/S+60 lb./ac. of  $P_2O_5$  as Super,  $T_5$ =50 lb./ac. of N as A/S+60 lb./ac. of  $P_2O_5$  as B.M.,  $T_6$ =50 lb./ac. of N as F.Y.M. and  $T_7$ =25 lb./ac. of N as F.Y.M.+25 lb./ac. of N as A/S.

A/S and other nitrogenous fertilizers applied by broadcast. B.M. and Super applied in furrows with the help of a funnel on 20.10.1957.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) and (b) 50'×20'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1190 lb./ac. (ii) 293.3 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$T_0$	$T_1$	$T_2$	$T_3$	$T_4$	$T_5$	$T_6$	$T_7$
Av. yield	828	1100	849	1492	1677	1405	915	1252

S.E./mean = 146.6 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 56(351).****Site :- Govt. Res. Farm, Pura.****Type :- 'M'.**

Object :—To study the effect of N, P and K applied individually and in combinations on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) *Sanai* for G.M. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Pura. (iii) 10.11.1956.  
 (iv) (a) 5 *desi* ploughings. (b) to (e) N.A. (v) G.M. (*sanai*). (vi) N.A. (vii) Irrigated. (viii) 1 weeding.  
 (ix) N.A. (x) 11.4.1957.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 2 levels of N as A/S/N :  $N_0=0$  and  $N_1=30$  lb./ac.(2) 2 levels of  $P_2O_5$  as Super :  $P_0=0$  and  $P_1=40$  lb./ac.(3) 2 levels of  $K_2O$  as Mur. Pot. :  $K_0=0$  and  $K_1=60$  lb./ac. $P_2O_5$  and  $K_2O$  placed deep in bands with the help of manure drill. N applied broadcast. Manures applied on 9.11.1956.**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) and (b) 87.1'×12.5'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Satisfactory. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1956—1958. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**(i) 1114 lb./ac. (ii) 150.6 lb./ac. (iii) Main effect of P is highly significant and interaction  $N \times P \times K$  is significant. (iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	Mean	$K_0$	$K_1$
$N_0$	880	1260	1070	1010	1130
$N_1$	970	1345	1158	1135	1180
Mean	925	1302	1114	1073	1155
$K_0$	880	1265			
$K_1$	970	1340			

S.E. of any marginal mean

= 37.6 lb./ac.

S.E. of body of any table

= 53.2 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 57(382).****Site :- Govt. Res. Farm, Pura.****Type :- 'M'.**

Object :— To study the effects of N, P and K applied individually and in combinations on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) *Sanai* for G.M. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Pura. (iii) 13.10.1957.  
 (iv) (a) 1 ploughing by *desi* plough and 1 double harrowing by tractor. (b) to (e) N.A. (v) G.M. (*sanai*).  
 (vi) N.A. (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 24.3.1958.

**2. TREATMENTS and 3. DESIGN :**

Same as in expt. no. 56(351) above.

Manures applied on 17.10.1957.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1956—1958. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1137 lb./ac. (ii) 167.8 lb./ac. (iii) Main effects of N and P are highly significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	K <sub>0</sub>	K <sub>1</sub>
N <sub>0</sub>	830	1050	940	935	945
N <sub>1</sub>	1240	1425	1332	1315	1350
Mean	1035	1237	1136	1125	1148
K <sub>0</sub>	1035	1215			
K <sub>1</sub>	1035	1260			

S.E. of any marginal mean = 41.9 lb./ac.  
S.E. of body of any table = 59.3 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 58(357).**

**Site :- Govt. Res. Farm, Pura.**

**Type :- 'M'.**

Object :- To study the effects of N, P and K applied individually and in combinations on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai* for G.M. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Pura. (iii) 9.11.1958. (iv) (a) N.A. (b) Behind the plough. (c) to (e) N.A. (v) G.M. (*sanai*). (vi) to (ix) N.A. (x) 16, 17.4.1959.

## 2. TREATMENTS :

Same as in expt. no. 56(351) on page 305.  
Manures applied on 9.11.1958.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) and (b) 40'×27'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1956—1958. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 2102 lb./ac. (ii) 151.3 lb./ac. (iii) Main effects of N and P are highly significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	K <sub>0</sub>	K <sub>1</sub>
N <sub>0</sub>	1881	2158	2019	1997	2042
N <sub>1</sub>	2082	2289	2186	2097	2274
Mean	1982	2223	2102	2047	2158
K <sub>0</sub>	1881	2213			
K <sub>1</sub>	2082	2233			

S.E. of any marginal mean = 37.8 lb./ac.  
S.E. of body of any table = 53.5 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 57(383).****Site :- Govt. Res. Farm, Pura.****Type :- 'M'.**

Object :—To study the effect of different levels of P on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Sanai*. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Pura. (iii) 21.10.1957. (iv) 2 ploughings by *desi* plough and 1 harrowing by tractor. (b) to (e) N.A. (v) 4.25 lb. of A/S broadcast in each plot + G.M. (*sanai*). (vi) N.A. (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 25.3.1958.

**2. TREATMENTS :**

5 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=30$ ,  $P_2=60$ ,  $P_3=90$  and  $P_4=120$  lb./ac.  
Manures applied deep in bands with the help of manure drill on 20.10.1957.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 5. (b) 60' 5" × 128'. (iii) 4. (iv) (a) and (b) 60' 5" × 24'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1248 lb./ac. (ii) 99.5 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$P_0$	$P_1$	$P_2$	$P_3$	$P_4$
Av. yield	819	1329	1352	1337	1404

S.E./mean = 49.8 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 58(358).****Site :- Govt. Res. Farm, Pura.****Type :- 'M'.**

Object :—To study the residual effect of P on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) *Guar* fodder. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Pura. (iii) 10.11.1958. (iv) (a) N.A. (b) Behind the plough. (c) to (e) N.A. (v) 25 lb./ac. of N as A/S. (vi) to (ix) N.A. (x) 17, 18.4.1959.

**2. TREATMENTS :**

5 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=30$ ,  $P_2=60$ ,  $P_3=90$  and  $P_4=120$  lb./ac.  
These treatments were applied during *rabi*, 1957 to wheat crop. After that residual effect was tested during *kharif*, 1958 on *guar* fodder crop.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 5. (b) 60' 5" × 128'. (iii) 4. (iv) (a) and (b) 60' 5" × 24'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 2052 lb./ac. (ii) 320.8 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$P_0$	$P_1$	$P_2$	$P_3$	$P_4$
Av. yield	1960	1893	2050	2178	2178

S.E./mean = 160.4 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 54(266).****Site :- Govt. Res. Farm, Pura.****Type :- 'M'.**

Object :— To study the effect of P and different sources of N on Wheat crop.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Pura. (iii) to (x) N.A.

**2. TREATMENTS :**

All combinations of (1) and (2)+2 extra treatments

(1) 3 sources of N at 50 lb./ac. :  $S_1=A/S$ ,  $S_2=F.Y.M.$  and  $S_3=A/S$  and F.Y.M. as 1 : 1 ratio.(2) 2 levels of  $P_2O_5$  as Super :  $P_0=0$  and  $P_1=50$  lb./ac.Extra treatments :  $E_0=Control$  and  $E_1=50$  lb./ac. of N as castor cake.

Super applied in the ridges and A/S applied broadcast.

**3. DESIGN :**(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) and (b)  $20' \times 60'$ . (v) Nil. (vi) Yes.**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1954—contd. (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1616 lb./ac. (ii) 240.4 lb./ac. (iii) Main effect of P is highly significant. Main effect of S and E are significant. (iv) Av. yield of grain in lb./ac.

$$E_0 = 1398 \text{ lb./ac. and } E_1 = 1770 \text{ lb./ac.}$$

	$S_1$	$S_2$	$S_3$	Mean
$P_0$	1534	1153	1751	1479
$P_1$	1969	1661	1688	1773
Mean	1752	1407	1720	1626

S.E. of S marginal mean = 85.0 lb./ac.

S.E. of P marginal mean = 69.4 lb./ac.

S.E. of body of table or E mean = 120.2 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 55(305).****Site :- Govt. Res. Farm, Pura.****Type :- 'M'.**

Object :— To study the effect of P and different sources of N on Wheat crop.

**1. BASAL CONDITIONS :**(i) (a) N.A. (b) *Moong*. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Pura. (iii) 10.11.1955. (iv) (a) 7 poughings by *desi* plough. (b) to (e) N.A. (v) G.M. (*moong*). (vi) NP-710 (*medium*). (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 5.4.1956.**2. TREATMENTS :**

All combinations of (1) and (2)+2 extra treatments

(1) 3 sources of N at 30 lb./ac. :  $S_1=A/S$ ,  $S_2=F.Y.M.$  and  $S_3=A/S$  and F.Y.M. in 1 : 1 ratio.(2) 2 levels of  $P_2O_5$  as Super :  $P_0=0$  and  $P_1=40$  lb./ac.Extra treatments :  $E_0=Control$  and  $E_1=30$  lb./ac. of N as castor cake. All the manures applied after final preparation of the field on 9.11.1955. F.Y.M. broadcast and ploughed in. Super placed deep in bands.**3. DESIGN :**(i) R.B.D. (ii) (a) 8. (b)  $60'5'' \times 167'$ . (iii) 4. (iv) (a) and (b)  $60'5'' \times 20'$ . (v) Nil. (vi) Yes.

## 4. GENERAL :

Same as in expt. no. 54(266) on page 308.

## 5. RESULTS :

(i) 920 lb./ac. (ii) 269.2 lb./ac. (iii) Main effect of P is highly significant. 'E vs. others' is significant. (iv) Av. yield of grain in lb./ac.

$$E_0 = 613 \text{ lb./ac. and } E_1 = 883 \text{ lb./ac.}$$

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean
P <sub>0</sub>	829	658	883	790
P <sub>1</sub>	1162	982	1352	1165
Mean	996	820	1118	978

S.E. of S marginal mean = 95.2 lb./ac.

S.E. of P marginal mean = 77.7 lb./ac.

S.E. of body of table or E mean = 134.6 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 56(340).**

**Site :- Govt. Res. Farm, Pura.**

**Type :- 'M'.**

Object :— To study the effect of P and different sources of N on Wheat crop.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Moong*. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Pura. (iii) 11.11.1956. (iv) (a) 1 ploughing by victory plough and 5 ploughings by *desi* plough. (b) to (e) N.A. (v) G.M. (*moong*). (vi) N.A. (vii) Irrigated. (viii) and (ix) N.A. (x) 10.4.1957.

## 2. TREATMENTS :

All combinations of (1) and (2) + 2 extra treatments

(1) 3 sources of N at 30 lb./ac. : S<sub>1</sub>=A/S, S<sub>2</sub>=F.Y.M. and S<sub>3</sub>=A/S and F.Y.M. in 1 : 1 ratio.

(2) 2 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0 and P<sub>1</sub>=40 lb./ac.

Extra treatments : E<sub>0</sub>=Control and E<sub>1</sub>=30 lb./ac. of N as castor cake.

Super placed deep in bands with the help of manure drill. A/S and castor cake broadcast on 10.11.1956.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) 60' 5" × 167'. (iii) 4. (iv) (a) and (b) 60' 5" × 20'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1954—contd. (b) Yes. (c) Nil. (v) to (vi) Nil.

## 5. RESULTS :

(i) 846 lb./ac. (ii) 86.1 lb./ac. (iii) Main effects of S, P, E and 'E vs. others' are highly significant. Interaction S × P is significant. (iv) Av. yield of grain in lb./ac.

$$E_0 = 649 \text{ lb./ac. and } E_1 = 865 \text{ lb./ac.}$$

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean
P <sub>0</sub>	793	721	856	790
P <sub>1</sub>	1126	793	964	961
Mean	960	757	910	876

S.E. of S marginal mean	= 30.4 lb./ac.
S.E. of P marginal mean	= 24.9 lb./ac.
S.E. of body of table or E mean	= 43.6 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 57(375).**

**Site :- Govt. Res. Farm, Pura.**

**Type :- 'M'.**

**Object :-** To study the effect of P and different sources of N on Wheat crop.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Sanai*. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Pura. (iii) 20.10.1957. (iv) (a) 2 ploughings by *desi* plough and 1 double harrowing by tractor. (b) to (e) N.A. (v) G.M. (*sanai*). (vi) N.A. (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 23.3.1958.

**2. TREATMENTS and 3. DESIGN :**

Same as in expt. no. 56(340) on page 309.

Manures applied on 17.10.1957.

**3. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1954—contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1222 lb./ac. (ii) 105.6 lb./ac. (iii) Main effects of P, E and interaction S × P are highly significant. Main effect of S and 'E vs. others' are significant. (iv) Av. yield of grain in lb./ac.

$$E_0 = 937 \text{ lb./ac. and } E_1 = 1370 \text{ lb./ac.}$$

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean
P <sub>0</sub>	919	1181	1108	1069
P <sub>1</sub>	1478	1199	1586	1421
Mean	1198	1190	1347	1245

S.E. of S marginal mean	= 37.3 lb./ac.
S.E. of P marginal mean	= 30.5 lb./ac.
S.E. of body of table or E mean	= 52.8 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 58(339).**

**Site :- Govt. Res. Farm, Pura.**

**Type :- 'M'.**

**Object :-** To study the effect of P and different sources of N on Wheat crop.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Lobia*. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Pura. (iii) 9.11.1958. (iv) (a) N.A. (b) Behind the plough. (c) to (e) N.A. (v) G.M. (*sanai*). (vi) to (ix) N.A. (x) 15, 16.4.1959.

**2. TREATMENTS to 4. GENERAL :**

Same as in expt. no. 56(340) on page 309.

Manures applied on 8.11.1958.

**5. RESULTS :**

(i) 1804 lb./ac. (ii) 140.7 lb./ac. (iii) Main effect of P alone is significant. (iv) Av. yield of grain in lb./ac.

$$E_0 = 1703 \text{ lb./ac. and } E_1 = 1883 \text{ lb./ac.}$$

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean
P <sub>0</sub>	1685	1730	1766	1727
P <sub>1</sub>	1956	1775	1938	1890
Mean	1820	1752	1852	1808

S.E. of S marginal mean = 49.7 lb./ac.

S.E. of P marginal mean = 40.6 lb./ac.

S.E. of body of table or E mean = 70.4 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 59(369).**

**Site :- Govt. Res. Farm, Pura.**

**Type :- 'M'.**

Object :—To study the effect of P and different sources of N on Wheat crop.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Pura. (iii) 11, 12.11.1959. (iv) to (ix) N.A. (x) 14 to 16.4.1960.

**2. TREATMENTS to 4. GENERAL :**

Same as in expt. no. 56(340) on page 309.

Manures applied on 11.11.1959.

**5. RESULTS :**

(i) 1508 lb./ac. (ii) 125.8 lb./ac. (iii) Main effects of S, P, 'E vs. others' and interaction S×P are highly significant. (iv) Av. yield of grain in lb./ac.

$$E_0 = 1253 \text{ lb./ac. and } E_1 = 1379 \text{ lb./ac.}$$

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean
P <sub>0</sub>	1072	1577	1343	1331
P <sub>1</sub>	1820	1739	1883	1814
Mean	1446	1658	1613	1572

S.E. of S marginal mean = 44.5 lb./ac.

S.E. of P marginal mean = 36.3 lb./ac.

S.E. of body of table or E mean = 62.9 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 55(326).**

**Site :- Govt. Res. Farm, Pura.**

**Type :- 'M'.**

Object :—To study the effect of different methods of application of N and P on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) *Moong* for GM. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Pura. (iii) 11.11.1955. (iv) (a) 10 ploughings by *desi* plough. (b) to (e) N.A. (v) G.M. (*moong*). (vi) N.A. (vii) Irrigated. (viii) and (ix) N.A. (x) 6.4.1956.



**2. TREATMENTS :****Main-plot treatments :**

2 sources of  $P_2O_5$  at 30 lb./ac. :  $S_1$ =Super and  $S_2$ =Ammono. Phos.

**Sub-plot treatments :**

2 methods of application of  $P_2O_5$  :  $M_1$ =Broadcast and  $M_2$ =Placed deep in bands.

**Sub-sub-plot treatments :**

2 methods of application of 25 lb./ac. of N as A/S :  $A_1$ =Broadcast and  $A_2$ =Placed deep in bands.  
Manures applied on 11.11.1955.

**3. DESIGN :**

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 2 sub-plots/main-plot, 2 sub-sub-plots/sub-plot. (b) 114' × 41'.  
(iii) 4. (iv) and (b) 27.25' × 20'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1955—1958. (b) No (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1864 lb./ac. (ii) (a) 175.1 lb./ac. (b) 401.4 lb./ac. (c) 214.0 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	$M_1$	$M_2$	Mean	$A_1$	$A_2$
$S_1$	1853	1938	1896	1883	1908
$S_2$	1763	1903	1833	1788	1878
Mean	1808	1920	1864	1836	1893
$A_1$	1793	1878			
$A_2$	1823	1963			

**S.E. of difference of two**

- |                                   |                 |                                   |                 |
|-----------------------------------|-----------------|-----------------------------------|-----------------|
| 1. S marginal means               | = 61.9 lb./ac.  | 6. A means at the same level of S | = 107.0 lb./ac. |
| 2. M marginal means               | = 141.9 lb./ac. | 7. S means at the same level of A | = 97.8 lb./ac.  |
| 3. A marginal means               | = 75.7 lb./ac.  | 8. A means at the same level of M | = 107.0 lb./ac. |
| 4. M means at the same level of S | = 200.7 lb./ac. | 9. M means at the same level of A | = 160.8 lb./ac. |
| 5. S means at the same level of M | = 154.8 lb./ac. |                                   |                 |

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 56(357).**

**Site :- Govt. Res. Farm, Pura.**

**Type :- 'M'.**

Object :—To study the effect of different methods of application of N and P on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) *Sanai*. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Pura. (iii) 13.11.1956. (v)  
(a) 1 ploughing by victory plough and 7 ploughings by *desi* plough. (b) to (e) N.A. (v) *Sanai* (G.M). (vi)  
N.A. (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 9 and 10.4.1957.

**2. TREATMENTS :**

Same as in expt. no. 55(326) on page 311.

Manures applied on 12.11.1956.

**3. DESIGN :**

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 2 sub-plots/main-plot and 2 sub-sub-plots/sub-plot. (b) N.A. (iii) 4. (iv) (a) and (b) 37.5' × 28'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1955—1958. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1637 lb./ac. (ii) (a) 136.8 lb./ac. (b) 239.3 lb./ac. (c) 166.8 lb./ac. (iii) Main effect of S alone is significant. (iv) Av. yield of grain in lb./ac.

	M <sub>1</sub>	M <sub>2</sub>	Mean	A <sub>1</sub>	A <sub>2</sub>
S <sub>1</sub>	1644	1794	1719	1716	1722
S <sub>2</sub>	1556	1556	1556	1597	1514
Mean	1600	1675	1637	1657	1618
A <sub>1</sub>	1582	1732			
A <sub>2</sub>	1618	1618			

S.E. of difference of two

- |                                   |                 |                                   |                 |
|-----------------------------------|-----------------|-----------------------------------|-----------------|
| 1. S marginal means               | = 48.4 lb./ac.  | 6. A means at the same level of S | = 83.4 lb./ac.  |
| 2. M marginal means               | = 84.6 lb./ac.  | 7. S means at the same level of A | = 76.3 lb./ac.  |
| 3. A marginal means               | = 59.0 lb./ac.  | 8. A means at the same level of M | = 83.4 lb./ac.  |
| 4. M means at the same level of S | = 119.6 lb./ac. | 9. M means at the same level of A | = 103.1 lb./ac. |
| 5. S means at the same level of M | = 97.5 lb./ac.  |                                   |                 |

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 57(386)**

**Site :- Govt. Res. Farm, Pura.**

**Type :- 'M'.**

Object :—To study the effect of different methods of application of N and P on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai*. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Pura. (iii) 20.10.1957. (iv) (a) 2 ploughings by *desi* plough and 1 harrowing by tractor. (b) to (e) N.A. (v) *Sanai* G M: applied on 17.8.1957. (vi) N.A. (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 25.3.1958.

## 2. TREATMENTS :

Same as in expt. no. 55(326) on page 311.  
Manures applied on 19.10.1957.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 2 sub-plots/main-plot and 2 sub-sub-plots/sub-plot (b) N.A. (iii) 4. (iv) (a) and (b) 40' × 27'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1955—1958. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1178 lb./ac. (ii) (a) 165.6 lb./ac. (b) 163.6 lb./ac. (c) 254.2 lb./ac. (iii) Main effect of S alone is highly significant. (iv) Av. yield of grain in lb./ac.

	M <sub>1</sub>	M <sub>2</sub>	Mean	A <sub>1</sub>	A <sub>2</sub>
S <sub>1</sub>	1306	1407	1356	1331	1381
S <sub>2</sub>	953	1049	1001	938	1064
Mean	1129	1228	1178	1134	1222
A <sub>1</sub>	998	1271			
A <sub>2</sub>	1260	1185			

S.E. of difference of two

1. S marginal means	= 58.5 lb./ac.	6. A means at the same level of S	= 127.1 lb./ac.
2. M marginal means	= 57.8 lb./ac.	7. S means at the same level of A	= 107.3 lb./ac.
3. A marginal means	= 89.9 lb./ac.	8. A means at the same level of M	= 127.1 lb./ac.
4. M means at the same level of S	= 81.8 lb./ac.	9. M means at the same level of A	= 106.9 lb./ac.
5. S means at the same level of M	= 82.3 lb./ac.		

**Crop :- Wheat (Rabi).****Ref :- U.P. 58(368).****Site :- Govt. Res. Farm, Pura.****Type :- 'M'.**

Object :—To study the effect of different methods of application of N and P on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) *Sanai*. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Pura. (iii) 8.11.1958. (iv) (a) N.A. (b) Behind the plough. (c) to (e) N.A. (v) *Sanai* applied as G.M. (vi) to (ix) N.A. (x) 12, 13.4.1959.

**2. TREATMENTS :**

Same as in expt. no. 55(326) on page 311.  
Manures applied on 7.11.1958.

**3. DESIGN and 4. GENERAL :**

Same as in expt. no. 57(386) on page 313.

**5. RESULTS :**

(i) 2028 lb./ac. (ii) (a) 151.6 lb./ac. (b) 127.0 lb./ac. (c) 123.4 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	M <sub>1</sub>	M <sub>2</sub>	Mean	A <sub>1</sub>	A <sub>2</sub>
S <sub>1</sub>	2077	2047	2062	2087	2037
S <sub>2</sub>	2012	1976	1994	1965	2022
Mean	2044	2012	2028	2027	2030
A <sub>1</sub>	2047	2007			
A <sub>2</sub>	2042	2017			

S.E. of difference of two

1. S marginal means	= 53.6 lb./ac.	6. A means at the same level of S	= 61.7 lb./ac.
2. M marginal means	= 44.9 lb./ac.	7. S means at the same level of A	= 69.1 lb./ac.
3. A marginal means	= 43.6 lb./ac.	8. A means at the same level of M	= 61.7 lb./ac.
4. M means at the same level of S	= 63.5 lb./ac.	9. M means at the same level of A	= 62.6 lb./ac.
5. S means at the same level of M	= 69.9 lb./ac.		

**Crop :- Wheat (Rabi).****Ref :- U.P. 54(289).****Site :- Govt. Cotton Res. Sub-Stn., Raya.****Type :- 'M'.**

Object :—To study the effect of N, P and K applied alone and in combinations on Wheat crop.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Raya. (iii) 15.11.1954. (iv) (a) *Palewa* on 5.11.1954 and 5 ploughings by *dest* plough. (b) Line sowing by drill. (c) 40 srs./ac. (d) Rows 9" apart. (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) 1 weeding. (ix) 1.51". (x) 24.4.1955.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 2 levels of N as A/S :  $N_0=0$  and  $N_1=30$  lb./ac.

(2) 2 levels of  $P_2O_5$  as Super :  $P_0=0$  and  $P_1=60$  lb./ac.

(3) 3 levels of  $K_2O$  as Potassium chloride :  $K_0=0$ ,  $K_1=60$  and  $K_2=120$  lb./ac.

A/S and Potassium chloride applied broadcast before sowing. Super placed 3" to 4" deep in furrows. Manures applied on 13 and 14.11.1954.

## 3. DESIGN :

(i)  $3 \times 2 \times 2$  partially balanced confd. confounding interactions  $N \times P$  and  $N \times P \times K$ . (ii) (a) 6 plots/block and 2 blocks/replication. (b)  $41' \times 174'$ . (iii) 4. (iv) (a) and (b)  $41' \times 26.5'$ . (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) and (b) No. (c) Nil. (v) (a) Kalai, Matkota, Tissuhi and Atarra. (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 849 lb./ac. (ii) 256.4 lb./ac. (iii) Main effect of N alone is highly significant. (iv) Av. yield of grain in lb./ac.

	$K_0$	$K_1$	$K_2$	Mean	$P_0$	$P_1$
$N_0$	646	526	566	579	615	544
$N_1$	1148	1078	1128	1118	1079	1156
Mean	897	802	847	849	847	850
$P_0$	887	822	832			
$P_1$	907	782	862			

S.E. of N or P marginal mean	= 52.3 lb./ac.
S.E. of K marginal mean	= 64.1 lb./ac.
S.E. of body of $N \times P$ table	= 74.0 lb./ac.
S.E. of body of $N \times K$ or $P \times K$ table	= 90.7 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 55(340).**

**Site :- Govt. Cotton Res. Sub-Stn., Raya.**

**Type :- 'M'.**

Object :- To study the effect of N, P and K applied alone and in combinations on Wheat crop.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Raya. (iii) 22.11.1955. (iv) (a) 4 ploughings by *desi* plough. (b) By seed drill in lines. (c) 40 srs./ac. (d) Rows 9" apart. (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) Nil. (ix) 2.01". (x) 18.4.1956.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 2 levels of N as A/S :  $N_0=0$  and  $N_1=30$  lb./ac.

(2) 2 levels of  $P_2O_5$  as Super :  $P_0=0$  and  $P_1=40$  lb./ac.

(3) 2 levels of  $K_2O$  as Pot. Sul. :  $K_0=0$  and  $K_1=60$  lb./ac.

A/S applied broadcast. Super and Pot. Sul. placed deep in bands by manure drill on 22.11.1955.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b)  $83' \times 90'$ . (iii) 4. (iv) (a) and (b)  $40' \times 20'3"$ . (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1955—1957. (b) No. (c) Nil. (v) (a) Kalai. (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1953 lb./ac. (ii) 202.4 lb./ac. (iii) Interaction N×P alone is significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	K <sub>0</sub>	K <sub>1</sub>
N <sub>0</sub>	1862	2097	1980	1963	1996
N <sub>1</sub>	1963	1889	1926	1923	1929
Mean	1912	1993	1953	1943	1962
K <sub>0</sub>	1849	2037			
K <sub>1</sub>	1976	1949			

S.E. of any marginal mean = 50.6 lb./ac.  
 S.E. of body of any table = 71.5 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 56(360).

Site :- Govt. Cotton Res. Sub-Stn., Raya.

Type :- 'M'.

Object :- To study the effect of N, P and K applied alone and in combination on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Raya. (iii) 8.11.1956. (iv) (a) N.A.  
 (b) By seed drill in rows. (c) 40 srs./ac. (d) Rows 9" apart. (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated.  
 (viii) 1 hoeing. (ix) 3.20". (x) 25.4.1957.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 2 levels of N as A/S : N<sub>0</sub>=0 and N<sub>1</sub>=30 lb./ac.(2) 2 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0 and P<sub>1</sub>=40 lb./ac.(3) 2 levels of K<sub>2</sub>O as Potassium chloride : K<sub>0</sub>=0 and K<sub>1</sub>=60 lb./ac.

A/S applied as broadcast. Super and Potassium chloride placed deep in bands by manure drill on 18.11.1956.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) 40' × 258.5'. (iii) 4. (iv) (a) and (b) 40' × 27'2". (v) Nil. (vi) Yes.

## 4. GENERAL :

Same as in expt. no. 55(340) on page 3-5.

## 5. RESULTS :

(i) 1552 lb./ac. (ii) 187.6 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	K <sub>0</sub>	K <sub>1</sub>
N <sub>0</sub>	1543	1468	1506	1478	1533
N <sub>1</sub>	1618	1578	1598	1508	1689
Mean	1581	1523	1552	1493	1611
K <sub>0</sub>	1483	1503			
K <sub>1</sub>	1679	1543			

S.E. of any marginal mean = 46.9 lb./ac.]  
 S.E. of body of any table = 66.3 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 57(394).****Site :- Govt. Cotton Res. Sub-Strn., Raya.****Type :- 'M'.**

Object :—To study the effect of N, P and K applied alone and in combinations on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Raya. (iii) 3.11.1957. (iv) (a) N.A. (b) By seed drill in rows. (c) 40 srs./ac. (d) Rows 9" apart. (e) N.A. (v) Nil. (vi) to (ix) N.A. (x) 12.4.1958.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 2 levels of N as A/S/N :  $N_0=0$  and  $N_1=30$  lb./ac.(2) 2 levels of  $P_2O_5$  as Super :  $P_0=0$  and  $P_1=40$  lb./ac.(3) 2 levels of  $K_2O$  as Potassium chloride :  $K_0=0$  and  $K_1=60$  lb./ac.

A/S/N applied as broadcast on 27, 28.11.1957. Super and Potassium chloride placed deep in bands by manure drill on 2.11.1957.

**3. DESIGN :**(i) Fact. in R.B.D. (ii) (a) 8. (b)  $87' \times 114'$ . (iii) 4. (iv) (a) and (b)  $87' \times 12.5'$ . (v) Nil. (vi) Yes.**4. GENERAL :**

Same as in expt. no. 55(340) on page 315.

**5. RESULTS :**(i) 1685 lb./ac. (ii) 349.4 lb./ac. (iii) Interaction N  $\times$  K alone is significant. (iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	Mean	$K_0$	$K_1$
$N_0$	1767	1497	1632	1777	1487
$N_1$	1767	1712	1740	1597	1883
Mean	1767	1604	1686	1687	1685
$K_0$	1692	1682			
$K_1$	1843	1527			

S.E. of any marginal mean = 87.3 lb./ac.  
S.E. of body of any table = 123.5 lb./ac.**Crop :- Wheat (Rabi).****Ref :- U.P. 56(30),****Site :- State Soil Cons. Res. Demons. & Trg. Centre, Rehmankhera. Type :- 'M'.**

Object :—To study the effect of N on Wheat grown on eroded land.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Loamy sand to sandy loam. (b) Refer soil analysis, Rehmankhera. (iii) 27, 28.10.1956. (iv) (a) 4 ploughings. (b) Sown behind the plough. (c) 45 srs./ac. (d) Rows 9" apart. (e) N.A. (v) N.A. (vi) NP—710. (vii) Irrigated. (viii) and (ix) N.A. (x) 12.4.1957.

**2. TREATMENTS :****Main-plot treatments :**4 manurial treatments :  $M_0$ =Control,  $M_1$ =*Sanai* G.M.,  $M_2$ =20 lb./ac. of N as F.Y.M and  $M_3$ =40 lb./ac. of N as F.Y.M.**Sub-plot treatments :**3 levels of N as A/S :  $N_0=0$ ,  $N_1=20$  and  $N_2=40$  lb./ac.

A/S applied as top dressing on 4 and 5.12.1956 just before first irrigation.

**3. DESIGN :**

(i) Split-plot. (ii) (a) 4 main-plots/replication, 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 44'×22'. (b) 40'×18'. (v) 2'×2'. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1956--1959. (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 801 lb./ac. (ii) (a) 725.7 lb./ac. (b) 343.5 lb./ac. (iii) Main effect of N alone is significant. (iv) Av. yield of grain in lb./ac.

	M <sub>0</sub>	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	Mean
N <sub>0</sub>	558	497	768	694	629
N <sub>1</sub>	762	546	881	943	783
N <sub>2</sub>	1007	830	1019	1104	990
Mean	776	624	889	914	801

S.E. of difference of two

1. M marginal means = 296.3 lb./ac.
2. N marginal means = 121.4 lb./ac.
3. N means at the same level of M = 242.9 lb./ac.
4. M means at the same level of N = 356.5 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 57(115).**

**Site :- State Soil Cons. Res. Demons. & Trg. Centre, Rehmankhara. Type :- 'M'.**

Object :—To study the effect of N on Wheat grown on eroded land.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loamy sand to sandy loam. (b) Refer soil analysis, Rehmankhara. (iii) 4 and 5.11.1957. (iv) (a) Ploughings by cultivator. (b) Sown behind the plough. (c) 45 srs./ac. (d) Rows 9' apart. (e) N.A. (v) N.A. (vi) NP-718. (vii) to (x) N.A.

**2. TREATMENTS to 4. GENERAL :**

Same as in expt. no. 56(80) on page 317.

**5. RESULTS :**

(i) 1301 lb./ac. (ii) 168.6 lb./ac. (b) 186.8 lb./ac. (iii) Main effect of N alone is highly significant. (v) Av. yield of grain in lb./ac.

	M <sub>0</sub>	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	Mean
N <sub>0</sub>	1014	1257	1204	1161	1159
N <sub>1</sub>	1228	1403	1398	1456	1371
N <sub>2</sub>	1429	1293	1454	1317	1373
Mean	1224	1318	1352	1311	1301

S.E. of difference of two

1. M marginal means = 68.8 lb./ac.
2. N marginal means = 66.0 lb./ac.
3. N means at the same level of M = 132.1 lb./ac.
4. M means at the same level of N = 127.9 lb./ac.

**Crop :-** Wheat (*Rabi*).

**Ref :-** U.P. 58(107).

**Site :-** State Soil Cons. Res., Demons. & Trg. Centre, Rehmankhara. **Type :-** 'M'.

**Object :-** To study the effect of N on Wheat grown on eroded land.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loamy sand to sandy loam. (b) Refer soil analysis, Rehmankhara. (iii) 30.10.1958. (iv) (a) Ploughings by cultivator. (b) Sown behind the plough. (c) 45 srs./ac. (d) Rows 9" apart. (e) N.A. (v) N.A. (vi) NP-718. (vii) Irrigated. (viii) Interculture, weeding and hoeing. (ix) N.A. (x) 21 to 23.4.1959.

**2. TREATMENTS to 4. GENERAL :**

Same as in expt. no. on page 56(80) 317.

**5. RESULTS :**

(i) 1719 lb./ac. (ii) (a) 385.4 lb./ac. (b) 222.5 lb./ac. (iii) Main effect of N alone is highly significant. (iv) Av. yield of grain in lb./ac.

	M <sub>0</sub>	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	Mean
N <sub>0</sub>	1382	1886	1353	1449	1518
N <sub>1</sub>	1755	2113	1654	1463	1746
N <sub>2</sub>	1885	1911	1816	1956	1892
Mean	1674	1970	1608	1623	1719

S.E. of difference of two

- |                                   |                 |
|-----------------------------------|-----------------|
| 1. M marginal means               | = 157.3 lb./ac. |
| 2. N marginal means               | = 78.7 lb./ac.  |
| 3. N means at the same level of M | = 157.3 lb./ac. |
| 4. M means at the same level of N | = 203.1 lb./ac. |

**Crop :-** Wheat (*Rabi*).

**Ref :-** U.P. 59(110).

**Site :-** State Soil Cons. Res. Demons. & Trg. Centre, Rehmankhara. **Type :-** 'M'.

**Object :-** To study the effect of N on Wheat grown on eroded land.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loamy sand to sandy loam. (b) Refer soil analysis, Rehmankhara. (iii) N.A. (iv) (a) 2 ploughings. (b) Sown behind the plough. (c) 45 srs./ac. (d) Rows 9" apart. (e) N.A. (v) to (x) N.A.

**2. TREATMENTS to 4. GENERAL :**

Same as in expt. no. 56(80) on page 317.

**5. RESULTS :**

(i) 1333 lb./ac. (ii) (a) 402.9 lb./ac. (b) 180.4 lb./ac. (iii) Main effect of N alone is significant. (iv) Av. yield of grain in lb./ac.

	M <sub>0</sub>	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	Mean
N <sub>0</sub>	1227	1338	1309	1489	1341
N <sub>1</sub>	1316	1405	1468	1513	1426
N <sub>2</sub>	1198	960	1336	1431	1231
Mean	1247	1234	1371	1478	1333



S.E. of difference of two

- |                                   |   |               |
|-----------------------------------|---|---------------|
| 1. M marginal means               | = | 164.5 lb./ac. |
| 2. N marginal means               | = | 63.8 lb./ac.  |
| 3. N means at the same level of M | = | 127.6 lb./ac. |
| 4. M means at the same level of N | = | 194.7 lb./ac. |

**Crop :- Wheat (Rabi).****Ref :- U.P. 57(110.)****Site :- State Soil Cons. Res. Demons. & Trg. Centre, Rehmankhara. Type :- 'M'.**

Object :- To study the effect of different times of application of A/S in green manured Wheat crop grown on denuded soils.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loamy sand to sandy loam. (b) Refer soil analysis, Rehmankhara. (iii) 4.11.1957. (iv) to (vi) N.A. (vii) Irrigated. (viii) Nil. (ix) and (x) N.A.

**2. TREATMENTS :**

5 manurial treatments :  $T_0$ =Control (no N),  $T_1$ =30 lb./ac. of N as A/S applied at the time of turning in of *sanai*,  $T_2$ =30 lb./ac. of N as A/S applied at the time of second turning in,  $T_3$ =30 lb./ac. of N as A/S applied just before sowing on 1.11.1957 and  $T_4$ =30 lb./ac. of N as A/S applied at the time of 1st irrigation on 16.12.1957.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 3. (iv) (a) 46'×24'. (b) 42'×20'. (v) 2'×2'. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1957-1960. (b) Yes. (c) No. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1607 lb./ac. (ii) 257.6 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$T_0$	$T_1$	$T_2$	$T_3$	$T_4$
Av. yield	1447	1769	1609	1602	1609

S.E./mean = 148.7 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 58(102).****Site :- State Soil Cons. Res. Demons. & Trg. Centre, Rehmankhara. Type :- 'M'.**

Object :- To study the effect of different times of application of A/S in green manured Wheat crop grown on denuded soils.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loamy sand to sandy loam. (b) Refer soil analysis, Rehmankhara. (iii) to (vi) N.A. (vii) Irrigated. (viii) Interculturing, hoeing and weeding. (ix) N.A. (x) 20.4.1959.

**2. TREATMENTS :**

5 manurial treatments :  $T_0$ =Control (no N),  $T_1$ =30 lb./ac. of N as A/S at the time of turning in of *sanai* on 28.8.1958,  $T_2$ =30 lb./ac. of N as A/S at the time of second turning in on 18.9.1958,  $T_3$ =30 lb./ac. of N as A/S just before sowing on 27.10.1958 and  $T_4$ =30 lb./ac. of N as A/S at the time of 1st irrigation on 26.11.1958.

**3. DESIGN and 4. GENERAL :**

Same as in expt. no. 57(110) above.

## 5. RESULTS :

(i) 1890 lb./ac. (ii) 196.8 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>
Av. yield	1832	1935	1961	1947	1776

S.E./mean = 113.6 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 59(105.)**

**Site :- State Soil Cons. Res. Demons. & Trg. Centre, Rehmankhara. Type :- 'M'.**

Object :—To study the effect of different times of application of A/S in green manured Wheat crop grown on denuded soils.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loamy sand to sandy loam. (b) Refer soil analysis, Rehmankhara. (iii) 5.7.1959. (iv) (a) 2 ploughings. (b) N.A. (c) 40 srs./ac. (d) and (e) N.A. (v) to (x) N.A.

## 2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 57(110) on page 320.

## 5. RESULTS :

(i) 609 lb./ac. (ii) 223.1 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>
Av. yield	402	696	660	676	613

S.E./mean = 128.8 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 58(424).**

**Site :- Reg. Res. Stn., Rudrapur.**

**Type :- 'M'.**

Object :—To study the efficiency of organic and inorganic nitrogenous manures and P on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Lobia*. (c) Nil. (ii) (a) Clayey loam. (b) Refer soil analysis, Rudrapur. (iii) 19.11.1958. (iv) (a) 8 ploughings. (b) Behind the plough. (c) 40 srs./ac. (d) 9" between rows. (e) N.A. (v) *Lobia* (G.M.). (vi) Ridley (late). (vii) Irrigated. (viii) 2 intercultures. (ix) N.A. (x) 24.4.1959.

## 2. TREATMENTS :

10 manurial treatments : M<sub>0</sub>=Control, M<sub>1</sub>=25 lb./ac. of N as A/S, M<sub>2</sub>=2 M<sub>1</sub>, M<sub>3</sub>=25 lb./ac. of N as F.Y.M., M<sub>4</sub>=2 M<sub>3</sub>, M<sub>5</sub>=40 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super, M<sub>6</sub>=M<sub>2</sub>+M<sub>5</sub>, M<sub>7</sub>=M<sub>4</sub>+M<sub>5</sub>, M<sub>8</sub>=M<sub>1</sub>+M<sub>3</sub> and M<sub>9</sub>=M<sub>1</sub>+M<sub>3</sub>+M<sub>5</sub>

F.Y.M. broadcast and ploughed in. Super applied deep in bands.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) 178.5' × 36'. (iii) 4. (iv) (a) 36' × 15'. (b) 32' × 13.5'. (v) 2' × 9". (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Infection of yellow, orange and black rust. (iii) Height of plant, number of tillers, yield of grain and straw. (iv) (a) 1958—1960. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1425 lb./ac. (ii) 62.0 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	M <sub>0</sub>	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	M <sub>4</sub>	M <sub>5</sub>	M <sub>6</sub>	M <sub>7</sub>	M <sub>8</sub>	M <sub>9</sub>
Av. yield	1212	1309	1413	1429	1426	1478	1452	1582	1448	1497

S.E./mean = 31.0 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 59(451).**

**Site :- Reg. Res. Stn., Rudrapur.**

**Type :- 'M'.**

**Object :-**To study the efficiency of organic and inorganic nitrogenous manures and P on Wheat.

### 1. BASAL CONDITIONS :

(i) (a) *Lobia*—Wheat. (b) *Lobia*. (c) Nil. (ii) (a) Clayey loam. (b) Refer soil analysis, Rudrapur. (iii) 12.11.1959. (iv) (a) N.A. (b) Behind the plough. (c) 40 srs./ac. (d) 9" between rows. (e) N.A. (v) N.A. (vi) Ridley (late). (vii) to (ix) N.A. (x) 19, 20.4.1960.

### 2. TREATMENTS :

Same as in expt. no. 58(424) on page 321.

### 3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) 172.5' × 36'. (iii) 4. (iv) (a) 36' × 15'. (b) 32' × 13.5'. (v) 2' × 9". (vi) Yes.

### 4. GENERAL :

(i) Germination and stand good. (ii) N.A. (iii) Germination, stand, length of ear and yield of grain and straw. (iv) (a) 1958—1960. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

### 5. RESULTS :

(i) 1491 lb./ac. (ii) 152.0 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	M <sub>0</sub>	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	M <sub>4</sub>	M <sub>5</sub>	M <sub>6</sub>	M <sub>7</sub>	M <sub>8</sub>	M <sub>9</sub>
Av. yield	1109	1182	1348	1503	1523	1656	1542	1682	1555	1809

S.E./mean = 76.0 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 59(454).**

**Site :- Reg. Res. Stn., Rudrapur.**

**Type :- 'M'.**

**Object :-**To study the most suitable time of application of N at different levels on Wheat.

### 1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Rudrapur. (iii) 11.11.1959. (iv) (a) N.A. (b) Behind the plough. (c) 40 srs./ac. (d) Rows 9" apart. (e) N.A. (v) 20 lb./ac. of P<sub>2</sub>O<sub>5</sub> applied in bands. (vi) NP—720. (vii) Irrigated. (viii) and (ix) N.A. (x) 21.4.1960.

### 2. TREATMENTS :

All combinations of (1), (2) and (3)+controls (3 plots)

(1) 3 times of application of N : T<sub>1</sub>=At sowing, T<sub>2</sub>=At 1st irrigation on 11, 12.1.1960 and T<sub>3</sub>= $\frac{1}{2}$  at sowing + $\frac{1}{2}$  at 1st irrigation.

(2) 3 sources of N : S<sub>1</sub>=A/S, S<sub>2</sub>=A/S/N and S<sub>3</sub>=Urea.

(3) 2 levels of N : N<sub>1</sub>=20 and N<sub>2</sub>=40 lb./ac.

### 3. DESIGN :

(i) 3<sup>2</sup> × 2 fact. confounded. (ii) (a) 7 plots/block ; 3 blocks/replication. (b) 133.5' × 33'. (iii) 4. (iv) (e) 16 5' × 33'. (v) 15' × 29'. (vi) 9" × 2'. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) N.A. (iii) Stand, germination, height, number of tillers, number of leaves, length of ears and yield of grain and straw. (iv) (a) and (b) No. (c) Nil. (v) (a) Kalai, Meerut, Hardoi, Faizabad and Nawabganj. (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1214 lb./ac. (ii) 133.2 lb./ac. (iii) Main effect of T and 'control vs. others' are highly significant. Main effects of S, N and interaction T×N are significant. (iv) Av. yield of grain in lb./ac.

Control = 1035 lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean	N <sub>1</sub>	N <sub>2</sub>
T <sub>1</sub>	1426	1317	1275	1339	1260	1413
T <sub>2</sub>	1188	1105	1271	1188	1206	1170
T <sub>3</sub>	1247	1117	1252	1205	1149	1262
Mean	1287	1180	1266	1244	1205	1283
N <sub>1</sub>	1282	1144	1188			
N <sub>2</sub>	1291	1216	1343			

S.E. of T or S marginal mean	= 27.2 lb./ac.
S.E. of N marginal mean	= 22.2 lb./ac.
S.E. of body of T×S table	= 47.1 lb./ac.
S.E. of body of T×N or S×N table or control mean	= 38.5 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 54(292).**

**Site :- Rice Res. Sub-Stn., Tissuhi.**

**Type :- 'M'.**

Object :— To study the effect of N, P and K applied alone and in combinations on the yield of Wheat crop.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Lobia*. (c) N.A. (ii) (a) Hard clayey. (b) Refer soil analysis, Tissuhi. (iii) 30 and 31.10.1954. (iv) (a) 1 ploughing by victory plough, 1 *palewa* and 6 ploughings by *desi* plough. (b) Sown in lines. (c) 50 srs./ac. (d) and (e) N.A. (v) Nil. (vi) C—13 (early). (vii) Irrigated. (viii) N.A. (ix) 2.75". (x) 27, 28.3.1955.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 2 levels of N as A/S : N<sub>0</sub>=0 and N<sub>1</sub>=30 lb./ac.

(2) 2 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0 and P<sub>1</sub>=60 lb./ac.

(3) 3 levels of K<sub>2</sub>O as Pot. Sul. : K<sub>0</sub>=0, K<sub>1</sub>=60 and K<sub>2</sub>=120 lb./ac.

Super and Pot. Sul. placed deep in furrows behind the plough on 25, 26.10.1954. A/S broadcast on 1.11.1954.

## 3. DESIGN :

(i) 3×2×2 partially balanced, confounding interactions N×P and N×P×K. (ii) (a) 6 plots/block ; 3 blocks/replication. (b) N.A. (iii) 4. (iv) (a) and (b) 42'×25'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Germination uniform. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) and (b) No. (c) Nil. (v) (a) Raya, Kalai, Matkota, Bharari and Atarra. (b) Nil. (vi) Nil. (vii) Crop slightly damaged by rats.

## 5. RESULTS :

(i) 1053 lb./ac. (ii) 92.7 lb./ac. (iii) Main effects of N, P and interaction N×K are highly significant. (iv) Av. yield of grain in lb./ac.

	K <sub>0</sub>	K <sub>1</sub>	K <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>
N <sub>0</sub>	965	998	1063	1009	608	1409
N <sub>1</sub>	1118	1154	1022	1098	664	1532
Mean	1041	1076	1042	1053	636	1470
P <sub>0</sub>	630	635	643			
P <sub>1</sub>	1452	1517	1442			

S.E. of N or P marginal mean	= 18.9 lb./ac.
S.E. of K marginal mean	= 23.2 lb./ac.
S.E. of body of P×N table	= 26.8 lb./ac.
S.E. of body of N×K or P×K table	= 32.8 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 55(338).**

**Site :- Rice Res. Sub-Stn., Tisuihi.**

**Type :- 'M'.**

**Object :-** To study the effect of N, P and K applied alone and in combinations on the yield of Wheat crop.

**1. BASAL CONDITIONS :**

(i) (a) to (c) Nil. (ii) (a) Vindhyan black clayey. (b) Refer soil analysis, Tisuihi. (iii) 17 and 18.11.1955. (iv) (a) 8 ploughings. (b) Sown in lines. (c) 50 srs./ac. (d) Between rows 9". (e) N.A. (v) Nil. (vi) NP--760 (medium). (vii) Irrigated. (viii) N.A. (ix) Nil. (x) 8.4.1956.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

- (1) 2 levels of N as A/S : N<sub>0</sub>=0 and N<sub>1</sub>=30 lb./ac.
- (2) 2 levels of P<sub>2</sub>O<sub>5</sub> as triple Super : P<sub>0</sub>=0 and P<sub>1</sub>=40 lb./ac.
- (3) 2 levels of K<sub>2</sub>O as Pot. Sul. : K<sub>0</sub>=0 and K<sub>1</sub>=60 lb./ac.

A/S broadcast on 16.11.1955. Super placed deep in bands on 16.11.1955 and Pot. Sul. placed deep in bands on 17.11.1955.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) and (b) 40'×27.3'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Poor. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1955-1957. (b) No (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) Due to heavy claddy nature of soil, the germination in some plots was defective and patchy. Stand was poor due to non-availability of timely irrigation. The crop suffered a lot at the growing stage due to lack of moisture.

**5. RESULTS :**

(i) 606 lb./ac. (ii) 83.7 lb./ac. (iii) Main effects of N, P and interaction N×P are highly significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	K <sub>0</sub>	K <sub>1</sub>
N <sub>0</sub>	426	519	472	504	441
N <sub>1</sub>	541	937	739	740	738
Mean	484	728	606	622	590
K <sub>0</sub>	496	748			
K <sub>1</sub>	471	708			

S.E. of any marginal mean = 20.9 lb./ac.  
S.E. of body of any table = 29.6 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 56(358).**

**Site :- Rice Res. Sub-Stn., Tissuhi.**

**Type :- 'M'.**

Object :—To study the effect of N, P and K applied alone and in combinations on the yield of Wheat crop.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Sanai*. (c) Nil. (ii) (a) Clayey soil. (b) Refer soil analysis, Tissuhi. (iii) 26.11.1956. (iv) (a) 7 ploughings by *desi* plough. (b) N.A. (c) 50 srs./ac. (d) and (e) N.A. (v) *Sanai* G.M. (vi) NP—52 (medium). (vii) Irrigated. (viii) N.A. (ix) 2.34". (x) 7.4.1957.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 2 levels of N as A/S/N :  $N_0=0$  and  $N_1=30$  lb./ac.

(2) 2 levels of  $P_2O_5$  as Super :  $P_0=0$  and  $P_1=40$  lb./ac.

(3) 2 levels of  $K_2O$  as Mur. Pot. :  $K_0=0$  and  $K_1=60$  lb./ac.

A/S/N broadcast on 25.11.1956. Super and Mur. Pot. behind the plough in bands on 24 and 25.11.1956.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) and (b) 26' × 42'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1955—1957. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 833 lb./ac. (ii) 77.2 lb./ac. (iii) Main effects of N, P, K and interaction  $N \times P$  are highly significant. Interaction  $N \times P \times K$  is significant. (iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	Mean	$K_0$	$K_1$
$N_0$	603	782	693	654	732
$N_1$	727	1218	973	925	1020
Mean	645	1000	833	789	876
$K_0$	619	959			
$K_1$	711	1041			

S.E. of any marginal mean = 19.3 lb./ac.  
S.E. of body of any table = 27.3 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 57(387).**

**Site :- Rice Res. Sub-Stn., Tissuhi.**

**Type :- 'M'.**

Object :—To study the effect of N, P and K applied alone and in combinations on the yield of Wheat crop.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Guar*. (c) N.A. (ii) (a) Clayey soil. (b) Refer soil analysis, Tissuhi. (iii) 20.11.1957. (iv) (a) 6 ploughings by *desi* plough. (b) Sown through *mala basa*. (c) 45 srs./ac. (d) and (e) N.A. (v) Nil. (vi) NP—718 (medium). (vii) Unirrigated. (viii) N.A. (ix) Nil. (x) 3.4.1958.

**2. TREATMENTS :**

All combinations (1), (2) and (3)

(1) 2 levels of N as A/S :  $N_0=0$  and  $N_1=30$  lb./ac.

(2) 2 levels of  $P_2O_5$  as Super :  $P_0=0$  and  $P_1=40$  lb./ac.

(3) 2 levels of  $K_2O$  as Potash :  $K_0=0$  and  $K_1=60$  lb./ac.

A/S applied on 19.11.1957 as broadcast. Super and Potash placed deep in furrows before sowing.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) and (b)  $30' \times 36'$ . (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Poor. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1955—1957. (b) No. (c) Nil. (v) (a) Varanasi and Faizabad. (b) Nil. (vi) Nil. (vii) The crop was not given water as the canal could not supply water.

**5. RESULTS :**

(i) 441 lb./ac. (ii) 79.4 lb./ac. (iii) Main effects of N and P are significant. (iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	Mean	$K_0$	$K_1$
$N_0$	376	445	410	404	416
$N_1$	434	509	472	495	448
Mean	405	477	441	450	432
$K_0$	388	512			
$K_1$	422	442			

S.E. of any marginal mean

= 19.9 lb./ac.

S.E. of body of any table

= 28.1 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 57(251).**

**Site :- Rice Res. Sub-Stn., Tisuihi.**

**Type :- 'M'.**

Object :—To study the effect of different levels of P on Wheat crop.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Sanai* for G.M. (c) 20 srs./ac. of Super. (ii) (a) Clayey soil. (b) Refer soil analysis, Tisuihi. (iii) 7.11 1957. (iv) (a) 5 ploughings. (b) Sown through *mala basa*. (c) 45 srs./ac. (d) and (e) N.A. (v) *Sanai* (G.M.) and 25 lb./ac. of N as A/S. (vi) NP-718/medium. (vii) Unirrigated. (viii) N.A. (ix) Nil. (x) 1.4.1958

**2. TREATMENTS :**

5 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=30$ ,  $P_2=60$ ,  $P_3=90$  and  $P_4=120$  lb./ac.

Manures applied on 6.11.1957.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) and (b)  $26' \times 42'$ . (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Normal (ii) N.A. (iii) Yield of grain and straw. (iv) (a) and (b) No. (c) Nil. (v) (a) Varanasi and Faizabad. (b) N.A. (vi) Nil. (vii) No water could be given to the crop, as the canal could not supply water.

**5. RESULTS :**

(i) 4.6 lb./ac. (ii) 63.2 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	P <sub>4</sub>
Av. yield	363	372	416	449	482

S.E./mean = 31.6 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 58(200).**

**Site :- Rice Res. Sub-Stn., Tissuhi.**

**Type :- 'M'.**

Object :—To study the residual effect of different levels of P applied to Wheat crop during Rabi, 1957.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Paddy. (c) 25 lb./ac. of N. (ii) (a) Clayey soil. (b) Refer soil analysis, Tissuhi. (iii) 19.11.1958. (iv) (a) 8 ploughings. (b) Sown behind the plough. (c) 45 srs./ac. (d) Rows 9" apart. (e) N.A. (v) 25 lb./ac. of N as A/S. (vi) NP—710 (medium). (vii) Irrigated. (viii) N.A. (ix) 1.8". (x) 5.4.1959.

**2. TREATMENTS :**

5 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0, P<sub>1</sub>=30, P<sub>2</sub>=60, P<sub>3</sub>=90 and P<sub>4</sub>=120 lb./ac.

Treatments have been applied during *rabi*, 1957 to wheat crop. Residual effect of these treatments has already been tested on paddy crop during *kharif*, 1958.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) and (b) 26'×42'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Satisfactory. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) and (b) No. (c) Nil. (v) (a) Faizabad and Varanasi. (b) N.A. (vi) Nil. (vii) Residual effect on paddy also studied during 1958 *kharif*.

**5. RESULTS :**

(i) 616 lb./ac. (ii) 71.7 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	P <sub>4</sub>
Av. yield	465	550	649	658	756

S.E./mean = 35.8 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 54(221).**

**Site :- Agri. College Farm, B.H.U., Varanasi.**

**Type :- 'M'.**

Object :—To study the effect of different times of application of N on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Loam. (b) Refer soil analysis, Varanasi. (iii) 21.10.1954. (iv) (a) Summer ploughings with victory plough and subsequent ploughings by Meston and *desi* plough. (b) Seed drill. (c) 40 srs./ac. (d) 9" between rows. (e) N.A. (v) Nil. (vi) Pb.—591. (vii) Irrigated. (viii) 1 weeding at tillering stage. (ix) and (x) N.A.

**2. TREATMENTS :**

8 times of application of 50 lb./ac. of N : T<sub>0</sub>=Control (no N), T<sub>1</sub>=At sowing, T<sub>2</sub>=At germination, T<sub>3</sub>=At tillering, T<sub>4</sub>=½ dose at sowing+½ dose at germination, T<sub>5</sub>=½ dose at sowing+½ dose at tillering, T<sub>6</sub>=½ dose at germination+½ dose at tillering and T<sub>7</sub>=½ dose at sowing+½ dose at germination+½ dose at tillering.

Manures applied on 21.10.1954, 9.11.1954 and 13.12.1954.



**3. DESIGN :**

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 57' × 23.5'. (b) 54' × 20.5'. (v) 1.5' × 1.5'. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Growth characters, maturity characters and yield of grain. (iv) (a) and (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1538 lb./ac. (ii) 211.6 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	T <sub>5</sub>	T <sub>6</sub>	T <sub>7</sub>
Av. yield	682	1603	1564	1510	1875	1702	1659	1705

S.E./mean = 105.8 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 54(145).**

**Site :- Reg. Res. Stn., Varanasi.**

**Type :- 'M'.**

Object :—To study the effect of N, P and Calcium applied singly and in combinations on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Varanasi. (iii) 16.11.1954. (iv) (a) 5 ploughings. (b) Seed drill. (c) 25 to 30 srs./ac. (d) and (e) N.A. (v) and (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

- (1) 2 levels of N : N<sub>0</sub>=0 and N<sub>1</sub>=75 lb./ac.
- (2) 2 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0 and P<sub>1</sub>=50 lb./ac.
- (3) 2 levels of CaO : C<sub>0</sub>=0 and C<sub>1</sub>=60 lb./ac.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 41' × 29'. (b) 38' × 26'. (v) 1½' × 1½'. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1954—1956. (b) No. (c) N.A. (v) (a) Jhansi, Atarra and Kalianpur. (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1477 lb./ac. (ii) 166.5 lb./ac. (iii) Main effect of N and interaction P × C are highly significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	C <sub>0</sub>	C <sub>1</sub>
N <sub>0</sub>	1315	1311	1313	1261	1365
N <sub>1</sub>	1670	1613	1642	1589	1694
Mean	1492	1462	1477	1425	1530
C <sub>0</sub>	1540	1309			
C <sub>1</sub>	1445	1615			

S.E. of any marginal mean = 41.6 lb./ac.

S.E. of body of any table = 58.9 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 55(128).****Site :- Reg. Res. Stn., Varanasi.****Type :- 'M'.**

Object :—To study the effect of N, P and Calcium applied singly and in combinations on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Light loam. (b) Refer soil analysis, Varanasi. (iii) 7.11.1955.  
 (iv) 2 ploughings. (b) By seed drill. (c) 25 to 30 srs./ac. (d) and (e) N.A. (v) G.M. (vi) NP--52 (early),  
 (vii) Irrigated. (viii) N.A. (ix) 0.71". (x) 26.3.1956.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 2 levels of N as A/S :  $N_0=0$ , and  $N_1=50$  lb./ac.(2) 2 levels of  $P_2O_5$  as Super :  $P_0=0$  and  $P_1=40$  lb./ac.(3) 2 levels of CaO as gypsum :  $C_0=0$  and  $C_1=60$  lb./ac.N applied in split doses  $\frac{1}{2}$  at sowing and  $\frac{1}{2}$  at tillering. P applied by placement 3" to 4" deep in soil behind the plough 6 to 7 days before sowing and CaO applied as surface dressing 2 to 3 days before sowing.**3. DESIGN :**(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 41'×28'. (b) 38'×25'. (v)  $1\frac{1}{2} \times 1\frac{1}{2}$ '. (vi) Yes.**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1954—1956. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1816 lb./ac. (ii) 244.4 lb./ac. (iii) Main effect of N is highly significant and main effect of C is significant. (iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	Mean	$C_0$	$C_1$
$N_0$	1447	1550	1499	1421	1577
$N_1$	2016	2249	2133	1978	2287
Mean	1732	1900	1816	1700	1932
$C_0$	1689	1710			
$C_1$	1774	2090			

S.E. of any marginal mean = 61.1 lb./ac.

S.E. of body of any table = 86.4 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 56(71).****Site :- Reg. Res. Stn., Varanasi.****Type :- 'M'.**

Object :—To study the effect of N, P and Calcium applied singly and in combinations on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Light loam. (b) Refer soil analysis, Varanasi. (iii) 26.11.1956.  
 (iv) (a) 2 ploughings. (b) Seed drill. (c) 25 to 30 srs./ac. (d) and (e) N.A. (v) G.M. (vi) NP--760,  
 (vii) Irrigated. (viii) N.A. (ix) 2.94". (x) 25.4.1957.

**2. TREATMENTS and 3. DESIGN :**

Same as in expt. no. 55(128) above.

Manures applied on 25, 26.11.1956 and 24.1.1957.

**4. GENERAL :**

(i) Lodging in some plots. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1954—1955. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1767 lb./ac. (ii) 211.4 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	C <sub>0</sub>	C <sub>1</sub>
N <sub>0</sub>	1686	1742	1714	1695	1733
N <sub>1</sub>	1934	1705	1820	1710	1929
Mean	1810	1724	1767	1702	1831
C <sub>0</sub>	1777	1627			
C <sub>1</sub>	1842	1820			

S.E. of any marginal mean = 52.8 lb./ac.

S.E. of body of any table = 74.7 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 55(127).**

**Site :- Reg. Reg. Stn., Varanasi.**

**Type :- 'M'.**

Object :- To test the relative merits of A/C and A/S on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Varanasi. (iii) 6.11.1955. (iv) (a) 2 ploughings. (b) Line sowing. (c) 40 srs./ac. (d) and (e) N.A. (v) F.Y.M. applied on 19.10.1955. (vi) NP—52 (early). (vii) Irrigated. (viii) N.A. (ix) 0.71%. (x) 29.3.1956.

## 2. TREATMENTS :

3 sources of 24 lb./ac. of N : S<sub>0</sub>=Control (no N), S<sub>1</sub>=A/S and S<sub>2</sub>=A/C.

Manures applied broadcast on 6.11.1955.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 42' × 26'. (v) N.A. (v) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1955—contd. (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1213 lb./ac. (ii) 189.4 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	S <sub>0</sub>	S <sub>1</sub>	S <sub>2</sub>
Av. yield	875	1306	1457
	S.E./mean = 77.3 lb. ac.		

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 56(70).**

**Site :- Reg. Res. Stn., Varanasi.**

**Type :- 'M'.**

Object :- To test the relative merits of A/C and A/S on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Varanasi. (iii) 1.12.1956. (iv) (a) N.A. (b) Line sowing. (c) 40 srs./ac. (d) and (e) N.A. (v) Nil. (vi) NP—760. (vii) Irrigated. (viii) N.A. (ix) 2.94%. (x) 12.4.1957.

## 2. TREATMENTS :

Same as in expt. no. 55(127) on page 330.

Manures applied on 1.12.1957.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) 48'×30'. (b) 42'×26'. (v) 3'×2'. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1955—contd. (b) N.A. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1442 lb./ac. (ii) 113.3 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	S <sub>0</sub>	S <sub>1</sub>	S <sub>2</sub>
Av. yield	1027	1590	1708

S.E./mean = 46.3 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 55(185).**

**Site :- Reg. Res. Stn., Varanasi.**

**Type :- 'M'.**

Object :— To study the effect of N and different sources of P on the yield of Wheat.

## 1. BASAL CODITIONS :

(i) (a) Nil. (b) *Sanai* and *moong* for G.M. (c) Nil. (ii) (a) Loam. (b) Refer soil analysis, Varanasi. (i) 2.11.1955. (iv) (a) 3 ploughings. (b) Sown in lines by seed drill. (c) 50 srs./ac. (d) Rows 9" apart. (e) N.A. (v) G.M. by *moong* and *sanai*. (vi) NP—52 (medium). (vii) Irrigated. (viii) and (ix) N.A. (x) 21 to 23.3.1956.

## 2. TREATMENTS :

All combinations of (1) and (2) +2 extra treatments

(1) 2 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>1</sub>=30 and P<sub>2</sub>=60 lb./ac.

(2) 2 sources of P<sub>2</sub>O<sub>5</sub> : S<sub>1</sub>=Triple Super and S<sub>2</sub>=B.M.

Extra treatments : E<sub>0</sub>=Control and E<sub>1</sub>=30 lb./ac. of N as A/S. Triple Super and B.M. placed deep in bands on 1, 2.11.1955 and N applied as broadcast on 2.11.1955.

All treatment combinations P×S received a basal dose of 30 lb./ac. of N.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) and (b) 26'×42'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Fair. (ii) Slight damage by rats. (iii) Yield of grain and straw. (iv) (a) 1955—1956. (b) Yes. (c) Nil. (v) (a) and (b) Nil. (vi) There was very light shower and hailstorm in the 2nd week of March, but here was no damage to the crop. (vii) Nil.

## 5. RESULTS :

(i) 1424 lb./ac. (ii) 215.6 lb./ac. (iii) E effect and 'E vs. others' are highly significant. (iv) Av. yield of grain in lb./ac.

E<sub>0</sub> = 893 lb./ac. and E<sub>1</sub> = 1492 lb./ac.

	P <sub>1</sub>	P <sub>2</sub>	Mean
S <sub>1</sub>	1532	1609	1570
S <sub>2</sub>	1513	1507	1510
Mean	1522	1558	1540

S.E. of any marginal mean = 62.2 lb./ac.  
S.E. of body of table or E mean = 88.0 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P 56(171).****Site :- Reg. Res. Stn., Varanasi.****Type :- 'M'.**

Object :- To study the effect of N and different sources of P on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Jowar* for fodder. (c) 15 lb./ac. of N as A/S. (ii) (a) Loam. (b) Refer soil analysis, Varanasi. (iii) 20.11.1956. (iv) (a) 2 ploughings, 1 cross ploughing and 1 planking. (b) Sown by seed drill. (c) 45 srs./ac. (d) Rows 9" apart. (e) N.A. (v) Nil. (vi) NP-52 (medium). (vii) Irrigated. (viii) 1 weeding and hoeing. (ix) 2.42". (x) 30.3.1957.

**2. TREATMENTS :**

All combinations of (1) and (2) + 2 extra treatments

(1) 2 levels of  $P_2O_5$  :  $P_1=30$  and  $P_2=60$  lb./ac.(2) 2 sources of  $P_2O_5$  :  $S_1=$  Super and  $S_2=$  B.M.

Treatment combinations S x P received as basal dressing of 30 lb./ac. of N as A/S.

Extra treatments :  $E_0=$  Control and  $E_1=30$  lb./ac. of N as A/S/N. N broadcast on 19.11.1956. Super and B.M. applied 2½" below the seed in bands on 17.11.1956.**3. DESIGN :**

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) and (b) 26' x 42'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Attack by rats. (iii) Yield of grain and straw. (iv) (a) 1955-1956. (b) Yes. (c) Nil. (v) (a) and (b) Nil. (vi) The sowing was delayed by about one month due to late monsoons. Growth of crop and grain formation were hampered due to unfavourable weather conditions. (vii) Nil.

**5. RESULTS :**

(i) 482 lb./ac. (ii) 91.4 lb./ac. (iii) E effect and 'E vs. others' are highly significant. Main effect of S is significant. (iv) Av. yield of grain in lb./ac.

 $E_0 = 205$  lb./ac. and  $E_1 = 545$  lb./ac.

	$P_1$	$P_2$	Mean
$S_1$	612	553	583
$S_2$	533	441	487
Mean	573	497	535

S.E. of any marginal mean = 26.4 lb./ac.

S.E. of body of table or E mean = 37.3 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 56(69).****Site :- Reg. Res. Stn., Varanasi.****Type :- 'M'.**

Object :- To study the effect of P and different sources of N on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) G.M. crop. (c) N.A. (ii) (a) Light loam. (b) Refer soil analysis, Varanasi. (iii) 29.11.1956. (iv) (a) 5 ploughings. (b) Behind the plough in lines. (c) 50 srs./ac. (d) and (e) N.A. (v) N.A. (vi) NP-760. (vii) Irrigated. (viii) N.A. (ix) 2.94". (x) 24.4.1957.

## 2. TREATMENTS :

8 manurial treatments :  $T_0$ =Control,  $T_1$ =60 lb./ac. of N as F.Y.M.,  $T_2$ =60 lb./ac. of N as A/S,  $T_3$ =50 lb./ac. of  $P_2O_5$  as Super,  $T_4$ = $T_1+T_3$ ,  $T_5$ = $T_2+T_3$ ,  $T_6$ =30 lb./ac. of N as F.Y.M.+30 lb./ac. of N as A/S and  $T_7$ =30 lb./ac. of N as F.Y.M.+30 lb./ac. of N as A/S+25 lb./ac. of  $P_2O_5$  as Super.

Super applied by placement 3" to 4" deep in soil behind the plough a week before sowing. F.Y.M. applied 2 to 3 days before sowing. A/S applied in split application  $\frac{1}{2}$  at sowing and  $\frac{1}{2}$  at tillering.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 41'×28'. (b) 30'×25'. (v) 5½'×1½'. (vi) Yes.

## 4. GENERAL :

(i) Crop lodged. (ii) Attack of rats. (iii) Yield of grain and straw. (iv) (a) 1956—1957. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1654 lb./ac. (ii) 179.2 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$T_0$	$T_1$	$T_2$	$T_3$	$T_4$	$T_5$	$T_6$	$T_7$
Av. yield	1337	1525	1975	1267	1553	1794	1723	2057

S.E./mean = 89.6 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 57(94).**

**Site :- Reg. Res. Stn., Varanasi.**

**Type :- 'M'.**

Object :—To study the effect of P and different sources of N on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Moong*. (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Varanasi. (iii) 16.12.1957. (iv) (a) N.A. (b) Behind the plough. (c) 25 to 30 srs./ac. (d) Row to row 9". (e) N.A. (v) N.A. (vi) NP—760. (vii) Irrigated. (viii) N.A. (ix) 1.01". (x) 20.4.1958.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 sources of N at 50 lb./ac. :  $S_0$ =Control (no manure),  $S_1$ =F.Y.M.,  $S_2$ =A/S and  $S_3$ = $\frac{1}{2}$  dasose F.Y.M.+ $\frac{1}{2}$  dose as A/S.

(2) 2 levels of  $P_2O_5$  as Super :  $P_0$ =0 and  $P_1$ =40 lb./ac.

Super applied by placement 3" to 4" deep in soil behind the plough before sowing. F.Y.M. applied 2 to 3 weeks before sowing. A/S applied in split application  $\frac{1}{2}$  at sowing and  $\frac{1}{2}$  at tillering 3 weeks after germination.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 38'×21'. (b) 35'×18'. (v) 1½'×1½'. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1956—1957. (b) No. (c) Nil. (v) to (vii) Nil.

## RESULTS :

(i) 944 lb./ac. (ii) 161.0 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	$S_0$	$S_1$	$S_2$	$S_3$	Mean
$P_0$	856	916	864	804	860
$P_1$	1020	994	1003	1098	1029
Mean	938	955	934	951	944

S.E. of P marginal mean	=	40.2 lb./ac.
S.E. of S marginal mean	=	56.9 lb./ac.
S.E. of body of table	=	80.5 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 57(252).**

**Site :- Reg. Res. Stn., Varanasi.**

**Type :- 'M'.**

Object :- To study the effect of different levels of P on Wheat

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Dhaincha*. (c) Nil. (ii) (a) Loam. (b) Refer soil analysis, Varanasi. (iii) 21.12.57. (iv) (a) Application of roller for levelling, 1 *palewa*, 2 ploughings by *dest* plough and 1 harrowing. (b) Sown behind the plough. (c) 40 srs./ac. (d) Rows 9" apart. (e) N.A. (v) *Dhaincha* G.M. + 25 lb./ac. of N as A/S. (vi) NP-760 (medium). (vii) Irrigated. (viii) N.A. (ix) 1.28%. (x) 18.4.1958.

**2. TREATMENTS :**

5 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=30$ ,  $P_2=60$ ,  $P_3=90$  and  $P_4=120$  lb./ac.  
 $P_2O_5$  applied on 21.12.1957.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) and (b) 27' x 42'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Poor stand. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) and (b) No. (c) Nil. (v) (a) Tissuhi and Faizabad. (b) N.A. (vi) Nil. (vii) The crop was sown very late due to the failure of tube well of the farm.

**5. RESULTS :**

(i) 591 lb./ac. (ii) 62.9 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$P_0$	$P_1$	$P_2$	$P_3$	$P_4$
Av. yield	568	615	575	620	576

S.E./mean = 31.4 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 58(202).**

**Site :- Reg. Res. Stn., Varanasi.**

**Type :- 'M'.**

Object :- To study the residual effect of different levels of P applied to Wheat crop during Rabi, 1957.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Paddy. (c) 25 lb./ac. of N as A/S. (ii) (a) Loam. (b) Refer soil analysis, Varanasi. (iii) 20.11.1958. (iv) (a) 1 ploughing by watt plough, 2 ploughings by *dest* plough and 1 harrowing by spring harrow. (b) Seed drill. (c) 40 srs./ac. (d) Rows 9" apart. (e) N.A. (v) 25 lb./ac. of N as A/S. (vi) NP-760 (medium). (vii) Irrigated. (viii) N.A. (ix) 4.73%. (x) 14.4.1959.

**2. TREATMENTS :**

5 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=30$ ,  $P_2=60$ ,  $P_3=90$  and  $P_4=120$  lb./ac.  
 Treatments were applied to wheat crop during *rabi*, 1957. After that residual effect was tested on paddy crop during *kharrif*, 1958. The present wheat crop is the 2nd crop on which residual effect is being tested.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) and (b) 27' x 42'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) and (b) No. (c) Nil. (v) (a) Tissuhi and Faizabad. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 810 lb./ac. (ii) 108.4 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	P <sub>4</sub>
Av. yield	843	749	764	823	873

S.E./mean = 54.2 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 58(85).**

**Site :- Reg. Res. Stn., Varanasi.**

**Type :- 'M'.**

Object :—To study the effect of N and P on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Varanasi. (iii) 9.11.1958. (iv) (a) Tractor harrowing on 6.11.1958. (b) Line sowing behind the plough. (c) 40 srs./ac. (d) and (e) N.A. (v) Nil. (vi) NP—710 (medium). (vii) Irrigated. (viii) 1 weeding. (ix) 2.89". (x) 7.4.1959.

## 2. TREATMENTS :

10 manurial treatments : M<sub>0</sub>=Control, M<sub>1</sub>=25 lb./ac. of N as A/S, M<sub>2</sub>=50 lb./ac. of N as A/S, M<sub>3</sub>=25 lb./ac. of N as F.Y.M., M<sub>4</sub>=50 lb./ac. of N as F.Y.M., M<sub>5</sub>=40 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super., M<sub>6</sub>=M<sub>2</sub>+M<sub>5</sub>, M<sub>7</sub>=M<sub>4</sub>+M<sub>5</sub>, M<sub>8</sub>=M<sub>1</sub>+M<sub>3</sub> and M<sub>9</sub>=M<sub>1</sub>+M<sub>3</sub>+M<sub>5</sub>. A/S and F.Y.M. applied broadcast. Super applied behind the plough through seed drill placed 6" deep.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 40'×15'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1958—contd. (b) N.A. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1552 lb./ac. (ii) 87.4 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	M <sub>0</sub>	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	M <sub>4</sub>	M <sub>5</sub>	M <sub>6</sub>	M <sub>7</sub>	M <sub>8</sub>	M <sub>9</sub>
Av. yield	1289	1506	1697	1461	1561	1497	1779	1588	1520	1620

S.E./mean = 43.7 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 59(89).**

**Site :- Reg. Res. Stn., Varanasi.**

**Type :- 'M'.**

Object :—To study the effect of N and P on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Lobia*. (c) Nil. (ii) (a) Clayey loam. (b) Refer soil analysis, Varanasi. (iii) 4.11.1959. (iv) (a) Tractor harrowing. (b) Sown behind the plough. (c) 40 srs./ac. (d) Rows 9" apart. (e) N.A. (v) Nil. (vi) NP—710 (medium). (vii) Irrigated. (viii) Weeding. (ix) N.A. (x) 29.4.1960.

## 2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 58(85) above.

Super applied on 31.10.1959.



## 5. RESULTS :

(i) 876 lb./ac. (ii) 170.7 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	M <sub>0</sub>	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	M <sub>4</sub>	M <sub>5</sub>	M <sub>6</sub>	M <sub>7</sub>	M <sub>8</sub>	M <sub>9</sub>
Av. yield	621	1055	1288	630	784	789	1115	681	896	905

S.E./mean = 85.4 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 54(207).**

**Site :- Reg. Res. Stn., Varanasi.**

**Type :- 'M'.**

**Object :-** To study the effect of N and different sources of P on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Guar* for fodder. (c) Nil. (ii) (a) Loam. (b) Refer soil analysis, Varanasi. (iii) 2.11.1954. (iv) (a) 3 ploughings and 3 plankings. (b) By seed drill. (c) 40 srs./ac. (d) Rows 9" apart. (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) 1.40". (x) 4.4.1955.

## 2. TREATMENTS :

**Main-plot treatments :**

2 levels of N as A/S: N<sub>0</sub>=0 and N<sub>1</sub>=30 lb./ac.

**Sub-plot treatments :**

5 phosphatic treatments: P<sub>0</sub>=Control, P<sub>1</sub>=60 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super, P<sub>1'</sub>=60 lb./ac. of P<sub>2</sub>O<sub>5</sub> as B.M. P<sub>2</sub>=120 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super and P<sub>2'</sub>=120 lb./ac. of P<sub>2</sub>O<sub>5</sub> as B.M.

Super and B.M. placed deep in furrows behind the plough on 31.10.1954 and 1.11.1954. N broadcast on 5.11.1954.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication; 5 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) and (b) 23' x 47½'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Germination was uniform. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1953-1954. (b) Yes. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 771 lb./ac. (ii) (a) 174.1 lb./ac. (b) 101.9 lb./ac. (iii) Main-effect N is highly significant and effect of sources of P is significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>1'</sub>	P <sub>2</sub>	P <sub>2'</sub>	Mean
N <sub>0</sub>	526	539	545	542	571	545
N <sub>1</sub>	1008	924	1022	923	1109	997
Mean	767	732	784	733	840	771

S.E. of difference of two

1. N marginal means	= 55.1 lb./ac.
2. P marginal means	= 51.0 lb./ac.
3. P means at the same level of N	= 72.1 lb./ac.
4. N means at the same level of P	= 84.8 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 56(82).**

**Site :- Reg. Res. Stn., Varanasi.**

**Type :- 'M'.**

**Object :-** To study the effect of P and different sources of N on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Dhaincha*. (c) Nil. (ii) (a) Loam. (b) Refer soil analysis, Varanasi. (iii) 30.11.1956. (iv) (a) 2 ploughings. (b) Line sowing. (c) 40 srs./ac. (d) and (e) N.A. (v) *Dhaincha* G.M. (vi) T-52 (early). (vii) and (viii) N.A. (ix) 2.94". (x) 10.4.1957.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 levels of  $P_2O_5$  as Super :  $P_0=0$  and  $P_1=25$  lb./ac.

(2) 4 sources of N at 36 lb./ac. :  $S_0$ =Control (No N),  $S_1=A/S$ ,  $S_2=A/S/N$  and  $S_3=Urea$ .

N applied on 30.11.1956 by broadcast,  $P_2O_5$  ploughed in on 25.11.1956.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b)  $182' \times 42'$ . (iii) 4. (iv) (a)  $34' \times 20'$ . (b)  $30' \times 18'$ . (v)  $2' \times 1'$ . (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1956—N.A. (b) N.A. (c) Nil. (v) to (vii) N.A.

## 5. RESULTS :

(i) 1356 lb./ac. (ii) 156.8 lb./ac. (iii) Main effect of N alone is highly significant. (iv) Av. yield of grain in lb./ac.

	$S_0$	$S_1$	$S_2$	$S_3$	Mean
$P_0$	1013	1592	1470	1486	1390
$P_1$	892	1615	1415	1367	1322
Mean	952	1604	1442	1426	1356

S.E. of P marginal mean = 39.2 lb./ac.

S.E. of S marginal mean = 55.4 lb./ac.

S.E. of body of table = 78.4 lb./ac.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 57(117).**

**Site :- Reg. Res. Stn., Varanasi.**

**Type :- 'M'.**

Object :— To study the effect of Super and compost on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Clayey loam. (b) Refer soil analysis, Varanasi. (iii) 14.12.1957. (iv) (a) N.A. (b) Line sowing. (c) 40 srs./ac. (d) and (e) N.A. (v) Nil. (vi) NP-760. (vii) Irrigated. (viii) N.A. (ix) 1.01". (x) 21.4.1958.

## 2. TREATMENTS :

All combinations of (1) and (2)+3 extra treatments

(1) 2 levels of compost :  $C_0=0$  and  $C_1=100$  mds./ac.

(2) 4 levels of Super :  $P_0=0$ ,  $P_1=2.5$ ,  $P_2=5.0$  and  $P_3=7.5$  cwt./ac.

Extra treatments : 3 levels of Super added to 100 mds./ac. of compost and then composted :  $E_1=2.5$ ,  $E_2=5.0$  and  $E_3=7.5$  cwt./ac.

Compost applied by broadcast and Super placed deep in furrows below the seed.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 11. (b) N.A. (iii) 4. (iv) (a)  $40' \times 18'$ . (b)  $37' \times 15'$ . (v)  $1\frac{1}{2}' \times 1\frac{1}{2}'$ . (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1957—N.A. (b) N.A. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1016 lb./ac. (ii) 214.8 lb./ac. (iii) Main effect of C alone is highly significant. (iv) Av. yield of grain in lb./ac.

$E_1 = 1040$  lb./ac,  $E_2 = 1079$  lb./ac. and  $E_3 = 1138$  lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	Mean
C <sub>0</sub>	814	942	903	804	866
C <sub>1</sub>	1109	1226	981	1138	1114
Mean	962	1084	942	971	990

S.E. of C marginal mean = 53.7 lb./ac.  
 S.E. of P marginal mean = 75.9 lb./ac.  
 S.E. of body of table or E mean = 107.4 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 57(390).**

**Site :- Reg. Res. Stn., Varanasi.**

**Type :- 'M'.**

**Object :-** To study the effect of N, P and K applied alone and in combinations on the yield of Wheat.

#### 1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Varanasi. (iii) 20.12.1957. (iv) (a) 1 *palewa*, 2 ploughings by *desi* plough and 1 ploughing by harrow. (b) Sown by seed drill. (c) 40 srs./ac. (d) Rows 9' apart. (e) N.A. (v) Nil. (vi) NP-718 (medium). (vii) Irrigated. (viii) N.A. (ix) 1.C1". (x) 20.4.1958.

#### 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 2 levels of N as A/S : N<sub>0</sub>=0 and N<sub>1</sub>=30 lb./ac.

(2) 2 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0 and P<sub>1</sub>=40 lb./ac.

(3) 2 levels of K<sub>2</sub>O as Mur. Pot. : K<sub>0</sub>=0 and K<sub>1</sub>=60 lb./ac.

A/S broadcast on 20.12.1957. Super and Mur. Pot. placed deep in bands on 20.12.1957.

#### 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) and (b) 25' × 41'. (v) Nil. (vi) Yes.

#### 4. GENERAL :

(i) Poor. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) and (b) No. (c) Nil. (v) (a) Tissuhi and Faizabad. (b) N.A. (vi) Nil. (vii) The crop was sown very late due to the failure of tubewell of the farm.

#### 5. RESULTS :

(i) 724 lb./ac. (ii) 69.0 lb./ac. (iii) Main effects of N and K are highly significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	K <sub>0</sub>	K <sub>1</sub>
N <sub>0</sub>	666	661	664	638	690
N <sub>1</sub>	773	794	784	738	829
Mean	720	728	724	688	759
K <sub>0</sub>	702	674			
K <sub>1</sub>	737	781			

S.E. of any marginal mean = 17.3 lb./ac.  
 S.E. of body of any table = 24.4 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 57(426).****Site :- Reg. Res. Stn., Varanasi.****Type :- 'M'.**

Object :— To study the effect of different methods of application of hormones on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) *Dhaincha*—Wheat—Fallow—Wheat. (b) Fallow. (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Varanasi. (iii) 7.12.1957. (iv) (a) 1 ploughing. (b) Behind the plough in lines. (c) 25 to 30 srs./ac. (d) Row to row 9". (e) N.A. (v) 100 mds./ac. of F.Y.M. (vi) NP—760. (vii) Irrigated. (viii) and (ix) N.A. (x) 14.4.1958.

**2. TREATMENTS :****Main-plot treatments :**

2 applications of nutrient :  $M_1$  = Soaking of seeds for 12 hours and  $M_2$  = Foliar spray once at tillering and another at pre-flowering.

**Sub-plot treatments :**

6 elements :  $E_0$  = Control (water spray),  $E_1$  = 2, 4-D acid at 20 ppm. 0.002% solution,  $E_2$  = Urea 0.2% N solution,  $E_3$  = A/S 0.2% solution,  $E_4$  = Sucrose 5.0% solution and  $E_5$  =  $KH_2PO_4$  0.5% solution.

Spray on 5.2.1958 and 10.3.1958.

**3. DESIGN :**

(i) Split-plot. (ii) 2 main-plots/replication and 6 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 42' × 25'. (b) 39' × 22'. (v) 1½' × 1½'. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Attack of orange and black rust on leaves and stem respectively. (iii) Yield of grain and straw. (iv) (a) and (b) No. (c) Nil. (v) to (vii) N.A.

**5. RESULTS :**

(i) 1176 lb./ac. (ii) (a) 170.2 lb./ac. (b) 110.3 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	$E_0$	$E_1$	$E_2$	$E_3$	$E_4$	$E_5$	Mean
$M_1$	1142	1202	1108	1252	1142	1235	1180
$M_2$	1142	1218	1278	1188	1151	1058	1172
Mean	1142	1210	1193	1220	1146	1146	1176

**S.E. of difference of two**

- |                                   |                |
|-----------------------------------|----------------|
| 1. M marginal means               | = 56.7 lb./ac. |
| 2. E marginal means               | = 63.7 lb./ac. |
| 3. E means at the same level of M | = 90.1 lb./ac. |
| 4. M means at the same level of E | = 99.9 lb./ac. |

**Crop :- Wheat (Rabi).****Ref :- U.P. 57(424).****Site :- Reg. Res. Stn., Varanasi.****Type :- 'M'.**

Object :— To study the effect of P and different methods of application of N on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Varanasi. (iii) 16.12.1957. (iv) (a) N.A. (b) Behind the plough. (c) 30 srs./ac. (d) Row to row 9". (e) N.A. (v) Nil. (vi) NP—760. (vii) to (ix) N.A. (x) 22.4.1958.

**2. TREATMENTS :****Main-plot treatments :**

All combinations of (1) and (2)+control (3 plots)

(1) 3 sources of N at 36 lb./ac. :  $S_1=A/S$ ,  $S_2=Urea$  and  $S_3=A/S/N$ .

(2) 3 methods of application of N:  $M_1=Basal$  dressing,  $M_2=Top$  dressing and  $M_3=Basal$  and top dressing.

**Sub-plot treatments :**

2 levels of  $P_2O_5$  as Super :  $P_0=0$  and  $P_1=18$  lb./ac.

N broadcast on 15.12.1957 and 15.2.1958. Super applied behind the plough in furrows on 15.12.1957.

**3. DESIGN :**

(i) Split-plot. (ii) (a) 12 main-plots/replication ; 2 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a)  $40' \times 15'$ . (b)  $38' \times 13.5'$ . (v)  $1' \times 9'$ . (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1957—contd. (b) N.A. (c) Nil. (v) to (vii) N.A.

**5. RESULTS :**

(i) 614 lb./ac. (ii) (a) 95.1 lb./ac. (b) 90.4 lb./ac. (iii) Main effect of M is highly significant and 'control vs. M S' is significant. (iv) Av. yield of grain in lb./ac.

$$M_0S_0P_0 = 552 \text{ lb./ac. and } M_0S_0P_1 = 566 \text{ lb./ac.}$$

	$M_1$	$M_2$	$M_3$	Mean	$P_0$	$P_1$
$S_1$	711	541	690	647	658	637
$S_2$	722	488	616	609	594	623
$S_3$	743	488	700	644	637	651
Mean	725	506	669	633	630	637
$P_0$	736	502	651			
$P_1$	715	509	686			

**S.E. of difference of two**

1. S or M marginal means	= 38.8 lb./ac.
2. P marginal means	= 30.1 lb./ac.
3. P means at the same level of S or M	= 52.2 lb./ac.
4. S or M means at the same level of P	= 53.6 lb./ac.
S.E. of body of $S \times M$ table	= 47.6 lb./ac.
S.E. of $M_0S_0P$ mean	= 38.8 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 58(136).**

**Site :- Reg. Res. Stn., Varanasi.**

**Type :- 'M'.**

**Object :-** To study the effect of P and different methods of application of N on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Varanasi. (iii) 10.11.1958. (iv) (a) N.A. (b) Sown behind the plough. (c) 30 srs./ac. (d) Row to row 9". (e) N.A. (v) Nil. (vi) NP-760. (vii) Irrigated. (viii) Tractor harrowing and weeding. (ix) 2.89". (x) 6.4.1959.

**2. TREATMENTS to 4. GENERAL :**

Same as in expt. no. 57(424) on page 339.

N broadcast on 10.11.1958 and 5.1.1959. Super applied behind the plough in furrows on 10.11.1958.

## 5. RESULTS :

(i) 1640 lb./ac. (ii) (a) 248.8 lb./ac. (b) 205.5 lb./ac. (iii) 'Control vs. SM' is highly significant and main effect of P is significant. (iv) Av. yield of grain in lb./ac.

$$S_0M_0P_0 = 1139 \text{ lb./ac. and } S_0M_0P_1 = 1118 \text{ lb./ac.}$$

	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>
S <sub>1</sub>	1773	1751	2059	1861	1734	1988
S <sub>2</sub>	1836	1773	1857	1822	1776	1868
S <sub>3</sub>	1783	1592	1868	1748	1599	1896
Mean	1797	1705	1928	1810	1703	1917
P <sub>0</sub>	1783	1571	1755			
P <sub>1</sub>	1811	1839	2102			

S.E. of difference of two

1. S or M marginal mean	=	101.6 lb./ac.
2. P marginal mean	=	68.5 lb./ac.
3. P means at the same level of S or M	=	118.6 lb./ac.
4. S or M means at the same level of P	=	131.7 lb./ac.
S.E. of S <sub>0</sub> M <sub>0</sub> P mean	=	83.9 lb./ac.
S.E. of body of S×M table	=	124.4 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 59(125).**

**Site :- Reg. Res. Stn., Varanasi.**

**Type :- 'M'.**

**Object :-**To study the effect of N and different sources of P on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Varanasi. (iii) 4.11.1959. (iv) (a) N.A. (b) Line sowing behind the plough. (c) 40 srs./ac. (d) Row to row 9". (e) N.A. (v) 50 mds./ac. of F.Y.M. in the last week of October, 1959. (vi) NP-710 (medium). (vii) to (ix) N.A. (x) 25.4.1960.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 levels of N : N<sub>0</sub>=0 (No N), N<sub>1</sub>=25 lb./ac. of N as A/S+25 lb./ac. of N as Urea.

(2) 6 sources of P<sub>2</sub>O<sub>5</sub> at 25 lb./ac. : S<sub>0</sub>=0 (No P<sub>2</sub>O<sub>5</sub>), S<sub>1</sub>=Super, S<sub>2</sub>=B.M. (raw), S<sub>3</sub>=B.M. (steamed), S<sub>4</sub>=½ dose as Super+½ dose as B.M. (raw) and S<sub>5</sub>=½ dose as Super+½ dose as B.M. (steamed)

A/S broadcast on 25.11.1959 and urea broadcast on 20.1.1960. Super placed behind the plough through seed drill 6" deep on 3.11.1959. B.M. (raw and steamed) broadcast on 3.11.1959.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 27'×27'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1959—N.A. (b) N.A. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 2253 lb./ac. (ii) 268.1 lb./ac. (iii) Main effect of N alone is significant. (iv) Av. yield of grain in lb./ac.

	S <sub>0</sub>	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>	S <sub>5</sub>	Mean
N <sub>0</sub>	2243	1928	2266	1967	2151	2274	2138
N <sub>1</sub>	2416	2389	2289	2443	2305	2366	2368
Mean	2330	2158	2278	2205	2228	2320	2253
	S.E. of N marginal mean = 54.7 lb./ac.						
	S.E. of S marginal mean = 94.8 lb./ac.						
	S.E. of body of table = 134.0 lb./ac.						

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 59(95).**

**Site :- Reg. Res. Stn., Varanasi.**

**Type :- 'M'.**

**Object :-** To study the efficiency of departmental mixture against A/S and Super on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Varanasi. (iii) 5.11.1959. (iv) (a) N.A. (b) Sown behind the plough in lines. (c) 40 srs./ac. (d) and (e) N.A. (v) Nil. (vi) NP-710 (medium). (vii) to (ix) N.A. (x) 2.5.1960.

**2. TREATMENTS :**

2 manurial treatments: M<sub>1</sub> = Departmental mixture no. 1 containing 16.75% N and 9% P<sub>2</sub>O<sub>5</sub> and M<sub>2</sub> = 48 lb./ac. of N as A/S + 27 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.

Departmental mixture broadcast on 31.10.1959. Super placed behind the plough through a seed drill about 6" deep on 31.10.1959. A/S broadcast ½ dose on 25.12.1959 and ½ dose on 29.12.1959.

**3. DESIGN :**

(i) Paired plot. (ii) (a) 2. (b) N.A. (iii) 12. (iv) (a) N.A. (b) 40' x 8'. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1959 - contd. (b) N.A. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1046 lb./ac. (ii) 189.2 lb./ac. (iii) Treatment difference is highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	M <sub>1</sub>	M <sub>2</sub>
Av. yield	872	1219

S.E./mean = 54.6 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 57(248).**

**Site :- Udai Pratap College Farm, Varanasi.**

**Type :- 'M'.**

**Object :-** To study the effect of N and P applied alone and in combinations on the yield of Wheat crop.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Varanasi. (iii) 9 and 10.11.1957 (iv) (a) 1 palewa and 4 ploughings by desi plough. (b) Behind the plough. (c) 45 srs./ac. (d) Rows 9' apart. (e) N.A. (v) Nil. (vi) NP-760 (medium). (vii) Irrigated. (viii) and (ix) N.A. (x) 26 and 27.3.1985.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N as A/S :  $N_0=0$ ,  $N_1=25$   $N_2=50$  lb./ac.

(2) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=30$  and  $P_2=60$  lb./ac.

N broadcast on 8.11.1957. and  $P_2O_5$  placed  $2\frac{1}{2}$ " below the seed in bands on 7.11.1957.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) and (b)  $44' \times 25'$ . (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Crop stand good and lodging in heavy manured plots. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1931 lb./ac. (ii) 204.0 lb./ac. (iii) Main effect of N alone is highly significant. (iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	$P_2$	Mean
$N_0$	1788	1613	1787	1729
$N_1$	2016	1987	2037	2013
$N_2$	2066	2218	1868	2051
Mean	1957	1939	1897	1931

S.E. of any marginal mean = 58.9 lb./ac.

S.E. of body of table = 102.0 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 57(MAE).**

**Site :- B.R. College Insttl. Res. Farm, Bichpuri.**

**Type :- 'M'.**

Object :—Type II—To study the effect of N, P, K and F.Y.M. on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Fallow—Wheat. (b) Fallow. (c) Nil. (ii) (a) Sandy soil. (b) Refer soil analysis, Bichpuri. (iii) 1st and 2nd week of Nov., 1957. (iv) (a) 3 ploughings. (b) N.A. (c) 60 lb./ac. (d)  $12''$  between rows. (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix)  $0.63''$ . (x) Last week of April, 1958.

## 2. TREATMENTS :

All combinations of (1), (2), (3) and (4)

(1) 3 levels of N as A/S :  $N_0=0$ ,  $N_1=20$  and  $N_2=40$  lb./ac.

(2) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=20$  and  $P_2=40$  lb./ac.

(3) 3 levels of  $K_2O$  as Pot. Sul. :  $K_0=0$ ,  $K_1=20$  and  $K_2=40$  lb./ac.

(4) 2 levels of F.Y.M. :  $F_0=0$  and  $F_1=5000$  lb./ac.

## 3. DESIGN :

(i)  $3^3 \times 2$  fact. confd. (ii) (a) 9 plots/block ; 6 blocks/replication. (b) N.A. (iii) 1. (iv) (a)  $45.5' \times 24'$ . (b)  $42.5' \times 21'$ . (v)  $1.5' \times 1.5'$ . (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1957—contd. (b) No. (c) N.A. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1503 lb./ac. (ii) 212.6 lb./ac. (iii) Main effect of N is highly significant. Main effect of P and interactions  $N \times P$ ,  $N \times K$  and  $F \times N$  are significant. (iv) Av. yield of grain in lb./ac.



	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	K <sub>0</sub>	K <sub>1</sub>	K <sub>2</sub>	Mean
F <sub>0</sub>	1148	1373	1396	1233	1346	1339	1308	1348	1261	1306
F <sub>1</sub>	1287	1819	1998	1578	1665	1860	1594	1771	1739	1701
Mean	1217	1596	1697	1405	1506	1599	1451	1559	1500	1503
K <sub>0</sub>	1224	1646	1482	1368	1429	1556				
K <sub>1</sub>	1234	1493	1950	1562	1539	1577				
K <sub>2</sub>	1194	1648	1659	1286	1549	1665				
P <sub>0</sub>	1070	1414	1731							
P <sub>1</sub>	1131	1808	1578							
P <sub>2</sub>	1451	1565	1782							

S.E. of N, P or K marginal mean = 50.1 lb./ac.  
 S.E. of F marginal mean = 40.9 lb./ac.  
 S.E. of body of N×P, N×K or P×K table = 86.8 lb./ac.  
 S.E. of body of N×F, P×F or K×F table = 70.9 lb./ac.

**Crop :-** Wheat (*Rabi*).

**Ref :-** U.P. 58(MAE).

**Site :-** B.R. College Insttl. Res. Farm, Bichpuri.

**Type :-** 'M'.

**Object :-** Type II--To study the effect of N, P, K and F.Y.M on Wheat.

#### 1. BASAL CONDITIONS :

(i) (a) Fallow--Wheat. (b) Fallow. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Bichpuri. (iii) 4th week of Oct. and 1st week of Nov., 1958. (iv) (a) 3 ploughings. (b) N.A. (c) 60 lb./ac. (d) 9" between rows. (e) N.A. (v) Nil. (vi) Pb.--591 (150 days). (vii) Irrigated. (viii) 1 weeding. (ix) 2". (x) 1st and 2nd week of April, 1959.

#### 2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 57(MAE) type II on page 343.

#### 5. RESULTS :

(i) 1257 lb./ac. (ii) 142.8 lb./ac. (iii) Main effect of N alone is highly significant. (iv) Av. yield of grain in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	K <sub>0</sub>	K <sub>1</sub>	K <sub>2</sub>	Mean
F <sub>0</sub>	856	1193	1547	1168	1170	1259	1226	1160	1211	1199
F <sub>1</sub>	916	1369	1661	1274	1376	1296	1418	1308	1219	1315
Mean	886	1281	1604	1221	1273	1278	1322	1234	1215	1257
K <sub>0</sub>	922	1374	1670	1243	1317	1406				
K <sub>1</sub>	930	1259	1514	1193	1325	1185				
K <sub>2</sub>	806	1210	1628	1227	1177	1242				
P <sub>0</sub>	889	1251	1522							
P <sub>1</sub>	864	1300	1654							
P <sub>2</sub>	905	1292	1637							

S.E. of N, P or K marginal mean	= 33.7 lb./ac.
S E. of F marginal mean	= 27.5 lb./ac.
S.E. of body of N×P, N×K or P×K table	= 58.3 lb./ac.
S.E. of body of N×F, P×F or K×F table	= 47.6 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 59(MAE).**

**Site :- B.R. College Insttl. Res. Farm, Bichpuri.**

**Type :- 'M'.**

Object :—Type II—To study the effect of N, P, K and F.Y.M. on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Fallow—Wheat. (b) Fallow. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, B chpuri. (iii) 2nd and 3rd week of Nov., 1959. (iv) (a) 3 ploughings. (b) N.A. (c) 70 lb./ac. (d) 9" between rows. (e) N.A. (v) Nil. (vi) Pb.—591 (135 days). (vii) Irrigated. (viii) 1 weeding. (ix) 1". (x) 3rd week of April, 1960.

**2. TREATMENTS and 3. DESIGN :**

Same as in expt. no. 57(MAE) type II on page 343.

**4. GENERAL :**

(i) Satisfactory. (ii) Smut disease-controlled. (iii) Grain yield. (iv) (a) 1957—contd. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1493 lb./ac. (ii) 227.2 lb./ac. (iii) Main effect of N alone is highly significant. (iv) Av. yield of grain in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	K <sub>0</sub>	K <sub>1</sub>	K <sub>2</sub>	Mean
F <sub>0</sub>	1432	1473	1646	1456	1522	1573	1514	1555	1482	1517
F <sub>1</sub>	1218	1495	1694	1544	1522	1341	1464	1529	1414	1469
Mean	1325	1484	1670	1500	1522	1457	1489	1542	1448	1493
K <sub>0</sub>	1243	1481	1744	1613	1432	1422				
K <sub>1</sub>	1432	1440	1753	1531	1596	1499				
K <sub>2</sub>	1300	1531	1513	1356	1538	1450				
P <sub>0</sub>	1424	1440	1637							
P <sub>1</sub>	1267	1514	1786							
P <sub>2</sub>	1284	1498	1588							

S.E. of N, P or K marginal mean	= 53.6 lb./ac.
S.E. of F marginal mean	= 43.7 lb./ac.
S.E. of body of N×P, N×K or P×K table	= 92.8 lb./ac.
S.E. of body of N×F, P×F or K×F table	= 75.7 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 57(MAE).**

**Site :- B.R. College Insttl. Res. Farm, Bichpuri.**

**Type :- 'M'.**

Object :—Type III—To study the effect of continuous application of manures on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Maize—Pea—Moong—Wheat. (b) Moong. (c) As per treatments. (ii) (a) Sandy soil. (b) Refer soil analysis, Bichpuri. (iii) 1st and 2nd week of Nov., 1957. (iv) (a) 3 ploughings. (b) N.A. (c) 50 lb./ac. (d) 12" between rows. (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) 0.63". (x) Last week of April, 1958.

## 2. TREATMENTS :

Treatment	1	2	3	4	5	6	7	8
1st crop	M	M	M	M	0	0	0	0
2nd crop	M	M	0	0	M	M	0	0
3rd crop	M	0	M	0	M	0	M	0

Notations : 0 = Control and M = 30 lb./ac. of N as A/S + 30 lb./ac. of  $P_2O_5$  as Super.

## 3. DESIGN :

(i) R B D. (ii) (a) 8. (b) N.A. (iii) 2. (iv) (a) 32' × 18'. (b) 29' × 15'. (v) 1.5' × 1.5'. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1957—contd (1st year) (b) Yes. (c) N.A. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1199 lb./ac. (ii) 214.4 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	MM	M0	0M	00
Av. yield	1333	1498	971	996

S.E./mean = 197.2 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 58(MAE).**

**Site :- B.R. College Insttl. Res. Farm, Bichpuri. Type :- 'M'.**

**Object :-** Type III—To study the effect of continuous application of manures on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Maize—Pea—Moong—Wheat. (b) Moong. (c) As per treatments. (ii) (a) Sandy loam. (b) Refer soil analysis, Bichpuri. (iii) 4th week of Oct. and 1st week of Nov. 1958. (iv) (a) 3 ploughings. (b) N.A. (c) 60 lb./ac. (d) 9" between rows. (e) N.A. (v) Nil. (vi) Ph. 591 (150 days). (vii) Irrigated. (viii) 1 weeding. (ix) 2". (x) 1st and 2nd week of April, 1959.

## 2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 57(MAE) type III on page 345.

## 5. RESULTS :

(i) 1165 lb./ac. (ii) 76.0 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3	4	5	6	7	8
Av. yield	1488	1368	896	866	1537	1432	831	902

S.E./mean = 53.7 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 59(MAE).**

**Site :- B.R. College Insttl. Res. Farm, Bichpuri. Type :- 'M'.**

**Object :-** Type III—To study the effect of continuous application of manures on Wheat.

## 1. BASAL CONDITIONS:

(i) (a) Maize—Pea—*Moong*—Wheat. (b) *Moong*. (c) As per treatments. (ii) (a) Sandy loam. (b) Refer soil analysis, Bichpuri. (iii) 2nd and 3rd week of Nov. 1959. (iv) (a) 3 ploughings. (b) N.A. (c) 70 lb./ac. (d) 9" between rows. (e) N.A. (v) Nil. (vi) Pb.—591 (135 days). (vii) Irrigated. (viii) 1 weeding. (ix) 1". (x) 3rd week of April 1960.

## 2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 57(M.A.E.) type III on page 345.

## 4. GENERAL :

(i) Satisfactory. (ii) Smut disease controlled. (iii) Grain yield. (iv) (a) 1957—contd. (b) Yes. (c) N.A. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1786 lb./ac. (ii) 174.2 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2	3	4	5	6	7	8
Av. yield	2353	1514	1876	1950	1531	1728	1555	1777

S.E./mean = 123.2 lb./ac.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 57(MAE).**

**Site :- B.R. College Insttl. Res. Farm, Bichpuri.**

**Type :- 'M'.**

Object :—Type IV—To study the effect of direct and indirect manuring of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Legume—Wheat. (b) and (c) As per treatments. (ii) (a) Sandy soil. (b) Refer soil analysis, Bichpuri. (iii) 1st and 2nd week of Nov., 1957. (iv) (a) 3 ploughings. (b) N.A. (c) 60 lb./ac. (d) 1.5" between rows. (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) 0.63". (x) Last week of April 1958.

## 2. TREATMENTS :

**Main-plot treatments :**

All combinations of (1) and (2)+a fallow plot ( $L_0P_0$ )

(1) 2 previous legume crops :  $L_1=Moong$  and  $L_2=Urd$ .

(2) 3 levels of  $P_2O_5$  applied to legumes :  $P_0=0$ ,  $P_1=40$  and  $P_2=80$  lb./ac.

**Sub-plot treatments :**

3 levels of N applied to wheat :  $N_0=0$ ,  $N_1=15$  and  $N_2=30$  lb./ac.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 7 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 3. (iv)  $32' \times 18'$ . (v)  $29' \times 15'$ . (vi)  $1.5' \times 1.5'$ . (vii) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1957—contd. (b) Yes. (c) N.A. (v) (a) Varanasi and Pura. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1735 lb./ac. (ii) (a) 357.9 lb./ac. (b) 219.4 lb./ac. (iii) "Control vs. others" and main effect of N are highly significant. (iv) Av. yield of grain in lb./ac.

	$L_0P_0$	$L_1P_0$	$L_1P_1$	$L_1P_2$	$L_2P_0$	$L_2P_1$	$L_2P_2$	Mean
$N_0$	1150	1417	1719	1434	1741	1532	1787	1540
$N_1$	1442	1518	1927	1774	1830	1473	1776	1677
$N_2$	1284	2071	2191	2239	2170	2042	1909	1987
Mean	1292	1669	1946	1816	1914	1682	1824	1735

## S.E. of difference of two

1. L P marginal means = 168.7 lb./ac.
2. N marginal means = 67.7 lb./ac.
3. N means at the same level of L P = 179.1 lb./ac.
4. L P means at the same level of N = 223.3 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 58(MAE).****Site :- B.R. College Insttl. Res. Farm, Bichpuri.****Type :- 'M'.**

Object :-Type IV—To study the effect of direct and indirect manuring of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Legume—Wheat. (b) and (c) As per treatments. (ii) (a) Sandy loam. (b) Refer soil analysis, Bichpuri. (iii) 4th week of Oct. and 1st week of Nov., 1958. (iv) (a) 3 ploughings. (b) N.A. (c) 60 lb./ac (d) 9" between rows. (e) N.A. (v) Nil. (vi) Pb.—591 (150 days). (vii) Irrigated. (viii) 1 weeding. (ix) 2". (x) 1st and 2nd week of April, 1959.

## 2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 57(M.A.E.) type IV on page 347.

## 5. RESULTS :

(i) 1475 lb./ac. (ii) (a) 183.5 lb./ac. (b) 223.4 lb./ac. (iii) 'Control vs. others' and main effect of N are highly significant. (iv) Av. yield of grain in lb./ac.

	L <sub>0</sub> P <sub>0</sub>	L <sub>1</sub> P <sub>0</sub>	L <sub>1</sub> P <sub>1</sub>	L <sub>1</sub> P <sub>2</sub>	L <sub>2</sub> P <sub>2</sub>	L <sub>2</sub> P <sub>1</sub>	L <sub>2</sub> P <sub>2</sub>	Mean
N <sub>0</sub>	1456	1193	1177	1045	1160	1160	1144	1191
N <sub>1</sub>	1489	1341	1835	1391	1399	1424	1481	1480
N <sub>2</sub>	2189	1835	1580	1629	1319	1580	1646	1754
Mean	1711	1456	1531	1355	1459	1388	1424	1475

## S.E. of difference of two

1. L P marginal means = 86.5 lb./ac.
2. N marginal means = 63.9 lb./ac.
3. N mean at the same level of L P = 132.4 lb./ac.
4. L P means at the same level of N = 172.2 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 59(MAE).****Site :- B.R. College Insttl. Res. Farm, Bichpuri.****Type :- 'M'.**

Object :-Type IV—To study the effect of direct and indirect manuring of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Legume—Wheat. (b) and (c) As per treatments. (ii) (a) Light loam. (b) Refer soil analysis, Bichpuri. (iii) 26.10.1959. (iv) (a) 3 ploughings. (b) Behind the plough. (c) 35 srs. ac. (d) Distance between rows 9". (e) N.A. (v) Nil. (vi) Pb.—591 (4½ months). (vii) Irrigated. (viii) 1 weeding. (ix) 1.22". (x) 15.10.1960.

## 2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 57(M.A.E.) type IV on page 347.

## 4. GENERAL :

(i) Germination was satisfactory. There was lodging in some plots due to rains accompanied by heavy wind. (ii) Smut disease was observed and rouging was done to control it. (iii) Yield of grain and straw. (iv) (a) 1957—contd. (b) Yes. (c) N.A. (v) (a) Pura and Varanasi. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1436 lb./ac. (ii) (a) 626.4 lb./ac. (b) 374.7 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain lb./ac.

	L <sub>0</sub> P <sub>0</sub>	L <sub>1</sub> P <sub>0</sub>	L <sub>1</sub> P <sub>1</sub>	L <sub>1</sub> P <sub>2</sub>	L <sub>2</sub> P <sub>0</sub>	L <sub>2</sub> P <sub>1</sub>	L <sub>2</sub> P <sub>2</sub>	Mean
N <sub>0</sub>	1182	1763	1404	1318	1582	1349	1095	1385
N <sub>1</sub>	1416	1579	1300	1368	1298	1572	1227	1394
N <sub>2</sub>	1573	1401	1281	1621	1243	2143	1435	1528
Mean	1390	1581	1328	1436	1374	1688	1252	1436

S.E. of difference of two

1. LP marginal means = 259.3 lb./ac.
2. N marginal means = 115.6 lb./ac.
3. N means at the same level of LP = 306.0 lb./ac.
4. LP means at the same level of N = 386.8 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 57(MAE).**

**Site :- B.R. College Insttl. Res. Farm, Bichpuri.**

**Type :- 'M'.**

Object :—Type VI—To study the effect of different sources and methods of application of P on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Bichpuri. (iii) 1st and 2nd week of Nov., 1957. (iv) (a) 3 ploughings. (b) N.A. (c) 60 lb./ac. (d) 12" between rows. (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) 0.63". (x) Last week of April, 1958.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)+a control

- (1) 2 sources of P<sub>2</sub>O<sub>5</sub> : S<sub>1</sub>=Super and S<sub>2</sub>=Ammono. Phos.
- (2) 2 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>1</sub>=20 and P<sub>2</sub>=40 lb./ac.
- (3) 3 methods of applications of P<sub>2</sub>O<sub>5</sub> : M<sub>1</sub>=Broadcast before final cultivation, M<sub>2</sub>=2½" below seed and M<sub>3</sub>=Band placement.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 13. (b) N.A. (iii) 3. (iv) (a) 32'×18'. (b) 29'×15'. (v) 1.5'×1.5'. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1957—contd. (b) No. (c) N.A. (v) (a) Varanasi and Pura. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1181 lb./ac. (ii) 343.0 lb./ac. (iii) Main effects of P and M are significant. 'Control vs. others' is highly significant. (iv) Av. yield of grain in lb./ac.

Control = 791 lb./ac.

	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	Mean	S <sub>1</sub>	S <sub>2</sub>
P <sub>1</sub>	1146	1196	1664	1335	1340	1330
P <sub>2</sub>	922	1196	1157	1092	974	1210
Mean	1034	1196	1410	1213	1157	1270
S <sub>1</sub>	883	1136	1451			
S <sub>2</sub>	1185	1256	1369			

S.E. of S or P marginal mean	= 80.8 lb./ac.
S.E. of M marginal mean	= 99.0 lb./ac.
S.E. of body of S × M or P × M table	= 140.0 lb./ac.
S.E. of body of S × P table	= 114.3 lb./ac.
S.E. of control mean	= 198.0 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 58(MAE).

Site :- B.R. College Insttl. Res. Farm, Bichpuri.

Type :- 'M'.

Object :- Type VI—To study the effect of different sources and methods of application of P on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Bichpuri. (iii) 4th week of Oct., and 1st week of Nov., 1958. (iv) (a) 3 ploughings. (b) N.A. (c) 60 lb./ac. (d) 9" between rows. (e) N.A. (v) Nil. (vi) Pb.—591 (150 days). (vii) Irrigated. (viii) 1 weeding. (ix) 2". (x) 1st and 2nd week of April, 1959.

## 2. TREATMENTS to 4. GENERAL :

Same as in expt. no 57(M.A.E.) type VI on page 349.

## 5. RESULTS :

(i) 1673 lb./ac. (ii) 144.9 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

Control = 1559 lb./ac.

	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	Mean	S <sub>1</sub>	S <sub>2</sub>
P <sub>1</sub>	1613	1695	1670	1659	1679	1639
P <sub>2</sub>	1662	1728	1728	1706	1679	1734
Mean	1638	1711	1699	1683	1679	1687
S <sub>1</sub>	1646	1670	1720			
S <sub>2</sub>	1630	1752	1678			

S.E. of S or P marginal mean	= 34.2 lb./ac.
S.E. of M marginal mean	= 41.8 lb./ac.
S.E. of body of S × M or P × M table	= 59.2 lb./ac.
S.E. of body of S × P table	= 48.3 lb./ac.
S.E. of control mean	= 83.6 lb./ac.

**Crop :-** Wheat (*Rabi*).

**Ref :-** U.P. 59(MAE).

**Site :-** B.R. College Insttl. Res. Farm, Bichpuri.

**Type :-** 'M'.

Object :—Type VI—To study the effect of different sources and methods of application of P on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) *Jowar*. (c) 40 lb./ac. of N as A/S. (ii) (a) Light loam. (b) Refer soil analysis, Bichpuri. (iii) 12 to 14.11.1959. (iv) (a) 3 ploughings. (b) Behind the plough. (c) 35 srs./ac. (d) Between rows 9". (e) N.A. (v) 30 lb./ac. of N as A/S. (vi) Pb.—591 (4½ months). (vii) Irrigated. (viii) 1 weeding. (ix) 1.22. (x) 15.4.1960.

**2. TREATMENTS and 3. DESIGN :**

Same as in expt. no. 57(MAE) type VI on page 349.

**4. GENERAL :**

(i) Germination was satisfactory. (ii) Smut disease was controlled by rouging. (iii) Yield of grain and straw. (iv) (a) 1957—contd. (b) No. (c) Nil. (v) (a) Pura and Varanasi. (b) Nil. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1315 lb./ac. (ii) 181.6 lb./ac. (iii) Interactions  $S \times M$  and  $P \times M$  are significant. (iv) Av. yield of grain in lb./ac.

Control = 1160 lb./ac.

	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	Mean	S <sub>1</sub>	S <sub>2</sub>
P <sub>1</sub>	1272	1517	1294	1361	1457	1264
P <sub>2</sub>	1371	1168	1348	1295	1314	1276
Mean	1322	1342	1320	1328	1386	1270
S <sub>1</sub>	1340	1321	1498			
S <sub>2</sub>	1303	1364	1143			

S.E. of S or P marginal mean	=	42.8 lb./ac.
S.E. of M marginal mean	=	52.4 lb./ac.
S.E. of body of $S \times M$ or $P \times M$ table	=	74.1 lb./ac.
S.E. of body of $S \times P$ table	=	60.5 lb./ac.
S.E. of control mean	=	104.8 lb./ac.

**Crop :-** Wheat (*Rabi*).

**Ref :-** U.P. 57(MAE).

**Site :-** Govt. Res. Farm, Pura.

**Type :-** 'M'.

Object :—Type IV – To study the effect of direct and indirect manuring of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Legume—Wheat. (b) and (c) As per treatments. (ii) (a) Alluvial soil. (b) Refer soil analysis, Pura. (iii) Middle of Oct., 1957. (iv) (a) 2 to 3 ploughings with *desi* plough. (b) N.A. (c) 82 lb./ac. (d) 9" between rows. (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) and (ix) N.A. (x) Last week of March, 1958.

**2. TREATMENTS :**

Same as in expt. no. 57(MAE) type IV conducted at Bichpuri on page 347.  
Legumes are : L<sub>1</sub>=*Guar* and L<sub>2</sub>=*Cowpea*.

**3. DESIGN :**

(i) Split-plot. (ii) (a) 7 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 30' × 14 5'. (v) N.A. (vi) Yes.



## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1957—contd. (b) Yes. (c) N.A. (v) (a) Bichpuri and Varanasi. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1122 lb./ac. (ii) (a) 169.4 lb./ac. (b) 133.7 lb./ac. (iii) Main effects of N, P and 'control vs. others' are highly significant. Interaction L × P is significant. (iv) Av. yield of grain in lb./ac.

	L <sub>0</sub> P <sub>0</sub>	L <sub>1</sub> P <sub>0</sub>	L <sub>1</sub> P <sub>1</sub>	L <sub>1</sub> P <sub>2</sub>	L <sub>2</sub> P <sub>0</sub>	L <sub>2</sub> P <sub>1</sub>	L <sub>2</sub> P <sub>2</sub>	Mean
N <sub>0</sub>	699	910	719	1112	899	1070	960	910
N <sub>1</sub>	939	1126	1087	1416	984	1164	1181	1128
N <sub>2</sub>	1055	1245	1437	1573	1097	1477	1419	1329
Mean	898	1094	1081	1367	993	1237	1187	1122

S.E. of difference of two

1. LP marginal means = 79.9 lb./ac.
2. N marginal means = 41.3 lb./ac.
3. N means at the same level of LP = 109.2 lb./ac.
4. LP means at the same level of N = 119.7 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 58(MAE).**

**Site :- Govt. Res. Farm, Pura.**

**Type :- 'M'.**

Object :—To study the effect of direct and indirect manuring of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Legume—Wheat. (b) and (c) As per treatments. (ii) (a) Alluvial soil. (b) Refer soil analysis, Pura. (iii) 2nd week of Nov., 1958. (iv) (a) 4 ploughings. (b) N.A. (c) 80 lb./ac. (d) 9' between rows. (e) N.A. (v) Nil. (vi) Pb.—591 (160 days). (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 3rd week of April, 1959.

## 2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 57(MAE) type IV conducted at Bichpuri on page 347.

Legumes are : L<sub>1</sub> = Guar and L<sub>2</sub> = Cowpea.

## 4. GENERAL :

(i) Normal. (ii) Mild attack of rats. (iii) Grain yield. (iv) (a) 1957—contd. (b) Yes. (c) N.A. (v) (a) Bichpuri and Varanasi. (b) Nil. (vi) Water logging. (vii) Nil.

## 5. RESULTS :

(i) 1849 lb./ac. (ii) (a) 448.6 lb./ac. (b) 232.5 lb./ac. (iii) Main effect of N alone is highly significant. (iv) Av. yield of grain in lb./ac.

	L <sub>0</sub> P <sub>0</sub>	L <sub>1</sub> P <sub>0</sub>	L <sub>1</sub> P <sub>1</sub>	L <sub>1</sub> P <sub>2</sub>	L <sub>2</sub> P <sub>0</sub>	L <sub>2</sub> P <sub>1</sub>	L <sub>2</sub> P <sub>2</sub>	Mean
N <sub>0</sub>	1251	1777	1465	1794	1827	1670	1753	1648
N <sub>1</sub>	1522	1925	1950	2090	1679	2000	2098	1895
N <sub>2</sub>	1975	1983	1975	2098	1819	2016	2164	2004
Mean	1583	1895	1797	1994	1775	1895	2005	1849

S.E. of difference of two

1. LP marginal means = 211.5 lb./ac.
2. N marginal means = 71.7 lb./ac.
3. N means at the same level of LP = 189.8 lb./ac.
4. LP means at the same level of N = 262.2 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 59(MAE).****Site :- Govt. Res. Farm, Pura.****Type :- 'M'.**

Object :-Type IV—To study the effect of direct and indirect manuring of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Legume—Wheat. (b) and (c) As per treatments. (ii) (a) Alluvial soil. (b) Refer soil analysis, Pura. (iii) 9.11.1959. (iv) (a) 6 ploughings with *desi* plough. (b) Sown in lines behind *desi* plough. (c) 40 srs./ac. (d) 9" between rows. (e) N.A. (v) Nil. (vi) Pb.—591 (medium). (vii) Irrigated. (viii) 1 weeding with *khurpi*. (ix) N.A. (x) 14.4.1960.

**2. TREATMENTS :**

Same as in expt. no. 57(MAE) type IV conducted at Bichpuri on page 347.

Legumes are :  $L_1 = Guar$  and  $L_2 = Cowpea$ .**3. DESIGN :**

(i) Split-plot. (ii) (a) 7 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 30' × 18'2". (b) 27' × 16'2". (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) Germination good. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) to (c) N.A. (v) (a) Bichpuri and Varanasi. (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1356 lb./ac. (ii) (a) 221.9 lb./ac. (b) 142.5 lb./ac. (iii) Main effect of N and P and 'control vs. others' are highly significant. Main effect of L and interaction  $L \times N$  are significant. (iv) Av. yield of grain in lb./ac.

	$L_0P_0$	$L_1P_0$	$L_1P_1$	$L_1P_2$	$L_2P_0$	$L_2P_1$	$L_2P_2$	Mean
$N_0$	848	1029	1376	1338	1173	1187	1384	1191
$N_1$	1075	1139	1405	1442	1359	1501	1629	1364
$N_2$	1159	1363	1734	1754	1369	1629	1576	1512
Mean	1027	1177	1505	1511	1300	1439	1530	1356

S.E. of difference of two

1. LP marginal means = 104.6 lb./ac.
2. N marginal means = 46.2 lb./ac.
3. N means at the same level of LP = 116.4 lb./ac.
4. LP means at the same level of N = 141.3 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 56(MAE).****Site :- Govt. Res. Farm, Pura.****Type :- 'M'.**

Object :-Type V—To study the effect of sources, levels and times of application of N on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Sanaï*. (c) N.A. (ii) (a) Alluvial soil. (b) Refer soil analysis, Pura. (iii) 13 to 15.11.1956. (iv) (a) 7 ploughings with *desi* plough. (b) N.A. (c) 82 lb./ac. (d) 9" between rows. (e) N.A. (v) *Sanaï* as G.M.+5000 lb./ac. of F.Y.M. (vi) N.A. (vii) Irrigated. (viii) and (ix) N.A. (x) 14 to 16.4.1957.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)+control (3 plots).

(1) 3 sources of N :  $S_1 = A/S$ ,  $S_2 = A/N$  and  $S_3 = Urea$ .(2) 3 times of application of N :  $T_1 = At$  sowing,  $T_2 = At$  first irrigation and  $T_3 = \frac{1}{2}$  at sowing +  $\frac{1}{2}$  at first irrigation.(3) 2 levels of N :  $N_1 = 20$  and  $N_2 = 40$  lb./ac.

## 3. DESIGN :

- (i)  $3^2 \times 2 + 1$  confd. (ii) (a) 3 blocks/replication ; 7 plots/block including one control plot. (b) N.A. (iii) 4. (iv) and (v) N.A. (vi) Yes.

## 3. GENERAL :

- (i) Poor. (ii) Very mild attack of brown rust. (iii) Grain yield. (iv) (a) 1956—contd. (b) and (c) N.A. (v) (a) Varanasi. (b) N.A. (vi) Nil. (vii)  $T \times S$  table and the corresponding S.E. are unadjusted for block effects.

## 5. RESULTS :

- (i) 1984 lb./ac. (ii) 275.2 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

Control = 1805 lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>
N <sub>1</sub>	1941	1882	2480	2101	2603	1811	1890
N <sub>2</sub>	1931	1843	2007	1927	1967	1960	1853
Mean	1936	1862	2244	2014	2285	1885	1872
T <sub>1</sub>	1998	1906	2951				
T <sub>2</sub>	1928	1717	2010				
T <sub>3</sub>	1882	1963	1771				

- S.E. of S or T marginal mean = 56.2 lb./ac.  
 S.E. of N marginal mean = 45.9 lb./ac.  
 S.E. of body of  $S \times N$  or  $T \times N$  table or control mean = 79.4 lb./ac.  
 S.E. of body of  $S \times T$  table = 112.3 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 57(MAE).**

**Site :- Govt. Res., Farm, Pura.**

**Type :- 'M'.**

Object :- Type V—To study the effect of sources, levels and times of application of N on Wheat.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) *Sanai*. (c) N.A. (ii) (a) Alluvial soil. (b) Refer soil analysis, Pura. (iii) Middle of Oct., 1957. (iv) (a) 2 to 3 ploughings with *desi* plough. (b) N.A. (c) 82 lb./ac. (d) 9" between rows. (e) N.A. (v) *Sanai* G.M. + 20 lb./ac. of  $P_2O_5$  as triple Super. (vi) N.A. (vii) Irrigated. (viii) and (ix) N.A. (x) Last week of March, 1958.

## 2. TREATMENTS :

Same as in expt. no. 56(MAE) type V on page 353.

## 3. DESIGN :

- (i)  $3^2 \times 2 + 1$  confd. (ii) (a) 3 blocks/replication and 7 plots/block including one control plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 1/100 ac. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1956—contd. (b) and (c) N.A. (v) (a) Varanasi. (b) N.A. (vi) Nil. (vii)  $T \times S$  table and the corresponding S.E. are unadjusted for block effects.

## 5. RESULTS :

- (i) 1386 lb./ac. (ii) 131.8 lb./ac. (iii) Main effect of N and 'control vs. others' are highly significant. (iv) Av. yield of grain in lb./ac.

Control = 1177 lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>
N <sub>1</sub>	1358	1349	1415	1374	1374	1349	1399
N <sub>2</sub>	1506	1448	1447	1467	1440	1473	1489
Mean	1432	1399	1431	1421	1407	1411	1444
T <sub>1</sub>	1517	1311	1393				
T <sub>2</sub>	1381	1391	1461				
T <sub>3</sub>	1398	1495	1439				

S.E. of S or T marginal mean	= 26.9 lb./ac.
S.E. of N marginal mean	= 22.0 lb./ac.
S.E. of body of S×N or T×N table or control mean	= 38.0 lb./ac.
S.E. of body of S×T table	= 46.5 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 58(MAE).****Site :- Govt. Res. Farm, Pura.****Type :- 'M'.**

Object :— Type V—To study the effect of sources, levels and times of application of N on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Alluvial soil. (b) Refer soil analysis, Pura. (iii) 2nd week of Nov., 1958. (iv) (a) 4 ploughings. (b) N.A. (c) 80 lb./ac. (d) 9" between rows. (e) N.A. (v) *Sanai* G.M.+20 lb./ac. of P<sub>2</sub>O as triple Super. (vi) Pb.—591 (160 days). (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 3rd week of April, 1959.

**2. TREATMENTS :**

Same as in expt. no. 56(MAE) type V on page 353.

**3. DESIGN :**

(i) 3<sup>2</sup>×2+1 confd. (ii) (a) 3 blocks/replication and 7 plots/block including one control plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 34.5'×10.5'. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Mild attack of rats. (iii) Grain yield. (iv) (a) 1956—contd. (b) and (c) N.A. (v) (a) Varanasi. (b) N.A. (vi) Water logging. (vii) Means in S×T table and the corresponding S.E. are adjusted for block effects.

**5. RESULTS :**

(i) 2216 lb./ac. (ii) 244.7 lb./ac. (iii) Main effect of N alone is highly significant. (iv) Av. yield of grain in lb./ac.

Control = 2107 lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>
N <sub>1</sub>	2370	2445	2205	2340	2304	2386	2329
N <sub>2</sub>	2150	2104	2129	2128	2046	2194	2143
Mean	2260	2274	2167	2234	2175	2290	2236
T <sub>1</sub>	2131	2172	2222				
T <sub>2</sub>	2411	2329	2130				
T <sub>3</sub>	2238	2320	2149				

S.E. of S or T marginal mean	=	49.9 lb./ac.
S.E. of N marginal mean	=	40.8 lb./ac.
S.E. of body of S×N or T×N table or control mean	=	70.6 lb./ac.
S.E. of body of S×T table	=	92.5 lb./ac.

**Crop :-** Wheat (*Rabi*).

**Ref :-** U.P. 53(MAE).

**Site :-** Govt. Res. Farm, Pura.

**Type :-** 'M'.

**Object :-** Type V—To study the effect of sources, levels and times of application of N on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Sanoi* for G.M. (c) Nil. (ii) (a) Alluvial soil. (b) Refer soil analysis, Pura. (ii.) 20.11.1959. (iv) (a) 8 ploughings with *desi* plough. (b) Sown in lines behind the plough. (c) 40 srs./ac. (d) 9" between rows. (e) N.A. (v) *Sanoi* as G.M. + 20 lb./ac. of  $P_2O_5$  as Super. (vi) Pb -- 591 (medium). (vii) Irrigated. (viii) Weeding by *khurpi*. (ix) N.A. (x) 13.4.1960.

**2. TREATMENTS :**

Same as in expt. no. 56(MAE) type V on page 353.

**3. DESIGN :**

(i)  $3^2 \times 2 + 1$  conf'd. (ii) (a) 3 blocks/replication and 7 plots/block including one control plot. (b) N.A. (iii) 4. (iv) (a)  $25' \times 21' 9"$ . (b)  $22' \times 19' 9"$ . (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1956—contd. (b) No. (c) N.A. (v) (a) Varanasi. (b) Nil. (vi) and (vii) S×T table and corresponding S.E. are adjusted for block effects.

**5. RESULTS :**

(i) 2034 lb./ac. (ii) 157.0 lb./ac. (iii) 'Control vs. others' alone is highly significant. (iv) Av. yield of grain in lb./ac.

	Control = 1868 lb./ac.						
	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>
N <sub>1</sub>	2018	1999	2051	2022	2006	1991	2069
N <sub>2</sub>	2100	2171	2036	2102	2137	2078	2092
Mean	2059	2085	2043	2062	2072	2034	2081
T <sub>1</sub>	2034	2157	2024				
T <sub>2</sub>	2024	2050	2030				
T <sub>3</sub>	2117	2049	2076				

S.E. of S or T marginal mean	=	32.0 lb./ac.
S.E. of N marginal mean	=	26.2 lb./ac.
S.E. of body of S×N or T×N table or control mean	=	45.3 lb./ac.
S.E. of body of S×T table	=	59.3 lb./ac.

**Crop :-** Wheat (*Rabi*).

**Ref :-** U.P. 56(MAE).

**Site :-** Govt. Res. Farm, Pura.

**Type :-** 'M'.

**Object :-** Type VI—To study the effect of different sources and methods of application of P on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanoi*. (c) Nil. (ii) (a) Alluvial soil. (b) Refer soil analysis, Pura. (iii) 13.11.1956. (iv) (a) 7 ploughings. (b) N.A. (c) 40 srs./ac. (d) 9" between rows. (e) N.A. (v) *Sanoi* G.M. (vi) C-13 (180 days). (vii) Irrigated. (viii) and (ix) N.A. (x) 14.4.1957.

## 2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 57(MAE) type VI conducted at Bichpuri on page 349.

## 4. GENERAL :

(i) Good. (ii) Very mild attack of brown rust. (iii) Grain yield. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) Varanasi and Bichpuri. (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1688 lb./ac. (ii) 196.4 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

Control = 1471 lb./ac.

	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	Mean	S <sub>1</sub>	S <sub>2</sub>
P <sub>1</sub>	1857	1685	1566	1703	1759	1647
P <sub>2</sub>	1715	1734	1678	1709	1731	1687
Mean	1786	1709	1622	1706	1745	1667
S <sub>1</sub>	1777	1698	1759			
S <sub>2</sub>	1795	1721	1486			

S.E. of S or P marginal mean	= 46.3 lb./ac.
S.E. of M marginal mean	= 56.7 lb./ac.
S.E. of body of S×M or P×M table	= 80.2 lb./ac.
S.E. of body of S×P table	= 65.5 lb./ac.
S.E. of control mean	= 113.4 lb./ac.

**Crop :-** Wheat (*Rabi*).

**Ref :-** U.P. 58(MAE).

**Site :-** Govt. Res. Farm, Pura.

**Type :-** 'M'.

**Object :-** Type VI—To study the effect of different sources and methods of application of P on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Lobia*. (c) N.A. (ii) (a) Alluvial soil. (b) Refer soil analysis, Pura. (iii) 2nd week of Nov., 1958. (iv) (a) 4 ploughings. (b) N.A. (c) 80 lb./ac. (d) 9" between rows. (e) N.A. (v) *Lobia* as G.M.+30 lb./ac. of N as A/S. (vi) Pb.—591 (160 days). (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 3rd week of April, 1959.

## 2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 57(MAE) type VI conducted at Bichpuri on page 349.

## 4. GENERAL :

(i) Good. (ii) Mild attack of rats. (iii) Grain yield. (iv) (a) 1955—contd. (b) and (c) N.A. (v) (a) Bichpuri and Varanasi. (b) N.A. (vi) Water logging. (vii) Nil.

## 5. RESULTS :

(i) 2118 lb./ac. (ii) 227.4 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

Control = 1884 lb./ac.

	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	Mean	S <sub>1</sub>	S <sub>2</sub>
P <sub>1</sub>	2074	2164	2181	2140	2148	2132
P <sub>2</sub>	2139	2132	2139	2137	2202	2071
Mean	2106	2148	2160	2138	2175	2101
S <sub>1</sub>	2172	2181	2172			
S <sub>2</sub>	2041	2115	2148			

S.E. of S or P marginal mean	= 53.6 lb./ac.
S.E. of M marginal mean	= 65.6 lb./ac.
S.E. of body of S × M or P × M table	= 92.8 lb./ac.
S.E. of body of S × P table	= 75.8 lb./ac.
S.E. of control mean	= 131.3 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 57(MAE).****Site :- Govt. Res. Farm, Pura.****Type :- 'M'.**

Object .—Type VI—To study the effect of different sources and methods of application of P on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Sanai*. (c) N.A. (ii) Alluvial soil. (b) Refer soil analysis, Pura. (iii) Middle of Oct., 1957. (iv) (a) 2 to 3 ploughings with *desi* plough. (b) N.A. (c) 82 lb./ac. (d) 9" between rows. (e) N.A. (v) *Sanai* as G.M. (vi) N.A. (vii) Irrigated. (viii) and (ix) N.A. (x) Last week of March, 1958.

**2. TREATMENTS and 3. DESIGN :**

Same as in expt. no. 57(MAE) type VI conducted at Bichpuri on page 349.

**4. GENERAL :**

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1956—contd. (b) and (c) N.A. (v) (a) Bichpur and Varanasi. (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1980 lb./ac. (ii) 156.9 lb./ac. (iii) 'Control vs. others' alone is highly significant. (iv) Av. yield of grain in lb./ac.

Control = 1605 lb./ac.

	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	Mean	S <sub>1</sub>	S <sub>2</sub>
P <sub>1</sub>	1958	2024	1909	1964	2008	1920
P <sub>2</sub>	2107	2082	1983	2057	2068	2046
Mean	2033	2053	1946	2011	2038	1983
S <sub>1</sub>	2049	2115	1950			
S <sub>2</sub>	2017	1991	1942			

S.E. of S or P marginal mean	= 37.0 lb./ac.
S.E. of M marginal mean	= 45.3 lb./ac.
S.E. of body of S × M or P × M table	= 64.1 lb./ac.
S.E. of body of S × P table	= 52.3 lb./ac.
S.E. of control mean	= 90.6 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 59(MAE).****Site :- Govt. Res. Farm, Pura.****Type :- 'M'.**

Object :-Type VI—To study the effect of different sources and methods of application of P on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Paddy—Gram—*Sanai*—Wheat. (b) *Sanai*. (c) Nil. (ii) (a) Alluvial soil. (b) Refer soil analysis, Pura. (iii) 21.11.1959. (iv) (a) 7 ploughings. (b) Sown behind the plough. (c) 82 lb./ac. (d) 9" between rows. (e) N.A. (v) *Sanai* as G.M. +30 lb./ac. of N as A/S by broadcast before sowing. (vi) Pb.—591 (150 days). (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 14.4.1960.

**2. TREATMENTS :**

Same as in expt. no. 57(MAE) type VI conducted at Bichpuri on page 349.

**3. DESIGN:**

(i) R.B.D. (ii) (a) 13. (b) N.A. (iii) 3. (iv) (a) 35'×15'7". (b) 32'×13.6'. (v) N.A. (vi) Yes.

**4. GENERAL:**

(i) Germination and growth was good. Crop lodged. (ii) Crop damaged by rats. (iii) Grain yield. (iv) (a) 1956—contd. (b) and (c) N.A. (v) (a) Bichpuri and Varanasi. (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1475 lb./ac. (ii) 212.5 lb./ac. (iii) 'Control vs. others' alone is highly significant. (iv) Av. yield of grain in lb./ac.

Control = 1094 lb./ac.

	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	Mean	S <sub>1</sub>	S <sub>2</sub>
P <sub>1</sub>	1588	1522	1573	1561	1506	1616
P <sub>2</sub>	1498	1415	1447	1453	1440	1466
Mean	1543	1468	1510	1507	1473	1541
S <sub>1</sub>	1539	1399	1481			
S <sub>2</sub>	1547	1538	1539			

S.E. of S or P marginal mean	= 50.1 lb./ac.
S.E. of M marginal mean	= 61.3 lb./ac.
S.E. of body S×M or P×M table	= 86.8 lb./ac.
S.E. of body of S×P table	= 70.8 lb./ac.
S.E. of control mean	= 122.7 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 56(MAE).****Site :- Govt. Res. Farm, Pura.****Type :- 'M'.**

Object :-Type VI (TCM)—To study the effect of continuous application of N and P on Wheat.

**1. BASAL CONDITIONS :**

(i) Wheat—Maize—Pea—Fallow. (b) Fallow. (c) Nil. (ii) (a) Alluvial soil. (b) Refer soil analysis, Pura. (iii) 13 to 15.11.1956. (iv) (a) 7 ploughings. (b) N.A. (c) 82 lb./ac. (d) 9" between rows. (e) N.A. (v) and (vi) N.A. (vii) Irrigated. (viii) and (ix) N.A. (x) 14 to 16.4.1957.

**2. TREATMENTS :**

Treatment	1	2	3	4	5	6	7	8	9	10	11	12
1st crop	O	C	C	C	C	C	C	P <sub>1</sub>	P <sub>2</sub>	P <sub>½</sub>	P <sub>1</sub>	P <sub>2</sub>
2nd crop	O	C	C	C	C	P <sub>1</sub>	P <sub>2</sub>	C	C	P <sub>½</sub>	P <sub>1</sub>	P <sub>2</sub>
3rd crop	O	C	C	P <sub>1</sub>	P <sub>2</sub>	C	C	C	C	P <sub>½</sub>	P <sub>1</sub>	P <sub>2</sub>



There are only 11 distinct treatments. Plots under one treatment do not receive any fertilizer. Plots under other ten treatments receive a basal dose of N. One of the ten treatments consists of the application of basal dose of N only. This treatment which serves as control is applied to two plots in each block. Various symbols are : O=No manure, C=20 lb./ac. of N,  $p_1=10$ ,  $p_1=20$  and  $p_2=40$  lb./ac. of  $P_2O_5$ .

### 3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 2. (iv) (a) N.A. (b) 45' × 16'. (v) N.A. (vi) Yes.

### 4. GENERAL :

(i) N.A. (ii) A very mild attack of brown rust. (iii) Grain yield. (iv) (a) *Kharif 1955*—contd (3rd crop). (b) Yes. (c) N.A. (v) (a) Varanasi. (b) N.A. (vi) and (vii) Nil.

### 5. RESULTS :

(i) 1956 lb./ac. (ii) 224.6 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	(2,3)	4	5	6	7	8	9	10	11	12
Av. yield	1390	1265	2179	2437	1944	2208	1419	1597	2174	2694	2900

S.E./mean except (2,3) = 158.8 lb./ac., and S.E. of (2,3) mean = 112.3 lb./ac.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 57(MAE).**

**Site :- Govt. Res. Farm, Pura.**

**Type :- 'M'.**

Object :—Type VI (TCM)—To study the effect of continuous application of N and P on Wheat.

### 1. BASAL CONDITIONS :

(i) (a) Wheat—Maize—Pea—Fallow. (b) Fallow. (c) Nil. (ii) (a) Alluvial soil. (b) Refer soil analysis, Pura. (iii) Middle of Oct., 1957. (iv) (a) 7 ploughings. (b) N.A. (c) 82 lb./ac. (d) 9" between rows. (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) and (ix) N.A. (x) End of March, 1958.

### 2. TREATMENTS and 3. DESIGN :

Same as in expt. no 56(MAE) type VI (TCM) on page 359.

### 4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) *Kharif 1955*—contd (4th crop). (b) Yes. (c) N.A. (v) (a) Varanasi. (b) N.A. (vi) and (vii) Nil.

### 5. RESULTS :

(i) 1511 lb./ac. (ii) 216.6 lb./ac. (iii) 'Control vs. others' and treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	(2,3)	4	5	6	7	8	9	10	11	12
Av. yield	889	1243	1901	1917	1629	1522	1078	1358	1489	1687	2181

S.E./mean except (2, 3) = 153.2 lb./ac. and S.E. of (2, 3) mean = 108.3 lb./ac.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 58(MAE).**

**Site :- Govt. Res. Farm, Pura.**

**Type :- 'M'.**

Object :—Type VI (TCM)—To study the effect of continuous application of N and P on Wheat.

### 1. BASAL CONDITIONS :

(i) (a) Wheat—Maize—Pea—Fallow. (b) Fallow. (c) Nil. (ii) (a) Alluvial soil. (b) Refer soil analysis, Pura. (iii) 2nd week of Nov., 1958. (iv) (a) 4 ploughings. (b) N.A. (c) 80 lb./ac. (d) 9" between rows. (e) N.A. (v) Nil. (vi) Pb.—591 (160 days). (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 3rd week of April, 1959.

## 2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 56(MAE) type VI (TCM) on page 359.

## 4. GENERAL :

(i) Normal. (ii) Mild attack of rats. (iii) Grain yield. (iv) (a) *Kharif* 1955—contd (9th crop). (b) Yes. (c) N.A. (v) (a) Varanasi. (b) N.A. (vi) Crop affected due to water logging. (vii) Nil.

## 5. RESULTS :

(i) 1965 lb./ac. (ii) 185.5 lb./ac. (iii) 'Control vs. others' and treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	(2,3)	4	5	6	7	8	9	10	11	12
Av. yield	1358	1382	2370	2411	2000	2329	1580	1950	1958	2320	2543

S.E./mean except (2, 3) = 131.2 lb./ac. and S.E. of (2, 3) mean = 92.8 lb./ac.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 59 (MAE).**

**Site :- Govt. Res. Farm, Pura.**

**Type :- 'M'.**

Object :—Type VI (TCM)—To study the effect of continuous application of N and P on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Wheat—Maize—Pea—Fallow. (b) Fallow. (c) Nil. (ii) (a) Alluvial soil. (b) Refer soil analysis, Pura. (iii) 3rd week of Nov., 1959. (iv) (a) 6 ploughings. (b) Sown behind the plough. (c) 82 lb./ac. (d) 9" between rows. (e) N.A. (v) Nil. (vi) Pb.—591 (medium). (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 3rd week of April, 1960.

## 2. TREATMENTS :

Same as in expt. no. 56(MAE) type VI (TCM) on page 359.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 2. (iv) (a) N.A. (b) 40'4" × 18'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) *Kharif*, 1955—contd. (b) Yes. (c) N.A. (v) (a) Varanasi. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1418 lb./ac. (ii) 141.9 lb./ac. (iii) 'Control vs. others' and treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	(2,3)	4	5	6	7	8	9	10	11	12
Av. yield	955	930	1769	1580	1226	1522	1094	1267	1703	1827	2213

S.E./mean except (2, 3) = 100.3 lb./ac. and S.E. of (2, 3) mean = 70.9 lb./ac.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 58(MAE).**

**Site :- Reg. Res. Stn., Varanasi.**

**Type :- 'M'.**

Object :—Type IV—To study the effect of direct and indirect manuring of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Legume—Wheat. (b) and (c) As per treatments. (ii) (a) Loam soil. (b) Refer soil analysis, Varanasi. (iii) 4th week of Oct., to 1st week of Nov., 1958. (iv) (a) 2 ploughings. (b) N.A. (c) 82 lb./ac. (d) 9" between rows. (e) N.A. (v) Nil. (vi) NP—52 (150 days). (vii) Irrigated. (viii) 2 weedings. (ix) 8". (x) 1st and 2nd week of April, 1959.

## 2. TREATMENTS :

Same as in expt. no 57(MAE) type IV conducted at Bichpuri on page 347.

Legumes are :  $L_1 = \text{Lobia}$  and  $L_2 = \text{Moong}$ .

## 3. DESIGN :

(i) Split-plot. (ii) (a) 7 main-plots/replication and 3 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) N.A. (b)  $14' \times 31'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Attack of white ants was controlled. Slight damage due to rats. (iii) Grain yield. (iv) (a) 1958--contd. (b) Yes. (c) N.A. (v) (a) Bichpuri and Pura. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS:

(i) 921 lb./ac. (ii) (a) 203.8 lb./ac. (b) 144.0 lb./ac. (iii) Main effect of L and 'control vs. others' are significant. (iv) Av. yield of grain in lb./ac.

	$L_0P_0$	$L_1P_0$	$L_1P_1$	$L_1P_2$	$L_2P_0$	$L_2P_1$	$L_2P_2$	Mean
$N_0$	387	782	724	741	518	650	551	622
$N_1$	741	1144	1218	1086	806	1086	987	1010
$N_2$	1119	1094	1185	1218	1119	1078	1103	1131
Mean	749	1007	1042	1015	814	938	880	921

S.E. of difference of two

- |                                    |   |               |
|------------------------------------|---|---------------|
| 1. LP marginal means               | = | 96.1 lb./ac.  |
| 2. N marginal means                | = | 44.4 lb./ac.  |
| 3. N means at the same level of LP | = | 117.6 lb./ac. |
| 4. LP means at the same level of N | = | 135.8 lb./ac. |

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 59(MAE).**

**Site :- Reg. Res. Stn., Varanasi.**

**Type :- 'M'.**

Object :- Type IV--To study the effect of direct and indirect manuring of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Legume--Wheat. (b) and (c) As per treatments. (ii) (a) Loam soil. (b) Refer soil analysis, Varanasi. (iii) 4th week of Oct., 1959. (iv) (a) 3 ploughings and 1 harrowing. (b) N.A. (c) 82 lb./ac. (d) 9' between rows. (e) N.A. (v) Nil. (vi) NP--52 (160 days). (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 1st week of April, 1960.

## 2. TREATMENTS :

Same as in expt. no. 57(MAE) type IV conducted at Bichpuri on page 347.

Legumes are :  $L_1 = \text{Lobia}$  and  $L_2 = \text{Moong}$ .

## 3. DESIGN :

(i) Split-plot. (ii) (a) 7 main-plots/block ; 3 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) N.A. (b)  $14' \times 29'3"$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Mild attack of rats. (iii) Grain yield. (iv) (a) 1958--contd. (b) Yes. (c) N.A. (v) (a) Bichpuri and Pura. (b) N.A. (vi) Cloudy weather and frequent showers affected the growth. (vii) Nil.

## 5. RESULTS :

(i) 979 lb./ac. (ii) (a) 239.3 lb./ac. (b) 229.1 lb./ac. (iii) Main effect of N is highly significant and main effect of L is significant. (iv) Av. yield of grain in lb./ac.

	L <sub>0</sub> P <sub>0</sub>	L <sub>1</sub> P <sub>0</sub>	L <sub>1</sub> P <sub>1</sub>	L <sub>1</sub> P <sub>2</sub>	L <sub>2</sub> P <sub>0</sub>	L <sub>2</sub> P <sub>1</sub>	L <sub>2</sub> P <sub>2</sub>	Mean
N <sub>0</sub>	568	831	913	848	741	601	534	719
N <sub>1</sub>	1004	1185	1267	1070	897	946	930	1043
N <sub>2</sub>	1341	1292	1185	1037	1127	955	1292	1176
Mean	971	1103	1122	985	922	834	919	979

S.E. of difference of two

- |                                    |                 |
|------------------------------------|-----------------|
| 1. LP marginal means               | = 112.8 lb./ac. |
| 2. N marginal means                | = 70.7 lb./ac.  |
| 3. N means at the same level of LP | = 187.1 lb./ac. |
| 4. LP means at the same level of N | = 189.9 lb./ac. |

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 56(MAE).**

**Site :- Reg. Res. Stn., Varanasi.**

**Type :- 'M'.**

Object :- Type V—To study the effect of sources, levels and times of application of N on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loam soil. (b) Refer soil analysis, Varanasi. (iii) 25 to 30.11.1956. (iv) (a) 5 to 7 ploughings. (b) N.A. (c) 82 lb./ac. (d) 9" between rows. (e) N.A. (v) 5000 lb./ac. of F.Y.M. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) 1.98". (x) 29.3.1957 to 23.4.1957.

**2. TREATMENTS :**

Same as in expt. no. 56(MAE) type V conducted at Pura on page 353.

**3. DESIGN :**

(i) 3<sup>2</sup> × 2 + 1 confd. (ii) (a) 3 blocks/replication ; 7 plots/block including one control plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 1/100 ac. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) Poor. (ii) Mild attack of brown rust. No control measures taken. (iii) Grain yield. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) Pura. (b) Nil. (vi) Growth and grain formation were affected due to bad weather. (vii) Means in the body of S × T table and corresponding S.E. are unadjusted for block effects.

**5. RESULTS :**

(i) 939 lb./ac. (ii) 80.9 lb./ac. (iii) Main effects of N, T and 'control vs. others' are highly significant. (iv) Av. yield of grain in lb./ac.

Control = 499 lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>
N <sub>1</sub>	899	931	900	910	924	876	930
N <sub>2</sub>	1082	1147	1112	1114	1160	1023	1158
Mean	990	1039	1006	1012	1042	949	1044
T <sub>1</sub>	1049	1092	986				
T <sub>2</sub>	916	955	976				
T <sub>3</sub>	1005	1070	1056				

- |  |                |
|--|----------------|
| S.E. of marginal mean of S or T                      | = 16.5 lb./ac. |
| S.E. of N marginal mean                              | = 13.5 lb./ac. |
| S.E. of body of S × N or T × N table or control mean | = 23.4 lb./ac. |
| S.E. of body of S × T table                          | = 28.6 lb./ac. |

**Crop :- Wheat (Rabi).****Ref :- U.P. 57(MAE).****Site :- Reg. Res. Stn., Varanasi.****Type :- 'M'.**

Object :- Type V—To study the effect of sources, levels and times of application of N on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loam soil. (b) Refer soil analysis, Varanasi. (iii) Last week of Oct., 1957. (iv) (a) 4 ploughings. (b) N.A. (c) 40 srs./ac. (d) 9" between rows. (e) N.A. (v) 5000 lb./ac. of F.Y.M. (vi) N.A. (vii) Irrigated. (viii) 1 weeding. (ix) 1.11". (x) 2nd week of April, 1958.

**2. TREATMENTS :**

Same as in expt. no. 56(MAE) type V conducted at Pura on page 353.

**3. DESIGN :**

(i)  $3^2 \times 2 + 1$  confd. (ii) (a) 3 blocks/replication ; 7 plots/block including one control plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 1/100 ac. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1956--contd. (b) No. (c) Nil. (v) (a) Pura. (b) N.A. (vi) Nil. (vii) As the blocks were not made properly, the expt. has been analysed as an R.B.D.

**5. RESULTS :**

(i) 1313 lb./ac. (ii) 143.7 lb./ac. (iii) 'Control vs. others' alone is highly significant. (iv) Av. yield of grain in lb./ac.

Control = 1139 lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>
N <sub>1</sub>	1331	1286	1353	1323	1301	1369	1300
N <sub>2</sub>	1357	1392	1336	1362	1386	1298	1401
Mean	1344	1339	1344	1342	1343	1334	1350
T <sub>1</sub>	1372	1319	1339				
T <sub>2</sub>	1326	1336	1340				
T <sub>3</sub>	1333	1363	1354				

S.E. of S or T marginal mean	= 29.3 lb./ac.
S.E. of N marginal mean	= 23.9 lb./ac.
S.E. of body of S × N or T × N table or control mean	= 41.5 lb./ac.
S.E. of body of S × T table	= 50.8 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 58(MAE).****Site :- Reg. Res. Stn., Varanasi.****Type :- 'M'.**

Object :- Type V—To study the effect of sources, levels and times of application of N on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loamy soil. (b) Refer soil analysis, Varanasi. (iii) 4th week of Oct. to 1st week of Nov., 1958. (iv) (a) 2 ploughings. (b) N.A. (c) 82 lb./ac. (d) 9" between rows. (e) N.A. (v) 20 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super + 5000 lb./ac. of F.Y.M. (vi) NP-52 (150 days). (vii) Irrigated. (viii) 2 weedings. (ix) 8". (x) 1st and 2nd week of April, 1959.

**2. TREATMENTS :**

Same as in expt. no. 56(MAE) type V conducted at Pura on page 353.

## 3. DESIGN :

- (i)  $3^2 \times 2 + 1$  confd. (ii) (a) 3 blocks/replication ; 7 plots/block including one control plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 1/100 ac. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) Normal. (ii) Attack of white ants was controlled. Slight damage due to rats. (iii) Grain yield. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) Pura. (b) Nil. (vi) Nil. (vii) Means in the body of  $S \times T$  table and the corresponding S.E. are adjusted for block effects.

## 5. RESULTS :

- (i) 1139 lb./ac. (ii) 165.2 lb./ac. (iii) Main effect of N and 'control vs. others' are highly significant. (iv) Av yield of grain in lb./ac

Control = 683 lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>
N <sub>1</sub>	1127	1094	1078	1100	1119	1136	1045
N <sub>2</sub>	1379	1370	1242	1330	1261	1360	1369
Mean	1253	1232	1160	1215	1190	1248	1207
T <sub>1</sub>	1233	1169	1168				
T <sub>2</sub>	1259	1374	1111				
T <sub>3</sub>	1267	1152	1201				

S.E. of S or T marginal mean	= 33.7 lb./ac.
S.E. of N marginal mean	= 27.5 lb./ac.
S.E. of body of $S \times N$ or $T \times N$ table or control mean	= 47.7 lb./ac.
S.E. of body of $S \times T$ table	= 62.4 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 59(MAE).**

**Site :- Reg. Res. Stn., Varanasi.**

**Type :- 'M'.**

Object :- Type V—To study the effect of sources, levels and times of application of N on Wheat.

## 1. BASAL CONDITIONS :

- (i) (a) to (c) N.A. (ii) (a) Loam soil. (b) Refer soil analysis, Varanasi. (iii) 4th week of Oct., 1959. (iv) (a) 3 ploughings and 1 harrowing. (b) N.A. (c) 82 lb./ac. (d) 9" between rows. (e) N.A. (v) Nil. (vi) NP—52 (160 days). (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 1st week of April, 1960.

## 2. TREATMENTS :

Same as in expt. no. 56(MAE) type V conducted at Pura on page 353.

## 3. DESIGN :

- (i)  $3^2 \times 2 + 1$  confd. (ii) (a) 3 blocks/replication ; 7 plots/block including one control plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b)  $14' \times 29' 3''$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) Pura. (b) N.A. (vi) Nil. (vii) Means in the body of  $S \times T$  table and the corresponding S.E. are adjusted for block effects.

## 5. RESULTS :

- (i) 1292 lb./ac. (ii) 232.2 lb./ac. (iii) Main effect of N and 'control vs. others' are highly significant. (iv) Av. yield of grain in lb./ac.

Control = 658 lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>
N <sub>1</sub>	1201	1267	1111	1193	1210	1242	1127
N <sub>2</sub>	1625	1617	1569	1604	1548	1588	1675
Mean	1413	1442	1340	1398	1379	1415	1401
T <sub>1</sub>	1356	1456	1326				
T <sub>2</sub>	1448	1511	1287				
T <sub>3</sub>	1435	1360	1408				

S.E. of S or T marginal mean	=	47.4 lb./ac.
S.E. of N marginal mean	=	38.7 lb./ac.
S.E. of body of S×N or T×N table or control mean	=	67.0 lb./ac.
S.E. of body of S×T table	=	87.8 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 56(MAE).****Site :- Reg. Res. Stn., Varanasi.****Type :- 'M'.**

Object :- Type VI—To study the effect of different sources and methods of application of P on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) and (c) N.A. (ii) (a) Loam soil. (b) Refer soil analysis, Varanasi. (iii) 25 to 30.11.1956. (iv) (a) 5 to 7 ploughings. (b) N.A. (c) 82 lb./ac. (d) 9" between rows. (e) N.A. (v) Nil. (vi) NP—52 (139 days). (vii) Irrigated. (viii) N.A. (ix) 1.98". (x) 29.3.1957 to 23.4.1957.

**2. TREATMENTS :**

Same as in expt. no. 57(MAE) type VI conducted at Bichpuri on page 349.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 13. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 1/100 ac. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Mild attack of brown rust. No control measure taken. (iii) Grain yield. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) Pura. (b) Nil. (vi) Growth and grain formation were affected due to bad weather. (vii) Nil.

**5. RESULTS :**

(i) 880 lb./ac. (ii) 158.7 lb./ac. (iii) 'Control vs. others' alone is highly significant. (iv) Av. yield of grain in lb./ac.

Control = 241 lb./ac.

	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	Mean	S <sub>1</sub>	S <sub>2</sub>
P <sub>1</sub>	851	885	900	879	880	878
P <sub>2</sub>	1019	990	951	987	992	982
Mean	935	938	925	933	936	930
S <sub>1</sub>	914	920	973			
S <sub>2</sub>	956	956	877			

S.E. of S or P marginal mean	= 37.4 lb./ac.
S.E. of M marginal mean	= 45.8 lb./ac.
S.E. of body of S×M or P×M table	= 64.8 lb./ac.
S.E. of body of S×P table	= 52.9 lb./ac.
S.E. of control mean	= 91.6 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 57(MAE).**

**Site :- Reg. Res. Stn., Varanasi**

**Type :- 'M'.**

Object :-Type VI—To study the effect of different sources and methods of application of P on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) Loam soil. (b) Refer soil analysis, Varanasi. (iii) Last week of Oct., 1957. (iv) (a) 4 ploughings. (b) N.A. (c) 40 srs./ac. (d) 9" between rows. (e) N.A. (v) 30 lb./ac. of N as A/S. (vi) NP—52 (130 days). (vii) Irrigated. (viii) 1 weeding. (ix) 1.11". (x) 2nd week of April, 1958.

**2. TREATMENTS :**

Same as in expt. no. 57(MAE) type VI conducted at Bichpuri on page 349.

**3. DESIGN :**

(i) R.B.D. (ii) 13. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 1/100 ac. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1956—contd. (b) No. (c) N.A. (v) (a) Bichpuri and Pura. (b) Nil. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1297 lb./ac. (ii) 127.7 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

Control = 1259 lb./ac.

	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	Mean	S <sub>1</sub>	S <sub>2</sub>
P <sub>1</sub>	1251	1267	1382	1300	1299	1301
P <sub>2</sub>	1243	1349	1308	1300	1323	1277
Mean	1247	1308	1345	1300	1311	1289
S <sub>1</sub>	1259	1317	1358			
S <sub>2</sub>	1235	1299	1332			

S.E. of S or P marginal mean	= 30.1 lb./ac.
S.E. of M marginal mean	= 36.9 lb./ac.
S.E. of body of S×M or P×M table	= 52.1 lb./ac.
S.E. of body of S×P table	= 42.6 lb./ac.
S.E. of control mean	= 73.7 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 58(MAE).**

**Site :- Reg. Res. Stn., Varanasi.**

**Type :- 'M'.**

Object :-Type VI—To study the effect of different sources and methods of application of P on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loam soil. (b) Refer soil analysis, Varanasi. (iii) 4th week of Oct. to 1st week of Nov., 1958. (iv) (a) 2 ploughings. (b) N.A. (c) 82 lb./ac. (d) 9" between rows. (e) N.A. (v) Nil. (vi) NP—52 (122 days). (vii) Irrigated. (viii) 2 weedings. (ix) 8". (x) 1st and 2nd week of April, 1959.



## 2. TREATMENTS :

Same as in expt. no. 57(MAE) type VI conducted Bichpuri on page 349.

## 3. DESIGN :

(i) R.B.D. (ii) 13. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 14'x31'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Attack of white ants was controlled. Slight damage due to rats. (iii) Grain yield. (iv) (a) 1956—contd. (b) No. (c) N.A. (v) (a) Bichpuri and Para. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1280 lb./ac. (ii) 179.4 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

Control = 1238 lb./ac.

	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	Mean	S <sub>1</sub>	S <sub>2</sub>
P <sub>1</sub>	1234	1341	1300	1292	1234	1350
P <sub>2</sub>	1275	1300	1251	1275	1334	1216
Mean	1254	1320	1275	1283	1284	1283
S <sub>1</sub>	1305	1341	1185			
S <sub>2</sub>	1184	1299	1366			

S.E. of S or P marginal mean = 42.3 lb./ac.  
 S.E. of M marginal mean = 5.8 lb./ac.  
 S.E. of body of S x M or P x M table = 73.2 lb./ac.  
 S.E. of body of S x P table = 59.8 lb./ac.  
 S.E. of control mean = 103.6 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 59(MAE).**

**Site :- Reg. Res. Stn., Varanasi.**

**Type :- 'M'.**

Object :- Type VI—To study the effect of different sources and methods of application of P on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loam soil. (b) Refer soil analysis, Varanasi. (iii) 4th week of Oct., 1959. (iv) (a) 3 ploughings and 1 harrowing. (b) N.A. (c) 32 lb./ac. (d) 9' between rows. (e) N.A. (v) Nil. (vi) NP-52 (160 days). (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 1st week of April, 1960.

## 2. TREATMENTS :

Same as in expt. no. 57(MAE) type VI conducted at Bichpuri on page 349.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 13. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 1/100 ac. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Mild attack of rats. (iii) Grain yield. (iv) (a) 1956—contd. (b) No. (c) N.A. (v) (a) Bichpuri and Para. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1454 lb./ac. (ii) 290.7 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

Control = 1267 lb./ac.

	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	Mean	S <sub>1</sub>	S <sub>2</sub>
P <sub>1</sub>	1440	1522	1555	1506	1440	1572
P <sub>2</sub>	1432	1489	1382	1434	1462	1406
Mean	1436	1506	1468	1470	1451	1489
S <sub>1</sub>	1415	1522	1415			
S <sub>2</sub>	1457	1490	1521			

S.E. of S or P marginal mean = 68.5 lb./ac.  
 S.E. of M marginal mean = 83.9 lb./ac.  
 S.E. of body of S×M or P×M table or control mean = 118.7 lb./ac.  
 S.E. of body of S×P table = 96.9 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 56(MAE).****Site :- Reg. Res. Stn., Varanasi.****Type :- 'M'.**

Object :— Type VI (TCM)—To study the effect of continuous application of N and P on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Wheat—Maize—Pea—Fallow. (b) Fallow. (c) Nil. (ii) (a) Loam soil. (b) Refer soil analysis, Varanasi. (iii) 25 to 30.11.1956. (iv) (a) 5 to 7 ploughings. (b) N.A. (c) 82 lb./ac. (d) 9" between rows. (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) 1.98". (x) 29.3.1957 to 23.4.1957.

**2. TREATMENTS :**

Same as in expt. no. 56(MAE) type VI (TCM) conducted at Pura on page 359.

**3. DESIGN:**

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 2. (iv) (a) N.A. (b) 1/40 ac. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Severe attack of brown rust. No control measures taken. (iii) Grain yield. (iv) (a) 1555—contd. (b) Yes. (c) N.A. (v) (a) Pura. (b) N.A. (vi) Heavy damage due to rats in two plots. (vii) Nil.

**5. RESULTS :**

(i) 1482 lb./ac. (ii) 171.7 lb./ac. (iii) 'Control vs. others' alone is highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	(2,3)	4	5	6	7	8	9	10	11	12
Av. yield	1104	1568	1501	1424	1493	1461	1428	1624	1530	1552	1522

S.E./mean except (2, 3) = 121.4 lb./ac. and S.E. of (2, 3) mean = 85.8 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 57(MAE).****Site :- Reg. Res. Stn., Varanasi.****Type :- 'M'.**

Object :— Type VI (TCM)—To study the effect of continuous application of N and P on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Wheat—Maize—Pea—Fallow. (b) Fallow. (c) Nil. (ii) (a) Alluvial soil. (b) Refer soil analysis, Pura. (iii) Middle of Oct., 1957. (iv) (a) 7 ploughings. (b) N.A. (c) 82 lb./ac. (d) 9" between rows. (e) N.A. (v) 20 lb./ac. of N as A/S. (vi) N.A. (vii) Irrigated. (viii) and (ix) N.A. (x) Last week of March, 1958.

**2. TREATMENTS :**

Same as in expt. no. 56(MAE) type VI (TCM) conducted at Pura on page 359.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 2. (iv) (a) N.A. (b) 1/40 ac. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1955—contd. (b) Yes. (c) N.A. (v) (a) Pura. (b) Nil. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1474 lb./ac. (ii) 212.2 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	(2,3)	4	5	6	7	8	9	10	11	12
Av. yield	1193	1391	1547	1613	1366	1333	1251	1440	1654	1834	1670

S.E./mean except (2, 3) = 150.0 lb./ac.; S.E. of (2, 3) mean = 106.1 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 58(MAE).**

**Site :- Reg. Res. Stn., Varanasi.**

**Type :- 'M'.**

Object :— Type VI (TCM)—To study the effect of continuous application of N and P on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Wheat—Maize—Pea—Fallow. (b) Fallow. (c) Nil. (ii) (a) Loam soil. (b) Refer soil analysis, Varanasi. (iii) Last week of Oct., and 1st week of Nov., 1958. (iv) (a) 2 ploughings. (b) 82 lb./ac. (d) 9" between rows. (e) N.A. (v) Nil. (vi) NP—52 (150 days). (vii) Irrigated. (viii) 2 weedings. (ix) 8". (x) 1st and 2nd week of April, 1959.

**2. TREATMENTS :**

Same as in expt. no. 56(MAE) type VI (TCM) conducted at Pura on page 359.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 2. (iv) (a) N.A. (b) 1/40 ac. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) White ants attack was controlled. Slight damage due to rats. (iii) Grain yield. (iv) (a) 1955—contd. (b) Yes. (c) N.A. (v) (a) Pura. (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1767 lb./ac. (ii) 238.8 lb./ac. (iii) 'Control vs. others' alone is significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	(2,3)	4	5	6	7	8	9	10	11	12
Av. yield	1251	2082	1703	1917	1860	1835	1613	1695	1777	1596	1794

S.E./mean except (2, 3) = 168.9 lb./ac., S.E. of (2, 3) mean = 119.4 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 59(MAE).**

**Site :- Reg. Res. Stn., Varanasi.**

**Type :- 'M'.**

Object :—Type VI (TCM)—To study the effect of continuous application of N and P on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Wheat—Maize—Pea—Fallow. (b) Fallow. (c) Nil. (ii) (a) Loam soil. (b) Refer soil analysis, Varanasi. (iii) 4th week of Oct., 1959. (iv) (a) 3 ploughings and 1 harrowing. (b) N.A. (c) 82 lb./ac (d) 9". (e) N.A. (v) Nil. (vi) NP—52 (160 days). (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 1st week of April, 1960.

## 2. TREATMENTS :

Same as in expt. no. 56(MAE) type VI (TCM) conducted at Pura on page 359.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 2. (iv) (a) N.A. (b) 21'3"×46'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Mild attack of rats. (iii) Grain yield. (iv) (a) 1955—contd. (b) Yes. (c) N.A. (v) (a) Pura. (b) Nil. (vi) Cloudy weather and frequent showers affected the growth. (vii) Nil.

## 5. RESULTS :

(i) 1229 lb./ac. (ii) 229.5 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	(2,3)	4	5	6	7	8	9	10	11	12
Av. yield	936	1345	1084	1373	1338	1418	1343	1144	1244	1187	986

S.E./mean except (2,3) = 162.3 lb./ac. and S.E. of (2,3) mean = 114.8 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 54(TCM).**

**Site :- Govt. Res. Farm, Pura.**

**Type :- 'M'.**

Object :— Type I (a)—To study the effect of N and P on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loam in texture. (b) Refer soil analysis, Pura. (iii) 30.10.1954. (iv) (a) to (c) N.A. (v) Nil. (vi) C—13. (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 3.4.1955.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)+3 extra treatments

(1) 3 sources of N :  $S_1=A/S$ ,  $S_2=A/N$  and  $S_3=Urea$ .

(2) 3 levels of N :  $N_0=0$ ,  $N_1=20$  and  $N_2=40$  lb./ac.

(3) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=20$  and  $P_2=40$  lb./ac.

Extra treatments :  $T_1=60$  lb./ac. of N as A/S+40 lb./ac. of  $P_2O_5$  as Super,  $T_2=40$  lb./ac. of N as A/S+80 lb./ac. of  $P_2O_5$  as Super and  $T_3=60$  lb./ac. of N as A/S+80 lb./ac. of  $P_2O_5$  as Super.

## 3. DESIGN :

(i)  $3^3+3$  confd. (ii) (a) 12 plots/block ; 3 blocks/replication. (b) N.A. (iii) 1. (iv) (a) 57'×19.1'. (b) 48.1'×15.1'. (v) 4.45'×2'. (vi) Yes.

## 4. GENERAL :

(i) Germination was good. (ii) No. (iii) Grain yield. (iv) (a) 1953—1955. (b)<sub>1</sub> No. (c) Nil. (v) (a) Varanasi. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1202 lb./ac. (ii) 220.2 lb./ac. (iii) Main effect of P alone is highly significant. (iv) Av. yield of grain in lb./ac.

$T_1 = 2009 \text{ lb./ac.}$ ;  $T_2 = 2050 \text{ lb./ac.}$  and  $T_3 = 2039 \text{ lb./ac.}$

	$N_0$	$N_1$	$N_2$	Mean	$S_1$	$S_2$	$S_3$
$P_0$	600	800	600	667	760	550	691
$P_1$	1260	1439	1479	1393	1379	1399	1401
$P_2$	1359	1439	1839	1546	1619	1275	1744
Mean	1073	1226	1306	1202	1253	1075	1279
$S_1$	—	1330	1229	1314			
$S_2$	—	1020	1489	1254			
$S_3$	—	1328	1129	1229			

S.E. of any marginal mean in  $S \times P$  or  $N \times P$  table = 73.4 lb./ac.

S.E. of  $S$  marginal mean in  $S \times N$  table = 89.9 lb./ac.

S.E. of body of any table or  $T$  mean = 127.1 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 55(TCM).**

**Site :- Govt. Res. Farm, Pura.**

**Type :- 'M'.**

Object :- Type I (a)—To study the effect of  $N$  and  $P$  on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Sanai*. (c) N.A. (ii) (a) Loam soil. (b) Refer soil analysis, Pura. (iii) 8.11.1955. (iv) (a) 12 ploughings. (b) Sown in lines with *desi* seed drill. (c) 40 srs./ac. (d) 5" between rows. (e) N.A. (v) Nil. (vi) C—13. (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 9.4.1956.

**2. TREATMENTS :**

Same as in expt. no. 54(TCM) type I (a) on page 371.

**3. DESIGN :**

(i)  $3^3+3$  confd. (ii) (a) 12 plots/block ; 3 blocks/replication. (b) N.A. (iii) 1. (iv) (a) 57' 6"  $\times$  18' 9". (b) 48' 1"  $\times$  15' 1". (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) Satisfactory. (ii) Very mild attack of yellow rust. (iii) Grain yield. (iv) (a) 1953—1955. (b) No. (c) Nil. (v) (a) Varanasi. (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1936 lb./ac. (ii) 200.5 lb./ac. (iii) Main effect of  $P$  and interaction  $N \times P$  are significant. (iv) Av. yield of grain in lb./ac.

$T_1 = 1860 \text{ lb./ac.}$ ;  $T_2 = 1820 \text{ lb./ac.}$  and  $T_3 = 2115 \text{ lb. ac.}$

	$N_0$	$N_1$	$N_2$	Mean	$S_1$	$S_2$	$S_3$
$P_0$	1759	1420	1989	1723	1819	1699	1651
$P_1$	1809	2260	1890	1986	1841	2029	2088
$P_2$	2309	1870	2139	2106	2199	2220	1899
Mean	1959	1850	2006	1938	1953	1983	1879
$S_1$	—	1910	1999	1954			
$S_2$	—	1980	2009	1994			
$S_3$	—	1660	2009	1834			

S.E. of any marginal mean in $S \times P$ or $N \times P$ table	= 66.8 lb./ac.
S.E. of S marginal mean in $S \times N$ table	= 81.9 lb./aa.
S.E. of body of any table or T mean	= 115.8 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 54(TCM).**

**Site :- Govt. Res. Farm, Pura.**

**Type :- 'M'.**

Object :— Type II—To study the effect of time of application of N on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loam in texture. (b) Refer soil analysis, Pura. (iii) 4.11.1954. (iv) (a) to (e) N.A. (v) Nil. (vi) NP—125. (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 7.4.1955.

**2. TREATMENTS :**

All combinations of (1) and (2)+a control

(1) 3 sources of 20 lb./ac. of N :  $S_1=A/S$ ,  $S_2=A/N$  and  $S_3=Urea$ .

(2) 2 times of application of N :  $T_1=At$  sowing and  $T_2=At$  1st irrigation.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a)  $40' \times 27.2'$ . (b)  $33' \times 22'$ . (v)  $3.5' \times 2.6'$ . (vi) Yes.

**4. GENERAL :**

(i) Germination was good. (ii) No. (iii) Yield of grain. (iv) (a) 1953—1954. (b) No. (c) Nil. (v) (a) Varanasi. (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1083 lb./ac. (ii) 189.4 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

Control = 968 lb./ac.

	$S_1$	$S_2$	$S_3$	Mean
$T_1$	997	1095	997	1030
$T_2$	1185	1178	1163	1175
Mean	1091	1136	1080	1102

S.E. of S marginal mean = 67.0 lb./ac.

S.E. of T marginal mean = 54.7 lb./ac.

S.E. of body of table or control mean = 94.7 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 54(TCM).**

**Site :- Govt. Res. Farm, Pura.**

**Type :- 'M'.**

Object :—Type IV—To study the effect of time and method of application of P on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loam in texture. (b) Refer soil analysis, Pura. (iii) 1, 2.11.1954. (iv) and (v) N.A. (vi) C—13. (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 31.10.1955.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)+control (2 plots)

(1) 2 sources of  $P_2O_5$  :  $S_1=Ammono. Phos.$  and  $S_2=Super.$

(2) 2 levels of  $P_2O_5$  :  $P_1=20$  and  $P_2=40$  lb./ac.

(3) 3 methods of application :  $M_1=Broadcast$  before final cultivation,  $M_2=Band$  placement and  $M_3=2\frac{1}{2}''$  below seed.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 14. (b) N.A. (iii) 3. (iv) (a) 54' × 16'. (b) 51.8' × 14'. (v) 1.1' × 1'. (vi) Yes.

**4. GENERAL :**

(i) Germination was good. (ii) No. (iii) Yield of grain. (iv) (a) 1953—1955. (b) No. (c) Nil. (v) (a) Varanasi. (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1351 lb./ac. (ii) 257.5 lb./ac. (iii) 'Control vs. others' alone is highly significant. (iv) Av. yield of grain in lb./ac.

Control = 961 lb./ac.

	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	Mean	S <sub>1</sub>	S <sub>2</sub>
P <sub>1</sub>	1447	1442	1476	1455	1421	1489
P <sub>2</sub>	1492	1341	301	1378	1403	1353
Mean	1469	1392	1388	1416	1412	1421
S <sub>1</sub>	1541	1377	1317			
S <sub>2</sub>	1397	1407	1459			

S.E. of M marginal mean = 74.3 lb./ac.  
 S.E. of S or P marginal mean = 60.7 lb./ac.  
 S.E. of body of M × P or M × S table or control mean = 105.1 lb./ac.  
 S.E. of body of S × P table = 85.8 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 55(TCM).**

**Site :- Govt. Res. Farm, Pura.**

**Type :- 'M'.**

**Object :-**Type IV—To study the effect of time and method of application of P on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Sanai* G.M. (c) N.A. (ii) (a) Loam soil. (b) Refer soil analysis, Pura. (iii) 17, 18.11.1955. (iv) (a) 10 ploughings. (b) Sown in lines with *Jesi* seed drill. (c) 40 srs./ac. (d) 6' between rows. (e) N.A. (v) Nil. (vi) C—13. (vii) Irrigated. (viii) 1 weeding. (ix) and (x) N.A.

**2. TREATMENTS :**

Same as in expt. no. 54(TCM) type IV on page 373.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 14. (b) N.A. (iii) 3. (iv) (a) 54' 5" × 20'. (b) 48' 1" × 15' 1". (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) Good. Crop lodged. (ii) Very mild attack of yellow rust. (iii) Grain yield. (iv) (a) 1953—1955. (b) No. (c) Nil. (v) (a) Varanasi. (b) N.A. (vi) Mild attack of rats. (vii) Control plots are not taken for analysis.

**5. RESULTS :**

(i) 1364 lb./ac. (ii) 188.4 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

Control= 979 lb./ac.

	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	Mean	S <sub>1</sub>	S <sub>2</sub>
P <sub>1</sub>	1409	1370	1414	1398	1419	1377
P <sub>2</sub>	1584	1400	1390	1458	1433	1483
Mean	1496	1385	1402	1428	1426	1430
S <sub>1</sub>	1545	1335	1398			
S <sub>2</sub>	1448	1435	1407			

S.E. of M marginal mean	= 54.4 lb./ac.
S.E. of S or P marginal mean	= 44.4 lb./ac.
S.E. of body of S×M or P×M table	= 76.9 lb./ac.
S.E. of body of S×P table	= 62.8 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 55(TCM).****Site :- Govt. Res. Farm, Pura.****Type :- 'M'.**

Object :-Type VI—To study the direct, residual and cumulative effects of N and P on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Fallow and maize. (c) N.A. (ii) (a) Loam soil. (b) Refer soil analysis, Pura. (iii) 5, 6.11.1955. (iv) (a) 8 ploughings. (b) Sown with *desi* seed drill. (c) 40 srs./ac. (d) 6" between rows. (e) N.A. (v) Nil. (vi) NP—125. (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 11.4.1956.

**2. TREATMENTS:**

Same as in expt. no. 56(MAE) type VI (TCM) on page 359.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 2. (iv) (a) 47'4"×23'. (b) 45'×16'. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1955—contd. (b) Yes. (c) N.A. (v) (a) Varanasi. (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 948 lb./ac. (ii) 256.8 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	O	C	P <sub>½</sub>	P <sub>1</sub>	P <sub>2</sub>
Av. yield	648	719	950	1402	1327

S.E. of O or p<sub>½</sub> mean = 181.6 lb./ac. ; S.E. of C mean = 74.1 lb./ac. ;S.E. of p<sub>1</sub> or p<sub>2</sub> mean = 128.4 lb./ac.**Crop :- Wheat (Rabi).****Ref :- U.P. 54(TCM).****Site :- Govt. Res. Farm, Pura.****Type :- 'M'.**

Object :-Type IX—To study the effect of N, P and F.Y.M. on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loam in texture. (b) Refer soil analysis, Pura. (iii) 4.11.1954. (iv) and (v) N.A. (vi) C—13. (vii) Irrigated. (viii) and (ix) N.A. (x) 6.4.1955.



**2. TREATMENTS :**

All combinations of (1), (2) and (3)

- (1) 3 levels of N :  $N_0=0$ ,  $N_1=20$  and  $N_2=40$  lb./ac.  
 (2) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=20$  and  $P_2=40$  lb./ac.  
 (3) 3 levels of F.Y.M. :  $F_0=0$ ,  $F_1=10$  and  $F_2=20$  C.L./ac.

**3. DESIGN :**

- (i) 3<sup>3</sup> fact. confd. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A. (iii) 1. (iv) (a) 47.3' × 23'. (b) 40.3' × 18'. (v) 3.5' × 2.5'. (vi) Yes.

**4. GENERAL :**

- (i) Normal. (ii) No. (iii) Grain yield. (iv) (a) 1953—1955. (b) No. (c) Nil. (v) (a) Varanasi. (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

- (i) 1533 lb./ac. (ii) 306.1 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	$N_0$	$N_1$	$N_2$	Mean	$P_0$	$P_1$	$P_2$
$F_0$	1391	1568	1498	1486	1187	1561	1710
$F_1$	1351	1541	1702	1531	1481	1391	1721
$F_2$	1471	1421	1851	1581	1320	1671	1752
Mean	1404	1510	1684	1533	1329	1541	1728
$P_0$	1122	1501	1364				
$P_1$	1452	1381	1790				
$P_2$	1638	1648	1898				

S.E. of any marginal mean = 102.0 lb./ac.  
 S.E. of body of any table = 176.7 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 55 (TCM).**

**Site :- Govt. Res. Farm, Pura.**

**Type :- 'M'.**

Object :—Type IX—To study the effect of N, P and F.Y.M. on the yield of Wheat.

**1. BASAL CONDITIONS :**

- (i) (a) Nil. (b) *Sanai* G.M. (c) N.A. (ii) (a) Loam soil. (b) Refer soil analysis, Pura. (iii) 13.11.1955. (iv) (a) 10 ploughings. (b) Sown in lines by *desi* seed drill. (c) 40 srs./ac. (d) 6" between rows. (e) N.A. (v) Nil. (vi) C—13. (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 11.4.1956.

**2. TREATMENTS :**

Same as in expt. no. 54(TCM) type IX on page 375.

**3. DESIGN :**

- (i) 3<sup>3</sup> fact. confd. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A. (iii) 1. (iv) (a) 57' 6" × 19' 1". (b) 48' 1" × 15' 1". (v) N.A. (vi) Yes.

**4. GENERAL :**

- (i) Good. (ii) Very mild attack of yellow rust. (iii) Grain yield. (iv) (a) 1953—1955. (b) No. (c) Nil. (v) (a) Varanasi. (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

- (i) 1946 lb./ac. (ii) 441.6 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
F <sub>0</sub>	1557	1809	1991	1786	1446	2093	1819
F <sub>1</sub>	1870	2132	1961	1988	1678	2122	2164
F <sub>2</sub>	1958	2183	2051	2064	2132	1971	2089
Mean	1795	2041	2001	1946	1752	2062	2024
P <sub>0</sub>	1324	1789	2412				
P <sub>1</sub>	2143	2143	1900				
P <sub>2</sub>	1918	2191	1962				

S.E. of any marginal mean = 147.2 lb./ac.

S.E. of body of any table = 255.0 lb./ac.

**Crop :-** Wheat (*Rabi*).

**Ref :-** U.P. 54(TCM).

**Site :-** Govt. Res. Farm, Pura.

**Type :-** 'M'.

**Object :-** Type X—To study the effect of different sources and levels of N on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loam in texture. (b) Refer soil analysis, Pura. (iii) 5.11.1954. (iv) and (v) N.A. (vi) NP—125. (vii) Irrigated. (viii) and (ix) N.A. (x) 7.4.1955.

**2. TREATMENTS :**

All combinations of (1) and (2)+a control

(1) 3 sources of N : S<sub>1</sub>=A/S, S<sub>2</sub>=A/S/N and S<sub>3</sub>=A/C.

(2) 3 levels of N : N<sub>1</sub>=20, N<sub>2</sub>=40 and N<sub>3</sub>=60 lb./ac.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) 40'×20'. (b) 38.7'×18.8'. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) Germination was good. (ii) No. (iii) Yield of grain. (iv) (a) 1953—1955. (b) No. (c) Nil. (v) (a) Varanasi. (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1183 lb./ac. (ii) 248.8 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

Control = 1033 lb./ac.

	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	Mean
S <sub>1</sub>	1280	1025	1287	1197
S <sub>2</sub>	1257	1414	1287	1319
S <sub>3</sub>	1085	928	1235	1083
Mean	1207	1122	1270	1200

S.E. of any marginal mean = 71.8 lb./ac.

S.E. of body of table or control mean = 124.4 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 55(TCM).****Site :- Govt. Res. Farm, Pura.****Type :- 'M'.**

Object :—Type X—To study the effect of different sources and levels of N on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Sanai* G.M. (c) N.A. (ii) (a) Loam soil. (b) Refer soil analysis, Pura. (iii) 10.11.1955.  
 (iv) (a) 12 ploughings. (b) Line sowing with *desi* seed drill. (c) 40 srs./ac. (d) 6" between rows. (e) N.A.  
 (v) Nil. (vi) C—13. (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 9.4.1956.

**2. TREATMENTS :**

Same as in expt. no. 54(TCM) type X on page 377.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 3. (iv) (a) 45'×24' 2". (b) 38'×19'. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) Satisfactory. (ii) Very mild attack of yellow rust. (iii) Grain yield. (iv) (a) 1953—1955. (b) No.  
 (c) Nil. (v) (a) Varanasi. (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1688 lb./ac. (ii) 190.7 lb./ac. (iii) 'Control vs. others' alone is highly significant. (iv) Av. yield of grain in lb./ac.

Control = 1475 lb/ac.				
	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	Mean
S <sub>1</sub>	1698	1749	1801	1749
S <sub>2</sub>	1941	1698	1709	1783
S <sub>3</sub>	1587	1526	1697	1503
Mean	1742	1658	1736	1712

S.E. of any marginal mean = 63.6 lb./ac.

S.E. of body of table or control mean = 110.1 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 54(TCM).****Site :- Govt. Res. Farm, Pura.****Type :- 'M'.**

Object :—Type XI—To study the effect of N, P and K on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loam in texture. (b) Refer soil analysis, Pura. (iii) 31.10.1954 and 1.11.1954.  
 (iv) and (v) N.A. (vi) C—13. (vii) Irrigated. (viii) and (ix) N.A. (x) 4.4.1955.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=20 and N<sub>2</sub>=40 lb./ac.(2) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=20 and P<sub>2</sub>=40 lb./ac.(3) 3 levels of K<sub>2</sub>O : K<sub>0</sub>=0, K<sub>1</sub>=20 and K<sub>2</sub>=40 lb./ac.**3. DESIGN :**

(i) 3<sup>3</sup> fa.t. confd. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A. (iii) 1. (iv) (a) 45'×24.2'. (b) 38.0'×19.1' (v) 3.5'×2.55'. (vi) Yes.

**4. GENERAL :**

(i) Germination was good. (ii) No. (iii) Yield of grain. (iv) (a) 1953—1955. (b) No. (c) Nil. (v) (a) Varanasi. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1574 lb./ac. (ii) 157.0 lb./ac. (iii) Main effects of N and P are highly significant. Interaction N×K is significant. (iv) Av. yield of grain in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
K <sub>0</sub>	1531	1721	1681	1644	1490	1670	1772
K <sub>1</sub>	1110	1640	1971	1574	1370	1740	1612
K <sub>2</sub>	1430	1401	1681	1504	1240	1540	1732
Mean	1357	1587	1778	1574	1367	1650	1705
P <sub>0</sub>	1250	1440	1411				
P <sub>1</sub>	1340	1521	2089				
P <sub>2</sub>	1481	1800	1834				

S.E. of any marginal mean = 52.3 lb./ac.  
S.E. of body of any table = 90.6 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 55(TCM).**

**Site :- Govt. Res. Farm, Pura.**

**Type :- 'M'.**

Object :- Type XI—To study the effect of N, P and K on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanai* G.M. (c) N.A. (ii) (a) Loam soil. (b) Refer soil analysis, Pura. (iii) 18.11.1955. (iv) (a) 10 ploughings. (b) Line sowing with *desi* seed drill. (c) 40 srs./ac. (d) 6" between rows. (e) N.A. (v) N.A. (vi) C—13. (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 11.4.1956.

## 2. TREATMENTS :

Same as in expt. no. 54(TCM) type XI on page 378.

## 3. DESIGN :

(i) 3<sup>rd</sup> fact. confd. (ii) (a) 9 plots/block and 3 blocks/replication. (b) N.A. (iii) 1. (iv) (a) 57'6"×19'1". (b) 48'1"×15'1". (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Mild attack of yellow rust. (iii) Grain yield. (iv) (a) 1953—1955. (b) No. (c) Nil. (v) (a) Varanasi. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1668 lb./ac. (ii) 209.0 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
K <sub>0</sub>	1698	1748	1748	1731	1546	1829	1818
K <sub>1</sub>	1648	1688	1758	1698	1485	1789	1820
K <sub>2</sub>	1628	1516	1577	1574	1476	1728	1519
Mean	1658	1651	1694	1668	1502	1782	1719
P <sub>0</sub>	1415	1720	1371				
P <sub>1</sub>	1790	1809	1747				
P <sub>2</sub>	1769	1424	1964				

S.E. of any marginal mean = 69.7 lb./ac.  
S.E. of body of any table = 120.7 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 54(TCM).****Site :- Reg. Res. Stn., Varanasi.****Type :- 'M'.**

Object :—Type I (a)—To study the effect of N and P on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Sanai* G.M. (c) N.A. (ii) (a) Loam soil. (b) Refer soil analysis, Varanasi. (iii) 6.11.1954. (iv) (a) 7 ploughings. (b) Sown in lines with seed drill. (c) 45 srs./ac. (d) 9" between rows. (e) N.A. (v) Nil. (vi) C-13. (vii) Irrigated. (viii) 1 weeding. (ix) 1.4". (x) 12.4.1955.

**2. TREATMENTS :**

Same as in expt. no. 54(TCM) type I (a) conducted at Pura on page 371.

**3. DESIGN :**

(i) 3<sup>3</sup>+3 confd. (ii) (a) 3 blocks/replication ; 12 plots/block. (b) N.A. (iii) 1. (iv) (a) 42'×24'. (c) 36'×20'. (v) 2'×2'. (vi) Yes.

**4. GENERAL :**

(i) Good. Slight lodging. (ii) Crop damaged by rats. (iii) Grain yield. (iv) (a) 1953—1955. (b) No. (c) Nil. (v) (a) Pura. (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1632 lb./ac. (ii) 207.0 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

$T_1 = 1702$  lb./ac. ;  $T_2 = 1720$  lb./ac. and  $T_3 = 1783$  lb. ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>
P <sub>0</sub>	1308	1763	1611	1560	1493	1592	1595
P <sub>1</sub>	1314	1773	1580	1556	1553	1520	1595
P <sub>2</sub>	1657	1510	1856	1674	1628	1837	1557
Mean	1426	1682	1682	1597	1558	1650	1582
S <sub>1</sub>	—	1603	1766	1684			
S <sub>2</sub>	—	1702	1827	1764			
S <sub>3</sub>	—	1740	1453	1597			

S.E. of any marginal mean in S×P or N×P table

= 69.0 lb./ac.

S.E. of S marginal mean in S×N table

= 84.5 lb./ac.

S.E. of body of any table or T mean

= 119.5 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 55(TCM).****Site :- Reg. Res. Stn., Varanasi.****Type :- 'M'.**

Object :—Type I (a)—To study the effect of N and P on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Sanai*. (c) N.A. (ii) (a) Loam soil. (b) Refer soil analysis, Varanasi. (iii) 10.11.1955. (iv) (a) 5 ploughings and 1 harrowing. (b) By seed drill. (c) 50 srs./ac. (d) 9" between rows. (e) N.A. (v) *Sanai* G.M. (vi) C-13 (5 months). (vii) Irrigated. (viii) N.A. (ix) 0.71". (x) 15, 16.4.1956.

**2. TREATMENTS :**

Same as in expt. no. 54(T.C.M.) type I (a) conducted at Pura on page 371.

**3. DESIGN :**

(i) 3<sup>3</sup>+3 confd. (ii) (a) 12 plots/block ; 3 blocks/replication. (b) N.A. (iii) 1. (iv) (a) 42'×24'. (b) 36'×20'. (v) 2'×2'. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Traces of brown rust. No control measure taken. (iii) Grain yield. (iv) (a) 1953—1955. (b) No. (c) Nil. (v) (a) Pura. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1855 lb./ac. (ii) 207.0 lb./ac. (iii) Main effect of N alone is highly significant. (iv) Av. yield of grain in lb./ac.

$$T_1 = 2442 \text{ lb./ac.}; T_2 = 2341 \text{ lb./ac. and } T_3 = 2173 \text{ lb./ac.}$$

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>
P <sub>0</sub>	1277	1794	2061	1711	1724	1669	1740
P <sub>1</sub>	1472	1516	2023	1670	1660	1671	1679
P <sub>2</sub>	1402	1624	2133	1720	1881	1628	1651
Mean	1384	1645	2072	1700	1755	1656	1690
S <sub>1</sub>	—	1824	2109	1966			
S <sub>2</sub>	—	1562	1981	1771			
S <sub>3</sub>	—	1548	2127	1838			

S.E. of any marginal mean in P×S or P×N table = 69.0 lb./ac.  
 S.E. of S marginal mean in S×N table = 84.5 lb./ac.  
 S.E. of body of any table or T mean = 119.5 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 54(TCM).**

**Site :- Reg. Res. Stn., Varanasi.**

**Type :- 'M'.**

Object :-Type II—To study the effect of time of application of N on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Loam soil. (b) Refer soil analysis. Varanasi. (iii) 29.10.1954. (iv) (a) 10 ploughings. (b) By seed drill. (c) 45 srs./ac. (d) 9" between rows. (e) N.A. (v) Nil. (vi) P—52. (vii) Irrigated. (viii) 1 weeding. (ix) 1.4". (x) 6.4.1955.

## 2. TREATMENTS :

Same as in expt. no. 54(TCM) type II conducted at Pura on page 373.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 45'×24'. (b) 36'×20'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Crop suffered badly due to lack of moisture. (ii) A few plots were damaged by rats. (iii) Grain yield. (iv) (a) 1953—1954. (b) No. (c) Nil. (v) (a) Pura. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS:

(i) 1532 lb./ac. (ii) 221.1 lb./ac. (iii) Interaction S×T alone is significant. (iv) Av. yield of grain in lb./ac.

$$\text{Control} = 1368 \text{ lb./ac.}$$

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean
T <sub>1</sub>	1824	1434	1281	1513
T <sub>2</sub>	1496	1738	1528	1587
Mean	1660	1586	1404	1550

S.E. of S marginal mean	=	78.2 lb./ac.
S.E. of T marginal mean	=	63.8 lb./ac.
S.E. of body of table or control mean	=	110.6 lb./ac.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 54(TCM).**

**Site :- Reg. Res. Stn., Varanasi.**

**Type :- 'M'.**

Object :- Type IV--To study the effect of time and method of application of P on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Sanai* G.M. (c) N.A. (ii) (a) Loam soil. (b) Refer soil analysis, Varanasi. (iii) 2.11.1954. (iv) (a) Ploughings. (b) Sown in lines. (c) 45 srs./ac. (d) 9" between rows. (e) N.A. (v) Nil. (vi) C-13 (late). (vii) Irrigated. (viii) 1 weeding. (ix) 1.4". (x) 11.4.1955.

**2. TREATMENTS :**

Same as in expt. no. 54(TCM) type IV conducted at Pura on page 373.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 14. (b) N.A. (iii) 3. (iv) (a) 42'×26'. (b) 36'×20'. (v) 3'×3'. (vi) Yes.

**4. GENERAL :**

(i) Germination good. Slight lodging. (ii) Crop damaged by rats and birds. (iii) Grain yield. (iv) (a) 1953-1955. (b) No. (c) Nil. (v) (a) Pura. (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1407 lb./ac. (ii) 174.0 lb./ac. (iii) 'Control vs. others' alone is highly significant. (iv) Av. yield of grain in lb./ac.

Control = 1216 lb./ac.

	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	Mean	S <sub>1</sub>	S <sub>2</sub>
P <sub>1</sub>	1447	1483	1427	1452	1459	1445
P <sub>2</sub>	1438	1417	1424	1426	1395	1458
Mean	1442	1450	1426	1439	1427	1452
S <sub>1</sub>	1484	1438	1359			
S <sub>2</sub>	1401	1462	1492			

S.E. of M marginal mean	=	50.2 lb./ac.
S.E. of S or P marginal mean	=	41.0 lb./ac.
S.E. of body of S×M or P×M table or control mean	=	71.0 lb./ac.
S.E. of body of S×P table	=	58.0 lb./ac.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 55(TCM).**

**Site :- Reg. Res. Stn., Varanasi.**

**Type :- 'M'.**

Object :- Type IV--To study the effect of time and method of application of P on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Sanai*. (c) N.A. (ii) (a) Loam soil. (b) Refer soil analysis, Varanasi. (iii) 20, 21.11.1955. (iv) (a) 6 ploughings and 1 harrowing. (b) By seed drill. (c) 50 srs./ac. (d) 9" between rows. (e) N.A. (v) *Sanai* G.M. (vi) C-13 (5 months). (vii) Irrigated. (viii) Nil. (ix) 0.71". (x) 8 to 10.4.1956.

## 2. TREATMENTS :

Same as in expt. no. 54(TCM) type IV conducted at Pura on page 373.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 14. (b) N.A. (iii) 3. (iv) (a) and (b) 26'×42'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Traces of brown rust and attack of rats. (iii) Grain yield. (iv) (a) 1953—1955. (b) No. (c) Nil. (v) (a) Pura. (b) N.A. (vi) Nil. (vii) Control plots were not taken for analysis.

## 5. RESULTS :

(i) 1912 lb./ac. (ii) 219.2 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

Control = N.A.

	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	Mean	S <sub>1</sub>	S <sub>2</sub>
P <sub>1</sub>	1986	1944	1946	1959	1964	1954
P <sub>2</sub>	1962	1722	1914	1866	1852	1880
Mean	1974	1833	1930	1912	1908	1917
S <sub>1</sub>	1948	1854	1922			
S <sub>2</sub>	2000	1812	1939			

S.E. of M marginal mean	= 63.3 lb./ac.
S.E. of S or P marginal mean	= 51.7 lb./ac.
S.E. of body of M×P or M×S table	= 89.5 lb./ac.
S.E. of body of S×P table	= 73.1 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 55(TCM).**

**Site :- Reg. Res. Stn., Varanasi.**

**Type :- 'M'.**

Object :—Type VI—To study the effect of combinations of N and P on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Loamy soil. (b) Refer soil analysis, Varanasi. (iii) 30.10.1955. (iv) (a) 5 ploughings and 1 harrowing. (b) By seed drill. (c) 50 srs./ac. (d) 9" between rows. (e) N.A. (v) Nil. (vi) P—52 (5 months). (vii) Irrigated. (viii) 1 weeding. (ix) 0.71". (x) 19, 20.3.1956.

## 2. TREATMENTS :

Same as in expt. no. 56(MAE) type VI (TCM) conducted at Pura on page 366.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 2. (iv) (a) 23'×48'. (b) 20'×36'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Traces of brown rust. No control measure. Attack of rats. (iii) Grain yield. (iv) (a) 1955—contd. (b) Yes. (c) N.A. (v) (a) Pura. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1886 lb./ac. (ii) 181.2 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

Treatment	O	C	P <sub>1/2</sub>	P <sub>1</sub>	P <sub>2</sub>
Av. yield	1585	1842	1929	1963	2071

S.E. for O or P<sub>1/2</sub> mean = 128.1 lb./ac. ; S.E. of C mean = 52.3 lb./ac. ;

S.E. of P<sub>1</sub> or P<sub>2</sub> mean = 90.6 lb./ac.



**Crop :- Wheat (Rabi).****Ref :- U.P. 54(TCM).****Site :- Reg. Res. Stn., Varanasi.****Type :- 'M'.**

Object :-Type IX—To study the effect of N, P and F.Y.M. on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Sanai* G.M. (c) N.A. (ii) (a) Loam soil. (b) Refer soil analysis, Varanasi. (iii) 24.11.1954. (iv) (a) Ploughing and *palewa*. (b) Sown in lines. (c) 45 srs./ac. (d) 9" between rows. (e) N.A. (v) N.A. (vi) P—52. (vii) Irrigated. (viii) 1 weeding. (ix) 1.4". (x) 7.4.1955.

**2. TREATMENTS :**

Same as in expt. no. 54(TCM) type IX conducted at Pura on page 375.

**3. DESIGN :**

(i) 3<sup>3</sup> fact. confd. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A. (iii) 1. (iv) (a) 24' × 45'. (b) 20' × 36'. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) Good. Crop lodged. (ii) Rat trouble noticed. (iii) Grain yield. (iv) (a) 1953—1955. (b) No. (c) Nil. (v) (a) Pura. (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1276 lb./ac. (ii) 211.1 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb /ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
F <sub>0</sub>	1069	1357	1236	1221	1117	1289	1257
F <sub>1</sub>	1301	1182	1526	1336	1337	1307	1364
F <sub>2</sub>	1290	1303	1216	1270	1301	1262	1247
Mean	1220	1281	1326	1276	1252	1286	1289
P <sub>0</sub>	1125	1309	1322				
P <sub>1</sub>	1373	1315	1170				
P <sub>2</sub>	1162	1219	1486				

S.E. of any marginal mean = 70.4 lb./ac.  
S.E. of body of any table = 121.9 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 55(TCM).****Site :- Reg. Res. Stn., Varanasi.****Type :- 'M'.**

Object :-Type IX—To study the effect of N, P and F.Y.M. on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Sanai*. (c) N.A. (ii) (a) Loam soil. (b) Refer soil analysis, Varanasi. (iii) 13.11.1955. (iv) (a) 7 ploughings and 1 harrowing. (b) By seed drill. (c) 50 srs./ac. (d) 9" between rows. (e) N.A. (v) *Sanai* G.M. (vi) C—13 (5 months). (vii) Irrigated. (viii) Nil. (ix) 0.71". (x) 11.4.1956.

**2. TREATMENTS :**

Same as in expt. no. 54(TCM) type IX conducted at Pura on page 375.

**3. DESIGN :**

(i) 3<sup>3</sup> fact. confd. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A. (iii) 1. (iv) (a) 45' × 24'. (b) 6' × 20'. (v) N.A. (vi) Yes.

## 4. GENERAL :

Good. (ii) Traces of brown rust. Crop damaged by rats. (iii) Grain yield. (iv) (a) 1953—1955. (b) No. (c) Nil. (v) (a) Pura. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1727 lb./ac. (ii) 90.9 lb./ac. (iii) Main effect of N and interaction N×P are highly significant. (iv) Av. yield of grain in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
F <sub>0</sub>	1264	1736	1948	1649	1656	1642	1649
F <sub>1</sub>	1210	1910	2186	1769	1777	1805	1725
F <sub>2</sub>	1233	1849	2204	1762	1726	1725	1835
Mean	1236	1832	2113	1727	1720	1724	1736
P <sub>0</sub>	1338	1865	1958				
P <sub>1</sub>	1126	1710	2336				
P <sub>2</sub>	1244	1921	2044				

S.E. of any marginal mean = 30.3 lb./ac.  
S.E. of body of any table = 52.5 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 54(TCM).**

**Site :- Reg. Res. Stn., Varanasi.**

**Type :- 'M'.**

Object :—Type X—To study the effect of sources and levels of N on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanai* G.M. (c) N.A. (ii) (a) Loam soil. (b) Refer soil analysis, Varanasi. (iii) 3.11.1954. (iv) (a) N.A. (b) Line sowing. (c) 45 srs./ac, (d) 9" between rows. (e) N.A. (v) 20 lb./ac. of P<sub>2</sub>O<sub>5</sub>. (vi) P—52. (vii) Irrigated. (viii) 1 weeding and 1 hoeing. (ix) 1.4". (x) 9.4.1955.

## 2. TREATMENTS :

Same as in expt. no. 54(TCM) type X conducted at Pura on page 377.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) 24'×44'. (b) 20'×36'. (v) 2'×4'. (vi) Yes.

## 4. GENERAL :

(i) Germination was satisfactory but 50% plants died due to shortage of moisture. (ii) Nil. (iii) Grain yield. (iv) (a) 1953—1955. (b) No. (c) Nil. (v) (a) Pura. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1022 lb./ac. (ii) 179.0 lb./ac. (iii) Main effect of N and 'control vs. others' are highly significant. (iv) Av. yield of grain in lb./ac.

Control = 797 lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean
N <sub>1</sub>	883	942	936	920
N <sub>2</sub>	921	1210	945	1025
N <sub>3</sub>	1229	1188	1173	1197
Mean	1011	1113	1018	1047

S.E. of any marginal mean = 51.7 lb./ac.  
 S.E. of body of table or control mean = 89.5 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 55(TCM).**

**Site :- Reg. Res. Stn., Varanasi.**

**Type :- 'M'.**

Object :-Type X—To study the effect of sources and levels of N on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Sanai*. (c) N.A. (ii) (a) Loam soil. (b) Refer soil analysis, Varanasi. (iii) 17.11.1955.  
 (iv) (a) 7 ploughings and 1 harrowing. (b) By seed drill. (c) 50 srs./ac. (d) 9" between rows. (e) N.A.  
 (v) *Sanai* G.M. (vi) C—13 (5 months) (vii) Irrigated. (viii) Nil. (ix) 0.71". (x) 13 and 14.4 1956.

**2. TREATMENTS :**

Same as in expt. no. 54(TCM) type X conducted at Pura on page 377.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 3. (iv) (a) 49'×22'. (b) 36'×20'. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Slight attack of brown rust. (iii) Grain yield. (iv) (a) 1953—1955. (b) No. (c) Nil. (v)  
 (a) Pura. (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1016 lb./ac. (ii) 119.3 lb./ac. (iii) Main effect of N and 'control vs. others' are highly significant.  
 Av. yield of grain in lb./ac.

Control = 690 lb./ac.

	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	Mean
S <sub>1</sub>	874	1056	1260	1063
S <sub>2</sub>	831	798	1337	989
S <sub>3</sub>	820	1201	1291	1104
Mean	842	1018	1296	1052

S.E. of any marginal mean = 39.8 lb./ac.  
 S.E. of body of table or control mean = 68.9 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 54(TCM).**

**Site :- Reg. Res. Stn., Varanasi.**

**Type :- 'M'.**

Object :-Type XI—To study the effect of N, P and K on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Loam soil. (b) Refer soil analysis, Varanasi. (iii) 3.11.1954.  
 (iv) (a) N.A. (b) Line sowing. (c) 45 srs./ac. (d) 9" between rows. (e) N.A. (v) Nil. (vi) P—52.  
 (vii) Irrigated. (viii) 2 weedings and 2 hoeings. (ix) 1.4". (x) 5.4.1955.

**2. TREATMENTS :**

Same as in expt. no. 54(TCM) type XI conducted at Pura on page 378.

**3. DESIGN :**

(i) 3<sup>3</sup> fact. confd. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A. (iii) 1. (iv) (a) 45'×24'. (b)  
 36'×20'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Germination was satisfactory but plants died due to lack of moisture. (ii) Nil. (iii) Grain yield. (iv) (a) 1953—1955. (b) No. (c) Nil. (v) (a) Pura. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1162 lb./ac. (ii) 328.7 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
K <sub>0</sub>	881	1297	1210	1129	1133	1015	1239
K <sub>1</sub>	970	1212	1119	1100	1045	1238	1017
K <sub>2</sub>	1119	1058	1593	1257	1261	1250	1260
Mean	990	1189	1307	1162	1146	1168	1172
P <sub>0</sub>	994	1238	1206				
P <sub>1</sub>	1095	1126	1283				
P <sub>2</sub>	881	1203	1432				

S.E. of any marginal mean = 109.6 lb./ac.

S.E. of body of any table = 189.8 lb./ac

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 55(TCM).**

**Site :- Reg. Res. Stn., Varanasi.**

**Type :- 'M'.**

Object :— Type XI—To study the effect of N, P and K on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanai*. (c) N.A. (ii) (a) Loam soil. (b) Refer soil analysis, Varanasi. (iii) 10.11.1955. (iv) (a) 5 ploughings and 1 harrowing. (b) By seed drill. (c) 50 lb./ac. (d) 9" between rows. (e) N.A. (v) *Sanai* G.M. (vi) P—52. (vii) Irrigated. (viii) Nil. (ix) 0.71". (x) 14 and 15.4.1956.

## 2. TREATMENTS :

Same as in expt. no. 54(TCM) type XI conducted at Pura on page 378.

## 3. DESIGN :

(i) 3<sup>3</sup> fact. confd. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A. (iii) 1. (iv) (a) 45'×24'. (b) 36'×20'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Slight attack of rats. (iii) Grain yield. (iv) (a) 1953—1955. (b) No. (c) Nil. (v) (a) Pura. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1789 lb./ac. (ii) 254.8 lb./ac. (iii) Main effect of N alone is significant. (iv) Av. yield of grain in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
K <sub>0</sub>	1521	1931	2167	1873	1842	1861	1916
K <sub>1</sub>	1656	1870	1864	1797	1396	1916	2079
K <sub>2</sub>	1442	1668	1978	1696	1684	1613	1791
Mean	1540	1823	2003	1789	1641	1797	1929
P <sub>0</sub>	1402	1843	1677				
P <sub>1</sub>	1537	1734	2120				
P <sub>2</sub>	1681	1892	2213				

S.E. of any marginal mean = 84.9 lb./ac.  
S.E. of body of any table = 147.1 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 58(SFT).**

**Centre :- Aligarh (c.f.).**

**Type :- 'M'.**

**Object :-** Type A—To study the response of Wheat to levels of N, P and K applied individually and in combinations.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) Alluvial. (iii) to (v) N.A. (vi) October—November. (vii) Irrigated. (viii) and (ix) N.A. (x) April—May.

**2. TREATMENTS :**

0 = Control (no manure).  
n = 20 lb./ac. of N as A/S.  
p = 20 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.  
np = 20 lb./ac. of N as A/S+20 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.  
k = 20 lb./ac. of K<sub>2</sub>O as Mur. Pot.  
nk = 20 lb./ac. of N as A/S+20 lb./ac. of K<sub>2</sub>O as Mur. Pot.  
pk = 20 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super+20 lb./ac. of K<sub>2</sub>O as Mur. Pot.  
npk = 20 lb./ac. of N as A/S+20 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super+20 lb./ac. of K<sub>2</sub>O as Mur. Pot.

**3. DESIGN :**

(i) and (ii) The district has been divided into four agriculturally homogeneous zones and one field assistant has been posted in each zone. The field assistant conducts the trials in one revenue circle or *thana* in the zone and the circle/*thana* is changed once in two years within the same zone. Each field assistant is required to conduct 31 trials in a year, 8 on a *kharif* cereal, 8 on a *rabi* cereal, 8 on cash crops, 4 on an oilseed crop and 3 on a leguminous crop. Half the number of trials conducted are of type A and the other half of type B on crops other than the legumes. The three trials on legumes are of type C. Residual effects of phosphate application are studied on type C trials in two out of the four zones in each district every year. The above experiments are laid out in randomly located fields in randomly selected villages in each of the 4 zones at the rate of one experiment per village. (iii) (a) N.A. (b) 1/80 ac. (iv) Yes.

**4. GENERAL :**

(i) Normal. (ii) N.A. (iii) Grain yield. (iv) (a) 1958—contd. (b) No. (c) N.A. (v) As per design. (vi) and (vii) N.A.

**5. RESULTS:**

Effect	n	p	k	S.E.	np	nk	pk	npk	S.E.
Av. response of grain in lb./ac.	263	165	99	24.7	—8	—16	8	0	14.0

Control yield = 1160 lb./ac. and no. of trials = 16.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 59(SFT).**

**Centre :- Aligarh (c.f.).**

**Type :- 'M'.**

**Object :-** Type A—To study the response of Wheat to levels of N, P and K applied individually and in combinations.

**1. BASAL CONDITIONS to 4. GENERAL :**

Same as in expt. no. 58(SFT) type A above conducted at Aligarh.

**5. RESULTS :**

Effect	n	p	k	S.E.	np	nk	pk	npk	S.E.
Av. response of grain in lb./ac.	280	189	82	9.9	—8	—8	—16	25	14.8

Control yield = 1391 lb./ac. and no. of trials = 23.

**Crop :- Wheat (Rabi).****Ref :- U.P. 58(SFT).****Centre :- Allahabad (c.f.).****Type :- 'M'.**

Object :— Type A—To study the response of Wheat to levels of N, P and K applied individually and in combinations.

## 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 58(SFT) type A on page 388 conducted at Aligarh.

## 5. RESULTS :

Effect	n	p	k	S.E.	np	nk	pk	npk	S.E.
Av. response of grain in lb./ac.	230	140	58	17.3	—16	—8	25	49	15.5

Control yield = 1152 lb./ac. and no. of trials = 16.

**Crop :- Wheat (Rabi).****Ref :- U.P. 58(SFT).****Centre :- Bulandshahr (c.f.).****Type :- 'M'.**

Object :— Type A—To study the response of Wheat to levels of N, P and K applied individually and in combinations.

## 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 58(SFT) type A on page 388 conducted at Aligarh.

## 5. RESULTS :

Effect	n	p	k	S.E.	np	nk	pk	npk	S.E.
Av. response of grain in lb./ac.	239	132	25	16.5	0	—8	8	66	12.3

Control yield = 1317 lb./ac. and no. of trials = 16.

**Crop :- Wheat (Rabi).****Ref :- U.P. 59(SFT).****Centre :- Bulandshahr (c.f.).****Type :- 'M'.**

Object :—Type A—To study the response of Wheat to levels of N, P and K applied individually and in combinations.

## 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 58(SFT) type A on page 388 conducted at Aligarh.

## 5. RESULTS :

Effect	n	p	k	S.E.	np	nk	pk	npk	S.E.
Av. response of grain in lb./ac.	321	156	49	22.2	—58	8	—33	16	21.4

Control yield = 1308 lb./ac. and no. of trials = 23.

**Crop :- Wheat (Rabi).****Ref :- U.P. 58(SFT).****Centre :- Deoria (c.f.).****Type :- 'M'.**

Object :—Type A—To study the response of Wheat to levels of N, P and K applied individually and in combinations.

## 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 58(SFT) type A on page 388 conducted at Aligarh.

## 5. RESULTS:

Effect	n	p	k	S.E.	np	nk	pk	npk	S.E.
Av. response of grain in lb./ac.	576	239	189	32.1	33	-25	-16	99	22.2

Control yield = 1193 lb./ac. and no. of trials = 16.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 59(SFT).**

**Centre :- Deoria (c.f.).**

**Type :- 'M'.**

Object :—Type A—To study the response of Wheat to levels of N, P and K applied individually and in combinations.

## 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 58(SFT) type A on page 388 conducted at Aligarh.

## 5. RESULTS :

Effect	n	p	k	S.E.	np	nk	pk	npk	S.E.
Av. response of grain in lb./ac.	469	255	123	9.9	-8	0	41	66	6.6

Control yield = 1177 lb./ac. and no. of trials = 24.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 58(SFT).**

**Centre :- Farrukhabad (c.f.).**

**Type :- 'M'.**

Object :—Type A—To study the response of Wheat to levels of N, P and K applied individually and in combinations.

## § 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 58(SFT) type A on page 388 conducted at Aligarh.

## 5. RESULTS :

Effect	n	p	k	S.E.	np	nk	pk	npk	S.E.
Av. response of grain in lb./ac.	354	247	140	41.1	49	41	91	66	32.9

Control yield = 1185 lb./ac. and no. of trials = 16.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 59(SFT).**

**Centre :- Farrukhabad (c.f.).**

**Type :- 'M'.**

Object :—Type A—To study the response of Wheat to levels of N, P and K, applied individually and in combinations.

## 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 58(SFT) type A on page 388 conducted at Aligarh.

## 5. RESULTS :

Effect	n	p	k	S.E.	np	nk	pk	npk	S.E.
Av. response of grain in lb./ac.	379	214	99	26.3	16	-25	33	49	16.5

Control yield = 1251 lb./ac. and no. of trials = 23.

**Crop :- Wheat (Rabi).****Ref :- U.P. 58(SFT).****Centre :- Fatehpur (c.f.).****Type :- 'M'.**

Object :—Type A—To study the response of Wheat to levels of N, P and K applied individually and in combinations.

## 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 58(SFT) type A on page 388 conducted at Aligarh.

## 5. RESULTS :

Effect	n	p	k	S.E.	np	nk	pk	npk	S.E.
Av. response of grain in lb./ac.	247	107	8	23.0	16	8	—16	16	20.6

Control yield = 1 267 lb./ac. and no. of trials = 15.

**Crop :- Wheat (Rabi).****Ref :- U.P. 58(SFT).****Centre :- Gorakhpur (c.f.).****Type :- 'M'.**

Object :—Type A—To study the response of Wheat to levels of N, P and K applied individually and in combinations.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Tarai and Sub-montane. (iii) to (v) N.A. (vi) October—November. (vii) Irrigated. (viii) and (ix) N.A. (x) April—May.

## 2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 58(SFT) type A on page 388 conducted at Aligarh.

## 5. RESULTS :

Effect	n	p	k	S.E.	np	nk	pk	npk	S.E.
Av. response of grain in lb./ac.	387	247	66	37.0	25	41	0	58	19.7

Control yield = 864 lb./ac. and no. of trials = 16.

**Crop :- Wheat (Rabi).****Ref :- U.P. 59(SFT).****Centre :- Gorakhpur (c.f.).****Type :- 'M'.**

Object :—Type A—To study the response of Wheat to levels of N, P and K applied individually and in combinations.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Tarai and sub-montane. (iii) to (v) N.A. (vi) October—November. (vii) Irrigated. (viii) and (ix) N.A. (x) April—May.

## 2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 58(SFT) type A on page 388 conducted at Aligarh.

## 5. RESULTS :

Effect	n	p	k	S.E.	np	nk	pk	npk	S.E.
Av. response of grain in lb./ac.	321	197	66	16.5	25	33	16	41	13.2

Control yield = 1061 lb./ac. and no. of trials = 23.



**Crop :- Wheat (Rabi).****Ref :- U.P. 58(SFT).****Centre :- Jaunpur (c.f.).****Type :- 'M'.**

Object :—Type A—To study the response of Wheat to levels of N, P and K applied individually and in combinations.

**1. BASAL CONDITIONS to 4. GENERAL :**

Same as in expt. no. 58(SFT) type A on page 388 conducted at Aligarh.

**5. RESULTS :**

Effect	n	p	k	S.E.	np	nk	pk	nPK	S.E.
Av. response of grain in lb./ac.	346	173	82	20.6	0	25	25	25	16.5

Control yield = 1144 lb./ac. and no. of trials = 16.

**Crop :- Wheat (Rabi).****Ref :- U.P. 59(SFT).****Centre :- Jaunpur (c.f.).****Type :- 'M'.**

Object :—Type A—To study the response of Wheat to levels of N, P and K applied individually and in combinations.

**1. BASAL CONDITIONS to 4. GENERAL :**

Same as in expt. no. 58(SFT) type A on page 388 conducted at Aligarh.

**5. RESULTS :**

Effect	n	p	k	S.E.	np	nk	pk	nPK	S.E.
Av. response of grain in lb./ac.	296	156	49	28.8	--16	--16	41	33	27.2

Control yield = 1111 lb./ac. and no. of trials = 24.

**Crop :- Wheat (Rabi).****Ref :- U.P. 58(SFT).****Centre :- Kanpur (c.f.).****Type :- 'M'.**

Object :—Type A—To study the response of Wheat to levels of N, P and K applied individually and in combinations.

**1. BASAL CONDITIONS to 4. GENERAL :**

Same as in expt. no. 58(SFT) type A on page 388 conducted at Aligarh.

**5. RESULTS :**

Effect	n	p	k	S.E.	np	nk	pk	nPK	S.E.
Av. response of grain in lb./ac.	329	165	--33	27.2	16	--49	8	99	22.2

Control yield = 1325 lb./ac. and no. of trials = 16.

**Crop :- Wheat (Rabi).****Ref :- U.P. 59(SFT).****Centre :- Kanpur (c.f.).****Type :- 'M'.**

Object :—Type A—To study the response of Wheat to levels of N, P and K applied individually and in combinations.

## 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 58(SFT) type A on page 388 conducted at Aligarh.

## 5. RESULTS :

Effect	n	p	k	S.E.	np	nk	pk	npk	S.F.
Av. response of grain in lb./ac.	214	173	49	20.6	25	16	49	33	14.8

Control yield = 1440 lb./ac. and no. of trials = 21.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 58(SFT).**

**Centre :- Lakhimpur (c.f.).**

**Type :- 'M'.**

Object :—Type A—To study the response of Wheat to levels of N, P and K applied individually and in combinations.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Tarai and sub-montane. (iii) to (v) N.A. (vi) October—November. (vii) Irrigated. (viii) and (ix) N.A. (x) April—May.

## 2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 58(SFT) type A on page 388 conducted at Aligarh.

## 5. RESULTS :

Effect	n	p	k	S.E.	np	nk	pk	npk	S.E.
Av. response of grain in lb./ac.	296	206	181	31.3	25	—25	33	49	23.9

Control yield = 913 lb./ac. and no. of trials = 16.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 59(SFT).**

**Centre :- Lakhimpur (c.f.).**

**Type :- 'M'.**

Object :—Type A—To study the response of Wheat to levels of N, P and K applied individually and in combinations.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Tarai and sub-montane. (iii) to (v) N.A. (vi) October—November. (vii) Irrigated. (viii) and (ix) N.A. (x) April—May.

## 2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 58(SFT) type A on page 388 conducted at Aligarh.

## 5. RESULTS :

Effect	n	p	k	S.E.	np	nk	pk	npk	S.E.
Av. response of grain in lb./ac.	288	156	74	18.1	—25	—16	66	8	10.7

Control yield = 806 lb./ac. and no. of trials = 24.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 58(SFT).**

**Centre :- Lucknow (c.f.).**

**Type :- 'M'.**

Object :—Type A—To study the response of Wheat to levels of N, P and K applied individually and in combinations.

## 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 58(SFT) type A on page 388 conducted at Aligarh.

## 5. RESULTS :

Effect	n	p	k	S.E.	np	nk	pk	npk	S.E.
Av. response of grain in lb./ac.	346	222	123	18.9	66	74	8	49	18.1

Control yield = 1177 lb./ac. and no. of trials = 15.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 59(SFT).**

**Centre :- Lucknow (c.f.).**

**Type :- 'M'.**

Object :—Type A—To study the response of Wheat to levels of N, P and K applied individually and in combinations.

## 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 58(SFT) type A on page 388 conducted at Aligarh.

## 5. RESULTS :

Effect	n	p	k	S.E.	np	nk	pk	npk	S.E.
Av. response of grain in lb./ac.	230	272	107	19.7	58	0	49	25	18.1

Control yield = 1218 lb./ac. and no. of trials = 16.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 58(SFT).**

**Centre :- Meerut (c.f.).**

**Type :- 'M'.**

Object :—Type A—To study the response of Wheat to different levels of N, P and K applied individually and in combinations.

## 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 58(SFT) type A on page 388 conducted at Aligarh.

## 5. RESULTS :

Effect	n	p	k	S.E.	np	nk	pk	npk	S.E.
Av. response of grain in lb./ac.	387	313	189	28.0	16	74	49	74	23.9

Control yield = 1292 lb./ac. and no. of trials = 16.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 59(SFT).**

**Centre :- Meerut (c.f.).**

**Type :- 'M'.**

Object :—Type A—To study the response of Wheat to levels of N, P and K applied individually and in combinations.

## 1. BASAL CONDITIONS to 4. GENERAL:

Same as in expt. no. 58(SFT) type A on page 388 conducted at Aligarh.

## 5. RESULTS :

Effect	n	p	k	S.E.	np	nk	pk	npk	S.E.
Av. response of grain in lb./ac.	395	346	222	17.3	16	91	82	49	13.7

Control yield = 1349 lb./ac. and no. of trials = 24.

**Crop :- Wheat (Rabi).****Ref :- U.P. 58(SFT).****Centre :- Moradabad (c.f.).****Type :- 'M'.**

Object :—Type A—To study the response of Wheat to different levels of N, P and K applied individually and in combinations.

## 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 58(SFT) type A on page 388 conducted at Aligarh.

## 5. RESULTS :

Effect	n	p	k	S.E.	np	nk	pk	npk	S.E.
Av. response of grain in lb./ac.	354	214	288	24.7	—33	—58	—58	41	14.3

Control yield = 1531 lb./ac. and no. of trials = 16.

**Crop :- Wheat (Rabi).****Ref :- U.P. 59(SFT).****Centre :- Moradabad (c.f.).****Type :- 'M'.**

Object :—Type A—To study the response of Wheat to levels of N, P and K applied individually and in combinations.

## 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 58(SFT) type A on page 388 conducted at Aligarh.

## 5. RESULTS :

Effect	n	p	k	S.E.	np	nk	pk	npk	S.E.
Av. response of grain in lb./ac.	469	165	91	34.6	—74	—16	25	99	28.8

Control yield = 1662 lb./ac. and no. of trials = 18.

**Crop :- Wheat (Rabi).****Ref :- U.P. 58(SFT).****Centre :- Muzaffarnagar (c.f.).****Type :- 'M'.**

Object :—Type A—To study the response of Wheat to different levels of N, P and K applied individually and in combinations

## 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 58(SFT) type A on page 388 conducted at Aligarh.

## 5. RESULTS :

Effect	n	p	k	S.E.	np	nk	pk	npk	S.E.
Av. response of grain in lb./ac.	362	321	296	21.4	41	74	99	82	22.2

Control yield = 955 lb./ac. and no. of trials = 16.

**Crop :- Wheat (Rabi).****Ref :- U.P. 59(SFT).****Centre :- Muzaffarnagar (c.f.).****Type :- 'M'.**

Object :—Type A—To study the response of Wheat to levels of N, P and K applied individually and in combinations.

## 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 58(SFT) type A on page 388 conducted at Aligarh.

## 5. RESULTS :

Effect	n	p	k	S.E.	np	nk	pk	npk	S.E.
Av. response of grain in lb./ac.	337	272	181	11.5	41	25	58	41	14.0

Control yield = 930 lb./ac. and no. of trials = 24.

**Crop :-** Wheat (*Rabi*).

**Ref :-** U.P. 58(SFT).

**Centre :-** Pilibhit (c.f.).

**Type :-** 'M'.

**Object :-** Type A—To study the response of Wheat to levels of N, P and K applied individually and in combinations

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) *Tarai* and sub-montane. (iii) to (v) N.A. (vi) October—November. (vii) Irrigated. (viii) and (ix) N.A. (x) April—May.

## 2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 58(SFT) type A on page 388 conducted at Aligarh.

## 5. RESULTS :

Effect	n	p	k	S.E.	np	nk	pk	npk	S.E.
Av. response of grain in lb./ac.	239	222	115	27.2	25	25	41	49	23.0

Control yield = 913 lb./ac. and no. of trials = 8.

**Crop :-** Wheat (*Rabi*).

**Ref :-** U.P. 59(SFT).

**Centre :-** Pilibhit (c.f.).

**Type :-** 'M'.

**Object :-** Type A—To study the response of Wheat to levels of N, P and K applied individually and in combinations.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) *Tarai* and sub-montane. (iii) to (v) N.A. (vi) October—November. (vii) Irrigated. (viii) and (ix) N.A. (x) April—May.

## 2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 58(SFT) type A on page 388 conducted at Aligarh.

## 5. RESULTS :

Effect	n	p	k	S.E.	np	nk	pk	npk	S.E.
Av. response of grain in lb./ac.	189	107	49	9.9	—8	—16	8	33	5.6

Control yield = 913 lb./ac. and no. of trials = 24.

**Crop :-** Wheat (*Rabi*).

**Ref :-** U.P. 58(SFT).

**Centre :-** Rae-Bareilly (c.f.).

**Type :-** 'M'.

**Object :-** Type A—To study the response of Wheat to levels of N, P and K applied individually and in combinations.

## 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 58(SFT) type A on page 388 conducted at Aligarh.

## 4. RESULTS :

Effect	n	p	k	S.E.	np	nk	pk	npk	S.E.
Av. response of grain in lb./ac.	156	214	41	37.0	66	49	66	82	18.1

Control yield = 1539 lb./ac. and no. of trials = 8.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 59(SFT).**

**Centre :- Rae-Bareilly (c.f.).**

**Type :- 'M'.**

Object :— Type A—To study the response of Wheat to levels of N, P and K applied individually and in combinations.

## 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 58(SFT) type A on page 388 conducted at Aligarh.

## 5. RESULTS :

Effect	n	p	k	S.E.	np	nk	pk	npk	S.E.
Av. response of grain in lb./ac.	189	165	41	32.9	58	16	25	25	42.8

Control yield = 1531 lb./ac. and no. of trials = 23.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 58(SFT).**

**Centre :- Rampur (c.f.).**

**Type :- 'M'.**

Object :— Type A—To study the response of Wheat to levels of N, P and K applied individually and in combinations.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) *Tarai* and sub-montane. (iii) to (v) N.A. (vi) October—November. (vii) Irrigated. (viii) and (ix) N.A. (x) April—May.

## 2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 58(SFT) type A on page 388 conducted at Aligarh.

## 5. RESULTS :

Effect	n	p	k	S.E.	np	nk	pk	npk	S.E.
Av. response of grain in lb./ac.	329	370	263	32.9	0	25	58	49	33.7

Control yield = 1016 lb./ac. and no. of trials = 16.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 59(SFT).**

**Centre :- Rampur (c.f.).**

**Type :- 'M'.**

Object :— Type A—To study the response of Wheat to levels of N, P and K applied individually and in combinations.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) *Tarai* and sub-montane. (iii) to (v) N.A. (vi) October—November. (vii) Irrigated. (viii) and (ix) N.A. (x) April—May.

## 2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 58(SFT) type A on page 388 conducted at Aligarh.

## 5. RESULTS :

Effect	n	p	k	S.E.	np	nk	pk	npk	S.E.
Av. response of grain in lb./ac.	205	132	99	16.5	15	0	33	33	12.3

Control yield = 979 lb./ac. and no. of trials = 12.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 58(SFT).**

**Centre :- Varanasi (c.f.).**

**Type :- 'M'.**

Object :— Type A—To study the response of Wheat to levels of N, P and K applied individually and in combinations.

## 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 58(SFT) type A on page 388 conducted at Aligarh.

## 5. RESULTS :

Effect	n	p	k	S.E.	np	nk	pk	npk	S.E.
Av. response of grain in lb./ac.	239	49	41	33.7	—16	0	66	115	25.5

Control yield = 905 lb./ac. and no. of trials = 16.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 59(SFT).**

**Centre :- Varanasi (c.f.).**

**Type :- 'M'.**

Object :— Type A—To study the response of Wheat to levels of N, P and K applied individually and in combinations.

## 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 58(SFT) type A on page 388 conducted at Aligarh.

## 5. RESULTS :

Effect	n	p	k	S.E.	np	nk	pk	npk	S.E.
Av. response of grain in lb./ac.	272	156	41	19.7	25	—25	8	66	18.1

Control yield = 1111 lb./ac. and no. of trials = 23

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 58(SFT).**

**Centre :- Aligarh (c.f.).**

**Type :- 'M'.**

Object :— Type B—To investigate the relative efficiency of different nitrogenous fertilizers at different doses.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Alluvial. (iii) to (v) N.A. (vi) October—November. (vii) Irrigated. (viii) and (ix) N.A. (x) April—May.

## 2. TREATMENTS :

- 0 = Control (no manure).
- n<sub>1</sub> = 20 lb./ac. of N as A/S.
- n<sub>2</sub> = 40 lb./ac. of N as A/S.
- n<sub>1</sub>' = 20 lb./ac. of N as Urea.
- n<sub>2</sub>' = 40 lb./ac. of N as Urea.
- n<sub>1</sub>'' = 20 lb./ac. of N as A/S/N.
- n<sub>2</sub>'' = 40 lb./ac. of N as A/S/N.

## 3. DESIGN :

(i) and (ii) The district has been divided into four agriculturally homogeneous zones and one field assistant has been posted in each zone. The field assistant conducts the trials in one revenue circle or *thana* in the zone and the circle/*thana* is changed once in two years within the same zone. Each field assistant is required to conduct 31 trials in a year, 8 on a *kharif* cereal, 8 on a *rabi* cereal, 8 on cash crops, 4 on an oilseed crop and 3 on a leguminous crop. Half the number of trials conducted are of type A and the other half of type B on crops other than the legumes. The three trials on legumes are of type C. Residual effects of phosphate application are studied on type C trials in two out of the four zones in each district every year. The above experiments are laid out in randomly located fields in randomly selected villages in each of the 4 zones at the rate of one experiment per village. (iii) (a) N.A. (b) 1/80 ac. (iv) Yes.

## 4. GENERAL:

(i) Normal. (ii) N.A. (iii) Yield of grain. (iv) (a) 1958—contd. (b) No. (c) N.A. (v) As per design. (vi) and (vii) N.A.

## 5. RESULTS :

Treatment	0	$n_1$	$n_2$	$n_1'$	$n_2'$	$n_1''$	$n_2''$
Av. yield of grain in lb./ac.	1317	1531	1851	1539	1786	1555	1802

G.M. = 1626 lb./ac. ; S.E./mean = 48.9 lb./ac. and no. of trials = 16.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 59(SFT).**

**Centre :- Aligarh (c.f.).**

**Type :- 'M'.**

Object :—Type B—To investigate the relative efficiency of different nitrogenous fertilizers at different doses.

## 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 58(SFT) type B on page 398 conducted at Aligarh.

## 5. RESULTS :

Treatment	0	$n_1$	$n_2$	$n_1'$	$n_2'$	$n_1''$	$n_2''$
Av. yield of grain in lb./ac.	1432	1703	2074	1621	2041	1629	1983

G.M. = 1783 lb./ac. ; S.E./mean = 25.0 lb./ac. and no. of trials = 20.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 58(SFT).**

**Centre :- Allahabad (c.f.).**

**Type :- 'M'.**

Object :—Type B—To investigate the relative efficiency of different nitrogenous fertilizers at different doses.

## 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 58(SFT) type B on page 398 conducted at Aligarh.

## 5. RESULTS :

Treatment	0	$n_1$	$n_2$	$n_1'$	$n_2'$	$n_1''$	$n_2''$
Av. yield of grain in lb./ac.	1185	1382	1580	1374	1489	1333	1531

G.M. = 1411 lb./ac. ; S.E./mean = 26.2 lb./ac. and no. of trials = 15.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 58(SFT).**

**Centre :- Bulandshahr (c.f.).**

**Type :- 'M'.**

Object :—Type B—To investigate the relative efficiency of different nitrogenous fertilizers at different doses.



## 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 58(SFT) type B on page 398 conducted at Aligarh.

## 5. RESULTS :

Treatment	0	$n_1$	$n_2$	$n_1'$	$n_2'$	$n_1''$	$n_2''$
Av. yield of grain in lb./ac.	1284	1720	2032	1670	2090	1736	2041

G.M. = 1796 lb./ac. ; S.E./mean = 33.2 lb./ac. and no. of trials = 16.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 59(SFT).**

**Centre :- Bulandshahr (c.f.).**

**Type :- 'M'.**

Object :—Type B—To investigate the relative efficiency of different nitrogenous fertilizers at different doses.

## 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 58(SFT) type B on page 398 conducted at Aligarh.

## 5. RESULTS :

Treatment	0	$n_1$	$n_2$	$n_1'$	$n_2'$	$n_1''$	$n_2''$
Av. yield of grain in lb./ac.	1349	1662	1942	1703	2000	1744	2041

G.M. = 1777 lb./ac. ; S.E./mean = 27.3 lb./ac. and no. of trials = 23.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 58(SFT).**

**Centre :- Deoria (c.f.).**

**Type :- 'M'.**

Object :—Type B—To investigate the relative efficiency of different nitrogenous fertilizers at different doses.

## 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 53(SFT) type B on page 398 conducted at Aligarh.

## 5. RESULTS :

Treatment	0	$n_1$	$n_2$	$n_1'$	$n_2'$	$n_1''$	$n_2''$
Av. yield of grain in lb./ac.	1275	1720	2181	1786	2296	1810	2205

G.M. = 1896 lb./ac. ; S.E./mean = 29.7 lb./ac. and no. of trials = 16.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 59(SFT).**

**Centre :- Deoria (c.f.).**

**Type :- 'M'.**

Object :—Type B—To investigate the relative efficiency of different nitrogenous fertilizers at different doses.

## 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 58(SFT) type B on page 398 conducted at Aligarh.

## 5. RESULTS :

Treatment	0	$n_1$	$n_2$	$n_1'$	$n_2'$	$n_1''$	$n_2''$
Av. yield of grain in lb./ac.	1341	1580	1967	1679	2065	1646	2074

G.M. = 1765 lb./ac. ; S.E./mean = 16.9 lb./ac. and no. of trials = 24.

**Crop :- Wheat (Rabi).****Ref :- U.P. 58(SFT).****Centre :- Farrukhabad (c.f.).****Type :- 'M'.**

Object :-Type B—To investigate the relative efficiency of different nitrogenous fertilizers at different doses.

**1. BASAL CONDITIONS to 4. GENERAL :**

Same as in expt. no. 58 (SFT) type B on page 398 conducted at Aligarh.

**5. RESULTS :**

Treatment	0	$n_1$	$n_2$	$n_1'$	$n_2'$	$n_1''$	$n_2''$
Av. yield of grain in lb./ac.	1243	1522	1876	1662	1934	1703	2074

G.M. = 1716 lb./ac. ; S.E./mean = 51.2 lb./ac. and no. of trials = 16.

**Crop :- Wheat (Rabi).****Ref :- U.P. 59(SFT).****Centre :- Farrukhabad (c.f.).****Type :- 'M'.**

Object :-Type B—To investigate the relative efficiency of different nitrogenous fertilizers at different doses.

**1. BASAL CONDITIONS to 4. GENERAL :**

Same as in expt. no. 58(SFT) type B on page 398 conducted at Aligarh.

**5. RESULTS :**

Treatment	0	$n_1$	$n_2$	$n_1'$	$n_2'$	$n_1''$	$n_2''$
Av. yield of grain in lb./ac.	1218	1498	1777	1621	1893	1621	1884

G.M. = 1645 lb./ac. ; S.E./mean = 36.1 lb./ac. and no. of trials = 21.

**Crop :- Wheat (Rabi).****Ref :- U.P. 58(SFT).****Centre :- Fatehpur (c.f.).****Type :- 'M'.**

Object :-Type B—To investigate the relative efficiency of different nitrogenous fertilizers at different doses.

**1. BASAL CONDITIONS to 4. GENERAL :**

Same as in expt. no. 58(SFT) type B on page 398 conducted at Aligarh.

**5. RESULTS :**

Treatment	0	$n_1$	$n_2$	$n_1'$	$n_2'$	$n_1''$	$n_2''$
Av. yield of grain in lb./ac.	1012	1300	1465	1267	1391	1300	1432

G.M. = 1310 lb./ac. ; S.E./mean = 29.1 lb./ac. and no. of trials = 16.

**Crop :- Wheat (Rabi).****Ref :- U.P. 58(SFT).****Centre :- Gorakhpur (c.f.).****Type :- 'M'.**

Object :-Type B—To investigate the relative efficiency of different nitrogenous fertilizers at different doses.

**1. BASAL CONDITIONS :**(i) (a) to (c) N.A. (ii) *Tarai* and sub-montane. (iii) to (v) N.A. (vi) October—November. (vii) Irrigated. (viii) and (ix) N.A. (x) April—May.

## 2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 58(SFT) type B on page 398 conducted at Aligarh.

## 5. RESULTS :

Treatment	0	$n_1$	$n_2$	$n_1'$	$n_2'$	$n_1''$	$n_2''$
Av. yield of grain in lb./ac.	782	1111	1415	1111	1448	1094	1407

G.M. = 1195 lb./ac. ; S.E./mean = 34.3 lb /ac. and no of trials = 16.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 59(SFT).**

**Centre :- Gorakhpur (c.f.).**

**Type :- 'M'.**

Object :—Type B—To investigate the relative efficiency of different nitrogenous fertilizers at different doses.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) *Tarai* and sub-montane. (iii) to (v) N.A. (vi) October—November. (vii) Irrigated. (viii) and (ix) N.A. (x) April—May.

## 2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 58(SFT) type B on page 398 conducted at Aligarh.

## 5. RESULTS :

Treatment	0	$n_1$	$n_2$	$n_1'$	$n_2'$	$n_1''$	$n_2''$
Av. yield of grain in lb./ac.	1004	1267	1572	1275	1580	1267	1547

G.M. = 1359 lb./ac. ; S.E./mean = 18 0 lb./ac. no. of trials = 23.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 58(SFT).**

**Centre :- Jaunpur (c.f.).**

**Type :- 'M'.**

Object :—Type B—To investigate the relative efficiency of different nitrogenous fertilizers at different doses.

## 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 58(SFT) type B on page 398 conducted at Aligarh.

## 5. RESULTS :

Treatment	0	$n_1$	$n_2$	$n_1'$	$n_2'$	$n_1''$	$n_2''$
Av. yield of grain in lb./ac.	1136	1391	1605	1424	1637	1333	1489

G.M. = 1431 lb./ac. ; S.E./mean = 30.8 lb./ac. and no. of trials = 16.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 59(SFT).**

**Centre :- Jaunpur (c.f.).**

**Type :- 'M'.**

Object :—Type B—To investigate the relative efficiency of different nitrogenous fertilizers at different doses.

## 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 58 (SFT) type B on page 398 conducted at Aligarh.

## 5. RESULTS :

Treatment	0	$n_1$	$n_2$	$n_1'$	$n_2'$	$n_1''$	$n_2''$
Av. yield of grain in lb./ac.	1160	1374	1605	1424	1662	1498	1596

G.M. = 1474 lb./ac. ; S.E./mean = 19.8 lb./ac. and no. of trials = 24.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 58(SFT).**

**Centre :- Kanpur (c.f.).**

**Type :- 'M'.**

Object :—Type B—To investigate the relative efficiency of different nitrogenous fertilizers at different doses.

## 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 58(SFT) type B on page 398 conducted at Aligarh.

## 5. RESULTS :

Treatment	0	$n_1$	$n_2$	$n_1'$	$n_2'$	$n_1''$	$n_2''$
Av. yield of grain in lb./ac.	1440	1786	2032	1802	1975	1810	2082

G.M. = 1847 lb./ac. ; S.E./mean = 39.0 lb./ac. and no. of trials = 16.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 59(SFT).**

**Centre :- Kanpur (c.f.).**

**Type :- 'M'.**

Object :—Type B—To investigate the relative efficiency of different nitrogenous fertilizers at different doses.

## 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 58(SFT) type B on page 398 conducted at Aligarh.

## 5. RESULTS :

Treatment	0	$n_1$	$n_2$	$n_1'$	$n_2'$	$n_1''$	$n_2''$
Av. yield of grain in lb./ac	1506	1703	1884	1712	1876	1720	1942

G.M. = 1763 lb./ac. ; S.E./mean = 15.7 lb./ac. and no. of trials = 24.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 58(SFT).**

**Centre :- Lakhimpur (c.f.).**

**Type :- 'M'.**

Object :—Type B—To investigate the relative efficiency of different nitrogenous fertilizers at different doses.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) *Tarai* and sub-montane. (iii) to (v) N.A. (vi) October—November. (vii) Irrigated (viii) and (ix) N.A. (x) April—May.

## 2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 58(SFT) type B on page 398 conducted at Aligarh.

## 5. RESULTS :

Treatment	0	$n_1$	$n_2$	$n_1'$	$n_2'$	$n_1''$	$n_2''$
Av. yield of grain in lb./ac.	1012	1284	1415	1333	1498	1399	1547

G.M. = 1355 lb./ac. ; S.E./mean = 33.2 lb./ac. and no. of trials = 16.

**Crop :- Wheat (Rabi).****Ref :- U.P. 59(SFT).****Centre :- Lakhimpur (c.f.).****Type :- 'M'.**

Object :—Type B—To investigate the relative efficiency of different nitrogenous fertilizers at different doses.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) Tarai and sub-montane. (iii) to (v) N.A. (vi) October—November. (vii) Irrigated. (viii) and (ix) N.A. (x) April—May.

**2. TREATMENTS to 4. GENERAL :**

Same as in expt. no. 58(SFT) type B on page 398 conducted at Aligarh.

**5. RESULTS :**

Treatment	0	n <sub>1</sub>	n <sub>2</sub>	n <sub>1</sub> '	n <sub>2</sub> '	n <sub>1</sub> ''	n <sub>2</sub> ''
Av. yield of grain in lb./ac.	839	1037	1193	1053	1201	1086	1251

G.M. = 1094 lb./ac. ; S.E./mean = 20.9 lb./ac. and no. of trials = 24.

**Crop :- Wheat (Rabi).****Ref :- U.P. 58(SFT).****Centre :- Lucknow (c.f.).****Type :- 'M'.**

Object :—Type B—To investigate the relative efficiency of different nitrogenous fertilizers at different doses.

**1. BASAL CONDITIONS to 4. GENERAL :**

Same as in expt. no. 58 (SFT) type B on page 298 conducted at Aligarh.

**5. RESULTS :**

Treatment	0	n <sub>1</sub>	n <sub>2</sub>	n <sub>1</sub> '	n <sub>2</sub> '	n <sub>1</sub> ''	n <sub>2</sub> ''
Av. yield of grain in lb./ac.	1259	1621	1786	1662	1819	1506	1703

G.M. = 1622 lb./ac. ; S.E./mean = 33.2 lb./ac. and no. of trials = 16.

**Crop :- Wheat (Rabi).****Ref :- U.P. 58(SFT).****Centre :- Meerut (c.f.).****Type :- 'M'.**

Object :—Type B—To investigate the relative efficiency of different nitrogenous fertilizers at different doses.

**1. BASAL CONDITIONS to 4. GENERAL :**

Same as in expt. no. 58(SFT) type B on page 398 conducted at Aligarh.

**5. RESULTS :**

Treatment	0	n <sub>1</sub>	n <sub>2</sub>	n <sub>1</sub> '	n <sub>2</sub> '	n <sub>1</sub> ''	n <sub>2</sub> ''
Av. yield of grain in lb./ac	1275	1605	1975	1712	1975	1621	2008

G.M. = 1739 lb./ac. ; S.E./mean = 37.2 lb./ac. and no. of trials = 16.

**Crop :- Wheat (Rabi).****Ref :- U.P. 59(SFT).****Centre :- Meerut (c.f.).****Type :- 'M'.**

Object :—Type B—To investigate the relative efficiency of different nitrogenous fertilizers at different doses.

## 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 58(SFT) type B on page 398 conducted at Aligarh.

## 5. RESULTS :

Treatment	0	$n_1$	$n_2$	$n_1'$	$n_2'$	$n_1''$	$n_2''$
Av. yield of grain in lb./ac.	1555	1819	2139	1868	2107	1917	2139

G.M. = 1935 lb./ac. ; S.E./mean = 11.1 lb./ac. and no. of trials = 13.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 58(SFT).**

**Centre :- Moradabad (c.f.).**

**Type :- 'M'.**

Object :—Type B—To investigate the relative efficiency of different nitrogenous fertilizers at different doses.

## 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 58(SFT) type B on page 398 conducted at Aligarh.

## 5. RESULTS :

Treatment	0	$n_1$	$n_2$	$n_1'$	$n_2'$	$n_1''$	$n_2''$
Av. yield of grain in lb./ac.	1424	1950	2098	2024	2139	2016	2164

G.M. = 1974 lb./ac. ; S.E./mean = 47.1 lb./ac. and no. of trials = 16.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 59(SFT).**

**Centre :- Moradabad (c.f.).**

**Type :- 'M'.**

Object :—Type B—To investigate the relative efficiency of different nitrogenous fertilizers at different doses.

## 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 58(SFT) type B on page 398 conducted at Aligarh.

## 5. RESULTS :

Treatment	0	$n_1$	$n_2$	$n_1'$	$n_2'$	$n_1''$	$n_2''$
Av. yield of grain in lb./ac.	1498	1967	2098	1942	2065	1934	2008

G.M. = 1930 lb./ac. ; S.E./mean = 36.7 lb./ac. and no. of trials = 17.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 58(SFT).**

**Centre :- Muzaffarnagar (c.f.).**

**Type :- 'M'.**

Object :—Type B—To investigate the relative efficiency of different nitrogenous fertilizers at different doses.

## 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 58(SFT) type B on page 398 conducted at Aligarh.

## 5. RESULTS :

Treatment	0	$n_1$	$n_2$	$n_1'$	$n_2'$	$n_1''$	$n_2''$
Av. yield of grain in lb./ac.	1029	1382	1761	1440	1712	1456	1736

G.M. = 1502 lb./ac. ; S.E./mean = 42.5 lb./ac. and no. of trials = 16.

**Crop :- Wheat (Rabi).****Ref :- U.P. 59(SFT).****Centre :- Muzaffarnagar (c.f.).****Type :- 'M'.**

Object :—Type B—To investigate the relative efficiency of different nitrogenous fertilizers at different doses.

**1. BASAL CONDITIONS to 4. GENERAL :**

Same as in expt. no. 58(SFT) type B on page 398 conducted at Aligarh.

**5 RESULTS :**

Treatment	0	$n_1$	$n_2$	$n_1'$	$n_2'$	$n_1''$	$n_2''$
Av. yield of grain in lb./ac.	938	1341	1744	1300	1712	1415	1761

G.M. = 1459 lb./ac. ; S.E./mean = 25.0 lb./ac. and no. of trials = 24.

**Crop :- Wheat (Rabi).****Ref :- U.P. 58(SFT).****Centre :- Pilibhit (c.f.).****Type :- 'M'.**

Object :—Type B—To investigate the relative efficiency of different nitrogenous fertilizers at different doses.

**1. BASAL CONDITIONS :**(i) (a) to (c) N.A. (ii) *Tarai* and sub-montane. (iii) to (v) N.A. (vi) October—November. (vii) Irrigated. (viii) and (ix) N.A. (x) April—May.**2. TREATMENTS to 4. GENERAL :**

Same as in expt. no. 58(SFT) type B on page 398 conducted at Aligarh.

**5. RESULTS :**

Treatment	0	$n_1$	$n_2$	$n_1'$	$n_2'$	$n_1''$	$n_2''$
Av. yield of grain in lb./ac.	897	1333	1333	1267	1341	1284	1374

G.M. = 1261 lb./ac. ; S.E./mean = 36.7 lb./ac. and no. of trials = 8.

**Crop :- Wheat (Rabi).****Ref :- U.P. 59(SFT).****Centre :- Pilibhit (c.f.).****Type :- 'M'.**

Object :—Type B—To investigate the relative efficiency of different nitrogenous fertilizers at different doses.

**1. BASAL CONDITIONS :**(i) (a) to (c) N.A. (ii) *Tarai* and sub-montane. (iii) to (v) N.A. (vi) October—November. (vii) Irrigated. (viii) and (ix) N.A. (x) April—May.**2. TREATMENTS to 4. GENERAL :**

Same as in expt. no. 58(SFT) type B on page 398 conducted at Aligarh.

**5. RESULTS :**

Treatment	0	$n_1$	$n_2$	$n_1'$	$n_2'$	$n_1''$	$n_2''$
Av. yield of grain in lb./ac.	872	1086	1177	1160	1251	1210	1349

G.M. = 1158 lb./ac. ; S.E./mean = 18.0 lb./ac. and no. of trials = 24.

**Crop :- Wheat (Rabi).****Ref :- U.P. 58(SFT).****Centre :- Rae-Bareilly (c.f.).****Type :- 'M'.**

Object :—Type B—To investigate the relative efficiency of different nitrogenous fertilizers at different doses.

## 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 58(SFT) type B on page 398 conducted at Aligarh.

## 5. RESULTS :

Treatment	0	$n_1$	$n_2$	$n_1'$	$n_2'$	$n_1''$	$n_2''$
Av. yield of grain in lb./ac.	1456	1580	1925	1539	1695	1481	1687

G.M. = 1623 lb./ac. ; S.E./mean = 29.7 lb./ac. and no. of trials. = 6.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 58(SFT).**

**Centre :- Rampur (c.f.).**

**Type :- 'M'.**

Object :- Type B—To investigate the relative efficiency of different nitrogenous fertilizers at different doses.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) *Tarai* and sub-montane. (iii) to (v) N.A. (vi) October—November. (vii) Irrigated. (viii) and (ix) N.A. (x) April—May.

## 2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 58 (SFT) type B on page 398 conducted at Aligarh.

## 5. RESULTS :

Treatment	0	$n_1$	$n_2$	$n_1'$	$n_2'$	$n_1''$	$n_2''$
Av. yield of grain in lb./ac.	1078	1605	1975	1728	2098	1736	2197

G.M. = 1774 lb./ac. ; S.E./mean = 58.8 lb./ac. and no. of trials = 16.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 59(SFT).**

**Centre :- Rampur (c.f.).**

**Type :- 'M'.**

Object :- Type B—To investigate the relative efficiency of different nitrogenous fertilizers at different doses.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) *Taria* and sub-montane. (iii) to (v) N.A. (vi) October—November. (vii) Irrigated. (viii) and (ix) N.A. (x) April—May.

## 2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 58(SFT) type B on page 398 conducted at Aligarh.

## 5. RESULTS :

Treatment	0	$n_1$	$n_2$	$n_1'$	$n_2'$	$n_1''$	$n_2''$
Av. yield of grain in lb./ac.	1020	1292	1489	1341	1539	1349	1531

G.M. = 1366 lb./ac. ; S.E./mean = 19.2 lb./ac. and no. of trials = 23.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 58(SFT).**

**Centre :- Varanasi (c.f.).**

**Type :- 'M'.**

Object :- Type B—To investigate the relative efficiency of different nitrogenous fertilizers at different doses.

## 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 58(SFT) type B on page 398 conducted at Aligarh.



## 5. RESULTS :

Treatment	0	$n_1$	$n_2$	$n_1'$	$n_2'$	$n_1''$	$n_2''$
Av. yield of grain in lb./ac.	848	1144	1251	1078	1210	1136	1251

G.M. = 1131 lb./ac. ; S.E./mean = 36.1 lb./ac. and no. of trials = 16.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 59(SFT).**

**Centre :- Varanasi (c.f.).**

**Type :- 'M'.**

Object :— Type B—To investigate the relative efficiency of different nitrogenous fertilizers at different doses.

## 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 58(SFT) type B on page 398 conducted at Aligarh.

## 5. RESULTS :

Treatment	0	$n_1$	$n_2$	$n_1'$	$n_2'$	$n_1''$	$n_2''$
Av. yield of grain in lb./ac.	831	1144	1317	1136	1349	1103	1399

G.M. = 1183 lb./ac. ; S.E./mean = 22.7 lb./ac. and no. of trials = 23.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 55(378).**

**Centre :- Agra (Agra, c.f.).**

**Type :- 'M'.**

Object :—To study the effect of N alone and in combination with P on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Jowar* and fallow. (c) N.A. (ii) Light loam. (iii) and (iv) N.A. (v) (a) 6 to 8 ploughings. (b) Drilling. (c) 35 to 40 srs./ac. (d) 6" to 9" between rows. (e) N.A. (vi) 10, 11.11.1955. (vii) Irrigated. (viii) and (ix) N.A. (x) 4, 5.4.1956.

## 2. TREATMENTS :

$n_0p_0$  = Control.

$n_1p_0$  = 25 lb./ac. of N as A/S.

$n_1p_1'$  = 25 lb./ac. of N as A/S + 30 lb./ac. of  $P_2O_5$  as Super.

$n_1p_2'$  = 25 lb./ac. of N as A/S + 60 lb./ac. of  $P_2O_5$  as Super.

$n_1p_2''$  = 25 lb./ac. of N as A/S + 60 lb./ac. of  $P_2O_5$  as Ammo. Phos.

## 3. DESIGN :

(i) and (ii) 2 villages in the *tehsil* and 3 fields in each village were selected randomly. (iii) (a) and (b) 1/16 ac. (vi) Yes.

## 4. GENERAL :

(i) Good. Lodging occurred. (ii) Nil. (iii) Yield of grain. (iv) (a) 1955—1957. (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1603 lb./ac. (ii) 154.8 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$n_0p_0$	$n_1p_0$	$n_1p_1'$	$n_1p_2'$	$n_1p_2''$
Av. yield	1157	1507	1669	1816	1867

S.E./mean = 63.2 lb./ac. and no. of trials = 6.

**Crop :- Wheat (Rabi).****Ref :- U.P. 56(424).****Centre :- Agra (Agra, c.f.).****Type :- 'M'.**

Object :—To study the effect of N alone and in combination with P on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Fallow. (c) N.A. (ii) Loam. (iii) and (iv) N.A. (v) (a) 6 to 8 ploughings. (b) Drilling. (c) 35 to 40 srs./ac. (d) 6" to 9" between rows. (e) N.A. (vi) 8 to 16.11.1956. (vii) Irrigated. (viii) and (ix) N.A. (x) 6, 7.4.1957.

**2. TREATMENTS :**

Same as in expt. no. 55(378) on page 408.

**3. DESIGN :**

(i) and (ii) 2 villages in the *tehsil* and 2 fields in each village were selected randomly. (iii) (a) and (b) 1/16 ac. (vi) Yes.

**4. GENERAL :**

(i) Good. Lodging occurred. (ii) Nil. (iii) Grain yield. (iv) (a) 1955—1957. (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1830 lb./ac. (ii) 188.9 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain lb./ac.

Treatment	$n_0P_0$	$n_1P_0$	$n_1P_1'$	$n_1P_2'$	$n_1P_2''$
Av. yield	1480	1784	2060	2184	1644

S.E./mean = 94.5 lb./ac. and no. of trials = 4.

**Crop :- Wheat (Rabi).****Ref :- U P. 57(458).****Centre :- Agra (Agra, c.f.).****Type :- 'M'.**

Object :—To study the effect of N alone and in combination with P on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) *Bajra* and fallow. (c) N.A. (ii) Loam. (iii) and (iv) N.A. (v) (a) 6 to 8 ploughings. (b) Drilling. (c) 35 to 40 srs./ac. (d) 6" to 9" between rows. (e) N.A. (vi) 5 to 8.11.1957. (vii) Irrigated. (viii) and (ix) N.A. (x) 6, 7.4.1958.

**2. TREATMENTS :**

Same as in expt. no. 55(378) on page 408.

**3. DESIGN :**

(i) and (ii) 2 villages in the *tehsil* and 2 fields in each village were selected randomly. (iii) (a) and (b) 1/16 ac. (iv) Yes.

**4. GENERAL :**

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1955—1957. (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

**5. RESULTS:**

(i) 1267 lb./ac. (ii) 49.7 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$n_0P_0$	$n_1P_0$	$n_1P_1'$	$n_1P_2'$	$n_1P_2''$
Av. yield	824	1268	1332	1464	1448

S.E./mean = 24.8 lb./ac. and no. of trials = 4.

**Crop :- Wheat (Rabi).****Ref :- U.P. 55(380).****Centre :- Etmadpur (Agra, c.f.).****Type :- 'M'.**

Object :—To study the effect of N alone and in combination with P on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Fallow. (c) N.A. (ii) Light loam. (iii) and (iv) N.A. (v) (a) 6 to 8 ploughings. (b) Drilling. (c) 35 to 40 srs./ac. (d) 6" to 9" between rows. (e) N.A. (vi) 12, 13.11.1955. (vii) Irrigated. (viii) and (ix) N.A. (x) 6, 7.4.1955.

**2. TREATMENTS to 4. GENERAL :**

Same as in expt. no. 55(378) on page 408.

**5. RESULTS :**

(i) 1753 lb./ac. (ii) 238.9 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$n_0p_0$	$n_1p_0$	$n_1p_1'$	$n_1p_2'$	$n_1p_2''$
Av. yield	1405	1704	1867	1931	1856

S.E./mean = 97.5 lb./ac. and no. of trials = 6.

**Crop :- Wheat (Rabi).****Ref :- U.P. 56(426).****Centre :- Etmadpur (Agra, c.f.).****Type :- 'M'.**

Object :—To study the effect of N alone and in combination with P on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Fallow. (c) N.A. (ii) Loam. (iii) and (iv) N.A. (v) (a) 6 to 8 ploughings. (b) Drilling. (c) 35 to 40 srs./ac. (d) 6" to 9" between rows. (e) N.A. (vi) 6 to 10.11.1956. (vii) Irrigated. (viii) and (ix) N.A. (x) 10, 11.4.1957.

**2. TREATMENTS :**

Same as in expt. no. 55(378) on page 408.

**3. DESIGN :**

(i) and (ii) 3 villages in the *tehsil* and 2 fields in each village were selected randomly. (iii) (a) and (b) 1/16 ac. (iv) Yes.

**4. GENERAL :**

(i) Good. Lodging occurred. (ii) Nil. (iii) Yield of grain. (iv) (a) 1955--1957. (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1446 lb./ac. (ii) 369.5 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$n_0p_0$	$n_1p_0$	$n_1p_1'$	$n_1p_2'$	$n_1p_2''$
Av. yield	757	1173	1723	2216	1363

S.E./mean = 150.8 lb./ac. and no. of trials = 6.

**Crop :- Wheat (Rabi).****Ref :- UP 57(461).****Centre :- Etmadpur (Agra, c.f.).****Type :- 'M'.**

Object :—To study the effect of N alone and in combination with P on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Bajra* and *Arhar*. (c) N.A. (ii) Loam. (iii) and (iv) N.A. (v) (a) 6 to 8 ploughings. (b) Drilling. (c) 35 to 40 srs./ac. (d) Rows 6" to 9" apart. (e) N.A. (vi) 28.10.1957 to 1.11.1957. (vii) Irriga ed. (viii) and (ix) N.A. (x) 29 to 31.3.1958.

## 2. TREATMENTS :

Same as in expt. no. 55(378) on page 408.

## 3. DESIGN :

(i) and (ii) 3 villages in the *tehsil* and 2 fields in each village were selected randomly. (iii) (a) and (b) 1/16 ac. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Yield of grain. (iv) (a) 1955—1957. (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1581 lb./ac. (ii) 204.4 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$n_0P_0$	$n_1P_0$	$n_1P_1'$	$n_1P_2'$	$n_1P_2''$
Av. yield	997	1587	1760	1904	1659

S.E./mean = 83.5 lb./ac. and no. of trials = 6.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 55(376).**

**Centre :- Fatehabad (Agra, c.f.).**

**Type :- 'M'.**

Object :—To study the effect of N alone and in combination with P on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Jowar* and fallow. (c) N.A. (ii) Heavy loam. (iii) and (iv) N.A. (v) (a) 6 to 8 ploughings. (b) Drilling. (c) 35 to 40 srs./ac. (d) Rows 6" to 9" apart. (e) N.A. (vi) 20 to 28.11.1955. (vii) Irrigated. (viii) and (ix) N.A. (x) 7 and 8.4.1956.

## 2. TREATMENTS :

Same as in expt. no. 55(378) on page 408.

## 3. DESIGN :

(i) and (ii) 2 villages in the *tehsil*, 4 fields in one village and 2 fields in one village were selected randomly. (iii) (a) (b) 1/16 ac. (iv) Yes.

## 4. GENERAL :

(i) Poor. Lodging occurred. (ii) Nil. (iii) Yield of grain. (iv) (a) 1955—1957. (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1283 lb./ac. (ii) 167.3 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$n_0P_0$	$n_1P_0$	$n_1P_1'$	$n_1P_2'$	$n_1P_2''$
Av. yield	787	1112	1307	1613	1597

S.E./mean = 68.3 lb./ac. and no. of trials = 6.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 56(429).**

**Centre :- Fatehabad (Agra, c.f.).**

**Type :- 'M'.**

Object :—To study the effect of N alone and in combination with P on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Jowar, Bajra* and fallow. (c) N.A. (ii) Loam. (iii) and (iv) N.A. (v) (a) 6 to 8 ploughings. (b) Drilling. (c) 35 to 40 srs./ac. (d) Rows 6" to 9" apart. (e) N.A. (vi) 12 to 14.11.1956. (vii) Irrigated. (viii) and (ix) N.A. (x) 8 to 21.4.1957.

## 2. TREATMENTS :

Same as in expt. no. 55 (378) on page 408.

## 3. DESIGN :

(i) and (ii) 3 villages in the *tehsil* and 2 fields in each village were selected randomly. (ii) (a) and (b) 1/16 ac. (iv) Yes.

## 4. GENERAL :

(i) Satisfactory. Lodging occurred. (ii) Nil. (iii) Yield of grain. (v) (a) 1955—1957. (b) No. (c) Nil. (vi) N.A. (vii) and (viii) Nil.

## 5. RESULTS :

(i) 1141 lb./ac. (ii) 403.9 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$n_0P_0$	$n_1P_0$	$n_1P_1'$	$n_1P_2'$	$n_1P_2''$
Av. yield	907	1128	1179	1312	1179

S.E./mean = 164.9 lb./ac. and no. of trials = 6.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 57(453).**

**Centre :- Fatehabad (Agra, c.f.).**

**Type :- 'M'.**

Object :—To study the effect of N alone and in combination with P on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Bajra, Jowar* and fallow. (c) N.A. (ii) Loam. (iii) and (iv) N.A. (v) (a) 6 to 8 ploughings. (b) Drilling. (c) 35 to 40 srs./ac. (d) Rows 6" to 9" apart. (e) N.A. (vi) 1 to 4.11.1957. (vii) Irrigated. (viii) and (ix) N.A. (x) 27.3.1958 to 8.4.1958.

## 2. TREATMENTS :

Same as in expt. no. 55(378) on page 408.

## 3. DESIGN :

(i) and (ii) 3 villages in the *tehsil* and 2 fields in each village were selected randomly. (iii) (a) and (b) 1/16 ac. (iv) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Yield of grain. (iv) (a) 1955—1957. (b) No. (c) Nil. (v) N.A. (vi) Nil. (vii) Yield data of only 2 out of 3 villages selected was available.

## 5. RESULTS :

(i) 1265 lb./ac. (ii) 303.9 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain lb./ac.

Treatment	$n_0P_0$	$n_1P_0$	$n_1P_1'$	$n_1P_2'$	$n_1P_2''$
Av. yield	1009	1284	1212	1236	1584

S.E./mean = 152.0 lb./ac. and no. of trials = 4.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 55(379).**

**Centre :- Firozabad (Agra, c.f.).**

**Type :- 'M'.**

Object :—To study the effect of N alone and in combination with P on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Jowar* and *Bajra*. (c) N.A. (ii) Light loam. (iii) and (iv) N.A. (v) (a) 6 to 8 ploughings. (b) Drilling. (c) 35 to 40 srs./ac. (d) Rows 6" to 9" apart. (e) N.A. (vi) 14 to 19.11.1955. (vii) Irrigated. (viii) and (ix) N.A. (x) 6 to 10.4.1956.

## 2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 55(378) on page 408.

## 4. GENERAL :

(i) Poor. (ii) Attack of rust observed. (iii) Yield of grain. (iv) (a) 1955—1957. (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 745 lb./ac. (ii) 122.3 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$n_0P_0$	$n_1P_0$	$n_1P_1'$	$n_1P_2'$	$n_1P_2''$
Av. yield	637	723	755	851	757

S.E./mean = 49.9 lb./ac. and no. of trials = 6.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 56(428).**

**Centre :- Firozabad (Agra, c.f.).**

**Type :- 'M'.**

Object :—To study the effect of N alone and in combination with P on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Bajra* and fallow. (c) N.A. (ii) Loam. (iii) and (iv) N.A. (v) (a) 6 to 8 ploughings. (b) Drilling. (c) 35 to 40 srs./ac. (d) Rows 6" to 9" apart. (e) N.A. (vi) 7, 8.11.1956. (vii) Irrigated. (viii) and (ix) N.A. (x) 8, 9.4.1957.

## 2. TREATMENTS :

Same as in expt. no. 55(378) on page 408.

## 3. DESIGN :

(i) and (ii) 2 villages in the *tehsil* and 2 fields in each village were selected randomly. (iii) (a) and (b) 1/16 ac. (iv) Yes.

## 4. GENERAL :

(i) Good. Lodging occurred. (ii) Nil. (iii) Yield of grain. (iv) (a) 1955—1957. (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1074 lb./ac. (ii) 203.1 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$n_0P_0$	$n_1P_0$	$n_1P_1'$	$n_1P_2'$	$n_1P_2''$
Av. yield	728	892	1212	1492	1044

S.E./mean = 101.6 lb./ac. and no. of triass = 4.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 57(462).**

**Centre :- Firozabad (Agra, c.f.).**

**Type :- 'M'.**

Object :—To study the effect of N alone and in combination with P on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Bajra* and *Arhar*. (c) N.A. (ii) Loam. (iii) and (iv) N.A. (v) (a) 6 to 8 ploughings. (b) Drilling. (c) 35 to 40 srs./ac. (d) Rows 6" to 9" apart. (e) N.A. (vi) 25.10.1957 to 4.11.1957. (vii) Irrigated. (viii) and (ix) N.A. (x) 31.3.1958 to 6.4.1958.

## 2. TREATMENTS :

Same as in expt. no. 55(378) on page 408.

## 3. DESIGN :

(i) and (ii) 2 villages in the *tehsil* and 2 fields in each village were selected randomly. (iii) (a) and (b) 1/16 ac. (iv) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Yield of grain. (iv) (a) 1955—1957. (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1389 lb./ac. (ii) 221.4 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	$n_0p_0$	$n_1p_0$	$n_1p_1'$	$n_1p_2'$	$n_1p_2''$
Av. yield	1029	1192	1560	1648	1516

S.E./mean = 110.7 lb./ac. and no. of trials = 4.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 55(377).**

**Centre :- Khairgarh (Agra, c.f.).**

**Type :- 'M'.**

Object :- To study the effect of N alone and in combination with P on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow. (c) N.A. (ii) Light loam. (iii) and (iv) N.A. (v) (a) 6 to 8 ploughings. (b) Drilling. (c) 35 to 40 srs./ac. (d) Rows 6" to 9" apart. (e) N.A. (vi) 15 to 20.11.1955. (vii) Irrigated. (viii) and (ix) N.A. (x) 4 and 5.4.1956.

## 2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 55(378) on page 408.

## 4. GENERAL :

(i) Good. Lodging occurred. (ii) Nil. (iii) Yield of grain. (iv) (a) 1955--1957. (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1623 lb./ac. (ii) 96.1 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$n_0p_0$	$n_1p_0$	$n_1p_1'$	$n_1p_2'$	$n_1p_2''$
Av. yield	1056	1325	1613	2008	2115

S.E./mean = 39.2 lb./ac. and no. of trials = 6.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 56(427).**

**Centre :- Khairgarh (Agra, c.f.).**

**Type :- 'M'.**

Object :- To study the effect of N alone and in combination with P on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow. (c) N.A. (ii) Loam. (iii) and (iv) N.A. (v) (a) 6 to 8 ploughings. (b) Drilling. (c) 35 to 40 srs./ac. (d) Rows 6" to 9" apart. (e) N.A. (vi) 13 to 15.11.1956. (vii) Irrigated. (viii) and (ix) N.A. (x) 3 to 7.4.1957.

## 2. TREATMENTS :

Same as in expt. no. 55(378) on page 408.

## 3. DESIGN :

(i) and (ii) 2 villages in the *tehsil* and 2 fields in each village were selected randomly. (iii) (a) and (b) 1/16 ac. (iv) Yes.

## 4. GENERAL :

(i) Good. Lodging occurred. (ii) Nil. (iii) Yield of grain. (iv) (a) 1955—1957. (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 667 lb./ac. (ii) 34.3 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$n_0P_0$	$n_1P_0$	$n_1P_1'$	$n_1P_2'$	$n_1P_2''$
Av. yield	532	624	688	756	736

S.E./mean = 17.2 lb./ac. and no. of trials = 4.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 57(460).**

**Centre :- Khairgarh (Agra, c.f.).**

**Type :- 'M'.**

Object :— To study the effect of N alone and in combination with P on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow. (c) N.A. (ii) Loam. (iii) and (iv) N.A. (v) (a) 6 to 8 ploughings. (b) Drilling. (c) 35 to 40 srs./ac. (d) Rows 6" to 9" apart. (e) N.A. (vi) 2 to 7.11.1957. (vii) Irrigated. (viii) and (ix) N.A. (x) 30.3.1958 to 11.4.1958.

## 2. TREATMENTS :

Same as in expt. no. 53(378) on page 408.

## 3. DESIGN :

(i) and (ii) 3 villages in the *tehsil* and 2 fields in each village were selected randomly. (iii) (a) and (b) 1/16 ac. (iv) Yes.

## GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Yield of grain. (iv) (a) 1955—1957. (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1512 lb./ac. (ii) 82.1 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$n_0P_0$	$n_1P_0$	$n_1P_1'$	$n_1P_2'$	$n_1P_2''$
Av. yield	925	1507	1659	1696	1771

S.E./mean = 33.5 lb./ac. and no. of trials = 6.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 56(425).**

**Centre :- Kirwali (Agra, c.f.).**

**Type :- 'M'.**

Object :—To study the effect of N alone and in combination with P on Wheat.



## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow. (c) N.A. (ii) Loam. (iii) and (iv) N.A. (v) (a) 6 to 8 ploughings. (b) Drilling. (c) 35 to 40 srs./ac. (d) Rows 6" to 9" apart. (e) N.A. (vi) 14 to 18.11.1956. (vii) Irrigated. (viii) and (ix) N.A. (x) 8 to 10.4.1957.

## 2. TREATMENTS :

Same as in expt. no. 55(378) on page 408.

## 3. DESIGN :

(i) and (ii) 3 villages in the *tehsil* and 2 fields in each village were selected randomly. (iii) (a) and (b) 1/16 ac. (iv) Yes.

## 4. GENERAL :

(i) Satisfactory. Lodging occurred. (ii) Nil. (iii) Yield of grain. (iv) (a) 1956-1957. (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1689 lb./ac. (ii) 336.2 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	$n_0P_0$	$n_1P_0$	$n_1P_1'$	$n_1P_2'$	$n_1P_2''$
Av. yield	1267	1533	1995	2069	1581

S.E./mean = 137.3 lb./ac. and no. of trials = 6.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 57(459).**

**Centre :- Kirwali (Agra, c.f.).**

**Type :- 'M'.**

Object :—To study the effect of N alone and in combination with P on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow. (c) N.A. (ii) Loam. (iii) and (iv) N.A. (v) (a) 6 to 8 ploughings. (b) Drilling. (c) 35 to 40 srs./ac. (d) Rows 6" to 9" apart. (e) N.A. (vi) 8.11.1957. (vii) Irrigated. (viii) and (ix) N.A. (x) April, 1958.

## 2. TREATMENTS :

Same as in expt. no. 55(378) on page 408.

## 3. DESIGN :

(i) and (ii) 2 villages in the *tehsil* and 2 fields in each village were selected randomly. (iii) (a) and (b) 1/16 ac. (iv) Yes.

## 5. GENERAL :

(i) N.A. (ii) Nil. (iii) Yield of grain. (iv) (a) 1956-1957. (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1688 lb./ac. (ii) 62.5 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	$n_0P_0$	$n_1P_0$	$n_1P_1'$	$n_1P_2'$	$n_1P_2''$
Av. yield	1222	1634	1780	1882	1922

S.E./mean = 31.2 lb./ac. and no. of trials = 4.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 56(418).**

**Centre :- Agra (Agra, c.f.).**

**Type :- 'M'.**

Object :—To study the effect of N alone and in combination with P and K on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow. (c) N.A. (ii) Loam. (iii) and (iv) N.A. (v) (a) 6 to 8 ploughings. (b) Drilling. (c) 35 to 40 srs./ac. (d) 6" to 9" between rows. (e) N.A. (vi) November, 1956. (vii) Irrigated. (viii) and (ix) N.A. (x) April, 1957.

## 2. TREATMENTS :

c = Control (no manure)  
 n = 30 lb./ac. of N.  
 np = 30 lb./ac. of N+40 lb./ac. of  $P_2O_5$ .  
 nk = 30 lb./ac. of N+40 lb./ac. of  $K_2O$ .  
 npk = 30 lb./ac. of N+40 lb./ac. of  $P_2O_5$ +40 lb./ac. of  $K_2O$ .  
 N as A/S applied by broadcast,  $P_2O_5$  as Super and  $K_2O$  as Pot. Sul. applied in furrows.

## 3. DESIGN :

(i) and (ii) 2 villages in the *tehsil* and 1 field in each village was selected randomly. (iii) (a) and (b) 1/16 ac. (iv) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Yield of grain. (iv) (a) 1956—1957. (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 2102 lb./ac. (ii) 346.4 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	c	n	np	nk	npk
Av. yield	1424	1936	2272	2368	2512

S.E./mean = 244.9 lb./ac. and no. of trials = 2.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 57(452).**

**Centre :- Agra (Agra, c.f.).**

**Type :- 'M'.**

Object :- To study the effect of N alone and in combination with P and K on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow. (c) N.A. (ii) Loam. (iii) and (iv) N.A. (v) (a) 6 to 8 ploughings. (b) Drilling. (c) 35 to 40 srs./ac. (d) 6" to 9" between rows. (e) N.A. (vi) 5 to 8.11.1957. (vii) Irrigated. (viii) and (ix) N.A. (x) April, 1958.

## 2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 56(418) on page 416.

## 5. RESULTS :

(i) 1346 lb./ac. (ii) 111.8 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	c	n	np	nk	npk
Av. yield	888	1320	1456	1424	1640

S.E./mean = 79.1 lb./ac. and no. of trials = 2.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 56(421).**

**Centre :- Etmadpur (Agra, c.f.).**

**Type :- 'M'.**

Object :- To study the effect of N alone and in combination with P and K on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Maize and fallow. (c) N.A. (ii) Loam. (iii) and (iv) N.A. (v) (a) 6 to 8 ploughings. (b) Drilling. (c) 35 to 40 srs./ac. (d) 6" to 9" between rows. (e) N.A. (vi) 10 to 16.11.1956. (vii) Irrigated. (viii) and (ix) N.A. (x) 10 and 11.4.1957.

**2. TREATMENTS :**

Same as in expt. no. 56(418) on page 416.

**3. DESIGN :**

(i) and (ii) 3 villages in the *tehsil* and 1 field in each village was selected randomly. (iii) (a) and (b) 1/16 ac. (iv) Yes.

**4. GENERAL :**

(i) Good. Lodging occurred. (iii) Yield of grain. (iv) (a) 1956—1957. (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1505 lb./ac. (ii) 514.0 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	c	n	np	nk	npk
Av. yield	683	1371	1616	1472	2384

S.E./mean = 296.8 lb./ac. and no. of trials = 3.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 57(457).**

**Centre :- Etmadpur (Agra, c.f.).**

**Type :- 'M'.**

Object :— To study the effect of N alone and in combination with P and K on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) *Bajra* and *arhar*. (c) N.A. (ii) Loam. (iii) and (iv) N.A. (v) (a) 6 to 8 ploughings. (b) Drilling. (c) 35 to 40 srs./ac. (d) Rows 6" to 9" apart. (e) N.A. (vi) 29.10.1957 to 2.11.1957. (vii) Irrigated. (viii) and (ix) N.A. (x) 28 to 30.3.1958.

**2. TREATMENTS :**

Same as in expt. no. 56(418) on page 416.

**3. DESIGN :**

(i) and (ii) 3 villages in the *tehsil* and one field in each village was selected randomly. (iii) 1/16 ac. (iv) Yes.

**4. GENERAL :**

(i) Satisfactory. (ii) Nil. (iii) Yield of grain. (iv) (a) 1956—1957. (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1199 lb./ac. (ii) 97.8 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	c	n	np	nk	npk
Av. yield	720	1227	1296	1312	1440

S.E./mean = 56.5 lb./ac. and no. of trials = 3.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 56(423).**

**Centre :- Fatehabad (Agra, c.f.).**

**Type :- 'M'.**

Object :—To study the effect of N alone and in combination with P and K on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Bajra, urd* and fallow. (c) N.A. (ii) Loam. (iii) and (iv) N.A. (v) (a) 6 to 3 ploughings. (b) Drilling. (c) 35 to 40 srs./ac. (d) Rows 6" to 9" apart. (e) N.A. (vi) 12 to 14.11.1956. (vii) Irrigated. (viii) and (ix) N.A. (x) 8 to 20.4.1957.

## 2. TREATMENTS :

Same as in expt. no. 56(418) on page 416.

## 3. DESIGN :

(i) and (ii) 3 villages in the *tehsil* and 1 field in each village was selected randomly. (iii) (a) and (b) 1/16 ac. (iv) Yes.

## 4. GENERAL :

(i) Satisfactory. Lodging occurred. (ii) Nil. (iii) Yield of grain. (iv) (a) 1956—1957. (b) No. (c) Nil. (v) N.A. (vi) Nil. (vii) Yield data for the year 1957 is incomplete, hence the experiment has not been included.

## 5. RESULTS :

(i) 959 lb./ac. (ii) 250.5 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	c	n	np	nk	npk
Av. yield	555	843	933	869	1595

S.E./mean = 144.62 lb./ac. and no. of trials = 3.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 56(422).**

**Centre :- Firozabad (Agra, c.f.).**

**Type :- 'M'.**

Object :—To study the effect of N alone and in combinations with P and K on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Guar* and *bajra*. (c) N.A. (ii) Loam. (iii) and (iv) N.A. (v) (a) 6 to 8 ploughings. (b) Drilling. (c) 35 to 40 srs./ac. (d) Row 6" to 9" apart. (e) N.A. (vi) 7 and 8.11.1956. (vii) Irrigated. (viii) and (ix) N.A. (x) 8 and 9.4.1957.

## 2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 56 (418) on page 416.

## 4. GENERAL :

(i) Good. Lodging occurred. (ii) Nil. (iii) Yield of grain. (iv) (a) 1956—1957. (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1330 lb./ac. (ii) 271.6 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	c	n	np	nk	npk
Av. yield	1072	1008	1296	1184	2089

S.E./mean = 192.0 lb./ac. and no. of trials = 2.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 57(453).**

**Centre :- Firozabad (Agra, c f.).**

**Type :- 'M'.**

Object :—To study the effect of N alone and in combination with P and K on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Bajra* and *arhar*. (c) N.A. (ii) Loam. (iii) and (iv) N.A. (v) (a) 6 to 8 ploughings. (b) Drilling. (c) 35 to 40 srs./ac. (d) Rows 6" to 9" apart. (e) N.A. (vi) 27.10.1957 to 4.11.1957. (vii) Irrigated. (viii) and (ix) N.A. (x) 30.3.1958 to 5.4.1958.

## 2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 56(418) on page 416.

## 4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Yield of grain. (iv) (a) 1956—1957. (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1223 lb./ac. (ii) 230.7 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	c	n	np	nk	npk
Av. yield	1021	1216	1440	1064	1376

S.E./mean = 163.1 lb./ac. and no. of trials = 2.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 56(419).**

**Centre :- Khairgarh (Agra, c.f.).**

**Type :- 'M'.**

Object :—To study the effect of N alone and in combination with P and K on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow. (c) N.A. (ii) Loam. (iii) and (iv) N.A. (v) (a) 6 to 8 ploughings. (b) Drilling. (c) 35 to 40 srs./ac. (d) Rows 6" to 9" apart. (e) N.A. (vi) 12 to 15.11.1956. (vii) Irrigated. (viii) and (ix) N.A. (x) 1 to 6.4.1957.

## 2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 56(418) on page 416.

## 4. GENERAL :

(i) Good. Lodging occurred. (ii) Nil. (iii) Yield of grain. (iv) (a) 1956—1957. (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 587 lb./ac. (ii) 42.8 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	c	n	np	nk	npk
Av. yield	520	544	656	568	648

S.E./mean = 30.3 lb./ac. and no. of trials = 2.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 57(455).**

**Centre :- Khairgarh (Agra, c.f.).**

**Type :- 'M'.**

Object :—To study the effect of N alone and in combination with P and K on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow. (c) N.A. (ii) Loam. (iii) and (iv) N.A. (v) (a) 6 to 8 ploughings. (b) Drilling. (c) 35 to 40 srs./ac. (d) Rows 6" to 9" apart. (e) N.A. (vi) 3 to 7.11.1957. (vii) Irrigated. (viii) and (ix) N.A. (x) 1 to 12.4.1958.

## 2. TREATMENTS :

Same as in expt. no. 56(418) on page 416.

## 3. DESIGN :

(i) and (ii) 3 villages in the *tehsil* and 1 field in each village was selected randomly. (iii) (a) and (b) 1/16 ac. (iv) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Yield of grain. (iv) (a) 1956—1957. (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1421 lb./ac. (ii) 118.9 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	c	n	np	nk	npk
Av. yield	880	1419	1403	1611	1792

S.E./mean = 68.6 lb./ac. and no. of trials = 3.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 56(420).**

**Centre :- Kirwali (Agra, c.f.).**

**Type :- 'M'.**

Object :—To study the effect of N alone and in combination with P and K on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow. (c) N.A. (ii) Loam. (iii) and (iv) N.A. (v) (a) 6 to 8 ploughings. (b) Drilling. (c) 35 to 40 srs./ac. (d) Rows 6" to 9" apart. (e) N.A. (vi) 16 to 19.11.1956. (vii) Irrigated. (viii) and (ix) N.A. (x) 8 to 10.4.1957.

## 2. TREATMENTS :

Same as in expt. no. 56(418) on page 416.

## 3. DESIGN :

(i) and (ii) 3 villages in the *tehsil* and 1 field in each village was selected randomly. (iii) (a) and (b) 1/16 ac. (iv) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Yield of grain. (iv) (a) 1956—1957. (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1978 lb./ac. (ii) 226.7 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	c	n	np	nk	npk
Av. yield	1632	1861	2144	2000	2251

S.E./mean = 130.9 lb./ac. and no. of trials = 3.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 57(454).**

**Centre :- Kirwali (Agra, c.f.).**

**Type :- 'M'.**

Object :—To study the effect of N alone and in combination with P and K on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Fallow. (c) N.A. (ii) Loam. (iii) and (iv) N.A. (v) (a) 6 to 8 ploughings. (b) Drilling. (c) 35 to 40 srs./ac. (d) Rows 6" to 9" apart. (e) N.A. (vi) 8.11.1957. (vii) Irrigated. (viii) and (ix) N.A. (x) April, 1958.

**2. TREATMENTS and 3. DESIGN:**

Same as in expt. no. 56(418) on page 416.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Grain yield. (iv) (a) 1956—1957. (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1744 lb./ac. (ii) 253.2 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	c	n	np	nk	n <sub>p</sub> k
Av. yield	1400	1768	2032	1992	1528

S.E./mean = 179.0 lb./ac. and no. of trials = 2.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 57(465).**

**Centre :- Karchana (Allahabad, c.f.).**

**Type :- 'M'.**

Object :—To study the residual effect of N and P applied to previous crop on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Paddy. (c) As per treatments. (ii) Clayey. (iii) Nil. (iv) N.A. (v) (a) 7 to 8 ploughings. (b) Sown behind the plough. (c) 30 to 40 srs./ac. (d) 4" to 6" between rows. (e) N.A. (vi) 30.11.1957. (vii) Unirrigated. (viii) and (ix) N.A. (x) 24 to 26.3.1958.

**2. TREATMENTS :**

$n_0p_0$  = Control.

$n_1p_0$  = 25 lb./ac. of N as A/S.

$n_1p_1$  = 25 lb./ac. of N as A/S + 25 lb./ac. of  $P_2O_5$  as Super.

$n_1p_2$  = 25 lb./ac. of N as A/S + 50 lb./ac. of  $P_2O_5$  as Super.

Fertilizers applied to previous paddy crop.

**3. DESIGN :**

(i) and (ii) Out of the 6 trials conducted on previous paddy crop in 2 villages, residual effect has been tested in only 3 trials in one village. (iii) (a) N.A. (b) 1/40 ac. (iv) Yes.

**4. GENERAL :**

(i) Fair. (ii) N.A. (iii) Yield of grain and straw. (iv) and (v) N.A. (vi) Lack of winter rains. (vii) Nil.

**5. RESULTS :**

(i) 480 lb./ac. (ii) 20.8 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	$n_0p_0$	$n_1p_0$	$n_1p_1$	$n_1p_2$
Av. yield	460	460	480	520

S.E./mean = 12.0 lb./ac. and no. of trials = 3.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 57(437).**

**Centre :- Phoolpur (Allahabad, c.f.).**

**Type :- 'M'.**

Object :—To study the effect of N and P on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow. (c) Nil. (ii) Loam. (iii) and (iv) N.A. (v) (a) 7 to 8 ploughings by *desi* plough. (b) Sown behind the plough. (c) 30 to 40 srs./ac. (d) Rows 4" to 6" apart. (e) N.A. (vi) 27 to 31.10.1957. (vii) One trial irrigated and 3 trials unirrigated. (viii) and (ix) N.A. (x) 14 to 18.3.1958.

## 2. TREATMENTS :

$n_0P_0$  = Control.

$n_1P_0$  = 25 lb./ac. of N as A/S.

$n_1P_1'$  = 25 lb./ac. of N as A/S + 30 lb./ac. of  $P_2O_5$  as Super.

$n_1P_2'$  = 25 lb./ac. of N as A/S + 60 lb./ac. of  $P_2O_5$  as Super.

$n_1P_2''$  = 25 lb./ac. of N as A/S + 60 lb./ac. of  $P_2O_5$  as Ammo. Phos.

A/S and Ammo. Phos. surface dressed and Super placed deep in furrows behind the plough.

## 3. DESIGN :

(i) and (ii) 2 villages in the *tehsil* and 2 fields in each village were selected randomly. (iii) (a) N.A. (b) 1/40 ac. (iv) Yes.

## 4. GENERAL :

(i) Crop stand fair in 2 trials and poor in 2 trials. (ii) N.A. (iii) Yield of grain and straw. (iv) and (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1011 lb./ac. (ii) 35.2 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$n_0P_0$	$n_1P_0$	$n_1P_1'$	$n_1P_2'$	$n_1P_2''$
Av. yield	712	885	1068	1172	1220

S.E./mean = 17.6 lb./ac. and no. of trials = 4.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 57(436).**

**Centre :- Soroan (Allahabad, c.f.).**

**Type :- 'M'.**

Object :—To study the effect of N and P on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow. (c) Nil. (ii) Loam. (iii) and (iv) N.A. (v) (a) 7 to 8 ploughings by *desi* plough. (b) Sown behind the plough. (c) 30 to 40 srs./ac. (d) 4" to 6" between rows. (e) N.A. (vi) 3.11.1957 to 12.11.1957. (vii) Irrigated. (viii) and (ix) N.A. (x) 22.3.1958 to 30.2.1958.

## 2. TREATMENTS :

Same as in expt. no. 57(437) on page 422.

## 3. DESIGN :

(i) and (ii) 3 villages in the *tehsil* and 2 fields in each village were selected randomly. (iii) (a) N.A. (b) 66' x 16.5'. (iv) Yes.

## 4. GENERAL :

(i) Crop stand good in 2 trials, fair in 2 trials and poor in 2 trials. (ii) N.A. (iii) Yield of grain and straw. (iv) and (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1047 lb./ac. (ii) 59.4 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$n_0P_0$	$n_1P_0$	$n_1P_1'$	$n_1P_2'$	$n_1P_2''$
Av. yield	757	947	1098	1222	1212

S.E./mean = 24.2 lb./ac. and no. of trials = 6.



**Crop :- Wheat (Rabi).****Ref :- U.P. 57(441).****Centre :- Phoolpur (Allahabad, c.f.).****Type :- 'M'.**

Object :—To study the effect of N alone and in combination with P and K on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Fallow. (c) Nil (ii) Loam. (iii) and (iv) N.A. (v) (a) 7 to 8 ploughings by *desi* plough. (b) Sown behind the plough. (c) 30 to 40 srs./ac. (d) Rows 4" to 6" apart. (e) N.A. (vi) 29.10.1957 and 1.11.1957. (vii) Unirrigated. (viii) and (ix) N.A. (x) 16 and 20.3.1958.

**2. TREATMENTS :**

c =Control.

n =30 lb./ac. of N as A/S.

nk =30 lb./ac. of N as A/S+40 lb./ac. of  $K_2O$  as Mur. Pot.np =30 lb./ac. of N as A/S+40 lb./ac. of  $P_2O_5$  as Super.npk =30 lb./ac. of N as A/S+40 lb./ac. of  $P_2O_5$  as Super+40 lb./ac. of  $K_2O$  as Mur. Pot.

A/S surface dressed. Super and Mur. Pot. placed deep in furrows.

**3. DESIGN :**

(i) and (ii) 2 villages in the *tehsil* and 1 field in each village was selected randomly. (iii) (a) N.A. (b) 66' x 66.5'. (vi) Yes.

**4. GENERAL :**

(i) Crop stand fair in 1 trial and poor in the other. (ii) N.A. (iii) Yield of grain and straw. (iv) and (v) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1051 lb./ac. (ii) 46.9 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	c	n	nk	np	npk
Av. yield	810	1000	1045	1190	1210

S.E./mean = 33.2 lb./ac. and no. of trials = 2.

**Crop :- Wheat (Rabi).****Ref :- U.P. 57(440).****Centre :- Soron (Allahabad, c.f.).****Type :- 'M'.**

Object :— To study the effect of N alone and in combination with P and K on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Fallow. (c) Nil. (ii) Loam. (iii) and (iv) N.A. (v) (a) 7 to 8 ploughings by *desi* plough (b) Sown behind the plough. (c) 30 to 40 srs./ac. (d) 4" to 6" between rows. (e) N.A. (vi) 5.11.1957 to 10.11.1957. (vii) Irrigated. (viii) and (ix) N.A. (x) 24.3.1958 to 28.3.1958.

**2. TREATMENTS :**

Same as in expt. no. 57(441) above.

**3. DESIGN :**

(i) and (ii) 2 villages in the *tehsil*, 2 fields in one village and 1 field in the other village were selected randomly. (iii) (a) N.A. (b) 16.5' x 66'. (iv) Yes.

**4. GENERAL :**

(i) Crop stand good in 1 trial, fair in one and poor in one. (ii) N.A. (iii) Yield of grain and straw. (iv) and (v) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1127 lb./ac. (ii) 40.7 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	c	n	nk	np	npk
Av. yield	880	1093	1097	1307	1260

S.E./mean = 23.5 lb./ac. and no. of trials = 3.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 55(371).**

**Centre :- Ballia (Ballia, c.f.).**

**Type :- 'M'.**

Object :- To study the effect of N and P on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Fallow. (c) Nil. (ii) (a) Clayey loam. (iii) and (iv) N.A. (v) (a) 7 to 8 ploughings by *desi* plough. (b) Sown behind the plough. (c) 30 to 40 srs./ac. (d) 4" to 6" between rows. (e) N.A. (vi) 22 to 25.10.1955. (vii) Unirrigated. (viii) and (ix) N.A. (x) 12 to 15.3.1956.

**2. TREATMENTS :**

Same as in expt. no. 57(437) on page 422.

**3. DESIGN :**

(i) and (ii) 3 villages in the *tehsil* and 2 fields in each village were selected randomly. (iii) (a) N.A. (b) 33' x 33'. (iv) Yes.

**4. GENERAL :**

(i) Poor in 4 trials and fair in 2 trials. (ii) N.A. (iii) Yield of grain and straw. (iv) and (v) N.A. (vi) Two trials were affected by drought. (vii) Nil.

**5. RESULTS :**

(i) 681 lb./ac. (ii) 55.9 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	n <sub>0</sub> P <sub>0</sub>	n <sub>1</sub> P <sub>0</sub>	n <sub>1</sub> P <sub>1</sub> '	n <sub>1</sub> P <sub>2</sub> '	n <sub>1</sub> P <sub>2</sub> ''
Av. yield	590	613	730	767	703

S.E./mean = 22.8 lb./ac. and no. of trials = 6.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 55(372).**

**Centre :- Rasra (Ballia, c.f.).**

**Type :- 'M'.**

Object :- To study the effect of N and P on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Paddy and fallow. (c) N.A. (ii) Light loam to heavy loam. (iii) and (iv) N.A. (v) (a) 7 to 8 ploughings by *desi* plough. (b) Sown behind the plough. (c) 30 to 40 srs./ac. (d) 4" to 6" between rows. (e) N.A. (vi) 29.10.1955 to 4.11.1955. (vii) Irrigated. (viii) and (ix) N.A. (x) 11 to 22.3.1956.

**2. TREATMENTS :**

Same as in expt. no. 57(437) on page 422.

**3. DESIGN :**

(i) and (ii) 3 villages in the *tehsil*, 3 fields in 2 villages and 2 fields in 1 village were selected randomly. (iii) (a) N.A. (b) 33' x 33'. (iv) Yes.

**4. GENERAL :**

(i) Fair. (ii) N.A. (iii) Grain and straw yield. (iv) and (v) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1255 lb./ac. (ii) 140.1 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$n_0p_0$	$n_1p_0$	$n_1p_1'$	$n_1p_2'$	$n_1p_2''$
Av. yield	1000	1260	1345	1342	1330

S.E./mean = 49.5 lb./ac. and no. of trials = 8.

**Crop :-** Wheat (*Rabi*).

**Ref :-** U.P. 56(406).

**Centre :-** Ballia (Ballia, c.f.).

**Type :-** 'M'.

**Object :-** To study the effect of N alone and in combination with P and K on Wheat.

### 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) and (iv) N.A. (v) (a) 7 to 8 ploughings by *desi* plough. (b) Sown behind the plough. (c) 30 to 40 srs./ac. (d) 4" to 6" between rows. (e) N.A. (vi) 1. to 17.11.1956. (vii) Irrigated. (viii) and (ix) N.A. (x) 23 to 29.3.1957.

### 2. TREATMENTS :

c = Control.  
n = 30 lb./ac. of N as A/S/N.  
nk = 30 lb./ac. of N as A/S/N + 40 lb./ac. of  $K_2O$  as Mur. Pot.  
np = 30 lb./ac. of N as A/S/N + 40 lb./ac. of  $P_2O_5$  as Super.  
npk = 30 lb./ac. of N as A/S/N + 40 lb./ac. of  $P_2O_5$  as Super + 40 lb./ac. of  $K_2O$  as Mur. Pot.  
A/S/N broadcast and Super and Mur. Pot. placed deep in furrows behind the plough.

### 3. DESIGN :

(i) and (ii) 3 villages in the *tehsil* and 1 field in each village was selected randomly. (iii) (a) N.A. (b) 1/40 ac. (iv) Yes.

### 4. GENERAL :

(i) Fair. (ii) N.A. (iii) Grain and straw yield. (iv) and (v) N.A. (vi) 2 trials damaged by hailstorm and abnormal weather conditions. (vii) Nil.

### 5. RESULTS :

(i) 859 lb./ac. (ii) 61.0 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	c	n	nk	np	npk
Av. yield	700	927	867	913	887

S.E./mean = 35.2 lb./ac. and no. of trials = 3.

**Crop :-** Wheat (*Rabi*).

**Ref :-** U.P. 56(408).

**Centre :-** Bansdih (Ballia, c.f.).

**Type :-** 'M'.

**Object :-** To study the effect of N alone and in combination with P and K on Wheat.

### 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow and *bajra*. (c) N.A. (ii) 2 trials in clayey and 2 trials in loam soil. (iii) and (iv) N.A. (v) (a) 7 to 8 ploughings by *desi* plough. (b) Sown behind the plough. (c) 30 to 40 srs./ac. (d) Rows 4" to 6" apart. (e) N.A. (vi) 20 to 28.11.1956. (vii) Irrigated. (viii) and (ix) N.A. (x) 3 to 7.4.1957.

### 2. TREATMENTS :

Same as in expt. no. 56(406) above.

### 3. DESIGN :

(i) and (ii) 3 villages in the *tehsil*, 2 fields in one village and 1 field in each of 2 villages were selected randomly. (iii) (a) N.A. (b) 1/40 ac. (iv) Yes.

## 4. GENERAL :

(i) Fair. (ii) N.A. (iii) Grain and straw yield. (iv) and (v) N.A. (vi) Crop affected by hail storm. (vii) Nil.

## 5. RESULTS:

(i) 714 lb./ac. (ii) 54.1 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	c	n	nk	np	npk
Av. yield	510	715	705	850	790

S.E./mean = 27.1 lb/ac. and no. of trials = 4.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 56(407).**

**Centre :- Rasra (Ballia, c.f.).**

**Type :- 'M'.**

Object :- To study the effect of N alone and in combination with P and K on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow. (c) N.A. (ii) Clayey. (iii) and (iv) N.A. (v) (a) 7 to 8 ploughings by *desi* plough. (b) Sown behind the plough. (c) 30 to 40 srs./ac. (d) 4" to 6" between rows. (e) N.A. (vi) 16 to 25.11.1956. (vii) Irrigated. (viii) and (ix) N.A. (x) 23.3.1957 to 1.4.1957.

## 2. TREATMENTS :

Same as in expt. no. 56(406) on page 426.

## 3. DESIGN :

(i) and (ii) 4 villages in the *tehsil* and 1 field in each village was selected randomly. (iii) (a) N.A. (b) 1/40 ac. (iv) Yes.

## 4. GENERAL :

(i) Good. (ii) N.A. (iii) Grain and straw yield. (iv) and (v) N.A. (vi) 2 trials were affected by hailstorm. (vii) Nil.

## 5. RESULTS :

(i) 1512 lb./ac. (ii) 89.4 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	c	n	nk	np	npk
Av. yield	1210	1510	1510	1670	1660

S.E./mean = 44.7 lb./ac. and no. of trials = 4.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 54(194).**

**Centre :- Banda (Banda, c.f.).**

**Type :- 'M'.**

Object :- To study the effect of different combinations of N and P on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar* and paddy. (c) N.A. (ii) *Kabar, parwa* and *mar*. (iii) to (v) N.A. (vi) 22.10.1951 to 23.11.1957. (vii) Irrigated. (viii) and (ix) N.A. (x) 25.3.1955 to 13.4.1955.

## 2. TREATMENTS :

$n_0P_0$  = Control.

$n_1P_0$  = 25 lb/ac. of N as A/S.

$n_1P_1$  = 25 lb./ac. of N as A/S + 30 lb./ac. of  $P_2O_5$  as Super.

$n_1P_2$  = 25 lb./ac. of N as A/S + 60 lb./ac. of  $P_2O_5$  as Super.

A/S broadcast at sowing and Super applied deep in furrows at sowing.

## 3. DESIGN :

(i) and (ii) 10 villages in the *tehsil*, 2 fields in 4 villages each, 3 fields in 3 villages each, and 1 field in 3 villages each were selected randomly. (iii) (a) N.A. (b) 1/40 ac. (iv) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Grain yield. (iv) (a) 1954--N.A. (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1417 lb./ac. (ii) 142.8 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$n_0P_0$	$n_1P_0$	$n_1P_1$	$n_1P_2$
Av. yield	1012	1394	1554	1708

S.E./mean = 31.9 lb./ac. and no. of trials = 20.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 54(195).**

**Centre :- Naraini (Banda, c.f.).**

**Type :- 'M'.**

Object :—To study the effect of different combinations of N and P on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow. (c) Nil. (ii) *Kabar, parwa* and *mar*. (iii) to (v) N.A. (vi) 23.10.1957 to 15.11.1957. (vii) Irrigated. (viii) and (ix) N.A. (x) 24.3.1955 to 14.4.1955.

## 2. TREATMENTS :

Same as in expt. no. 54(194) on page 427.

## 3. DESIGN :

(i) and (ii) 8 villages in the *tehsil*, 2 fields in 5 villages, 3 fields in 2 villages and 4 fields in 1 village were selected randomly. (iii) (a) N.A. (b) 1/40 ac. (iv) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) Grain yield. (iv) (a) 1954--N.A. (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1022 lb./ac. (ii) 108.2 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$n_0P_0$	$n_1P_0$	$n_1P_1$	$n_1P_2$
Av. yield	642	962	1190	1294

S.E./mean = 24.2 lb./ac. and no. of trials = 20.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 55(176).**

**Centre :- Karwi (Banda, c.f.).**

**Type :- 'M'.**

Object :—To study the effect of different combinations of N and P on Wheat

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Jowar* and paddy. (c) N.A. (ii) *Parwa, kabar* and *mar*. (iii) to (v) N.A. (vi) October—November, 1955. (vii) Irrigated. (viii) and (ix) N.A. (x) 30.3.1956 to 11.4.1956.

## 2. TREATMENTS :

Same as in expt. no. 57(437) on page 422.

## 3. DESIGN :

(i) and (ii) 8 villages in the *tehsil*, 4 fields in 2 villages, 3 fields in 1 village, 2 fields in 2 villages and 1 field in 3 villages were selected randomly. (iii) (a) N.A. (b) 1/40 ac. (iv) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Grain yield. (iv) (a) 1955—N.A. (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1318 lb./ac. (ii) 119.0 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$n_0P_0$	$n_1P_0$	$n_1P_1$	$n_1P_2'$	$n_1P_2''$
Av. yield	969	1256	1449	1584	1333

S.E./mean = 28.0 lb./ac. and no. of trials = 18.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 55(177).**

**Centre :- Man (Banda, c.f.).**

**Type :- 'M'.**

Object :—To study the effect of different combinations of N and P on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy and fallow. (c) N.A. (ii) *Mar* and *kabar*. (iii) to (v) N.A. (vi) October—November, 1955. (vii) Irrigated. (viii) and (ix) N.A. (x) April, 1956.

## 2. TREATMENTS :

Same as in expt. no. 57(437) on page 422.

## 3. DESIGN :

(i) and (ii) 3 villages in the *tehsil* and 4 fields in each village were selected randomly. (iii) (a) N.A. (b) 1/40 ac. (iv) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Grain yield. (iv) (a) 1955—N.A. (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1203 lb./ac. (ii) 85.0 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$n_0P_0$	$n_1P_0$	$n_1P_1$	$n_1P_2'$	$n_1P_2''$
Av. yield	920	1157	1290	1427	1220

S.E./mean = 24.5 lb./ac. and no. of trials = 12.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 54(342).**

**Centre :- Fatehpur (Fatehpur, c.f.).**

**Type :- 'M'.**

Object :—To study the effect of N and P on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow. (c) N.A. (ii) Loam. (iii) to (v) N.A. (vi) 5 to 10.11.1954. (vii) Irrigated. (viii) and (ix) N.A. (x) 17 to 31.3.1955.

## 2. TREATMENTS :

Same as in expt. no. 54(194) on page 427.

## 3. DESIGN :

(i) and (ii) 5 villages in the *tehsil*, 2 fields in 4 villages and 1 field in 1 village were selected randomly. (iii) (a) and (b) 1/16 ac. (iv) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) and (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1738 lb./ac. (ii) 125.7 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	n <sub>0</sub> P <sub>0</sub>	n <sub>1</sub> P <sub>0</sub>	n <sub>1</sub> P <sub>1</sub>	n <sub>1</sub> P <sub>2</sub>
Av. yield	1182	1628	1924	2219

S.E /mean = 41.9 lb./ac. and no. of trials = 9.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 54(344).**

**Centre :- Khaga (Fatehpur, c.f.).**

**Type :- 'M'.**

Object :--To study the effect of N and P on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow. (c) N.A. (ii) Loam. (iii) to (v) N.A. (vi) 25.10.1954 to 2.11.1954. (vii) Irrigated. (viii) and (ix) N.A. (x) March—April, 1954.

## 2. TREATMENTS :

Same as in expt. no. 54(194) on page 427.

## 3. DESIGN :

(i) and (ii) 8 villages in the *tehsil* and 2 fields in each village were selected randomly. (iii) (a) and (b) 1/16 ac. (vi) Yes.

## 4. GENERAL :

(i) Good. Lodging occurred. (ii) Nil. (iii) Yield of grain. (iv) and (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1412 lb./ac. (ii) 103.1 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	n <sub>0</sub> P <sub>0</sub>	n <sub>1</sub> P <sub>0</sub>	n <sub>1</sub> P <sub>1</sub>	n <sub>1</sub> P <sub>2</sub>
Av. yield	1046	1332	1555	1717

S.E /mean = 25.8 lb./ac. and no. of trials = 16.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 54(343).**

**Centre :- Khajuha (Fatehpur, c.f.).**

**Type :- 'M'.**

Object :--To study the effect of N and P on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow and *sanai* for G.M. (c) N.A. (ii) Loam. (iii) G.M. by *sanai* in one trial. (v) and (v) N.A. (vi) 3.10.1954 to 12.11.1954. (vii) Irrigated. (viii) and (ix) N.A. (x) 21.3.1955 to 3.4.1955.

## 2. TREATMENTS :

Same as in expt. no. 54(194) on page 427.

## 3. DESIGN :

(i) and (ii) 6 villages in the *tehsil* and 2 fields in each village were selected randomly. (iii) (a) and (b) 1/16 ac. (iv) Yes.

## 4. GENERAL :

(i) and (ii) Nil. (iii) Grain yield. (iv) and (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1161 lb./ac. (ii) 95.7 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$n_0P_0$	$n_1P_0$	$n_1P_1$	$n_1P_2$
Av. yield	716	1047	1348	1533

S.E./mean = 27.6 lb./ac. and no. of trials = 12.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 54(334).**

**Centre :- Mohamdabad (Ghazipur, c.f.).**

**Type :- 'M'.**

Object :—To study the effect of N and P on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow. (c) Nil. (ii) Clayey loam. (iii) and (iv) N.A. (v) (a) 7 to 8 ploughings by *desi* plough. (b) Sown behind the plough. (c) 35 to 40 srs./ac. (d) 4" to 6" between rows. (e) N.A. (vi) 19 to 26.10.1954. (vii) Unirrigated. (viii) and (ix) N.A. (x) 1 and 2.3.1955.

## 2. TREATMENTS :

Same as in expt. no. 54(194) on page 427.

A/S broadcast and Super placed deep in furrows.

## 3. DESIGN :

(i) and (ii) 2 villages in the *tehsil* and in each village 1 field was selected randomly. (iii) (a) N.A. (b) 33' × 33'. (iv) Yes.

## 4. GENERAL :

(i) Good. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1953—N.A. (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1442 lb./ac. (ii) 87.5 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$n_0P_0$	$n_1P_0$	$n_1P_1$	$n_1P_2$
Av. yield	1330	1470	1490	1480

S.E./mean = 61.8 lb./ac. and no. of trials = 2.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 54(335).**

**Centre :- Zamaina (Ghazipur, c.f.).**

**Type :- 'M'.**

Object :—To study the effect of N and P on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow. (c) Nil. (ii) Clayey loam. (iii) and (iv) N.A. (v) (a) 7 to 8 ploughings by *desi* plough. (b) Sown behind the plough. (c) 35 to 40 srs./ac. (d) Rows 4" to 6" apart. (e) N.A. (vi) 18 to 20.10.1954. (vii) Unirrigated. (viii) and (ix) N.A. (x) 1 to 5.3.1955.

## 2. TREATMENTS :

Same as in expt. no. 54(194) on page 427.



## 3. DESIGN:

(i) and (ii) 3 villages in the *tehsil* and in each village 1 field was selected randomly. (iii) (a) N.A. (b) 33' × 33'. (iv) Yes.

## 4. GENERAL :

(i) 2 trials fair and 1 trial poor. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1954—N.A. (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 838 lb./ac. (ii) 48.2 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	n <sub>0</sub> P <sub>0</sub>	n <sub>1</sub> P <sub>0</sub>	n <sub>1</sub> P <sub>1</sub>	n <sub>1</sub> P <sub>2</sub>
Av. yield	680	833	893	947

S.E./mean = 27.8 lb./ac. and no. of trials = 3.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 58(190).**

**Centre :- Kurara (Hamirpur, c.f.).**

**Type :- 'M'.**

Object :—To study the effect of different sources of N on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) *Parwa* and *kabar*. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

## 2. TREATMENTS :

All combinations of (1) and (2) + one control

(1) 2 levels of N : N<sub>1</sub>=20 and N<sub>2</sub>=40 lb./ac.

(2) 3 sources of N : S<sub>1</sub>=A/S, S<sub>2</sub>=Urea and S<sub>3</sub>=A/S/N.

N applied by broadcast before sowing.

## 3. DESIGN :

(i) and (ii) 4 villages in the *tehsil* and one field in each village was selected randomly. (iii) (a) N.A. (b) 33' × 33'. (iv) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Grain yield. (iv) (a) 1958—N.A. (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1732 lb./ac. (ii) 146.0 lb./ac. (iii) Main effect of N and 'control vs. others' are highly significant. (iv) Av. yield of grain in lb./ac.

Control = 874 lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean
N <sub>1</sub>	1562	1786	1646	1665
N <sub>2</sub>	2062	2136	2056	2085
Mean	1812	1961	1851	1875

S.E. of N marginal mean = 42.2 lb./ac.  
 S.E. of S marginal mean = 51.6 lb./ac.  
 S.E. of body of table or control mean = 73.0 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 59(351).****Centre :- Kurara (Hamirpur, c.f.).****Type :- 'M'.**

Object :—To study the effect of different sources of N on Wheat.

**1. BASAL CONDITIONS and 2. TREATMENTS :**

Same as in expt. no. 58(190) on page 432.

**3. DESIGN :**(i) and (ii) 6 villages in the *tehsil* and 1 field in each village was selected randomly. (iii) (a) N.A. (b) 33'×33'. (iv) Yes.**4. GENERAL :**

(i) and (ii) N.A. (iii) Grain yield. (iv) (a) 1958—N.A. (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1330 lb./ac. (ii) 114.3 lb./ac. (iii) Main effect of N and 'control vs. others' are highly significant. (iv) Av. yield of grain in lb./ac.

Control = 961 lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean
N <sub>1</sub>	1281	1276	1259	1272
N <sub>2</sub>	1479	1464	1591	1511
Mean	1380	1370	1425	1392

S.E. of N marginal mean = 26.9 lb./ac.

S.E. of S marginal mean = 33.0 lb./ac.

S.E. of body of table or control mean = 46.6 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 58(188).****Centre :- Rath (Hamirpur, c.f.).****Type :- 'M'.**

Object :—To study the effect of different sources of N on Wheat.

**1. BASAL CONDITIONS to 4. GENERAL :**

Same as in expt. no. 58(190) on page 432.

**5. RESULTS :**

(i) 1295 lb./ac. (ii) 52.9 lb./ac. (iii) Main effect of S and 'control vs. others' are highly significant. Main effect of N is significant. (iv) Av. yield of grain in lb./ac.

Control = 1128 lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean
N <sub>1</sub>	1316	1312	1262	1297
N <sub>2</sub>	1376	1396	1272	1348
Mean	1346	1354	1267	1322

S.E. of N marginal mean = 15.3 lb./ac.

S.E. of S marginal mean = 18.7 lb./ac.

S.E. of body of table or control mean = 26.4 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 59(350).**

**Centre :- Rath (Hamirpur, c.f.).**

**Type :- 'M'.**

Object :—To study the effect of different sources of N on Wheat.

**1. BASAL CONDITIONS and 2. TREATMENTS :**

Same as in expt. no. 58(190) on page 432.

**3. DESIGN and 4. GENERAL :**

Same as in expt. no. 59(351) on page 433.

**5. RESULTS :**

(i) 1225 lb./ac. (ii) 29.1 lb./ac. (iii) Main effect of N, S and 'control vs. others' are highly significant. (iv) Av. yield of grain in lb./ac.

Control = 955 lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean
N <sub>1</sub>	1212	1255	1133	1200
N <sub>2</sub>	1355	1408	1259	1341
Mean	1283	1331	1196	1270

S.E. of N marginal mean == 6.8 lb./ac.  
 S.E. of S marginal mean == 8.4 lb./ac.  
 S.E. of body of table or control mean == 11.9 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 57(228).**

**Centre :- Charkhari (Hamirpur, c.f.).**

**Type :- 'M'.**

Object :—To study the effect of different combinations of N, P and K on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Fallow. (c) Nil. (ii) *Parwa, mar* and *kabar*. (iii) to (v) N.A. (vi) 14.10.1957. to 5.11.1957. (vii) Irrigated. (viii) and (ix) N.A. (x) 7 to 26.3.1958.

**2. TREATMENTS :**

c = Control.

n = 30 lb./ac. of N as A/S/N.

nk = 30 lb./ac. of N as A/S/N+40 lb./ac. of K<sub>2</sub>O as Mur. Pot.

np = 30 lb./ac. of N as A/S/N+40 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.

npk = 30 lb./ac. of N as A/S/N+40 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super+40 lb./ac. of K<sub>2</sub>O as Mur. Pot.

A/S/N applied by broadcast, Super and Mur. Pot. applied in furrows.

**3. DESIGN :**

(i) and (ii) 6 villages in the *tehsil*, 2 fields in 2 villages and 1 field in each of 4 villages were selected randomly. (iii) (a) N.A. (b) 33'×33'. (iv) Yes.

**4. GENERAL :**

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1957—N.A. (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1024 lb./ac. (ii) 37.2 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	c	n	nk	np	npk
Av. yield.	795	985	1060	1100	1180

S.E./mean = 13.1 lb./ac. and no. of trials = 8.

**Crop :- Wheat (Rabi).****Ref :- U.P. 57(230).****Centre :- Mahoba (Hamirpur, c.f.).****Type :- 'M'.**

Object :—To study the effect of different combinations of N, P and K on Wheat.

**1. BASAL CONDITIONS :**(i) (a) N.A. (b) Fallow, Paddy and *urd*. (c) N.A. (ii) *Kabar, mar* and *parwa*. (iii) to (v) N.A. (vi) 23.10.1957 to 4.11.1957. (vii) Irrigated. (viii) and (ix) N.A. (x) April, 1958.**2. TREATMENTS :**

Same as in expt. no. 57(228) on page 434.

**3. DESIGN :**(i) and (ii) 7 villages in the *tehsil* and 1 field in each village was selected randomly. (iii) (a) N.A. (b) 33'×33'. (iv) Yes.**4. GENERAL :**

(i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1957—N.A. (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1081 lb./ac. (ii) 58.9 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	c	n	nk	np	npk
Av. yield	851	1006	1131	1171	1246

S.E./mean = 22.3 lb./ac. and no. of trials = 7.

**Crop :- Wheat (Rabi).****Ref :- U.P. 58(189).****Centre :- Kurara (Hamirpur, c.f.).****Type :- 'M'.**

Object :— To study the effect of different combinations of N, P and K on Wheat.

**1. BASAL CONDITIONS :**(i) (a) to (c) N.A. (ii) *Parwa* and *kabar*. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 2 levels of N as A/S :  $N_0=0$  and  $N_1=20$  lb./ac.(2) 2 levels of  $P_2O_5$  as Super :  $P_0=0$  and  $P_1=20$  lb./ac.(3) 2 levels of  $K_2O$  as Mur. Pot. .  $K_0=0$  and  $K_1=20$  lb./ac.

A/S and Mur. Pot. broadcast before sowing and Super applied deep in furrows before sowing.

**3. DESIGN :**(i) and (ii) 4 villages in the *tehsil* and 1 field in each village was selected randomly. (iii) (a) N.A. (b) 33'×33'. (iv) Yes.**4. GENERAL :**

(i) and (ii) Nil. (iii) Grain yield. (iv) (a) 1958—N.A. (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

**5. RESULTS :**(i) 1691 lb./ac. (ii) 185.0 lb./ac. (iii) Main effects of N, P and K are highly significant. Interaction  $N \times P \times K$  is significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	K <sub>0</sub>	K <sub>1</sub>
N <sub>0</sub>	1198	1700	1449	1213	1685
N <sub>1</sub>	1740	2126	1933	1819	1945
Mean	1469	1913	1691	1567	1815
K <sub>0</sub>	1310	1824			
K <sub>1</sub>	1628	2002			

S.E. of any marginal mean = 46.2 lb./ac.  
 S.E. of body of any table = 65.4 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 59(355).**

**Centre :- Kurara (Hamirpur, c.f.).**

**Type :- 'M'.**

Object :— To study the effect of different combinations of N, P and K on Wheat.

**1. BASAL CONDITIONS and 2. TREATMENTS :**

Same as in expt. no. 58(189) on page 435.

**3. DESIGN :**

(i) and (ii) 5 villages in the *tehsil*, 1 field in each of 4 villages and 2 fields in one village were selected randomly. (iii) (a) N.A. (b) 33' × 33'. (iv) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Grain yield. (iv) (a) 1958—N.A. (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1261 lb./ac. (ii) 107.5 lb./ac. (iii) Main effects of N, P and K are highly significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	K <sub>0</sub>	K <sub>1</sub>
N <sub>0</sub>	1101	1187	1144	1068	1220
N <sub>1</sub>	1303	1453	1378	1302	1454
Mean	1202	1320	1261	1185	1337
K <sub>0</sub>	1109	1261			
K <sub>1</sub>	1295	1379			

S.E. of any marginal mean = 21.9 lb./ac.  
 S.E. of body of any table = 31.0 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 58(187).**

**Centre :- Rath (Hamirpur, c.f.).**

**Type :- 'M'.**

Object :— To study the effect of different combinations of N, P and K on Wheat.

**1. BASAL CONDITIONS to 4. GENERAL :**

Same as in expt. no. 58(189) on page 435.

## 5. RESULTS :

(i) 1317 lb./ac. (ii) 52.8 lb./ac. (iii) Main effects of N, P and interaction  $N \times P \times K$  are highly significant. Effect of K is significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	K <sub>0</sub>	K <sub>1</sub>
N <sub>0</sub>	1200	1266	1233	1205	1261
N <sub>1</sub>	1346	1456	1401	1381	1421
Mean	1273	1361	1317	1293	1341
K <sub>0</sub>	1248	1338			
K <sub>1</sub>	1298	1384			

S.E. of any marginal mean = 13.2 lb./ac.  
S.E. of body of any table = 18.7 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 59(356).**

**Centre :- Rath (Hamirpur, c.f.).**

**Type :- 'M'.**

Object :—To study the effect of different combinations of N, P and K on Wheat.

## 1. BASAL CONDITIONS and 2. TREATMENTS :

Same as in expt. 58(189) on page 435.

## 3. DESIGN :

(i) and (ii) 6 villages in the *tehsil* and 1 field in each village was selected randomly. (iii) (a) N.A. (b) 33' × 33'. (iv) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Grain yield. (iv) (a) 1958—N.A. (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1244 lb./ac. (ii) 125.9 lb./ac. (iii) Only main effect of N is highly significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	K <sub>0</sub>	K <sub>1</sub>
N <sub>0</sub>	1078	1212	1145	1072	1218
N <sub>1</sub>	1268	1418	1343	1306	1380
Mean	1173	1315	1244	1189	1299
K <sub>0</sub>	1115	1263			
K <sub>1</sub>	1231	1367			

S.E. of any marginal mean = 25.7 lb./ac.  
S.E. of body of any table = 36.3 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 57(229).**

**Centre :- Charkhari (Hamirpur, c.f.).**

**Type :- 'M'.**

Object :— To study the effect of N and P on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow. (c) Nil. (ii) *Parwa, mar* and *kabar*. (iii) to (v) N.A. (vi) 14.10.1957 to 4.11.1957. (vii) Irrigated. (viii) and (ix) N.A. (x) 4 to 26.3.1958.

## 2. TREATMENTS :

- $n_0P_0$  = Control.  
 $n_1P_0$  = 25 lb./ac. of N as A/S/N.  
 $n_{1P_1}'$  = 25 lb./ac. of N as A/S/N + 30 lb./ac. of  $P_2O_5$  as Super.  
 $n_{1P_2}'$  = 25 lb./ac. of N as A/S/N + 60 lb./ac. of  $P_2O_5$  as Super.  
 $n_{1P_2}''$  = 25 lb./ac. of N as A/S/N + 60 lb./ac. of  $P_2O_5$  as Amm. Phos.  
 A/S and Ammo. Phos. applied by broadcast and Super applied deep in furrows.

## 3. DESIGN :

- (i) and (ii) 6 villages in the *tehsil*, 4 fields in 2 villages and 2 fields in each of 4 villages were selected randomly. (iii) (a) N.A. (b) 33' x 33'. (iv) Yes.

## 4. GENERAL :

- (i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1957—N.A. (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 982 lb./ac. (ii) 47.8 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$n_0P_0$	$n_1P_0$	$n_{1P_1}'$	$n_{1P_2}'$	$n_{1P_2}''$
Av. yield	795	928	975	1093	1118

S.E./mean = 12.0 lb./ac. and no. of trials = 16.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 57(231).**

**Centre :- Mahoba (Hamirpur, c.f.).**

**Type :- 'M'.**

Object :- To study the effect of N and P on Wheat.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) Fallow in 11 cases, paddy in 2 cases and *urd* in one. (c) N.A. (ii) *Kabar, mar* and *parwa*. (iii) to (v) N.A. (vi) 25.10.1957 to 4.11.1957. (vii) Irrigated. (viii) and (ix) N.A. (x) April, 1958.

## 2. TREATMENTS :

Same as in expt. no. 57(229) on page 437.

## DESIGN :

- (i) and (ii) 7 villages in a *tehsil* and 2 fields in each village were selected randomly. (iii) (a) N.A. (b) 1/40 ac. (iv) Yes.

## 4. GENERAL :

- (i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1957—N.A. (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS:

- (i) 1231 lb./ac. (ii) 151.2 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$n_0P_0$	$n_1P_0$	$n_{1P_1}'$	$n_{1P_2}'$	$n_{1P_2}''$
Av. yield	931	1163	1266	1383	1414

S.E./mean = 40.4 lb./ac. and no. of trials = 14.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 56(416).**

**Centre :- Lakhimpur (Lakhimpur Kheri, c.f.)**

**Type :- 'M'.**

Object :- To study the effect of N and P on Wheat.

## 1. BASAL CONDITIONS:

(i) (a) N.A. (b) Fallow for 4 trials, sugarcane for 3 trials, *arhar* for 1 trial and mixed crops for 1 trial. (c) N.A. (ii) Loamy soil. (iii) Nil. (iv) N.A. (v) (a) 6 to 8 ploughings by *desi* plough. (b) Drilling. (c) 35 to 40 srs./ac. (d) Rows 6" to 9" apart. (e) N.A. (vi) 11 to 24.11.1956. (vii) Irrigated in 7 trials and unirrigated in 2 trials. (viii) and (ix) N.A. (x) 16 to 23.4.1957.

## 2. TREATMENTS :

$n_0P_0$  = Control.

$n_1P_0$  = 25 lb./ac. of N as A/S.

$n_1P_1'$  = 25 lb./ac. of N as A/S+30 lb./ac. of  $P_2O_5$  as Super.

$n_1P_2'$  = 25 lb./ac. of N as A/S+60 lb./ac. of  $P_2O_5$  as Super.

$n_1P_2''$  = 25 lb./ac. of N as A/S+60 lb./ac. of  $P_2O_5$  as Ammo. Phos.

A/S and Ammo. Phos. applied by broadcast. Super placed 3" to 4" deep in furrows behind the plough.

## 3. DESIGN :

(i) and (ii) 7 villages in the *tehsil*, 3 fields in 1 village and 1 field in each of 6 villages were selected randomly.

(iii) (a) and (b) 33' × 33'. (iv) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Grain yield. (iv) (a) 1956—N.A. (b) No. (c) Nil. (v) to (vii) N.A.

## 5. RESULTS;

(i) 1624 lb./ac. (ii) 200.0 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$n_0P_0$	$n_1P_0$	$n_1P_1'$	$n_1P_2'$	$n_1P_2''$
Av. yield	1219	1500	1671	1874	1855

S.E./mean = 66.7 lb./ac. and no. of trials = 9.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 57(449).**

**Centre :- Lakhimpur (Lakhimpur Kheri, c.f.).**

**Type :- 'M'.**

.Object :-To study the effect of N and P on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Loam to sandy loam. (iii) and (iv) N.A. (v) (a) 6 to 8 ploughings by *desi* plough. (b) Drilling. (c) 35 to 40 srs./ac. (d) Rows 6" to 9" apart. (e) N.A. (vi) 28 to 30.10.1957. (vii) to (ix) N.A. (x) 22.3.1958 to 8.4.1958.

## 2. TREATMENTS :

$n_1P_0$  = Control.

$n_1P_0$  = 25 lb./ac. of N as A/S/N.

$n_1P_1'$  = 25 lb./ac. of N as A/S/N+30 lb./ac. of  $P_2O_5$  as Super.

$n_1P_2'$  = 25 lb./ac. of N as A/S/N+60 lb./ac. of  $P_2O_5$  as Super.

$n_1P_2''$  = 25 lb./ac. of N as A/S/N+60 lb./ac. of  $P_2O_5$  as Ammo. Phos.

A/S/N and Ammo. Phos. applied by broadcast. Super placed 3" to 4" deep in bands behind the plough.

## 3. DESIGN :

(i) and (ii) 4 villages in the *tehsil*, 2 fields in each of 3 villages and 1 field in 1 village were selected randomly.

(iii) (a) 49.5' × 55'. (b) 1/40 ac. (iv) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Grain yield. (iv) (a) 1956—N.A. (b) No. (c) Nil. (v) to (vii) N.A.

## 5. RESULTS :

(i) 759 lb./ac. (ii) 135.8 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.



Treatment	$n_0P_0$	$n_1P_0$	$n_1P_1'$	$n_1P_2'$	$n_1P_2''$
Av. yield	516	696	796	916	870

S.E./mean = 51.3 lb./ac. and no. of trials = 7.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 56(414).**

**Centre :- Mohammadi (Lakhimpur Kheri, c.f.).**

**Type :- 'M'.**

Object :—To study the effect of N and P on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Fallow and maize. (c) N.A. (ii) Light loam to sandy loam. (iii) Nil. (iv) N.A. (v) (a) 6 to 8 ploughings by *desi* plough, (b) Drilling. (c) 35 to 40 srs./ac. (d) Rows 6" to 9" apart. (e) N.A. (vi) 14 to 18.11.1956. (vii) Irrigated. (viii) and (ix) N.A. (x) 12 to 19.4.1957.

**2. TREATMENTS :**

Same as in expt. no. 57(449) on page 439.

**3. DESIGN :**

(i) and (ii) 3 villages in the *tehsil* and 1 field in each village was selected randomly. (iii) (a) N.A. (b) 33'×33'. (iv) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Grain yield. (iv) (a) 1956—N.A. (b) No. (c) Nil. (v) to (vii) N.A.

**5. RESULTS :**

(i) 845 lb./ac. (ii) 104.1 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$n_0P_0$	$n_1P_0$	$n_1P_1'$	$n_1P_2'$	$n_1P_2''$
Av. yield	477	700	780	1180	1087

S.E./mean = 60.1 lb./ac. and no. of trials = 3.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 57(450).**

**Centre :- Mohammadi (Lakhimpur Kheri, c.f.).**

**Type :- 'M'.**

Object :—To study the effect of N and P on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) Sandy loam. (iii) and (iv) N.A. (v) (a) 6 to 8 ploughings by *desi* plough. (b) Drilling. (c) 35 to 40 srs./ac. (d) Rows 6" to 9" apart. (e) N.A. (vi) 22.10.1957 to 3.11.1957. (vii) Irrigated. (viii) and (ix) N.A. (x) 25.3.1958 to 12.4.1958.

**2. TREATMENTS :**

Same as in expt. no. 57(449) on page 429.

**3. DESIGN :**

(i) and (ii) 9 villages in the *tehsil* and in each village 1 field was selected randomly. (iii) (a) 49.5'×55'. (b) 1/40 ac. (iv) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1956—N.A. (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1480 lb./ac. (ii) 184.3 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$n_0P_0$	$n_1P_0$	$n_1P_1'$	$n_1P_2'$	$n_1P_2''$
Av. yield	1164	1507	1545	1553	1632

S.E./mean = 61.4 lb./ac. and no. of trials = 9.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 56(412).**

**Centre :- Nighasau (Lakhimpur Kheri, c.f.).**

**Type :- 'M'.**

Object :—To study the effect of N and P on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) Loam to clay loam. (iii) Nil. (iv) N.A. (v) (a) 6 to 8 ploughings by *desi* plough. (b) Drilling. (c) 35 to 40 srs./ac. (d) Rows 6" to 9" apart. (e) N.A. (vi) 22 to 30.11.1956. (vii) Unirrigated. (viii) and (ix) N.A. (x) 16 to 24.4.1957.

**2. TREATMENTS :**

Same as in expt. no 57(449) on page 439.

**3. DESIGN :**

(i) and (ii) 6 villages in the *tehsil*, 2 fields in 1 village and 1 field in each of 5 villages were selected randomly. (iii) (a) N.A. (b) 33' × 33'. (iv) Yes.

**4. GENERAL :**

(i) Good. Lodging occurred. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1956—N.A. (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1052 lb./ac. (ii) 106.3 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$n_0P_0$	$n_1P_0'$	$n_1P_1'$	$n_1P_2'$	$n_1P_2''$
Av. yield	740	860	1073	1262	1326

S.E./mean = 40.2 lb./ac. and no. of trials = 7.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 56(417).**

**Centre :- Lakhimpur (Lakhimpur Kheri, c.f.).**

**Type :- 'M'.**

Object :—To study the effect of N alone and in combination with P and K on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Fallow, paddy and maize. (c) N.A. (ii) Loam to silty loam. (iii) Nil. (iv) N.A. (v) (a) 6 to 8 ploughings by *desi* plough. (b) Drilling. (c) 35 to 40 srs./ac. (d) Rows 6" to 9" apart. (e) N.A. (vi) 12 to 26.11.1956. (vii) to (ix) N.A. (x) 17 to 23.4.1957.

**2. TREATMENTS :**

c = Control.

n = 30 lb./ac. of N.

nk = 30 lb./ac. of N + 40 lb./ac. of  $K_2O$

np = 30 lb./ac. of N + 40 lb./ac. of  $P_2O_5$

npk = 30 lb./ac. of N + 40 lb./ac. of  $P_2O_5$  + 40 lb./ac. of  $K_2O$

N as A/S or A/S/N applied by broadcast.  $P_2O_5$  as Super and  $K_2O$  as Mur. Pot. placed 3" to 4" deep behind the plough before sowing.

**3. DESIGN :**

(i) and (ii) 3 villages in the *tehsil*, 3 fields in 1 village, 2 fields in 1 village and 1 field in 1 village were selected randomly. (iii) (a) 49.5' × 33'. (b) 33' × 33'. (iv) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Grain yield. (iv) (a) 1956--N.A. (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1289 lb./ac. (ii) 186.7 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	c	n	nk	np	nPK
Av. yield	853	1113	1423	1462	1596

S.E./mean = 76.2 lb./ac. and no. of trials = 6.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 57(446).**

**Centre :- Lakhimpur (Lakhimpur Kheri, c.f.).**

**Type :- 'M'.**

Object :--To study the effect of N alone and in combination with P and K on Wheat.

## 1. BASAL CONDITIONS :

(i) a) to (c) N.A. (ii) Sandy and sandy loam. (iii) Nil. (iv) N.A. (v) (a) 6 to 3 ploughings by *desi* plough. (b) Drilling. (c) 35 to 40 srs./ac. (d) Rows 6" to 9" apart. (e) N.A. (vi) 30.10.1957 to 1.11.1957. (vii) to (ix) N.A. (x) 24.3.1958 to 6.4.1958.

## 2. TREATMENTS :

Same as in expt. no. 56(417) on page 441.

## 3. DESIGN :

(i) and (ii) 5 villages in the *tehsil*, 2 fields in 1 village and 1 field in each of 4 villages were selected randomly. (iii) (a) 46 9' x 55'. (b) 33' x 33'. (iv) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Grain yield. (iv) (a) 1956--N.A. (b) No. (c) Nil. (v) and (vi) N.A. (vii) In one trial crop was damaged by rats.

## 5. RESULTS :

(i) 1697 lb./ac. (ii) 310.1 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	c	n	nk	np	nPK
Av. yield	1240	1637	1739	1740	2130

S.E./mean = 126.6 lb./ac. and no. of trials = 6.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 56(415).**

**Centre :- Mohammadi (Lakhimpur Kheri, c.f.).**

**Type :- 'M'.**

Object :--To study the effect of N alone and in combination with P and K on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow and *jowar*. (c) N.A. (ii) Sandy to sandy loam. (iii) Nil. (iv) N.A. (v) (a) 6 to 8 ploughings by *desi* plough. (b) Drilling. (c) 35 to 40 srs./ac. (d) Rows 6" to 9" apart. (e) N.A. (vi) 13, 14.11.1956. (vii) Irrigated. (viii) and (ix) N.A. (x) 13 to 16.4.1957.

## 2. TREATMENTS :

Same as in expt. no. 56(417) on page 441.

N applied by broadcast as A/S/N.

## 3. DESIGN:

(i) and (ii) 2 villages in the *tehsil* and in each village 1 field was selected randomly. (iii) (a) 49.5' × 55'. (b) 33' × 33'. (iv) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1956—N.A. (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 657 lb./ac. (ii) 143.4 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	c	n	nk	pk	nPK
Av. yield	367	485	585	875	972

S.E./mean = 101.4 lb./ac. and no. of trials = 2.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 57(451).**

**Centre :- Mohammadi (Lakhimpur Kheri, c.f.).**

**Type :- 'M'.**

Object :—To study the effect of N alone and in combination of P and K on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Sandy loam and silty loam. (iii) Nil. (iv) N.A. (v) (a) 6 to 8 ploughings by *desi* plough. (b) Drilling. (c) 35 to 40 srs./ac. (d) Rows 6" to 9" apart. (e) N.A. (vi) 22.10.1957 to 4.11.1957. (vii) to (ix) N.A. (x) 24.3.1958 to 10.4.1958.

## 2. TREATMENTS :

Same as in expt. no. 56(417) on page 441.

## 3. DESIGN :

(i) and (ii) 5 villages in the *tehsil* and in each village 1 field was selected randomly. (iii) (a) 46.9' × 55'. (b) 33' × 33'. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1956—N.A. (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1658 lb./ac. (ii) 203.5 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	c	n	nk	np	nPK
Av. yield	1280	1696	1676	1784	1856

S.E./mean = 91.0 lb./ac. and no. of trials = 5.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 56(413).**

**Centre :- Nighasau (Lakhimpur Kheri, c.f.).**

**Type :- 'M'.**

Object :—To study the effect of N alone and in combination with P and K on Wheat.

## BASAL CONDITIONS:

(i) (a) N.A. (b) Maize and fallow. (c) Nil. (ii) Loam to sandy loam. (iii) Nil. (iv) N.A. (v) (a) 6 to 8 ploughings by *desi* plough. (b) Drilling. (c) 35 to 40 srs./ac. (d) Rows 6" to 9" apart. (e) N.A. (vi) 23 to 29.11.1956. (vii) Unirrigated. (viii) and (ix) N.A. (x) 15 to 23.4.1957.

## 2. TREATMENTS :

Same as in expt. no. 56(417) on page 441.  
N applied by broadcast as A/S/N.

## 3. DESIGN :

(i) and (ii) 5 villages in the *tehsil* and in each village 1 field was selected randomly. (iii) (a) 49.5' × 55'. (b) 33' × 33'. (iv) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1956--N.A. (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 803 lb./ac. (ii) 59.9 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	c	n	nk	np	npk
Av. yield	596	651	722	1010	1037

S.E./mean = 26.8 lb./ac. and no. of trials = 5.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 55(382).**

**Centre :- Lucknow (Lucknow, c.f.).**

**Type :- 'M'.**

Object :— To study the effect of N and P on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow. (c) Nil. (ii) Loam. (iii) to (v) N.A. (vi) 15 to 20.11.1955. (vii) Irrigated. (viii) and (ix) N.A. (x) April, 1956.

## 2. TREATMENTS :

5 manurial treatments :  $M_0$  = Control,  $M_1$  = 128 lb./ac. of A/S,  $M_2$  =  $M_1$  + 67 lb. ac. of Super,  $M_3$  =  $M_1$  + 134 lb./ac. of Super and  $M_4$  = 64 lb./ac. of A/S + 120 lb./ac. of Ammo. Phos.

## 3. DESIGN :

(i) and (ii) 5 villages in the *tehsil* and in each village 2 fields were selected randomly. (iii) (a) and (b) 1/16 ac. (iv) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1955--contd. (with changed treatments). (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1119 lb./ac. (ii) 202.4 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$M_0$	$M_1$	$M_2$	$M_3$	$M_4$
Av. yield	672	907	1147	1478	1390

S.E./mean = 64.0 lb./ac. and no. of trials = 10.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 56(433).**

**Centre :- Lucknow (Lucknow, c.f.).**

**Type :- 'M'.**

Object :— To study the effect of N and P on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow. (c) Nil. (ii) Loam. (iii) to (v) N.A. (vi) 6 to 12.11.1956. (vii) 2 trials unirrigated and 8 trials irrigated. (viii) and (ix) N.A. (x) 24.3.1957 to 1.5.1957.

## 2. TREATMENTS :

- $n_0P_0$  = Control.  
 $n_1P_0$  = 25 lb./ac. of N.  
 $n_1P_1'$  = 25 lb./ac. of N + 30 lb./ac. of  $P_2O_5$  as Super  
 $n_1P_2'$  = 25 lb./ac. of N + 60 lb./ac. of  $P_2O_5$  as Super.  
 $n_1P_1''$  = 25 lb./ac. of N + 30 lb./ac. of  $P_2O_5$  as Ammo. Phos.  
 N applied as A/S or A/S/N.

## 3. DESIGN :

- (i) and (ii) 5 villages in the *tehsil* and in each village 2 fields were selected randomly. (iii) (a) and (c) 1/16 ac. (iv) Yes.

## 4. GENERAL :

- (i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1955—contd. (with changed treatments). (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1682 lb./ac. (ii) 182.2 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$n_0P_0$	$n_1P_0$	$n_1P_1'$	$n_1P_2'$	$n_1P_1''$
Av. yield	1270	1509	1899	2088	1646

S.E./mean = 57.6 lb./ac. and no. of trials = 10.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 57(470).**

**Centre :- Lucknow (Lucknow, c.f.).**

**Type :- 'M'.**

Object :- To study the effect of N and P on Wheat.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) Fallow and paddy. (c) N.A. (ii) Sandy loam to loam. (iii) to (vi) N.A. (vii) Irrigated. (viii) and (ix) N.A. (x) 27.3.1958 to 3.4.1958.

## 2. TREATMENTS :

- $n_0P_0$  = Control.  
 $n_1P_0$  = 25 lb./ac. of N as A/S.  
 $n_1P_1'$  = 25 lb./ac. of N as A/S + 30 lb./ac. of  $P_2O_5$  as Super.  
 $n_1P_2'$  = 25 lb./ac. of N as A/S + 60 lb./ac. of  $P_2O_5$  as Super.  
 $n_1P_2''$  = 25 lb./ac. of N as A/S + 60 lb./ac. of  $P_2O_5$  as Ammo. Phos.

## 3. DESIGN :

- (i) and (ii) 5 villages in the *tehsil* and in each village 2 fields were selected randomly. (iii) (a) and (b) 1/16 ac. (iv) Yes.

## 4. GENERAL :

- (i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1955—contd. (with changed treatments). (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1399 lb./ac. (ii) 89.4 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$n_0P_0$	$n_1P_0$	$n_1P_1'$	$n_1P_2'$	$n_1P_2''$
Av. yield	1125	1310	1459	1621	1478

S.E./mean = 28.3 lb./ac. and no of trials = 10.

**Crop :- Wheat (Rabi).****Ref :- U.P. 56(438).****Centre :- Lucknow (Lucknow, c.f.).****Type :- 'M'.**

Object :-- To study the residual effect of N and P applied to previous crop on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Wheat. (c) As per treatments. (ii) Loam. (iii) 70 to 160 mds./ac. of F.Y.M. (iv) to (v) N.A. (vi) Irrigated. (vii) to (x) N.A.

**2. TREATMENTS :**

Same as in expt. no. 55(382) on page 444.

Treatments applied to previous crop.

**3. DESIGN :**(i) and (ii) 3 villages in the *tehsil* and in each village one field was selected randomly. (iii) (a) and (b) 1/16 ac. (iv) Yes.**4. GENERAL :**

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) and (v) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1026 lb./ac. (ii) 82.1 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	M <sub>0</sub>	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	M <sub>4</sub>
Av. yield	939	907	885	1109	1291

S.E./mean = 47.4 lb./ac. and no. of trials = 3.

**Crop :- Wheat (Rabi).****Ref :- U.P. 57(467).****Centre :- Lucknow (Lucknow, c.f.).****Type :- 'M'.**

Object :--To study the residual effect of N and P applied to previous crop on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Wheat. (c) As per treatments. (ii) Loam. (iii) to (v) N.A. (vi) October, 1957. (vii) Irrigated. (viii) and (ix) N.A. (x) 25 to 27.3.1958.

**2. TREATMENTS :**

Same as in expt. no. 57(470) on page 445.

Treatments applied to previous crop.

**3. DESIGN :**(i) and (ii) 2 villages in the *tehsil* and in each village 2 fields were selected randomly. (iii) (a) and (b) 1/16 ac. (iv) Yes.**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain. (iv) and (v) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 564 lb./ac. (ii) 55.6 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	n <sub>0</sub> P <sub>0</sub>	n <sub>1</sub> P <sub>0</sub>	n <sub>1</sub> P <sub>1</sub> '	n <sub>1</sub> P <sub>2</sub> '	n <sub>1</sub> P <sub>2</sub> '
Av. yield	584	468	624	644	500

S.E./mean = 27.8 lb./ac. and no. of trials = 4.

**Crop :- Wheat (Rabi).****Ref :- U.P. 55(383).****Centre :- Malihabad (Lucknow, c.f.).****Type :- 'M'.**

Object :—To study the effect of N and P on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Fallow. (c) Nil. (ii) Loam. (iii) to (v) N.A. (vi) November, 1955. (vii) Irrigated. (viii) and (ix) N.A. (x) 31.3.1956 to 2.4.1956.

**2. TREATMENTS :**

Same as in expt. no. 55(382) on page 444.

**3. DESIGN :**(i) and (ii) 3 villages in the *tehsil*, 2 fields in 2 villages and one field in one village were selected randomly. (iii) (a) and (b) 1/16 ac. (iv) Yes.**4. GENERAL :**

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1955—contd. (with changed treatment). (b) No. (c) N.I. (v) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1193 lb./ac. (ii) 114.9 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	M <sub>0</sub>	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	M <sub>4</sub>
Av. yield	970	1168	1283	1331	1212

S.E./mean = 51.4 lb./ac. and no. of trials = 5.

**Crop :- Wheat (Rabi).****Ref :- U.P. 56(434).****Centre :- Malihabad (Lucknow, c.f.).****Type :- 'M'.**

Object :—To study the effect of N and P on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Fallow. (c) Nil. (ii) Loam. (iii) to (v) N.A. (vi) 27.10.1956 to 12.11.1956. (vii) Irrigated. (viii) and (ix) N.A. (x) 6 to 16.4.1957.

**2. TREATMENTS to 4. GENERAL :**

Same as in expt. no. 56(433) on page 444.

**5. RESULTS :**

(i) 1238 lb./ac. (ii) 94.2 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	n <sub>0</sub> P <sub>0</sub>	n <sub>1</sub> P <sub>0</sub>	n <sub>1</sub> P <sub>1</sub> '	n <sub>1</sub> P <sub>2</sub> '	n <sub>1</sub> P <sub>1</sub> ''
Av. yield	890	1101	1357	1643	1198

S.E./mean = 29.8 lb./ac. and no. of trials = 10.

**Crop :- Wheat (Rabi).****Ref :- U.P. 57(468).****Centre :- Malihabad (Lucknow, c.f.).****Type :- 'M'.**

Object :—To study the effect of N and P on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Fallow. (c) Nil. (ii) Loam. (iii) to (vi) Nil. (vii) Irrigated. (viii) and (ix) N.A. (x) 3 to 13.4.1958.



## 2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 57(470) on page 445.

## 5. RESULTS :

(i) 1240 lb./ac. (ii) 61.2 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$n_0p_0$	$n_1p_0$	$n_1p_1'$	$n_1p_2'$	$n_1p_2''$
Av. yield	1008	1168	1301	1437	1235

S.E./mean = 19.4 lb./ac. and no. of trials = 10.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 55(381).**

**Centre :- Mohanlalganj (Lucknow, c.f.).**

**Type :- 'M'.**

Object :--To study the effect of N and P on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow. (c) Nil. (ii) Loam. (iii) to (vi) N.A. (vii) Irrigated. (viii) and (ix) N.A. (x) 29.3.1956 to 7.4.1956.

## 2. TREATMENTS :

Same as in expt. no. 55 (382) on page 444.

## 3. DESIGN :

(i) and (ii) 5 villages in the *tehsil*, 2 fields in 4 villages and one field in one village were selected randomly. (iii) (a) and (b) 1/16 ac. (iv) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1955—contd. (with changed treatments) (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1484 lb./ac. (ii) 137.2 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$M_0$	$M_1$	$M_2$	$M_3$	$M_4$
Av. yield	1115	1415	1483	1854	1553

S.E./mean = 45.7 lb./ac. and no. of trials = 9.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 56(435).**

**Centre :- Mohanlalganj (Lucknow, c.f.).**

**Type :- 'M'.**

Object :--To study the effect of N and P on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow. (c) N.A. (ii) Loam. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

## 2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 56(433) on page 444.

## 5. RESULTS:

(i) 1802 lb./ac. (ii) 267.6 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$n_0P_0$	$n_1P_0$	$n_1P_1'$	$n_1P_2'$	$n_1P_1''$
Av. yield	1094	1474	2085	2534	1821

S.E./mean = 84.6 lb./ac. and no. of trials = 10.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 57(469).**

**Centre :- Mohanlalganj (Lucknow, c.f.).**

**Type :- 'M'.**

Object :—To study the effect of N and P on Wheat.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow. (c) Nil. (ii) Loam and clay loam. (iii) to (v) N.A. (vi) 27.10.1957 to 4.11.1957. (vii) Irrigated. (viii) and (ix) N.A. (x) 19.3.1958 to 1.4.1958.

2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 57(470) on page 445.

5. RESULTS :

(i) 1260 lb./ac. (ii) 62.9 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$n_0P_0$	$n_1P_0$	$n_1P_1'$	$n_1P_2'$	$n_1P_2''$
Av. yield	992	1190	1293	1491	1333

S.E./mean = 19.9 lb./ac. and no. of trials = 10.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 56(432).**

**Centre :- Lucknow (Lucknow, c.f.).**

**Type :- 'M'.**

Object :—To study the effect of N alone and in combination with P or K on Wheat.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow. (c) Nil. (ii) Loam. (iii) to (v) N.A. (vi) 7 to 12.11.1956. (vii) Irrigated. (viii) and (ix) N.A. (x) 25.3.1957 to 2.5.1957.

2. TREATMENTS :

c = Control.

n = 25 lb./ac. of N.

nk = 25 lb./ac. of N+40 lb./ac. of  $K_2O$

np = 25 lb./ac. of N+40 lb./ac. of  $P_2O_5$

npk = 25 lb./ac. of N+40 lb./ac. of  $P_2O_5$ +40 lb./ac. of  $K_2O$

N applied as A/S,  $P_2O_5$  as Super and  $K_2O$  as Mur. Pot.

3. DESIGN :

(i) and (ii) 5 villages in the *tehsil* and in each village one field was selected randomly. (iii) (a) and (b) 1/16 ac. (iv) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1956—N.A. (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1669 lb./ac. (ii) 241.1 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	c	n	nk	np	npk
Av. yield	1235	1626	1603	1866	2013

S.E./mean = 107.8 lb./ac. and no. of trials = 5.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 57(471).**

**Centre :- Lucknow (Lucknow, c.f.).**

**Type :- 'M'.**

Object :—To study the effect of N alone and in combination with P and K on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Fallow. (c) Nil. (ii) Loam. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

**2. TREATMENTS to 4. GENERAL:**

Same as in expt. no. 56(432) on page 449.

N applied as A/S/N, P<sub>2</sub>O<sub>5</sub> as Super and K<sub>2</sub>O as Mur. Pot.

**5. RESULTS :**

(i) 1120 lb./ac. (ii) 52.6 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	c	n	nk	np	npk
Av. yield	915	1101	1104	1245	1235

S.E./mean = 23.5 lb./ac. and no. of trials = 5.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 57(474).**

**Centre :- Lucknow (Lucknow, c.f.).**

**Type :- 'M'.**

Object :—To study the residual effect of N, P and K applied to the previous crop on Wheat crop.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Wheat. (c) As per treatments. (ii) Loam. (iii) to (v) N.A. (vi) October, 1957. (vii) Irrigated. (viii) and (ix) N.A. (x) 25 to 28.3.1958.

**2. TREATMENTS :**

Same as in expt. no. 56(432) on page 449.

Treatments applied to previous crop.

**3. DESIGN :**

(i) and (ii) 2 villages in the *tehsil* and in each village 1 field was selected randomly. (iii) (a) and (b) 1/16 ac. (iv) Yes.

**4. GENERAL :**

(i) N.A. (ii) Nil. (iii) Yield of grain. (iv) and (v) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 701 lb./ac. (ii) 21.8 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	c	n	nk	np	npk
Av. yield	824	656	584	720	720

S.E./mean = 15.4 lb./ac. and no. of trials = 2.

**Crop :- Wheat (Rabi).****Ref :- U.P. 56(436).****Centre :- Malihabad (Lucknow, c.f.).****Type :- 'M'.**

Object :—To study the effect of N alone and in combination with P and K on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Fallow. (c) Nil. (ii) Loam. (iii) to (v) N.A. (vi) 1.10.1956 to 12.11.1956. (vii) Irrigated. (viii) and (ix) N.A. (x) 6 to 16.4.1957.

**2. TREATMENTS to 4. GENERAL :**

Same as in expt. no. 56(432) on page 449.

N applied as A/S/N, P<sub>2</sub>O<sub>5</sub> as Super and K<sub>2</sub>O as Mur. Pot.**5. RESULTS :**

(i) 938 lb./ac. (ii) 51.3 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	c	n	nk	np	npk
Av. yield	675	867	918	1075	1155

S.E./mean = 22.9 lb./ac. and no. of trials = 5.

**Crop :- Wheat (Rabi).****Ref :- U.P. 57(472).****Centre :- Malihabad (Lucknow, c.f.).****Type :- 'M'.**

Object :—To study the effect of N alone and in combination with P and K on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Fallow. (c) N.A. (ii) Loam. (iii) to (vi) N.A. (vii) Irrigated. (viii) and (ix) N.A. (x) 3 to 13.4.1958.

**2. TREATMENTS to 4. GENERAL :**

Same as in expt. no. 56(432) on page 449.

N applied as A/S/N, P<sub>2</sub>O<sub>5</sub> as Super and K<sub>2</sub>O as Mur. Pot.**5. RESULTS :**

(i) 797 lb./ac. (ii) 262.1 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	c	n	nk	np	npk
Av. yield	723	621	694	1010	939

S.E./mean = 117.2 lb./ac. and no. of trials = 5.

**Crop :- Wheat (Rabi).****Ref :- U.P. 57(473).****Centre :- Malihabad (Lucknow, c.f.).****Type :- 'M'.**

Object :—To study the residual effect of N, P and K applied to previous crop on Wheat.

**BASAL CONDITIONS :**

(i) (a) N.A. (b) Fallow. (c) N.A. (ii) Loam. (iii) to (v) N.A. (vi) October, 1957. (vii) Irrigated. (viii) and (ix) N.A. (x) 28.3.1958 to 2.4.1958.

**2. TREATMENTS :**

Same as in expt. no. 56(432) on page 449.

Treatments applied to previous crop.

## 3. DESIGN :

(i) and (ii) 2 villages in the *tehsil* and in each village one field was selected randomly. (iii) (a) and (b) 1/16 ac. (iv) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of grain. (iv) and (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 574 lb./ac. (ii) 54.6 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	c	n	nk	np	npk
Av. yield	584	456	464	664	704

S.E./mean = 38.6 lb./ac. and no. of trials = 2.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 56(437).**

**Centre :- Mohanlalganj (Lucknow, c.f.).**

**Type :- 'M'.**

Object :—To study the effect of N alone and in combination with P or K on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Loam. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

## 2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 56(432) on page 449.

## 5. RESULTS :

(i) 1616 lb./ac. (ii) 93.5 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	c	n	nk	np	npk
Av. yield	970	1533	1603	1946	2029

S.E./mean = 41.8 lb./ac. and no. of trials = 5.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 57(475).**

**Centre :- Mohanlalganj (Lucknow, c.f.).**

**Type :- 'M'.**

Object :—To study the effect of N alone and in combination with P or K on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow. (c) N.A. (ii) Loam. (iii) to (v) N.A. (vi) 27.10.1957 to 4.11.1957. (vii) Irrigated. (viii) and (ix) N.A. (x) 21.3.1958 to 1.4.1958.

## 2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 56(432) on page 449.

N applied as A/S/N, P<sub>2</sub>O<sub>5</sub> as Super and K<sub>2</sub>O as Mur. Pot.

## 5. RESULTS :

(i) 804 lb./ac. (ii) 58.4 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	c	n	nk	np	npk
Av. yield	653	739	739	974	915

S.E./mean = 26.1 lb./ac. and no. of trials = 5.

**Crop :- Wheat (Rabi).****Ref :- U.P. 54(340).****Centre :- Bhongaon (Mainpuri, c.f.).****Type :- 'M'.**

Object :—To study the effect of N and P on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) Heavy loam to sandy loam. (iii) and (iv) N.A. (v) (a) 6 to 8 ploughings by *desi* plough. (b) Drilling. (c) 35 to 40 srs./ac. (d) Rows 6" to 9" apart. (e) N.A. (vi) 30.10.1954 to 4.11.1954. (vii) Irrigated. (viii) and (ix) N.A. (x) 28.3.1955 to 2.4.1955.

**2. TREATMENTS :** $n_0P_0$  = No manure. $n_1P_0$  = 25 lb./ac. of N as A/S. $n_1P_1$  = 25 lb./ac. of N as A/S + 30 lb./ac. of  $P_2O_5$  as Super. $n_1P_2$  = 25 lb./ac. of N as A/S + 60 lb./ac. of  $P_2O_5$  as Super.**3. DESIGN :**

(i) and (ii) 9 villages in the *tehsil*, 1 field in 1 village, 2 fields in 5 villages each and 3 fields in 3 villages each were selected randomly. (iii) (a) and (b) 1/16 ac. (iv) Yes.

**4. GENERAL :**

(i) Satisfactory. (ii) Wheat cockles in 2 trials only. (iii) Yield of grain. (iv) and (v) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1612 lb./ac. (ii) 208.8 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$n_0P_0$	$n_1P_0$	$n_1P_1$	$n_1P_2$
Av. yield	1263	1539	1760	1886

S.E./mean = 46.7 lb./ac. and no. of trials = 20.

**Crop :- Wheat (Rabi).****Ref :- U.P. 54(338).****Centre :- Jastrana (Mainpuri, c.f.).****Type :- 'M'.**

Object :—To study the effect of N and P on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Fallow. (c) Nil. (ii) Loam soil. (iii) and (iv) N.A. (v) (a) 6 to 8 ploughings by *desi* plough. (b) Drilling. (c) 35 to 40 srs./ac. (d) Rows 6" to 9" apart. (e) N.A. (vi) 30.10.1954 to 1.11.1954. (vii) Irrigated. (viii) to (x) N.A.

**2. TREATMENTS :**

Same as in expt. no. 54(340) above.

**3. DESIGN :**

(i) and (ii) 3 villages in the *tehsil* and in each village 2 fields were selected randomly. (iii) (a) and (b) 1/16 ac. (iv) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain. (iv) and (v) N.A. (vi) Nil. (vii) Yield data in respect of 2 trials in a village was not available.

**5. RESULTS :**

(i) 1069 lb./ac. (ii) 203.9 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$n_0P_0$	$n_1P_0$	$n_1P_1$	$n_1P_2$
Av. yield	824	1044	1244	1164

S.E./mean = 101.9 lb./ac. and no. of trials = 4.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 54(341).**

**Centre :- Mainpuri (Mainpuri, c.f.).**

**Type :- 'M'.**

Object :—To study the effect of N and P on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Fallow. (c) Nil. (ii) Loam. (iii) and (iv) N.A. (v) (a) 6 to 8 ploughings by *desi* plough. (b) Drilling. (c) 35 to 40 srs./ac. (d) Rows 6" to 9" apart. (e) N.A. (vi) 1 to 5.11.1955. (vii) Irrigated. (viii) and (ix) N.A. (x) 25 to 31.3.1955.

**2. TREATMENTS :**

Same as in expt. no. 54(340) on page 453.

**3. DESIGN :**

(i) and (ii) 4 villages in the *tehsil*, 2 fields in 2 villages, 1 field in 1 village and 3 fields in 1 village were selected randomly. (iii) (a) and (b) 1/16 ac. (iv) Yes.

**4. GENERAL :**

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) and (v) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1498 lb./ac. (ii) 130.8 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$n_0P_0$	$n_1P_0$	$n_1P_1$	$n_1P_2$
Av. yield	1211	1508	1631	1644

S.E./mean = 46.2 lb./ac. and no. of trials = 8.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 54(339).**

**Centre :- Shikohabad (Mainpuri c.f.).**

**Type :- 'M'.**

Object :— To study the effect of N and P on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Fallow and maize. (c) N.A. (ii) Heavy loam to sandy loam. (iii) and (iv) N.A. (v) (a) 6 to 8 ploughings by *desi* plough. (b) Drilling. (c) 35 to 40 srs./ac. (d) Rows 6" to 9" apart. (e) N.A. (vi) 28 to 30.10.1954. (vii) Irrigated. (viii) to (x) N.A.

**2. TREATMENTS :**

Same as in expt. no. 54(340) on page 453.

**3. DESIGN :**

(i) and (ii) 3 villages in the *tehsil* and in each village 2 fields were selected randomly. (iii) (a) and (b) 1/16 ac. (iv) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain. (iv) and (v) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1034 lb./ac. (ii) 335.2 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	n <sub>0</sub> P <sub>0</sub>	n <sub>1</sub> P <sub>0</sub>	n <sub>1</sub> P <sub>1</sub>	n <sub>1</sub> P <sub>2</sub>
Av. yield	885	1051	992	1208

S.E./mean = 136.8 lb./ac. and no. of trials = 6.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 54(320).**

**Centre :- Kashipur (Nainital, c.f.).**

**Type :- 'M'.**

Object :— To study the effect of N and P on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Paddy. (c) N.A. (ii) Sandy loam to light loam. (iii) and (iv) N.A. (v) (a) 5 to 8 ploughings by *desi* plough. (b) Sown in lines. (c) 35 to 40 srs./ac. (d) Rows 6" to 9" apart. (e) N.A. (vi) 10 to 24.11.1954. (vii) Unirrigated. (viii) and (ix) N.A. (x) 22.4.1955 to 1.5.1955.

**2. TREATMENTS :**

Same as in expt. no. 54(340) on page 453.

A/S broadcast and Super applied in furrows behind the plough.

**3. DESIGN :**

(i) and (ii) 4 villages in the *tehsil*, 4 fields in 1 village, 2 fields in 1 village and 1 field in 2 villages each were selected randomly. (iii) (a) 55' × 49.5'. (b) 1/40 ac. (iv) Yes.

**4. GENERAL :**

(i) Good. (ii) N.A. (iii) Yield of grain and straw. (iv) and (v) N.A. (vi) Severe hailstorm damaged one trial and the same was rejected from the analysis. (vii) Nil.

**5. RESULTS :**

(i) 1718 lb./ac. (ii) 158.4 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	n <sub>0</sub> P <sub>0</sub>	n <sub>1</sub> P <sub>0</sub>	n <sub>1</sub> P <sub>1</sub>	n <sub>1</sub> P <sub>2</sub>
Av. yield	1350	1675	1866	1979

S.E./mean = 59.9 lb./ac. and no. of trials = 7.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 54(327).**

**Centre :- Kichha (Nainital, c.f.).**

**Type :- 'M'.**

Object :— To study the effect of N and P on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) Loam to sandy loam. (iii) and (iv) N.A. (v) (a) 6 to 8 ploughings by *desi* plough. (b) Drilling. (c) 30 to 40 srs./ac. (d) Rows 6" to 9" apart, (e) N.A. (vi) 12.11.1954 to 6.12.1955. (vii) 18 trials unirrigated and 8 trials irrigated. (viii) and (ix) N.A. (x) 16.4.1955 to 8.5.1955.

**2. TREATMENTS :**

Same as in expt. no. 54(340) on page 453.

**3. DESIGN :**

(i) and (ii) 12 villages in the *tehsil*, 7 fields in 1 village, 5 fields in 2 villages and 1 field in 9 villages each were selected randomly. (iii) (a) 55' × 49.5'. (b) 1/40 ac. (iv) Yes.

**4. GENERAL :**

(i) Good. (ii) N.A. (iii) Yield of grain and straw. (iv) and (v) N.A. (vi) and (vii) Nil.



## 5. RESULTS :

(i) 1470 lb./ac. (ii) 182.3 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$n_0P_0$	$n_1P_0$	$n_1P_1$	$n_1P_2$
Av. yield	1227	1473	1511	1667

S.E./mean = 35.7 lb./ac. and no. of trials = 26.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 55(374).**

**Centre :- Kashipur (Nainital, c.f.).**

**Type :- 'M'.**

Object :— To study the effect of N and P on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Sandy loam. (iii) and (iv) N.A. (v) (a) 6 to 8 ploughings by *desi* plough. (b) Drilling. (c) 35 to 40 srs./ac. (d) Rows 6" to 9" apart. (e) N.A. (vi) 13.11.1955 to 15.12.1955. (vii) Unirrigated. (viii) and (ix) N.A. (x) 15 to 24.4.1956.

## 2. TREATMENTS:

$n_0P_0$  = Control.

$n_1P_0$  = 25 lb./ac. of N as A/S.

$n_1P_1'$  = 25 lb./ac. of N as A/S + 30 lb./ac. of  $P_2O_5$  as Super.

$n_1P_2'$  = 25 lb./ac. of N as A/S + 60 lb./ac. of  $P_2O_5$  as Super.

$n_1P_2''$  = 25 lb./ac. of N as A/S + 60 lb./ac. of  $P_2O_5$  as Ammo. phos.

Super placed deep in furrows behind the plough. A/S and Ammo. Phos. broadcast at surface of the soil before sowing.

## 3. DESIGN :

(i) and (ii) 4 villages in the *tehsil*, 3 fields in 1 village, 2 fields in 1 village and 1 field in 2 villages each were selected randomly. (iii)(a) N.A. (b) 33' x 33'. (iv) Yes.

## 4. GENERAL :

(i) Good. (ii) Attack of smut. (iii) Yield of grain and straw. (iv) and (v) N.A. (vi) One trial was damaged to some extent by wild animals and one by hailstorm. (vii) Nil.

## 5. RESULTS :

(i) 1048 lb./ac. (ii) 92.9 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$n_0P_0$	$n_1P_0$	$n_1P_1'$	$n_1P_2'$	$n_1P_2''$
Av. yield	909	959	1056	1112	1206

S.E./mean = 35.1 lb./ac. and no. of trials = 7.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 55(375).**

**Centre :- Kichha (Nainital, c.f.).**

**Type :- 'M'.**

Object :—To study the effect of N and P on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Light loam to clay loam. (iii) and (iv) N.A. (v) (a) 6 to 8 ploughings by *desi* plough. (b) Drilling. (c) 35 to 40 srs./ac. (d) Rows 6" to 9" apart. (e) N.A. (vi) 4.11.1955 to 6.12.1955. (vii) Irrigated. (viii) and (ix) N.A. (x) 8.4.1956 to 2.5.1956.

## 2. TREATMENTS :

Same as in expt. no. 55(374) above.

## 3. DESIGN :

(i) and (ii) 7 villages in the *tehsil*, 4 fields in 2 villages, 3 fields in 1 village, 2 fields in 1 village and 1 field in 3 villages were selected randomly. (iii) (a) N.A. (b) 33' × 33'. (iv) Yes.

## 4. GENERAL :

(i) Good. Lodging occurred. (ii) Attack of black smut. (iii) Yield of grain and straw. (iv) and (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1061 lb./ac. (ii) 133.6 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	n <sub>0</sub> P <sub>0</sub>	n <sub>1</sub> P <sub>0</sub>	n <sub>1</sub> P <sub>1</sub> '	n <sub>1</sub> P <sub>2</sub> '	n <sub>1</sub> P <sub>2</sub> "
Av. yield	818	1032	1096	1142	1216

S.E./mean = 33.4 lb./ac. and no. of trials = 16.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 56(411).**

**Centre :- Kichha (Nainital, c.f.).**

**Type :- 'M'.**

Object —To study the effect of N alone and in combination with P and K on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Loam to clay loam. (iii) Nil. (iv) N.A. (v) (a) 6 to 8 ploughings by *desi* plough. (b) Drilling. (c) 35 to 40 srs./ac. (d) Rows 6" to 9" apart. (e) N.A. (vi) 17 to 30.11.1956. (vii) Irrigated. (viii) and (ix) N.A. (x) 23.4.1957 to 3.5.1957.

## 2. TREATMENTS :

c = Control.

n = 30 lb./ac. of N.

nk = 30 lb./ac. of N + 40 lb./ac. of K<sub>2</sub>O.

np = 30 lb./ac. of N + 40 lb./ac. of P<sub>2</sub>O<sub>5</sub>.

npk = 30 lb./ac. of N + 40 lb./ac. of P<sub>2</sub>O<sub>5</sub> + 40 lb./ac. of K<sub>2</sub>O

N as A/S broadcast, P<sub>2</sub>O<sub>5</sub> as Super and K<sub>2</sub>O as Mur. Pot. placed 3" to 4" deep in bands behind the plough.

## 3. DESIGN :

(i) and (ii) 5 villages in the *tehsil*, 5 fields in 1 village, 3 fields in 1 village, 2 fields in 1 village and 1 field in 2 villages were selected randomly. (iii) (a) 49.5' × 55'. (b) 33' × 33'. (iv) Yes.

## 4. GENERAL :

(i) Normal. Lodging occurred. (ii) Rust affected the crop. (iii) Yield of grain and straw. (iv) and (v) N.A. (vi) Damage by rats and weeds. (vii) Nil.

## 5. RESULTS :

(i) 1387 lb./ac. (ii) 242.6 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	c	n	nk	np	npk
Av. yield	1206	1280	1357	1404	1690

S.E./mean = 70.0 lb./ac. and no. of trials = 12.

**Crop :- Wheat (Rabi).**

**Ref :- U.P.56(410).**

**Centre :- Bilaspur (Rampur, c.f.).**

**Type :- 'M'.**

Object:—To study the effect of N alone and in combination with P and K on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy, (c) N.A. (ii) Light loam to loam. (iii) Nil (iv) N.A. (v) (a) 6 to 8 ploughings by *desi* plough. (b) Drilling. (c) 35 to 40 srs./ac. (d) Rows 6" to 9" apart. (e) N.A. (vi) 12.11.1956. (vii) Unirrigated. (viii) and (ix) N.A. (x) 21.4.1957 to 1.5.1957.

## 2. TREATMENTS :

Same as in expt. no. 56(411) on page 457.

## 3. DESIGN :

(i) and (ii) 2 villages in the *tehsil* and in each village 1 field was selected randomly. (iii) (a) 49.5' × 55' (b) 33' × 33'. (iv) Yes.

## 4. GENERAL :

(i) Good. Lodging occurred. (ii) N.A. (iii) Yield of grain and straw. (iv) and (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1542 lb./ac. (ii) 379.8 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	c	n	nk	np	npk
Av. yield	1328	1296	1312	1536	2240

S.E./mean = 268.6 lb./ac. and no. of trials = 2.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 54(321).**

**Centre :- Bilaspur (Rampur, c.f.).**

**Type :- 'M'.**

Object :—To study the effect of N and P on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Dhaincha* and maize. (c) N.A. (ii) Sandy to sandy loam. (iii) and (iv) N.A. (v) (a) 6 to 8 ploughings by *desi* plough. (b) Drilling. (c) 35 to 40 srs./ac. (d) Rows 6" to 9" apart. (e) N.A. (vi) 14 to 24.11.1954. (vii) Unirrigated. (viii) and (ix) N.A. (x) 25.4.1955 to 4.5.1955.

## 2. TREATMENTS :

$n_0p_0$  = Control

$n_1p_0$  = 25 lb./ac. of N as A/S

$n_1p_1$  = 25 lb./ac. of N as A/S + 30 lb./ac. of  $P_2O_5$  as Super

$n_1p_2$  = 25 lb./ac. of N as A/S + 60 lb./ac. of  $P_2O_5$  as Super

A/S broadcast and Super applied in furrows behind the plough in bands.

## 3. DESIGN :

(i) and (ii) 2 fields in 1 village in the *tehsil* were selected randomly. (iii) (a) 55' × 49.5'. (b) 1.40 ac. (iv) Yes.

## 4. GENERAL :

(i) Good. Lodging occurred. (ii) N.A. (iii) Yield of grain and straw. (v) and (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1384 lb./ac. (ii) 53.7 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$n_0p_0$	$n_1p_0$	$n_1p_1$	$n_1p_2$
Av. yield	1260	1368	1440	1468

S.E./mean = 38.0 lb./ac. and no. of trials = 2.

**Crop :- Wheat (Rabi).****Ref :- U.P. 57(270).****Site :- Allahabad Agri. Instt., Allahabad.****Type :- 'MV'.**

Object :—To study the effect of different levels of N on different varieties of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Fallow. (c) N.A. (ii) (a) Fine sandy loam. (b) Refer soil analysis, Allahabad. (iii) 15.11.1957. (iv) (a) and (b) N.A. (c) 30 srs./ac. (d) 1' between rows. (e) N.A. (v) N.A. (vi) As per treatments. (vii) Irrigated. (viii) Weeding by *khurpi*. (ix) and (x) N.A.

**2. TREATMENTS :****Main-plot treatments :**2 varieties :  $V_1=C-13$  and  $V_2=NP-720$ .**Sub-plot treatments :**6 levels of N as A/S and G.N.C. :  $N_0=0$ ,  $N_1=20$ ,  $N_2=30$ ,  $N_3=40$ ,  $N_4=50$  and  $N_5=60$  lb./ac.**3. DESIGN :**

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 6 sub-plots/main-plot. (b)  $129' \times 42'$ . (iii) 4. (iv) (a) N.A. (b)  $21.5' \times 20'$ . (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain and straw, ear length. (iv) (a) 1957—1958. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1831 lb./ac. (ii) (a) 144.0 lb./ac. (b) 148.9 lb./ac. (iii) Main effect of N alone is highly significant. (iv) Av. yield of grain in lb./ac.

	$N_0$	$N_1$	$N_2$	$N_3$	$N_4$	$N_5$	Mean
$V_1$	1883	2039	1903	1825	1837	1819	1884
$V_2$	1840	1934	1831	1816	1738	1507	1778
Mean	1862	1986	1867	1820	1788	1663	1831

S.E. of difference of two

- |                                   |                 |
|-----------------------------------|-----------------|
| 1. V marginal means               | = 41.6 lb./ac.  |
| 2. N marginal means               | = 74.4 lb./ac.  |
| 3. N means at the same level of V | = 105.3 lb./ac. |
| 4. V means at the same level of N | = 104.7 lb./ac. |

**Crop :- Wheat (Rabi).****Ref :- U.P. 58(243).****Site :- Allahabad Agri. Instt., Allahabad.****Type :- 'MV'.**

Object :—To study the effect of different levels of N on different varieties of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Fine sandy loam. (b) Refer soil analysis, Allahabad. (iii) to (v) N.A. (vi) As per treatments. (vii) to (x) N.A.

**2. TREATMENTS :****Main-plot treatments :**2 varieties :  $V_1=C-13$  and  $V_2=NP-720$ .**Sub-plot treatments :**6 levels of N as A/S :  $N_0=0$ ,  $N_1=20$ ,  $N_2=30$ ,  $N_3=40$ ,  $N_4=50$  and  $N_5=60$  lb./ac.**3. DESIGN :**

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 6 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b)  $20.5' \times 20'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1957—1958. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1846 lb./ac. (ii) (a) 18.9 lb./ac. (b) 96.3 lb./ac. (iii) Main effects of N, V and interaction  $N \times V$  are highly significant. (iv) Av. yield of grain in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	N <sub>4</sub>	N <sub>5</sub>	Mean
V <sub>1</sub>	973	1375	1898	1651	1689	1811	1566
V <sub>2</sub>	1251	1716	2085	2574	2645	2483	2126
Mean	1112	1546	1992	2112	2167	2147	1846

S.E. of difference of two

1. V marginal means = 5.5 lb./ac.
2. N marginal means = 48.1 lb./ac.
3. N means at the same level of V = 68.1 lb./ac.
4. V means at the same level of N = 62.4 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 59(150).**

**Site :- Reg. Res. Stn., Amrukh.**

**Type :- 'MV'.**

Object :—To study the effect of manures on different varieties of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) *Kabar* soil. (b) N.A. (iii) 31.10.1959. (iv) (a) N.A. (b) Line sowing. (c) 40 srs./ac. (d) Rows 1' apart. (e) N.A. (v) G.M. by *sana'* + 10 lb./ac. of N as Urea + 40 lb./ac. of P<sub>2</sub>O<sub>5</sub>. (vi) As per treatments. (vii) Irrigated. (viii) and (ix) N.A. (x) 23.3.1960 and 6.4.1960.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 varieties : V<sub>1</sub>=Pb.—591, V<sub>2</sub>=NP—710 and V<sub>3</sub>=K—54.

(2) 4 levels of N as A/S : N<sub>0</sub>= Control (no manure), N<sub>1</sub>=10 lb./ac. of N at 1st irrigation, N<sub>2</sub>=20 lb./ac. of N at 1st irrigation and N<sub>3</sub>=20 lb./ac. of N at 1st irrigation + 10 lb./ac. of N at 2nd irrigation

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) and (b) 34' × 16'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1959—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1618 lb./ac. (ii) 239.0 lb./ac. (iii) Main effect of V alone is highly significant. (iv) Av. yield of grain in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	Mean
V <sub>1</sub>	1426	1526	1755	1724	1608
V <sub>2</sub>	1302	1284	1590	1454	1408
V <sub>3</sub>	1750	1933	1753	1920	1839
Mean	1493	1581	1699	1699	1618

S.E. of V marginal mean	= 59.8 lb./ac.
S.E. of N marginal mean	= 69.0 lb./ac.
S.E. of body of table	= 119.5 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 59(2).**

**Site :- Reg. Res. Stn., Hardoi.**

**Type :- 'MV'.**

Object :—To study the effect of N, P and K on different varieties of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Legumes—Wheat. (b) *Moong*. (c) Nil. (ii) (a) Loam soil. (b) Refer soil analysis, Hardoi. (iii) 30.10.1959. (iv) (a) and (b) N.A. (c) 45 srs./ac. (d) and (e) N.A. (v) N.A. (vi) As per treatments. (vii) to (x) N.A.

**2. TREATMENTS :**

**Main-plot treatments :**

4 varieties :  $V_1=C-13$ ,  $V_2=Pb.-591$ ,  $V_3=NP-125$  and  $V_4=NP-710$ .

**Sub-plot treatments :**

4 manurial treatments :  $M_0=Control$ ,  $M_1=50$  lb./ac. of N as A/S,  $M_2=40$  lb./ac. of  $K_2O$  and  $M_3=40$  lb./ac. of  $P_2O_5$  as Super.

**3. DESIGN :**

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 4 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) and (b) 24' x 7'. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Grain yield. (iv) (a) 1959—contd. (b) Yes. (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1771 lb./ac. (ii) (a) 655.6 lb./ac. (b) 144.1 lb./ac. (iii) Main effect of M alone is highly significant. (iv) Av. yield of grain in lb./ac.

	$M_0$	$M_1$	$M_2$	$M_3$	Mean
$V_1$	1310	1998	1554	1732	1648
$V_2$	1533	2034	2022	1687	1819
$V_3$	1645	2066	1844	1799	1838
$V_4$	1533	2066	1888	1622	1777
Mean	1505	2041	1827	1710	1771

S.E. of difference of two

1. V marginal means	= 267.6 lb./ac.
2. M marginal means	= 58.8 lb./ac.
3. M means at the same level of V	= 117.6 lb./ac.
4. V means at the same level of M	= 286.4 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 54(24).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'MV'.**

Object :— To study the effect of A/C and A/S on different varieties of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) *Chari*—Wheat- (b) *Chari* for fodder. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Kanpur. (iii) 11.11.1954. (iv) (a) 7 ploughings, 8 plankings and 1 light *pulewa*. (b) Sown behind the plough. (c) 80 lb./ac. (d) 9" between rows. (e) N.A. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 10.4.1955.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 varieties :  $V_1=C-13$  and  $V_2=NP-125$ .

(2) 3 manuring treatments :  $M_0=$ Control,  $M_1=25$  lb./ac. of N as A/C and  $M_2=25$  lb./ac. of N as A/S. Manures broadcast on 8.1.1955, 3 days after 2nd irrigation.

## 3. DESIGN:

(i) Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a)  $21' \times 10.5'$ . (b)  $17' \times 9'$ . (v)  $2' \times 9'$ . (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Slight attack of brown and yellow rust. (iii) Dry grain yield. (iv) (a) and (b) No. (c) N.A. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1633 lb./ac. (ii) 227.8 lb./ac. (iii) Main effect of M alone is highly significant. (iv) Av. yield of grain in lb./ac.

	$M_0$	$M_1$	$M_2$	Mean
$V_1$	1400	1913	1738	1684
$V_2$	1198	1913	1639	1583
Mean	1299	1913	1688	1633

S.E. of M marginal mean = 80.5 lb./ac.  
 S.E. of V marginal mean = 65.8 lb./ac.  
 S.E. of body of table = 113.9 lb./ac.

**Crop :-** Wheat (*Rabi*).

**Ref :-** U.P. 55(9).

**Site :-** Govt. Res. Farm, Kanpur.

**Type :-** 'MV'.

**Object :-** To study the effect of Super on the lodging of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) *Sanai* for G.M. (c) Nil. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 10.11.1955. (iv) (a) 7 ploughing. (b) Sown behind the plough. (c) 80 lb./ac. (d) 9" between rows. (e) N.A. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) 1 weeding and 1 hoeing. (ix) N.A. (x) 7.4.1956.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 varieties :  $V_1=Pb-591$ ,  $V_2=K-53$  and  $V_3=C-13$ .

(2) 2 levels of  $P_2O_5$  as Super :  $P_0=0$  and  $P_1=100$  lb./ac.  
 $P_2O_5$  applied with in rows followed by hoeing on 18.1.1956.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a)  $12'6" \times 5'3"$ . (b)  $10'6" \times 3'9"$ . (v)  $1' \times 9"$ . (vi) Yes.

## 4. GENERAL :

(i) Good, lodging occurred. (ii) Attack of yellow and brown rust. (iii) Grain yield. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) The yields of II block have been omitted from the analysis due to wrong application of treatments.

## 5. RESULTS :

(i) 1479 lb./ac. (ii) 331.9 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	V <sub>1</sub>	V <sub>2</sub>	V <sub>3</sub>	Mean
P <sub>0</sub>	1537	1252	1450	1413
P <sub>1</sub>	1821	• 1337	1480	1546
Mean	1679	1294	1465	1479

S.E. of V marginal mean = 105.3 lb./ac.  
 S.E. of P marginal mean = 86.0 lb./ac.  
 S.E. of body of table = 148.9 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 58(428).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'MV'.**

Object :— To study the effects of N, P and K on different varieties of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Loam soil. (b) Refer soil analysis, Kanpur. (iii) 20.11.1958. (iv) (a) N.A. (b) Behind the plough. (c) 80 lb./ac. (d) Rows 9" apart. (e) N.A. (v) N.A. (vi) As per treatments. (vii) to (ix) N.A. (x) 16 and 18.4.1959.

## 2. TREATMENTS:

All combinations of (1), (2), (3) and (4)

(1) 4 varieties : V<sub>1</sub>=B.C.P. (medium), V<sub>2</sub>=C-13 (early), V<sub>3</sub>=Pb.-591 (late) and V<sub>4</sub>=NP-125 (medium).

(2) 2 levels of N as A/S : N<sub>0</sub>=0 and N<sub>1</sub>=50 lb./ac.

(3) 2 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0 and P<sub>1</sub>=40 lb./ac.

(4) 2 levels of K<sub>2</sub>O as Potassium chloride : K<sub>0</sub>=0 and K<sub>1</sub>=40 lb./ac.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 32. (b) N.A. (iii) 4. (iv) (a) 17' × 6.75'. (b) 15' × 5.25'. (v) 1' × 9". (iv) Yes.

## 4. GENERAL :

(i) Crop lodged. (ii) Attack of rust. (iii) Grain yield. (iv) (a) 1958—1959. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1717 lb./ac. (ii) 305.4 lb./ac. (iii) Main effects of V, N and P are [highly significant. (iv) Av. yield of grain in lb./ac.

	V <sub>1</sub>	V <sub>2</sub>	V <sub>3</sub>	V <sub>4</sub>	P <sub>0</sub>	P <sub>1</sub>	K <sub>0</sub>	K <sub>1</sub>	Mean
N <sub>0</sub>	1053	1596	1698	1627	1409	1578	1467	1520	1494
N <sub>1</sub>	1449	2085	2147	2085	1816	2067	1871	2011	1941
Mean	1251	1840	1922	1856	1612	1822	1669	1766	1717
K <sub>0</sub>	1205	1774	1840	1858	1558	1780			
K <sub>1</sub>	1298	1907	2005	1854	1667	1864			
P <sub>0</sub>	1102	1738	1836	1774					
P <sub>1</sub>	1400	1942	2009	1938					



S.E. of V marginal mean	=	54.0 lb./ac.
S.E. of N, K or P marginal mean	=	58.2 lb./ac.
S.E. of body of V×N, V×K or V×P table	=	76.3 lb./ac.
S.E. of body of N×P, N×K or K×P table	=	54.0 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 59(466).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'MV'.**

Object :— To study the effect of N, P and K on different varieties of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) *Jowar*. (c) N.A. (ii) (a) Loam soil. (b) Refer soil analysis, Kanpur. (iii) 13.11.1959.  
(iv) (a) N.A. (b) Behind the plough. (c) 80 lb./ac. (d) Rows 9" apart. (e) N.A. (v) N.A. (vi) As per treatments. (vii) to (ix) N.A. (x) 22.4.1960.

**2. TREATMENTS to 4. GENERAL :**

Same as in expt. no. 58(428) on page 463.

K<sub>2</sub>O applied as Potash.

**5. RESULTS :**

(i) 1343 lb./ac. (ii) 296.5 lb./ac. (iii) Main effects of N and V are highly significant. (iv) Av. yield of grain in lb./ac.

	V <sub>1</sub>	V <sub>2</sub>	V <sub>3</sub>	V <sub>4</sub>	P <sub>0</sub>	P <sub>1</sub>	K <sub>0</sub>	K <sub>1</sub>	Mean
N <sub>0</sub>	874	1034	1117	1025	965	1060	971	1054	1012
N <sub>1</sub>	1405	1747	1816	1724	1634	1713	1670	1676	1673
Mean	1140	1390	1467	1375	1300	1386	1321	1365	1343
K <sub>0</sub>	1130	1375	1449	1329	1298	1344			
K <sub>1</sub>	1149	1406	1485	1420	1301	1429			
P <sub>0</sub>	1101	1356	1471	1270					
P <sub>1</sub>	1178	1425	1462	1480					

S.E. of V marginal mean	=	52.4 lb./ac.
S.E. of N, P or K marginal mean	=	37.1 lb./ac.
S.E. of body of V×N, V×P or V×K table	=	74.1 lb./ac.
S.E. of body of N×P, N×K or K×P table	=	52.4 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 59(463).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'MV'.**

Object :—To study the effect of N on different varieties of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) *Paddy*. (c) N.A. (ii) (a) Loam soil. (b) Refer soil analysis, Kanpur. (iii) 19.12.1959.  
(iv) (a) N.A. (b) Behind the plough. (c) 80 lb./ac. (d) Rows 9" apart. (e) N.A. (v) 40 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super and 40 lb./ac. of K<sub>2</sub>O as Pot. Sul. (vi) As per treatments. (vii) Irrigated. (viii) and (ix) N.A.  
(x) 25.4.1960.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N :  $N_1=50$ ,  $N_2=75$  and  $N_3=100$  lb./ac.

(2) 12 varieties :  $V_1=NP-798$  (early),  $V_2=NP-830$  (medium),  $V_3=NP-824$  (medium),  $V_4=NP-792$  (early),  $V_5=NP-720$  (medium),  $V_6=K-64$  (medium),  $V_7=K-65$  (medium),  $V_8=K-67$  (medium),  $V_9=K-68$  (medium),  $V_{10}=C-13$  (early),  $V_{11}=C-228$  (medium) and  $V_{12}=C-281$ .

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 36. (b) N.A. (iii) 4. (iv) (a)  $10.5' \times 6'$ . (b)  $8.5' \times 4.5'$ . (v)  $1' \times 9''$ . (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Attack of rust. (iii) Yield of grain. (iv) (a) 1959—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1331 lb./ac. (ii) 227.3 lb./ac. (iii) Main effect of V alone is highly significant. (iv) Av. yield of grain in lb./ac.

	$V_1$	$V_2$	$V_3$	$V_4$	$V_5$	$V_6$	$V_7$	$V_8$	$V_9$	$V_{10}$	$V_{11}$	$V_{12}$	Mean
$N_1$	1120	1403	1379	1259	1168	1427	1569	1276	1333	1159	1222	1181	1291
$N_2$	1275	1394	1145	1057	1192	1619	1498	1490	1535	1365	1175	1466	1351
$N_3$	1133	1490	1396	1412	1342	1435	1457	1254	1221	1309	1347	1393	1350
Mean	1176	1429	1307	1243	1234	1494	1508	1340	1363	1278	1248	1348	1331

S.E. of V marginal mean = 65.6 lb./ac.

S.E. of N marginal mean = 32.8 lb./ac.

S.E. of body of table = 113.6 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 59(237).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'MV'.**

Object :- To study the effect of gypsum on different varieties of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Jowar*. (c) N.A. (ii) (a) Loam soil. (b) Refer soil analysis, Kanpur. (iii) 24.11.1959. (iv) (a) N.A. (b) Behind the plough. (c) 80 lb./ac. (d) Rows 9" apart. (e) N.A. (v) 75 lb./ac. of N as A/S. (vi) As per treatments. (vii) Irrigated. (viii) N.A. (ix) Negligible. (x) 22.4.1960.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 varieties :  $V_1=C-13$  (medium) and  $V_2=Ridley$  (late).

(2) 2 levels of gypsum :  $L_0=0$  and  $L_1=20$  lb./ac.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a)  $23' \times 12'$ . (b)  $21' \times 10.5'$ . (v)  $1' \times 9''$ . (vi) Yes.

## 4. GENERAL :

(i) Lodging. (ii) Attack of rust. (iii) Grain and straw yield. (iv) (a) 1959—contd. (b) and (c) No. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1438 lb./ac. (ii) 216.3 lb./ac. (iii) Interaction  $V \times L$  alone is significant. (iv) Av. yield of grain in lb./ac.

	L <sub>0</sub>	L <sub>1</sub>	Mean
V <sub>1</sub>	1628	1308	1468
V <sub>2</sub>	1368	1447	1408
Mean	1498	1378	1438

S.E. of any marginal mean = 62.4 lb./ac.  
S.E. of body of table = 88.3 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 58(35).**

**Site :- Reg. Res. Stn., Meerut.**

**Type :- 'MV'.**

**Object :-** To study the effect of application of high and low levels of fertility on different varieties of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Cotton. (c) Nil. (ii) (a) Silt loam. (b) Refer soil analysis, Meerut. (iii) 29.11.1958 (iv) (a) One ploughing by soil turning plough followed by 2 cross ploughings by *desi* plough. (b) Behind the plough in rows. (c) 40 srs./ac. (d) Rows 9" apart. (e) N.A. (v) 32 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super at sowing by placement 3" to 4" deep in bands. (vi) As per treatments. (vii) Irrigated. (viii) 1 weeding. (ix) 8.84". (x) 22.4.1959.

**2. TREATMENTS :**

4 treatments : T<sub>1</sub>=Pb.—591 sown with high level of fertility, T<sub>2</sub>=Pb.—591 sown with low level of fertility  
T<sub>3</sub>=C—228 sown with low level of fertility and T<sub>4</sub>=C—281 sown with low level of fertility.  
Low level of fertility : 30 lb./ac. of N in 3 equal doses at sowing, at 1st irrigation and at pre-flowering stage.  
High level of fertility : 20 lb./ac. of N as F.Y.M. + 60 lb./ac. of N as A/S in 3 equal doses at sowing, at 1st irrigation and at pre-flowering stage.

**DESIGN :**

(i) R.B.D. (ii) (a) 4. (b) 354' × 34.5'. (iii) 4. (iv) (a) 42' × 34.5'. (b) 38' × 30.5'. (v) 2' × 2'. (vi) Yes.

**4. GENERAL :**

(i) Satisfactory. (ii) Nil. (iii) Germination, yield of grain and straw. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1310 lb./ac. (ii) 163.3 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>
Av. yield	1453	1311	1300	1175

S.E./mean = 81.6 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 55(211).**

**Site :- Agri. College Farm, B.H.U., Varanasi.**

**Type :- 'MV'.**

**Object :-** To study the effect of different levels of N on different varieties of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Jowar*. (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Varanasi. (iii) 3.11.1955. (iv) (a) 2 ploughings by meston plough and 6 ploughings with *desi* plough. (b) Behind the plough. (c) to (e) N.A. (v) N.A. (vi) As per treatments. (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 4.4.1956.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 3 varieties :  $V_1=C-13$ ,  $V_2=Pb.-591$  and  $V_3=NP-760$ .(2) 4 levels of N as A/S :  $N_0=0$ ,  $N_1=25$ ,  $N_2=50$  and  $N_3=75$  lb./ac.**3. DESIGN :**(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a)  $32' \times 19'$ . (b)  $28' \times 15'$ . (v)  $2' \times 2'$ . (vi) Yes.**4. GENERAL :**

(i) and (ii) N.A. (iii) Growth and yield of grain. (iv) (a) 1955—contd. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1889 lb./ac. (ii) 138.3 lb./ac. (iii) Main effect of N alone is highly significant. (iv) Av. yield of grain in lb./ac.

	$N_0$	$N_1$	$N_2$	$N_3$	Mean
$V_1$	1556	1827	2112	2193	1922
$V_2$	1293	1823	2069	2143	1832
$V_3$	1319	1856	2296	2180	1913
Mean	1389	1835	2159	2172	1889

S.E. of N marginal mean = 39.9 lb./ac.

S.E. of V marginal mean = 34.6 lb./ac.

S.E. of body of table = 69.1 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 58(203).****Site :- Agri. College Farm, B.H.U., Varanasi.****Type :- 'MV'.**

Object :—To study the effect of different levels and sources of N on different varieties of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Fallow. (c) N.A. (ii) (a) Rich alluvial. (b) Refer soil analysis, Varanasi. (iii) 19.11.1958.

(iv) (a) 2 ploughings by victory plough, 3 ploughings by soil inverting during rainy season and 4 ploughings at weekly interval after plankings. (b) Behind the plough. (c) 40 srs./ac. (d) and (e) N.A. (v) N.A. (vi) As per treatments. (vii) Irrigated. (viii) 2 weedings and 1 hoeing. (ix) N.A. (x) 3.4.1959.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 2 varieties :  $V_1=C-13$  and  $V_2=NP-710$ .(2) 2 sources of N :  $S_1=A/S$  and  $S_2=Urea$ .(3) 3 levels of N :  $N_0=0$ ,  $N_1=40$  and  $N_2=80$  lb./ac.

N applied in equal doses, first applied at sowing and second after 2nd irrigation when the plants are at flowering stage.

**3. DESIGN :**(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a)  $40' \times 20'$ . (b)  $37' \times 17'$ . (v)  $1\frac{1}{2}' \times 1\frac{1}{2}'$ . (vi) Yes.**4. GENERAL :**

(i) and (ii) N.A. (iii) Growth observations and yield of grain. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**(i) 1624 lb./ac. (ii) 259.4 lb./ac. (iii) Main effects of V and N are highly significant. Interaction  $V \times N$  is significant. (iv) Av. yield of grain in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	S <sub>1</sub>	S <sub>2</sub>
V <sub>1</sub>	1212	1626	1634	1491	1601	1380
V <sub>2</sub>	1275	1808	2191	1758	1786	1731
Mean	1244	1717	1912	1624	1693	1556
S <sub>1</sub>	—	1741	1972			
S <sub>2</sub>	—	1693	1853			

S.E. of V or S marginal mean	= 52.9 lb./ac.
S.E. of N marginal mean	= 64.8 lb./ac.
S.E. of body of V×N or S×N table	= 91.8 lb./ac.
S.E. of body of V×S table	= 74.9 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 54(TCM).**

**Site :- Govt. Res. Farm, Pura.**

**Type :- 'MV'.**

**Object :-**Type VIII—To study the effect of N and P on different varieties of Wheat.

**1. BASAL CONDITIONS:**

(i) (a) to (c) N.A. (ii) (a) Loam in texture. (b) Refer soil analysis, Pura. (iii) 29.10.1954. (iv) and (v) N.A. (vi) As per treatments. (vii) Irrigated. (viii) and (ix) N.A. (x) 2.4.1955.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 3 varieties : V<sub>1</sub>=Local, V<sub>2</sub>=C-13 and V<sub>3</sub>=NP-125.

(2) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=20 and N<sub>2</sub>=40 lb./ac.

(3) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=20 and P<sub>2</sub>=40 lb./ac.

**3. DESIGN :**

(i) 3<sup>3</sup> fact. contd. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A. (iii) 1. (iv) (a) 43.6'×25'. (b) 36.3'×20'. (v) 3.65'×2.5". (vi) Yes.

**4. GENERAL :**

(i) Germination was good. (ii) No. (iii) Yield of grain. (iv) (a) 1953—1955. (b) No. (c) Nil. (v) (a) Varanasi. (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1419 lb./ac. (ii) 235.9 lb./ac. (iii) Main effects of N and P are significant. (iv) Av. yield of grain in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
V <sub>1</sub>	1370	1430	1410	1403	1150	1560	1499
V <sub>2</sub>	1110	1370	1740	1407	1250	1630	1341
V <sub>3</sub>	1190	1469	1680	1446	1071	1510	1757
Mean	1223	1423	1610	1419	1157	1567	1532
P <sub>0</sub>	1110	1250	1111				
P <sub>1</sub>	1280	1510	1911				
P <sub>2</sub>	1279	1509	1808				

S.E. of any marginal mean = 78.6 lb./ac.  
S.E. of body of any table = 136.2 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 55(TCM).**

**Site :- Govt. Res. Farm, Pura.**

**Type :- 'MV'.**

Object :—Type VIII—To study the effect of N and P on different varieties of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Sanai* G.M. (c) Nil. (ii) (a) Loam soil. (b) Refer soil analysis, Pura. (iii) 7.11.1955. (iv) (a) 12 ploughings. (b) Sown in lines with *desi* seed drill. (c) 40 srs./ac. (d) 6" between rows. (e) N.A. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 8.4.1956.

**2. TREATMENTS :**

Same as in expt. no. 54(TCM) type VIII on page 468.

**3. DESIGN :**

(i) 3<sup>rd</sup> fact. confd. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A. (iii) 1. (iv) (a) 43'6"×25'. (b) 34'6"×21'. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Very mild attack of yellow rust. (iii) Grain yield. (iv) (a) 1953—1955. (b) No. (c) Nil. (v) (a) Varanasi. (b) Nil. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1663 lb./ac. (ii) 187.1 lb./ac. (iii) Main effects of P and V are significant. (iv) Av. yield of grain in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
V <sub>1</sub>	1647	1284	1536	1489	1253	1517	1697
V <sub>2</sub>	1587	1668	1790	1682	1496	1879	1671
V <sub>3</sub>	1708	1961	1789	1819	1546	2042	1868
Mean	1647	1638	1705	1663	1432	1813	1745
P <sub>0</sub>	1526	1374	1396				
P <sub>1</sub>	1860	1668	1911				
P <sub>2</sub>	1555	1872	1808				

S.E. of any marginal mean = 62.4 lb./ac.  
S.E. of body of any table = 108.0 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 54(TCM).**

**Site :- Reg. Res. Stn., Varanasi.**

**Type :- 'MV'.**

Object :—Type VIII—To study the effect of N and P on different varieties of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Sanai* G.M. (c) N.A. (ii) (a) Loam soil. (b) Refer soil analysis, Varanasi. (iii) 26.11.1954. (iv) (a) 7 ploughings and *palewa*. (b) Sown in lines. (c) 40 srs./ac. (d) 9" between rows. (e) N.A. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) 1 weeding. (ix) 1.4". (x) 10.4.1955.

## 2. TREATMENTS :

Same as in expt. no. 54(TCM) type VIII conducted at Pura on page 468.

Varieties are :  $V_1$ =Local,  $V_2$ =NP-750 and  $V_3$ =NP-760.

## 3. DESIGN :

(i) 3<sup>3</sup> fact. confd. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A. (iii) 1. (iv) (a) 24'×45'. (b) 20'×36'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Germination good. Crop lodged. (ii) Rust attack in  $V_1$  plots. Slight damage by rats. (iii) Grain yield. (iv) (a) 1953-1955. (b) No. (c) Nil. (v) (a) Pura. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 929 lb./ac. (ii) 94.9 lb./ac. (iii) Main effect of V is highly significant. Main effects of N and P and interaction N×P are significant. (iv) Av. yield of grain in lb./ac.

	$N_0$	$N_1$	$N_2$	Mean	$P_0$	$P_1$	$P_2$
$V_1$	685	783	773	747	691	688	862
$V_2$	1041	1166	1012	1073	871	1176	1272
$V_3$	853	1172	875	967	990	948	963
Mean	860	1040	887	929	851	937	955
$P_0$	764	835	954				
$P_1$	837	1127	847				
$P_2$	979	1158	860				

S.E. of any marginal mean

= 31.6 lb./ac.

S.E. of body of any table

= 54.8 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- 55(TCM).**

**Site :- Reg. Res. Stn., Varanasi.**

**Type :- 'MV'.**

**Object :** Type VIII—To study the effect of N and P on different varieties of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanai*. (c) N.A. (ii) (a) Loam soil. (b) Refer soil analysis, Varanasi. (ii) 11.11.1955. (iv) (a) 5 ploughings and 1 harrowing. (b) By seed drill. (c) 40 srs./ac. (d) 9" between rows. (e) N.A. (v) *Sanai* G.M. (vi) As per treatments. (vii) Irrigated. (viii) Nil. (ix) 0.71". (x) 16.4.1955.

## 2. TREATMENTS :

Same as in expt. no. 54(TCM) type VIII conducted at Pura on page 468.

Varieties are :  $V_1$ =Local,  $V_2$ =C-13 and  $V_3$ =P-52.

## 3. DESIGN :

(i) 3<sup>3</sup> fact. confd. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A. (iii) 1. (iv) (a) 45'×24'. (b) 36'×20'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Heavy attack of brown rust on local variety and traces on other too. (iii) Grain yield. (iv) (a) 1953-1955. (b) No. (c) Nil. (v) (a) Pura. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1697 lb./ac. (ii) 232.4 lb./ac. (iii) Main effect of N alone is significant. (iv) Av. yield of grain in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
V <sub>1</sub>	1594	1693	1642	1643	1388	1743	1798
V <sub>2</sub>	1546	1869	2083	1833	1798	1961	1740
V <sub>3</sub>	1169	1771	1902	1614	1425	1628	1789
Mean	1436	1778	1876	1697	1537	1777	1776
P <sub>0</sub>	1233	1631	1747				
P <sub>1</sub>	1461	1878	1992				
P <sub>2</sub>	1614	1825	1889				

S.E. of any marginal mean = 77.5 lb./ac.  
 S.E. of body of any table = 134.2 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 59(280).**

**Site :- Allahabad Agri. Instt., Allahabad.**

**Type :- 'C'.**

Object :—To find out suitable direction for sowing of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Deep loam soil. (b) Refer soil analysis, Allahabad. (iii) 28.10.1959. (iv) (a) N.A. (b) As per treatments. (c) 35 srs./ac. (d) and (e) N.A. (v) N.A. (vi) HB—65. (vii) to (x) N.A.

**2. TREATMENTS :**

2 directions of sowing : D<sub>1</sub>=East to west and D<sub>2</sub>=North to south.

**3. DESIGN :**

(i) C.R.D. (ii) (a) 2. (b) N.A. (iii) 6. (iv) (a) 63'×61'. (b) 59'×57'. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 2447 lb./ac. (ii) 219.0 lb./ac. (iii) Treatment difference is not significant. (iv) Av. yield of grain in lb./ac.

Treatment	D <sub>1</sub>	D <sub>2</sub>
Av. yield	2416	2478

S.E./mean = 89.4 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 57(129).**

**Site :- Reg. Res. Stn., Amrukh.**

**Type :- 'C'.**

Object :—To study the effect of growing legumes in kharif on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) As per treatments. (c) N.A. (ii) (a) Light *karar* soil. (b) N.A. (iii) 26.10.1957. (iv) (a) 1 ploughing by victory plough, 2 ploughings by *desi* plough, 4 plankings and 1 *palewa*. (b) In lines behind the plough. (c) 45 srs./ac. (d) and (e) N.A. (v) Nil. (vi) Pb.—591. (vii) Irrigated. (viii) N.A. (ix) Nil. (x) 22 and 28.3.1958.



## 2. TREATMENTS :

6 leguminous crops preceding wheat : C<sub>0</sub>=Fallow, C<sub>1</sub>=Hot weather cultivation, C<sub>2</sub>=Maize, C<sub>3</sub>=*Guar* (fodder), C<sub>4</sub>=*Sanai* (G.M.) and C<sub>5</sub>=Early *moong* (G.M.).

*Moong* and *Sanai* turned in on 22, 23.9.1957.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) 66'×137'. (iii) 4. (iv) (a) and (b) 66'×22'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Fair. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) and (b) No. (c) Nil. (v) (a) Hardoi, Kalianpur, Meerut, Nawabganj. Pura, Raya and Varanasi. (b) N.A. (vi) Nil. (vii) *Guar* and maize in *kharif* failed due to heavy rain.

## 5. RESULTS :

(i) 905 lb./ac. (ii) 95.2 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	C <sub>0</sub>	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	C <sub>4</sub>	C <sub>5</sub>
Av. yield	960	825	863	870	1080	833

S.E./mean = 47.6 lb./ac.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 57(141).**

**Centre :- Reg. Res. Stn., Amrukh.**

**Type :- 'C'.**

Object :—To study the effect of growing legumes in *kharif* on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) As per treatments. (c) N.A. (ii) (a) *Kabar* soil. (b) N.A. (iii) 26.10.1957. (iv) (a) 2 *bakherings* and 1 ploughing by victory plough. (b) Line sowing. (c) 40 srs./ac. (d) and (e) N.A. (v) Nil. (vi) Pb.—591. (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 22 and 27.3.1958.

## 2. TREATMENTS :

6 leguminous crops preceding wheat : C<sub>0</sub>=Fallow, C<sub>1</sub>=Hot weather cultivation, C<sub>2</sub>=Maize, C<sub>3</sub>=*Guar* (fodder), C<sub>4</sub>=*Sanai* (G.M.) and C<sub>5</sub>=Early *moong*.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) and (b) 66'×22'. (v) 3'×3'. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Attack of smut and rust. (iii) Yield of grain. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 933 lb./ac. (ii) 98.6 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	C <sub>0</sub>	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	C <sub>4</sub>	C <sub>5</sub>
Av. yield	998	843	898	901	1105	853

S.E./mean = 49.3 lb./ac.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 55(208).**

**Site :- B.R. College Insttl. Res. Farm, Bichpuri.**

**Type :- 'C'.**

Object :— To study the suitability of *kharif* crops for rotation with Wheat.

## 1. BASAL CONDITIONS :

(i) (a) and (b) As per treatments. (c) Maize and *bajra* : 50 lb./ac. of N+60 lb./ac. of  $P_2O_5$  as basal dressing. *Urid* and *urid+til* : 40 lb./ac. of  $P_2O_5$ . (ii) (a) Sandy loam. (b) Refer soil analysis, Bichpuri. (iii) 30.10.1955 to 5.11.1955. (iv) (a) 6 to 8 ploughings. (b) Behind the plough. (c) N.A. (d) Row to row 18". (e) N.A. (v) 40 lb./ac. of N as A/S. (vi) N.A. (vii) Irrigated. (viii) Ridge making and 1 weeding by *khurpi*. (ix) N.A. (x) 21.4 1956.

## 2. TREATMENTS :

5 crops preceding wheat :  $C_0$ =Control (fallow),  $C_1$ =Maize,  $C_2$ =*Bajra*,  $C_3$ =*Urid* and  $C_4$ =*Urid+Til*.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 36'×15'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) to (c) No. (v) (a) and (b) N.A. (vi) Dry spell damaged the crop. (vii) Nil.

## 5. RESULTS :

(i) 1296 lb./ac. (ii) 168.9 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$C_0$	$C_1$	$C_2$	$C_3$	$C_4$
Av. yield	1387	1177	1078	1692	1145

S.E./mean = 69.0 lb./ac.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 58(186).**

**Site :- Soil Cons. Res. Demons. and Trg. Farm, Chhalesar.**

**Type :- 'C'.**

Object :- To find out the optimum seed rate and spacing for Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Dhaincha*. (c) Nil. (ii) (a) Sandy to sandy loam. (b) Refer soil analysis, Chhalesar. (iii) 24.11.1958. (iv) (a) 10 ploughings. (b) By seed drill. (c) and (d) As per treatments. (e) N.A. (v) *Dhaincha* (G.M.). (vi) C-591. (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 9.4.1959.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 seed rates :  $R_1=20$ ,  $R_2=30$  and  $R_3=35$  lb./ac.

(2) 3 spacings :  $S_1=9''$ ,  $S_2=12''$  and  $S_3=15''$ .

## 3. DESIGN :

i) Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 17'×26'. (b) 15'×24'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1958—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1177 lb./ac. (ii) 165.4 lb./ac. (iii) Main effect of R alone is significant. (iv) Av. yield of grain in lb./ac.

	$S_1$	$S_2$	$S_3$	Mean
$R_1$	1131	1088	1131	1117
$R_2$	1182	1283	1408	1291
$R_3$	1085	1144	1143	1124
Mean	1133	1172	1227	1177

S.E. of any marginal mean = 47.7 lb./ac.

S.E. of body of table = 82.7 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 59(215).****Site :- Soil Cons. Res. Demons. and Trg. Farm, Chhalesar.****Type :- 'C'.**

Object :— To find out the optimum seed rate and spacing for Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Dhaincha*. (c) Nil. (ii) Sandy to sandy loam. (b) Refer soil analysis, Chhalesar. (iii) 28.11.1959. (iv) (a) 3 ploughings. (b) By seed drill. (c) and (d) As per treatments. (e) N.A. (v) *Dhaincha* (G.M.) (vi) C—591. (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 5.4.1950.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 3 seed rates :  $R_1=25$ ,  $R_2=30$  and  $R_3=35$  lb./ac.(2) 3 spacings :  $S_1=9''$ ,  $S_2=12''$  and  $S_3=18''$ .**3. DESIGN and 4. GENERAL :**

Same as in expt. no. 58(186) on page 473.

**5. RESULTS :**

1886 lb./ac. (iii) 374.5 lb./ac. (iii) None of the effects is significant. (v) Av. yield of grain in lb./ac.

	$S_1$	$S_2$	$S_3$	Mean
$R_1$	1815	2133	1860	1936
$R_2$	1997	1815	2133	1982
$R_3$	1845	1679	1694	1739
Mean	1886	1876	1896	1886

S.E. of any marginal mean = 108.1 lb./ac.

S.E. of body of table = 187.2 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 56(74).****Site :- State Usar Reclamation Farm, Dhakuni.****Type :- 'C'.**

Object :— To study the effect of reclamation of saline alkali soils by leaching with water alone on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) *Dhaincha*—Wheat. (b) *Dhaincha*. (c) Nil. (ii) (a) Saline alkali soil, pH value varies from 9.0 to 9.9 at different depths. (b) Refer soil analysis, Dhakuni. (iii) 4. 7.11.1956. (iv) (a) 1 ploughing. (b) Line sowing. (c) 40 srs./ac. (d) Row to row 9". (e) N.A. (v) G.M. with *dhaincha*+A/S. (vi) NP—710. (vii) Irrigated. (viii) Nil. (ix) 3.50". (x) 8.3.1957 and 1.4.1957.

**2. TREATMENTS :**2 cultural treatments :  $C_0$ =No leaching and  $C_1$ =Leaching with water.**3. DESIGN :**

(i) Paired-plot. (ii) (a) 2. (b) N.A. (iii) 2. (iv) (a) and (b)  $C_0=0.48$  ac., and 0.37 ac. in replication I and II respectively and  $C_1=0.59$  ac. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Nil. (iii) Yield of grain. (iv) (a) 1956—contd. (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) and (b) Nil.

**5. RESULTS :**

(i) 543 lb./ac. (ii) 29.1 lb./ac. (iii) Treatment difference is not significant. (iv) Av. yield of grain in lb./ac.

Treatment	C <sub>0</sub>	C <sub>1</sub>
Av. yield	223	862

S.E./mean = 20.6 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 57(96).**

**Site :- State Usar Reclamation Farm, Dhakuni.**

**Type :- 'C'.**

Object :-To study the effect of reclamation of saline alkali soils by leaching with water on the yield of Wheat

**1. BASAL CONDITIONS:**

(i) (a) *Dhaincha*—Wheat. (b) *Dhaincha*. (c) Nil. (ii) (a) Saline alkali, pH value varies from 8.4 to 10.1 at different depths. (b) Refer soil analysis, Dhakuni. (iii) 2.11.1957. (iv) (a) 1 ploughing by *desi* plough. (b) Line sowing. (c) 40 srs./ac. (d) Row to row 9". (e) N.A. (v) G.M. with *dhaincha*+A/S. (vi) NP--718. (vii) Irrigated. (viii) Nil. (ix) 2.08". (x) 29.3.1958.

**2. TREATMENTS to 4. GENERAL :**

Same as in expt. no. 56(74) on page 474.

**5. RESULTS :**

(i) 545 lb./ac. (ii) 100.6 lb./ac. (iii) Treatment difference is significant. (iv) Av. yield of grain in lb./ac.

Treatment	C <sub>0</sub>	C <sub>1</sub>
Av. yield	285	805

S.E./mean = 71.1 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 58(94).**

**Site :- State Usar Reclamation Farm, Dhakuni.**

**Type :- 'C'.**

Object :-To study the effect of reclamation of saline alkali soils by leaching with water on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) *Dhaincha*—Wheat. (b) *Dhaincha*. (c) Nil. (ii) (a) Saline alkali. (b) Refer soil analysis, Dhakuni. (iii) 2, 3.11.1958. (iv) (a) 1 ploughing by *desi* plough. (b) Line sowing. (c) 40 srs./ac. (d) Rows to rows 9". (e) N.A. (v) G.M. with *dhaincha*+A/S and Super. (vi) NP—718. (vii) Irrigated. (viii) 1 hoeing. (ix) 1.12". (x) 23.2.1958.

**2. TREATMENTS to 4. GENERAL :**

Same as in expt. no. 56(74) on page 474.

**5 RESULTS :**

(i) 590 lb./ac. (ii) 127.1 lb./ac. (iii) Treatment difference is not significant. (iv) Av. yield of grain in lb./ac.

Treatment	C <sub>0</sub>	C <sub>1</sub>
Av. yield	315	866

S.E./mean = 89.9 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 59(100).**

**Site :- State Usar Reclamation Farm, Dhakuni.**

**Type :- 'C'.**

Object :-To study the effect of reclamation of saline alkali soils by leaching with water on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) *Dhaincha*—Wheat. (b) *Dhaincha*. (c) Nil. (ii) (a) Saline alkali. pH value varies from 8.5 to 10.1. (b) Refer soil analysis, Dhakuni. (iii) 20, 26 and 27.10.1959. (iv) (a) 2 ploughings by *desi* plough. (b) Line sowing. (c) 40 srs./ac. (d) Row to row 9". (e) N.A. (v) G.M. with *dhaincha*+A/S at 1 md./ac. + Super at 2 mds./ac. (vi) NP—718. (vii) Irrigated. (viii) 2 weedings. (ix) 4.72". (x) 10.4.1960.

## 2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 56(74) on page 474.

## 5. RESULTS :

(i) 622 lb./ac. (ii) 120.2 lb./ac. (iii) Treatment difference is not significant. (iv) Av. yield of grain in lb./ac.

Treatment	C <sub>0</sub>	C <sub>1</sub>
Av. yield	329	914

S.E./mean = 85.0 lb./ac.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 57(95).**

**Site :- State Usar Reclamation Farm, Dhakuni.**

**Type :- 'C'.**

Object :—To study the effect of reclamation of saline alkali soils by leaching with water alone on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Dhaincha* (G.M.). (c) Nil. (ii) (a) Saline alkali. pH varies from 8.2 to 10.1. (b) Refer soil analysis, Dhakuni. (iii) 2.11.1957 and 3.11.1957. (iv) (a) 1 ploughing by U.P. plough for turning in of *dhaincha* and 1 ploughing by *meston* plough. (b) Line sowing. (c) 40 srs./ac. (d) Row to row 9". (e) N.A. (v) G.M. with *dhaincha*+20 srs./ac. of A/S. (vi) NP—718. (vii) Irrigated. (viii) Nil. (ix) 2.08". (x) 29.3.1958 and 30.3.1958.

## 2. TREATMENTS :

2 cultural treatments : C<sub>0</sub> = No leaching and C<sub>1</sub> = Leaching with water alone.

## 3. DESIGN :

(i) Paired plot. (ii) (a) 2. (b) N.A. (iii) 8. (iv) (a) and (b) 0.50 ac. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Grain yield. (iv) (a) 1957—contd. (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 562 lb./ac. (ii) 73.8 lb./ac. (iii) Treatment difference is highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	C <sub>0</sub>	C <sub>1</sub>
Av. yield	371	752

S.E./mean = 26.1 lb/c.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 58(93).**

**Site :- State Usar Reclamation Farm, Dhakuni.**

**Type :- 'C'.**

Object :—To study the effect of reclamation of saline alkali soils by leaching with water on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanai*. (c) Nil. (ii) (a) Saline alkali. (b) Refer soil analysis, Dhakuni. (iii) 1 to 3.11.1958. (iv) (a) 1 ploughing by U.P. plough for turning in of *sanai* and 1 ploughing by *meston* plough. (b) Line sowing. (c) 40 srs./ac. (d) Row to row 9". (e) N.A. (v) G.M. with *sanai*+A/S at 1 md./ac. and Super at 1 md./ac. (vi) NP—718. (vii) Irrigated. (viii) 1 hoeing. (ix) 1.12". (x) 24 and 25.2.1959.

## 2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 57(95) on page 476.

## 5. RESULTS :

(i) 595 lb./ac. (ii) 118.7 lb./ac. (iii) Treatment difference is highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	C <sub>0</sub>	C <sub>1</sub>
Av. yield	436	754

S.E./mean = 42.0 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 59(99).**

**Site :- State Usar Reclamation Farm, Dhakuni.**

**Type :- 'C'.**

**Object :-**To study the effect of reclamation of saline alkali soils by leaching with water on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Dhaincha*. (c) Nit. (ii) (a) Saline alkali. pH value varies from 8.96 to 10.07. (b) Refer soil analysis, Dhakuni. (iii) 27, 29.10.1959. (iv) (a) 2 ploughings. (b) Line sowing. (c) 40 srs./ac. (d) Row to row 9". (e) N.A. (v) G.M. by *dhaincha*+A/S at 1 md./ac. and Super at 2 md./ac. (vi) NP—718. (vii) Irrigated. (viii) 2 weedings. (ix) 4.72". (x) 8 to 10.4.1960.

## 2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 57(95) on page 476.

## 4. GENERAL :

(i) Normal. (ii) Dusting of Gammexane in order to prevent any disease. (iii) Yield of grain. (iv) (a) 1957—contd. (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 665 lb./ac. (ii) 132.3 lb./ac. (iii) Treatment difference is highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	C <sub>0</sub>	C <sub>1</sub>
Av. yield	474	857

S.E./mean = 46.8 lb/ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 59(335).**

**Site :- Instt. of Crop Physiology, Dilkusha.**

**Type :- 'C'.**

**Object :-**To study the effect of directions of sowing on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Dhaincha*. (c) N.A. (ii) (a) Light sandy loam. (b) Refer soil analysis, Dilkusha. (iii) 30.10.1959. (iv) (a) 6 ploughings and plankings. (b) Behind the plough in lines. (c) 30 srs./ac. (d) and (e) N.A. (v) *Dhaincha* (G.M.). (vi) NP—710. (vii) Irrigated. (viii) 2 weedings. (ix) 1.11". (x) 11.4.1960.

## 2. TREATMENTS :

2 directions of sowing : D<sub>1</sub>=East to west and D<sub>2</sub>=North to south.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 4. (iv) (a) 30'×30'. (b) 27'×27'. (v) 1½'×1½'. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1959—N.A. (b) No. (c) Nil. (v) (a) Allahabad. (b) N.A. (vi) Hailstorm on 21.3.1960. (vii) Nil.

## 5. RESULTS :

(i) 1430 lb./ac. (ii) 197.1 lb./ac. (iii) Treatment difference is not significant. (iv) Av. yield of grain in lb./ac.

Treatment	D <sub>1</sub>	D <sub>2</sub>
Av. yield	1375	1485

S.E./mean = 98.5 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 58(8).**

**Site :- Reg. Res. Stn., Hardoi.**

**Type :- 'C'.**

Object :—To study the effect of cultural treatments on Wheat crop.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loam soil. (b) Refer soil analysis, Hardoi. (iii) to (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 13.4.1959.

## 2. TREATMENTS :

4 cultural treatments : C<sub>1</sub>=Cultivated fallow, C<sub>2</sub>=Uncultivated fallow, C<sub>3</sub>=Turning under weeds by end of August and C<sub>4</sub>=Moong for G.M.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 5. (iv) (a) and (b) 41'×21'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Attack of yellow rust in all the plots. (iii) Yield of grain. (iv) (a) and (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 825 lb./ac. (ii) 227.6 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	C <sub>4</sub>
Av. yield	723	624	908	1046

S.E./mean = 101.8 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 57(363).**

**Site :- Reg. Reg. Stn., Hardoi.**

**Type :- 'C'.**

Object :—To study the effect of growing legumes in kharif on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) As per treatments. (c) Top dressing in maize only. (ii) (a) Medium loam. (b) Refer soil analysis, Hardoi. (iii) 30.10.1957. (iv) (a) 1 *palewa*, 4 ploughings by *Shabash* plough and 2 ploughings by *desi* plough. (b) Behind the plough. (c) to (e) N.A. (v) and (vi) N.A. (vii) Irrigated. (viii) and (ix) N.A. (x) 3.4.1958.

## 2. TREATMENTS :

6 leguminous crops preceding wheat : C<sub>0</sub>=Fallow, C<sub>1</sub>=Hot weather cultivation, C<sub>2</sub>=Maize, C<sub>3</sub>=*Guar* (fodder), C<sub>4</sub>=*Sanai* (G.M.) and C<sub>5</sub>=Early *moong*.

*Sanai* turned in on 1, 2.10.1957 and *moong* picked on 27.9.1957.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) and (b) 40'×30'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1957—1958. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) Germination of *sanai*, *guar* and *moong* was very satisfactory. Maize did not germinate well due to heavy rain and delay in sowing.

## 5. RESULTS :

(i) 1007 lb./ac. (ii) 107.4 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	C <sub>0</sub>	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	C <sub>4</sub>	C <sub>5</sub>
Av. yield	908	989	808	1071	1180	1089

S.E./mean = 53.7 lb./ac

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 58(4).**

**Site :- Reg. Res. Stn., Harodi.**

**Type :- 'C'.**

Object :—To study the effect of growing legumes in kharif on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) As per treatments. (b) and (c) N.A. (ii) (a) Loam soil. (b) Refer soil analysis, Hardoi. (iii) 1.11.1958. (iv) and (v) N.A. (vi) NP—710. (vii) Irrigated. (viii) 3 weedings. (ix) N.A. (x) 21.4.1958.

## 2. TREATMENTS :

Same as in expt. no. 57(363) on page 478.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) and (b) 41'×21'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Severe to moderate attack of yellow rust. No control measure taken. (iii) Yield of grain. (iv) (a) and (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1369 lb./ac. (ii) 165.3 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	C <sub>0</sub>	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	C <sub>4</sub>	C <sub>5</sub>
Av. yield	1437	1398	1034	1626	14.9	1229

S.E./mean = 82.6 lb./ac.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 55(135).**

**Site :- Govt. Agri. Farm, Kalai.**

**Type :- 'C'.**

Object :—To study the effect of growing legumes in kharif on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) As per treatments. (c) 20 lb./ac. of N as A/S applied in treatment C<sub>2</sub> only. (ii) (a) Loam soil. (b) N.A. (iii) 6.11.1955. (iv) (a) 2 ploughings by watt plough, 1 ploughing by *desi* plough and levelling. (b) By seed drill. (c) 40 srs./ac. (d) Rows 9" apart. (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) Nil. (ix) 2.48". (x) 11.4.1956.



## 2. TREATMENTS :

Same as in expt. no. 57(363) on page 478

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) 41' × 217.5'. (iii) 4. (iv) (a) and (b) 41' × 35.4'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1949—1957. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 873 lb./ac. (ii) 127.4 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	C <sub>0</sub>	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	C <sub>4</sub>	C <sub>5</sub>
Av. yield	900	900	705	900	998	833

S.E./mean = 63.7 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 56(85).**

**Site :- Govt. Agri. Farm, Kalai.**

**Type :- 'C'.**

Object :—To study the effect of growing legumes in kharif on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) As per treatments. (c) 20 lb./ac. of N as A/S applied to treatment C<sub>2</sub> only. (ii) (a) Loam soil. (b) N.A. (iii) 1.11.1956. (iv) (a) 5 ploughings by *desi* plough. (b) By seed drill. (c) 40 srs./ac. (d) Rows 9" apart. (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) 1 weeding. (ix) 3.45". (x) 16.4 1957.

## 2. TREATMENTS :

Same as in expt. no. 57(363) on page 478

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) 44'6" × 195.75'. (iii) 4. (iv) (a) and (b) 44.5' × 32'7½". (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1949—1957. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1127 lb./ac. (ii) 138.1 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	C <sub>0</sub>	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	C <sub>4</sub>	C <sub>5</sub>
Av. yield	1088	1174	968	1133	1245	1155

S.E./mean = 69.0 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 54(269).**

**Site :- Govt. Res. Farm, Kalianpur.**

**Type :- 'C'.**

Object :—To study the effect of growing legumes in kharif on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) and (b) As per treatments. (c) 50 lb./ac. of N as F.Y.M. (ii) (a) Loam soil. (b) Refer soil analysis, Kalianpur. (iii) 31.10.1954. (iv) (a) 5 ploughings by *desi* plough and planking. (b) Behind the plough. (c) to (e) N.A. (v) and (vi) N.A. (vii) Irrigated. (viii) Interculturing and weeding. (ix) N.A. (x) 2.4 1955.

## 2. TREATMENTS :

Same as in expt. no. 57(363) on page 478

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) 27'×267.4'. (iii) 8. (iv) (a) and (b) 27'×40.4'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain and straw (iv) (a) 1949—1957. (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1573 lb./ac. (ii) 140.7 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	C <sub>0</sub>	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	C <sub>4</sub>	C <sub>5</sub>
Av. yield	1288	1318	1702	1508	1917	1707

S.E./mean = 49.7 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 54(19).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'C'.**

Object :—To find out suitable number of seedlings per hole for Wheat crop.

## AS AL CONDITIONS :

(i) (a) No. (b) *Sanai* for G.M. (c) Nil. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 7.11.1954. (iv) (a) 7 ploughings and 7 plankings. (b) Dibbling. (c) As per treatments. (d) 9"×6". (e) As per treatments. (v) Nil. (vi) C—13. (vii) Irrigated. (viii) 1 hoeing with *naini* wheeled hoe. (ix) N.A. (x) 13.4.1955.

## 2. TREATMENTS :

5 cultural treatments : C<sub>1</sub>=Single seed/hole, C<sub>2</sub>=Two seeds/hole, C<sub>3</sub>=Three seeds/hole, C<sub>4</sub>=Four seeds/hole and C<sub>5</sub>=Sowing behind the plough at 80 lb./ac.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) 15'×10'. (b) 11'×9'. (v) 2'×½'. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Moderate attack of brown rust. There were traces of yellow rust also. (iii) Grain yield. (iv) (a) 1952—1954. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1705 lb./ac. (ii) 193.6 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	C <sub>4</sub>	C <sub>5</sub>
Av. yield	1443	1651	1820	1924	1688

S.E./mean = 79.0 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 54(17).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'C'.**

Object :— To study the effect of seed rate and spacing on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanai* for G.M. (c) Nil. (ii) (a) Loam soil. (b) Refer soil analysis, Kanpur. (iii) 6.11.1954. (iv) (a) 3 *desi* ploughings, 4 plankings, cultivators twice and 1 ploughing by victory plough. (c) and (d) As per treatments. (e) N.A. (v) Nil. (vi) C—13. (vii) Irrigated. (viii) 1 weeding and earthing up. (i) N.A. (x) 4.4.1955.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 seed rates :  $R_1=40$ ,  $R_2=60$  and  $R_3=80$  lb./ac.

(2) 4 spacings between plants :  $S_1=9''$ ,  $S_2=12''$ ,  $S_3=15''$  and  $S_4=15''$  + earthing up with *naini* wheel ridger on 19.1.1955.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a)  $16' \times 15'$ . (b)  $12' \times 15'$ . (v) 2' on either side of the plot (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Moderate attack of brown and yellow rust. (iii) Yield of grain. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) N. A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 2210 lb./ac. (ii) 262.0 lb./ac. (iii) Main effect of S is highly significant and effect of R is significant. (iv) Av. yield of grain in lb./ac.

	$S_1$	$S_2$	$S_3$	$S_4$	Mean
$R_1$	2481	2147	1913	1804	2086
$R_2$	2396	2264	1968	2171	2200
$R_3$	2544	2356	2248	2233	2345
Mean	2474	2256	2345	2069	2210

S.E. of R marginal mean = 65.5 lb./ac.

S.E. of S marginal mean = 75.6 lb./ac.

S.E. of body of table = 131.0 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 55(11).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'C'.**

**Object :-** To study the effect of seed rate, earthing up and spacing on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) *Sanai*. (c) Nil. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 17.11.1955. (iv) (a) Victory and *watts* plough once and cultivator. (b) N.A. (c) and (d) As per treatments. (e) N.A. (v) Nil. (vi) C-13 (medium). (vii) Irrigated. (viii) Earthing up after 2nd irrigation and weeding with *naini* hoe. (ix) N.A. (x) 21.4.1956.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 5 spacings between rows :  $S_1=9''$ ,  $S_2=12''$ ,  $S_3=12''$  + earthing up,  $S_4=15''$  and  $S_5=15''$  + earthing up.

(2) 2 seed rates :  $R_1=60$  and  $R_2=80$  lb./ac.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a)  $19' \times 15'$ . (b)  $15' \times 15'$ . (v) 2' on either side of the plot. (vi) Yes.

## 4. GENERAL :

(i) Good. 20% lodging. (ii) Traces of rust attack. (iii) Grain yield. (iv) (a) 1954-1956. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1002 lb./ac. (ii) 243.9 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>	S <sub>5</sub>	Mean
R <sub>1</sub>	977	927	1126	1071	872	995
R <sub>2</sub>	945	1127	1120	941	916	1010
Mean	961	1027	1123	1006	894	1002

S.E. of R marginal mean = 54.5 lb./ac.  
 S.E. of S marginal mean = 86.2 lb./ac.  
 S.E. of body of table = 122.0 lb./ac.

**Crop :- Wheat.**

**Ref :- U.P. 55(8).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'C'**

Object :- To study the effect of different methods of hoeing on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) No. (b) *Sanai*. (c) No. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 10.11.1955. (iv) (a) 6 ploughings and planking. (b) Sown behind the plough. (c) 80 lb./ac. (d) Rows 9" apart. (e) N.A. (v) Nil. (vi) C-13 (medium). (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 15.4.1956.

**2. TREATMENTS :**

T<sub>0</sub>=Control, T<sub>1</sub>=*Naini* hoe, T<sub>2</sub>=Hand hoe, T<sub>3</sub>=*Wardha* hoe and T<sub>4</sub>=*Khurpi*.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) 33'×7.5'. (b) 29'×6'. (v) 2'×9". (vi) Yes.

**4. GENERAL :**

(i) Good ; crop lodged. (ii) Attack of brown and yellow rust. (iii) Grain yield. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1163 lb./ac. (ii) 312.6 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>
Av. yield	1175	1169	1256	1229	987

S.E./mean = 127.6 lb./ac.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 56(222).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'C'.**

Object :- To study the effect of different methods of hoeing on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Sanai*. (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 10.11.1956. (iv) (a) N.A. (b) Behind the plough. (c) 80 lb./ac. (d) Rows 9" apart. (e) N.A. (v) *Sanai* as G.M. (vi) C-13 (mid-early). (vii) Irrigated. (viii) As per treatments. (ix) N.A. (x) 22.4.1957.

**2. TREATMENTS :**

Same as in expt. no. 55(8) above.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) 15'×6'. (b) 13'×4.5'. (v) 1'×9". (vi) Yes.

## 4. GENERAL :

(i) Good. Crop lodged. (ii) Attack of yellow, brown and black rust. No control measures adopted. (iii) Grain and straw yield. (iv) 1955—1956. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1513 lb./ac. (ii) 306.8 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>
Av. yield	1548	1612	1404	1516	1484

S.E./mean = 125.2 lb/ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 56(262).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'C'.**

Object :—To study the effect of seed rate, spacing and earthing up on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanai*. (c) Nil. (ii) (a) Loam soil. (b) Refer soil analysis, Kanpur. (iii) 13.11.1956. (iv) (a) N.A. (b) Behind the plough. (c) and (d) As per treatments. (e) N.A. (v) *Sanai* as G.M. (vi) C—13 (mid-early). (vii) Irrigated. (viii) Hoeing by *naini* hoe and earthing up as per treatments. (ix) N.A. (x) 15.4.1957.

## 2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 55(11) on page 482

## 4. GENERAL :

(i) Good. (ii) Attack of brown, yellow and black rust. No control measures adopted. (iii) Grain and straw yield. (iv) (a) 1954—1956. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1958 lb./ac. (ii) 166.5 lb./ac. (iii) Main effect of S and interaction R×S are significant. (iv) Av. yield of grain in lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>	S <sub>5</sub>	Mean
R <sub>1</sub>	1917	1724	1898	1917	2153	1922
R <sub>2</sub>	1954	1960	1842	2246	1973	1995
Mean	1936	1842	1870	2082	2063	1958

S.E. of R marginal mean = 37.2 lb/ac.

S.E. of S marginal mean = 58.9 lb/ac.

S.E. of body of table = 83.2 lb/ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 56(217).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'C'.**

Object :—To study the effect of soaking of seeds on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanai*. (c) Nil. (ii) (a) Loam soil. (b) Refer soil analysis, Kanpur. (iii) 20.11.1956. (iv) (a) N.A. (b) By dibbling. (c) N.A. (d) 9"×6". (e) 2. (v) *Sanai* (G.M.). (vi) Pb.—591 (medium) (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 10.4.1957.

**2. TREATMENTS :**

All combinations of (1) and (2)+a control

(1) 2 periods of soaking :  $P_1$ =Post harvest and  $P_2$ =Pre-sowing.

(2) 3 durations of soaking :  $D_1$ =8,  $D_2$ =16 and  $D_3$ =24 hours.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) and (b) 7.5'×6'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Attack of brown, yellow and black rust ; no control measures adopted. (iii) Grain and straw yield. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1800 lb./ac. (ii) 242.0 lb./ac. (iii) Main effects of P, D, interaction  $P \times D$  and 'control vs. others' are highly significant. (iv) Av. yield of grain in lb./ac.

Control = 2302 lb./ac.

	$D_1$	$D_2$	$D_3$	Mean
$P_1$	2178	187	902	2089
$P_2$	2396	2396	2240	2344
Mean	2287	1292	1571	1717

S.E. of P marginal mean = 69.9 lb./ac.

S.E. of D marginal mean = 85.6 lb./ac.

S.E. of body of table or control mean = 121.0 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 57(297).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'C'.**

Object :—To study the effect of different dates and durations of soaking on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Sanai*. (c) Nil. (ii) (a) Loam soil. (b) Refer soil analysis, Kanpur. (iii) 9.11.1957. (iv) (a) N.A. (b) Dibbling. (c) N.A. (d) Rows 9" apart. (e) 2. (v) *Sanai* (G.M.). (vi) Pb.—591 (medium). (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 26.4.1958.

**2. TREATMENTS :**

All combinations of (1) and (2)+a control

(1) 6 dates of soaking :  $T_1$ =5.5.1957,  $T_2$ =18.5.1957,  $T_3$ =3.6.1957,  $T_4$ =17.6.1957,  $T_5$ =4.7.1957 and  $T_6$ =18.7.1957.

(2) 3 durations of post harvest soaking :  $D_1$ =12,  $D_2$ =16 and  $D_3$ =20 hours.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 19. (b) N.A. (iii) 4. (iv) (a) and (b) 7.5'×6'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Rust incidence noticed. No control measures adopted. (iii) Grain and straw yield. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1384 lb./ac. (ii) 343.1 lb./ac. (iii) Main effect of T and 'control vs. others' are highly significant. (iv) Av. yield of grain in lb./ac.

Control = 1960 lb./ac.

	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	T <sub>5</sub>	T <sub>3</sub>	Mean
D <sub>1</sub>	1245	1867	1680	1307	1151	902	1359
D <sub>2</sub>	1493	2209	1556	1089	1400	622	1395
D <sub>3</sub>	1711	1742	1742	871	1182	560	1301
Mean	1483	1939	1659	1089	1244	695	1352

S.E. of T marginal mean = 99.0 lb./ac.

S.E. of D marginal mean = 70.0 lb./ac.

S.E. of body of table or control mean = 171.6 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 57(298).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'C'.****Object :-**To study the effect of different dates and durations of soaking on the yield of Wheat.**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Sanai*. (c) Nil. (ii) (a) Loam soil. (b) Refer soil analysis, Kanpur. (iii) 9.11.1957. (iv) (a) N.A. (b) Behind the plough. (c) 90 lb./ac. (d) Rows 9" apart. (e) N.A. (v) *Sanai* (G.M.). (vi) Pb.—591 (medium). (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 26.4.1958.

**2. TREATMENTS :**

Same as in expt. no. 57(297) on page 485

**3. DESIGN :**

(i) R.B.D. (ii) (a) 19. (b) N.A. (iii) 4. (iv) (a) and (b) 7.5' × 2'. (v) No. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) N.A. (iii) Grain and straw yield. (iv) (a) and (b) No. (c) N.I. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1699 lb./ac. (ii) 567.5 lb./ac. (iii) Main effect T is highly significant and effect of D and 'control vs. others' are significant. (iv) Av. yield of grain in lb./ac.

Control = 2427 lb./ac.

	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	T <sub>5</sub>	T <sub>6</sub>	Mean
D <sub>1</sub>	2707	2054	2800	1493	1120	1493	1944
D <sub>2</sub>	2147	2240	2334	1400	280	1120	1587
D <sub>3</sub>	2054	2334	2800	373	280	840	1447
Mean	2303	2209	2645	1089	560	1151	1659

S.E. of T marginal mean = 163.8 lb./ac.

S.E. of D marginal mean = 115.8 lb./ac.

S.E. of body of table or control mean = 283.7 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 57(299).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'C'.****Object :-**To study the effect of different dates and durations of soaking on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanai*. (c) Nil. (ii) (a) Loam soil. (b) Refer soil analysis, Kanpur. (iii) 9.11.1957. (iv) (a) N.A. (b) Behind the plough. (c) 90 lb./ac. (d) Rows 9" apart. (e) N.A. (v) *Sanai* as G.M. (vi) Pb.—591 (medium). (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 26.4.1958.

## 2. TREATMENTS :

Same as in expt. no. 57(297) on page 485

## 3. DESIGN and 4. GENERAL :

Same as in expt. no. 57(298) on page 486.

## 5. RESULTS :

(i) 2157 lb./ac. (ii) 574.8 lb./ac. (iii) Main effect of T and 'control vs. others' are highly significant. (iv) Av. yield of grain in lb./ac.

Control = 3360 lb./ac.

	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	T <sub>5</sub>	T <sub>6</sub>	Mean
D <sub>1</sub>	3080	2614	3080	1960	2147	653	2256
D <sub>2</sub>	2520	2334	2800	2054	747	933	1898
D <sub>3</sub>	2800	3174	2987	1680	1027	1027	2116
Mean	2800	2707	2956	1898	1307	871	2090

S.E. of T marginal mean = 165.9 lb./ac.  
 S.E. of D marginal mean = 117.3 lb./ac.  
 S.E. of body of table or control mean = 287.4 lb./ac.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 57(291).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'M'.**

Object :—To study the effect of pre-sowing soaking of seeds on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanai*. (c) Nil. (ii) (a) Loam soil. (b) Refer soil analysis, Kanpur. (iii) 9.11.1957. (iv) (a) N.A. (b) By dibbling. (c) N.A. (d) Rows 9" apart. (e) 3. (v) *Sanai* (G.M.). (vi) Pb.—591 (medium). (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 26.4.1958.

## 2. TREATMENTS :

All combinations of (1) and (2) + a control

(1) 3 dates of soaking : T<sub>1</sub>=9.10.1957, T<sub>2</sub>=17.10.1957 and T<sub>3</sub>=25.10.1957.

(2) 3 durations of soaking (pre sowing—shade dried) : D<sub>1</sub>=12, D<sub>2</sub>=16 and D<sub>3</sub>=20 hours.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) and (b) 7.5'×6'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) N.A. (iii) Grain and straw yield. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1031 lb./ac. (ii) 531.5 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

Control = 1493 lb./ac.

	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	Mean
D <sub>1</sub>	1369	1213	1338	1307
D <sub>2</sub>	1213	1213	1400	1275
D <sub>3</sub>	1307	1027	1431	1255
Mean	1296	1151	1390	1279



S.E. of any marginal mean = 153.4 lb./ac.  
 S.E. of body of table or control mean = 265.7 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 57(290).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'C'.**

**Object :-**To study the effect of pre-sowing soaking of seeds on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Sanai*. (c) Nil. (ii) (a) Loam soil. (b) Refer soil analysis, Kanpur. (iii) 9.11.1957. (iv) (a) N.A. (b) Behind the plough. (c) 90 lb./ac. (d) Rows 9" apart. (e) N.A. (v) *Sanai* as G.M. (vi) Pb.—591 (medium). (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 26.4.1958.

**2. TREATMENTS :**

Same as in expt. no. 57(291) on page 487.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) and (b) 7.5' × 2'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) N.A. (iii) Grain and straw yield. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1517 lb./ac. (ii) 407.3 lb./ac. (iii) 'Control vs. others' alone is highly significant. (iv) Av. yield of grain in lb./ac.

Control = 2520 lb./ac.

	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	Mean
D <sub>1</sub>	1540	980	1213	1244
D <sub>2</sub>	1587	1633	1447	1556
D <sub>3</sub>	1353	1447	1447	1416
Mean	1493	1353	1369	1405

S.E. any marginal mean = 117.6 lb./ac.  
 S.E. of body of table or control mean = 203.6 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 57(292).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'C'.**

**Object :-**To study the effect of pre-sowing soaking of seeds on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Sanai*. (c) Nil. (ii) (a) Loam soil. (b) Refer soil analysis, Kanpur. (iii) 9.11.1957. (iv) (a) N.A. (b) Behind the plough. (c) 90 lb./ac. (d) Rows 9" apart. (e) N.A. (v) *Sanai* for G.M. (vi) Pb.—591 (medium). (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 26.4.1958.

**2. TREATMENTS :**

Same as in expt. no. 57(290) on page 487.

**3. DESIGN and 4. GENERAL :**

Same as in expt. no. 57(290) above.

**5. RESULTS :**

(i) 1820 lb./ac. (ii) 760.6 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

Control = 2427 lb./ac.

	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	Mean
D <sub>1</sub>	1400	2194	1900	1851
D <sub>2</sub>	2007	1774	2054	1945
D <sub>3</sub>	1400	1540	1447	1462
Mean	1602	1836	1820	1753

S.E. any marginal mean = 219.6 lb./ac.  
 S.E. of body of table or control mean = 380.0 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 58(216).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'C'.**

Object :—To study the effect of transplanting of Wheat against normal sowing.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loam soil. (b) Refer soil analysis, Kanpur. (iii) As per treatments. (iv) (a) 1 *Palewa*. (b) As per treatments. (c) 80 lb./ac. (d) Rows 9" apart. (e) N.A. (v) N.A. (vi) NP-710 (medium). (vii) Irrigated. (viii) N.A. (ix) 0.79". (x) N.A.

**2. TREATMENTS :**

4 times of sowing : T<sub>1</sub>=At the time of nursery sowing on 5.11.1958, T<sub>2</sub>=At normal time on 27.10.1958, T<sub>3</sub>=Transplanting on 25.11.1958 and T<sub>4</sub>=At the time of transplanting on 25.11.1958.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 4. (b) 36' × 54'. (iii) 4. (iv) (a) 12' × 36'. (b) 10.5' × 32'. (v) 2' × 9'. (vi) Yes.

**4. GENERAL :**

(i) Lodging in few plots. (ii) Attack of black and brown rust. (iii) Grain and straw yield. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1841 lb./ac. (ii) 235.2 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>
Av. yield	2029	1800	2138	1396

S.E./mean = 117.6 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 58(214).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'C'.**

Object :—To find out suitable direction for sowing of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loam soil. (b) Refer soil analysis, Kanpur. (iii) N.A. (iv) (a) N.A. (b) Behind the plough. (c) N.A. (d) Rows 9" apart. (e) N.A. (v) N.A. (vi) C-13 (medium). (vii) and (viii) N.A. (ix) 0.79". (x) 24.4.1959.

**2. TREATMENTS :**

2 directions of sowing : D<sub>1</sub>=North to south and D<sub>2</sub>=East to west.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 2. (iv) (a) and (b) 12' × 16.5'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Attack of black and brown rust. (iii) Grain and straw yield. (iv) (a) 1958—contd (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 870 lb./ac. (ii) 127.3 lb./ac. (iii) Treatment difference is not significant. (iv) Av. yield of grain in lb./ac.

Treatment	D <sub>1</sub>	D <sub>2</sub>
Av. yield	877	863

S.E./mean = 90.0 lb./ac.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 59(226).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'C'.**

Object :— To find out suitable direction for sowing of Wheat.

## 1. BASAL CONDITIONS:

(i) (a) to (c) N.A. (ii) (a) Loam soil. (b) Refer soil analysis, Kanpur. (iii) 10.11.1959. (iv) (a) N.A. (b) Behing the plough. (c) 80 lb./ac. (d) Rows 9" apart. (e) N.A. (v) N.A. (vi) C—13 (medium). (vii) and (viii) N.A. (ix) Nil. (x) 11.4.1960.

## 2. TREATMENTS:

Same as in expt. no. 58(214) on page 489.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 5. (iv) (a) 36' × 15'. (b) 32' × 13½'. (v) 2' × 9". (vi) Yes.

## 4. GENERAL :

(i) Lodging. (ii) Attack of brown and black rust. (iii) Grain and straw yield. (iv) (a) 1958—contd. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1152 lb./ac. (ii) 66.0 lb./ac. (iii) Treatment difference is not significant. (iv) Av. yield of grain in lb./ac.

Treatment	D <sub>1</sub>	D <sub>2</sub>
Av yield	1076	1227

S.E./mean = 29.5 lb./ac.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 59(467).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'C'.**

Object :— To study the effect of transplanting of Wheat against normal sowing.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loam soil. (b) Refer soil analysis, Kanpur. (iii) As per treatments. (iv) (a) N.A. (b) As per treatments. (c) 80 lb./ac. (d) 9" × 6". (e) N.A. (v) 50 lb./ac. of N as F.Y.M. + 20 lb./ac. of N as A/S. (vi) NP—710 (medium). (vii) to (ix) N.A. (x) 19.4.1960.

## 2. TREATMENTS:

All combinations of (1) and (2)

(1) 5 cultural treatments :  $T_1$ =Normal sowing behind the plough,  $T_2$ =Sowing behind the plough one week after  $T_1$ ,  $T_3$ =Sowing 3 weeks after  $T_1$ ,  $T_4$ =Transplanting 3 weeks after  $T_1$  and using nursery sown at  $T_1$  and  $T_5$ =Transplanting 3 weeks after  $T_1$  and using nursery sown at  $T_2$ .

(2) 5 dates of sowing or transplanting :  $D_1$ =15.10.1959,  $D_2$ =30.10.1959,  $D_3$ =14.11.1959,  $D_4$ =29.11.1959 and  $D_5$ =14.12.1959.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 25. (b) N.A. (iii) 4. (iv) (a)  $13' \times 10'$ . (b)  $10' \times 9'$ . (v)  $1.5' \times 6'$ . (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Rust attack. (iii) Yield of grain. (iv) (a) 1959—contd. (b) N.A. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 833 lb./ac. (ii) 340.7 lb./ac. (iii) Main effects of T and D are highly significant. (iv) Av. yield of grain in lb./ac.

	$T_1$	$T_2$	$T_3$	$T_4$	$T_5$	Mean
$D_1$	1357	1317	1184	1453	762	1215
$D_2$	1439	1346	920	800	920	1085
$D_3$	1018	949	666	960	898	898
$D_4$	666	562	445	874	448	599
$D_5$	576	376	240	357	288	367
Mean	1011	910	691	889	663	833

S.E. of any marginal mean = 76.2 lb./ac.  
S.E. of body of table = 170.3 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 54(7).**

**Site :- Student's Instructional Farm, Govt. Agri. College, Kanpur. Type :- 'C'.**

**Object :-** To study the effect of different rotational and cultural practices on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) and (b) As per treatments. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Kanpur. (iii) 26.10.1954. (iv) (a) 5 to 6 ploughings. (b) Behind *desi* plough. (c) 40 str./ac. (d) and (e) N.A. (v) Nil. (vi) C-13. (vii) Irrigated. (viii) 1 weeding. (ix) Negligible (x) 6.4.1955.

## 2. TREATMENTS :

**Main-plot treatments :**

2 types of cultivations :  $S_0$ =No summer cultivation and  $S_1$ =Summer hot weather cultivation.

**Sub-plot treatments :**

4 crops preceding to wheat :  $R_0$ =Fallow,  $R_1$ =*Senai* (G.M.),  $R_2$ =*Guar* ( fodder) and  $R_3$ =*Moong*.

**Sub-sub-plot treatments :**

2 levels of weeding :  $W_0$ =No weeding and  $W_1$ =1 weeding.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/block ; 4 sub-plots/main-plot and 2 sub-sub-plots/sub-plot. (b) N.A. (iii) 3. (iv) (a)  $30' \times 24'$ . (b)  $28' \times 22'$ . (v)  $1' \times 1'$ . (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Yield of grain and straw. (iv) (a) 1951-1955. (b) Yes. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1496 lb./ac. (ii) (a) 498.5 lb./ac. (b) 227.0 lb./ac. (c) 236.9 lb./ac. (iii) Main effect of W alone is highly significant. (iv) Av. yield of grain in lb./ac.

	R <sub>0</sub>	R <sub>1</sub>	R <sub>2</sub>	R <sub>3</sub>	Mean	W <sub>0</sub>	W <sub>1</sub>
S <sub>0</sub>	1561	1527	1308	1368	1441	1249	1632
S <sub>1</sub>	1296	1702	1621	1590	1552	1319	1785
Mean	1429	1614	1464	1479	1496	1284	1709
W <sub>0</sub>	1283	1408	1238	1209			
W <sub>1</sub>	1574	1821	1631	1749			

## S.E. of difference of two

- |                                   |                 |                                   |                 |
|-----------------------------------|-----------------|-----------------------------------|-----------------|
| 1. S marginal means               | = 143.9 lb./ac. | 6. W means at the same level of R | = 136.3 lb./ac. |
| 2. R marginal means               | = 92.7 lb./ac.  | 7. R means at the same level of W | = 116.0 lb./ac. |
| 3. W marginal means               | = 68.4 lb./ac.  | 8. W means at the same level of S | = 96.7 lb./ac.  |
| 4. R means at the same level of S | = 131.1 lb./ac. | 9. S means at the same level of W | = 159.3 lb./ac. |
| 5. S means at the same level of R | = 183.3 lb./ac. |                                   |                 |

**Crop :-** Wheat (*Rabi*).

**Ref :-** U.P. 55(290).

**Site :-** Student's Instructional Farm, Govt. Agri. College, Kanpur. **Type :-** 'C'.

**Object :-** To study the effect of different rotational and cultural practices on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) and (b) As per treatments. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Kanpur. (iii) 10.11.1955. (iv) (a) Victory and *desi* ploughing in fallow plots. (b) Hand sowing. (c) 40 srs./ac. (d) 9" between rows. (e) N.A. (v) Green matter of *sanai* was turned in on 31.8.1955, *guar* and *moong* stubble were also ploughed in on 11.9.1955. (vi) C-13. (vii) Irrigated. (viii) 1 weeding. (ix) 2.19". (x) 31.3.1955.

## 2. TREATMENTS :

Same as in expt. no. 54(7) on page 491.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication; 2 sub-plots/main-plot and 2 sub-sub-plots/sub-plot. (b) N.A. (iii) 3. (iv) (a) 22' × 28'. (b) 19' × 25'. (v) 1.5' × 1.5'. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Mild attack of black stem rust. (iii) Yield of grain. (iv) (a) 1951-1955 (modified in 1952). (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 828 lb./ac. (ii) (a) 376.9 lb./ac. (b) 118.4 lb./ac. (c) 69.1 lb./ac. (iii) Main effect of W is highly significant and effect of R is significant. (iv) Av. yield of grain in lb./ac.

	R <sub>0</sub>	R <sub>1</sub>	R <sub>2</sub>	R <sub>3</sub>	Mean	W <sub>0</sub>	W <sub>1</sub>
S <sub>0</sub>	803	959	765	811	835	772	897
S <sub>1</sub>	820	884	756	825	821	772	870
Mean	811	922	760	818	828	772	883
W <sub>0</sub>	733	862	720	773			
W <sub>1</sub>	890	980	800	862			

S.E. of difference of two

1. S marginal means	= 108.8 lb./ac.	6. W means at the same level of R	= 39.9 lb./ac.
2. R marginal means	= 48.3 lb./ac.	7. R means at the same level of W	= 56.0 lb./ac.
3. W marginal means	= 19.9 lb./ac.	8. W means at the same level of S	= 28.2 lb./ac.
4. R means at the same level of S	= 68.4 lb./ac.	9. S means at the same level of W	= 110.6 lb./ac.
5. S means at the same level of R	= 123.9 lb./ac.		

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 57(328).**

**Site :- Student's Instructional Farm, Govt. Agri. College, Kanpur. Type :- 'C'.**

**Object :-** To determine the effect of hot weather cultivation on the yield of Wheat grown after different crops.

**1. BASAL CONDITIONS :**

(i) (a) and (b) As per treatments. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Kanpur. (iii) 2.11.1957. (iv) (a) 1 *palewa*, 1 victory ploughing, 2 ploughings by *desi* plough followed by plankings. (b) Behind the plough. (c) 40 srs./ac. (d) 9" between rows. (e) N.A. (v) Nil. (vi) NP-125. (vii) Irrigated. (viii) Nil. (ix) 1.50". (x) 24.3.1958.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 2 types of cultivation :  $C_0$  = Control (no cultivation) and  $C_1$  = Hot weather cultivation.

(2) 3 crops preceding wheat :  $R_0$  = Fallow,  $R_1$  = *Sanai* (G.M.) and  $R_2$  = Maize.

*Sanai* (G.M.) was buried in the site.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) 29' × 25'. (b) 26' × 22'. (v) 1.5' × 1.5'. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Nil. (iii) Height of plants, tillers and grain yield. (iv) (a) 1957-1958. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 2828 lb./ac. (ii) 492.5 lb./ac. (iii) Main effect of R alone is highly significant. (iv) Av. yield of grain in lb./ac.

	$R_1$	$R_2$	$R_3$	Mean
$C_0$	2773	3169	3303	3082
	2960	2673	2093	2575
Mean	2866	2921	2698	2828

S.E. of C marginal mean = 116.1 lb./ac.

S.E. of R marginal mean = 142.2 lb./ac.

S.E. of body of table = 201.1 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 57(34).**

**Site :- Reg. Res. Stn., Meerut.**

**Type :- 'C'.**

**Object :-** To study the effect of growing legumes in Kharif on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) and (b) As per treatments. (c) 20 lb./ac. of N as A/S was applied to maize crop alone on 13.8.1957. (ii) (a) Silt loam. (b) Refer soil analysis, Meerut. (iii) 26.10.1957. (iv) (a) 1 ploughing by soil turning plough and 4 to 5 ploughings by *desi* plough. (b) Behind the plough. (c) 35 srs./ac. (d) Rows 9" apart. (e) Nil. (v) Nil. (vi) Pb.—591 (medium). (vii) Irrigated. (viii) 1 weeding. (ix) 1.31". (x) 11.4.1958.

## 2. TREATMENTS :

6 crops preceding wheat :  $R_0$ =Fallow,  $R_1$ =Hot weather cultivation,  $R_2$ =Maize,  $R_3$ =Guar (fodder),  
 $R_4$ =Sanai (G.M.) and  $R_5$ =Early moong.  
 Moong plants turned under as G.M. latest by Sept., 1957. Sanai turned in on 13.8.1957.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) 40'4"×231'. (iii) 4. (iv) (a) 40'4"×36'. (b) 37'4"×32'. (v) 2'×1½'. (vi) Yes.

## 4. GENERAL :

(i) Poor. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1737 lb./ac. (ii) 347.8 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$R_0$	$R_1$	$R_2$	$R_3$	$R_4$	$R_5$
Av. yield	1869	1887	1522	1778	1686	1677

S.E./mean = 173.9 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 58(27).**

**Site :- Reg. Res. Stn., Meerut.**

**Type :- 'C'.**

Object :—To study the effect of transplanting and normal sowing on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 10 to 15 lb./ac. of N as A/S as top dressing after sowing. (ii) (a) Silt loam. (b) Refer soil analysis, Meerut. (iii) 2, 5.11.1958/4.12.1958. (iv) (a) 1 ploughing by soil turning plough and 4 to 5 ploughings by *desi* plough (b) As per treatments. (c) 40 srs/ac. (d) 9"×4". (e) 1. (v) Nil. (vi) Pb.—591 (medium). (vii) Irrigated. (viii) 1 weeding. (ix) 8.84" (x) 27.4.1959.

## 2. TREATMENTS :

2 methods of sowing :  $M_1$ =Normal sowing and  $M_2$ =Transplanting.

## 3. DESIGN :

(i) Paired plot. (ii) (a) 2. (b) 52'×12'. (iii) 4. (iv) (a) and (b) 12'×24'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination, yield of grain and straw. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1529 lb./ac. (ii) 40.2 lb./ac. (iii) Treatment difference is significant. (iv) Av. yield of grain in lb./ac.

Treatment	$M_1$	$M_2$
Av. yield	1612	1446

S.E./mean = 20.1 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 59(26).**

**Site :- Reg. Res. Stn., Meerut.**

**Type :- 'C'.**

Object :—To study the effect of different methods of sowing on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Dhaincha*. (c) Nil. (ii) (a) Silt loam soil. (b) Refer soil analysis, Meerut. (iii) 5.11.1959 to 2.12.1959. (iv) (a) 1 ploughing by soil turning plough and 4 to 5 ploughings by *desi* plough. (b) As per treatments. (c) 30 srs./ac. (d) 9"×4". (e) 1. (v) G.M. by *dhaincha*. (vi) Pb.—591 (medium). (vii) Irrigated. (viii) 1 weeding. (ix) 1.01". (x) 26.4.1960.

## 2. TREATMENTS :

3 methods of sowing :  $M_1$ =Sown behind the plough (normal sowing),  $M_2$ =Transplanted wheat seedling after 30 days and  $M_3$ =Sown behind the plough on the date wheat transplanted.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) 44'×40'. (iii) 8. (iv) (a) 44'×12'. (b) 41'×9'. (v) 1.5'×1.5'. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination, yield of grain and straw. (iv) (a) 1959—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 2142 lb./ac. (ii) 424.4 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	$M_1$	$M_2$	$M_3$
Av. yield	2354	2339	1734
S.E./mean = 150.0 lb./ac.			

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 57(116).**

**Site :- Reg. Res. Stn., Nawabganj.**

**Type :- 'C'.**

Object :—To study the effect of growing legumes in kharif on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) to (c) As per treatments. (ii) (a) Clayey loam. (b) Refer soil analysis, Nawabganj. (iii) 29.10.1957. (iv) (a) N.A. (b) Behind the plough. (c) 40 srs./ac. (d) Rows 9" apart. (e) N.A. (v) Nil. (vi) Pb.—591 (late). (vii) Irrigated. (viii) N.A. (ix) 0.59". (x) 19.4.1958.

## 2. TREATMENTS :

6 crops preceding wheat :  $R_0$ =Fallow,  $R_1$ =Hot weather cultivation,  $R_2$ =Maize,  $R_3$ =*Guar*(fodder),  $R_4$ =*Sanai* (G.M.) and  $R_5$ =Early *moong*.  
20 lb./ac. of N as A/S applied to maize only.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) and (b) 28'6"×50'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Brown rust incidence and smut noticed. (iii) [Germination, flowering, grain and straw yield. (iv) (a) 1957—1958 (treatments modified in 1958). (b) N.A. (c) Nil. (v) (a) Meerut, Hardoi, Amrukh, Varanasi, Kalai and Pura. (b) N.A. (vi) N.A. (vii) Nil.

## 5. RESULTS :

(i) 722 lb./ac. (ii) 64.7 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	$R_0$	$R_1$	$R_2$	$R_3$	$R_4$	$R_5$
Av. yield	739	668	692	652	825	755

S.E./mean = 32.3 lb./ac.



**Crop :- Wheat (Rabi).****Ref :- U.P. 58(111).****Site :- Reg. Res. Stn., Nawabganj.****Type :- 'C'.**

Object :—To study the effect of growing legumes in kharif on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) to (c) As per treatments. (ii) (a) Clayey loam. (b) Refer soil analysis, Nawabganj. (iii) 14.11.1958. (iv) (a) Summer ploughing. (b) Behind the plough. (c) 1 md./ac. (d) Rows 9" apart. (e) N.A. (v) 100 lb./ac. of A/S on 25.12.1955 and 40 lb./ac. on 31.1.1959. (vi) Pb.—591 (late). (vii) Irrigated. (viii) 1 hoeing by wheel hoe. (ix) 2.93". (x) 10, 11.4.1959.

**2. TREATMENTS :**

6 crops preceeding wheat : R<sub>0</sub>=Fallow, R<sub>1</sub>=Hot weather cultivation R<sub>2</sub>=Early paddy, R<sub>3</sub>=Lobia (fodder), R<sub>4</sub>=Dhaincha (G.M.) and R<sub>5</sub>=Early moong (G.M.).  
20 lb./ac. of N as A/S applied to paddy crop alone.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 28'6" × 50'. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Grain and straw yield. (iv) (a) 1957—1958. (b) Yes. (c) Nil. (v) (a) Meerut. Hardoi, Amrukh, Varanasi, Kalai and Pura. (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 790.0 lb./ac. (ii) 93.7 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	R <sub>0</sub>	R <sub>1</sub>	R <sub>2</sub>	R <sub>3</sub>	R <sub>4</sub>	R <sub>5</sub>
Av. yield	758	821	728	823	882	727

S.E./mean = 46.8 lb./ac.

**Crop :- Wheat. (Rabi).****Ref :- U.P. 58(112).****Site :- Reg. Res. Stn., Nawabganj.****Type :- 'C'.**

Object :—To study the effect of sowing Wheat with Hubum clover.

**1. BASAL CONDITIONS :**

(i) (a) Cotton—Wheat. (b) Cotton. (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Nawabganj. (iii) 29,30.11.1958 and 5.1.1959. (iv) (a) N.A. (b) Behind the plough. (c) 1 md./ac. (d) Rows 9" apart. (e) N.A. (v) Nil. (vi) C—13 (early). (vii) Irrigated. (viii) 1 rouging (ix) 2.93". (x) 13.4.1959.

**2. TREATMENTS :**

2 cultural treatments : C<sub>0</sub>=Control (wheat sown alone by level method) and C<sub>1</sub>=Alternate strips of wheat and humum clover.  
40 lb./ac. of A/S applied on 2.2.1959 as top dressing.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 6. (iv) (a) and (b) 50' × 20'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Grain and straw. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 648 lb./ac. (ii) 269.9 lb./ac. (iii) Treatment difference is not significant. (iv) Av. yield of grain in lb./ac.

Treatment	C <sub>0</sub>	C <sub>1</sub>
Av. yield	609	687

S.E./mean = 110.2 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 58(109).****Site :- Reg. Res. Stn., Nawabganj.****Type :- 'C'.**

Object :—To study the effect of sowing Wheat with berseem.

**1. BASAL CONDITIONS :**

(i) (a) Cotton—Wheat. (b) Cotton. (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Nawabganj. (iii) Wheat on 29, 30.11.1958, *Berseem* on 26.12.1958 and *resown* on 12.1.1959. (iv) (a) N.A. (b) As per treatments. (c) 1 md./ac. for wheat and 10 srs./ac. for *berseem*. (d) Row to row 9". (e) N.A. (v) 40 lb./ac. of N as A/S applied on 2.2.1959 as top dressing. (vi) C—13 (early). (vii) Irrigated. (viii) Rouging on 31.3.1959. (ix) 2.93". (x) 13.4.1959.

**2. TREATMENTS :**

2 cultural treatments :  $C_0$ =Wheat alone sown behind the plough and  $C_1$ =Alternate strips of wheat and *berseem*. Wheat sown by dibbling and *berseem* by broadcast.

**3. DESIGN :**

Same as in expt. no. 58(112) on page 496.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Height, length of ears/plant, weight, number of grains/plant and grain yield. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 922 lb./ac. (ii) 272.3 lb./ac. (iii) Treatment difference is not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$C_0$	$C_1$
Av. yield	844	1001

S.E./mean = 111.2 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 55(303).****Site :- Govt. Res. Farm Pura.****Type :- 'C'.**

Object :—To study the effect of growing legumes in kharif on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) As per treatments. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Pura. (iii) 7.11.1955. (iv) (a) 10 ploughings by *desi* plough. (b) Behind the plough. (c) to (e) N.A. (v) Nil. (vi) NP—710 (medium). (vii) Irrigated. (viii) and (ix) N.A. (x) 5.4.1956.

**2. TREATMENTS :**

6 crops preceding wheat :  $R_0$ =Fallow,  $R_1$ =Hot weather cultivation,  $R_2$ =Maize,  $R_3$ =*Guar* (fodder),  $R_4$ =*Sanai* (G.M.) and  $R_5$ =*Moong*—G.M.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 6. (b) 48'7"×149'. (iii) 4. (iv) (a) and (b) 48'7"×24'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1955—contd. (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1037 lb./ac. (ii) 149.0 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	$R_0$	$R_1$	$R_2$	$R_3$	$R_4$	$R_5$
Av. yield	1027	1083	850	906	1242	1111

S.E./mean = 74.5 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 56(339).****Site :- Govt. Res. Farm Pura.****Type :- 'C'.**

Object :—To study the effect of legumes in kharif on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) and (b) As per treatments. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Pura. (iii) 9.11.1956. (iv) (a) 6 ploughings by *desi* plough. (b) to (e) N.A. (v) and (vi) N.A. (vii) Irrigated. (viii) 2 weedings. (ix) N.A. (x) 9.4.1957.

**2. TREATMENTS :**

6 crops preceeding wheat :  $R_0$ =Fallow,  $R_1$ =Hot weather cultivation,  $R_2$ =Maize,  $R_3$ =*Guar* (fodder),  $R_4$ =*Sanai* (G.M.) and  $R_5$ =*Moong* T—1 (early).

**3. DESIGN :**

(i) R.B.D. (ii) (a) 6 (b) 48'7" × 149'. (iii) 4. (iv) (a) and (b) 48'7" × 24'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Poor. (ii) N.A. (iii) Yield of grain. (iv) (a) 1955—contd. (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 631 lb./ac. (ii) 68.2 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$R_0$	$R_1$	$R_2$	$R_3$	$R_4$	$R_5$
Av. yield	542	598	523	617	775	729

S.E./mean = 34.1 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 57(374).****Site :- Govt. Res. Farm Pura.****Type :- 'C'.**

Object :—To study the effect of growing legumes in kharif on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) and (b) As per treatments. (c) 4 lb./plot of A/S to maize only. (ii) (a) Sandy loam. (b) Refer soil analysis, Pura. (iii) 17.10.1957. (iv) to (vi) N.A. (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 23.3.1958.

**2. TREATMENTS and 3. DESIGN :**

Same as in expt. no. 56(339) above.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1955—1957. (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 791 lb./ac. (ii) 97.6 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$R_0$	$R_1$	$R_2$	$R_3$	$R_4$	$R_5$
Av. yield	701	738	766	813	934	794

S.E./mean = 48.8 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 54(151).****Site :- Govt. Cotton Res. Sub-Stn., Raya.****Type :- 'C'.**

Object :—To study the effect of growing legumes in kharif on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) As per treatments. (c) 20 lb./ac. of N as A/S to maize only. (ii) (a) Sandy loam. (b) Refer soil analysis, Raya. (iii) 15.11.1954. (iv) (a) *Palewa*, 4 ploughings by *desi* plough and 2 ploughings by victory plough. (b) Line sowing through drill. (c) 40 srs./ac. (d) Rows 9" apart. (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) 1 weeding. (ix) 1.51". (x) 23.4.1955.

**2. TREATMENTS :**

6 crops preceding wheat :  $R_0$ =Fallow,  $R_1$ =Hot weather cultivation,  $R_2$ =Maize,  $R_3$ =*Guar* (fodder),  $R_4$ =*Sanai* (G.M.) and  $R_5$ =*Moong* (early).

**3. DESIGN :**

(i) R.B.D. (ii) (a) 6. (b) 109'×92'. (iii) 8. (iv) (a) and (b) 50'×29'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1951—1954. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1021 lb./ac. (ii) 183.5 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$R_0$	$R_1$	$R_2$	$R_3$	$R_4$	$R_5$
Av. yield	984	867	867	875	1404	1127

S.E./mean = 64.9 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 56(78).****Site :- State Soil Cons. Res. Demons. & Trg. Centre, Rehmankhara. Type :- 'C'.**

Object :— To study the effect of sowing of Wheat in contoured beds against open plots.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Sanai*. (c) No. (ii) (a) Sandy loam. (b) Refer soil analysis, Rehmankhara. (iii) 23 and 24.10.1956. (iv) (a) Ploughing in of *sanai* on 11.8.1956 by tractor plough. (b) Behind hand hoe. (c) 45 srs./ac. (d) Line to line 9". (e) N.A. (v) G.M. by *sanai* and F.Y.M. applied at 80 md./ac. (vi) NP—710. (vii) Irrigated. (viii) to (x) N.A.

**2. TREATMENTS :**

8 cultural treatments :  $C_0$ =Open plots,  $C_1$ =Plots with ridges around but with no *kiaris*,  $C_2$ =Plots with ridges around and *kiaris* 33'×20' each,  $C_3$ =Plots with ridges around and *kiaris* 22'×20' each,  $C_4$ =Plots with ridges around and *kiaris* 11'×20' each,  $C_5$ =Plots with ridges around and *kiaris* 33'×10' each,  $C_6$ =Plots with ridges around and *kiaris* 22'×10' each and  $C_7$ =Plots with ridges around and *kiaris* 11'×10' each.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 66'×20'. (b) 62'×16'. (v) 2'×2'. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1956—1959. (b) Yes. (c) Nil. (v) to (vii) Nil.

**RESULTS :**

(i) 1739 lb./ac. (ii) 244.1 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	C <sub>0</sub>	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	C <sub>4</sub>	C <sub>5</sub>	C <sub>6</sub>	C <sub>7</sub>
Av. yield	1605	2049	1657	1914	1746	1825	1442	1677

S.E./mean = 122.0 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 57(111).**

**Site :- State Soil Cons. Res. Demons. & Trg. Centre, Rehmankhara. Type :- 'C'.**

Object :— To study the effect of sowing of Wheat in contoured beds against open plots.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Rehmankhara. (iii) 6 and 8.11.1957. (iv) to (x) N.A.

**2. TREATMENTS to 4. GENERAL :**

Same as in expt no. 56(78) on page 499.

**5. RESULTS :**

(i) 1054 lb./ac. (ii) 245.2 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	C <sub>0</sub>	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	C <sub>4</sub>	C <sub>5</sub>	C <sub>6</sub>	C <sub>7</sub>
Av. yield	936	977	1224	1184	970	1051	947	1144

S.E./mean = 122.6 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 58(103).**

**Site :- State Soil Cons. Res. Demons. & Trg. Centre, Rehmankhara. Type :- 'C'.**

Object :— To study the effect of sowing of Wheat in contoured beds against open plots.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Rehmankhara. (iii) 31.10.1958. (iv) (a) Ploughing. (b) Line sowing. (c) N.A. (d) Rows 9" apart. (e) N.A. (v) G.M. before sowing. (vi) N.A. (vii) Irrigated. (viii) Weeding and interculturing. (ix) and (x) N.A.

**2. TREATMENTS to 4. GENERAL :**

Same as in expt. no. 56(78) on page 499.

**5. RESULTS ;**

(i) 1294 lb./ac. (ii) 233.0 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	C <sub>0</sub>	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	C <sub>4</sub>	C <sub>5</sub>	C <sub>6</sub>	C <sub>7</sub>
Av. yield	941	1146	1516	1010	1520	1408	1327	1485

S.E./mean = 116.5 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 59(106).**

**Site :- State Soil Cons. Res. Demons. & Trg. Centre, Rehmankhara. Type :- 'C'.**

Object :— To study the effect of sowing of Wheat in contoured beds against open plots.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Rehmankhara. (iii) to (x) N.A.

## 2. TREATMENTS to 4. GENERAL :

Same as in expt. in 56(78) on page 499.

## 5. RESULTS :

(i) 448 lb./ac. (ii) 254.5 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	C <sub>0</sub>	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	C <sub>4</sub>	C <sub>5</sub>	C <sub>6</sub>	C <sub>7</sub>
Av. yield	182	403	539	333	552	597	597	380

S.E./mean = 127.7 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 59(111).**

**Site :- State Soil Cons. Res. Demons. & Trg. Centre, Rehmankhara. Type :- 'C'.**

Object :—To study the best time and method of cultivation of fields for Wheat.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Rehmankhara. (iii) N.A. (iv) (a) As per treatments. (b) Sown behind the plough. (c) 40 srs./ac. (d) and (e) N.A. (v) N.A. (vi) NP--710. (vii) to (x) N.A.

## 2. TREATMENTS :

**Main-plot treatments :**

4 methods of ploughing : M<sub>1</sub>=Ploughings by *desi* plough, M<sub>2</sub>=One ploughing in July by soil turning plough and rest by *desi* plough, M<sub>3</sub>=One ploughing in August by soil turning plough and rest by *desi* plough and M<sub>4</sub>=One ploughing each in July and August by soil turning plough and rest by *desi* plough.

**Sub-plot treatments :**

4 times of ploughing : T<sub>1</sub>=Ploughing during every gap in rains right from the start of rains, T<sub>2</sub>=Ploughing during every gap in rains from 1st August, T<sub>3</sub>=Ploughing during every gap in rains from 1st September and T<sub>4</sub>=Ploughing during every gap in rains from 15th September.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 4 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 49.5' × 44'. (b) 44.5' × 40'. (v) 2' × 2'. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1959—contd. (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 315 lb./ac. (ii) (a) 341.5 lb./ac. (b) 232.3 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	M <sub>4</sub>	Mean
T <sub>1</sub>	554	569	130	287	385
T <sub>2</sub>	166	377	217	485	311
T <sub>3</sub>	231	506	65	228	257
T <sub>4</sub>	243	435	419	125	305
Mean	298	472	208	281	315

## S.E. of difference of two

- |                                   |   |               |
|-----------------------------------|---|---------------|
| 1. M marginal means               | = | 139.4 lb./ac. |
| 2. T marginal means               | = | 94.8 lb./ac.  |
| 3. T means at the same level of M | = | 189.7 lb./ac. |
| 4. M means at the same level of T | = | 215.5 lb./ac. |

**Crop :- Wheat (Rabi).****Ref :- U.P. 59(477).****Site :- Reg. Res. Stn., Rudrapur.****Type :- 'C'.**

Object :—To study the effect of kharif crops on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) As per treatments. (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Rudrapur. (iii) 20.11.1959. (iv) (a) N.A. (b) Behind the plough. (c) 40 srs./ac. (d) Rows 9" apart. (e) N.A. (v) N.A. (vi) NP—720. (vii) to (ix) N.A. (x) 21.4.1960.

**2. TREATMENTS :**6 crops preceding wheat :  $R_0$ =Fallow,  $R_1$ =*Lobia*,  $R_2$ =*Dhaincha*,  $R_3$ =*Moong*,  $R_4$ =*Sanai* and  $R_5$ =*Paddy*.**3. DESIGN :**(i) R.B.D. (ii) (a) 6. (b)  $136' \times 68'$ . (iii) 4. (iv) (a) and (b)  $68' \times 21'$ . (v) Nil. (vi) Yes.**4. GENERAL :**

(i) Germination and stand good. (ii) N.A. (iii) Grain and straw yield. (iv) (a) 1959—1960. (b) N.A. (c) Nil. (v) and (vi) N.A. (vii) Crop damaged by wild animals in February.

**5. RESULTS :**

(i) 440 lb./ac. (ii) 79.6 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$R_0$	$R_1$	$R_2$	$R_3$	$R_4$	$R_5$
Av. yield	282	541	627	331	474	386

S.E./mean = 39.8 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 57(476).****Site :- Soil Cons. Res. Stn., Selakui.****Type :- 'C'.**

Object :—To study the effect of leguminous crops sown by different methods and at different seed rates on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) and (b) As per treatments. (c) 40 lb./ac. of  $P_2O_5$  as Super+10 lb./ac. of N as A/S. (ii) (a) Silty loam. (b) Refer soil analysis, Selakui. (iii) N.A. (iv) (a) 2 discings, 4 harrowings and 4 plankings. (b) Line sowing by seed drill. (c) 80 lb./ac. (d) Rows 10" apart. (e) N.A. (v) 40 lb./ac. of  $P_2O_5$  as Super+40 lb./ac. of N as A/S applied as broadcast. (vi) Pb.—591. (vii) Unirrigated. (viii) Nil. (ix) 7.9". (x) N.A.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)+a control

(1) 6 leguminous crops :  $C_1$ =*Cowpea*,  $C_2$ =*Moong*,  $C_3$ =*Urd*,  $C_4$ =*Dhaincha*,  $C_5$ =*Soyabean* and  $C_6$ =*Sannhemp*.(2) 2 seed rates :  $R_1$ =Normal seed rate and  $R_2$ = $2R_1$ .(3) 2 methods of sowing :  $S_1$ =Broadcast,  $S_2$ =Dibbling with  $12'' \times 3''$  and  $12'' \times 6''$ .**3. DESIGN :**(i) R.B.D. (ii) (a) 25. (b) N.A. (iii) 4. (iv) (a) and (b)  $33 \times 8.25'$ . (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Fumigation with Syno gas at 5 lb./ac. (iii) Yield of grain and straw. (iv) (a) 1956—1959. (b) Yes. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) N.A. (ii) 229.9 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

Control = N.A.

	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	C <sub>4</sub>	C <sub>5</sub>	C <sub>6</sub>	Mean	R <sub>1</sub>	R <sub>2</sub>
S <sub>1</sub>	193	229	288	314	285	332	274	259	288
S <sub>2</sub>	334	190	221	265	154	278	240	231	250
Mean	264	210	255	290	220	305	257	245	269
R <sub>1</sub>	136	278	188	291	255	321			
R <sub>2</sub>	391	141	321	288	185	288			

S.E. of C marginal mean	= 57.5 lb./ac.
S.E. of S or R marginal mean	= 33.2 lb./ac.
S.E. of body of C×S or C×R table	= 81.3 lb./ac.
S.E. of body of S×R table	= 46.9 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 59(488).**

**Site :- Soil Cons. Res. Stn., Selakui.**

**Type :- 'C'.**

Object :—To study the effect of leguminous crops sown by different methods and at different seedrates on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) and (b) As per treatments. (c) 40 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super+10 lb./ac. of N as A/S. (ii) (a) Silty loam. (b) Refer soil analysis, Selakui. (iii) 14.11.1959. (iv) (a) 2 discing, 4 harrowings and 4 plankings. (b) Line sowing by seed drill. (c) 80 lb./ac. (d) Rows 10" apart. (e) N.A. (v) 40 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super and 40 lb./ac. of N as A/S broadcast. (vi) Pb.—591. (vii) Unirrigated. (viii) Nil. (ix) 5.2". (x) N.A.

## 2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 57(476) on page 502.

## 5. RESULTS :

(i) 1090 lb./ac. (ii) 290.7 lb./ac. (iii) Interaction C×R alone is highly significant. (iv) Av. yield of grain in lb./ac.

Control = 1310 lb./ac.

	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	C <sub>4</sub>	C <sub>5</sub>	C <sub>6</sub>	Mean	R <sub>1</sub>	R <sub>2</sub>
S <sub>1</sub>	1115	1130	880	1260	1130	980	1082	1072	1093
S <sub>2</sub>	1145	975	1000	1165	1075	1120	1080	1067	1093
Mean	1130	1052	940	1212	1102	1050	1081	1069	1093
R <sub>1</sub>	1080	1255	910	1065	1185	920			
R <sub>2</sub>	1180	850	970	1360	1020	1180			



S.E. of C marginal mean	=	72.8 lb./ac.
S.E. of R or S marginal mean	=	42.0 lb./ac.
S.E. of body of C×S or C×R table	=	102.8 lb./ac.
S.E. of body of R×S table	=	59.3 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 58(431).**

**Site :- Soil Cons. Res. Stn., Selakui**

**Type :- 'C'.**

**Object :-**To develop a system of conservative farming on terrace land for Wheat.

**1. BASAL CONDITIONS :**

(i) (a) to (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Selakui. (iii) 14 and 15.11.1958. (iv) (a) 2 disc ploughings, 4 harrowings and 4 plankings. (b) Line sowing by seed drill. (c) 80 lb./ac. (d) Rows 9" apart. (e) N.A. (v) 40 lb./ac. of N as A/S and 50 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super (vi) Pb.--591 (late) (vii) Unirrigated (viii) Nil. (ix) 8.29" (x) April, 1959.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

- (1) 2 terrace spacings :  $A_1 = S/2 + 2$  and  $A_2 = S/2 + 3$  (where S is slope %)  
 (2) 2 terrace sections : B<sub>1</sub>=Broad based and B<sub>2</sub>=Narrow based (cross sections 7.5 sq. ft.)  
 (3) 2 channel grades : C<sub>1</sub>=0.4 and C<sub>2</sub>=0.6 ft./100 ft.

**3. DESIGN :**

(i) 2<sup>3</sup> confd. (ii) (a) 4 plots/block ; 2 blocks/replication. (b) N.A. (iii) 1 (iv) (a) and (b) Plot size varies from 1.63 ac. to 2.75 ac. (v) N.A (vi) Yes.

**4. GENERAL :**

(i) Normal. (ii) Nil. Dusting and fumigation by Gammexane at 20 lb./ac and Syno gas at 5 lb./ac. respectively. (iii) Yield of grain and straw. (iv) (a) 1958—contd. (b) Yes. (c) Nil. (v) and (vi) Nil. (vii) Two and three factor interactions are taken as error.

**5. RESULTS :**

(i) 1213 lb./ac. (ii) 456.4 lb./ac. (iii) None of the effects is significant. (vi) Av. yield of grain in lb./ac.

Treatment	A <sub>1</sub>	A <sub>2</sub>	B <sub>1</sub>	B <sub>2</sub>	C <sub>1</sub>	C <sub>2</sub>
Av. Yield	1360	1066	1178	1248	1299	1126

S.E./mean=228.2 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U. P. 59 (483).**

**Site :- Soil Cons. Res. Stn., Selakui.**

**Type :- 'C'.**

**Object :-**To develop a system of conservative farming on terrace land for Wheat.

**1 BASAL CONDITIONS :**

(i) (a) Maize—Wheat. (b) Maize. (c) 100 lb./ac. of N as A/S+80 lb./ac. of P<sub>5</sub> O<sub>5</sub> as super. (ii) (a) Sandy loam. (b) Refer soil analysis, Selakui. (iii) 16.11.1959. to 19.11.1959 (iv) (a) 2 disc ploughing, 4 harrowings and 4 plankings. (b) Line sowing by seed drill. (c) Rows 9" apart. (e) N.A. (v) 40 lb./ac. of N as A/S and 50 lb./ac. of P<sub>2</sub>O<sub>5</sub> as super. (vi) C—281 (medium). (vii) Unirrigated. (viii) Nil. (ix) 5.2" (x) April, 1960.

**2. TREATMENTS and 3. DESIGN :**

Same as in expt. no. 58 (431) on page above.

**4. GENERAL :**

(i) Good, heavy lodging on 6.2.1960. (ii) Rust attack, dusting and fumigation by Gammexane at 20 lb./ac. and Syno gas at 5 lb./ac. respectively. (iii) Yield of grain. (iv) (a) 1958—contd. (b) Yes. (c) Nil. (v) and (iv) Nil. (vii) Two and three factor interactions are taken as error.

## 5. RESULTS :

(i) 1014 lb./ac. (ii) 443.6 lb /ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

Treatment	A <sub>1</sub>	A <sub>2</sub>	B <sub>1</sub>	B <sub>2</sub>	C <sub>1</sub>	C <sub>2</sub>
Av. yield	1254	773	1155	872	1001	1027

S.E./mean=221.8 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 58(432).**

**Site :- Soil Cons. Res. Stn., Selakui.**

**Type :- 'C'.**

Object :—To study the effect of vegetative mulch on moisture conservation in Wheat fields to increase crop yield.

## 1. BASAL CONDITIONS :

(i) (a) Maize—Wheat. (b) Maize. (c) 84 lb./ac. of P<sub>2</sub>O<sub>5</sub>+125 lb./ac. of N. (ii) (a) Sandy loam. (b) Refer soil analysis, Selakui. (iii) 5.11.1958. (iv) (a) 2 discings, 4 harrowings, 6 plankings and 4 *desi* ploughings. (b) Line sowing by seed drill. (c) 60 lb./ac. (d) Rows 10" apart. (e) N.A. (v) 40 lb./ac. of N and 40 lb./ac. of P<sub>2</sub>O<sub>5</sub>. (vi) Pb.—591 (late). (vii) Unirrigated. (viii) Nil. (ix) 8.3". (x) N.A.

## 2. TREATMENTS :

4 cultural treatments : C<sub>1</sub>=Clean cultivation of maize, C<sub>2</sub>=All maize residues ploughed under, C<sub>3</sub>=All and seed bed prepared by sub-surface tillage and C<sub>4</sub>=Maize stubbles left on surface and seed bed prepared by sub-surface tillage.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) 74'×50'. (iii) 6. (iv) (a) and (b) 36'×24'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. Dusting with Gammexane at 20 lb./ac. (iii) Grain and straw yield. (iv) (a) 1958—1960. (b) Yes. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 769 lb./ac. (ii) 180.5 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb /ac.

Treatment	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	C <sub>4</sub>
Av. yield	778	856	536	908

S.E./mean = 73.7 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 59(484).**

**Site :- Soil Cons. Res. Stn., Selakui.**

**Type :- 'C'.**

Object :—To study the effect of vegetative mulch on moisture conservation in Wheat fields to increase crop yield.

## 1. BASAL CONDITIONS :

(i) (a) Maize—Wheat. (b) Maize. (c) 84 lb./ac. of P<sub>2</sub>O<sub>5</sub>+125 lb./ac. of N. (ii) (a) Sandy loam. (b) Refer soil analysis, Selakui. (iii) 14.11.1959. (iv) (a) 2 discings, 4 harrowings, 6 plankings and 4 *desi* ploughings. (b) Line sowing by seed drill. (c) 60 lb./ac. (d) Rows 10" apart. (e) N.A. (v) 40 lb./ac. of N+40 lb./ac. of P<sub>2</sub>O<sub>5</sub>. (vi) C—281 (medium). (vii) Unirrigated. (viii) Nil. (ix) 5.14". (x) 19.4.1960.

## 2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 58(432) above.

## 5. RESULTS ;

(i) 1110 lb./ac. (ii) 170.8 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	C <sub>4</sub>
Av. yield	1084	1105	1021	1231

S.E./mean = 69.7 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 58(207).**

**Site :- Agri. College Farm, B.H.U., Varanasi.**

**Type :- 'C'.**

Object :—To study the effect of different seed rates on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanai*. (c) N.A. (ii) (a) Medium alluvial soil. (b) Refer soil analysis, Varanasi. (iii) As per treatments. (iv) (a) 5 ploughings with alternate planking and 1 discing. (b) N.A. (c) As per treatments. (d) and (e) N.A. (v) *Sanai* as G.M. +20 lb./ac. of N as A/S. (vi) NP—710. (vii) Irrigated. (viii) 2 intercultures. (ix) and (x) N.A.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 seed rates : R<sub>1</sub>=30, R<sub>2</sub>=40 and R<sub>3</sub>=50 srs./ac.

(2) 3 sowing dates : D<sub>1</sub>=7.11.1958, D<sub>2</sub>=17.11.1958 and D<sub>3</sub>=27.11.1958.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 45' × 20'. (b) 41' × 15'. (v) 2' × 2'. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Growth character and yield of grain (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1430 lb./ac. (ii) 126.8 lb./ac. (iii) Main effect of D alone is significant. (iv) Av. yield of grain in lb./ac.

	R <sub>1</sub>	R <sub>2</sub>	R <sub>3</sub>	Mean
D <sub>1</sub>	1438	1417	1673	1509
D <sub>2</sub>	1374	1490	1417	1427
D <sub>3</sub>	1336	1318	1404	1353
Mean	1383	1408	1498	1430

S.E. of any marginal mean = 36.6 lb./ac.

S.E. of body of table = 63.4 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 54(200).**

**Site :- Reg. Res. Stn., Varanasi.**

**Type :- 'C'.**

Object :— To study the effect of growing legumes in kharif on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) and (b) As per treatments. (c) Nil. (ii) (a) Loam. (b) Refer soil analysis, Varanasi. (iii) 4.11.1954. (iv) (a) 4 ploughings and 1 planking after every ploughing. (b) In lines by seed drill. (c) to (e) N.A. (v) Compost on 26.10.1954. (vi) NP—52 (medium). (vii) Irrigated. (viii) N.A. (ix) 1.40". (x) 8 and 9.4.1955.

## 2. TREATMENTS :

6 leguminous crops preceding wheat :  $R_0$ =Fallow,  $R_1$ =Hot weather cultivation,  $R_2$ =Maize,  $R_3$ =Guar (fodder),  $R_4$ =Sennai (G.M.) and  $R_5$ =Moong (G.M).

## 3. DESIGN:

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 8. (iv) (a) and (b)  $43' \times 27.25'$ . (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1951—1954. (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 675 lb./ac. (ii) 110.0 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$R_0$	$R_1$	$R_2$	$R_3$	$R_4$	$R_5$
Av. yield	659	565	699	655	851	619

S.E./mean = 38.9 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 55(181).**

**Site :- Reg. Res. Stn., Varanasi.**

**Type :- 'C'.**

Object :— To study the effect of growing legumes in kharif on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) As per treatments. (c) Nil. (ii) (a) Loam soil. (b) Refer soil analysis, Varanasi. (iii) 29.10.1955. (iv) (a) 4 ploughings and 1 harrowing. (b) By seed drill. (c) 50 lb./ac. (d) Rows 9" apart. (e) N.A. (v) Nil. (vi) NP—52 (medium). (vii) Irrigated. (viii) to (x) N.A.

## 2. TREATMENTS :

Same as in expt. no. 54(200) on page 506.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) and (b)  $27' \times 55'$ . (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Slight damage by rats. (iii) Yield of grain and straw. (iv) (a) 1955—1956. (b) Yes. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1131 lb./ac. (ii) 123.3 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$R_0$	$R_1$	$R_2$	$R_3$	$R_4$	$R_5$
Av. yield	1055	1063	1134	1149	1272	1111

S.E./mean = 61.6 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 56(174).**

**Site :- Reg. Res. Stn., Varanasi.**

**Type :- 'C'.**

Object :— To study the effect of growing legumes in kharif on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) As per treatments. (c) 20 lb./ac. of N as A/S to maize plots only. (ii) (a) Loam soil. (b) Refer soil analysis, Varanasi. (iii) 21.11.1956. (iv) (a) 3 ploughings and cultivator once and 2 cone ploughings. (b) By seed drill. (c) 45 srs./ac. (d) Rows 9" apart. (e) N.A. (v) Nil. (vi) NP-52 (medium). (vii) Irrigated. (viii) N.A. (ix) 2.42". (x) 31.3.1957.

## 2. TREATMENTS :

Same as in expt. no. 54(200) on page 506.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) and (b) 27' × 55'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Slight attack of disease in treatment R<sub>2</sub> in replication IV. (iii) Yield of grain and straw. (iv) (a) 1955-1957. (b) Yes. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 500 lb./ac. (ii) 78.6 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	R <sub>0</sub>	R <sub>1</sub>	R <sub>2</sub>	R <sub>3</sub>	R <sub>4</sub>	R <sub>5</sub>
Av. yield	414	475	497	442	714	456

S.E./mean = 39.3 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 57(249).**

**Site :- Reg. Res. Stn., Varanasi.**

**Type :- 'C'.**

Object :- To study the effect of growing crops in kharif on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) As per treatments. (c) Nil. (ii) (a) Loam soil. (b) Refer soil analysis, Varanasi. (iii) 7.12.1957. (iv) (a) 2 ploughings by *desi* plough and *palewa*. (b) Sown by seed drill. (c) 40 srs./ac. (d) Rows 9" apart. (e) N.A. (v) Nil. (vi) NP-52 (medium). (vii) Irrigated. (viii) N.A. (ix) 1.01". (x) 17.4.1958.

## 2. TREATMENTS :

6 crops preceding wheat : R<sub>0</sub>=Fallow, R<sub>1</sub>=Hot weather cultivation, R<sub>2</sub>=Paddy, R<sub>3</sub>=Guar (fodder), R<sub>4</sub>=*Sanai* (G.M.) and R<sub>5</sub>=Early *moong* (G.M.).

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 29' × 55'. (b) 27' × 55'. (v) 1' on either side of the plots along length. (vi) Yes.

## 4. GENERAL :

(i) Poor. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1955-1957. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 661 lb./ac. (ii) 180.1 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	R <sub>0</sub>	R <sub>1</sub>	R <sub>2</sub>	R <sub>3</sub>	R <sub>4</sub>	R <sub>5</sub>
Av. yield	680	721	270	706	857	732

S.E./mean = 90.0 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 54(14).****Site :- Govt. Res. Farm, Kanpur.****Type :- CV'.**

Object :—To study the effect of different dates of sowing on different varieties of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Sanai* for G.M. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) As per treatments (iv) (a) 6 ploughings. (b) Sown behind the *kudali*. (c) 80 lb./ac. (d) 9" between rows. (e) N.A. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) 2 weedings. (ix) N.A. (x) 13.4.1955.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 4 varieties :  $V_1=NP-710$ ,  $V_2=NP-125$ ,  $V_3=C-13$  and  $V_4=Pb.-591$ .(2) 4 dates of sowing :  $D_1=23.10.1954$ ,  $D_2=30.10.1954$ ,  $D_3=6.11.1954$  and  $D_4=13.11.1954$ .**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 18'×6'. (b) 16'×6'. (v) 1' on both side length wise. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Slight attack of brown and yellow rust. (iii) Grain yield. (iv) (a) 1952-1956. (b) and (c) No. (v) to (vi) Nil.

**5. RESULTS :**

(i) 1996 lb./ac. (ii) 394.8 lb /ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	Mean
V <sub>1</sub>	2392	1692	2275	1940	2075
V <sub>2</sub>	2013	2100	1882	1998	1998
V <sub>3</sub>	2319	1809	1925	1940	1998
V <sub>4</sub>	1940	1809	2129	1780	1914
Mean	2166	1852	2053	1914	1996

S.E. of any marginal mean = 98.7 lb./ac.

S.E. of body of table = 197.4 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 55(4).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'CV'.**

Object :—To study the effect of different dates of sowing on different varieties of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Sanai* for G.M. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) As per treatments. (iv) (a) 4 ploughings. (b) Sown behind *kudali*. (c) 80 lb./ac. (d) 9" between rows. (e) N.A. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 11.4.1956.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 4 varieties :  $V_1=C-13$ ,  $V_2=NP-710$ ,  $V_3=NP-125$  and  $V_4=Pb.-591$ .(2) 4 dates of sowing :  $D_1=1.11.1955$ ,  $D_2=10.11.1955$ ,  $D_3=20.11.1955$  and  $D_4=30.11.1955$ .**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 3. (iv) (a) 15'×6'. (b) 13'×4½'. (v) 1.50'×0.75'. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Slight attack of rust. (iii) Grain yield. (iv) (a) 1952-1956. (b) and (c) No. (v) (a) and (b) N.A. (vi) Nil. (vii) Originally the experiment was planed with 4 replications. Sowing was done on 7.12.1955 instead of 30.11.1955 in block no III and this block was omitted in the statistical analysis.

## 5. RESULTS :

(i) 719 lb./ac. (ii) 161.3 lb./ac. (iii) Only main effect of D is highly significant. (iv) Av. yield of grain in lb./ac.

	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	Mean
V <sub>1</sub>	702	734	638	860	733
V <sub>2</sub>	542	574	511	766	598
V <sub>3</sub>	670	606	542	702	630
V <sub>4</sub>	956	925	766	1021	917
Mean	717	710	614	837	719

S.E. of any marginal mean = 40.3 lb./ac.

S.E. of body of table = 80.6 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 56(219).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'CV'.**

Object :—To study the effect of different dates of sowing on different varieties of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Moong*. (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) As per treatments. (iv) (a) N.A. (b) Behind the plough. (c) 80 lb./ac. (d) 9" between rows. (e) N.A. (v) N.A. (vi) As per treatments. (vii) Irrigated. (viii) 2 weedings with *khurpi* and 3 hoeings with *naini* hoe. (ix) N.A. (x) 12.4.1957.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 varieties : V<sub>1</sub>=C-13 (mid. early), V<sub>2</sub>=NP-710 (mid. early), V<sub>3</sub>=NP-125 (mid. early) and V<sub>4</sub>=Pb.-591 (medium).

(2) 4 dates of sowing : D<sub>1</sub>=1.11.1956, D<sub>2</sub>=10.11.1956, D<sub>3</sub>=20.11.1956 and D<sub>4</sub>=30.11.1956.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 16.5'×6'. (b) 14.5'×4.5'. (v) 1.00'×0.75'. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Yellow, Brown and black rust. No control measures adopted. (iii) Germination %, flowering dates, maturity dates, yield of grain, straw and dry grain (iv) (a) 1952—1956. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1175 lb./ac. (ii) 345.1 lb./ac. (iii) Main effect of D is highly significant and main effect of V is significant. (iv) Av. yield of grain in lb./ac.

	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	Mean
V <sub>1</sub>	1009	1760	1459	1180	1352
V <sub>2</sub>	923	1309	1287	880	1100
V <sub>3</sub>	751	1159	1352	622	971
V <sub>4</sub>	1502	1416	1202	987	1277
Mean	1046	1411	1325	917	1175

S.E. of any marginal mean = 86.3 lb./ac.

S.E. of body of table = 172.6 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 59(470).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'CV'.

Object :—To study the effect of different dates of sowing on different varieties of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai* for G.M. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) As per treatments. (iv) (a) N.A. (b) Line sowing. (c) 80 lb./ac. (d) 9" between rows. (e) N.A. (v) Green manured by *sanai*. (vi) As per treatments. (vii) N.A. (viii) 1 weeding. (ix) N.A. (x) 20, 25 and 26.4.1960.

## 2. TREATMENTS :

## Main-plot treatments :

3 dates of sowing : D<sub>1</sub>=30.10.1959, D<sub>2</sub>=14.11.1959, D<sub>3</sub>=1.12.1959, D<sub>4</sub>=15.12.1959 and D<sub>5</sub>=31.12.1959.

## Sub-plot treatments :

17 varieties of wheat : V<sub>1</sub>=C—13 (early), V<sub>2</sub>=Pb.—591 (early), V<sub>3</sub>=NP—710 (medium), V<sub>4</sub>=NP—720 (medium), V<sub>5</sub>=NP—775 (early), V<sub>6</sub>=M.P. Hy—65 (medium), V<sub>7</sub>=NP—718 (medium), V<sub>8</sub>=NP—792 (early), V<sub>9</sub>=NP—798 (early), V<sub>10</sub>=NP—824 (medium), V<sub>11</sub>=C—281 (medium), V<sub>12</sub>=K—65 (medium), V<sub>13</sub>=K—67 (medium), V<sub>14</sub>=K—68 (medium), V<sub>15</sub>=NP—830 (medium), V<sub>16</sub>=R.S. 31—1 (medium) and V<sub>17</sub>=Agra local (medium).

## 3. DESIGN :

(i) Split-plot. (ii) (a) 5 main-plots/replication ; 17 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) and (b) 14' × 1½'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Rust attack. (iii) Germination %, flowering dates, rust attack (yellow, brown and black), maturity dates, and yield of grain and straw. (iv) (a) N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1353 lb./ac. (ii) (a) 1024.5 lb./ac. (b) 425.8 lb./ac. (iii) Main effects of D and V are highly significant and interaction V × D is significant. (iv) Av. yield of grain in lb./ac.

	V <sub>1</sub>	V <sub>2</sub>	V <sub>3</sub>	V <sub>4</sub>	V <sub>5</sub>	V <sub>6</sub>	V <sub>7</sub>	V <sub>8</sub>	V <sub>9</sub>	V <sub>10</sub>	V <sub>11</sub>	V <sub>12</sub>	V <sub>13</sub>	V <sub>14</sub>	V <sub>15</sub>	V <sub>16</sub>	V <sub>17</sub>	Mean
D <sub>1</sub>	2610	3553	2673	2633	2382	3022	2782	1805	1830	2799	2730	3054	3319	3399	3296	3330	3797	2883
D <sub>2</sub>	1822	2317	1565	1940	1679	2062	1748	1714	1845	1976	2062	1842	1556	2053	2291	2382	2091	1933
D <sub>3</sub>	1088	1197	973	700	973	1387	669	667	853	886	958	1085	623	907	1533	1354	944	988
D <sub>4</sub>	597	664	576	804	600	1006	665	666	693	850	799	684	779	719	1378	783	835	770
D <sub>5</sub>	130	225	208	143	126	250	147	63	147	218	123	212	123	144	574	149	182	186
Mean	1249	1591	1199	1244	1152	1545	1202	983	1074	1346	1334	1375	1280	1444	1814	1600	1562	1353

S.E. of difference of two

1. D marginal means = 175.7 lb./ac.
2. V marginal means = 134.6 lb./ac.
3. V means at the same level of D = 301.1 lb./ac.
4. D means at the same level of V = 340.9 lb./ac.

Crop :- Wheat (*Rabi*).

Ref:-U.P. 58(131).

Site :- Reg. Res. Stn., Amrukh.

Type :- 'CM'.

Object :—To study the effect of manures, seed rates and dates of sowing on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) Nil. (b) and (c) N.A. (ii) (a) *Kabar*. (b) N.A. (iii) As per treatments. (iv) (a) 3 *bakherings*. (b) Line sowing. (c) As per treatments. (d) and (e) N.A. (v) N.A. (vi) Pb.—591. (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 8.4.1959.



## 2. TREATMENTS :

**Main-plot treatments :**

All combinations of (1) and (2)

(1) 2 levels of manure :  $M_1=25$  lb./ac. of N+20 lb /ac. of  $P_2O_5$  and  $M_2=2 M_1$ .(2) 3 dates of sowing :  $D_1=20.10.1958$ ,  $D_2=27.10.1958$ . and  $D_3=3.11.1958$ .**Sub-plot treatments :**3 seed rates :  $R_1=20$ ,  $R_2=30$  and  $R_3=40$  srs./ac.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 6 main-plots/replication and 3 sub-plots/main-plot. (t) N.A. (iii) 4. (iv) (a) and (b) 24' x 23'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) and (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 638 lb./ac. (ii) (a) 369.3 lb./ac. (b) 269.0 lb./ac. (iii) None of the effects is significant. (iv) Av yield of grain in lb./ac.

	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	Mean	R <sub>1</sub>	R <sub>2</sub>	R <sub>3</sub>
M <sub>1</sub>	570	611	583	588	573	581	611
M <sub>2</sub>	739	662	660	687	626	701	733
Mean	655	636	622	638	600	641	672
R <sub>1</sub>	632	569	598				
R <sub>2</sub>	635	656	633				
R <sub>3</sub>	697	684	635				

## S.E. of difference of two

- |                                   |                 |                                   |                 |
|-----------------------------------|-----------------|-----------------------------------|-----------------|
| 1. M marginal means               | = 87.0 lb./ac.  | 5. M means at the same level of R | = 125.0 lb./ac. |
| 2. D marginal means               | = 106.6 lb./ac. | 6. R means at the same level of D | = 134.5 lb /ac. |
| 3. R marginal means               | = 77.6 lb./ac.  | 7. D means at the same level of R | = 153.0 lb /ac. |
| 4. R means at the same level of M | = 109.8 lb./ac. | S.E. of body of M x D table       | = 87.0 lb /ac.  |

**Crop :- Wheat.****Ref :- U.P. 59(541).****Site :- Reg. Res. Stn., Varanasi.****Type :- 'CM'.**

Object :—To study the effect of manures, seed rates and different dates of sowing on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) *Kabar* and *parwa*. (b) N.A. (iii) As per treatments. (iv) (a) 6 *bakharingas*. (b) Line sowing east to west. (c) As per treatments. (d) 1' between rows. (e) N.A. (v) Nil. (vi) Pb.--591. (vii) Irrigated. (viii) 1 hoeing. (ix) N.A. (x) 23, 25 and 26.4.1960.

## 2. TREATMENTS

**Main-plot treatments :**2 levels of manure :  $M_1=25$  lb./ac. of N as A/S +20 lb./ac. of  $P_2O_5$  as super and  $M_2=50$  lb./ac. of N as A/S +40 lb./ac. of  $P_2O_5$  as super.**Sub-plot treatments :**

All combinations of (1) and (2)

(1) 3 dates of sowing :  $D_1=19.10.1959$ ,  $D_2=29.10.1959$  and  $D_3=8.11.1959$ .(2) 3 seed rates :  $R_1=30$ ,  $R_2=40$  and  $R_3=50$  srs./ac.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication and 9 sub-p'ots/main-plot. (b) N.A. (iii) 4. (iv) (a) and (b) 30' x 18'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Grain yield. (iv) to (vi) N.A. (vii) Crop sown on 19.10.1959 failed due to depterous fly.

## 5. RESULTS :

(i) 1461 lb./ac. (ii) (a) 373.6 lb./ac. (b) 370.6 lb./ac. (iii) Main effect of D is highly significant and main effect of R is significant. (iv) Av. yield of grain in lb./ac.

	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	Mean	R <sub>1</sub>	R <sub>2</sub>	R <sub>3</sub>
M <sub>1</sub>	777	1691	1807	1425	1232	1474	1570
M <sub>2</sub>	807	1713	1971	1497	1310	1576	1604
Mean	792	1702	1889	1461	1271	1525	1587
R <sub>1</sub>	485	1639	1689				
R <sub>2</sub>	973	1626	1976				
R <sub>3</sub>	918	1841	2002				

S.E. of difference of two

1. M marginal means	= 88.1 lb./ac.
2. D or R marginal means	= 107.0 lb./ac.
3. D or R means at the same level of M	= 151.3 lb./dc.
4. M means at the same level of D or R	= 151.7 lb./ac.
S.E. of body of R × D table	= 131.0 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 54(133).**

**Site :- Govt. Agri. Farm, Atarra.**

**Type :- 'CM'.**

Object :—To study the effect of manures and seed rates on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Moong*. (c) N.A. (ii) (a) *Parwa* and *kabar*. (b) N.A. (iii) 2.11.1954. (iv) (a) 5 ploughings. (b) Local seed drill. (c) As per treatments. (d) and (e) N.A. (v) *Moong* (G.M.). (vi) Pb.—591. (v.i) Irrigated. (viii) and (ix) N.A. (x) 17.4.1955

## 2. TREATMENTS :

**Main-plot treatments :**

4 seed rates : R<sub>1</sub>=10, R<sub>2</sub>=20, R<sub>3</sub>=30 and R<sub>4</sub>=40 srs./ac.

**Sub-plot treatments :-**

3 levels of manure : M<sub>1</sub>=3.25 C.L./ac of F.Y.M., M<sub>2</sub>=M<sub>1</sub>+30 lb./ac. of N as A/S+20 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super+15 lb./ac. of K<sub>2</sub>O as Pot. Sul.+15 lb./ac. of CaO as gypsum and M<sub>3</sub>=M<sub>1</sub>+60 lb./ac. of N as A/S+40 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super+30 lb./ac. of K<sub>2</sub>O as Pot. Sul.+30 lb./ac. of CaO as gypsum.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 4 (iv) (a) 28' × 29'. (b) 25' × 26' (v) 1½' × 1½' (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) No. (iii) Yield of grain and straw. §(iv) (a) and (b) No. (c) Nil. (v) (a) Kalianpur, Vararasi, Meerut and Dilkusha. (b) N.A. (vi) N.A. (vii) Nil.

## 5. RESULTS :

(i) 1901 lb./ac. (ii) (a) 60.6 lb./ac. (b) 111.2 lb./ac. (iii) All the effects are highly significant. (iv) Av. yield of grain in lb./ac.

	R <sub>1</sub>	R <sub>2</sub>	R <sub>3</sub>	R <sub>4</sub>	Mean
M <sub>1</sub>	1542	1676	1564	1835	1654
M <sub>2</sub>	1896	1887	2055	1913	1938
M <sub>3</sub>	2206	1990	2301	1947	2111
Mean	1881	1851	1973	1898	1901

S.E. of difference of two

1. R marginal means = 24.7 lb./ac.
2. M marginal means = 39.3 lb./ac.
3. M means at the same level of R = 78.5 lb./ac.
4. R means at the same level of M = 68.8 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 55(245).**

**Site :- Govt. Agri. Farm, Atarra.**

**Type :- 'CM'.**

Object :- To study the effect of different manures and seed rate on the yield of Wheat.

#### 1. BASAL CONDITIONS :

(i) (a) to (c) N. A. (ii) (a) *Parwa* soil. (b) N.A. (ii) 18.11.1955. (iv) (a) 6 ploughings by watt plough (b) Behind the plough. (c) As per treatments. (d) and (e) N.A. (v) 100 md./ac. of F.Y.M. (vi) Pb.—591. (vii) Irrigated. (viii) and (ix) N.A. (x) 11.4.1956

#### 2. TREATMENTS :

**Main plot treatments :-**

4 seed rates : R<sub>1</sub>=10, R<sub>2</sub>=20, R<sub>3</sub>=30 and R<sub>4</sub>=40 srs./ac.

**Sub-plot treatments :**

3 levels of manure : M<sub>0</sub>=No manure. M<sub>1</sub>=40 lb./ac. of N+20 lb./ac. of P<sub>2</sub>O<sub>5</sub>+15 lb./ac. of K<sub>2</sub>O+15 lb./ac. of CaO. and M<sub>2</sub>=80 lb./ac. of N+40 lb./ac. of P<sub>2</sub>O<sub>5</sub>+30 lb./ac. of K<sub>2</sub>O+30 lb./ac. of CaO.

N as A/S topdressed half at sowing and half at tillering. P<sub>2</sub>O<sub>5</sub> as Super to be placed 3" to 4" deep in soil behind the plough. Potash applied as surface dressing CaO as gypsum applied as surface dressing.

#### 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication. 3 sub-plots/main-plot. (b) N.A. (iii) 3 (iv) (a) 44'×23' (b) 41'×20' (v) 1½'×1½' (vi) Yes.

#### 4. GENERAL :

(i) and (ii) N.A. (iii) Grain yield. (iv) (a) 1955—1956 (b) N.A. (c) Nil. (v) (a) Meerut. (b) Nil (vi) and (vii) Nil.

#### 5. RESULTS :

(i) 941.2 lb./ac. (ii) 55.6 lb./ac. (b) 43.4 lb./ac. (iii) All the effects are highly significant. (iv) Av. yield of grain in lb./ac.

	R <sub>1</sub>	R <sub>2</sub>	R <sub>3</sub>	R <sub>4</sub>	Mean
M <sub>0</sub>	717	920	826	1029	873
M <sub>1</sub>	724	1090	888	1220	980
M <sub>2</sub>	833	1015	993	1038	970
Mean	758	1008	902	1096	941

S.E. of difference of two

1. R marginal means = 26.2 lb./ac.
2. M marginal means = 17.7 lb./ac.
3. M means at the same level of R = 35.4 lb./ac.
4. R means at the same level of M = 39.1 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 56(261).****Site :- Govt. Agri. Farm, Atarra.****Type :- 'CM'.**

Object :—To study the effect of seed rate and manures on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Moong*. (c) N.A. (ii) (a) *Parwa*. (b) N.A. (iii) 22.11.1956. (iv) (a) 4 ploughings by watt plough. (b) By *chonga*. (c) As per treatments. (d) and (e) N.A. (v) 100 md./ac. of F.Y.M. (vi) Pb.—591. (vii) Irrigated. (viii) and (ix) N.A. (x) 21.4.1957.

**2. TREATMENTS :****Main-plot treatments :**4 seed rates :  $R_1=10$ ,  $R_2=20$ ,  $R_3=30$  and  $R_4=40$  srs./ac.**Sub-plot treatments :**3 levels of manure :  $M_0$ =Control (no manure),  $M_1=40$  lb./ac. of N+20 lb./ac. of  $P_2O_5$ +15 lb./ac. of  $K_2O$ +15 lb./ac. of CaO. and  $M_2=2M_1$ .

N as A/S top dressed half at sowing and half at tillering :  $P_2O_5$  as Super to be placed 3" to 4" deep in the soil behind the plough 6 to 7 days before sowing.  $K_2O$  as Mur. Pot. and CaO as gypsum both to be applied as surface dressing.

**3. DESIGN :**

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 44'×23'. (b) 41'×20'. (v) 1½'×1½'. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Badly attacked by rust. (iii) Grain yield. (iv) (a) to (c) [N.A. (v) Etawah and Meerut. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 705 lb./ac. (ii) (a) 22.4 lb./ac. (b) 20.5 lb./ac. (iii) All effects are highly significant. (iv) Av. yield of grain in lb./ac.

	$R_1$	$R_2$	$R_3$	$R_4$	Mean
$M_0$	305	574	501	405	446
$M_1$	590	863	890	747	773
$M_2$	813	908	961	899	895
Mean	569	782	784	684	705

S.E. of difference of two

- |                                   |                |
|-----------------------------------|----------------|
| 1. R marginal means               | = 10.6 lb./ac. |
| 2. M marginal means               | = 8.4 lb./ac.  |
| 3. M means at the same level of R | = 16.7 lb./ac. |
| 4. R means at the same level of M | = 17.3 lb./ac. |

**Crop :- Wheat (Rabi).****Ref :- U.P. 56(260).****Site :- Govt. Agri. Farm, Atarra.****Type :- 'CM'.**

Object :—To study the effect of manures and seed rates on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) *Moong*—Wheat. (b) *Moong*. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 17.11.1956. (iv) (a) 4 ploughings by watt plough. (b) Behind the plough. (c) As per treatments. (d) and (e) N.A. (v) 100 md./ac. of F.Y.M. (vi) NP—710. (vii) Irrigated. (viii) and (ix) N.A. (x) 23.4.1957.

**2. TREATMENTS :**

Same as in expt. no. 56(261) above.

**3. DESIGN :**

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 3 sub-plots/main-plot. (iii) 3. (iv) (a) 37' × 28'. (b) 34' × 25'.  
(v) 1½' × 1½'. (vi) Yes.

**4. GENERAL :**

(i) Nil. (ii) N.A. (iii) Grain yield. (iv) (a) 1955—1956. (b) N.A. (c) Nil. (v) (a) Etawah and Meerut.  
(b) Nil. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1903 lb./ac. (ii) (a) 422.3 lb./ac. (b) 235.8 lb./ac. (iii) Main effect of M alone is highly significant. (iv) Av. yield of grain in lb./ac.

	R <sub>1</sub>	R <sub>2</sub>	R <sub>3</sub>	R <sub>4</sub>	Mean
M <sub>0</sub>	1239	1617	1590	1709	1539
M <sub>1</sub>	1836	1783	2122	1885	1906
M <sub>2</sub>	2029	2126	2284	2618	2264
Mean	1701	1842	1999	2071	1903

S.E. of difference of two

1. R marginal means = 199.1 lb./ac.
2. M marginal means = 96.3 lb./ac.
3. M means at the same level of R = 192.6 lb./ac.
4. R means at the same level of M = 253.7 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 54(136).**

**Site :- Instt. of Crop Physiology, Dilkusha.**

**Type :- 'CM'.**

**Object :-**To study the effect of manures and seed rates on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) N.A. (iv) (a) N.A. (b) Improved seed drill. (c) As per treatments. (d) and (e) N.A. (v) to (x) N.A.

**2. TREATMENTS :**

Same as in expt. no. 54(133) on page 513.

**3. DESIGN :**

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 25' × 18'.  
(b) 22' × 16'. (v) 1½' around. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) to (c) N.A. (v) Kalianpur, Varanasi, Atarra and Meerut  
(b) Nil (vi) and (vii) N.A.

**5. RESULTS :**

(i) 1280 lb./ac. (ii) (a) 313.1 lb./ac. (b) 327.6 lb./ac. (iii) R effect alone is highly significant. (iv) Av. yield of grain in lb./ac.

	R <sub>1</sub>	R <sub>2</sub>	R <sub>3</sub>	R <sub>4</sub>	Mean
M <sub>0</sub>	851	1130	1575	1551	1277
M <sub>1</sub>	955	1249	1663	1297	1291
M <sub>2</sub>	971	1328	1591	1201	1273
Mean	926	1236	1610	1350	1280

## S.E. of difference of two

1. R marginal means = 127.8 lb./ac.
2. M marginal means = 115.8 lb./ac.
3. M means at the same level of R = 231.6 lb./ac.
4. R means at the same level of M = 226.2 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 54(107).****Site :- Govt. Agri. Farm, Etawah.****Type :- 'CM'.**

Object :—To study the effect of seed rate and manures on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) and (iii) N.A. (iv) (a) 10 ploughings. (b) Behind the plough by seed drill. (c) As per treatments. (d) and (e) N.A. (v) 10 C.L./ac. of F.Y.M. (vi) Pb.—591 (medium). (vii) Irrigated. (viii) and (ix) N.A. (x) 14.4.1955.

**2. TREATMENTS :****Main-plot treatments :**4 seed rates :  $R_1=10$ ,  $R_2=20$ ,  $R_3=30$  and  $R_4=40$  srs./ac.**Sub-plot treatments :**

3 levels of manure :  $M_0$ =Control (no manure),  $M_1=30$  lb./ac. of N as A/S+20 lb./ac. of  $P_2O_5$  as Super+15 lb./ac. of  $K_2O$  as Pot. Sul.+15 lb./ac. of CaO as gypsum and  $M_2=2M_1$ .  
Manures applied on 2, 7, 8.11.1954 and 2.12.1954.

**3. DESIGN :**

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 27'×28', (b) 24'×25'. (v)  $1\frac{1}{2}' \times 1\frac{1}{2}'$ . (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Light attack of yellow rust. (iii) Grain yield. (iv) to (vii) N.A.

**5. RESULTS :**

(i) 2175 lb./ac. (ii) (a) 274.4 lb./ac. (b) 160.3 lb./ac. (iii) Main effect of M is highly significant. Main effect of R is significant. (iv) Av. yield of grain in lb./ac.

	$R_1$	$R_2$	$R_3$	$R_4$	Mean
$M_0$	1545	1666	1904	2026	1785
$M_1$	2044	2350	2511	2303	2302
$M_2$	2173	2520	2576	2483	2438
Mean	1921	2179	2330	2271	2175

## S.E. of difference of two

1. R marginal means = 112.0 lb./ac.
2. M marginal means = 56.7 lb./ac.
3. M means at the same level of R = 113.3 lb./ac.
4. R means at the same level of M = 145.3 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 55(194).****Site :- Govt. Agri. Farm, Etawah.****Type :- 'CM'.**

Object :—To study the effect of seed rate and manures on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Loam. (b) N.A.\* (iii) 3.11 1955. (iv) (a) 5 ploughings. (b) By *desi* seed drill behind the plough. (c) As per treatments. (d) and (e) N.A. (v) 100 mds./ac. of F.Y.M. (vi) Pb.—591. (vii) Irrigated. (viii) and (ix) N.A. (x) 21.4.1956.

## 2. TREATMENTS :

## Main-plot treatments :

4 seed rates :  $R_1=10$ ,  $R_2=20$ ,  $R_3=30$  and  $R_4=40$  srs./ac.

## Sub-plot treatments :

3 levels of manure :  $M_0$ =No manure,  $M_1=40$  lb./ac. of N—20 lb./ac. of  $P_2O_5+15$  lb./ac. of  $K_2O+15$  lb./ac. of CaO and  $M_2=2M_1$ .

N as A/S top dressed half at sowing and half at tillering.  $P_2O_5$  as Super to be placed 3" to 4" deep in the soil 6 to 7 days before sowing.  $K_2O$  as Pot. Sul. applied as surface dressing. CaO as gypsum as surface dressing.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a)  $37' \times 28'$ . (b)  $34' \times 25'$ . (v)  $1\frac{1}{2}' \times 1\frac{1}{2}'$ . (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Grain yield. (iv) to (vii) N.A.

## 5. RESULTS :

(i) 211 lb./ac. (ii) (a) 101.4 lb./ac. (b) 160.6 lb./ac. (iii) Main effects of M and R are highly significant. (iv) Av. yield of grain in lb /ac.

	$R_1$	$R_2$	$R_3$	$R_4$	Mean
$M_0$	1248	1388	1810	1933	1595
$M_1$	1845	1950	2355	2548	2174
$M_2$	2249	2390	2706	2917	2565
Mean	1781	1909	2290	2466	2111

## S.E. of difference of two

1. R marginal means = 47.8 lb./ac.
2. M marginal means = 65.6 lb./ac.
3. M means at the same level of R = 131.1 lb./ac.
4. R means at the same level of M = 117.3 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 56(259).**

**Site :- Govt. Agri. Farm, Etawah.**

**Type :- 'CM'.**

Object :—To study the effect of seed rate and manures on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) *Moong*—Wheat. (b) *Moong*. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 7.11.1956. (iv) (a) 6 ploughings. (b) Behind the plough. (c) As per treatments. (d) and (e) N.A. (v) 100 md./ac. of F.Y.M. (vi) NP—720. (vii) Irrigated. (viii) and (ix) N.A. (x) 9.4.1957.

## 2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 55(194) on page 517.

## 4. GENERAL :

(i) N.A. (ii) Heavy attack of orange rust. (iii) Grain yield. (iv) (a) to (c) N.A. (v) (a) Atarra and Meerut. (b) Nil. (vi) and (vii) N.A.

## 5. RESULTS :

(i) 1101 lb./ac. (ii) (a) 115.1 lb./ac. (b) 133.5 lb./ac. (iii) Main effects of R and M are highly significant. (iv) Av. yield of grain in lb./ac.

	R <sub>1</sub>	R <sub>2</sub>	R <sub>3</sub>	R <sub>4</sub>	Mean
M <sub>0</sub>	650	756	984	1125	879
M <sub>1</sub>	896	984	1283	1248	1103
M <sub>2</sub>	1089	1248	1494	1458	1322
Mean	878	996	1254	1277	1101

S.E. of difference of two

1. R marginal means = 54.3 lb./ac.
2. M marginal means = 54.5 lb./ac.
3. M means at the same level of R = 109.0 lb./ac.
4. R means at the same level of M = 104.2 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 58(7).**

**Site :- Reg. Res. Stn., Hardoi.**

**Type :- 'CM'.**

Object :—To study the effect of dates of sowing, different levels of fertilizers and seed rates on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Loam. (b) N.A. (iii) As per treatments. (iv) (a) and (b) N.A. (c) As per treatments. (d) and (e) N.A. (v) N.A. (vi) NP—710. (vii) Irrigated. (viii) 3 weedings by *khurpi*. (ix) and (x) N.A.

**2. TREATMENTS :**

**Main-plot treatments :**

All combinations of (1) and (2)

(1) 3 dates of sowing : D<sub>1</sub>=28.10.1958, D<sub>2</sub>=8.11.1958 and D<sub>3</sub>=19.11.1958.

(2) 2 levels of fertilizers : F<sub>1</sub>=25 lb./ac. of N as A/S+40 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super and F<sub>2</sub>=2½ lb./ac. of N as A/S+20 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.

**Sub-plot treatments :**

3 seed rates : R<sub>1</sub>=30, R<sub>2</sub>=40 and R<sub>3</sub>=50 srs./ac.

**3. DESIGN :**

(i) Split-plot. (ii) (a) 6 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) and (b) 36' × 18'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Severe to moderate attack of yellow rust. (iii) Grain yield. (iv) (a) No. (b) and (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1510 lb./ac. (ii) (a) 260.2 lb./ac. (b) 150.5 lb./ac. (iii) Interaction R × D alone is significant. (iv) Av. yield of grain in lb./ac.

	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	Mean	R <sub>1</sub>	R <sub>2</sub>	R <sub>3</sub>
F <sub>1</sub>	1566	1489	1446	1500	1558	1467	1476
F <sub>2</sub>	1589	1484	1487	1520	1472	1540	1547
Mean	1577	1486	1466	1510	1515	1503	1512
R <sub>1</sub>	1670	1402	1474				
R <sub>2</sub>	1541	1469	1499				
R <sub>3</sub>	1521	1588	1426				



## S.E. of difference of two

1. D marginal means	= 75.1 lb./ac.	5. D means at the same level of R	= 97.1 lb./ac.
2. F marginal means	= 61.3 lb./ac.	6. R means at the same level of F	= 61.4 lb./ac.
3. R marginal means	= 43.4 lb./ac.	7. F means at the same level of R	= 79.2 lb./ac.
4. R means at the same level of D	= 75.2 lb./ac.	S.E. of body of F × D table	= 75.1 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 59(460).**

**Site :- Reg. Res. Stn., Hardoi.**

**Type :- 'CM'.**

**Object :-** To study the effect of dates of sowing, seed rates and different levels of manures on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) As per treatments (iv) (a) and (b) N.A. (c) As per treatments. (d) and (e) N.A. (v) N.A. (vi) NP—710. (vii) Irrigated. (viii) Weeding by *khurpi*. (ix) 20.01". (x) 28, 29.3.1960.

## 2. TREATMENTS :

**Main-plot treatments :**

All combinations of (1) and (2)

(1) 2 levels of fertility :  $F_1=20$  lb./ac. of  $P_2O_5+25$  lb./ac. of N and  $F_2=2 F_1$ .

(2) 3 dates of sowing :  $D_1=21.10.1959$ ,  $D_2=31.10.1959$  and  $D_3=10.11.1959$ .

**Sub-plot treatments :**

3 seed rates :  $R_1=30$ ,  $R_2=40$  and  $R_3=50$  srs./ac.

## 3. DESIGN:

(i) Split-plot. (ii) (a) 6 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b)  $24' \times 20'$ . (v) N.A. (vi) Only sub-plot treatments have been randomised.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Grain yield. (iv) (a) 1959—contd. (b) and (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

Treatment	G.M. (lb./ac.)	S.E./plot (lb./ac.)	Significance	Av. yield of grain in lb./ac.			S.E./mean (lb./ac.)
				$R_1$	$R_2$	$R_3$	
$F_1D_1$	1702	418.9	N.S.	1546	1855	1706	209.5
$F_2D_1$	2386	294.4	N.S.	2254	2286	2619	147.2
$F_1D_2$	1672	494.9	N.S.	1528	1913	1575	247.4
$F_2D_2$	2309	1108.4	N.S.	2505	2304	2117	554.2
$F_1D_3$	1752	236.9	N.S.	1854	1744	1648	118.4
$F_2D_3$	2393	468.4	N.S.	2523	2415	2240	234.2

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 54(139).**

**Site :- Govt. Agri. Res. Farm, Kalianpur.**

**Type :- 'CM'.**

**Object :-** To study the effect of seed rates and manures on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loam soil. (b) Refer soil analysis, Kalianpur. (iii) 24.10.1954. (iv) (a) 7 ploughings by *desi* cultivator and planking. (b) Behind the plough. (c) As per treatments. (d) and (e) N.A. (v) G.M. with *moong*. (vi) NP—710. (vii) Irrigated. (viii) to (x) N.A.

## 2. TREATMENTS :

## Main-plot treatments :

4 seed rates :  $R_1=10$ ,  $R_2=20$ ,  $R_3=30$  and  $R_4=40$  srs./ac.

## Sub-plot treatments:

3 levels of manures :  $M_1=3\frac{1}{2}$  C.L./ac. of F.Y.M,  $M_2=M_1+30$  lb./ac. of N as A/S+20 lb./ac. of  $P_2O_5$  as Super+15 lb./ac. of  $K_2O$  as Pot. Sul.+15 lb./ac. of CaO as gypsum and  $M_3=M_2=M_1+60$  lb./ac. of N as A/S+40 lb./ac. of  $P_2O_5$  as Super+30 lb./ac. of  $K_2O$  as Pot. Sul. +30 lb./ac. of CaO as gypsum.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a)  $27' \times 28'$ . (b)  $24' \times 25'$ . (v)  $1\frac{1}{2}' \times 1\frac{1}{2}'$ . (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Grain yield. (iv) (a) 1954—N.A. (b) N.A. (c) Nil. (v) (a) Varanasi, Atarra, Meerut and Dilkusha. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 2300 lb./ac. (ii) (a) 484.8 lb./ac. (b) 384.1 lb./ac. (iii) Main effect of M alone is significant. (iv) Av. yield of grain in lb./ac.

	$R_1$	$R_2$	$R_3$	$R_4$	Mean
$M_1$	1825	2056	2217	2114	2053
$M_2$	2250	2429	2586	2352	2404
$M_3$	2278	2614	2432	2446	2442
Mean	2118	2366	2412	2304	2300

S.E. of difference of two

1. R marginal means = 197.9 lb./ac.
2. M marginal means = 135.8 lb./ac.
3. M means at the same level of R = 271.6 lb./ac.
4. R means at the same level of M = 297.2 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 55(193).**

**Site :- Govt. Agri. Res. Farm, Kalianpur.**

**Type :- 'CM'.**

Object :- To study the effect of seed rates and manures on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Moong—Wheat. (b) Moong. (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kalianpur. (iii) 12.11.1955. (iv) (a) 3 ploughings by *desi* plough and one by victory plough. (b) Improved seed drill. (c) As per treatments. (d) and (e) N.A. (v) 100 md./ac. of F.Y.M. (vi) NP—710. (vii) Irrigated. (viii) and (ix) N.A. (x) 12.4.1956.

## 2. TREATMENTS to 4. GENERAL :

Same as in expt no. 55(194) on page 517.

## 5. RESULTS :

(i) 1597 lb./ac. (ii) (a) 288.8 lb./ac. (b) 308.5 lb./ac. (iii) Main effect of M alone is significant. (iv) Av. yield of grain in lb./ac.

	$R_1$	$R_2$	$R_3$	$R_4$	Mean
$M_0$	1300	1617	1441	1335	1423
$M_1$	1599	1423	1423	1704	1537
$M_2$	1617	2003	1792	1915	1832
Mean	1505	1681	1552	1651	1597

S.E. of difference of two

- |                                   |   |               |
|-----------------------------------|---|---------------|
| 1. R marginal means               | = | 136.1 lb./ac. |
| 2. M marginal means               | = | 125.9 lb./ac. |
| 3. M means at the same level of R | = | 251.9 lb./ac. |
| 4. R means at the same level of M | = | 246.6 lb./ac. |

**Crop :- Wheat.****Ref :- U.P. 55(16).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'CM'.**

Object :- To study the effect of wood ash, lime and hoeings on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Sanai*. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 18.11.1955. (iv) (a) 2 victory plough, 1 planking, watts plough once and *desi* plough twice. (b) Sown behind the plough. (c) 80 lb./ac. (d) and (e) N.A. (v) Nil. (vi) C—13 (medium). (vii) Irrigated. (viii) As per treatments. (ix) N.A. (x) 21.4.1956.

**2. TREATMENTS :**

All combinations of (1) and (2)

- (1) 5 levels of manure :  $M_0$ =No manure,  $M_1$ =5 mds./ac. of wood ash,  $M_2$ =10 mds./ac. of wood ash,  $M_3$ =2 lb./ac. of lime and  $M_4$ =4 lb./ac. of lime.  
 (2) 2 cultural practices :  $C_0$ =No hoeing and  $C_1$ =Hoeing (details N.A.)

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) 25' × 12'. (b) 21' × 10' 6". (v) 24' × 9". (vi) Yes

**4. GENERAL :**

(i) Good. Lodging only in the plots in which irrigation water has entered from the adjoining fields. (ii) Slight attack of rust. (iii) Yield of grain. (iv) (a) 1954—N.A. (b) and (c) No. (v) (a) Shahjahanpur and Pura. (b) Nil. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 723 lb./ac. (ii) 103.0 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	$M_0$	$M_1$	$M_2$	$M_3$	$M_4$	Mean
$C_0$	730	787	661	704	775	731
$C_1$	787	704	742	666	673	714
Mean	758	745	701	685	724	723

- |                         |   |              |
|-------------------------|---|--------------|
| S.E. of C marginal mean | = | 36.4 lb./ac. |
| S.E. of M marginal mean | = | 23.0 lb./ac. |
| S.E. of body of table   | = | 51.5 lb./ac. |

**Crop :- Wheat (*Rabi*).****Ref :- U.P. 56(218).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'CM'.**

Object :- To study the effect of wood ash, lime and hoeings on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Sanai*. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 12.11.1956. (iv) (a) N.A. (b) Behind the plough. (c) 80 lb./ac. (d) 9" between rows. (e) N.A. (v) *Sanai* as G.M. (vi) C—13 (medium early). (vii) Irrigated. (viii) As per treatments. (ix) N.A. (x) 18.4.1957.

## 2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 55(16) on page 522.

## 4. GENERAL :

(i) Good. (ii) Brown, yellow and black rust. (iii) Germination %, flowering dates, stand, maturity dates, fresh yield of sheaf, grain, straw and dry grain yield. (iv) 1954—1956. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 2046 lb./ac. (ii) 293.3 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	M <sub>0</sub>	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	M <sub>4</sub>	Mean
C <sub>0</sub>	1943	1861	2197	2070	1962	2007
C <sub>1</sub>	2229	1981	2095	2076	2051	2086
Mean	2086	1921	2146	2073	2006	2046

S.E. of M marginal mean = 103.7 lb./ac.

S.E. of C marginal mean = 65.6 lb./ac.

S.E. of body of table = 146.6 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 58(264).**

**Site :- Student's Instl. Farm, Govt. Agri. College, Kanpur.**

**Type :- 'CM'.**

**Object :-** To study the effect of transplanting of Wheat in relation to dates of sowing.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Kanpur. (iii) As per treatments. (iv) (a) 1 ploughing and 1 cultivation. (b) Transplanting. (c) As per treatments. (d) 9" × 6". (e) As per treatments. (v) Nil. (vi) C—13. (vii) Irrigated. (viii) 1 weeding with *khurpi*. (ix) 2.08" (x) 20.3.1959.

## 2. TREATMENTS :

**Main-plot treatments :**

2 levels of fertilizers : F<sub>1</sub>=30 lb./ac. of N as A/S and F<sub>2</sub>=60 lb./ac. of N as A/S+40 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.

**Sub-plot treatments :**

9 cultural treatments : C<sub>1</sub>=Line sowing on 30th Oct., at 40 srs./ac., C<sub>2</sub>=Line sowing on 6th Nov., at 40 srs./ac., C<sub>3</sub>=Line sowing on 13th Nov., at 40 srs./ac., C<sub>4</sub>=10 days old seedlings planted on 30th Oct., C<sub>5</sub>=10 days old seedlings planted on 6th Nov., C<sub>6</sub>=10 days old seedlings planted on 13th Nov., C<sub>7</sub>=17 days old seedlings planted on 6th Nov., C<sub>8</sub>=17 days old seedlings planted on 13th Nov., and C<sub>9</sub>=24 days old seedlings planted on 13th Nov.

Fertilizers were applied 4" deep.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 9 sub-plots/main-plot. (b) 233' × 165'. (iii) 3. (iv) (a) N.A. (b) 24' × 16'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Shoot height, number of tillers and grain yield. (iv) (a) 1958—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 2023 lb./ac. (ii) (a) 531.6 lb./ac. (b) 260.0 lb./ac. (iii) Main effect of F alone is highly significant. (iv) Av. yield of grain in lb./ac.

	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	C <sub>4</sub>	C <sub>5</sub>	C <sub>6</sub>	C <sub>7</sub>	C <sub>8</sub>	C <sub>9</sub>	Mean
F <sub>1</sub>	1214	1005	994	1605	1172	1324	910	1225	1203	1184
F <sub>2</sub>	2724	2678	2724	2838	2970	2993	2921	3035	2872	2862
Mean	1969	1842	1859	2222	2071	2159	1916	2130	2038	2023

S.E. of difference of two

1. F marginal means = 144.7 lb./ac.
2. C marginal means = 150.1 lb./ac.
3. C means at the same level of F = 212.3 lb./ac.
4. F means at the same level of C = 247.0 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 58(363).**

**Site :- Reg. Res. Stn., Majhera.**

**Type :- 'CM'.**

Object:—To find out the optimum sowing date, seed rate and fertility level for Wheat crop.

#### 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Madiwa*. (c) Nil. (ii) (a) Heavy soil - sandy loam. (b) Refer soil analysis, Majhera. (iii) As per treatments. (iv) (a) 2 ploughings. (b) Line sowing. (c) As per treatments. (d) 9" between rows. (e) N.A. (v) Nil. (vi) NP—770 (medium). (vii) Unirrigated. (viii) 1 hoeing and 1 weeding. (ix) N.A. (x) 3.5.1959.

#### 2. TREATMENTS :

**Main-plot treatments :**

All combinations of (1) and (2)

- (1) 3 dates of sowing : D<sub>1</sub>=30.10.1958, D<sub>2</sub>=11.11.1958 and D<sub>3</sub>=19.11.1958.
- (2) 2 levels of fertility : L<sub>1</sub>=25 lb./ac. of N+ 20 lb./ac. of P<sub>2</sub>O<sub>5</sub> and L<sub>2</sub>=2 L<sub>1</sub>.

**Sub-plot treatments :**

3 seed rates : R<sub>1</sub>=25, R<sub>2</sub>=40 and R<sub>3</sub>=50 srs./ac.

#### 3. DESIGN :

(i) Split-plot. (ii) (a) 6 main-plots/replication : 3 sub-plots/main-plot. (b) 180'×73.5'. (iii) 4. (iv) (a) and (b) 12'×9'. (v) Nil. (vi) Yes.

#### 4. GENERAL :

(i) Good. (ii) Nil. (iii) Height of plants and grain yield. (iv) (a) 1958 - contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

#### 8. RESULTS :

(i) 1036 lb./ac. (ii) (a) 240.1 lb./ac. (b) 333.0 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	L <sub>1</sub>	L <sub>2</sub>	Mean	R <sub>1</sub>	R <sub>2</sub>	R <sub>3</sub>
D <sub>1</sub>	1024	1080	1052	1095	1050	1011
D <sub>2</sub>	972	1090	1031	1011	1063	1018
D <sub>3</sub>	1063	985	1024	1037	1011	1024
Mean	1020	1052	1036	1048	1041	1018
R <sub>1</sub>	938	1158				
R <sub>2</sub>	1037	1046				
R <sub>3</sub>	1085	951				

S.E. of difference of two

1. D marginal means	= 69.3 lb./ac.	5. D means at the same level of R	= 152.6 lb./ac.
2. L marginal means	= 56.6 lb./ac.	6. R means at the same level of L	= 135.9 lb./ac.
3. R marginal means	= 96.1 lb./ac.	7. L means at the same level of R	= 124.6 lb./ac.
4. R means at the same levels of D	= 166.5 lb./ac.	S.E. of body of D×L table	= 69.3 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 59(392).**

**Site :- Reg. Res. Stn., Majhera.**

**Type :- 'CM'**

Object :—To find out the optimum sowing date, seed rate and level of fertility for Wheat crop.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Urea. (c) Nil. (ii) (a) Hilly soil—sandy loam (b) Refer soil analysis, Majhera. (iii) As per treatments. (iv) (a) 2 ploughings. (b) Line sowing. (c) As per treatments. (d) 9" between rows. (e) N.A. (v) Nil. (vi) NP-770 (medium). (vii) Unirrigated. (viii) One weeding and 1 hoeing. (ix) N.A. (x) April 1960.

**2. TREATMENTS :**

**Main-plot treatments :**

All combinations of (1) and (2)

(1) 3 dates of sowing :  $D_1=20.10.1959$ ,  $D_2=30.10.1959$  and  $D_3=9.11.1959$

(2) 2 levels of N :  $N_1=25$  and  $N_2=50$  lb./ac.

**Sub-plot treatments :**

3 seed rates :  $R_1=30$ ,  $R_2=40$ , and  $R_3=50$  srs./ac.

**3. DESIGN :**

(i) Split-plot. (ii) (a) 6 main-plots/replication and 3 sub-plots/main-plot. (b) N.A. (iii) 4 (iv) (a) and (b) 12'×9'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Normal. (ii) Nil. (iii) Germination %, height of plant and grain yield. (iv) (a) 1958—contd. (b) No (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil

**5. RESULTS :**

(i) 482 lb./ac. (ii) (a) 203.0 lb./ac. (b) 202.3 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	$N_1$	$N_2$	Mean	$R_1$	$R_2$	$R_3$
$D_1$	463	579	521	564	447	552
$D_2$	437	475	456	408	480	480
$D_3$	411	527	469	402	480	525
Mean	437	527	482	458	469	519
$R_1$	428	488				
$R_2$	398	540				
$R_3$	485	553				

S.E. of difference of two

1. D marginal means	= 58.6 lb./ac.	5. D means at the same level of R	= 101.3 lb./ac.
2. N marginal means	= 47.8 lb./ac.	6. R means at the same level of N	= 82.6 lb./ac.
3. R marginal means	= 58.4 lb./ac.	7. N means at the same level of R	= 82.7 lb./ac.
4. R means at the same level of D	= 101.1 lb./ac.	S.E. of body of D×N table	= 58.6 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 54(137).****Site :- Reg. Res. Stn., Meerut.****Type :- 'CM'**

Object :—To study the effect of seed rates and different levels of manure on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) *Moong*—Wheat. (b) *Moong*. (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Meerut. (iii) N.A. (iv) (a) 2 ploughings by victory plough and 5 ploughings by *desi* plough. (b) Seed drill. (c) As per treatments. (d) and (e) N.A. (v) Nil. (vi) Pb.—591. (vii) Irrigated. (viii) and (ix) N.A. (x) 3.4.1955

**2. TREATMENTS :****Main-plot treatments :**4 seed rates :  $R_1=10$ ,  $R_2=20$ ,  $R_3=30$  and  $R_4=40$  srs./ac.**Sub-plot treatments :**

3 levels of manure :  $M_1=3\frac{1}{2}$  C.L./ac. of F.Y.M.,  $M_2=M_1+60$  lb./ac. of N as A/S+40 lb./ac. of  $P_2O_5$  as Super+30 lb./ac. of  $K_2O$  as Pot. Sul.+15 lb./ac. of CaO as gypsum and  $M_3=M_1+120$  lb./ac. of N as A/S+80 lb./ac. of  $P_2O_5$  as Super+60 lb./ac. of  $K_2O$  as Pot. Sul.+30 lb./ac. of CaO as gypsum.

**3. DESIGN :**

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 4 (iv) (a) 27'×28' (b) 24'×25' (v) 1½'×1½' (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Nil. (iii) Grain yield. (iv) (a) 1954—N.A. (b) N.A. (c) Nil. (v) (a) Dilkusha, Kalianpur, Varanasi and Atarra. (vi) N.A. (vii) Nil.

**5. RESULTS :**

(i) 1350 lb./ac. (ii) (a) 79.2 lb./ac. (b) 109.3 lb./ac. (iii) Main effects of M and R are highly significant. (iv) Av. yield of grain in lb./ac.

	$R_1$	$R_2$	$R_3$	$R_4$	Mean
$M_1$	884	1185	1218	1346	1158
$M_2$	1195	1311	1421	1610	1384
$M_3$	1265	1393	1561	1811	1508
Mean	1115	1296	1400	1589	1350

S.E. of difference of two

1. R marginal means = 32.3 lb./ac.
2. M marginal means = 38.6 lb./ac.
3. M means at the same level of R = 77.3 lb./ac.
4. R means at the same level of M = 70.9 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 55(246).****Site :- Reg. Res. Stn., Meerut.****Type :- 'CM'**

Object :—To study the effect of seed rates and manuring on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) *Moong*—Wheat. (b) *Moong*. (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Meerut. (iii) 20.11.1955. (iv) (a) 7 ploughings by victory plough. (b) *Desi* seed drill. (c) As per treatments. (d) and (e) N.A. (v) 100 mds./ac. of F.Y.M. (vi) Pb.—591. (vii) Irrigated. (viii) and (ix) N.A. (x) 19 and 20.4.1956.

**2. TREATMENTS :****Main-plot treatments :**4 seed rates :  $R_1=10$ ,  $R_2=20$ ,  $R_3=30$  and  $R_4=40$  srs./ac.

**Sub-plot treatments :**

3 levels of manure :  $M_0$ =No manure,  $M_1$ =40 lb./ac. of N+20 lb./ac. of  $P_2O_5$ +15 lb./ac. of  $K_2O$ +15 lb./ac. of CaO and  $M_2$ = $2M_1$ .

N as A/S applied as top dressing in split applications, half at sowing and half at tillering.  $P_2O_5$  as Super to be placed 3" to 4" deep in the soil behind the plough 6 to 7 days before sowing.  $K_2O$  as Pot. Sul. and CaO as gypsum both to be applied as surface dressing.

**3. DESIGN :**

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 3 sub-plots/main-plot. (t) N.A. (iii) 3. (iv) (a) 37'×28'. (b) 34'×25'. (v) 1.5'×1.5'. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Affected by yellow rust. (iii) Grain yield. (iv) (a) 1955—1956. (b) No. (c) Nil. (v) (a) Atarra. (b) Nil. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1203 lb./ac. (ii) (a) 82.7 lb./ac. (b) 35.6 lb./ac. (iii) Main effect of M alone is highly significant. (iv) Av. yield of grain in lb./ac.

	R <sub>1</sub>	R <sub>2</sub>	R <sub>3</sub>	R <sub>4</sub>	Mean
$M_0$	690	725	725	738	720
$M_1$	1252	1313	1335	1313	1303
$M_2$	1614	1570	1621	1544	1587
Mean	1185	1203	1227	1198	1203

**S.E. of difference of two**

1. R marginal means = 39.0 lb./ac.
2. M marginal means = 14.5 lb./ac.
3. M means at the same level of R = 29.1 lb./ac.
4. R means at the same level of M = 45.6 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 56(258).**

**Site :- Reg. Res. Stn., Meerut.**

**Type :- 'CM'.**

Object :-To study the effect of seed rates and manuring on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) and (ii) N.A. (iii) 16.11.1956. (iv) (a) 9 principal cultivations. (b) Through seed drill. (c) As per treatments. (d) and (e) N.A. (v) 100 mds./ac. of F.Y.M. (vi) Pb.—591. (vii) N.A. (viii) 1 weeding. (ix) N.A. (x) 29.4.1957.

**2. TREATMENTS and 3. DESIGN :**

Same as in expt. no. 55(194) on page 571.

**4. GENERAL :**

(i) N.A. (ii) Attack of rust. (iii) Grain yield. (iv) (a) 1956—1957. (b) and (c) N.A. (v) (a) Atarra and Etawah. (b) Nil. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1347 lb./ac. (ii) (a) 130.3 lb./ac. (b) 179.8 lb./ac. (iii) M effect is highly significant and R effect is significant (iv) Av. yield of grain in lb./ac.



	R <sub>1</sub>	R <sub>2</sub>	R <sub>3</sub>	R <sub>4</sub>	Mean
M <sub>0</sub>	879	1026	949	966	955
M <sub>1</sub>	1212	1397	1625	1423	1414
M <sub>2</sub>	1388	1713	1845	1740	1672
Mean	1160	1379	1473	1376	1347

S.E. of difference of two

1. R marginal means = 61.4 lb./ac.
2. M marginal means = 73.4 lb./ac.
3. M means at the same level of R = 146.8 lb./ac.
4. R means at the same level of M = 134.7 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 58(42).**

**Site :- Reg. Res. Stn., Meerut.**

**Type :- 'CM'.**

**Object :-** To study the effect of dates of sowing and fertilizers on the yield of Wheat.

#### 1. BASAL CONDITIONS ;

(i) (a) *Guar* fodder—Wheat. (b) *Guar* fodder. (c) Nil. (ii) (a) Silt loam. (b) Refer soil analysis, Meerut. (iii) As per treatments. (iv) (a) 1 ploughing by soil turning plough and 4 to 5 ploughing by *desi* plough and 1 cross ploughing at each sowing date. (b) Behind *desi* plough. (c) As per treatments. (d) 9" between rows. (e) N.A. (v) Nil. (vi) Pb.—591 (medium). (vii) Irrigated. (viii) 4 weedings by *khurpi*. (ix) 8.84". (x) 22.4 1959.

#### 2. TREATMENTS :

**Main-plot treatments :**

All combinations of (1) and (2)

(1) 3 dates of sowing : D<sub>1</sub>=1.11.1958, D<sub>2</sub>=13.11.1958 and D<sub>3</sub>=26.11.1958.

(2) 2 levels of fertilizers : F<sub>1</sub>=25 lb./ac. of N+20 lb./ac. of P<sub>2</sub>O<sub>5</sub> and F<sub>2</sub>=2F<sub>1</sub>.

**Sub-plot treatments :**

3 seed rates : R<sub>1</sub>=20, R<sub>2</sub>=30 and R<sub>3</sub>=40 srs./ac.

#### 3. DESIGN :

(i) Split-plot. (ii) (a) 6 main-plots/replication ; 3 sub-plots/main-plot. (b) 174'×57'. (iii) 4. (iv) (a) 27'×18'. (b) 24'×15'. (v) 1½'×1½'. (vi) Yes.

#### 4. GENERAL :

(i) Fair. Lodging in about 3% plots ranging from 10% to 85%. (ii) Nil. (iii) Grain and straw yield and other physiology characters. (iv) (a) 1958—contd. (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

#### 5. RESULTS :

(i) 1696 lb./ac. (ii) (a) 175.6 lb./ac. (b) 241.4 lb./ac. (iii) Only D and R effects are highly significant. (iv) Av. yield of grain in lb./ac.

	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	Mean	F <sub>1</sub>	F <sub>2</sub>
R <sub>1</sub>	1585	1657	1453	1565	1519	1611
R <sub>2</sub>	1938	1655	1544	1712	1667	1758
R <sub>3</sub>	1871	1925	1641	1812	1795	1830
Mean	1798	1746	1546	1696	1660	1733
F <sub>1</sub>	1735	1728	1517			
F <sub>2</sub>	1861	1763	1575			

S.E. of difference of two

1. D marginal means	= 50.7 lb./ac.	5. D means at the same level of R	= 110.8 lb./ac.
2. F marginal means	= 41.4 lb./ac.	6. R means at the same level of F	= 98.5 lb./ac.
3. R marginal means	= 69.7 lb./ac.	7. F means at the same level of R	= 90.5 lb./ac.
4. R means at the same level of D	= 120.7 lb./ac.	S.E. of body of D×F table	= 50.7 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 59(41).****Site :- Reg. Res. Stn., Meerut.****Type :- 'CM'.**

Object :—To study the effect of dates of sowing, fertilizers and seed rates on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) *Guar* for fodder—Wheat. (b) *Guar*. (c) Nil. (ii) (a) Silt loam. (b) Refer soil analysis, Meerut. (iii) As per treatments. (iv) (a) 1 ploughing by soil turning plough, 4 to 5 ploughings by *desi* plough. (b) Line sowing behind *desi* plough. (c) As per treatments. (d) 9" between rows. (e) N.A. (v) Nil. (vi) Pb.—591 (medium). (vii) Irrigated. (viii) 1 weeding. (ix) 1.01". (x) 24.4.1960.

**2. TREATMENTS :****Main-plot treatments :**

All combinations of (1) and (2)

(1) 3 dates of sowing :  $D_1=1.11.1959$ ,  $D_2=13.11.1959$  and  $D_3=26.11.1959$ .(2) 2 levels of fertilizers :  $F_1=25$  lb./ac. of N+20 lb./ac. of  $P_2O_5$  and  $F_2=2 F_1$ .**Sub-plot treatments :**3 seed rates :  $R_1=20$ ,  $R_2=30$  and  $R_3=40$  srs./ac.**3. DESIGN :**

(i) Split-plot. (ii) (a) 6 main-plots/replication and 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 24'3"×20'. (b) 21'3"×17'. (v) 1½'×1½'. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Nil. (iii) Germination, shoot length, number of green leaves, number of tillers per plant, fresh and dry weight of plant and yield of grain and straw. (iv) (a) 1958—contd. (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 2145 lb./ac. (ii) (a) 407.2 lb./ac. (b) 395.0 lb./ac. (iii) Only D effect is highly significant. (iv) Av. yield of grain in lb./ac.

	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	Mean	F <sub>1</sub>	F <sub>2</sub>
R <sub>1</sub>	2236	2182	1867	2095	2066	2124
R <sub>2</sub>	2108	2219	1848	2058	2006	2111
R <sub>3</sub>	2530	2297	2023	2283	2220	2346
Mean	2291	2233	1913	2145	2097	2193
F <sub>1</sub>	2323	2113	1856			
F <sub>2</sub>	2259	2352	1969			

S.E. of difference of two

1. D marginal means	= 117.5 lb./ac.	5. D means at the same level of R	= 199.5 lb./ac.
2. F marginal means	= 96.0 lb./ac.	6. R means at the same level of F	= 161.2 lb./ac.
3. R marginal means	= 114.0 lb./ac.	7. F means at the same level of R	= 162.9 lb./ac.
4. R means at the same level of D	= 197.5 lb./ac.	S.E. of body of D×F table	= 117.5 lb./ac.

**Crop : Wheat (Rabi).****Ref :- U.P. 58(122).****Site :- Reg. Res. Stn., Nawabganj.****Type :- 'CM'.**

Object :—To study the effect of dates of sowing, fertilizers and seed rates on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) *Moong*—Wheat. (b) *Moong*. (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Nawabganj. (iii) As per treatments. (iv) (a) N.A. (b) Behind the plough in rows. (c) As per treatments. (d) 9" between rows. (e) N.A. (v) *Moong* G.M. ploughed in. (vi) Pb.—591 (late). (vii) Irrigated. (viii) N.A. (ix) 2.93". (x) 15 and 16.4.1959.

**2. TREATMENTS :****Main-plot treatments :**

All combinations of (1) and (2)

(1) 3 dates of sowing :  $D_1=6.11.1958$ ,  $D_2=16.11.1958$  and  $D_3=26.11.1958$ .(2) 2 levels of fertilizers :  $F_1=25$  lb./ac. of N as A/S + 20 lb./ac. of  $P_2O_5$  as Super and  $F_2=2 F_1$ .**Sub-plot treatments :**3 seed rates :  $R_1=20$ ,  $R_2=35$  and  $R_3=50$  srs./ac.**3. DESIGN :**

(i) Split-plot. (ii) (a) 6 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 12' × 45'. (b) 1/101 ac. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Grain and straw yield. (iv) (a) 1958—contd. (b) N.A. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1095 lb./ac. (ii) (a) 197.8 lb./ac. (b) 139.6 lb./ac. (iii) Main effects of F and R are highly significant and main effect of D is significant. (iv) Av. yield of grain in lb./ac.

	$F_1$	$F_2$	Mean	$R_1$	$R_2$	$R_3$
$D_1$	1012	1318	1165	1102	1191	1201
$D_2$	1017	1255	1136	1061	1126	1221
$D_3$	879	1091	985	909	1000	1045
Mean	969	1221	1095	1024	1106	1156
$R_1$	856	1192				
$R_2$	1008	1203				
$R_3$	1043	1268				

**S.E. of difference of two**

- |                                   |                |                                   |                |
|-----------------------------------|----------------|-----------------------------------|----------------|
| 1. D marginal means               | = 57.1 lb./ac. | 5. D means at the same level of R | = 80.7 lb./ac. |
| 2. F marginal means               | = 46.6 lb./ac. | 6. R means at the same level of F | = 57.0 lb./ac. |
| 3. R marginal means               | = 40.3 lb./ac. | 7. F means at the same level of R | = 65.9 lb./ac. |
| 4. R means at the same level of D | = 69.8 lb./ac. | S.E. of body of D × F table       | = 57.1 lb./ac. |

**Crop :- Wheat (Rabi).****Ref :- U.P. 59(40).****Site :- Reg. Res. Stn., Nawabganj.****Type :- 'CM'.**

Object :— To study the effect of dates of sowing, fertilizers and seed rates on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Sugarcane. (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Nawabganj. (iii) As per treatments. (iv) (a) and (b) N.A. (c) As per treatments. (d) and (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) and (ix) N.A. (x) 15.4.1960.

## 2. TREATMENTS :

## Main-plot treatments :

All combinations of (1) and (2)

(1) 3 dates of sowing :  $D_1=20.11.1959$ ,  $D_2=30.11.1959$  and  $D_3=10.12.1959$ .

(2) 2 levels of fertilizers :  $F_1=25$  lb./ac. of N as A/S+20 lb./ac. of  $P_2O_5$  as Super and  $F_2=2 F_1$ .

## Sub-plot treatments :

3 seed rates :  $R_1=30$ ,  $R_2=35$  and  $R_3=50$  lb./ac.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 6 main-plots/replication and 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a)  $21' \times 25'6''$ . (b)  $19'6'' \times 21'6''$ . (v)  $9'' \times 24''$ . (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Grain yield. (iv) (a) 1958—contd. (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 957 lb./ac. (ii) (a) 269.0 lb./ac. (b) 148.5 lb./ac. (iii) Main effects of D, F and R are significant. (iv) Av. yield of grain in lb./ac.

	$F_1$	$F_2$	Mean	$R_1$	$R_2$	$R_3$
$D_1$	974	1134	1054	1011	1086	1065
$D_2$	836	1113	974	845	1068	1010
$D_3$	795	893	844	826	806	899
Mean	868	1047	957	894	987	991
$R_1$	784	1004				
$R_2$	940	1034				
$R_3$	881	1102				

## S.E. of difference of two

- |                                   |                |                                    |                |
|-----------------------------------|----------------|------------------------------------|----------------|
| 1. D marginal means               | = 77.6 lb./ac. | 5. D means at the same level of R  | = 98.5 lb./ac. |
| 2. F marginal means               | = 63.4 lb./ac. | 6. R means at the same level of F  | = 60.6 lb./ac. |
| 3. R marginal means               | = 42.9 lb./ac. | 7. F means at the same level of R  | = 80.6 lb./ac. |
| 4. R means at the same level of D | = 74.2 lb./ac. | S.E. of body of $D \times F$ table | = 77.6 lb./ac. |

Crop :- Wheat (*Rabi*).

Ref :- U.P. 54(135).

Site :- Reg. Res. Stn., Varanasi.

Type :- 'CM'.

Object :- To study the effect of seed rate and manure on the yield of Wheat.

## 1. BASAL CONDITIONS:

(i) (a) N.A. (b) *Sanai*. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, Varanasi. (iii) 1.11.1954. (iv) (a) 5 principle cultivations. (b) Seed drill. (c) As per treatments. (d) and (e) N.A. (v) *Sanai* (G.M.) (vi) NP-52. (vii) Irrigated. (viii) and (ix) N.A. (x) 3 and 4.5.1955.

## 2. TREATMENTS :

## Main-plot treatments :

4 seed rates :  $R_1=10$ ,  $R_2=20$ ,  $R_3=30$  and  $R_4=40$  lb./ac.

## Sub-plot treatments :

3 levels of manure :  $M_1=3\frac{1}{2}$  C.L./ac. of F.Y.M.,  $M_2=M_1+30$  lb./ac. of N as A/S+15 lb./ac. of  $P_2O_5$  as Super+15 lb./ac. of  $K_2O$  as Pot. Sul.+15 lb./ac. of CaO as gypsum and  $M_3=M_1+60$  lb./ac. of N as A/S+30 lb./ac. of  $P_2O_5$  as Super+30 lb./ac. of  $K_2O$  as Pot. Sul.+30 lb./ac. of CaO as gypsum.

**3. DESIGN :**

(i) Split-plot. (ii) (a) 4 main-plots/replication and 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 27' × 29'.  
(b) 24' × 25'. (v) 1½' × 2'. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Nil. (iii) Yield of grain. (iv) (a) 1954—1956. (b) N.A. (c) Nil. (v) (a) Kalianpur, Atarra, Meerut and Dilkusha. (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1778 lb./ac. (ii) (a) 294.2 lb./ac. (b) 193.1 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	R <sub>1</sub>	R <sub>2</sub>	R <sub>3</sub>	R <sub>4</sub>	Mean
M <sub>1</sub>	1430	1809	1774	1741	1688
M <sub>2</sub>	1535	1914	1881	1809	1785
M <sub>3</sub>	1694	1760	1984	2005	1861
Mean	1553	1828	1880	1832	1778

S.E. of difference of two

1. R marginal means = 120.1 lb./ac.
2. M marginal means = 68.3 lb./ac.
3. M means at the same level of R = 136.5 lb./ac.
4. R means at the same level of M = 163.9 lb./ac.

**Crop :-** Wheat (*Rabi*).

**Ref :-** U.P. 55(129).

**Site :-** Reg. Res. Stn., Varanasi.

**Type :-** 'CM'.

**Object :-** To study the effect of seed rate and manure on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Varanasi. (iii) 8.11.1955. (iv) (a) and (b) N.A. (c) As per treatments. (d) and (e) N.A. (v) 90 mds./ac. of F.Y.M. applied 2 weeks before sowing. (vi) to (x) N.A.

**2. TREATMENTS :**

**Main-plot treatments :**

4 seed rates : R<sub>1</sub>=10, R<sub>2</sub>=20, R<sub>3</sub>=30 and R<sub>4</sub>=40 srs./ac.

**Sub-plot treatments :**

3 levels of manure : M<sub>0</sub>=No manure, M<sub>1</sub>=30 lb./ac. of N+20 lb./ac. of P<sub>2</sub>O<sub>5</sub>+15 lb./ac. of K<sub>2</sub>O+15 lb./ac. of CaO and M<sub>2</sub>=2 M<sub>1</sub>.

N as A/S applied ½ at sowing and ½ at tillering. P<sub>2</sub>O<sub>5</sub> as Super applied 3" to 4" deep in soil 6 to 7 days before sowing. K<sub>2</sub>O as Pot. Sul. applied as surface dressing. CaO as gypsum applied as surface dressing.

**3. DESIGN :**

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 34' × 25'. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Grain yield. (iv) (a) 1954—1956. (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 2161 lb./ac. (ii) (a) 86.6 lb./ac. (b) 108.9 lb./ac. (iii) All the effects are highly significant. (iv) Av. yield of grain in lb./ac.

	R <sub>1</sub>	R <sub>2</sub>	R <sub>3</sub>	R <sub>4</sub>	Mean
M <sub>0</sub>	1353	2047	2055	1775	1808
M <sub>1</sub>	1740	2513	2565	2864	2420
M <sub>2</sub>	1863	1924	2460	2767	2254
Mean	1652	2161	2360	2469	2161

S.E. of difference of two

1. R marginal means = 40.8 lb./ac.
2. M marginal means = 44.5 lb./ac.
3. M means at the same level of R = 88.9 lb./ac.
4. R means at the same level of M = 83.3 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 56(66).**

**Site :- Reg. Res. Stn., Varanasi.**

**Type :- 'CM'.**

Object :—To study the effect of seed rate and manure on the yield of Wheat.

#### 1. BASAL CONDITIONS :

(i) (a) Suarcane—Sugarcane—Paddy—Gram—G.M—Wheat. (b) G.M. (c) N.A. (ii) (a) Light loam. (b) Refer soil analysis, Varanasi. (iii) 29.11.1956. (iv) (a) 3 ploughings. (b) Behind the plough through seed drill. (c) As per treatments. (d) and (e) N.A. (v) G.M. and F.Y.M. applied to the entire field 2 weeks before sowing. (vi) NP—760. (vii) Irrigated. (viii) and (ix) N.A. (x) 25.4.1957.

#### 2. TREATMENTS :

**Main-plot treatments :**

4 seed rates : R<sub>1</sub>=10, R<sub>2</sub>=20, R<sub>3</sub>=30 and R<sub>4</sub>=40 srs./ac.

**Sub-plot treatments :**

3 levels of manure : M<sub>0</sub>=No manure, M<sub>1</sub>=40 lb./ac. of N+20 lb./ac. of P<sub>2</sub>O<sub>5</sub>+15 lb./ac. of K<sub>2</sub>O as Pot. Sul.+15 lb./ac. of K<sub>2</sub>O as Mur. Pot.+15 lb./ac. of CaO and M<sub>2</sub>=80 lb./ac. of N+40 lb./ac. of P<sub>2</sub>O<sub>5</sub>+30 lb./ac. as Pot. sul.+30 lb./ac. of CaO.

N as A/S top dressed  $\frac{1}{2}$  at sowing and  $\frac{1}{2}$  at tillering. CaO as gypsum applied as surface dressing. Pot. Sul. as surface dressing. P<sub>2</sub>O<sub>5</sub> applied as Super placed 3" to 4" deep in soil behind the plough.

#### 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication and 3 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 37'×28'. (b) 34'×5', (v) 1 $\frac{1}{2}$ '×1 $\frac{1}{2}$ '. (vi) Yes.

#### 4. GENERAL :

(i) Crop lodged. (ii) Rat attack. (iii) Grain and straw yield. (iv) (a) 1954—1956. (b) and (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

#### 5. RESULTS :

(i) 1634 lb./ac. (ii) (a) 191.6 lb./ac. (b) 109.5 lb./ac. (iii) Only M effects is highly significant. (iv) Av. yield of grain in lb./ac.

	R <sub>1</sub>	R <sub>2</sub>	R <sub>3</sub>	R <sub>4</sub>	Mean
M <sub>0</sub>	1230	1182	1248	1204	1216
M <sub>1</sub>	1862	1898	1889	1898	1887
M <sub>2</sub>	1788	1660	1827	1915	1798
Mean	1627	1580	1655	1672	1634

## S.E. of difference of two

1. R marginal means	= 90.3 lb./ac.
2. M marginal means	= 44.7 lb./ac.
3. M means at the same level of R	= 89.4 lb./ac.
4. R means at the same level of M	= 116.1 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 56(MAE).****Site :- Govt. Res. Farm., Pura.****Type :- 'CM'.**

Object: —Type VIII—To study the effect of seed rate, date of sowing and manure on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Sanai*. (c) N.A. (ii) (a) Alluvial soil. (b) Refer soil analysis, Pura. (iii) As per treatments. (iv) (a) 7 ploughings with *desi* plough. (b) N.A. (c) As per treatments. (d) 9" between rows. (e) N.A. (v) *Sanai* as G.M+5000 lb./ac. of F.Y.M. (vi) N.A. (vii) Irrigated. (viii) and (ix) N.A. (x) 14 to 16.4.1957.

**2. TREATMENTS :****Main-plot treatments :**

All combinations of (1) and (2)

- (1) 3 seed rates :  $S_1=50$ ,  $S_2=70$  and  $S_3=90$  lb./ac.  
 (2) 3 dates of sowing :  $D_1=$ Early,  $D_2=$ Normal and  $D_3=$ Late.

**Sub-plot treatments :**

All combinations of (1) and (2)

- (1) 3 levels of N as A/S :  $N_0=0$ ,  $N_1=20$  and  $N_2=40$  lb./ac.  
 (2) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=20$  and  $P_2=40$  lb./ac.

Dates of sowing are :  $D_1=6.11.1956$ ,  $D_2=15.11.1956$  and  $D_3=25.11.1956$ .**3. DESIGN :**

(i) Split-plot. (ii) (a) 9 main-plots/block ; 9 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a) N.A. (b) 1/120 ac. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Mild attack of brown rust. (iii) Grain yield. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) Varanasi. (b) Nil. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1417 lb./ac. (ii) (a) 312.2 lb./ac. (b) 229.5 lb./ac. (iii) Main effects of D and P are highly significant. Main effect of N is significant. (iv) Av. yield of grain in lb./ac.

	$S_1$	$S_2$	$S_3$	$D_1$	$D_2$	$D_3$	$N_0$	$N_1$	$N_2$	Mean
$P_0$	977	971	1023	1182	1010	778	999	1013	959	990
$P_1$	1539	1636	1588	1890	1587	1286	1625	1588	1549	1588
$P_2$	1666	1728	1627	2029	1690	1302	1800	1646	1575	1674
Mean	1394	1445	1413	1700	1429	1122	1475	1416	1361	1417
$N_0$	1419	1523	1483	1752	1500	1174				
$N_1$	1442	1404	1401	1726	1447	1074				
$N_2$	1321	1407	1354	1623	1340	1119				
$D_1$	1731	1732	1638							
$D_2$	1444	1430	1412							
$D_3$	1006	1173	1188							

S.E. of difference of two

1. S or D marginal means	= 60.1 lb./ac.
2. N or P marginal means	= 44.2 lb./ac.
3. N or P means at the same level of S or D	= 76.5 lb./ac.
4. S or D means at the same level of N or P	= 86.7 lb./ac.
S.E. of body of S×D table	= 73.6 lb./ac.
S.E. of body of N×P table	= 54.1 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 57(MAE).**

**Site :- Govt. Res. Farm, Pura.**

**Type :- 'CM'.**

Object :—Type VIII—To study the effect of seed rate, date of sowing and manure on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) *Sanai*. (c) N.A. (ii) (a) Alluvial soil. (b) Refer soil analysis, Pura. (iii) As per treatments. (iv) (a) 2 to 3 ploughings. (b) N.A. (c) As per treatments. (d) 9" between rows. (e) N.A. (v) *Sanai* as G.M. (vi) N.A. (vii) Irrigated. (viii) and (ix) N.A. (x) Last week of March, 1958.

**2. TREATMENTS :**

Same as in expt. no. 56(MAE) type VIII on page 534.

Dates of sowing are ; D<sub>1</sub>=12.10.1957, D<sub>2</sub>=28.10.1957 and D<sub>3</sub>=13.11.1957.

**3. DESIGN :**

(i) Split-plot. (ii) (a) 9 main-plots/replication ; 9 sub-plots/main-plot. (b) N.A. (iii) 2 (iv) (a) N.A. (b) 1/100 ac. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) Varanasi. (b) Nil. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1321 lb./ac. (ii) (a) 440.6 lb./ac. (b) 197.1 lb./ac. (iii) Main effects of N and P and interaction D×N are highly significant. Main effect of D is significant. (iv) Av. yield of grain in lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean
P <sub>0</sub>	1015	995	1108	973	1212	932	912	1032	1173	1039
P <sub>1</sub>	1394	1329	1459	1302	1560	1319	1286	1368	1528	1394
P <sub>2</sub>	1519	1463	1610	1489	1709	1395	1404	1581	1607	1531
Mean	1309	1262	1392	1255	1494	1215	1201	1327	1436	1321
N <sub>0</sub>	1120	1136	1346	1095	1316	1191				
N <sub>1</sub>	1343	1259	1380	1204	1571	1206				
N <sub>2</sub>	1465	1392	1451	1465	1594	1249				
D <sub>1</sub>	1306	1091	1376							
D <sub>2</sub>	1544	1422	1515							
D <sub>3</sub>	1077	1273	1295							

S.E. of difference of two

1. S or D marginal means	= 84.8 lb./ac.
2. N or P marginal means	= 37.9 lb./ac.
3. N or P means at the same level of S or D	= 65.7 lb./ac.
4. S or D means at the same level of N or P	= 100.3 lb./ac.
S.E. of body of S×D table	= 103.8 lb./ac.
S.E. of body of N×P table	= 46.5 lb./ac.



**Crop :- Wheat (Rabi).****Ref :- U.P. 58(MAE).****Site :- Govt. Res. Farm, Pura.****Type :- 'CM'.**

Object :-Type VIII—To study the effect of seed rate, date of sowing and manure on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) *Sanai*. (c) Nil. (ii) (a) Alluvial soil. (b) Refer soil analysis, Pura. (iii) As per treatments. (iv) (a) and (b) N.A. (c) As per treatments. (d) 9" between rows. (e) N.A. (v) *Sanai* as G.M. (vi) Pb.—591 (160 days). (vii) Irrigated. (viii) to (x) N.A.

**2. TREATMENTS:**

Same as in expt. no. 56(MAE) type VIII on page 534.

Dates of sowing are :  $D_1=21.10.1958$ ,  $D_2=6.11.1958$  and  $D_3=22.11.1958$ .**3. DESIGN :**

(i) Split-plot. (ii) (a) 9 main-plots/replication ; 9 sub-plots/main-plot. (b) N.A. (iii) 2 (iv) (a) N.A. (b) 22'×15' (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1956—contd. (b) No. (c) N.A. (v) (a) Varanasi. (b) Nil. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1980 lb./ac. (ii) (a) 486.1 lb./ac. (b) 227.2 lb./ac. (iii) Main effect of P alone is highly significant. (iv) Av. yield of grain in lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean
P <sub>0</sub>	1794	1843	1629	1753	1884	1628	1679	1777	1809	1755
P <sub>1</sub>	2230	2008	2074	2016	2131	2165	2197	2090	2025	2104
P <sub>2</sub>	2148	2057	2041	2057	2123	2066	2041	2090	2115	2082
<b>Mean</b>	2057	1969	1915	1942	2046	1953	1972	1986	1983	1980
N <sub>0</sub>	2029	1983	1904	1909	2115	1892				
N <sub>1</sub>	2065	1983	1910	1975	1991	1992				
N <sub>2</sub>	2077	1941	1931	1942	2032	1975				
D <sub>1</sub>	2098	1917	1811							
D <sub>2</sub>	2189	1991	1958							
D <sub>3</sub>	1884	1999	1976							

S.E. of difference of two

1. S or D marginal means	= 93.5 lb./ac.
2. N or P marginal means	= 43.7 lb./ac.
3. N or P means at the same level of S or D	= 75.7 lb./ac.
4. S or D means at the same level of N or P	= 112.1 lb./ac.
S.E. of body of S×D table	= 114.6 lb./ac.
S.E. of body of N×P table	= 53.6 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 59(MAE).****Site :- Govt. Res. Farm, Pura.****Type :- 'CM'.**

Object :-Type VIII—To study the effect of seed rate, date of sowing and manure on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) *Sanai*—Wheat—Paddy—Gram. (b) *Sanai*. (c) Nil. (ii) (a) Loam in texture. (b) Refer soil analysis, Pura. (iii) As per treatments. (iv) (a) 5 ploughings by *desi* plough. (b) Sown in lines behind *desi* plough. (c) As per treatments. (d) 9" between rows. (e) N.A. (v) *Sanai* as G.M. (vi) Pb.—591 (medium). (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) D<sub>1</sub> on 4.4.1960, D<sub>2</sub> on 12.4.1960 and D<sub>3</sub> on 15.4.1960.

## 2. TREATMENTS :

Same as in expt. no. 56(MAE) type VIII conducted at Pura on page 534.

Dates of sowing are : D<sub>1</sub>=21.10.1959, D<sub>2</sub>=8.11.1959 and D<sub>3</sub>=25.11.1959.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 9 main-plots/replication ; 9 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a) 28'×17'3". (b) 27'×16'2". (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Mild attack of rats. (iii) Yield of grain and straw. (iv) (a) and (b) No. (c) Nil. (v) (a) Varanasi. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1651 lb./ac. (ii) (a) 471.2 lb./ac. (b) 209.1 lb./ac. (iii) Main effects of D, P and interaction D×N are highly significant. Main effect of N and interaction S×D×P are significant. (iv) Av. yield of grain in lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean
P <sub>0</sub>	1275	1375	1427	1536	1600	941	1340	1295	1441	1359
P <sub>1</sub>	1698	1772	1789	1851	1981	1426	1712	1786	1759	1753
P <sub>2</sub>	1799	1893	1832	1949	2071	1503	1816	1779	1929	1841
Mean	1590	1680	1683	1779	1884	1290	1623	1620	1710	1651
N <sub>0</sub>	1500	1678	1692	1637	1893	1339				
N <sub>1</sub>	1568	1623	1671	1745	1862	1254				
N <sub>2</sub>	1703	1741	1685	1955	1897	1277				
D <sub>1</sub>	1664	1932	1741							
D <sub>2</sub>	1824	1887	1941							
D <sub>3</sub>	1282	1222	1366							

## S.E. of difference of two

1. S or D marginal means	= 90.7 lb./ac.
2. N or P marginal means	= 40.2 lb./ac.
3. N or P means at the same level of S or D	= 69.7 lb./ac.
4. S or D means at the same level of N or P	= 107.1 lb./ac.
S.E. of body of S×D table	= 111.1 lb./ac.
S.E. of body of N×P table	= 49.3 lb./ac.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 56(MAE).**

**Site :- Reg. Res. Stn., Varanasi.**

**Type :- 'CM'.**

**Object :-** Type VIII—To study the effect of seed rate, date of sowing and manure on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loam soil. (b) Refer soil analysis, Varanasi. (iii) As per treatments. (iv) (a) 5 to 7 ploughings. (b) N.A. (c) As per treatments. (d) 9" between rows. (e) N.A. (v) 5000 lb./ac. of F.Y.M. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) 198" (x) 29.3.1957 to 23.4.1957.

## 2. TREATMENTS :

Same as in expt. no. 56(MAE) type VIII conducted at Pura on page 534.

Dates of sowing are :  $D_1=14.11.1956$ ,  $D_2=25.11.1956$  and  $D_3=6.12.1956$ .

## 3. DESIGN :

(i) Split-plot. (ii) (a) 9 main-plots/block ; 9 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a) N.A. (b) 1,100 ac. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Poor. (ii) Mild attack of brown rust. No control measures taken. (iii) Grain yield. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) Pura. (b) Nil. (vi) Growth and grain formation were affected due to bad weather. (vii) Nil.

## 5. RESULTS :

(i) 813 lb./ac. (ii) (a) 219.0 lb./ac. (b) 123.7 lb./ac. (iii) Main effects of D and N and interaction  $D \times N$  are highly significant. (iv) Av. yield of grain in lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean
P <sub>0</sub>	764	769	862	828	915	651	425	875	1094	798
P <sub>1</sub>	738	829	897	876	885	702	467	906	1090	821
P <sub>2</sub>	770	818	868	866	882	709	507	814	1136	819
Mean	757	805	876	857	894	687	466	865	1107	813
N <sub>0</sub>	429	453	516	521	474	403				
N <sub>1</sub>	792	871	932	865	992	738				
N <sub>2</sub>	1050	1091	1180	1185	1216	920				
D <sub>1</sub>	804	872	895							
D <sub>2</sub>	736	935	1011							
D <sub>3</sub>	731	608	722							

## S.E. of difference of two

1. S or D marginal means	= 42.1 lb./ac.
2. N or P marginal means	= 23.8 lb./ac.
3. N or P means at the same level of S or D	= 41.2 lb./ac.
4. S or D means at the same level of N or P	= 53.9 lb./ac.
S.E. of body of $S \times D$ table	= 51.6 lb./ac.
S.E. of body of $N \times P$ table	= 29.2 lb./ac.

**Crop :- Wheat (Rabi).**

**Site :- Reg. Res. Stn., Varanasi.**

**Ref :- U.P. 57(MAE).**

**Type :- 'CM'.**

Object :- Type VIII—To study the effect of seed rate, date of sowing and manure on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loam soil. (b) Refer soil analysis, Varanasi. (iii) As per treatments. (iv) (a) 4 ploughings. (b) N.A. (c) As per treatments. (d) 9" between rows. (e) N.A. (v) 5000 lb./ac. of F.Y.M. (vi) N.A. (vii) Irrigated. (viii) 1 weeding. (ix) 1.11". (x) 2nd week of April, 1958.

## 2. TREATMENTS :

Same as in expt. no. 56(MAE) type VIII conducted at Pura on page 534.

Dates of sowing are :  $D_1=12.10.1957$ ,  $D_2=31.10.1957$  and  $D_3=23.11.1957$ .

## 3. DESIGN :

(i) Split-plot. (ii) (a) 9 main-plots/block ; 9 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a) N.A. (b) 1/100 ac. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1956—contd. (b) No. (c) N.A. (v) (a) Pura. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1096 lb./ac. (ii) (a) 240.7 lb./ac. (b) 167.9 lb./ac. (iii) Main effects of D and N and interaction D×N are highly significant. Main effect of S is significant. (iv) Av. yield of grain in lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean
P <sub>0</sub>	976	1095	1183	519	1431	1304	903	1116	1236	1085
P <sub>1</sub>	1062	1200	1135	533	1459	1404	991	1144	1262	1132
P <sub>2</sub>	989	1097	1130	520	1369	1327	938	1064	1214	1072
Mean	1009	1131	1149	524	1420	1345	944	1108	1237	1096
N <sub>0</sub>	868	964	1000	411	1143	1278				
N <sub>1</sub>	1009	1134	1181	541	1449	1334				
N <sub>2</sub>	1150	1294	1267	620	1667	1424				
D <sub>1</sub>	352	670	549							
D <sub>2</sub>	1390	1429	1440							
D <sub>3</sub>	1285	1293	1458							

## S.E. of difference of two

1. S or D marginal means	= 46.3 lb./ac.
2. N or P marginal means	= 32.3 lb./ac.
3. N or P means at the same level of S or D	= 56.0 lb./ac.
4. S or D means at the same level of N or P	= 65.1 lb./ac.
S.E. of body of S×D table	= 56.7 lb./ac.
S.E. of body of N×P table	= 39.6 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 58(MAE).**

**Site :- Reg. Res. Stn., Varanasi.**

**Type :- 'CM'.**

**Object :-**Type VIII—To study the effect of seed rate, date of sowing and manure on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loam soil. (b) Refer soil analysis, Varanasi. (iii) 4th week of Oct. to 1st week of Nov., 1958. (iv) (a) 2 ploughings. (b) N.A. (c) 82 lb./ac. (d) 9" between rows. (e) N.A. (v) 50 lb./ac. of F.Y.M. (vi) NP—52 (150 days). (vii) Irrigated. (viii) 2 weedings. (ix) 8". (x) 1st and 2nd week of April, 1959.

## 2. TREATMENTS :

Same as in expt. 56(MAE) type VIII conducted at Pura on page 534.

Dates of sowing are : D<sub>1</sub>=30.10.1958, D<sub>2</sub>=11.11.1958 and D<sub>3</sub>=21.11.1958.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 9 main-plots/block ; 9 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a) 16'×32'. (b) 14'×31'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Attack of white ants was controlled. Slight damage due to rats. (iii) Grain yield. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) Pura. (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1104 lb./ac. (ii) (a) 261.8 lb./ac. (b) 211.3 lb./ac. (iii) Main effects of S, D and N are highly significant. Interaction S×N is significant. (iv) Av. yield of grain in lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean
P <sub>0</sub>	880	1168	1136	971	1210	1002	691	1078	1414	1061
P <sub>1</sub>	972	1167	1218	963	1259	1135	741	1177	1439	1119
P <sub>2</sub>	1037	1152	1210	1012	1308	1079	716	1201	1482	1133
Mean	963	1162	1188	982	1259	1072	716	1152	1445	1104
N <sub>0</sub>	650	757	741	592	823	733				
N <sub>1</sub>	1020	1160	1276	1070	1317	1069				
N <sub>2</sub>	1219	1569	1547	1284	1637	1414				
D <sub>1</sub>	790	1086	1070							
D <sub>2</sub>	1193	1349	1235							
D <sub>3</sub>	906	1051	1259							

## S.E. of difference of two

1. S or D marginal means = 50.4 lb./ac.
2. N or P marginal means = 40.7 lb./ac.
3. N or P means at the same level of S or D = 70.4 lb./ac.
4. S or D means at the same level of N or P = 76.4 lb./ac.
- S.E. of body of S×D table = 61.7 lb./ac.
- S.E. of body of N×P table = 49.8 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 56(MAE).**

**Site :- Reg. Res. Stn., Varanasi.**

**Type :- 'CM'.**

Object :—Type VIII—To study the effect of seed rate, date of sowing and manure on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loam soil. (b) Refer soil analysis, Varanasi. (iii) As per treatments. (iv) (a) 3 ploughings and 1 harrowing. (b) N.A. (c) As per treatments. (d) 9" between rows. (e) N.A. (v) 5000 lb./ac. of F.Y.M. (vi) NP—52 (160 days). (vii) Irrigated. (viii) 1 weeding. (ix) 6". (x) 1st week of April, 1960.

## 2. TREATMENTS :

Same as in expt. no. 56(MAE) type VIII conducted at Pura on page 534.  
Dates of sowing are : D<sub>1</sub>=23.10.1959, D<sub>2</sub>=6.11.1959 and D<sub>3</sub>=22.11.1959.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 9 main-plots/block ; 9 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a) N.A. (b) 1/100 ac. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) (a) Pura. (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1160 lb./ac. (ii) (a) 191.3 lb./ac. (b) 198.9 lb./ac. (iii) Main effects of D and N are highly significant. Interactions S×D and D×N are significant. (iv) Av. yield of grain in lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean
P <sub>0</sub>	1103	1218	1160	1119	1267	1094	806	1185	1489	1160
P <sub>1</sub>	1070	1127	1201	1053	1193	1153	757	1210	1432	1133
P <sub>2</sub>	1193	1193	1177	1078	1325	1161	864	1308	1392	1188
Mean	1122	1179	1179	1083	1262	1136	809	1234	1438	1160
N <sub>0</sub>	765	823	838	674	872	881				
N <sub>1</sub>	1152	1258	1292	1201	1300	1201				
N <sub>2</sub>	1449	1457	1407	1374	1614	1326				
D <sub>1</sub>	1144	1191	914							
D <sub>2</sub>	1136	1251	1398							
D <sub>3</sub>	1086	1095	1226							

## S.E. of difference of two

1. S or D marginal means = 36.8 lb./ac.
2. N or P marginal means = 38.3 lb./ac.
3. N or P means at the same level of S or D = 66.3 lb./ac.
4. S or D means at the same level of N or P = 65.5 lb./ac.
- S.E. of body of S×D table = 45.1 lb./ac.
- S.E. of body of N×P table = 46.9 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 54(16).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'CMV'.**

Object :—To study the effect of wood ash, and hoeings on different varieties of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Sanai* for G.M. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 3.11.1954. (iv) (a) 6 plankings and 6 ploughings. (b) Sown behind the plough. (c) 80 lb./ac. (d) 9" between rows. (e) N.A. (v) *Sanai* as G.M. burried. (vi) As per treatments. (vii) Irrigated. (viii) 2 weedings. (ix) N.A. (x) 7.4.1955.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 2 varieties : V<sub>1</sub>=C—13 and V<sub>2</sub>=Pb—591.(2) 2 levels of wood ash. : L<sub>0</sub>=0 and L<sub>1</sub>=5 mds./ac.(3) 2 cultural practices : C<sub>0</sub>=No hoeing and C<sub>1</sub>=Hand hoeings.

Wood ash applied and mixed by hand hoe.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 18'×13.5'. (b) 14'×12'. (v) 2'×.75'. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Slight attack of brown or orange, yellow and stripe rust. (iii) Grain yield. (iv) (a) 1954—N.A. (b) No. (c) Nil. (v) (a) Shahjahanpur and Pura. (b) N.A. (vi) and (vii) Nil.

**5. RESULTS:**

(i) 1599 lb./ac. (ii) 184.1 lb./ac. (iii) Only V effect is significant. (iv) Av. yield of grain in lb./ac.

	L <sub>0</sub>	L <sub>1</sub>	Mean	C <sub>0</sub>	C <sub>1</sub>
V <sub>1</sub>	1574	1475	1524	1608	1441
V <sub>2</sub>	1721	1629	1675	1679	1670
Mean	1647	1552	1599	1643	1555
C <sub>0</sub>	1683	1604			
C <sub>1</sub>	1612	1499			

S.E. of any marginal mean  
S.E. of body of any table

= 45.9 lb./ac.  
= 64.9 lb./ac.

**Crop :-** Wheat (*Rabi*).

**Ref :-** U.P. 55(286).

**Site :-** Student's Instrl. Farm, Govt. Agri. College, Kanpur. **Type :-** 'CMV'.

**Object :-** To study the effect of different seed rates and manuring on different varieties of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Sanai*. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Kanpur. (iii) 9 and 10.11.1955. (iv) (a) 3 ploughings and 1 planking. (b) and (c) As per treatments. (d) 9" between rows. (e) N.A. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) 1 weeding. (ix) 2.19". (x) N.A.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 3 seed rates : R<sub>1</sub>=14.5, R<sub>2</sub>=20.5 and R<sub>3</sub>=41 srs./ac.

(2) 2 levels of manure : M<sub>1</sub>=*Sanai* as G.M. and M<sub>2</sub>=M<sub>1</sub>+20 lb./ac. of N as A/S.

(3) 2 varieties : V<sub>1</sub>=C-13 and V<sub>2</sub>=NP-710

A/S broadcast just before first irrigation. For treatment R<sub>1</sub> seeds were dibbled and for others sown behind the plough.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 5. (iv) (a) 35.5' × 18.75'. (b) 32.5' × 15.75'. (v) 1.5' × 1.5'. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) N.A. (iii) Germination, number of tillers, shoot height, ear length and yield of grain. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1380 lb./ac. (ii) 286.3 lb./ac. (iii) Only M effect is highly significant. (iv) Av. yield of grain in lb./ac.

	M <sub>1</sub>	M <sub>2</sub>	Mean	V <sub>1</sub>	V <sub>2</sub>
R <sub>1</sub>	1209	1573	1391	1382	1399
R <sub>2</sub>	1276	1513	1394	1378	1410
R <sub>3</sub>	1239	1469	1354	1344	1363
Mean	1241	1518	1380	1368	1391
V <sub>1</sub>	1220	1516			
V <sub>2</sub>	1262	1520			

S.E. of R marginal mean	= 64.0 lb./ac.
S.E. of M or V marginal mean	= 52.2 lb./ac.
S.E. of body of R×M or R×V table	= 90.5 lb./ac.
S.E. of body of M×V table	= 73.9 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 57 (316).**

**Site :- Student's Instrl. Farm, Govt. Agri. College, Kanpur.**

**Type :- 'CMV'.**

Object :—To study the effect of different seedrates and manures on different varieties of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Maize. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Kanpur. (iii) 5.11.1959. (iv) (a) 1 ploughing by victory plough, cultivating and planking, 2 ploughings by *desi* plough followed by planking. (b) Behind the plough in furrows. (c) As per treatments. (d) 9" to 10" between rows. (e) N.A. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) 1 weeding and 1 hoeing. (ix) N.A. (x) 25.3.1958.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

- (1) 2 varieties :  $V_1=NP-710$  and  $V_2=C-13$ .  
 (2) 2 levels of N :  $N_0=0$  and  $N_1=15$  lb./ac.  
 (3) 3 seed rate :  $R_1=10$ ,  $R_2=20$  and  $R_3=40$  srs./ac.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 27'×13.5'. (b) 24'×10.5'. (v) 1.5'×1.5'. (vi) Yes.

**4. GENERAL :**

(i) Normal. (ii) Termite and rust attack. (iii) Germination, and yield of grain. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) Two-way tables are not available.

**5. RESULTS :**

(i) 2207 lb./ac. (ii) 493.5 lb./ac. (iii) Only N effect is highly significant. (iv) Av. yield of grain in lb./a.c

Treatment	$V_1$	$V_2$	$N_0$	$N_1$	$R_1$	$R_2$	$R_3$
Av. yield	2243	2172	1688	2727	2087	2259	2276

S.E. of V or N marginal mean = 100.8 lb./ac.  
 S.E. of R marginal mean = 123.4 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 56(323).**

**Site :- Student's Instrl. Farm, Govt. Agri. College, Kanpur.**

**Type :- 'CMV'.**

Object :—To study the response of two varieties of Wheat to different seed rates and levels of soil fertility.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Chari*. (c) Heavy doses of F.Y.M. (ii) (a) Sandy loam. (b) Refer soil analysis, Kanpur. (i-i) 9, 10.11.1956. (iv) (a) 2 victory ploughings, 2 harrowings 3 ; ploughings and plankings. (b) and (c) As per treatments. (d) and (e) N.A. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) 1 hoeing and 1 weedings. (ix) 2.19". (x) N.A.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

- (1) 3 seed rates :  $R_1=9$   $R_2=20$  and  $R_3=40$  srs./ac. sown behind the plough.  
 (2) 2 levels of N as A/S :  $N_0=0$  and  $N_1=50$  lb./ac.  
 (3) 2 varieties :  $V_1=NP-710$  and  $V_2=C-13$ .

The fertilizer was mixed with the earth and broadcast in the respective plots and mixed with  $\frac{1}{2}$  harma hoe. For treatment  $R_1$  seeds were dibbled and for others seeds were sown behind the plough.



## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 49.3' × 18'. (b) 37.3' × 15. (v) 1.5' × 1.5'.  
(vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination, number of tillers, shoot height and grain yield. (iv) (a) and (b) No.  
(c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 2333 lb./ac. (ii) 332.5 lb./ac. (iii) R effect is significant and V effect is highly significant. (iv) Av. yield of grain in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	Mean	V <sub>1</sub>	V <sub>2</sub>
R <sub>1</sub>	2137	2163	2150	2218	2082
R <sub>2</sub>	2262	2427	2345	2584	2106
R <sub>3</sub>	2445	2561	2503	2643	2364
Mean	2281	2384	2333	2482	2184
V <sub>1</sub>	2442	2521			
V <sub>2</sub>	2120	2247			

S.E. of R marginal mean	= 83.1 lb./ac.
S.E. of V or N marginal mean	= 67.9 lb./ac.
S.E. the body of R × N or R × V table	= 117.5 lb./ac.
S.E. of body of V × N table	= 96.0 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 59(298).**

**Site :- Student's Instrl. Farm, Govt. Agri. College, Kanpur.**

**Type :- 'CMV'.**

Object :—To study the response of Wheat varieties to levels of seed rate and N.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize—*Lobia*. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Kanpur. (iii) 7, 8.11.1959. (iv) (a) 1 *palewa*, 1 ploughing with soil turning plough. 3 ploughing with *desi* plough, 1 cultivator and *planking*, (b) and (c) As per treatments. (d) N.A. (e) 2 seeds/hole when dibbled (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) 1 weeding and 1 hoeing. (ix) N.A. (x) 7.4.1960.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

- (1) 3 seed rates : R<sub>1</sub>=9 srs./ac. sown by dibbling, R<sub>2</sub>=20 srs./ac. sown behind the plough and R<sub>3</sub>=40 srs./ac. sown behind the plough.
- (2) 2 levels of N as A/S : N<sub>0</sub>=0 and N<sub>1</sub>=50 lb./ac.
- (3) 2 varieties : V<sub>1</sub>=C-13 and V<sub>2</sub>=NP-710.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 6. (iv) (a) 26.9' × 18'. (b) 23.9' × 15. (v) 1.5' × 1.5'.  
(vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Mild attack of termite. (iii) Number of tillers, germination and grain yield. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1667 lb./ac. (ii) 327.9 lb./ac. (iii) R effect is highly significant and R × N interaction is significant. (iv) Av. yield of grain in lb./ac.

Treatment	V <sub>1</sub>	V <sub>2</sub>	N <sub>0</sub>	N <sub>1</sub>	R <sub>1</sub>	R <sub>2</sub>	R <sub>3</sub>
Av. yield	1632	1702	1624	1710	1879	1564	1559

S.E. of R marginal mean = 66.9 lb./ac.

S.E. of V or N marginal mean = 54.7 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 56(396).**

**Site :- Govt. Agri. Farm, Dhanauri.**

**Type :- 'I'.**

Object :—To find out the best combination of depth of irrigation and interval between irrigation treatments for Wheat crop.

### 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) 20 to 25.11.1956. (iv) (a) 1 victory ploughing followed by 10 *desi* ploughings. (b) Line sowing. (c) 36 srs./ac. (d) 9" between rows. (e) N.A. (v) *Sanai* (G.M.)+200 mds./ac. of compost. (vi) Pb.—591 (medium). (vii) As per treatments. (viii) 2 weedings. (ix) 7.75". (x) 25 to 30.4.1957.

### 2. TREATMENTS :

Main-plot treatments :

3 depths of irrigation : I<sub>1</sub>=2", I<sub>2</sub>=3" and I<sub>3</sub>=4".

Sub-plot treatments :

12 dates of irrigation : D<sub>1</sub>=23.12.1956 and 4.2.1957, D<sub>2</sub>=23.12.1956 and 11.2.1957, D<sub>3</sub>=23.12.1956 and 18.2.1957, D<sub>4</sub>=2.1.1957 and 6.2.1957, D<sub>5</sub>=2.1.1957 and 13.2.1957, D<sub>6</sub>=2.1.1957 and 20.2.1957, D<sub>7</sub>=4.2.1957 and 4.3.1957, D<sub>8</sub>=4.2.1957 and 14.3.1957, D<sub>9</sub>=4.2.1957 and 22.3.1957, D<sub>10</sub>=6.2.1957 and 8.3.1957, D<sub>11</sub>=6.2.1957 and 22.3.1957, and D<sub>12</sub>=6.2.1957 and 27.3.1957.

### 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication and 12 sub-plots/main-plot. (b) 360'×80'. (iii) 3. (iv) (a) 36'×16'2". (b) 31'×15'4". (v) 2.5'×5". (vi) Yes.

### 4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1956—1957. (b) and (c) Nil. (v) (a) and (b) No. (vi) Heavy rains and storm. (vii) Nil.

### 5. RESULTS :

(i) 1153 lb./ac. (ii) (a) 55.4 lb./ac. (b) 76.2 lb./ac. (iii) All effects are highly significant. (iv) Av. yield of grain in lb./ac.

	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	D <sub>5</sub>	D <sub>6</sub>	D <sub>7</sub>	D <sub>8</sub>	D <sub>9</sub>	D <sub>10</sub>	D <sub>11</sub>	D <sub>12</sub>	Mean
I <sub>1</sub>	1304	1280	962	1135	1398	1304	939	1504	1214	1053	1108	954	1180
I <sub>2</sub>	1540	1477	1021	950	1202	1225	1111	1347	1182	1135	1147	1056	1199
I <sub>3</sub>	1005	1174	1029	1076	1214	1080	1108	1229	947	1045	1017	1041	1080
Mean	1283	1310	1004	1054	1271	1203	1053	1360	1114	1078	1091	1017	1153

S.E. of difference of two

1. I marginal means = 13.0 lb./ac.

2. D marginal means = 35.9 lb./ac.

3. D means at the same level of I = 62.2 lb./ac.

4. I means at the same level of D = 61.0 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 57(418).****Site :- Govt. Agri. Farm, Dhanauri.****Type :- 'I'.**

Object :— To find out the best combination of depth of irrigation and interval between irrigation treatments for Wheat crop.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) 6 to 9.11.1957. (iv) (a) 1 victory ploughing followed by 12 *desi* ploughings. (b) Line sowing. (c) 40 srs./ac. (c) 9' between rows. (e) N.A. (v) G.M. with *sanai* followed by 200 mds./ac. of compost (vi) Pb.—591 (medium). (vii) As per treatments. (viii) 2 weedings. (ix) N.A. (x) 15.4.1958 to 20.4.1958.

**2. TREATMENTS :****Main-plot treatments :**3 depths of irrigation :  $I_1=2''$ ,  $I_2=3''$  and  $I_3=4''$ .**Sub-plots treatments :**

All combinations of (1) and (2)

(1) 4 dates of first irrigation :  $D_1=6.12.1957$ ,  $D_2=6.1.1958$ ,  $D_3=17.1.1958$  and  $D_4=24.1.1958$ .(2) 3 intervals between first and second irrigation :  $W_1=4$ ,  $W_2=5$  and  $W_3=6$  weeks.**3. DESIGN :**

(i) Split-plot. (ii) (a) 3 main-plots/replication and 12 sub-plots/main-plot. (b)  $360' \times 80'$ . (iii) 3. (iv) (a)  $36' \times 16'2''$ . (b)  $31' \times 15'4''$ . (v)  $2.5' \times 5''$ . (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1956—1957. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1541 lb./ac. (ii) (a) 603.4 lb./ac. (b) 180.9 lb./ac. (iii) Main effect of D alone is highly significant. (iv) Av. yield of grain in lb./ac.

	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	Mean	W <sub>1</sub>	W <sub>2</sub>	W <sub>3</sub>
I <sub>1</sub>	1564	1538	1545	1644	1573	1590	1533	1597
I <sub>2</sub>	1431	1486	1517	1598	1508	1517	1495	1512
I <sub>3</sub>	1350	1652	1523	1644	1542	1528	1451	1648
Mean	1448	1559	1528	1629	1541	1545	1493	1585
W <sub>1</sub>	1390	1571	1559	1659				
W <sub>2</sub>	1396	1448	1517	1612				
W <sub>3</sub>	1559	1657	1508	1617				

S.E. of difference of two

- |                              |                 |                                   |                 |
|------------------------------|-----------------|-----------------------------------|-----------------|
| 1. I marginal means          | = 142.2 lb./ac. | 5. I means at the same level of D | = 160.3 lb./ac. |
| 2. D marginal means          | = 49.2 lb./ac.  | 6. W means at the same level of I | = 73.8 lb./ac.  |
| 3. W marginal means          | = 42.6 lb./ac.  | 7. I means at the same level of W | = 154.5 lb./ac. |
| 4. D means at the level of I | = 85.3 lb./ac.  | S.E. of body of W × D table       | = 60.3 lb./ac.  |

**Crop :- Wheat (Rabi).****Ref :- U.P. 58(108).****Site :- State Soil Cons. Res. Demons. & Trg. Centre, Rehmankhara. Type :- 'I'.**

Object :— To study the optimum moisture range for growing Wheat.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loamy sand to sandy loam. (b) Refer soil analysis, Rehmankhara. (iii) 1 and 2.11.1958. (iv) (a) Ploughings by *desi* plough and harrowing by tractor. (b) Behind the plough. (c) 40 srs./ac. (d) and (e) N.A. (v) 104 lb./ac. of A/S at 1st irrigation. (vi) NP—710. (vii) As per treatments. (viii) 1 interculturing and 1 weeding. (ix) and (x) N.A.

## 2. TREATMENTS :

## Main-plot treatments :

2 intensities of irrigation :  $W_1$  = Minimum water to cover the entire plot 2" irrigation or 756 gallons per plot and  $W_2$  = 50% more than the first, 3" irrigation or 1134 gallons per plot.

## Sub-plot treatments :

8 intervals of irrigation :  $I_1$  = 1 irrigation 2 weeks after sowing,  $I_2$  = 1 irrigation 4 weeks after sowing,  $I_3$  = 1 irrigation 6 weeks after sowing,  $I_4$  = 1st irrigation 2 weeks after sowing and 2nd irrigation 4 weeks after first irrigation,  $I_5$  = 1st irrigation 4 weeks after sowing and 2nd irrigation 6 weeks after first irrigation,  $I_6$  = 1st irrigation 2 weeks after sowing and subsequent 2 irrigations at an interval of 4 weeks,  $I_7$  = 1st irrigation 3 weeks after sowing and subsequent 2 irrigations at an interval of 5 weeks and  $I_8$  = 1st irrigation 4 weeks after sowing and subsequent 2 irrigation at an interval of 6 weeks.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 8 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 32' × 22'. (b) 29' × 18'. (v) 2' × 2'. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1958—contd. (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1816 lb./ac. (ii) (a) 308.5 lb./ac. (b) 175.7 lb./ac. (iii) Main effect of I and interaction I × W are highly significant. (iv) Av. yield of grain in lb./ac.

	$I_1$	$I_2$	$I_3$	$I_4$	$I_5$	$I_6$	$I_7$	$I_8$	Mean
$W_1$	1730	1513	1738	1585	1840	2093	2145	1828	1809
$W_2$	1800	1598	1633	1703	1962	1871	1846	2163	1822
Mean	1765	1556	1686	1644	1901	1982	1996	1996	1816

## S.E. of difference of two

- |                                   |                 |
|-----------------------------------|-----------------|
| 1. W marginal means               | = 77.1 lb./ac.  |
| 2. I marginal means               | = 87.9 lb./ac.  |
| 3. I means at the same level of W | = 124.2 lb./ac. |
| 4. W means at the same level of I | = 139.5 lb./ac. |

**Crop :-** Wheat (*Rabi*).

**Ref :-** U.P. 59(112).

**Site :-** State Soil Cons. Res. Demons. & Trg. Centre, Rehmankhara. **Type :-** 'P'.

**Object :-** To study the optimum moisture range for growing Wheat.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Rehmankhara. (iii) 6.11.1959. (iv) (a) Summer ploughing and harrowing by tractor. (b) Behind the plough. (c) 40 srs./ac. (d) and (e) N.A. (v) 104 lb./ac. of A/S applied 1 day before sowing. (vi) NP—710. (vii) As per treatments. (viii) to (x) N.A.

## 2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 58(108) on page 546.

## 5. RESULTS :

(i) 1455 lb./ac. (ii) (a) 250.3 lb./ac. (b) 92.5 lb./ac. (iii) Main effect of I and interaction I × W are highly significant. (iv) Av. yield of grain in lb./ac.

	I <sub>1</sub>	I <sub>2</sub>	I <sub>3</sub>	I <sub>4</sub>	I <sub>5</sub>	I <sub>6</sub>	I <sub>7</sub>	I <sub>8</sub>	Mean
W <sub>1</sub>	990	1172	1320	1351	1440	1480	1899	1475	1391
W <sub>2</sub>	1199	1137	1284	1395	1775	1620	2114	1628	1519
Mean	1094	1154	1302	1373	1607	1550	2006	1552	1455

S.E. of difference of two

1. W marginal means = 62.6 lb./ac.
2. I marginal means = 46.3 lb./ac.
3. I means at the same level of W = 65.4 lb./ac.
4. W means at the same level of I = 87.5 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 57(352).**

**Site :- Instt. of Crop Physiology, Dilkusha.**

**Type :- 'IM'.**

**Object :—** To study the effect of different forms of N and levels of irrigation applied singly and in combinations on growth and yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) *Sanai*—Wheat. (b) *Sirai*. (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) 31.10.1957. (iv) (a) 8 ploughings. (b) Behind the plough. (c) 35 srs./ac. (d) and (e) N.A. (v) *Sanai* as G.M. (vi) NP—710. (vii) As per treatments. (viii) and (ix) N.A. (x) 5.4.1958.

**2. TREATMENTS :**

**Main-plot treatments :**

3 levels of irrigation : I<sub>1</sub>=1, I<sub>2</sub>=2 and I<sub>3</sub>=3 irrigations.

**Sub-plot treatments :**

4 sources of 30 lb./ac. of N : S<sub>0</sub>=Control (no manure), S<sub>1</sub>=F.Y.M., S<sub>2</sub>=A/S and S<sub>3</sub>=Urea.

F.Y.M. applied 2 to 3½ weeks before sowing. A/S and Urea in divided instalments ½ at sowing and ½ at 1st irrigation.

**3. DESIGN :**

(i) Split-plot. (ii) (a) 3 main-plots/replication and 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) and (b) 32'×20'. (v) Nil. (vi) Yes

**4. GENERAL :**

(i) and (ii) N.A. (iii) Grain and straw yield. (iv) (a) N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1305 lb./ac. (ii) (a) 125.5 lb./ac. (b) 98.6 lb./ac. (iii) Main effects of I and S are highly significant. (iv) Av. yield of grain in lb./ac.

	S <sub>0</sub>	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean
I <sub>1</sub>	869	1164	1119	977	1032
I <sub>2</sub>	1346	1483	1443	1272	1386
I <sub>3</sub>	1448	1562	1676	1301	1497
Mean	1221	1403	1413	1183	1305

S.E. of difference of two

1. I marginal means = 44.4 lb./ac.
2. S marginal means = 40.2 lb./ac.
3. S means at the same level of I = 69.7 lb./ac.
4. I means at the same level of S = 74.9 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 57(30).****Site :- Reg. Res. Stn. Meerut.****Type :- 'IM'.**

Object :—To study the effect of different forms of N and levels of irrigation applied singly and in combinations on growth and yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) G.M.—Wheat. (b) *Sanai* for G.M. (c) Nil. (ii) (a) Silt loam. (b) Refer soil analysis, Meerut. (iii) 24.12.1957. (iv) (a) 1 ploughing by soil turning plough and 4 to 5 ploughing by *desi* plough. (b) Behind the plough in lines. (c) 30 srs./ac. (d) 9" between rows. (e) N.A. (v) G.M. (*Sanai*). (vi) Pb.—228 (early). (vii) As per treatments. (viii) One weeding. (ix) 1.31". (x) 29.4.1958.

**2. TREATMENTS :**

Same as in expt. no. 57(352) on page 548.

Application of manures : F.Y.M. 3 weeks before sowing A/S and Urea in divided instalments— $\frac{1}{2}$  at sowing and  $\frac{1}{2}$  at 1st irrigation (Top dressing). Application of manures on 4.2.1958.

Time of irrigation : (1) At tillering (3 weeks after germination) (2) At flowering (9 weeks after germination). (3) At milky stage (12 weeks after germination).

**3. DESIGN :**

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 4 sub-plots/main-plot. (b) 77' × 159'. (iii) 3. (iv) (a) 51' × 18'6". (b) 48' × 16' (v) 1½' × 9". (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 505 lb./ac. (ii) (a) 79.3 lb./ac. (b) 77.8 lb./ac. (iii) Main effect of S alone is significant. (iv) Av. yield of grain in lb./ac.

	S <sub>0</sub>	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean
I <sub>1</sub>	569	598	592	528	572
I <sub>2</sub>	501	541	424	448	478
I <sub>3</sub>	481	579	381	417	465
Mean	517	573	466	464	505

S.E. of difference of two

1. I marginal means	= 32.4 lb./ac.
2. S marginal means	= 36.7 lb./ac.
3. S means at the same level of I	= 63.5 lb./ac.
4. I means at the same level of S	= 63.8 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 57(108).****Site :- Reg. Res. Stn., Nawabganj.****Type :- 'IM'.**

Object :—To study the effect of different forms of N and levels of irrigation applied singly and in combinations on growth and yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Nawabganj. (iii) 7.11.1957. (iv) (a) N.A. (b) Behind plough in lines. (c) 30 srs./ac. (d) Rows 9" apart. (e) N.A. (v) G.M. (vi) Pb.—591 (late). (vii) As per treatments. (viii) N.A. (ix) 0.59". (x) 26.4.1958.

## 2. TREATMENTS :

## Main-plot treatments :

3 levels of irrigation :  $I_1=1$  irrigation at tillering (3 weeks after germination),  $I_2=I_1+1$  irrigation at flowering (9 weeks after germination) and  $I_3=I_2+1$  irrigation at milky stage (12 weeks after germination).

## Sub-plot treatments :

4 sources of 30 lb./ac. of N :  $S_0$ =Control (no manure),  $S_1$ =A/S,  $S_2$ =Urea and  $S_3$ =F.Y.M.  
Manures applied before sowing on 6.11.1957.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication, 4 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a)  $56' \times 16.5'$ . (b)  $53' \times 13.5'$ . (v)  $1\frac{1}{2}' \times 1\frac{1}{4}'$ . (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Loose smut and brown rust. (iii) Germination, flowering dates, height and tillers, yield of grain and straw (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1293 lb./ac. (ii) (a) 236.1 lb./ac. (b) 190.2 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	$S_0$	$S_1$	$S_2$	$S_3$	Mean
$I_1$	1169	1200	1398	1357	1281
$I_2$	1273	1419	1190	1336	1304
$I_3$	1315	1419	1294	1148	1294
Mean	1252	1346	1294	1280	1293

## S.E of difference of two

- |                                   |                 |
|-----------------------------------|-----------------|
| 1. I marginal means               | = 96.4 lb./ac.  |
| 2. S marginal means               | = 89.7 lb./ac.  |
| 3. S means at the same level of I | = 155.3 lb./ac. |
| 4. I means at the same level of S | = 165.5 lb./ac. |

Crop :- Wheat (*Rabi*).

Ref :- U.P. 57(118).

Site :- Reg. Res. Stn., Varanasi.

Type :- 'IM'.

Object :- To study the effect of different forms of N and levels of irrigation on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) a) N.A. (b) Maize fodder. (c) 4 mds./ac. of caster cake. (ii) (a) Clayey loam. (b) Refer soil analysis, Varanasi. (iii) 30.11.1957. (iv) (a) 1 ploughing. (b) Behind the plough. (c) 40 srs./ac. (d) 9" between rows. (e) N.A. (v) G.M. (vi) NP—710 (medium). (vii) As per treatments. (viii) 1 harrowing, 1 weeding and 1 hoeing. (ix) 1.01". (x) 1.4.1958.

## 2 TREATMENTS :

Same as in expt. no. 57(352) on page 548.

F.Y.M. was applied 2 to 3 weeks before sowing, A/S and Urea in divided instalments  $\frac{1}{2}$  at sowing and  $\frac{1}{2}$  at first irrigation.

Times of Irrigation : First at tillering 3 weeks after germination, second at flowering 9 weeks after germination and third at milky stage 12 weeks after germination.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 4 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a)  $56' \times 18'$ . (b)  $53' \times 15'$ . (v)  $1\frac{1}{2}' \times 1\frac{1}{4}'$ . (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Attack of orange rust on leaves and black rust on stems. (iii) Yield of grain and straw. (iv) (a) 1957—1958. (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1305 lb./ac. (ii) (a) 192.0 lb./ac. (b) 82.9 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	S <sub>0</sub>	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean
I <sub>1</sub>	1315	1260	1242	1306	1281
I <sub>2</sub>	1361	1269	1370	1379	1345
I <sub>3</sub>	1306	1260	1315	1278	1290
Mean	1327	1263	1309	1321	1305

S.E. of difference of two

1. I marginal means = 78.4 lb./ac.
2. S marginal means = 39.1 lb./ac.
3. S means at the same level of I = 67.7 lb./ac.
4. I means at the same level of S = 97.9 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 57(MAE).**

**Site :- B.R. College Insttl. Res. Farm, Bichpuri.**

**Type :- 'IM'.**

**Object :-**Type I—To study the effect of frequency and intensity of irrigation along with manures on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy soil. (b) Refer soil analysis, Bichpuri. (iii) 1st and 2nd week of Nov., 1957. (iv) (a) 3 ploughings. (b) N.A. (c) 60 lb./ac. (d) 12" between rows. (e) N.A. (v) 5000 lb./ac. of M.C. with 0.7% N. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) 0.63". (x) Last week of April, 1958.

## 2. TREATMENTS :

**Main-plot treatments :**

All combinations of (1) and (2)

(1) 3 intensities of irrigation : I<sub>1</sub>=2", I<sub>2</sub>=3" and I<sub>3</sub>=4".

(2) 3 frequencies of irrigation : F<sub>1</sub>=2, F<sub>2</sub>=3 and F<sub>3</sub>=4 irrigations.

**Sub-plot treatments :**

All combinations of (1) and (2)

(1) 3 levels of N as A/S : N<sub>0</sub>=0, N<sub>1</sub>=30 and N<sub>2</sub>=60 lb./ac.

(2) 3 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0, P<sub>1</sub>=30 and P<sub>2</sub>=60 lb./ac.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 9 main-plots/block ; 9 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a) 32' × 18'. (b) 29' × 15'. (v) 1.5' × 1.5'. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1957—contd. (b) No. (c) Nil (v) to (vii) Nil.

## 5. RESULTS :

(i) 1695 lb./ac. (ii) (a) 664.7 lb./ac. (b) 349.7 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.



	I <sub>1</sub>	I <sub>2</sub>	I <sub>3</sub>	F <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean
P <sub>0</sub>	1577	1648	1737	1514	1607	1841	1596	1753	1613	1654
P <sub>1</sub>	1732	1647	1786	1476	1854	1836	1629	1777	1760	1722
P <sub>2</sub>	1694	1691	1743	1511	1714	1902	1868	1646	1613	1709
Mean	1668	1662	1755	1500	1725	1860	1698	1725	1662	1695
N <sub>0</sub>	1734	1591	1769	1491	1803	1800				
N <sub>1</sub>	1669	1722	1784	1638	1667	1870				
N <sub>2</sub>	1601	1673	1712	1371	1705	1910				
F <sub>1</sub>	1564	1349	1587							
F <sub>2</sub>	1786	1637	1752							
F <sub>3</sub>	1654	2000	1926							

## S.E. of difference of two

1. I or F marginal means	= 127.9 lb./ac.
2. N or P marginal means	= 67.3 lb./ac.
3. N or P means at the same level of I or F	= 116.6 lb./ac.
4. I or F means at the same level of N or P	= 276.2 lb./ac.
S.E. of body of I×F table	= 156.7 lb./ac.
S.E. of body of N×P table	= 82.4 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 58(MAE).****Site :- B.R. College, Insttl. Res. Farm, Bichpuri.****Type :- 'IM'.**

Object :—Type I—To study the effect of frequency and intensity of irrigation along with manures on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Bichpuri. (iii) 4th week of Oct. and 1st week of Nov., 1958. (iv) (a) 3 ploughings. (b) N.A. (c) 60 lb./ac. (d) 5" between rows. (e) N.A. (v) 5000 lb./ac. of compost. (vi) Pb.—591 (150 days). (vii) Irrigated. (viii) 1 weeding. (ix) 2". (x) 1st and 2nd week of April, 1959.

**2. TREATMENTS :**

All combinations of (1), (2), (3) and (4)

- (1) 3 intensities of irrigation : I<sub>1</sub>=2", I<sub>2</sub>=3" and I<sub>3</sub>=4".
- (2) 3 frequencies of irrigation : F<sub>1</sub>=2, F<sub>2</sub>=3 and F<sub>3</sub>=4 irrigations.
- (3) 3 levels of N as A/S : N<sub>0</sub>=0, N<sub>1</sub>=30 and N<sub>2</sub>=60 lb./ac.
- (4) 3 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0, P<sub>1</sub>=30 and P<sub>2</sub>=60 lb./ac.

**3. DESIGN :**

(i) 3<sup>4</sup> fact. confd. (ii) (a) 9 plots/block ; 9 blocks/replication. (b) N.A. (iii) 1. (iv) (a) 32'×18'. (b) 29'×15'. (v) 1.5'×1.5'. (vi) Yes.

**4. GENERAL :**

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1957—contd. (modified in 1958). (b) No. (c) N.A. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1569 lb./ac. (ii) 581.8 lb./ac. (iii) Main effect of P alone is significant. (iv) Av. yield of grain in lb./ac.

	I <sub>1</sub>	I <sub>2</sub>	I <sub>3</sub>	F <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean
P <sub>0</sub>	1267	1489	1747	1369	1684	1450	1679	1251	1572	1501
P <sub>1</sub>	1739	1602	2050	1797	1832	1762	1893	1810	1687	1797
P <sub>2</sub>	1314	1665	1250	1446	1281	1502	1382	1679	1168	1410
Mean	1440	1585	1682	1537	1599	1571	1651	1580	1476	1569
N <sub>0</sub>	1413	1632	1566	1750	1561	1642				
N <sub>1</sub>	1407	1684	1706	1382	1637	1721				
N <sub>2</sub>	1500	1439	1774	1478	1599	1351				
F <sub>1</sub>	1448	1498	1665							
F <sub>2</sub>	1185	1777	1835							
F <sub>3</sub>	1687	1481	1545							

S.E. of any marginal mean = 79.2 lb./ac.  
 S.E. of body of any table = 137.1 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 59(MAE).**

**Site :- B.R. College, Insttl. Res. Farm, Bichpuri.**

**Type :- 'IM'.**

Object :—Type I—To study the effect of frequency and intensity of irrigation along with manures on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) *Jowar*. (c) 40 lb./ac. of N as A/S. (ii) (a) Light loam. (b) Refer soil analysis, Bichpuri (iii) 19, 20.11.1959. (iv) (a) 3 ploughings. (b) Behind the plough. (c) 35 srs./ac. (d) Distance between rows 9". (e) N.A. (v) 5000 lb./ac. of compost. (vi) Pb.—591 (4½ months). (vii) Irrigated. (viii) 1 weeding. (ix) 1.22". (x) 17.4.1960.

**2. TREATMENTS and 3. DESIGN :**

Same as in expt. no. 58(MAE) type I on page 552.

**4. GENERAL :**

(i) Germination was satisfactory. Crop lodged. (ii) Smut disease was observed. Rouging of smutted ear-heads was done. (iii) Yield of grain and straw. (iv) (a) 1957—contd. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1094 lb./ac. (ii) 258.6 lb./ac. (iii) Main effect of N alone is highly significant. (iv) Av. yield of grain in lb./ac.

	I <sub>1</sub>	I <sub>2</sub>	I <sub>3</sub>	F <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean
P <sub>0</sub>	946	1004	1132	915	1082	1085	620	1074	1388	1027
P <sub>1</sub>	1004	1165	1154	1043	1115	1165	584	1224	1516	1108
P <sub>2</sub>	1208	1023	1207	1068	1152	1218	615	1318	1505	1146
Mean	1053	1064	1164	1009	1116	1156	607	1205	1469	1094
N <sub>0</sub>	537	581	702	604	646	570				
N <sub>1</sub>	1191	1196	1229	1130	1260	1227				
N <sub>2</sub>	1430	1415	1562	1293	1443	1671				
F <sub>1</sub>	971	940	1115							
F <sub>2</sub>	1074	1068	1207							
F <sub>3</sub>	1113	1185	1171							

S.E. of any marginal mean = 35.2 lb./ac.  
 S.E. of body of any table = 61.0 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 54(TCM).****Site :- Govt. Res. Farm, Pura.****Type :- 'IM'.**

Object :—Type VII—To study the effect of N, P and frequency of irrigation on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loam in texture. (b) Refer soil analysis, Pura. (iii) 3.11.1954. (iv) and (v) N.A. (vi) C—13. (vii) Irrigated. (viii) and (ix) N.A. (x) 18.4.1955.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 3 frequencies of irrigation :  $I_1=1$ ,  $I_2=2$  and  $I_3=3$  irrigations.(2) 3 levels of N :  $N_0=0$ ,  $N_1=20$  and  $N_2=40$  lb./ac.(3) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=20$  and  $P_2=40$  lb./ac.**3. DESIGN :**(i)  $3^3$  fact. confd. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A. (iii) 1. (iv) (a)  $45' \times 24.2'$ . (b)  $35.5' \times 20.4'$ . (v)  $4.75' \times 1.9'$ . (vi) Yes.**4. GENERAL :**

(i) Germination was good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1953—1954. (b) No. (c) Nil. (v) Varanasi. (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1639 lb./ac. (ii) 243.7 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	$N_0$	$N_1$	$N_2$	Mean	$P_0$	$P_1$	$P_2$
$I_1$	1253	1493	2105	1617	1363	1503	1985
$I_2$	1203	1644	1874	1574	1414	1735	1573
$I_3$	1233	1905	2036	1725	1484	1675	2016
Mean	1230	1681	2005	1639	1420	1638	1858
$P_0$	1053	1433	1774				
$P_1$	1283	1654	1977				
$P_2$	1314	1956	2264				

S.E. of any marginal mean

= 81.2 lb./ac.

S.E. of body of any table

= 140.7 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 54(TCM).****Site :- Reg. Res. Stn., Varanasi****Type :- 'IM'.**

Object :—Type VII—To study the effect of N, P and frequency of irrigation on Wheat.

**1. BASAL CONDITIONS :**(i) (a) Nil. (b) *Sanai* G.M. (c) N.A. (ii) (a) Loam soil. (b) Refer soil analysis, Varanasi. (iii) 23.11.1954. (iv) (a) 7 ploughings and *palewa*. (b) Sown in lines. (c) 45 srs./ac. (d) 9" between rows. (e) N.A. (v) Nil. (vi) P—52. (vii) Irrigated. (viii) 1 weeding. (ix) 1.4". (x) 9.4.1955.**2. TREATMENTS :**

Same as in expt. no. 54(TCM) type VII conducted at Pura above.

**3. DESIGN :**(i)  $3^3$  fact. confd. (ii) (a) 9 plots/block ; 3 blocks/replications. (b) N.A. (iii) 1. (iv) (a)  $24' \times 45'$ . (b)  $20' \times 36'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1953—1954. (b) No. (c) Nil. (v) (a) Pura. (b) N.A. (vi) Nil. (vii) In  $I_3$  plots the third irrigation could not be given. Therefore experiment has been analysed accordingly.

## 5. RESULTS :

(i) 1168 lb./ac. (ii) 239.2 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	$N_0$	$N_1$	$N_2$	Mean	$P_0$	$P_1$	$P_2$
$I_1$	996	1327	1270	1198	1340	1147	1108
$I_2$	989	1185	1286	1153	1168	1129	1163
Mean	991	1232	1281	1168	1225	1135	1145
$P_0$	1233	1119	1323				
$P_1$	908	1273	1224				
$P_2$	832	1305	1297				

S.E. of N, P or  $I_1$  marginal mean = 79.7 lb./ac.  
 S.E. of  $I_2$  marginal mean = 56.4 lb./ac.  
 S.E. of body of  $N \times P$  table = 138.1 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 55(217).**

**Site :- Allahabad Agri. Instt., Allahabad.**

**Type :- 'D'.**

Object :—To study the effect of different methods of weed control on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Fine sandy loam. (b) Refer soil analysis, Allahabad. (iii) 11.11.1955. (iv) 'a' and (b) N.A. (c) 30 srs./ac. (d) and (e) N.A. (v) to (vii) N.A. (viii) As per treatments. (ix) and (x) N.A.

## 2. TREATMENTS :

5 weedicidal treatments :  $W_0$ =Control (No weeding),  $W_1$ =Pre-emergence treatment with 2, 4—D followed by cultivation,  $W_2$ =Frequent cultivation to check weed growth (4 cultivations),  $W_3$ =Weeds removed with *khurpi* (4 weedings) and  $W_4$ =Post-emergence treatment with 2, 4—D followed by cultivation.

## 3. DESIGN :

(i) L. Sq. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 32'×24'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) to (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1823 lb./ac. (ii) N.A. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$W_0$	$W_1$	$W_2$	$W_3$	$W_4$
Av. yield	1800	1600	2009	1916	1788

S.E./mean = N.A.

**Crop :- Wheat (Rabi).****Ref :- U.P. 55(231).****Site :- Allahabad Agri. Instt. Allahabad.****Type :- 'D'.**

Object :—To study the effect of different methods of weed control on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) *Bajra*—Wheat. (b) *Bajra*. (c) N.A. (ii) (a) Fine sandy loam. (b) Refer soil analysis, Allahabad. (iii) 10.11.1955. (iv) (a) N.A. (b) In lines by *malabasa* (c) 30 srs./ac. (d) Rows 1' apart. (e) N.A. (v) N.A. (vi) NP--775. (vii) to (ix) N.A. (x) 18.4.1956.

**2. TREATMENTS :**

Same as in expt. no. 55(217) on page 555.

**3. DESIGN :**

(i) L. Sq. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) and (b) 34' × 26'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) to (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 3986 lb./ac. (ii) 355.4 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	W <sub>0</sub>	W <sub>1</sub>	W <sub>2</sub>	W <sub>3</sub>	W <sub>4</sub>
Av. yield	4055	3588	4217	4339	3730

S.E./mean = 158.9 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 57(134).****Site :- Reg. Res. Stn., Amrukh.****Type :- 'D'.**

Object :—To study the effect of for smut control on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) and (c) N.A. (ii) (a) *Kabar* soil. (b) N.A. (iii) 30.10.1957. (iv) One ploughing by *desi* plough and 2 *bakharing*. (b) Line sowing. (c) 40 srs./ac. (d) and (e) N.A. (v) N.A. (vi) Pb.-- 591. (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 21.3.1958.

**2. TREATMENTS :**

All combinations of (1) and (2) + a control.

(1) 2 dates of soaking : D<sub>1</sub> = End of May and D<sub>2</sub> = 1st week of October.(2) 4 periods of soaking : P<sub>1</sub> = 8, P<sub>2</sub> = 12, P<sub>3</sub> = 16 and P<sub>4</sub> = 20 hours.**3. DESIGN :**

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) and (b) 22' × 9'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Normal. (ii) Attack of rust. (iii) Yield of grain. (iv) (a) to (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1461 lb./ac. (ii) 325.4 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

Control = 1398 lb./ac.

	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	P <sub>4</sub>	Mean
D <sub>1</sub>	1470	1591	1583	1549	1548
D <sub>2</sub>	1562	1314	1273	1413	1360
Mean	1516	1452	1428	1481	1469

S.E. of D marginal mean	= 81.4 lb./ac.
S.E. of P marginal mean	= 115.0 lb./ac.
S.E. of body of table	= 162.7 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 58(134).**

**Site :- Reg. Res. Stn., Amrukh.**

**Type :- 'D'.**

Object :—To study the effect of spraying of hormones and nutrients on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) and (c) N.A. (ii) (a) *Kabar* soil. (b) N.A. (iii) 24.10.1958. (iv) (a) 3 *bakharings*. (b) Line sowing. (c) 40 srs./ac. (b) and (c) N.A. (v) *Sanai* as G.M. (vi) Pb.—591. (vii) Irrigated. (viii) and (ix) N.A. (x) 12.4.1959.

**2. TREATMENTS :**

8 spraying treatments :  $T_0$ =Control,  $T_1$ =Indolyl acetic acid 0.005% solution,  $T_2$ =2, 4—Dichlorophonyx acetic acid 0.005% solution,  $T_3$ =Urea 0.2% solution,  $T_4$ =A/S 0.45% solution,  $T_5$ =Potassium dihydrogen phosphate 0.5% solution,  $T_6$ =Manganese Sulphate 0.2% solution and  $T_7$ =C/S 0.2% solution.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) and (b) 24'×23'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Light attack of rust and smut. (iii) Yield of grain. (iv) (a) to (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1811 lb./ac. (ii) 424.0 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$T_0$	$T_1$	$T_2$	$T_3$	$T_4$	$T_5$	$T_6$	$T_7$
Av. yield	1649	2313	1684	1654	1963	1816	1725	1684

S.E./mean = 221.0 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 58(239).**

**Site :- B. R. College Insttl. Res. Farm, Bichpuri.**

**Type :- 'D'.**

Object :—To study the effect of various concentrations of Ester and Amine salts of 2, 4—D at pre and post-emergence stages for control of weeds in Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) *Jowar* (fodder). (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Bichpuri. (iii) 15.11.1958. (a) 2 ploughings with tractor driven offset double disc harrow and 2 subsequent ploughings. (b) Line sowing. (c) 35 srs./ac. (d) Rows 9" apart. (e) N.A. (v) 80 mds./ac. of compost+20 lb./ac. of N as A/S+60 lb./ac. of  $P_2O_5$  as Super. (vi) Pb.—591. (vii) Irrigated. (viii) Ridge making and 1 weeding. (ix) N.A. (x) 24.4.1959.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)+2 extra treatments

(1) 2 stages of spray :  $S_1$ =Pre-emergence and  $S_2$ =Post-emergence.

(2) 2 weedicides :  $W_1$ =2, 4—D ester and  $W_2$ =2, 4—D amine.

(3) 3 concentrations :  $C_1$ =1.0,  $C_2$ =1.5 and  $C_3$ =2.0 lb./ac.

Extra treatments :  $E_0$ =Control and  $E_1$ =Hand weeding. Pre-emergence spray done on 17.11.1958. and Post-emergence on 31.12.1958

**3. DESIGN :**

(i) R.B.D. (ii) (a) 14. (b) N.A. (iii) 3. (iv) (a) 22'×28'. (b) 18'×24'. (v) 2'×2'. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) to (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) N.A. (ii) 129.2 lb./ac (iii) Main effect of S and interaction S×W are highly significant (iv) Av. yield of grain in lb./ac.

$$E_0 = \text{N.A. } E_1 = 1457 \text{ lb./ac.}$$

$$C_1 = 1633 \text{ lb./ac., } C_2 = 1603 \text{ lb./ac. and } C_3 = 1553 \text{ lb./ac.}$$

	S <sub>1</sub>	S <sub>2</sub>	Mean
W <sub>1</sub>	1734	1395	1564
W <sub>2</sub>	1660	1596	1623
Mean	1697	1496	1596

S.E. of C mean	= 37.3 lb./ac.
S.E. of E mean	= 74.6 lb./ac.
S.E. of S or W marginal mean	= 30.5 lb./ac.
S.E. of body of table	= 43.1 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 58(9).****Site :- Reg. Res. Stn , Hardoi.****Type :- 'D'.****Object :-**To study the effect of spraying hormones and trace-elements on the yield of Wheat.**1. BASAL CONDITIONS :**(i) (a) to (c) N.A. (ii) (a) Loam soil. (b) Refer soil analysis, Hardoi. (iii) 1.11.1958. (iv) and (v) N.A. (vi) NP-710. (vii) Irrigated. (viii) Weeding by *khurpi*. (ix) N.A. (x) 7.4.1959.**2. TREATMENTS :**

Same as in expt. no. 58(134) on page 557.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 8. (b) 61'×73'. (iii) 4. (iv) (a) 30½'×18'. (b) 27'×15'. (v) 1½'×1½'. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Attack of yellow rust. (iii) Yield of grain. (iv) (a) to (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 913 lb./ac. (ii) 154.4 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	T <sub>5</sub>	T <sub>6</sub>	T <sub>7</sub>
Av. yield	781	836	953	1009	878	1023	788	1033

S.E./mean = 77.2 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 57(477).****Site :- Reg. Res. Stn., Hardoi.****Type :- 'D'.**

Object :—To study the effect of soaking of seed for smut control in Wheat.

**1. BASAL CONDITIONS :**(i) (a) Nil. (b) *Sanai*. (c) Nil. (ii) (a) Loam soil. (b) Refer soil analysis, Hardoi. (iii) and (iv) N.A. (v) *Sanai* (G.M.). (vi) N.A. (vii) Irrigated. (viii) 1 weeding with *khurpi*. (ix) N.A. (x) 3.4.1958.**2. TREATMENTS :**

All combinations of (1) and (2)+a control

(1) 4 durations of soaking :  $D_1=8$ ,  $D_2=12$ ,  $D_3=16$  and  $D_4=20$  hours soaking.(2) 2 dates of soaking :  $M_1$ =End of May and  $M_2$ =Early October.**3. DESIGN :**(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a)  $23' \times 9.75'$ . (b)  $20 \times 8.25'$ . (v)  $1\frac{1}{2}' \times 9'$ . (vi) Yes.**4. GENERAL :**

(i) Good. (ii) N.A. (iii) Fresh yields of sheaf, grain and straw. (iv) (a) and (b) No. (c) Nil. (v) (a) Nawabganj, Varanasi, Amrukh and Meerut. (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 2245 lb./ac. (ii) 220.2 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

Control = 2274 lb./ac.

	$D_1$	$D_2$	$D_3$	$D_4$	Mean
$M_1$	2138	2240	2325	2181	2221
$M_2$	2138	2291	2444	2172	2261
Mean	2138	2266	2384	2176	2241

S.E. of M marginal mean = 55.1 lb./ac.

S.E. of D marginal mean = 77.8 lb./ac.

S.E. of body of table or control mean = 110.1 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 58(11).****Site :- Reg. Res. Stn., Hardoi.****Type :- 'D'.**

Object :—To study the effect of different times and periods of soaking of seed on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loam soil. (b) Refer soil analysis, Hardoi. (iii) N.A. (iv) (a) and (b) N.A. (c) 50 srs./ac. (d) and (e) N.A. (v) N.A. (vi) NP—710. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) N.A.

**2. TREATMENTS :**

Same as in expt. no. 54(477) above.

**3. DESIGN :**(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) and (b)  $13' \times 9'$ . (v) Nil. (vi) Yes.**4. GENERAL :**

(i) N.A. (ii) Attack of smut. (iii) Yield of grain. (iv) (a) to (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1787 lb./ac. (ii) 338.5 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.



	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	Mean
M <sub>1</sub>	1589	1568	1566	1949	1668
M <sub>2</sub>	1901	1844	1829	1926	1875
Mean	1745	1706	1698	1938	1772

S.E. of M marginal mean = 84.6 lb./ac.

S.E. of D marginal mean = 119.7 lb./ac.

S.E. of body of table or control mean = 169.2 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 54(1).**

**Site :- Vivekanand Lab. Exptl. Fields, Hawalbagh.**

**Type :- 'D'.**

Object :—To find out the effect of vernalization on vegetative phase and yield of Wheat under late sowing conditions.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Maize. (c) 200 mds./ac. of compost at 4 mds./ac. of castor cake and 2 mds./ac. of mixture of A/S and Super. (ii) (a) Loam. (b) N.A. (iii) 4.1 1954. (iv) (a) 3 ploughings. (b) Dibbled in rows. (c) 12 srs./ac. (d) 9"×3". (e) 1. (v) 200 mds./ac. of compost and 5 mds./ac. of castor cake. 1 md./ac. of A/S used as top dressing. (vi) Pb.—228 (early). (vii) Irrigated. (viii) 1 weeding and 2 light hoeings. (ix) N.A. (x) 8.5.1954.

**2. TREATMENTS :**

2 seed treatments : T<sub>0</sub>=Control and T<sub>1</sub>=Vernalised (seeds were chilled for 15 weeks).

**3. DESIGN :**

(i) Paired-plot. (ii) (a) 2. (b) N.A. (iii) 10. (iv) (a) N.A. (b) 6'×4½'. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) Normal. (ii) Yellow and black rust in both the treatments. (iii) Vegetative phase (from sowing to ear emergence) and yield of grain. (iv) and (v) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1520 lb./ac. (ii) 306.5 lb./ac. (iii) Treatment difference is not significant. (iv) Av. yield of grain in lb./ac.

Treatment	T <sub>0</sub>	T <sub>1</sub>
Av. yield	1546	1493

S.E./mean = 96.9 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 54(131).**

**Site :- Govt. Agri. Res. Farm, Kalianpur.**

**Type :- 'D'.**

Object :—To study the effect of soaking of seed with salt solutions on growth and yield of Wheat.

**1. BASAL CONDITIONS:**

(i) (a) No. (b) *Lobia*. (c) Nil. (ii) (a) Loam soil. (b) Refer soil analysis, Kalianpur. (ii) 22.10.1954. (iv) (a) 3 ploughings and planking. (b) Behind the plough. (c) 25 to 30 srs./ac. (d) and (e) N.A. (v) 50 mds./ac. of F.Y.M.+40 lb./ac. of N as A/S+40 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super+30 lb./ac. of K<sub>2</sub>O as Pot. Sul. +*Lobia* as G.M. (vi) NP—710. (vii) Irrigated. (viii) and (ix) N.A. (x) 2.4.1955.

## 2. TREATMENTS :

8 solutions for soaking seeds :  $S_0$ =Control (unsoaked seed),  $S_1$ =Water,  $S_2$ =Boric acid,  $S_3$ =C/S,  $S_4$ =Zn. Sul.,  $S_5$ =Manganese sulphate,  $S_6$ =Pot. di-hydrogen phosphate and  $S_7$ =A/N.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a)  $32' \times 22'$ . (b)  $29' \times 19'$ . (v)  $1\frac{1}{2} \times 1\frac{1}{2}'$ . (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Yield of grain. (iv) (a) to (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 2829 lb./ac. (ii) 257.6 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	$S_0$	$S_1$	$S_2$	$S_3$	$S_4$	$S_5$	$S_6$	$S_7$
Av. yield	2948	3230	2877	2729	2770	2551	2673	2856

S.E./mean = 128.8 lb./ac.

**Crop :-** Wheat (*Rabi*).

**Ref :-** U.P. 54(20).

**Site :-** Govt. Res. Farm, Kanpur.

**Type :-** 'D'.

Object :—To study the effect of seed treated with 2, 4—D on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) *Sanai*. (c) Nil. (ii) (a) Loam soil. (b) Refer soil analysis, Kanpur. (iii) 8.11.1954. (iv) (a) 6 ploughings and 4 plankings. (b) Sown behind the plough. (c) 56 lb./ac. (d) Rows 9" apart. (e) N.A. (v) Nil. (vi) NP—710 (medium). (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 6.4.1955.

## 2. TREATMENTS :

8 seed soaking treatments :  $S_0$ =Control,  $S_1$ =Concentration 0.001 ppm, soaked for 24 hrs.,  $S_2$ =Concentration 0.01 ppm, soaked for 24 hrs.,  $S_3$ =Concentration 0.1 ppm, soaked for 12 mts.,  $S_4$ =Concentration 0.1 ppm, soaked for 24 mts.,  $S_5$ =Concentration 1.0 ppm, soaked for 12 mts.,  $S_6$ =Concentration 10.0 ppm, soaked for 6 mts. and  $S_7$ =Concentration 10.0 ppm, soaked for 12 mts.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a)  $18' \times 11.25'$ . (b)  $14' \times 9.75'$ . (v)  $2' \times 9'$ . (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Slight attack of brown and yellow rust. (iii) Grain yield. (iv) (a) 1953—1955. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 2199 lb./ac. (ii) 134.0 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$S_0$	$S_1$	$S_2$	$S_3$	$S_4$	$S_5$	$S_6$	$S_7$
Av. yield	2287	2225	2164	2185	2134	2297	2082	2215

S.E./mean = 67.0 lb./ac.

**Crop :-** Wheat (*Rabi*).

**Ref :-** U.P. 55(23).

**Site :-** Govt. Res. Farm, Kanpur.

**Type :-** 'D'.

Object :—To study the effect of seed treated with Dicotox 2, 4—D on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanai*. (c) No. (ii) (a) Loam soil. (b) Refer soil analysis, Kanpur. (iii) 23.11.1955. (iv) (a) 2 cultivators, 1 victory and 3 *desi* ploughings. (b) Sown behind the plough. (c) 80 lb./ac. (d) Rows 9" apart. (e) N.A. (v) Nil. (vi) NP—710 (medium). (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 24.4.1956.

## 2. TREATMENTS :

Same as in expt. no. 54(20) on page 561.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 9' × 11.5'. (b) 7½' × 9½'. (v) 9" × 1'. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Traces of rust attack. (iii) Grain yield. (iv) (a) 1953—1955. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1076 lb./ac. (ii) 262.9 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	S <sub>0</sub>	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>	S <sub>5</sub>	S <sub>6</sub>	S <sub>7</sub>
Av. yield	1198	1002	963	1021	1198	1179	982	1061

S.E./mean = 131.4 lb./ac.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 55(22).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'D'.**

Object :—To study the effect of seed treated with dicotox 2, 4—D on Wheat

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanai*. (c) No. (ii) (a) Loam soil. (b) Refer soil analysis, Kanpur. (iii) 23.11.1955. (iv) (a) 2 cultivators, 1 victory and 3 *desi* ploughings. (b) Sown behind the plough. (c) 80 lb./ac. (d) Rows 9" apart. (e) N.A. (v) Nil. (vi) Pb.—591 (late). (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 24.4.1956.

## 2. TREATMENTS :

4 concentrations of seed treatment : S<sub>0</sub>=Control, S<sub>1</sub>=100.0 ppm., S<sub>2</sub>=10.0 ppm., and S<sub>3</sub>=1.0 ppm. Seed soaked for 24 hours.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 9' × 7.5'. (b) 7.5' × 5.5'. (v) 9" × 1'. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Traces of rust attack. (iii) Grain yield. (iv) and (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1188 lb./ac. (ii) 295.7 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	S <sub>0</sub>	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>
Av. yield	1244	1064	1154	1290

S.E./mean = 120.7 lb./ac.

**Crop :- Wheat (*Rabi*).**

**Ref :- U.P. 55(368).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'D'.**

Object :— To study the effect of different chemicals on Wheat nematode.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Alluvial loam. (b) Refer soil analysis, Kanpur. (iii) N.A. (iv) and (v) N.A. (vi) NP-125. (vii) to (x) N.A.

## 2. TREATMENTS :

All combinations of (1) and (2) + one control

(1) 3 numbers of sprayings :  $N_1=1$ ,  $N_2=2$  and  $N_3=3$ .

(2) 3 chemicals each at 3 concentrations :  $C_1$ =Benzoic acid 0.04%,  $C_2$ =Benzoic acid 0.07%,  $C_3$ =Benzoic acid 0.14%,  $C_4$ =Salicylic acid 0.05%,  $C_5$ =Salicylic acid 0.08%,  $C_6$ =Salicylic acid 0.16%,  $C_7$ =Diazinon acid 0.05%,  $C_8$ =Diazinon acid 0.1% and  $C_9$ =Diazinon acid 0.15%.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 28. (b) N.A. (iii) 3. (iv) (a) and (b) 13' × 10.5'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Weight of cockles of wheat. (iv) (a) to (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 354 lb./ac. (ii) 113.9 lb./ac. (iii) None of the effects is significant. (iv) Av. weight of cockles in lb./ac.

Control = 295 lb./ac.

	$C_1$	$C_2$	$C_3$	$C_4$	$C_5$	$C_6$	$C_7$	$C_8$	$C_9$	Mean
$N_1$	404	305	478	392	383	262	325	304	327	353
$N_2$	452	278	461	357	447	363	308	418	410	388
$N_3$	294	383	308	339	237	241	340	420	386	328
Mean	383	322	416	363	356	289	324	381	374	256

S.E. of C marginal mean = 38.0 lb./ac.

S.E. of N marginal mean = 21.9 lb./ac.

S.E. of body of table = 65.8 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 56(398).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'D'.**

Object :- To study the effect of different chemicals on Wheat nematode.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Alluvial loam. (b) N.A. (iii) 22.11.1956. (iv) and (v) N.A. (vi) NP-125. (vii) to (x) N.A.

## 2. TREATMENTS :

6 chemical treatments :  $C_0$ =Control,  $C_1$ =Benzoic acid 0.14%,  $C_2$ =Salicylic acid 0.16%+albolium (500 : 1),  $C_3$ =Salicylic acid 0.16%+lisopol (500 : 1),  $C_4$ =Benzoic acid 0.14%+alblum (500 : 1),  $C_5$ =Benzoic acid 0.14%+lisopol (500 : 1).

Subsequent two sprayings of treatments completed within a fortnight of the first spraying at 125 gallons/ac.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) and (b) 20' × 16'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Wheat cockles weight. (iv) (a) to (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 40 lb./ac. (ii) 16.0 lb./ac. (iii) Treatment differences are not significant. (iv) Av. weight of cockles in lb./ac.

Treatment	C <sub>0</sub>	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	C <sub>4</sub>	C <sub>5</sub>
Av. weight	36	38	49	47	45	26

S.E./mean = 8.0 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 56(362).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'D'.**

Object :— To study the the efficacy of solar and chemical treatments for the control of loose smut o' Wheat.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loam soil. (b) Refer soil analysis, Kanpur. (iii) 17.11.1956. (iv) (a) N.A. (b) Line sowing. (c) N.A. (d) and (e) N.A. (v) N.A. (vi) Pb.—591. (vii) to (x) N.A.

**2. TREATMENTS :**

All combinations of (1) and (2) + one extra treatment

(1) 2 periods of soaking : P<sub>1</sub>=For 2 hours in water in shade and P<sub>2</sub>=For 4 hours in water in the sun.

(2) 2 places for drying the seed in the sun : S<sub>1</sub>=Cowdung plastered floor and S<sub>2</sub>=Layer of sand.

Extra treatment : T=Soaking of seed in water for 6 hours and subsequently immersing them in 0.1% spergon (wetable) for 24 hours.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) and (b) 1'×20'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Effect of smut in treatment T only. (iii) Gremination and no. of smut effected plants. (iv) and (v) N.A. (vi) and (vii) Nil.

**5. RESULTLS :**

(i) 25.54 degrees. (ii) 5.23degrees. (iii) Main effect of S and interaction P×S are significant. (iv) Av. germination in degrees.

T = 28.91 degrees.

	S <sub>1</sub>	S <sub>2</sub>	Mean
P <sub>1</sub>	16.33	28.98	22.66
P <sub>2</sub>	23.97	29.51	26.74
Mean	20.15	29.24	24.70

S.E. of P or S marginal mean = 1.85 degrees.

S.E. of body of table or T mean = 2.62 degrees.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 55(20).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'D'.**

Object :— To study the effect of soaking and sunning of seed on Wheat

**1. BASAL CONDITIONS :**

(i) (a) No. (b) Moong. (c) Nil. (ii) (a) Light loam. (b) Refer soil analysis, Kanpur. (ii) 20.11.1955. (iv) (a) 4 ploughings. (b) Sown by dibbling. (c) N.A. (d) 9"×6". (e) 5. (v) Nil. (vi) NP—125 (medium). (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 25.4.1956.

## 2. TREATMENTS :

11 seed treatments :  $S_0$ =Control (unsoaked and unsunned),  $S_1$ =Soaked and unsunned,  $S_2$ =Unsoaked nonbunted,  $S_3$ =Soaked overnight and sunned for 8 days,  $S_4$ =Unsoaked and sunned for 8 days,  $S_5$ =Soaked overnight and sunned for 16 days,  $S_6$ =Unsoaked and sunned for 16 days,  $S_7$ =Soaked overnight and sunned for 24 days,  $S_8$ =Unsoaked and sunned for 24 days,  $S_9$ =Unsoaked and unsunned seed to be treated with Agrosan G.N. before sowing and  $S_{10}$ =Unsoaked and unsunned seed to be treated with Ceresan.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 11. (b) N.A. (iii) 4. (iv) (a) and (b)  $7\frac{1}{2}' \times 6'$ . (v)  $2' \times 2'$ . (vi) Yes.

## 4. GENERAL :

(i) In soaked treatments germination was 14.5% and unsoaked treatments germination was 66.2%. (ii) Light traces of rust were seen. No plant was affected by smut. (iii) Grain yield. (iv) and (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1833 lb./ac. (ii) 464.6 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$S_0$	$S_1$	$S_2$	$S_3$	$S_4$	$S_5$	$S_6$	$S_7$	$S_8$	$S_9$	$S_{10}$
Av. yield	2396	933	2396	1617	1743	903	1649	1337	2396	2520	2271

S.E./mean = 232.3 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 55(7).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'D'.**

Object :- To study the effect of salt treated seeds on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanai*. (c) Nil. (ii) (a) Loam soil. (b) Refer soil analysis, Kanpur. (iii) 10.11.1955. (iv) (a) 6 ploughings and 1 planking. (b) Sown behind the plough. (c) 80 lb./ac. (d) Rows 9" apart. (e) N.A. (v) Nil. (vi) NP-125 (medium). (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 7.4.1956.

## 2. TREATMENTS :

2 seed treatments :  $S_0$ =Control and  $S_1$ =Seed treated with salt for 5 mts. before sowing.

## 3. DESIGN :

(i) Paired-plot. (ii) (a) 2. (b) N.A. (iii) 12. (iv) (a)  $10' \times 5'3''$ . (b)  $8' \times 3'9''$ . (v)  $1' \times 9''$ . (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) and (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1648 lb./ac. (ii) 203.3 lb./ac. (iii) Treatment difference is not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$S_0$	$S_1$
Av. yield	1617	1680

S.E./mean = 58.7 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 58(209).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'D'.**

Object :- To study the effect of soaking of seed in brine solution on Wheat crop.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loam soil. (b) Refer soil analysis, Kanpur. (iii) 15.11.1958. (iv) (a) N.A. (b) Behind the plough. (c) 80 lb./ac. (d) Rows 9" apart. (e) N.A. (v) N.A. (vi) C-13 (medium). (vii) and (viii) N.A. (ix) 1". (x) N.A.

**2. TREATMENTS :**

4 seed treatments :  $S_0$ =Control,  $S_1$ =Soaking in water over night,  $S_2$ =Soaking in water just before sowing and  $S_3$ =Soaking in brine solution.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) 18'×12'. (b) 16'×10½'. (v) 1'×9". (vi) Yes.

**4. GENERAL :**

(i) Lodging in 4 plots only. (ii) Yellow, brown and black rust attack. (iii) Germination %, flowering dates, yield of grain and straw. (iv) and (v) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1727 lb./ac. (ii) 193.6 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$S_0$	$S_1$	$S_2$	$S_3$
Av. yield	1767	1859	1625	1659

S.E./mean = 96.8 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 58(210).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'D'.**

Object :—To study the effect of seed dressing with Agrosan G.N. and Fernasan compound on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) *Sanai*. (c) Nil. (ii) (a) Loam soil. (b) Refer soil analysis, Kanpur. (iii) 20.11.1958. (iv) (a) 1 ploughing by victory plough, 2 ploughings by *desi* plough and 3 plankings. (b) Behind the plough. (c) 80 lb./ac. (d) Rows 9" apart. (e) N.A. (v) *Sanai* as G.M. (vi) Pb.—591 (late). (vii) Irrigated. (viii) N.A. (ix) 1". (x) N.A.

**2. TREATMENTS :**

5 seed treatments :  $F_0$ =Control,  $F_1$ =6 ozs. of Agrosan G.N.,  $F_2$ =4 ozs. of Fernasan,  $F_3$ =2 $F_2$  and  $F_4$ =3 $F_2$ .

**3. DESIGN :**

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 29'×11.25'. (b) 25'×9.75'. (v) 2'×9". (vi) Yes.

**4. GENERAL :**

(i) Lodging. (ii) Rust attack noticed. (iii) Germination % and yield of grain. (iv) (a) to (c) No. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1445 lb./ac. (ii) 314.0 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$F_0$	$F_1$	$F_2$	$F_3$	$F_4$
Av. yield	1512	1365	1438	1595	1314

S.E./mean = 140.4 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 55(285).****Site :- Student's. Instrl. Farm, Govt. Agri. College, Kanpur.****Type :- 'D'.**

Object :—To study the effect of chemical and mechanical control of weeds on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Moong*. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Kanpur. (iii) 18.11.1955. (iv) (a) 4 ploughings by *desi* plough followed by planking and 1 cultivation by Kanpur cultivator. (b) Behind the plough. (c) 40 srs./ac. (d) and (e) N.A. (v) Nil. (vi) C—13 (early). (vii) Irrigated. (viii) As per treatments. (ix) 2.19". (x) N.A.

**2. TREATMENTS :**

8 weeding treatments :  $W_0$ =Control,  $W_1$ =Weeding by Sharma hoe,  $W_2$ =Weeding by *khurpi*,  $W_3$ =Weeding by bullock driver implements,  $W_4$ =Post-emergence spraying with 2, 4—D at 3.5 lb./ac.,  $W_5$ =Post-emergence spraying with 2, 4—D at 4.5 lb./ac.,  $W_6$ =Pre-emergence spraying with 2, 4—D at 3.5 lb./ac. and  $W_7$ =Pre-emergence spraying with 2, 4—D at 4.5 lb./ac.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 6. (iv) (a) 30'×24'. (b) 27'×21'. (v) 1.5'×1.5'. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Nil. (iii) Germination and yield of grain. (iv) (a) to (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1434 lb./ac. (ii) 269.1 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$W_0$	$W_1$	$W_2$	$W_3$	$W_4$	$W_5$	$W_6$	$W_7$
Av. yield	1326	1493	1428	1438	1587	1288	1498	1412

S.E./mean = 109.9 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 56(240).****Site :- Student's. Instrl. Farm, Govt. Agri. College, Kanpur.****Type :- 'D'.**

Object :—To study the effect of chemical and mechanical control of weeds on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Chari+Lobia*. (c) 25 C.L./ac. of compost. (ii) (a) Sandy loam. (b) Refer soil analysis, Kanpur. (iii) 7.11.1956. (iv) (a) 5 ploughings, 3 harrowings and 2 plankings. (b) Behind *desi* plough. (c) 40 lb./ac. (d) 9" between rows. (e) N.A. (v) Nil. (vi) C—13. (vii) Irrigated. (viii) As per treatments. (ix) 2.19". (x) 11.4.1957.

**2. TREATMENTS :**

8 weeding treatments :  $T_0$ =Control,  $T_1$ =Weeding by *khurpi*,  $T_2$ =Hoeing by Sharma hoe,  $T_3$ =Weeding by bullock driven implement,  $T_4$ =Pre-emergence spraying of 2, 4—D (Fernozone) at the rate of 1.0 lb./ac.,  $T_5=2 T_4$ ,  $T_6$ =Post-emergence spraying of 2, 4—D (Fernozone) at the rate of 1.0 lb./ac. and  $T_7=2 T_6$ .

**3. DESIGN :**

(i) R.B.D. (ii) (a) 8. (b) 78'×72'. (iii) 6. (iv) (a) 36'×19.5'. (b) 33'×16.5'. (v) 1.5'×1.5'. (vi) Yes.

**4. GENERAL :**

(i) Good growth. (ii) Nil. (iii) Germination and yield of grain. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1674 lb./ac. (ii) 216.6 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.



Treatment	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	T <sub>5</sub>	T <sub>6</sub>	T <sub>7</sub>
Av. yield	1728	1777	1736	1481	1802	1580	1720	1572

S.E./mean = 88.4 lb./ac.

**Crop :-** Wheat (*Rabi*).

**Ref :-** U.P. 57(320).

**Site :-** Student's. Instrl. Farm, Govt. Agri. College, Kanpur.

**Type :-** 'D'.

**Object :-** To study the effect of chemical mechanical and methods of weed control on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Maize. (c) 30 mds./ac. of F.Y.M. (ii) (a) Sandy loam. (b) Refer soil analysis, Kanpur. (iii) 3.11.1957. (iv) (a) 1 *palewa*, 1 ploughing by victory plough, 5 plankings and 5 *desi* ploughings. (b) Sown behind the plough. (c) 45 srs./ac. (b) and (c) N.A. (v) Nil. (vi) C-13. (vii) Irrigated. (viii) As per treatments. (ix) 1.50". (x) 23.3.1958.

**2. TREATMENTS :**

Same as in expt. no. 56(240) on page 567.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 8. (b) 80'×30'. (iii) 6. (iv) (a) 20'×15'. (b) 17'×12'. (v) 1.5'×1.5'. (vi) Yes.

**4. GENERAL :**

Same as in expt. no. 56(240) on page 567.

**5. RESULTS :**

(i) 1800 lb./ac. (ii) 375.0 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	T <sub>5</sub>	T <sub>6</sub>	T <sub>7</sub>
Av. yield	1860	1883	1665	1662	1995	1846	1828	1662

S.E./mean = 153.1 lb./ac.

**Crop :-** Wheat (*Rabi*).

**Ref :-** U.P. 59(474).

**Site :-** State Livestock-cum-Agri. Farm, Madhurikund.

**Type :-** 'D'.

**Object :-** To find out an effective measure of control against gujia weeries pest of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) *Jowar*—*Dhaincha*—Wheat. (b) *Dhaincha*. (c) Nil. (ii) (a) *Doomat* soil. (b) N.A. (iii) and (iv) N.A. (v) 40 srs./ac of A/S+40 srs./ac. of Super applied with *dhaincha* (G.M.). (vi) Pb.—591. (vii) N.A. (viii) 1 hoeing. (ix) and (x) N.A.

**2. TREATMENTS :**

4 insecticidal treatments: D<sub>0</sub>=Control (two plots), D<sub>1</sub>=Dusting with 10% B.H.C. dust at 35 lb./ac. and raking the soil., D<sub>2</sub>=Dusting with 5% Aldrin dust at 30 lb./ac. and raking the soil., and D<sub>3</sub>=Dusting with 2% Diazinon dust at 25 lb./ac. and raking the soil. Insecticides applied on 18.11.1955. by rotary land duster.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 2. (iv) (a) and (b) 80'×54.6". (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Mortality percentage. (iv) (a) to (c) No. (v) (a) and (b) N.A. (vi) and (vi) Nil.

**5. RESULTS :**

(i) 35.62 degrees. (ii) 2.67 degrees. (iii) Treatment differences are highly significant. (iv) Av. mortality in degrees.

Treatment	D <sub>0</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>
Mean angle	1.80	64.10	69.52	40.88
mortality %	0.70	80.61	87.38	089

S.E./mean = 1.88 degrees.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 57(42).**

**Site :- Reg. Res. Stn., Meerut.**

**Type :- 'D'.**

Object :—To study the effect of soaking of seed for smut control in Wheat.

#### 1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Silt loam. (b) Refer soil analysis. Meerut. (iii) 13.11.1957. (iv) (a) 1 ploughing by soil turning plough followed by 4 to 5 *desi* ploughings. (b) Behind the plough. (c) 80 lb./ac. (d) Between rows 9". (e) N.A. (v) Nil. (vi) Pb.—591 (medium). (vii) Irrigated. (viii) 1 weeding by *khurpi*. (ix) 1.31". (x) 8.5.1958.

#### 2. TREATMENTS :

All combinations of (1) and (2)+a control

(1) 4 durations of soaking : D<sub>1</sub>=8, D<sub>2</sub>=12, D<sub>3</sub>=16 and D<sub>4</sub>=20 hours.

(2) 2 dates of soaking : M<sub>1</sub>=End of May and M<sub>2</sub>=1st week of October.

#### 3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) 70'×35½'. (iii) 4. (iv) (a) 22'×10½'. (b) 20'×9'. (v) 1'×9". (vi) Yes.

#### 4. GENERAL :

(i) Good. (ii) Wheat smut control measures as per treatments. (iii) Yield of grain and no. of smutted plants/plot. (iv) (a) to (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

#### 5. RESULTS :

##### I Grain yield.

(i) 997 lb./ac. (ii) 137.8 lb./ac. (iii) Main effect of M 'interactions D×M and 'control vs. others' are highly significant. (iv) Av. yield of grain in lb./ac.

Control = 1573 lb./ac.

	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	Mean
M <sub>1</sub>	491	181	197	424	323
M <sub>2</sub>	1437	1452	1649	1573	1528
Mean	964	816	923	998	925

S.E. of M marginal mean = 34.4 lb./ac.

S.E. of D marginal mean = 48.7 lb./ac.

S.E. of body of table or control mean = 68.9 lb./ac.

##### II Smutted plants/plot.

$\sqrt{x+0.5}$  transformation applied where x is the number of smutted plants.

(i) 2.3. (ii) 0.66. (iii) Main effect of M and 'control vs. others' are highly significant. (iv) Av. number of smutted plants.

Control = 4.3

	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	Mean
M <sub>1</sub>	0.7	0.7	1.0	0.8	0.8
M <sub>2</sub>	3.1	4.0	3.7	2.9	3.4
Mean	1.9	2.4	2.4	1.8	2.1

S.E. of M marginal mean	= 0.16
S.E. of D marginal mean	= 0.23
S.E. of body of table or control mean	= 0.33

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 58(43).**

**Site :- Reg. Res. Stn., Meerut.**

**Type :- 'D'.**

**Object :-**To study the effect of soaking of seed for control of loose smut of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) *Dhaincha*. (c) Nil. (ii) (a) Silt loam. (b) Refer soil analysis, Meerut. (iii) 8.11.1958. (iv) (a) 1 ploughing by soil turning plough followed by 4 to 5 ploughings by *desi* plough. (b) Sown behind the plough. (c) 67 srs./ac. (d) Rows 9" apart. (e) N.A. (v) *Dhaincha* as G.M. (vi) Pb.—591. (vii) Irrigated. (viii) 1 weeding. (ix) 8.84". (x) 15.4.1959.

**2. TREATMENTS :**

12 seed soaking treatments :  $S_0$ =Control,  $S_1$ =2,  $S_2$ =4,  $S_3$ =6 hours soaking before sowing in C/S solution,  $S_4$ =8,  $S_5$ =12,  $S_6$ =16,  $S_7$ =20 hours soaking in 1st week of October in water,  $S_8$ =8,  $S_9$ =12,  $S_{10}$ =16 and  $S_{11}$ =20 hours soaking in the end of May in water.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 12. (b) 30' × 171.5'. (iii) 3. (iv) (a) 30' × 12'. (b) 27' × 9'. (v) 1.5' × 1.5'. (vi) Yes.

**4. GENERAL :**

(i) No germination in last four treatments. In other treatments growth was good. (ii) Smut. (iii) Germination and yield of grain. (iv) (a) to (c) No. (v) (a) and (b) N.A. (vi) Nil. (vii) Because of no yield in last four treatments they were not taken into consideration for analysis.

**5. RESULTS :**

**I Grain yield**

(i) 1913 lb /ac. (ii) 188.8 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$S_0$	$S_1$	$S_2$	$S_3$	$S_4$	$S_5$	$S_6$	$S_7$
Av. yield	2017	1953	1755	1870	1951	189	2088	1792

S.E./mean 109.0 lb /ac.

**II Smutted plants/plot**

$\sqrt{x+0.5}$  transformation applied where x is the number of smutted plants.

(i) 1.8 (ii) 0.99 (iii) Treatment differences are not significant. (iv) Av. number of smutted plants.

Treatment	$S_0$	$S_1$	$S_2$	$S_3$	$S_4$	$S_5$	$S_6$	$S_7$
Av. number	3.1	2.0	2.2	1.6	1.0	2.0	1.4	1.4

S.E./mean = 0.57

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 58(26).**

**Site :- Reg. Res. Stn., Meerut.**

**Type :- 'D'.**

**Object :-**To study the effect of sulphur dusting for control of rust in Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Dhaincha*. (c) Nil. (ii) (a) Silt loam. (b) Refer soil analysis, Meerut. (iii) 31.10.1958. (iv) (a) 1 ploughing by soil turning plough and 4 to 5 ploughings by *desi* plough. (b) Sown behind the plough in rows. (c) 35 srs./ac. (d) Rows 9" apart. (e) N.A. (v) *Dhaincha* as G.M. (vi) Pb.—591 (medium). (vii) Irrigated. (viii) 1 weeding. (ix) 12.13". (x) 16.4.1959.

## 2. TREATMENTS :

## Main-plot treatments :

2 dusting treatments :  $D_0$ =Undusted and  $D_1$ =Sulphur dusting.

## Sub-plot treatments :

2 applications of manure :  $M_0$ =Sowing without manure and  $M_1$ =Sowing with a mixture of F.Y.M. and Super.

Sulphur dusting at 21 lb./ac. done on 11.3.1959. 40 lb./ac. of  $P_2O_5$  as Super+25 lb./ac. of N as F.Y.M. mixed and applied through funnel in band 3" to 4" deep and then seeds sown behind the plough in the same furrow.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 2 sub-plots/main-plot. (b)  $163' \times 2\frac{1}{2}'$ . (iii) 4. (iv) (a)  $82' \times 12'$ . (b)  $79' \times 9'$ . (v)  $1.5' \times 1.5'$ . (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) N.A. (iii) Germination and yield of grain. (iv) (a) to (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1187 lb./ac. (ii) (a) 173.0 lb./ac. (b) 114.6 lb./ac. (iii) Main effect of M alone is significant. (iv) Av. yield of grain in lb./ac.

	$M_0$	$M_1$	Mean
$D_0$	1072	1344	1208
$D_1$	1137	1195	1166
Mean	1104	1270	1187

S.E. of difference of two

- |                                   |                 |
|-----------------------------------|-----------------|
| 1. D marginal means               | = 86.5 lb./ac.  |
| 2. M marginal means               | = 57.3 lb./ac.  |
| 3. M means at the same level of D | = 81.0 lb./ac.  |
| 4. D means at the same level of M | = 103.8 lb./ac. |

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 5(28).**

**Site :- Reg. Res. Stn., Meerut.**

**Type :- 'D'.**

Object :—To study the effect of certain hormones and nutrients applied as foliar spray on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Dhaincha*. (c) Nil. (ii) (a) Silt loam. (b) Refer soil analysis, Meerut. (iii) 31.10.1958. (iv) (a) 1 victory plough and 2 by *desi* plough. (b) Behind the plough in rows. (c) 40 srs./ac. (d) Rows 10" apart. (e) N.A. (v) *Dhaincha* as G.M. (vi) Pb.—591 (medium). (vii) Irrigated. (viii) 1 weeding. (ix) 12.13". (x) 30.4.1959.

## 2. TREATMENTS :

8 sprayings :  $S_0$ =Control,  $S_1$ =Indolyl acetic acid 0.005% solution,  $S_2$ =2, 4—D Dichlorophenoxy acetic acid 0.005% solution,  $S_3$ =Urea 0.2% solution,  $S_4$ =A/S 0.45% solution,  $S_5$ =Potassium di-hydrogen phosphate 0.5% solution,  $S_6$ =Manganese sulphate 0.02% solution and  $S_7$ =C/S 0.02% solution.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b)  $57' \times 86'$ . (iii) 4. (iv) (a)  $27' \times 20'$ . (b)  $24' \times 17'$ . (v)  $1.5' \times 1.5'$ . (vi) Yes.

## 4. GENERAL :

(i) Fair growth. (ii) Slight effect of rust. (iii) Germination and yield of grain (iv) (a) to (c) No. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1290 lb./ac. (ii) 229.2 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	S <sub>0</sub>	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>	S <sub>5</sub>	S <sub>6</sub>	S <sub>7</sub>
Av. yield	1308	1179	1162	1562	1167	1376	1265	1298

S.E /mean = 114.6 lb./ac.

**Crop :-** Wheat (*Rabi*).

**Ref :-** U.P. 59(28).

**Site :-** Reg. Res. Stn., Meerut.

**Type :-** 'D'.

**Object :-** To find out suitable method of control of weeds in Wheat by spraying hormones.

## 1. BASAL CONDITIONS :

(i) (a) G.M.--Wheat. (b) *Sanai*. (c) Nil. (ii) (a) Silt loam. (b) Refer soil analysis, Meerut. (iii) 12, 13.11.1959. (iv) (a) 1 ploughing by soil turning plough followed by 4 to 5 ploughings by *desi* plough. (b) By dibbling. (c) 5 srs./ac. (d) 9" × 4½". (e) 2. (v) *Sanai* as G.M. (vi) Pb.--591 (medium). (vii) Irrigated. (viii) 1 weeding only in T<sub>1</sub>. (ix) 1.01". (x) 20.4.1960.

## 2. TREATMENTS :

All combinations of (1) and (2)+2 extra treatments

(1) 2 numbers of spraying of planotox : S<sub>1</sub>=1 and S<sub>2</sub>=2.

(2) 2 levels of planotox : L<sub>1</sub>=15 and L<sub>2</sub>=22.5 oz./ac.

Extra treatments with water sprayings : T<sub>0</sub>=Unweeded and T<sub>1</sub>=Weeded.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) 114' × 89½'. (iii) 4. (iv) (a) 44' × 37'. (b) 41' × 34'. (v) 1.5' × 1.5'. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain and straw. (iv) and (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 2313 lb./ac. (ii) 256.2 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

T<sub>0</sub> = 2257 and T<sub>1</sub> = 2575 lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	Mean
L <sub>1</sub>	2339	2165	2252
L <sub>2</sub>	2338	2202	2270
Mean	2338	2184	2261

S.E. of L or S marginal mean = 90.6 lb./ac.

S.E. of body of table or T mean = 128.1 lb./ac.

**Crop :-** Wheat (*Rabi*).

**Ref :-** U.P. 57(104).

**Site :-** Reg. Res. Stn., Nawabganj.

**Type :-** 'D'.

**Object :-** To study the effect of soaking of seed for smut control in Wheat.

## 1. BASAL CONDITIONS:

- (i) (a) N.A. (b) Fallow. (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Nawabganj. (iii) 28.10.1957.  
 (iv) (a) N.A. (b) Behind the plough. (c) 80 lb./ac. (d) Row to row 9". (e) N.A. (v) 150 mds./ac. of F.Y.M.  
 (vi) Pb.—591 (late). (vii) 8.12.1957. (viii) N.A. (ix) 0.59". (x) 10.4.1958.

## 2. TREATMENTS :

All combinations of (1) and (2) + a control

- (1) 2 dates of soaking :  $M_1$  = End of May and  $M_2$  = 1st week of October.  
 (2) 4 periods of soaking :  $P_1$  = 8,  $P_2$  = 12,  $P_3$  = 16 and  $P_4$  = 20 hours.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a)  $23' \times 9\frac{3}{4}'$ . (b)  $23' \times 8'3''$ . (v)  $1\frac{1}{2}' \times 9''$ . (vi) Yes.

## 4. GENERAL :

- (i) and (ii) N.A. (iii) % germination, yield of grain and straw. (iv) (a) to (c) No. (v) (a) and (b) N.A.  
 (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1294 lb./ac. (ii) 186.0 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

Control = 1162 lb./ac.

	$P_1$	$P_2$	$P_3$	$P_4$	Mean
$M_1$	1340	1256	1408	1204	1302
$M_2$	1341	1322	1272	1340	1319
Mean	1340	1289	1340	1272	1310

S.E. of M marginal mean = 46.5 lb./ac.  
 S.E. of P marginal mean = 65.8 lb./ac.  
 S.E. of body of table or control mean = 93.0 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 58(95).**

**Site :- Reg. Res. Stn., Nawabganj.**

**Type :- 'D'.**

Object :- To study the effect of certain hormones and nutrients applied as foliar spray on the yield of Wheat.

## 1. BASAL CONDITIONS :

- (i) (a) to (c) N.A. (ii) Clayey loam. (b) Refer soil analysis, Nawabganj. (iii) 17.11.1958. (iv) (a) N.A.  
 (b) Behind the plough in lines. (c) 1 md./ac. (d) and (e) N.A. (v) 100 mds./ac. of F.Y.M. (vi) Pb.—591  
 (late). (vii) and (viii) N.A. (ix) 2.93". (x) 26.4.1959.

## 2. TREATMENTS :

Same as in expt. no. 58(28) on page 571.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a)  $27' \times 21'$ . (b)  $24' \times 18'$ . (v)  $1.5' \times 1.5'$ . (vi) Yes.

## 4. GENERAL :

- (i) and (ii) N.A. (iii) Germination, yield of grain and straw. (iv) (a) to (c) No. (v) (a) and (b) N.A. (vi)  
 and (vii) Nil.

## 5. RESULTS :

- (i) 821 lb./ac. (ii) 119.0 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain  
 in lb./ac.

Treatment	S <sub>0</sub>	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>	S <sub>5</sub>	S <sub>6</sub>	S <sub>7</sub>
Av. yield	810	768	927	700	875	788	843	856

S.E./mean = 59.5 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :-U.P. 56(181).**

**Site :- Agri. College Farm, B.H.U., Varanasi.**

**Type :- 'D'.**

Object :— To study the effect of electro-chemical treatment of seeds on the yield of Wheat.

### 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar*. (c) N.A. (ii) (a) Medium alluvial soil. (b) Refer soil analysis, Varanasi. (iii) N.A. (iv) (a) 6 ploughings by *desi* plough each followed by planking. (b) Dibbling. (c) 40 srs./ac. (d) and (e) N.A. (v) N.A. (vi) Pb.—591 and C—13. (vii) Irrigated. (viii) to (x) N.A.

### 2. TREATMENTS :

All combinations of (1), (2) and (3)+2 extra treatments

(1) 4 salts : S<sub>1</sub>=Sodium chloride, S<sub>2</sub>=Calcium chloride, S<sub>3</sub>=Potassium Nitrate and S<sub>4</sub>=S<sub>1</sub>+S<sub>2</sub> in 9 : 1 ratio.

(2) 2 seed treatments : T<sub>1</sub>=Soaking and T<sub>2</sub>=Electro-chemical treatment.

(3) 2 durations of treatment : D<sub>1</sub>=5 and D<sub>2</sub>=10 minutes.

Extra treatments : E<sub>0</sub>=Unsoaked and E<sub>1</sub>=Water soaked.

### 3. DESIGN :

(i) R.B.D. (ii) (a) 18. (b) N.A. (iii) 3. (iv) (a) 24' × 18'. (b) 20' × 14'. (v) 2' × 2'. (vi) Yes.

### 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) to (c) No. (v) (a) and (b) N.A. (vi) Nil. (vii) The experiment is conducted on two different varieties separately.

### 5. RESULTS:

Variety : C—13

(i) 2290 lb./ac. (ii) 144.0 lb./ac. (iii) Main effects of S, T and interaction S × T and S × D are significant. (iv) Av. yield of grain in lb./ac.

E<sub>0</sub> = 2231 lb./ac. and E<sub>1</sub> = 2330 lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>	Mean	D <sub>1</sub>	D <sub>2</sub>
T <sub>1</sub>	2366	2408	1754	2412	2235	2218	2252
T <sub>2</sub>	2710	2434	1594	2652	2348	2352	2344
Mean	2538	2421	1674	2532	2291	2285	2298
D <sub>1</sub>	2486	2421	1740	2493			
D <sub>2</sub>	2590	2421	1608	2571			

S.E. of T or D marginal mean = 29.4 lb./ac.

S.E. of S marginal mean = 41.6 lb./ac.

S.E. of body of T × D table = 41.6 lb./ac.

S.E. of body of S × T or S × D table = 58.8 lb./ac.

S.E. of E mean = 83.1 lb./ac.

Variety : Pb.—591.

(i) 1925 lb./ac. (ii) 262.4 lb./ac. (iii) Main effects of S, T and interaction S × T or S × D are significant. (iv) Av. yield of grain in lb./ac.

$E_0 = 1920 \text{ lb./ac. and } E_1 = 1920 \text{ lb./ac.}$ 

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>	Mean	D <sub>1</sub>	D <sub>2</sub>
T <sub>1</sub>	2116	1972	1525	1784	1849	1794	1904
T <sub>2</sub>	2350	1976	1262	2421	2002	2037	1968
Mean	2233	1974	1394	2103	1926	1916	1936
D <sub>1</sub>	2284	1796	1468	2116			
D <sub>2</sub>	2182	2152	1320	2090			

S.E. of T or D marginal mean = 53.6 lb./ac.  
 S.E. of S marginal mean = 75.7 lb./ac.  
 S.E. of body of T × D table = 75.7 lb./ac.  
 S.E. of body of S × T or S × D table = 107.1 lb./ac.  
 S.E. of E mean = 151.5 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 57(92).**

**Site :- Reg. Res. Stn., Varanasi.**

**Type :- 'D'.**

**Object :-** To study the effect of soaking of seed for smut control in Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Paddy—Wheat. (b) Paddy. (c) Compost, A/S, Super and Pot. Sul. (ii) (a) Clay loam. (b) Refer soil analysis, Varanasi. (iii) 10.12.1957. (iv) (a) Ploughing by *desi* plough. (b) Behind the plough. (c) 80 lb./ac. (d) Row to row 9". (e) N.A. (v) N.A. (vi) NP—52 (early). (vii) Irrigated. (viii) N.A. (ix) 1.01". (x) 4.4.1958.

**2. TREATMENTS and 3. DESIGN :**

Same as in expt. no. 57(104) on page 572.

**4. GENERAL :**

(i) N.A. (ii) Nil. (iii) Yield of grain. (iv) (a) to (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 297 lb./ac. (ii) 102.3 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

Control = 309 lb./ac.

	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	P <sub>4</sub>	Mean
M <sub>1</sub>	235	301	342	264	286
M <sub>2</sub>	322	351	214	330	304
Mean	278	326	278	297	295

S.E. of M marginal mean = 25.6 lb./ac.  
 S.E. of P marginal mean = 36.2 lb./ac.  
 S.E. of body of table or control mean = 51.2 lb./ac.



**Crop :- Wheat (Rabi).****Ref :- U.P. 58(92).****Site :- Reg. Res. Stn., Varanasi.****Type :- 'D'.**

Object :—To study the effect of hormones and nutrients applied as foliar spray on the yield of Wheat

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Maize. (c) 100 mds./ac. of F.Y.M. (ii) (a) Clayey loam. (b) Refer soil analysis, Varanasi. (iii) 12.11.1958. (iv) (a) Tractor harrowing twice. (b) Behind the plough in lines. (c) 30 srs/ac. (d) Row to row 9". (e) N.A. (v) Nil. (vi) NP--710 (medium). (vii) Irrigated. (viii) 2 weedings and 2 hoeings. (ix) 2 89". (x) 5.4.1959.

**2. TREATMENTS :**

Same as in expt. no. 58 (28) on page 571.

**3. DESIGN and 4. GENERAL :**

Same as in expt. no. 58 (95) on page 573.

**5. RESULTS :**

(i) 1352 lb./ac. (ii) 222.1 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	S <sub>0</sub>	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>	S <sub>5</sub>	S <sub>6</sub>	S <sub>7</sub>
Av. yield	1260	1374	1487	1273	1273	1412	1475	1260

S.E./mean = 111.0 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- U.P. 55(15).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'DV'.**

Object :—To study the effect of soaking and sunning of seed on Wheat varieties.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Moong*. (c) Nil. (ii) (a) Light loam. (b) Refer soil analysis, Kanpur. (iii) 18.11.1955. (iv) (a) 4 ploughings. (b) Dibbling. (c) N.A. (d) 9"×6". (e) 5. (v) Nil. (vi) As per treatments (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 25.4.1956.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 2 varieties : V<sub>1</sub>=Pb.--591 (late) and V<sub>2</sub>=NP--125 (medium).(2) 2 seed soaking treatments : S<sub>0</sub>=Unsoaked and S<sub>1</sub>=Soaked.(3) 3 durations of sunning : D<sub>0</sub>=0, D<sub>1</sub>=8 and D<sub>2</sub>=16 days.**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) and (b) 8'×6'. (v) 2'×2'. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Traces of rust attack. (iii) Grain yield. (iv) (a) 1955—1956. (b) and (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1883 lb./ac. (ii) 245.0 lb./ac. (iii) Main effects of V, S and interaction V×S are highly significant. Interaction V×S×D is significant. (iv) Av. yield of grain in lb./ac.

	D <sub>0</sub>	D <sub>1</sub>	D <sub>2</sub>	Mean	S <sub>0</sub>	S <sub>1</sub>
V <sub>1</sub>	2305	2443	2480	2409	2747	2071
V <sub>2</sub>	1374	1285	1408	1356	2490	222
Mean	1840	1864	1944	1883	2518	1147
S <sub>0</sub>	2662	2603	2589			
S <sub>1</sub>	1017	1125	1298			

S.E. of V or S marginal mean	= 50.0 lb./ac.
S.E. of D marginal mean	= 61.2 lb./ac.
S.E. of body of V×S table	= 70.7 lb./ac.
S.E. of body of V×D or S×D table	= 86.6 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 57(274).**

**Site :- Allahabad Agri. Instt., Allahabad.**

**Type :- 'CD'.**

**Object :-**To study the effect of different levels of 2, 4-D on weeds as well as on the yield of Wheat.

**GENERAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Fine sandy loam. (b) Refer soil analysis, Allahabad. (iii) 16.11.1957. (iv) (a) to (e) N.A. (v) 60 lb./ac. of N as A/S+40 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super. (vi) N.A. (vii) Irrigated. (viii) As per treatments. (ix) N.A. (x) April, 1958.

**2. TREATMENTS ;**

**Main-plot treatments :**

5 concentrations of 2, 4-D (amine form) : C<sub>0</sub>=0, C<sub>1</sub>=0.25, C<sub>2</sub>=0.50, C<sub>3</sub>=0.75 and C<sub>4</sub>=1.00 lb./ac.

**Sub-plot treatments :**

2 cultivations : S<sub>0</sub>=No cultivation after spraying and S<sub>1</sub>=1 cultivation after spraying.  
Spraying done 5 weeks after sowing.

**3. DESIGN :**

(i) Split-plot. (ii) (a) 5 main-plots/replication ; 2 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 14'×18'. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) to (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1031 lb./ac. (ii) (a) 67.2 lb./ac. (b) 190.1 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	C <sub>0</sub>	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	C <sub>4</sub>	Mean
S <sub>0</sub>	1029	146	1131	1046	1438	958
S <sub>1</sub>	941	931	1109	1343	1197	1104
Mean	985	538	1120	1194	1318	1031

**S.E. of difference of two**

1. C marginal means	= 33.6 lb./ac.
2. S marginal means	= 60.1 lb./ac.
3. S means at the same level of C	= 134.4 lb./ac.
4. C means at the same level of S	= 100.8 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 58(245).**

**Site :- Allahabad Agri. Instt., Allahabad.**

**Type :- 'CD'.**

**Object :-**To study the effect of different levels of 2, 4-D on weeds as well as on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Maize—Wheat. (b) Maize. (c) Nil. (ii) (a) Fine sandy loam. (b) Refer soil analysis, Allahabad. (iii) 5.11.1958. (iv) (a) and (b) N.A. (c) 30 srs./ac. (d) and (e) N.A. (v) 60 lb./ac. of N as A/S+40 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super. (vi) N.A. (vii) Irrigated. (viii) As per treatments. (ix) N.A. (x) April, 1959.

## 2. TREATMENTS :

Same as in expt. no. 57(274) on page 577.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 5 main-plots/replication, 2 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 28'×18'. (v) 1.5'×1.5'. (vi) Yes.

## 4. GENERAL :

Same as in expt. no. 57(274) on page 577.

## 5. RESULTS :

(i) 2498 lb./ac. (ii) (a) 1026.4 lb./ac. (b) 529.9 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	C <sub>0</sub>	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	C <sub>4</sub>	Mean
S <sub>0</sub>	2025	2542	2633	2511	3149	2572
S <sub>1</sub>	2069	2501	2673	2320	2559	2424
Mean	2047	2522	2653	2416	2854	2498

## S.E. of difference of two

1. C marginal means = 513.2 lb./ac.
2. S marginal means = 167.6 lb./ac.
3. S means at the same level of C = 374.7 lb./ac.
4. C means at the same level of S = 577.6 lb./ac.

**Crop :-** Wheat (*Rabi*).

**Ref :-** U.P. 59(304).

**Site :-** Student's Instrl. Farm, Govt. Agri. College, Kanpur.

**Type :-** 'ID'.

**Object :-** To study the effect of chemical and mechanical methods of weed control in Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Lobia*. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Kanpur. (iii) 31.10.1959. (iv) (a) 1 ploughing by soil turning plough and 6 *desi* plough followed by planking. (b) Drilling. (c) 30 srs./ac. (d) and (e) N.A. (v) *Lobia* as G.M. (vi) C--13. (vii) Irrigated. (viii) As per treatments. (ix) 1.44" (x) 22.3.1960.

## 2. TREATMENTS :

**Main-plot treatments :**

2 irrigational treatments : I<sub>0</sub>=Unirrigated, I<sub>1</sub>=Irrigated.

**Sub-plot treatments :**

9 weeding treatments : T<sub>0</sub>=Control, T<sub>1</sub>=Hoeing by Sharma hoe, T<sub>2</sub>=Harrowing by spike tooth harrow, T<sub>3</sub>=Weeding by *khurpi*, T<sub>4</sub>=8, T<sub>5</sub>=12, T<sub>6</sub>=16, T<sub>7</sub>=20 and T<sub>8</sub>=24 oz./ac. of 2, 4—D sprayed.

The application of 2, 4—D Fernoxone was done only once.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication, 9 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 25'×19'. (b) 22'×16'. (v) 1.5'×1.5'. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil except rabbit trouble which spoiled the yield of one complete replication. (iii) Germination and yield of grain. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 980 lb./ac. (ii) (a) 223.5 lb./ac. (b) 137.8 lb./ac. (iii) Main effect of I alone is highly significant. (iv) Av. yield of grain in lb /ac.

Treatment	I <sub>0</sub>	I <sub>1</sub>	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	T <sub>5</sub>	T <sub>6</sub>	T <sub>7</sub>	T <sub>8</sub>
Av. yield	486	1474	932	950	931	1030	971	956	1015	1008	1025

S E. of difference of two

1. I marginal means = 60.8 lb./ac.

2. T marginal means = 79.6 lb./ac.

**Crop :- Barley (*Rabi*).**

**Ref :- U.P. 57(508).**

**Site :- Reg. Res. Stn., Amrukh.**

**Type :- 'M'.**

Object :—To study the effect of various concentrations of trace-elements on the yield of Barley.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) Nil. (ii) (a) *Kabar* and *parwa*. (b) N.A. (iii) 22.11.1957. (iv) (a) 4 *bakherings*, and 3 plankings. (b) Line sowing by seed drill. (c) 30 to 40 srs./ac. (d) and (e) N.A. (v) Nil. (vi) K—12. (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 3.4.1958.

## 2. TREATMENTS :

**Main-plot treatments :**

2 methods of application : M<sub>1</sub>=Soil application and M<sub>2</sub>=Foliar spray.

**Sub-plot treatments :**

4 trace-element treatments : T<sub>0</sub>=Control (3 plots), T<sub>1</sub>=Boric acid at 2 lb./ac. in soil application and 0.01% solution in foliar spray, T<sub>2</sub>=C/S at 3 lb./ac. in soil application and 0.025% solution in foliar spray and T<sub>3</sub>=MnSO<sub>4</sub> at 5 lb./ac. in soil application and 0.025% solution in foliar spray.

Soil application : Trace-elements mixed with fine dry earth or sand and applied uniformly within the plots as surface dressing before sowing.

Foliar spray : Solution of trace-elements in required concentration is prepared in water and sprayed on the crop at 80 gallons/ac. in two instalments, at tillering and at pre-flowering.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 6 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 41'×26'. (b) 38'×23'. (v) 1.5'×1.5'. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Attack of smut rust. (iii) Yield of grain. (iv) (a) 1957—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 926 lb./ac. (ii) (a) 583.6 lb./ac. (b) 194.4 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

T<sub>0</sub> = 939 lb./ac.

	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	Mean
M <sub>1</sub>	863	914	816	864
M <sub>2</sub>	830	1057	997	961
Mean	846	986	906	913

S.E. of difference of two

1. M marginal means = 275.1 lb./ac.

2. T marginal means = 112.2 lb./ac.

3. T means at the same level of M = 158.7 lb./ac.

4. M means at the same level of T = 304.1 lb./ac.

**Crop :- Barley (Rabi).****Ref :- U.P. 57(403).****Site :- Usar Reclamation Farm, Chakeri.****Type :- 'M'.****Object :—**To study the effect of N, P and K on the yield of Barley.**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Paddy. (c) N.A. (ii) (a) Saline alkaline soil. (b) Refer soil analysis, Chakeri. (iii) 24.11.1957. (iv) to (ix) N.A. (x) 9.4.1958.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 2 levels of N as A/S/N :  $N_0=0$  and  $N_1=30$  lb./ac.(2) 2 levels of  $P_2O_5$  as Super :  $P_0=0$  and  $P_1=40$  lb./ac.(3) 2 levels of  $K_2O$  as Mur. Pot. :  $K_0=0$  and  $K_1=60$  lb./ac.

Fertilizer applied on 24.11.1957. Super and Mur. Pot. placed deep in bands with the help of manure drill and A/S/N broadcast.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) and (b) 22'6" × 12'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Satisfactory. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1957—1958. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1187 lb./ac. (ii) 3405 lb./ac. (iii) Main effect of K alone is significant. (iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	Mean	$K_0$	$K_1$
$N_0$	1321	1220	1270	1089	1452
$N_1$	988	1220	1104	1028	1180
Mean	1154	1220	1187	1059	1316
$K_0$	1069	1049			
$K_1$	1240	1391			

S.E. of any marginal mean = 85.1 lb./ac.

S.E. of body of any table = 120.4 lb./ac.

**Crop :- Barley (Rabi).****Ref :- U.P. 58(341).****Site :- Usar Reclamation Farm, Chakeri.****Type :- 'M'.****Object :—**To study the effect of N, P and K on the yield of Barley.**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Paddy. (c) N.A. (ii) (a) Saline alkaline soil. (b) Refer soil analysis, Chakeri. (iii) 20.11.1958. (iv) to (ix) N.A. (x) 1.4.1959.

**2. TREATMENTS :**

Same as in exp no. 57(403) above.

Fertilizers applied on 19.11.1958.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) and (b) 35' × 31'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1957—1958. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1268 lb./ac. (ii) 165.0 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	K <sub>0</sub>	K <sub>1</sub>
N <sub>0</sub>	1199	1275	1237	1224	1250
N <sub>1</sub>	1240	1360	1300	1285	1315
Mean	1220	1317	1268	1254	1283
K <sub>0</sub>	1209	1300			
K <sub>1</sub>	1230	1335			

S.E. of any marginal mean = 41.2 lb./ac.

S.E. of body of any table = 58.3 lb./ac.

**Crop :- Barley (Rabi).**

**Ref :- U.P. 58(356).**

**Site :- Usar Reclamation Farm, Chakeri.**

**Type :- 'M'.**

Object :—To study the residual effect of K applied to previous paddy crop on Barley.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy. (c) As per treatments. (ii) (a) Saline alkaline soil. (b) Refer soil analysis, Chakeri. (iii) 24.11.1958. (iv) to (ix) N.A. (x) 15.4.1959.

## 2. TREATMENTS :

2 levels of K<sub>2</sub>O : K<sub>0</sub>=0 and K<sub>1</sub>=100 lb./ac.

K<sub>2</sub>O applied to previous paddy crop.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 2. (iv) (a) and (b) 61'×44'7". (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 965 lb./ac. (ii) 136.2 lb./ac. (iii) Treatment difference is not significant. (iv) Av. yield of grain in lb./ac.

Treatment	K <sub>0</sub>	K <sub>1</sub>
Av. yield	921	1009

S.E./mean = 96.3 lb./ac.

**Crop :- Barley (Rabi).**

**Ref :- U.P. 54(141).**

**Site :- Instt. of Crop Physiology, Dilkusha.**

**Type :- 'M'.**

Object :—To study the effect of N, P and calcium on the yield of Barley.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Sandy loam (b) Refer soil analysis, Dilkusha. (iii) 25.10.1954. (iv) (a) N.A. (b) Behind the plough. (c) 30 srs./ac. (d) and (e) N.A. (v) G.M.+Pot. Sul. (vi) K-12. (vii) to (x) N.A.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

- (1) 2 levels of N :  $N_0=0$ ,  $N_1=75$  lb./ac.  
 (2) 2 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=50$  lb./ac.  
 (3) 2 levels of CaO :  $C_0=0$ ,  $C_1=60$  lb./ac.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 3. (iv) (a) and (b)  $33' \times 20'$ . (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1954—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1137 lb./ac. (ii) 266.8 lb./ac. (iii) Only N effect is significant. (iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	Mean	$C_0$	$C_1$
$N_0$	880	1160	1020	948	1092
$N_1$	1205	1304	1254	1185	1324
Mean	1042	1232	1137	1066	1208
$C_0$	948	1185			
$C_1$	1137	1279			

S.E. of any marginal mean  
 S E. of body of any table

= 77.0 lb./ac.  
 = 108.9 lb./ac.

**Crop :- Barley (Rabi).**

**Ref :- U.P. 55(277).**

**Site :- Instt. of Crop Physiology, Dilkusha.**

**Type :- 'M'.**

**Object :-**To study the effect of different methods of application of fertilizers on Barley.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) *Sanai*. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Dilkusha. (iii) 4.11.1955. (iv) (a) N.A. (b) Behind the plough. (c) 35 srs./ac. (d) and (e) N.A. (v) *Sanai* as G.M. (vi) K-12. (vii) Irrigated. (viii) and (ix) N.A. (x) 21.3.1956.

**2. TREATMENTS :**

All combinations of (1) and (2)

- (1) 3 levels of fertilizers :  $F_1=60$  lb./ac. of N as A/S,  $F_2=50$  lb./ac. of  $P_2O_5$  as Super and  $F_3=60$  lb./ac. of CaO as gypsum.  
 (2) 3 methods of application :  $M_1$ =Broadcast,  $M_2$ =Placement behind the plough in furrows and  $M_3$ =Drilled mixed with seed.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 2. (iv) (a)  $36' \times 18'$ . (b)  $32' \times 14'$ . (v)  $2' \times 2'$ . (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) Yield of replication III were low due to the effect of shade of tree and hence the replication was rejected.

## 5. RESULTS :

(i) 2365 lb./ac. (ii) 214.7 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	F <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>	Mean
M <sub>1</sub>	2375	2431	2450	2419
M <sub>2</sub>	2213	2575	2081	2290
M <sub>3</sub>	2438	2100	2625	2388
Mean	2342	2369	2385	2365

S.E. of any marginal mean = 87.7 lb./ac.  
S.E. of body of table = 151.8 lb./ac.

**Crop :- Barley (Rabi).**

**Ref :- U.P. 54(132).**

**Site :- Instt. of Crop Physiology, Dilkusha.**

**Type :- 'M'.**

Object :—To study the effect of different methods of application of fertilizers on Barley.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Dilkusha. (iii) 23.10.1954. (iv) (a) N.A. (b) As per treatments. (c) 25 to 30 srs./ac. (d) and (e) N.A. (v) N.A. (vi) Barley—251. (vii) to (x) N.A.

## 2. TREATMENTS :

All combinations of (1) and (2)

- (1) 4 level of fertilizers : F<sub>1</sub>=60 lb./ac. of N as A/S, F<sub>2</sub>=50 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super, F<sub>3</sub>=40 lb./ac. of K<sub>2</sub>O as Pot. Sul. or Mur. Pot. and F<sub>4</sub>=60 lb./ac. of CaO as gypsum.  
(2) 3 methods of application : M<sub>1</sub>=Broadcast, M<sub>2</sub>=Placement behind the plough in furrows and M<sub>3</sub>=Drilled mixed with seed.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 3. (iv) (a) 32'×25'. (b) 29'×22'. (v) 1.5'×1.5'. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1954—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1497 lb./ac. (ii) 409.2 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	F <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>	F <sub>4</sub>	Mean
M <sub>1</sub>	1194	1826	1615	1568	1551
M <sub>2</sub>	1545	1475	1732	1405	1539
M <sub>3</sub>	1042	1955	1428	1182	1402
Mean	1260	1752	1592	1382	1497

S.E. of M marginal mean = 118.1 lb./ac.  
S.E. of F marginal mean = 136.4 lb./ac.  
S.E. of body of table = 236.3 lb./ac.



**Crop :- Barley (Rabi).****Ref :- U.P. 56(253).****Site :- Instt. of Crop Physiology, Dilkusha.****Type :- 'M'.**

Object :—To study the effect of different methods of applications of fertilizers on Barley.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) *Moong*. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Dilkusha. (iii) 3.11.1956.  
 (iv) (a) N.A. (b) Drilling. (c) 25 to 30 srs./ac. (d) and (e) N.A. (v) Nil. (vi) K-12. (vii) to (ix) N.A.  
 (x) 12 and 13.4.1957.

**2. TREATMENTS :**

Same as in expt. no. 54(132) on page 583.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 3. (iv) (a) 40'×24'. (b) 35'×20'. (v) 2'×2'. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1954—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1732 lb./ac. (ii) 210.3 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	F <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>	F <sub>4</sub>	Mean
M <sub>1</sub>	1965	1582	1597	1576	1680
M <sub>2</sub>	1590	1815	1680	1659	1776
M <sub>3</sub>	1587	1774	1888	1711	1740
Mean	1834	1724	1722	1649	1732

S.E. of M marginal mean = 60.7 lb./ac.

S.E. of F marginal mean = 70.1 lb./ac.

S.E. of body of table = 121.4 lb./ac.

**Crop :- Barley (Rabi).****Ref :- U.P. 57(348).****Site :- Instt. of Crop Physiology, Dilkusha.****Type :- 'M'.**

Object :—To study the effect of N, P and K and methods of application on Barley.

**1. BASAL CONDITIONS :**

(i) (a) Nil (b) *Moong*. (c) N.A. (ii) (a) Light sandy. (b) Refer soil analysis, Dilkusha. (iii) N.A.  
 (iv) (a) 6 ploughings and planking. (b) In lines behind the plough (c) 30 srs./ac. (d) and (e) N.A.  
 (v) G.M. (*moong*). (vi) K-12. (vii) Irrigated. (viii) N.A. (ix) Nil. (x) 27.3.1958.

**2. TREATMENTS :****Main-plot treatments :**3 fertilizers : F<sub>1</sub>=50 lb./ac. of N as A/S, F<sub>2</sub>=40 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super and F<sub>3</sub>=30 lb./ac. of K<sub>2</sub>O as Potash.**Sub-plot treatments :**3 methods of application : M<sub>1</sub>=Broadcast, M<sub>2</sub>=Placement and M<sub>3</sub>=Mixed with seed.

Manuring done on 19, 20.10.1957.

**3. DESIGN :**

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 33'×26'. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Smut attack. (iii) Yield of grain and straw. (iv) (a) 1957—1958. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1248 lb./ac. (ii) (a) 279.7 lb./ac. (b) 209.4 lb./ac. (iii) Interaction M × F alone is significant. (iv) Av. yield of grain in lb./ac.

	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	Mean
F <sub>1</sub>	1563	1149	1289	1334
F <sub>2</sub>	1053	1369	1067	1163
F <sub>3</sub>	1315	1289	1142	1249
Mean	1310	1269	1166	1248

S.E. of difference of two

1. F marginal means = 114.2 lb./ac.
2. M marginal means = 85.5 lb./ac.
3. M means at the same level of F = 148.1 lb./ac.
4. F means at the same level of M = 166.3 lb./ac.

**Crop :- Barley (Rabi).**

**Ref :- U.P. 58(305).**

**Site :- Instt. of Crop Physiology, Dilkusha.**

**Type :- 'M'.**

Object :- To study the effect of methods of application of N, P and K on the yield of Barley.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanai*. (c) N.A. (ii) (a) Light sandy loam. (b) Refer soil analysis, Dilkusha. (iii) 5.11.1958. (iv) (a) 10 ploughings and 1 cultivation. (b) Behind the plough through funnel. (c) 35 srs./ac. (d) and (e) N.A. (v) G.M. (*sanai*). (vi) K-12. (vii) Irrigated. (viii) and (ix) N.A. (x) 28.3.1959.

## 2. TREATMENTS :

Same as in expt. no. 57(348) on page 584.

Manuring done on 2.11.1958.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 3 sub-plots/main-plot (b) N.A. (iii) 4. (iv) (a) 30' × 26'. (b) 27' × 23'. (v) 1½' × 1½'. (vi) Yes.

## 4. GENERAL :

Same as in expt. no. 57(348) on page 584.

## 5. RESULTS :

(i) 1920 lb./ac. (ii) (a) 379.2 lb./ac. (b) 359.3 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	Mean
F <sub>1</sub>	1903	1822	1989	1905
F <sub>2</sub>	1849	2047	2038	1978
F <sub>3</sub>	1885	1912	1831	1876
Mean	1879	1927	1953	1920

S.E. of difference of two

1. F marginal means = 154.8 lb./ac.
2. M marginal means = 146.7 lb./ac.
3. M means at the same level of F = 254.1 lb./ac.
4. F means at the same level of M = 258.8 lb./ac.

**Crop :- Barley (Rabi).****Ref :- U.P. 56(196).****Site :- Instt. of Crop Physiology, Dilkusha.****Type :- 'M'.**

Object :—To study the effect of different forms and levels of nitrogenous fertilizers on the yield of Barley.

**1. BASAL CONDITIONS :**

(i) (a) G.M. crops—Barley. (b) G.M. crops. (c) N.A. (ii) (a) Sandy loam. (b) Refer soi. analysis. Dilkusha. (iii) 2.11.1956. (iv) and (v) N.A. (vi) K—12. (vii) to (ix) N.A. (x) 12.4.1957.

**2. TREATMENTS :**

All combinations of (1) and (2)+a control

(1) 2 levels of N :  $N_1=25$ , and  $N_2=50$  lb./ac.

(2) 3 sources of N :  $S_1=A/S$ ,  $S_2=C/N$  and  $S_3=Cereal\ fertilizer$ .

**3. DESIGN :**

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 3. (iv) (a)  $23' \times 27'$ . (b)  $19' \times 23'$ . (v)  $2' \times 2'$ . (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 2023 lb./ac. (ii) 295.9 lb./ac. (iii) 'Control vs. others' alone is significant. (iv) Av. yield of grain in lb./ac

Control = 1623 lb./ac.

	$S_1$	$S_2$	$S_3$	Mean
$N_1$	2204	1834	2333	2124
$N_2$	2221	1828	2119	2056
Mean	2212	1832	2226	2090

S.E. of N marginal mean = 98.6 lb./ac.

S.E. of S marginal mean = 120.8 lb./ac.

S.E. of body of table or control mean = 170.8 lb./ac.

**Crop :- Barley (Rabi).****Ref :- U.P. 56(257).****Site :- Instt. of Crop Physiology, Dilkusha.****Type :- 'M'.**

Object :—To study the effect of trace-elements on the yield of Barley.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) *Dhaincha*. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Dilkusha. (iii) 4.11.1956. (iv) (a) N.A. (b) Improved seed drill. (c) to (e) N.A. (v) to (ix) N.A. (x) 13, 14.4.1957.

**2. TREATMENTS :**

10 trace-element treatments :  $T_0$ =Control,  $T_1=3$  lb./ac. of C/S,  $T_2=6$  lb./ac. of C/S,  $T_3=12$  lb./ac. of C/S,  $T_4=1$  lb./ac. of Boron,  $T_5=2$  lb./ac. of Boron,  $T_6=4$  lb./ac. of Boron,  $T_7=1$  lb./ac. of Zn. Sul.,  $T_8=2$  lb./ac. of Zn. Sul. and  $T_9=10$  lb./ac. of Zn. Sul.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) N.A. (b)  $1/52.4$  ac. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1956—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1461 lb./ac. (ii) 246.2 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	T <sub>5</sub>	T <sub>6</sub>	T <sub>7</sub>	T <sub>8</sub>	T <sub>9</sub>
Av. yield	1205	1420	1541	1292	1541	1578	1501	1504	1572	1454

S.E./mean = 123.1 lb./ac.

**Crop :- Barley (Rabi).**

**Ref :- U.P. 57(347).**

**Site :- Instt. of Crop Physiology, Dilkusha.**

**Type :- 'M'.**

Object :— To study the effect of P and different sources of N on the yield of Barley.

## 1. BASAL CONDITIONS :

(i) (a) *Sunai*—Barley—*Lobia*. (b) *Lobia*. (c) N.A. (ii) (a) Light sandy. (b) Refer soil analysis, Dilkusha. (iii) 22.10.1957. (iv) (a) 5 ploughings. (b) Behind the plough. (c) 35 srs./ac. (d) and (e) N.A. (v) N.A. (vi) K—12. (vii) Irrigated. (viii) and (ix) N.A. (x) 22.3.1958.

## 2. TREATMENTS :

All combination of (1) and (2)+2 extra treatments

(1) 3 sources of N at 50 lb./ac. : S<sub>1</sub>=F.Y.M., S<sub>2</sub>=A/S and S<sub>3</sub>=½ F.Y.M.+½ A/S.

(2) 2 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0 and P<sub>1</sub>=40 lb./ac.

Extra treatments : T<sub>0</sub>=Control and T<sub>1</sub>=40 lb./ac. of P<sub>2</sub>O<sub>5</sub>.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 24½' × 22'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Smut attack. (iii) Yield of grain and straw. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1504 lb./ac. (ii) 186.3 lb./ac. (iii) Main effect of P and 'T vs. others' are highly significant and effect of S is significant. (iv) Av. yield of grain in lb./ac.

T<sub>0</sub> = 1143 lb./ac. and T<sub>1</sub> = 1212 lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean
P <sub>0</sub>	1413	1379	1503	1432
P <sub>1</sub>	1455	1912	2009	1792
Mean	1434	1646	1756	1612

S.E. of S marginal mean = 76.1 lb./ac.

S.E. of P marginal mean = 62.1 lb./ac.

S.E. of body of table = 107.6 lb./ac.

**Crop :- Barley (Rabi).**

**Ref :- U.P. 55(184).**

**Site :- Govt. Agri. Farm, Faizabad.**

**Type :- 'M'.**

Object :— To study the residual effect of N and P applied to previous wheat crop on Barley.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 25 lb./ac. of N as A/S. (ii) (a) Clayey loam. (b) Refer soil analysis, Faizabad. (iii) 16.11.1955. (iv) (a) 4 ploughings. (b) Sown in lines by seed drill. (c) N.A. (d) Rows 9" apart. (e) N.A. (v) 25 lb./ac. of N as A/S broadcast. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) 0.07". (x) 12.4.1956.

## 2. TREATMENTS:

All combinations of (1) and (2)

(1) 3 levels of N :  $N_0=0$ ,  $N_1=30$  and  $N_2=60$  lb./ac.

(2) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=60$  and  $P_2=120$  lb./ac.

Treatments applied to wheat crop in *rabi* 1954.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) and (b)  $36 \times 24'$ . (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain and straw (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil

## 5. RESULTS :

(i) 1002 lb./ac. (ii) 162.3 lb./ac. (iii) None of the effects is significant. (v) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	$P_2$	Mean
$N_0$	939	1006	1027	991
$N_1$	997	1027	1020	1015
$N_2$	975	1010	1021	1002
Mean	970	1014	1023	1002

S.E. of any marginal mean = 38.3 lb./ac.  
S.E. of body of table = 66.3 lb./ac.

Crop :- Barley.

Site :- Govt. Res. Farm, Kanpur.

Ref :- U.P. 54(22).

Type :- 'M'.

Object :- To study the effect of N, P and K on the yield of Barley.

## 1. BASAL CONDITIONS :

(i) (a) *Chari*—Barley. (b) *Chari* for fodder. (c) Cowdung a month before sowing. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 9.11.1954. (iv) (a) 7 ploughings, levelling and 5 plankings. (b) Behind the plough. (c) 80 lb./ac. (d) 9" between rows. (e) N.A. (v) Nil. (vi) NP—21 (medium). (vii) Irrigated. (viii) and (ix) N.A. (x) 30.3.1955.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 levels of N as A/S :  $N_0=0$ ,  $N_1=25$  and  $N_2=50$  lb./ac.

(2) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=50$  and  $P_2=100$  lb./ac.

(3) 3 levels of K<sub>2</sub>O as Pot. Sul. :  $K_0=0$ ,  $K_1=50$  and  $K_2=100$  lb./ac.

K<sub>2</sub>O and N applied before sowing and  $P_2O_5$  applied in furrows at sowing on 9.11.1954.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 27. (b) N.A. (iii) 3. (iv) (a)  $15' \times 10' 6"$ . (b)  $11' \times 9'$ . (v)  $2' \times 9'$ . (vi) Yes.

## 4. GENERAL :

(i) Good ; 10 to 20% lodging in four plots. (ii) Slight effect of yellow rust and heavy smut attack. (iii) Grain yield. (iv) (a) 1951—1955 (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS:

(i) 3056 lb./ac. (ii) 384.2 lb./ac. (iii) Main effect of N alone is highly significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean	K <sub>0</sub>	K <sub>1</sub>	K <sub>2</sub>
N <sub>0</sub>	2722	2948	2936	2869	2878	2602	3124
N <sub>1</sub>	3181	3181	3080	3147	3256	3105	3080
N <sub>2</sub>	3275	3174	3011	3153	3054	3212	3193
Mean	3059	3101	3009	3056	3063	2973	3132
K <sub>0</sub>	3061	3143	2986				
K <sub>1</sub>	3023	3073	2822				
K <sub>2</sub>	3092	3087	3218				

S.E. of any marginal mean = 73.9 lb./ac.

S.E. of body of any table = 128.1 lb./ac.

**Crop :- Barley.**

**Ref :- U.P: 55(21).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'M'.**

Object :— To study the effect of N, P and K on the yield of Barley.

**1. BASAL CONDITIONS :**

(i) (a) *Chari*—Barley. (b) *Chari*. (c) Nil. (ii) (a) Sandy loam; (b) Refer soil analysis, Kanpur. (iii) 21.11.1955. (iv) (a) 2 victory ploughings, 3 *desi* ploughings and cultivation. (b) Behind the plough. (c) 80 lb./ac. (d) Rows 9" apart. (e) N.A. (v) Nil. (vi) NP—21 (medium). (vii) Irrigated. (viii) 1 hoeing. (ix) N.A. (x) 5.4.1956.

**2. TREATMENTS and 3. DESIGN :**

Same as in expt. no. 54(22) on page 588.

N and K<sub>2</sub>O broadcast and P<sub>2</sub>O<sub>5</sub> applied in furrows at the time of sowing.

**4. GENERAL :**

(i) Good. (ii) Heavy yellow rust was observed. (iii) Grain yield. (iv) (a) 1951—1955. (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS:**

(i) 1881 lb./ac. (ii) 534.2 lb./ac. (iii) Main effect of N is highly significant and effect of K is significant. (iv) Av. yield of grain lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean	K <sub>0</sub>	K <sub>1</sub>	K <sub>2</sub>
N <sub>0</sub>	1319	1389	1326	1345	1295	1263	1477
N <sub>1</sub>	1791	2225	2093	2036	1760	1935	2414
N <sub>2</sub>	2307	2356	2118	2261	2339	2156	2287
Mean	1806	1990	1846	1881	1798	1785	2059
K <sub>0</sub>	1766	1954	1672				
K <sub>1</sub>	1791	1836	1728				
K <sub>2</sub>	1860	2181	2137				

S.E. of any marginal mean = 102.8 lb./ac.

S.E. of body of any table = 178.1 lb./ac.

**Crop :- Barley (Rabi).****Re :- U.P. 57(281).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'M'.**

Object :—To study the effect of P and different sources of N on Barley.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Loam soil. (b) Refer soil analysis, Kanpur. (iii) 5.11.1957. (iv) (a) N.A. (b) Behind the plough. (c) 79.4 lb./ac. (d) Rows 9" apart. (e) N.A. (v) Nil. (vi) C—251 (mid-early). (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 4.4.1958.

**2. TREATMENTS :**

All combinations of (1) and (2) + one extra treatment

(1) 4 sources of 25 lb./ac. of N :  $S_0$ =Control,  $S_1$ =Castor cake,  $S_2$ =A/S and  $S_3$ =Urea.(2) 2 levels of  $P_2O_5$  as Super :  $P_0$ =0 and  $P_1$ =50 lb./ac.Extra treatment : T=100 lb./ac. of  $P_2O_5$  as Super.**3. DESIGN :**

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 16' × 11.25'. (b) 12' × 9.75'. (v) 2' × 9". (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Rust and smut incidence. No control measure taken. (iii) Grain and straw yield. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 2155 lb./ac (ii) 296.1 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

T = 2082 lb./ac.

	$S_0$	$S_1$	$S_2$	$S_3$	Mean
$P_0$	1987	2214	2166	2130	2124
$P_1$	2034	2166	2346	2274	2205
Mean	2010	2190	2256	2202	2164

S.E. of S marginal mean = 104.7 lb./ac.

S.E. of P marginal mean = 74.0 lb./ac.

S.E. of body of table or control mean = 148.0 lb./ac.

**Crop :- Barley (Rabi).****Ref :- U.P. 57(44).****Site :- Reg. Res. Stn., Meerut.****Type :- 'M'.**

Object :—To study the effect of varying concentration of trace-elements on Barley.

**1. BASAL CONDITIONS :**

(i) (a) G.M.—Barley. (b) *Sanai*. (c) Nil. (ii) (a) Silt loam. (b) Refer soil analysis, Meerut. (iii) 11.11.1957. (iv) (a) 1 ploughing by soil turning plough and 4 to 5 ploughings by *desi* plough. (b) Behind the plough in rows. (c) 35 srs./ac. (d) Rows 9" apart. (e) N.A. (v) G.M. (*sanai*). (vi) K—12 (early). (vii) Irrigated. (viii) Weeding. (ix) 1.31". (x) 16.4.1958.

**2. TREATMENTS :**4 trace-elements treatments :  $T_0$ =Control (3 plots),  $T_1$ =Boric acid,  $T_2$ =C/S and  $T_3$ =Manganese sulphate.

Concentration of the trace-elements :

For soil application : 2 lb./ac. of B, 3 lb./ac. of Cu and 5 lb./ac. of Mn.

For foliar spray : 0.01% solution of Boric acid, 0.025% solution of C/S and 0.25% solution of Manganese sulphate.

Soil application : Trace-elements salts mixed with fine dry earth or sand and applied uniformly within the plots as surface dressing before sowing.

Foliar spray : Trace-elements solutions in required concentrations prepared in water and sprayed on the crop twice in the life cycle (i) At tillering (ii) At pre-flowering stage.

## 3. DESIGN :

(i) R.B.D. (ii) 6 for each type of application. (b) 79'×178'. (iii) 3. (iv) (a) 38'×29'. (b) 35'×26'. (v) 1½'×½'. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain and straw yield. (iv) (a) and (b) No. (c) Nil. (v) (a) Varanasi. (b) N.A. (vi) Nil. (vii) Since the concentrations of the trace-elements are not the same for foliar and soil application, the expt. is analysed as two simple R.B.D.

## 5. RESULTS :

## For soil application :

(i) 1235 lb./ac. (ii) 257.5 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>
Av. yield	1255	1025	1275	1348
S.E./mean except T <sub>0</sub> mean = 148.7 lb./ac.				
S.E./T <sub>0</sub> mean = 85.8 lb./ac.				

## For foliar spray

(i) 1295 lb./ac. (ii) 209.2 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>
Av. yield	1215	1522	1199	1404
S.E./mean except T <sub>0</sub> mean = 120.8 lb./ac.				
S.E./T <sub>0</sub> mean = 69.7 lb./ac.				

**Crop :- Barley (Rabi).**

**Site :- Reg. Res. Stn., Varanasi.**

**Ref :- U.P. 57(425).**

**Type :- 'M'.**

Object :—To study the effect of varying concentration of trace-elements on Barley.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Guar*. (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Varanasi. (iii) 29.11.1957. (iv) (a) 1 *desi* ploughing. (b) Behind the plough. (c) 30 to 40 srs./ac. (d) 9" between rows. (e) N.A. (v) G.M. (vi) K-12 (early). (vii) Irrigated. (viii) and (ix) N.A. (x) 26.3.1958.

## 2. TREATMENTS :

Same as in expt. no. 57(44) on page 590.

## 3. DESIGN :

(i) R.B.D. (ii) (b) N.A. (iii) 3. (iv) (a) 36'×28'. (b) 33'×25'. (v) 1.5'×1.5'. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Attack of loose smut of barley, yellow and brown rust on leaves. (iii) Yield of grain and straw. (iv) (a) No. (b) N.A. (c) Nil. (v) (a) Meerut. (b) N.A. (vi) Nil. (vii) Since the concentrations of the trace-elements are not same for foliar and soil application, the expt. is analysed as two simple R.B.D.

## 5. RESULTS :

## For soil application :

(i) 2100 lb./ac. (ii) 226.5 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.



Treatment	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>
Av. yield	2112	1917	2138	2207

S.E./mean except T<sub>0</sub> mean = 130.8 lb./ac.

S.E./T<sub>0</sub> mean = 75.5 lb./ac.

**For foliar spray :**

(i) 2127 lb./ac. (ii) 136.8 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>
Av. yield	2075	2138	2270	2128

S.E./mean except T<sub>0</sub> mean = 79.0 lb./ac.

S.E./T<sub>0</sub> mean = 45.6 lb./ac.

**Crop :- Barley (Rabi).**

**Ref :- U.P. 57(438).**

**Centre :- Phoolpur (Allahabad, c.f.).**

**Type :- 'M'.**

Object :—To study the effect of N, P and K on the yield of Barley.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Fallow. (c) N.I. (ii) Clayey soil. (iii) and (iv) N.A. (v) (a) 7 to 8 ploughings by *desi* plough. (b) Sown behind the plough. (c) 30 to 40 srs./ac. (d) Rows 4" to 6" apart. (e) N.A. (vi) 31.10.1957 and 2.11.1957. (vii) Irrigated. (viii) and (ix) N.A. (x) 2.4.1958 and 5.4.1958.

**2. TREATMENTS :**

5 manurial treatments : M<sub>0</sub>=Control, M<sub>1</sub>=30 lb./ac. of N as A/S, M<sub>2</sub>=M<sub>1</sub>+40 lb./ac. of K<sub>2</sub>O as Mur. Pot., M<sub>3</sub>=M<sub>1</sub>+40 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super and M<sub>4</sub>=M<sub>2</sub>+40 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.

Super and Mur. Pot. placed deep in furrows and A/S surface dressed.

**3. DESIGN :**

(i) and (ii) One field in each of the 2 villages in the *tehsil* was selected randomly. (iii) (a) N.A. (b) 1/40 ac. (iv) Yes.

**4. GENERAL :**

(i) Fair. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) and (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 954 lb./ac. (ii) 152.8 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	M <sub>0</sub>	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	M <sub>4</sub>
Av. yield	780	860	850	1180	1100

S.E./mean = 108.0 lb./ac. and no. of trials = 2.

**Crop :- Barley (Rabi).**

**Ref :- U.P. 57(439).**

**Centre :- Soroan (Allahabad, c.f.).**

**Type :- 'M'.**

Object :—To study the effect of N, P and K on the yield of Barley.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Fallow for 2 trials and Paddy for 1 trial. (c) N.A. (i) Loam. (iii) and (iv) N.A. (v) (a) 7 to 8 ploughings by *desi* plough. (b) Sown behind the plough. (c) 30 to 40 srs./ac. (d) Rows 4" to 6" apart. (e) N.A. (vi) 4 to 11.11.1957. (vii) Irrigated. (viii) and (ix) N.A. (x) 8 to 16.3.1958.

## 2. TREATMENTS ;

Same as in expt. no. 57(438) on page 592.

## 3. DESIGN :

(i) and (ii) One field in each of the 3 villages in the *tehsil* was selected randomly. (iii) (a) N.A. (b) 1/40 ac. (iv) Yes.

## 4. GENERAL :

(i) Crop stand fair for two trials and poor for one trial. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) and (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1030 lb./ac. (ii) 123.8 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	M <sub>0</sub>	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	M <sub>4</sub>
Av. yield	780	953	993	1253	1173

S.E./mean = 71.3 lb./ac. and number of trials=3.

**Crop :- Barley (Rabi).**

**Ref :- U.P. 57(434).**

**Centre :- Phoolpur (Allahabad, c.f.).**

**Type :- 'M'.**

Object :- To study the effect of N and P on the yield of Barley.

## B. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow for 3 trials and Paddy for 1 trial. (c) N.A. (ii) Loam in 1 trial and clayey in 3 trials. (iii) and (iv) N.A. (v) (a) 7 to 8 ploughings by *desi* plough. (b) Sown behind the plough. (c) 30 to 40 srs./ac. (d) 4" to 6" apart. (e) N.A. (vi) 30.10.1957 to 3.11.1957. (vii) Irrigated. (viii) and (ix) N.A. (x) 30.3.1958 to 4.4.1958.

## 2. TREATMENTS :

5 manurial treatments : M<sub>0</sub>=Control, M<sub>1</sub>=25 lb./ac. of N as A/S, M<sub>2</sub>=M<sub>1</sub>+30 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super, M<sub>3</sub>=M<sub>1</sub>+60 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super and M<sub>4</sub>=M<sub>1</sub>+60 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Ammo. Phos.

A/S and Ammo. Phos. were surface dressed and Super placed deep in furrows behind the plough.

## 3. DESIGN :

(i) and (ii) 2 fields in each of the 2 villages in the *tehsil* were selected randomly. (iii) (a) N.A. (b) 1/40 ac. (iv) Yes.

## 4. GENERAL :

(i) Crop stand good for two trials, poor for 1 trial and fair for 1 trial. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) and (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1070 lb./ac. (ii) 45.4 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	M <sub>0</sub>	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	M <sub>4</sub>
Av. yield	790	950	1110	1255	1245

S.E./mean = 22.7 lb./ac. and number of trials=4.

**Crop :- Barley (Rabi).**

**Ref :- U.P. 57(435).**

**Centre :- Soroan (Allahabad, c.f.).**

**Type :- 'M'.**

Object :- To study the effect of N and P on the yield of Barley.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Fallow. (c) Nil. (ii) Loam. (iii) and (iv) N.A. (v) (a) 7 to 8 ploughings by *desi* plough. (b) Sown behind the plough. (c) 30 to 40 srs./ac. (d) Rows 4" to 6" apart. (e) N.A. (vi) 5 to 10.11.1957. (vii) Irrigated. (viii) and (ix) N.A. (x) 9 to 15.3.1958.

**2. TREATMENTS :**

Same as in expt. no. 57(434) on page 593.

**3. DFSIGN :**

(i) and (ii) 2 fields in each of the 3 villages in the *tehsil* were selected randomly. (iii) (a) N.A. (b) 1/40 ac. (iv) Yes.

**4. GENERAL :**

(i) Fair. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) and (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1168 lb./ac. (ii) 67.6 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	M <sub>0</sub>	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	M <sub>4</sub>
Av. yield	883	1050	1210	1350	1347

S.E./mean = 27.6 lb./ac. and number of trials=6.

**Crop :- Barley (*Rabi*).**

**Ref :- U.P. 55(369).**

**Centre :- Ballia (Ballia, c.f.).**

**Type :- 'M'.**

Object :—To study the effect of N and P on the yield of Barley.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Fallow. (c) Nil. (ii) Light loam to sandy loam. (iii) and (iv) N.A. (v) (a) 7 to 8 ploughings by *desi* plough. (b) Sown behind the plough. (c) 30 to 40 srs./ac. (d) Rows 4" to 6" apart. (e) N.A. (vi) 23 to 30.10.1955. (vii) Irrigated. (viii) and (ix) N.A. (x) 4 to 12.3.1956.

**2. TREATMENTS :**

5 manurial treatments : M<sub>0</sub>=Control, M<sub>1</sub>=25 lb./ac. of N as A/S, M<sub>2</sub>=M<sub>1</sub>+30 lb./ac. of P<sub>2</sub>O<sub>5</sub> as triple Super, M<sub>3</sub>=M<sub>1</sub>+60 lb./ac. of P<sub>2</sub>O<sub>5</sub> as triple Super and M<sub>4</sub>=M<sub>1</sub>+60 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Ammo. Phos.

N broadcast and P<sub>2</sub>O<sub>5</sub> placed deep in furrows behind the plough.

**3. DESIGN :**

(i) and (ii) 3 fields in 1 village, 2 fields in each of 2 villages and 1 field in 1 village were selected randomly in 4 villages of the *tehsil*. (iii) (a) N.A. (b) 1/40 ac. (iv) Yes.

**4. GENERAL :**

(i) Crop stand good for five trials and fair for three trials. (ii) Most of the trials badly damaged by rats especially in treatments M<sub>2</sub> and M<sub>3</sub>. (iii) Yield of grain and straw. (iv) (a) 1955—1956. (b) and (c) Nil. (v) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1912 lb./ac. (ii) 224.0 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	M <sub>0</sub>	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	M <sub>4</sub>
Av. yield	1185	1730	2145	2360	2142

S.E./mean = 79.2 lb./ac. and number of trials=8.

**Crop :- Barley (Rabi).****Ref :- U.P. 56(403).****Centre :- Ballia (Ballia, c.f.).****Type :- 'M'.**

Object :—To study the effect of N and P on the yield of Barley.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) *Bajra* for 2 trials and fallow for 4 trials. (c) N.A. (ii) Light loam to sandy loam. (iii) and (iv) N.A. (v) (a) 7 to 8 ploughings by *desi* plough. (b) Sown behind the plough. (c) 30 to 40 srs./ac. (d) Rows 4" to 6" apart. (e) N.A. (vi) 8 to 16.11.1956. (vii) Irrigated. (viii) and (ix) N.A. (x) 21 to 28.3.1957.

**2. TREATMENTS :**

5 manurial treatments :  $M_0$ =Control,  $M_1$ =25 lb./ac. of N as A/S/N,  $M_2$ = $M_1$ +30 lb./ac. of  $P_2O_5$  as triple Super,  $M_3$ = $M_1$ +60 lb./ac. of  $P_2O_5$  as triple Super and  $M_4$ = $M_1$ +60 lb./ac. of  $P_2O_5$  as Ammo. Phos.

$P_2O_5$  placed deep in furrows behind the plough and N broadcast.

**3. DESIGN :**

(i) and (ii) 2 fields in each of the 3 villages in the *tehsil* were selected randomly. (iii) (a) N.A. (b) 1/40 ac. (iv) Yes.

**4. GENERAL :**

(i) Crop stand good for 2 trials and fair for 4 trials. (ii)  $M_3$  plots were slight damaged by rats. (iii) Yield of grain and straw. (iv) (a) 1955—1956 (b) and (c) Nil. (v) N.A. (vi) In 1 trial, plot with treatment  $M_4$  was affected due to water logging. 3 trials were damaged by hailstorm. In these trials timely manuring could not be done due to abnormal weather. (vii) Nil.

**5. RESULTS :**

(i) 775 lb./ac. (ii) 76.0 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$M_0$	$M_1$	$M_2$	$M_3$	$M_4$
Av. yield	540	713	827	933	860

S.E./mean = 31.0 lb./ac. and number of trials=6.

**Crop :- Barley (Rabi).****Ref :- U.P. 55(370).****Centre :- Bansdih (Ballia, c.f.).****Type :- 'M'.**

Object :—To study the effect of N and P on the yield of Barley.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Fallow. (c) Nil. (ii) Heavy loam and clayey loam. (iii) and (iv) N.A. (v) (a) 7 to 8 ploughings by *desi* plough. (b) Sown behind the plough. (c) 30 to 40 srs./ac. (d) Rows 4" to 6" apart. (e) N.A. (vi) 2 to 8.11.1955. (vii) Irrigated. (viii) and (ix) N.A. (x) 14 to 21.3.1956.

**2. TREATMENTS :**

Same as in expt. no. 55(369) on page 594.

**DESIGN :**

(i) and (ii) 3 fields in each of 2 villages and 2 fields in 1 village were selected randomly in 3 villages of the *tehsil*. (iii) (a) N.A. (b) 1/40 ac. (iv) Yes.

**4. GENERAL :**

(i) Crop stand fair for 6 trials and good for two trials. (ii)  $M_2$ ,  $M_3$  and  $M_4$  plots in 2 trials were damaged by rats. (iv) 1955—1956 (iii) Yield of grain and straw. (b) and (c) Nil. (v) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1588 lb./ac. (ii) 208.0 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	M <sub>0</sub>	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	M <sub>4</sub>
Av. yield	1062	1472	1728	1868	1810

S.E./mean = 73.6 lb./ac. and number of trials=8.

**Crop :- Barley (Rabi).**

**Ref :- U.P. 56(405).**

**Centre :- Bausdih (Ballia, c.f.).**

**Type :- 'M'.**

**Object :-**To study the effect of N and P on the yield of Barley.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Fallow. (c) Nil. (ii) Loam to heavy loam. (iii) and (iv) N.A. (v) (a) 7 to 8 ploughings by *desi* plough. (b) Sown behind the plough. (c) 30 to 40 srs./ac. (d) Rows 4" to 6" apart. (e) N.A. (vi) 18 to 27.11.1956. (vii) Irrigated. (viii) and (ix) N.A. (x) 21.3.1957 to 6.4.1957.

**2. TREATMENTS and 3. DESIGN :**

Same as in expt. no. 56(403) on page 595.

**4. GENERAL :**

(i) Fair. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1955—1956. (b) and (c) N.A. (v) N.A. (vi) Two trials badly affected by frost and 4 trials by hailstorm. (vii) Nil.

**5. RESULTS :**

(i) 525 lb./ac. (ii) 38.5 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	M <sub>0</sub>	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	M <sub>4</sub>
Av. yield	350	500	550	587	637

S.E./mean = 15.7 lb./ac. and number of trials=6.

**Crop :- Barley (Rabi).**

**Ref :- U.P. 56(404).**

**Centre :- Rasra (Ballia c.f.).**

**Type :- 'M'.**

**Object :-** To study the effect of N and P on the yield of Barley.

**1. BASAL CONDITIONS :**

(i) (a) and (b) Fallow. (c) Nil. (ii) Clayey and heavy loam. (iii) and (iv) N.A. (v) (a) 7 to 8 ploughings by *desi* plough. (b) Sown behind the plough. (c) 30 to 40 srs./ac. (d) Rows 4" to 6" apart. (e) N.A. (vi) 15 to 26.11.1956. (vii) Irrigated. (viii) and (ix) N.A. (x) 20 to 30.3.1957.

**2. TREATMENTS :**

5 manurial treatments : M<sub>0</sub>=Control, M<sub>1</sub>=25 lb./ac. of N as A/S/N, M<sub>2</sub>=M<sub>1</sub>+30 lb./ac. of P<sub>2</sub>O<sub>5</sub> as triple Super, M<sub>3</sub>=M<sub>1</sub>+60 lb./ac. of P<sub>2</sub>O<sub>5</sub> as triple Super and M<sub>4</sub>=M<sub>1</sub>+60 lb./ac of P<sub>2</sub>O<sub>5</sub> as Ammo. Phos.

A/S/N and Ammo. Phos. broadcast and Super placed deep in furrows.

**3. DESIGN :**

(i) and (ii) 2 fields in each of the 4 villages in the *tehsil* were selected randomly. (iii) (a) N.A. (b) 33'×33'. (iv) Yes.

**4. GENERAL :**

(i) Good. (ii) In one trial, M<sub>4</sub> plot slightly damaged by rats. (iii) Yield of grain and straw. (iv) (a) and (b) No. (c) Nil. (v) N.A. (vi) 2 trials were slightly and 1 badly damaged by hailstorm (vii) Nil.

## 5. RESULTS :

(i) 1222 lb./ac. (ii) 81.6 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	M <sub>0</sub>	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	M <sub>4</sub>
Av. yield	1002	1185	1318	1362	1242

S.E./mean = 28.8 lb./ac. and number of trials=8.

**Crop :- Barley (Rabi).**

**Ref :- U.P. 54(331).**

**Centre :- Saidpur (Ghazipur, c.f.).**

**Type :- 'M'.**

Object :— To study the effect of N and P on the yield of Barley.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow. (c) Nil. (ii) Clayey loam in 4 trials, sandy loam in 4 trials and loam in 2 trials. (iii) and (iv) N.A. (v) (a) 7 to 8 ploughings by *desi* plough. (b) Sown behind the plough. (c) 30 to 40 srs./ac. (d) Rows 4" to 6" apart. (e) N.A. (vi) 20.10.1954 to 4.11.1954. (vii) Irrigated. (viii) and (ix) N.A. (x) 6 to 18.3.1955.

## 2. TREATMENTS :

4 manurial treatments : M<sub>0</sub>=Control, M<sub>1</sub>=25 lb./ac. of N as A/S, M<sub>2</sub>=M<sub>1</sub>+30 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super and M<sub>3</sub>=M<sub>1</sub>+60 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super. A/S broadcast and Super placed deep in furrows.

## 3. DESIGN :

(i) and (ii) 2 fields in each of the 5 villages in the *tehsil* were selected randomly. (iii) (a) N.A. (b) 33'×33'. (iv) Yes.

## 4. GENERAL :

(i) Good in 2 trials, fair in 4 trials and poor in 4 trials. (ii) N.A. (iii) Yield of grain and straw. (iv, (a) 1953—1954. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) There were severe weeds in 1 trial.

## 5. RESULTS :

(i) 1802 lb./ac. (ii) 182.4 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	M <sub>0</sub>	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>
Av. yield	1482	1642	1952	2134

S.E./mean = 57.7 lb./ac. and number of trials=10.

**Crop :- Barley (Rabi).**

**Ref :- U.P. 54(332).**

**Centre :- Ghazipur (Ghazipur, c.f.).**

**Type :- 'M'.**

Object :— To study the effect of N and P on the yield of Barley.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow for 11 trials and *Bajra* for 1 trial. (c) N.A. (ii) Clayey loam in 8 trials and sandy loam in 4 trials. (iii) and (iv) N.A. (v) (a) 7 to 8 ploughings by *desi* plough. (b) Sown behind the plough. (c) 30 to 40 srs./ac. (d) Rows 4" to 6" apart. (e) N.A. (vi) 22.10.1954 to 2.11.1954. (vii) Irrigated. (viii) and (ix) N.A. (x) 5 to 18.3.1955.

## 2. TREATMENTS :

Same as in expt. no. 54(331) above.

**3. DESIGN :**

(i) and (ii) 4 fields in 1 village and 2 fields in each of 4 villages from 5 villages in the *tehsil* were selected randomly. (iii) (a) N.A. (b) 33' × 33' in 9 trials and 26' × 42' in 3 trials. (iv) Yes.

**4. GENERAL :**

(i) Good. (ii) Rat trouble observed. (iii) Yield of grain and straw. (iv) (a) 1953—1954. (b) and (c) N.A. (v) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 2557 lb./ac. (ii) 267.8 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	M <sub>0</sub>	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>
Av. yield	2332	2388	2597	2910

S.E./mean = 77.3 lb./ac. and number of trials=12.

**Crop :- Barley (*Rabi*).**

**Ref :- U.P. 54(333).**

**Centre :- Zamania (Ghazipur, c.f.).**

**Type :- 'M'.**

Object :—To study the effect of N and P on the yield of Barley.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Paddy for 5 trials and fallow for 2 trials. (c) N.A. (ii) Loam and clayey loam. (iii) and (iv) N.A. (v) (a) 7 to 8 ploughings by *desi* plough. (b) Sown behind the plough. (c) 30 to 40 srs./ac. (d) Rows 4" to 6" apart. (e) N.A. (vi) 18 to 31.10.1954. (vii) 6 trials Irrigated and 1 trial unirrigated. (viii) and (ix) N.A. (v) 2 to 18.3.1955.

**2. TREATMENTS :**

Same as in expt. no. 54(331) on page 597.

**3. DESIGN :**

(i) and (ii) 1 field in 1 village and 2 fields in each of 3 villages from 4 villages in the *tehsil* were selected randomly. (iii) (a) N.A. (b) 33' × 33'. (iv) Yes.

**4. GENERAL :**

(i) Good. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) and (b) No. (c) Nil. (v) N.A. (vi) Nil. (vii) Drought affected the crop in 2 trials. There were alkaline patches in M<sub>2</sub> and M<sub>4</sub> plots in 1 trial.

**5. RESULTS :**

(i) 957 lb./ac. (ii) 59.1 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	M <sub>0</sub>	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>
Av. yield	777	917	1037	1097

S.E./mean = 22.3 lb./ac. and number of trials=7.

**Crop :- Barley (*Rabi*).**

**Ref :- U.P. 59(496).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'MV'.**

Object :—To study the effect of N on different varieties of Barley.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Paddy. (c) N.A. (ii) (a) Loamy soil. (b) Refer soil analysis, Kanpur. (iii) 19.12.1959. (iv) (a) N.A. (b) Behind the plough. (c) 80 lb./ac. (d) Rows 9" apart. (e) N.A. (v) 40 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super+40 lb./ac. of K<sub>2</sub>O as Pot. Sul. (vi) As per treatments. (vii) Irrigated. (viii) and (ix) N.A. (x) 23.4.1960.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N as A/S :  $N_0=0$ ,  $N_1=40$  and  $N_2=80$  lb./ac.

(2) 10 varieties :  $V_1=K-23$  (medium),  $V_2=K-24$  (medium),  $V_3=KN-28$  (medium),  $V_4=KN-16$  (medium),  $V_5=1-W-112/B-6$  (late),  $V_6=K-3$  (medium),  $V_7=K-19$  (medium),  $V_8=NP-21$  (medium),  $V_9=C-251$  (medium) and  $V_{10}=K-12$  (medium).

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 30. (b) N.A. (iii) 4. (iv) (a)  $14' \times 15.25'$ . (b)  $12' \times 13.75'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Rust and smut attack. (iii) Yield of grain and straw. (iv) (a) 1959—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1251 lb./ac. (ii) 237.4 lb./ac. (iii) All the effects are highly significant. (iv) Av yield of grain in lb./ac.

	$V_1$	$V_2$	$V_3$	$V_4$	$V_5$	$V_6$	$V_7$	$V_8$	$V_9$	$V_{10}$	Mean
$N_0$	976	1091	480	368	595	683	1064	765	670	1006	770
$N_1$	1387	1907	904	832	1040	1400	1832	1585	1307	2099	1429
$N_2$	1963	1972	888	763	1070	1966	1862	1972	1323	2051	1583
Mean	1442	1657	757	654	903	1350	1586	1441	1100	1719	1261

S.E. of N marginal mean = 37.5 lb./ac.

S.E. of V marginal mean = 68.5 lb./ac.

S.E. of body of table = 118.7 lb./ac.

**Crop :- Barley (Rabi).**

**Ref :- U.P. 54(23).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'MV'.**

Object :—To study the effect of P on different varieties of Barley.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) N.A. (c) Nil. (ii) (a) Loamy soil. (b) Refer soil analysis, Kanpur. (iii) 11.11.1954. (iv) (a) 3 *desi* ploughings and 4 plankings. (b) Behind the plough. (c) 80 lb./ac. (d) 9" between rows. (e) N.A. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 2.4 1955.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)+2 extra treatments

(1) 2 varieties :  $V_1=NP-21$  and  $V_2=C-251$ .

(2) 2 levels of  $P_2O_5$  as Super :  $P_1=50$  and  $P_2=100$  lb./ac.

(3) 2 methods of application :  $M_1=$ Broadcast and  $M_2=$ In furrows.

$P_2O_5$  applied before sowing on 11.11.1954.

Extra treatments :  $E_1=$ Variety NP—21 without  $P_2O_5$  and  $E_2=$ Variety C—251 without  $P_2O_5$ .

## 3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a)  $18' \times 8'3"$ . (b)  $14' \times 6'9"$ . (v)  $2' \times 9"$ . (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Heavy smut incidence. (iii) Grain yield. (iv) (a) 1953—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 2436 lb./ac. (ii) 434.6 lb./ac. (iii) Main effect of V alone is highly significant. (iv) Av. yield of grain in lb./ac.



$$E_1 = 2697 \text{ lb./ac. and } E_2 = 2089 \text{ lb./ac.}$$

	P <sub>1</sub>	P <sub>2</sub>	Mean	V <sub>1</sub>	V <sub>2</sub>
M <sub>1</sub>	2577	2570	2573	3318	1829
M <sub>2</sub>	2326	2319	2322	2970	1674
Mean	2451	2444	2447	3144	1751
V <sub>1</sub>	3141	3148			
V <sub>2</sub>	1762	1741			

S.E. of any marginal mean	= 108.6 lb./ac.
S.E. of body of any table	= 153.7 lb./ac.
S.E. of E mean	= 217.3 lb./ac.

**Crop :- Barley (Rabi).**

**Ref :- U.P. 55(17).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'MV'.**

Object :—To study the effect of P on different varieties of Barley.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Sanai*. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Kanpur. (iii) 19.11.1955. (iv) (a) 2 victory ploughings, 3 *desi* ploughing and 1 planking. (b) Behind the plough. (c) 80 lb./ac. (d) and (e) N.A. (v) G.M. (*sanai*). (vi) As per treatments. (vii) Irrigated. (viii) 1 hoeing and 1 weeding. (ix) N.A. (x) 13.4.1956.

**2. TREATMENTS and 3. DESIGN :**

Same as in expt. no. 54(23) on page 599.

**4. GENERAL :**

(i) Good. (ii) Heavy attack of yellow rust. (iii) Grain yield. (iv) (a) 1953—contd. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1249 lb./ac. (ii) 241.9 lb./ac. (iii) 'E vs. others' alone is significant. (iv) Av. yield of grain in lb./ac.

$$E_1 = 1215 \text{ lb./ac. and } E_2 = 846 \text{ lb./ac.}$$

	P <sub>1</sub>	P <sub>2</sub>	Mean	V <sub>1</sub>	V <sub>2</sub>
M <sub>1</sub>	1341	1222	1282	1208	1356
M <sub>2</sub>	1367	1282	1324	1356	1293
Mean	1354	1252	1303	1282	1324
V <sub>1</sub>	1437	1126			
V <sub>2</sub>	1271	1378			

S.E. of any marginal mean	= 60.5 lb./ac.
S.E. of body of any table	= 85.5 lb./ac.
S.E. of E mean	= 120.9 lb./ac.

**Crop :- Barley (Rabi).****Ref :- U.P. 55(6).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'MV'.**

Object :—To study the effect of P on different varieties of Barley.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Sanai*. (c) Nil. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 10.11.1955. (iv) (a) 2 victory ploughings, 2 *desi* ploughings, 1 planking and 2 cultivators. (b) Behind the plough. (c) 80 lb./ac. (d) 9" between rows. (e) N.A. (v) *Sanai* as G.M. turned in on 25.8.1955. (vi) As per treatments. (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 7.4.1956.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 3 varieties :  $V_1=NP-21$ ,  $V_2=C-251$  and  $V_3=K-12$ .(2) 2 levels of  $P_2O_5$  :  $P_0=0$  and  $P_1=100$  lb./ac. $P_2O_5$  applied on 18.1.1956.**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) 12'6"×5'3". (b) 10'6"×3'9". (v) 1'×9". (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Attack of yellow rust. (iii) Grain yield. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1674 lb./ac. (ii) 266.1 lb./ac. (iii) Main effect of V alone is highly significant. (iv) Av. yield of grain in lb./ac.

	$V_1$	$V_2$	$V_3$	Mean
$P_0$	1796	1418	1631	1615
$P_1$	1868	1488	1844	1733
Mean	1832	1453	1737	1674

S.E. of P marginal mean = 62.7 lb./ac.

S.E. of V marginal mean = 76.8 lb./ac.

S.E. of body of table = 108.6 lb./ac.

**Crop :- Barley (Rabi).****Ref :- U.P. 58(206).****Site :- Agri. College Farm, B.H.U., Varanasi.****Type :- 'MV'.**

Object :—To study the effect of different levels of N on different varieties of Barley.

**1. BASAL CONDITIONS :**

(i) (a) Nil (b) Fallow. (c) Nil. (ii) (a) Medium alluvial soil. (b) Refer soil analysis, Varanasi. (iii) 17.11.1958. (iv) (a) 6 ploughings. (b) N.A. (c) 32 srs./ac. (d) and (e) N.A. (v) N.A. (vi) As per treatments. (vii) Irrigated. (viii) 3 weedings by *khurpi* and 1 hoeing. (ix) N.A. (x) 31.3.1959.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 4 levels of N as A/S :  $N_0=0$ ,  $N_1=25$ ,  $N_2=50$  and  $N_3=75$  lb./ac.(2) 3 varieties :  $V_1=K-12$ ,  $V_2=NP-21$  and  $V_3=C-251$ .N broadcast  $\frac{1}{2}$  at sowing and  $\frac{1}{2}$  at first irrigation on 17.12.1958.**3. DESIGN :**

Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 18'×40'. (b) 16'×38'. (v) 1'×1'. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Growth characters and yield of grain. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

- (i) 2077 lb./ac. (ii) 247.4 lb./ac. (iii) Main effect of N is highly significant and effect of V is significant.  
 (iv) Av. yield of grain in lb./ac

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	Mean
V <sub>1</sub>	2334	2519	2119	1962	2234
V <sub>2</sub>	2092	2217	1990	1809	2027
V <sub>3</sub>	1923	2055	1968	1939	1971
Mean	2116	2264	2026	1903	2077

S.E of V marginal mean = 61.8 lb./ac.  
 S.E. of N marginal mean = 71.4 lb./ac.  
 S.E. of body of table = 123.7 lb./ac.

**Crop :- Barley (Rabi).**

**Ref :- U.P. 59(223).**

**Site :- Agri. College Farm, B.H.U., Varanasi.**

**Type :- 'MV'.**

Object :- To study the effect of N and P on different varieties of Barley.

## 2. BASAL CONDITIONS :

- (i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Medium alluvial soil. (b) Refer soil analysis, Varanasi. (iii) 31.10.1959. (iv) (a) 6 ploughings. (b) to (e) N.A. (v) N.A. (vi) As per treatments. (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 10.3.1960.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

- (1) 3 levels of N as A/S : N<sub>0</sub>=0, N<sub>1</sub>=40 and N<sub>2</sub>=60 lb./ac.  
 (2) 2 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0 and P<sub>1</sub>=30 lb./ac.  
 (3) 2 varieties : V<sub>1</sub>=C-251 and V<sub>2</sub>=K-12.

N broadcast before 1st irrigation on 15.12.1959 and P<sub>2</sub>O<sub>5</sub> with country plough on 29.10.1959.

## 3. DESIGN :

- (i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 44'×29'. (b) 40'×25'. (v) 2'×2'. (vi) Yes.

## 4. GENERAL :

- (i) and (ii) N.A. (iii) Growth characters and yield of grain. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

- (i) 1772 lb./ac. (ii) 305.5 lb./ac. (iii) Main effect of N alone is highly significant. (iv) Av. yield of grain in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>
V <sub>1</sub>	1263	2003	1836	1701	1694	1708
V <sub>2</sub>	1263	2061	2208	1844	1875	1812
Mean	1263	2032	2022	1772	1785	1760
P <sub>0</sub>	1224	2054	2076			
P <sub>1</sub>	1302	2010	1967			

S.E. of V or P marginal mean	= 62.4 lb./ac.
S.E. of N marginal mean	= 76.4 lb./ac.
S.E. of body of P×N or V×N table	= 108.0 lb./ac.
S.E. of body of V×P table	= 88.2 lb./ac.

**Crop :- Barley (*Rabi*).**

**Ref :- U.P. 58(252).**

**Site :- Allahabad Agri. Instt., Allahabad**

**Type :- 'C'.**

Object :—To study the effect of selected cultivation practices on the yield of Barley.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) *Bajra*. (c) N.A. (ii) (a) Fine sandy loam. (b) Refer soil analysis, Allahabad. (iii) 24.11.1958. (iv) (a) 1 *palewa*. (b) Broadcast. (c) 43 srs./ac. (d) and (e) N.A. (v) and (vi) N.A. (vii) Irrigated. (viii) and (ix) N.A. (x) 2.4.1959.

**2. TREATMENTS :**

4 cultural treatments : C<sub>1</sub>=Primary operations and interculture by local method, C<sub>2</sub>=Primary operations by local method and interculture by cultivator, C<sub>3</sub>=Primary operations by mould board plough and interculture by cultivator 3 times in the season, and C<sub>4</sub>= Primary operations by mould board plough and interculture by cultivator 6 times in the season.

**3. DESIGN :**

(i) L. sq. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 40'×25'. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1958—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 2186 lb./ac. (ii) 219.4 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	C <sub>4</sub>
Av. yield	2145	2189	2233	2178

S.E./mean = 109.7 lb./ac.

**Crop :- Barley (*Rabi*).**

**Ref :- U.P. 57(337)-**

**Site :- Instt. of Crop Physiology, Dilkusha.**

**Type :- 'C'.**

Object :—To study the effect of different seed rates on the yield of Barley.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Dhaincha* (c) N.A. (ii) (a) Light sandy loam. (b) Refer soil analysis, Dilkusha. (iii) 15.10.1957. (iv) (a) 7 ploughings. (b) Behind the plough. (c) As per treatments. (d) and (e) N.A. (v) G.M. (*dhaincha*). (vi) K—12. (vii) Irrigated. (viii) and (ix) N.A. (x) 20.3.1958.

**2. TREATMENTS :**

6 seed rates : R<sub>1</sub>=10, R<sub>2</sub>=15, R<sub>3</sub>=20, R<sub>4</sub>=25, R<sub>5</sub>=30 and R<sub>6</sub>=35 srs./ac.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 25'×13.5'. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) and (b) N.A. (c) Nil. (v) (a) Hardoi. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1472 lb./ac. (ii) 246.6 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	R <sub>1</sub>	R <sub>2</sub>	R <sub>3</sub>	R <sub>4</sub>	R <sub>5</sub>	R <sub>6</sub>
Av. yield	1051	1283	1571	1908	1538	1482

S.E./mean = 142.4 lb./ac.

**Crop :- Barley (Rabi).**

**Ref :- U.P. 58(304).**

**Site :- Instt. of Crop Physiology, Dilkusha.**

**Type :- 'C'.**

**Object :-**To study the effect of different seed rates on the yield of Barley.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Maize+Lobia. (c) N.A. (ii) (a) Light sandy loam. (b) Refer soil analysis, Dilkusha. (iii) 28.10.1958. (iv) (a) 5 ploughings and 5 plankings. (b) Behind the plough. (c) As per treatments. (d) and (e) N.A. (v) 50 lb./ac. of N as A/S/N+20 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super. (vi) K-12. (vii) Irrigated. (viii) and (ix) N.A. (x) 11.4.1959.

## 2. TREATMENTS :

6 seed rates : R<sub>1</sub>=15, R<sub>2</sub>=20, R<sub>3</sub>=25, R<sub>4</sub>=30, R<sub>5</sub>=35 and R<sub>6</sub>=40 srs./ac.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 3. (iv) 26'×23'. (b) 23'×20'. (v) 1½'×1½'. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Smut on ear heads. (iii) Yield of grain and straw. (iv) (a) and (b) N.A. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1580 lb. ac. (ii) 103.8 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	R <sub>1</sub>	R <sub>2</sub>	R <sub>3</sub>	R <sub>4</sub>	R <sub>5</sub>	R <sub>6</sub>
Av. yield	1477	1721	1672	1721	1493	1396

S.E./mean = 59.9 lb./ac.

**Crop :- Barley (Rabi).**

**Ref :- U.P. 58(337).**

**Site :- Instt. of Crop Physiology Dilkusha.**

**Type :- 'C'.**

**Object :-**To find out suitable direction for sowing of Barley crop.

## 1. BASAL CONDITIONS :

(i) (a) Sanai-Lobia-Barley. (b) Lobia. (c) N.A. (ii) (a) Light sandy loam. (b) Refer soil analysis, Dilkusha. (iii) 5.11.1958. (iv) (a) 7 ploughings and 7 plankings. (b) Behind the plough. (c) 35 srs./ac. (d) and (e) N.A. (v) 20 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super+50 lb./ac. of N as A/S on 4.11.1958. (vi) K-12. (vii) Irrigated. (viii) and (ix) N.A. (x) 12.4.1959.

## 2. TREATMENTS :

4 directions of sowing : D<sub>1</sub>=East to west, D<sub>2</sub>=North to south, D<sub>3</sub>=North-west to south-east and D<sub>4</sub>=North-east to South-west.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 5. (iv) (a) 30'×20'. (b) 27'×17'. (v) 1½'×1½'. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Attack of smut. (iii) Yield of grain and straw. (iv) (a) 1958—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1727 lb./ac. (ii) 218.2 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>
Av. yield	1616	1933	1669	1689

S.E./mean = 97.6 lb./ac.

**Crop :- Barley (Rabi).**

**Ref :- U.P. 57(355).**

**Site :- Reg. Res. Stn., Hardoi.**

**Type :- 'C'.**

Object :—To study the effect of different seed rates on the yield of Barley.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanai*. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Hardoi. (iii) 2.11.1957. (iv) (a) 6 principal cultivations. (b) Behind the plough in lines. (c) As per treatments. (d) and (e) N.A. (v) G.M. by *sanai*. (vi) K—12. (vii) Irrigated. (viii) and (ix) N.A. (x) 17 and 18.3.1958.

## 2. TREATMENTS :

6 seed rates : R<sub>1</sub>=10, R<sub>2</sub>=15, R<sub>3</sub>=20, R<sub>4</sub>=25, R<sub>5</sub>=30 and R<sub>6</sub>=35 srs./ac.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 30'×25'. (v) N.A. (vi) Yes.

## 4. GENERAL ;

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) and (b) No. (c) Nil. (v) (a) Dilkusha. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 2610 lb./ac. (ii) 394.2 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	R <sub>1</sub>	R <sub>2</sub>	R <sub>3</sub>	R <sub>4</sub>	R <sub>5</sub>	R <sub>6</sub>
Av. yield	2688	2733	2830	2419	2584	2405

S.E./mean = 197.1 lb./ac.

**Crop :- Barley.**

**Ref :- U.P. 54(18).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'C'.**

Object :— To find out suitable number of seeds per hole for Barley crop.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) *Sanai*. (c) Nil. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 7.11.1954. (iv) (a) Drawing over *pata* 5 times, 4 *desi* and 1 victory ploughings and cultivator. (b) Dibbling. (c) As per treatments. (d) 9" row to row. (e) As per treatments. (v) Nil. (vi) K—12. (vii) Irrigated. (viii) 1 weeding by *naini* hoe (ix) N.A. (x) 31.3.1955.

## 2. TREATMENTS :

5 cultural treatments : C<sub>1</sub>=1 seed, C<sub>2</sub>=2 seeds, C<sub>3</sub>=3 seeds, C<sub>4</sub>=4 seeds per hole and C<sub>5</sub>=80 lb./ac. of seed sown behind the plough with 6" spacing between plants.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) 15'×10'6". (b) 11'×9'. (v) 2'×9". (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Smut attack upto 23%. (iii) Grain yield. (iv) (a) 1953—1955. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 3007 lb./ac. (ii) 309.1 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	C <sub>4</sub>	C <sub>5</sub>
Av. yield	2876	3149	3064	3121	2885

S.E./mean = 126.2 lb./ac.

**Crop :- Barley.**

**Ref :- U.P. 55(14).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'C'.**

Object :— To find out suitable number of seeds per hole for Barley crop.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) *Moong*. (c) Nil. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 18.11.1955. (iv) (a) 1 victory plough, 1 cultivator and 2 *desi* poughings. (b) Dblbling. (c) As per treatments. (d) 9' × 6". (e) As per treatments. (v) Nil. (vi) K—12 (medium). (vii) Irrigated. (viii) Harrowing, hoeing and weeding (ix) N.A. (x) 10.4.1956.

## 2. TREATMENTS :

5 cultural treatments : C<sub>1</sub>=1 seed, C<sub>2</sub>=2 seeds, C<sub>3</sub>=3 seeds, C<sub>4</sub>=4 seeds/hole and C<sub>5</sub>=Seeds sown at 80 lb./ac.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) 15' × 10' 6". (b) 11' × 9'. (v) 2' × 9". (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Minute attack of yellow rust. (iii) Grain yield. (iv) (a) 1953—1955. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1999 lb./ac. (ii) 227.4 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	C <sub>4</sub>	C <sub>5</sub>
Av. yield	1980	2027	1942	2131	1914

S.E./mean = 92.8 lb./ac.

**Crop :- Barley.**

**Ref :- U.P. 55(13).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'C'.**

Object :— To study the effect of different implements for hoeing on the yield of Barley.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) *Sanai*. (c) Nil. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 18.11.1955. (iv) (a) 3 victory ploughings, cultivator twice and planking once and 2 *desi* ploughing. (b) Behind the plough. (vii) Irrigated. (viii) 1 apart. (e) N.A. (v) *Sanai* was turned in on 25.8.1955. (vi) C—25 (medium). (c) 80 lb./ac. (d) Rows 9" weeding and 1 hoeing as per treatments. (ix) N.A. (x) 6.4.1956.

## 2. TREATMENTS :

5 implements of hoeing : H<sub>0</sub>=Control, H<sub>1</sub>=*Naini* hoe, H<sub>2</sub>=Hand hoe, H<sub>3</sub>=*Wardha* hoe and H<sub>4</sub>=*Khurpi*.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) 33'×7.5'. (b) 29'×6'. (v) 2'×9'. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Attack of yellow rust and moderate attack of brown rust. (iii) Grain yield. (iv) (a) 1955—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1888 lb./ac. (ii) 235.9 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	H <sub>0</sub>	H <sub>1</sub>	H <sub>2</sub>	H <sub>3</sub>	H <sub>4</sub>
Av. yield	1936	1958	1786	1877	1883

S.E./mean = 96.3 lb./ac.

**Crop :- Barley (Rabi).**

**Ref :- U.P. 56(225).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'C'.**

Object :— To study the effect of different implements for hoeing on Barley.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanai*. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Kanpur. (iii) 10.11.1956. (iv) (a) N.A. (b) Behind the plough. (c) 76 lb./ac. (d) Rows 9" apart. (e) N.A. (v) *Sanai* (G.M.). (vi) C—251 (medium early). (vii) Irrigated. (viii) As per treatments. (ix) N.A. (x) 17.11.1957.

## 2. TREATMENTS :

Same as in expt. no. 55(13) on page 606.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) 15'×36'. (iii) 6. (iv) (a) 15'×6'. (b) 13'×4.5'. (v) 1'×9'. (vi) Yes.

## 4. GENERAL :

(i) Good, about 60% lodging. (ii) Yellow and black rust and smut. No control measures adopted. (iii) Germination%, flowering dates, smut incidence, lodging%, maturity dates, yield of sheaf, grain and straw. (iv) (a) 1955—1956. (b) No. (c) Nil. (vi) to (vii) Nil.

## 5. RESULTS :

(i) 1529 lb./ac. (ii) 297.2 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	H <sub>0</sub>	H <sub>1</sub>	H <sub>2</sub>	H <sub>3</sub>	H <sub>4</sub>
Av. yield	1532	1500	1404	1388	1819

S.E./mean = 121.3 lb./ac.

**Crop :- Barley (Rabi).**

**Ref :- U.P. 56(226).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'C'.**

Object :— To study the effect of soaking of seeds on germination and yield of Barley.

## 1. BASAL CONDITIONS :

(i) (a) Nil (b) *Sanai*. (c) Nil. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 20.11.1956. (iv) (a) N.A. (b) Dibbling. (c) N.A. (d) Rows 9" apart. (e) 2. (v) *Sanai* (G.M.). (vi) NP—21 (medium late) (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 10.4.1957.



## 2. TREATMENTS :

All combinations of (1) and (2)+a control

(1) 2 periods of soaking : P<sub>1</sub>=Post-harvest and P<sub>2</sub>=Pre-sowing.

(2) 3 durations of soaking : D<sub>1</sub>=8, D<sub>2</sub>=16 and D<sub>3</sub>=24 hours.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) and (b) 7.5'×6'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Brown, yellow and black rust and smut attack. (iii) Germination %, flowering dates, no. of smutted ears, maturity dates, yields of fresh sheaf, grain and straw. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 2885 lb./ac. (ii) 311.9 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

Control = 2831 lb./ac.

	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	Mean
P <sub>1</sub>	2987	2800	2956	2914
P <sub>2</sub>	2800	2956	2863	2873
Mean	2894	2878	2910	2894

S.E. of P marginal mean = 90.0 lb./ac.

S.E. of D marginal mean = 110.3 lb./ac.

S.E. of body of table or control mean = 155.9 lb./ac.

**Crop :- Barley (Rabi).**

**Ref :- U.P. 57(278).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'C'.**

**Object :-**To study the effect of pre-sowing soaking (shade dried followed by sun dried) on the yield of Barley.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanai*. (c) Nil. (ii) (a) Sandy loam to light loam. (b) Refer soil analysis, Kanpur. (iii) 4.11.1957. (iv) (a) N.A. (b) By *kudali*. (c) 80 lb./ac. (d) Rows 1' apart. (e) N.A. (v) *Sanai* (G.M.). (vi) NP-21 (medium late). (vii) Irrigated. (viii) Weeding with *khurpi*. (ix) N.A. (x) 8.4.1958.

## 2. TREATMENTS :

All combinations of (1) and (2)+a control

(1) 2 periods of soaking : P<sub>1</sub>=Early October (9.10.1957.) and P<sub>2</sub>=Middle of October (18.10.1957.).

(2) 4 durations of soaking (shade dried followed by sun dried) : D<sub>1</sub>=16, D<sub>2</sub>=24, D<sub>3</sub>=32 and D<sub>4</sub>=40 hours soaking.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) and (b) 7.5'×2'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Rust and smut incidence. (iii) Yield of grain. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 6171 lb./ac. (ii) 721.1 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

Control = 5881 lb./ac.

	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	Mean
P <sub>1</sub>	6627	6254	6161	5787	6207
P <sub>2</sub>	6627	5507	6254	6441	6207
Mean	6627	5880	6207	6114	6207

S.E. of D marginal mean = 254.9 lb./ac.

S.E. of P marginal mean = 180.3 lb./ac.

S.E. of body of table or control mean = 360.5 lb./ac.

**Crop :- Barley (Rabi).****Ref :- U.P. 57(279).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'C'.**

Object:—To study the effect of pre-sowing soaking of seed (shade dried) on the yield of Barley.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Sanai* (G.M.). (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Kanpur (iii) 4.11.1957. (iv) (a) N.A. (b) Dibbling. (c) N.A. (d) 9"×6". (e) 2. (v) *Sanai* (G.M.). (vi) NP—21 (medium late). (vii) Irrigated. (viii) Weeding with *khurpi*. (ix) N.A. (x) 7.4.1958.

**2. TREATMENTS :**

All combinations of (1) and (2)+a control

(1) 2 dates of soaking : P<sub>1</sub>=Early October (8, 9.10.1957) and P<sub>2</sub>=Middle of October (16, 17.10.1957.).(2) 4 durations of soaking (shade dried) : D<sub>1</sub>=16, D<sub>2</sub>=24, D<sub>3</sub>=32 and D<sub>4</sub>=40 hours.**3. DESIGN :**

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) and (b) 7.5'×6'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Rust and smut incidence ; no control measures adopted. (iii) Germination %, flowering dates, smut incidences, height, maturity dates, fresh yield of sheaf, grain and straw yield. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 4238 lb./ac. (ii) 411.8 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

Control = 4418 lb./ac.

	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	Mean
P <sub>1</sub>	4200	4014	4605	4076	4224
P <sub>2</sub>	4200	4200	4387	4045	4208
Mean	4200	4107	4496	4060	4216

S.E. of D marginal mean = 145.6 lb./ac.

S.E. of P marginal mean = 102.9 lb./ac.

S.E. of body of table or control mean = 205.9 lb./ac.

**Crop :- Berley (Rabi).****Ref :- U.P. 58(262).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'C'.**

Object :— To study the effect of pre-sowing soaking of seed (shade dried) on the yield of Barley.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Sanai* (c) Nil. (ii) (a) Loam. (b) Refer soil analysis, Kanpur (iii) 18.11.1958. (iv) (a) 6 ploughings and 2 plankings. (b) Line sowing. (c) N.A. (d) Rows 9' apart. (e) N.A. (v) G.M. (*sanai*). (vi) NP—21 (medium late). (vii) Irrigated. (viii) to (x) N.A.

**2. TREATMENTS :**

All combinations of (1) and (2) + a control

(1) 2 dates of soaking : P<sub>1</sub>=Middle of October (17.10.1958) and P<sub>2</sub>=End of October (27.10.1958).(2) 4 durations of soaking : D<sub>1</sub>=16, D<sub>2</sub>=24, D<sub>3</sub>=32 and D<sub>4</sub>=40 hours.**3. DESIGN :**

(i) R.B.D. (ii) (a) 9. (b) 26.5' × 22'. (iii) 4. (iv) (a) and (b) 7.5' × 6'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Attack of yellow rust. (iii) Germination %, tillering, height of plant, dates of flowering, dates of maturity and yield of grain. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 3879 lb./ac. (ii) 475.9 lb./ac. (iii) None of the effects is significant. (v) Av. yield of grain in lb./ac.

	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	Mean
P <sub>1</sub>	4263	3703	3609	3454	3757
P <sub>2</sub>	4045	4200	3578	4356	4045
Mean	4154	3952	3594	3905	3901

S.E. of D marginal mean = 168.2 lb./ac.

S.E. of P marginal mean = 119.0 lb./ac.

S.E. of body of table or control mean = 237.9 lb./ac.

**Crop :- Barley (Rabi).****Ref :- U.P. 57(300).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'C'.**

Object :— To study the effect of post-harvest soaking of seed (shade dried followed by sun dried) on the yield of Barley.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Sanai*. (c) Nil. (ii) (a) Sandy loam to light loam. (b) Refer soil analysis, Kanpur (iii) 4.11.1957. (iv) (a) N.A. (b) By *kudali*. (c) 80 lb./ac. (d) Rows 1' apart. (e) N.A. (v) *Sanai* (G.M.). (vi) NP—21 (medium late). (vii) Irrigated. (viii) Weeding with *khurpi* on 4.1.1958. (ix) N.A. (x) 8.4.1958.

**2. TREATMENTS :**

All combinations of (1) and (2) + a control

(1) 7 dates of soaking : P<sub>1</sub>=16.4.1957, P<sub>2</sub>=15.5.1957, P<sub>3</sub>=18.5.1957, P<sub>4</sub>=3.6.1957, P<sub>5</sub>=17.6.1957, P<sub>6</sub>=7.7.1957 and P<sub>7</sub>=18.7.1957.(2) 2 durations of soaking : D<sub>1</sub>=16 and D<sub>2</sub>=24 hours.**3. DESIGN :**

(i) R.B.D. (ii) (a) 15. (b) N.A. (iii) 4. (iv) (a) and (b) 7.5' × 2'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Rust and smut incidence ; no control measure adopted. (iii) Germination %, flowering dates, smut incidence, height of plants, maturity dates, yields of fresh sheaf, grain and straw. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 4655 lb./ac. (ii) 681.3 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

Control = 5041 lb./ac.

	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	P <sub>4</sub>	P <sub>5</sub>	P <sub>6</sub>	P <sub>7</sub>	Mean
D <sub>1</sub>	5507	4574	4667	4760	4667	4014	4760	4707
D <sub>2</sub>	4480	4667	4294	4574	4667	4947	4200	4547
Mean	4994	4620	4480	4667	4667	4480	4480	4627

S.E. of P marginal mean = 240.9 lb./ac.  
 S.E. of D marginal mean = 128.8 lb./ac.  
 S.E. of body of table or control mean = 340.6 lb./ac.

**Crop :- Barley (Rabi).**

**Ref :- U.P. 57(302).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'C'.**

Object :—To study the effect of post-harvest soaking of seed (sun dried) on the yield of Barley.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanai*. (c) Nil. (ii) (a) Sandy loam to light loam. (b) Refer soil analysis, Kanpur (iii) 4.11.1957. (iv) (a) N.A. (b) By *kudali*. (c) 80 lb./ac. (d) Rows 1' apart. (e) N.A. (v) *Sanai* (G.M.). (vi) NP—21 (medium). (vii) Irrigated. (viii) Weeding with *khurpies*-on 4.1.1958. (ix) N.A. (x) 7.4.1958.

## 2. TREATMENTS :

All combinations of (1) and (2)+a control-

(1) 7 dates of soaking : P<sub>1</sub>=16.4.1957, P<sub>2</sub>=5.5.1957, P<sub>3</sub>=18.5.1957, P<sub>4</sub>=3.6.1957, P<sub>5</sub>=17.6.1957, P<sub>6</sub>=4.7.1957 and P<sub>7</sub>=18.7.1957.

(2) 2 durations of soaking : D<sub>1</sub>=16 and D<sub>2</sub>=24 hours.

## 3. DESIGN and 4. GENERAL :

Same as in expt. no. 57(300) on page 610.

## 5. RESULTS :

(i) 4705 lb./ac. (ii) 911.5 lb./ac. (iii) Main effects of P and D are highly significant. 'Control vs. others' is significant. (iv) Av. yield of grain in lb./ac.

Control = 5881 lb./ac.

	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	P <sub>4</sub>	P <sub>5</sub>	P <sub>6</sub>	P <sub>7</sub>	Mean
D <sub>1</sub>	5507	6161	5507	5881	4014	3547	5601	5174
D <sub>2</sub>	4107	5227	5321	5694	2054	1120	4947	4067
Mean	4807	5694	5414	5788	3034	2334	5274	4621

S.E. of P marginal mean = 322.3 lb./ac.  
 S.E. of D marginal mean = 172.3 lb./ac.  
 S.E. of body of table or control mean = 455.7 lb./ac.

**Crop :- Barley (Rabi).****Ref :- U.P. 57(301).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'C'.**

Object :—To study the effect of post-harvest soaking of seed (shade dried) on the yield of Barley.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Sanai* (c) Nil. (ii) (a) Sandy loam to light loam. (b) Refer soil analysis, Kanpur. (iii) (a) N.A. (b) Dibbling. (c) N.A. (d) 9"×6". (e) 2. (v) *Sanai* (G.M.). (vi) NP—21 (medium-late). 4.11.1957. (iv) (vii) Irrigated. (viii) Weeding with *khurpi* on 4.1.1958. (ix) N.A. (x) 7.4.1958.

**2. TREATMENTS :**

Same as in expt. no. 57(302) on page 611.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 15. (b) N.A. (iii) 4. (iv) (a) and (b) 7.5'×6'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Rust and smut incidence ; no control measures adopted. (iii) Germination %, flowering dates, smut incidence, height, maturity dates, yields of fresh sheaf, grain and straw. (iv) (a) 1957—1958. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 3436 lb./ac. (ii) 769.7 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

Control = 3205 lb./ac.

	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	P <sub>4</sub>	P <sub>5</sub>	P <sub>6</sub>	P <sub>7</sub>	Mean
D <sub>1</sub>	2925	3889	4045	3516	2894	3889	3485	3520
D <sub>2</sub>	3578	3018	3236	3454	3360	3454	3578	3383
Mean	3252	3454	3640	3485	3127	3672	3532	3452

S.E. of P marginal mean = 272.1 lb./ac.

S.E. of D marginal mean = 145.4 lb./ac.

S.E. of body of table or control mean = 384.8 lb./ac.

**Crop :- Barley (Rabi).****Ref :- U.P. 58(263).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'C'.**

Object :—To study the effect of post-harvest soaking of seed on the yield of Barley.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 18.11.1958. (iv) (a) N.A. (b) Dibbling. (c) 80 lb./ac. (d) 9"×6". (e) N.A. (v) N.A. (vi) NP—21 (medium late). (vii) to (ix) N.A. (x) 22.4.1959.

**2. TREATMENTS :**

All combinations of (1) and (2) + one control

(1) 2 durations of soaking : D<sub>1</sub>=16 and D<sub>2</sub>=24 hours.(2) 7 dates of soaking : P<sub>1</sub>=16.4.1958, P<sub>2</sub>=5.5.1958, P<sub>3</sub>=18.5.1958, P<sub>4</sub>=3.6.1958, P<sub>5</sub>=17.6.1958, P<sub>6</sub>=4.7.1958 and P<sub>7</sub>=18.7.1958.**3. DESIGN :**

(i) R.B.D. (ii) (a) 15. (b) N.A. (iii) 4. (iv) (a) and (b) 4.5'×10'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Yellow rust and smut attack. (iii) Germination %, flowering dates, tillering, height of plants, maturity dates and yield of grain. (iv) (a) 1957—1958. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 3668 lb./ac. (ii) 481.7 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

Control = 3858 lb./ac.

	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	P <sub>4</sub>	P <sub>5</sub>	P <sub>6</sub>	P <sub>7</sub>	Mean
D <sub>1</sub>	4138	3858	3360	3858	3454	3671	3703	3720
D <sub>2</sub>	3578	3703	3391	3547	3360	3703	3827	3587
Mean	3858	3780	3376	3702	3407	3687	3765	3654

S.E. of P marginal mean = 170.3 lb./ac.

S.E. of D marginal mean = 91.0 lb./ac.

S.E. of body of table or control mean = 240.8 lb./ac.

**Crop :- Barley (Rabi).**

**Ref :- U.P. 58(213).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'C'.**

Object :—To study the effect of directions of sowing on Barley crop.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 25.11.1958. (iv) (a) N.A. (b) Sowing by *kudali*. (c) 80 lb./ac. (d) Rows 9" apart. (e) N.A. (v) N.A. (vi) C--251 (medium). (vii) and (viii) N.A. (ix) 0.8". (x) 24.4.1959.

## 2. TREATMENTS :

2 directions of sowing : D<sub>1</sub>=North to south and D<sub>2</sub>=East to west.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 2. (iv) (a) and (b) 16.5' × 12'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Rust attack. (iii) Germination %, flowering dates, rust %, (yellow and black), height of plants, maturity dates, yield of grain and straw. (iv) (a) 1958—contd. (b) No. (c) Nil. (v) (a) Majhera. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1329 lb./ac. (ii) 28.3 lb./ac. (iii) Treatment difference is not significant. (iv) Av. yield of grain in lb./ac.

Treatment	D <sub>1</sub>	D <sub>2</sub>
Av. yield	1259	1400

S.E./mean = 20.0 lb./ac.

**Crop :- Barley (Rabi).**

**Ref :- U.P. 59(227).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'C'.**

Object :—To study the effect of directions of sowing on Barley.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 10.11.1959. (iv) (a) N.A. (b) Behind the *kudali*. (c) 80 lb./ac. (d) Rows 9" apart. (e) N.A. (v) N.A. (vi) C-251 (medium). (vii) and (viii) N.A. (ix) Negligible. (x) 11.4.1960.

## 2. TREATMENTS :

2 directions of sowing :  $D_1$ =North to south and  $D_2$ =East to west.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 4. (iv) (a)  $36' \times 15'$ . (b)  $32' \times 13\frac{1}{2}'$ . (v)  $2' \times 9"$ . (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Rust attack. (iii) Germination %, flowering dates, tillering, rust %. (yellow, brown and black) maturity dates, yield of grain and straw. (iv) (a) 1958—contd. (b) No. (c) Nil. (v) (a) Majhera. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1548 lb./ac. (ii) 80.2 lb./ac. (iii) Treatment difference is not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$D_1$	$D_2$
Av. yield	1584	1512

S.E./mean = 40.1 lb./ac.

**Crop :- Barley (*Rabi*).**

**Ref :- U.P. 58(212).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'C'.**

Object :- To study the effect of transplanting Barley against normal sowing.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (c) As per treatments. (iv) (a) N.A. (b) Behind the plough and transplanting. (c) 80 lb./ac. (d) Rows 9" apart. (e) N.A. (v) N.A. (vi) K-12 (medium). (vii) and (viii) N.A. (ix) 0.8". (x) 24.4.1959.

## 2. TREATMENTS :

4 methods of growing the crop :  $T_1$ =Barley sown at the time of nursery sowing on 5.11.1958,  $T_2$ =Barley sown normally on 27.10.1958,  $T_3$ =Barley transplanted on 25.11.1958 and  $T_4$ =Barley sown at the time of transplanting.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a)  $12' \times 36'$ . (b)  $10.5' \times 32'$ . (v)  $2' \times 9"$ . (vi) Yes.

## 4. GENERAL :

(i) Lodging in some plots. (ii) Yellow rust and smut attack. (iii) Germination %, tillering, flowering dates, plant height, maturity dates, lodging %, ear length and yield of grain. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 2056 lb./ac. (ii) 340.3 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$T_1$	$T_2$	$T_3$	$T_4$
Av. yield	2090	1729	2359	2046

S.E./mean = 170.1 lb./ac.

**Crop :- Barley (Rai).****Ref :- U.P. 58(343).****Site :- Reg. Res. Stn., Majhera.****Type :- 'C'.**

Object :—To study the effect of directions of sowing on the yield of Barley.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Maduwa*. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Majhera. (iii) 4.11.1958. (iv) (a) 2 ploughings. (b) Behind *kassi* in lines. (c) 40 srs./ac. (d) 6" to 9" between rows. (e) N.A. (v) Nil. (vi) Local. (vii) Unirrigated. (viii) and (ix) N.A. (x) 10.4.1959.

**2. TREATMENTS :**2 directions of sowing :  $D_1$ =North to south and  $D_2$ =East to west.**3. DESIGN :**

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 2. (iv) (a) and (b) 21'×15'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Nil. (iii) Germination count, plant height and yield of grain. (iv) (a) 1958--contd. (b) No. (c) Nil. (v) (a) Kanpur. (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1738 lb./ac. (ii) 26.7 lb./ac. (iii) Treatment difference is not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$D_1$	$D_2$
Av. yield	1805	1671

S.E./mean = 18.9 lb./ac.

**Crop :- Barley (Rabi).****Ref :- U.P. 59(370).****Site :- Reg. Res. Stn., Majhera.****Type :- 'C'.**

Object :—To study the effect of directions of sowing on Barley crop.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Maduwa*. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Majhera. (iii) 27.10.1959. (iv) (a) 2 ploughings. (b) Behind *kassi* in lines (c) 40 srs./ac. (d) 6" to 9" between rows. (e) N.A. (v) Nil. (vi) Local. (vii) Unirrigated. (viii) and (ix) N.A. (x) 28.4.1960.

**2. TREATMENTS :**

Same as in expt. no. 58(343) above.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 2. (iv) (a) and (b) 18'×18'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Normal. (ii) Nil. (iii) Germination % and yield of grain. (iv) (a) 1958--ccntd. (b) No. (c) Nil. (v) (a) Kanpur. (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1387 lb./ac. (ii) 59.9 lb./ac. (iii) Treatment difference is not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$D_1$	$D_2$
Av. yield	1521	1253

S.E./mean = 42.4 lb./ac.



**Crop :- Barley (Rabi).****Ref :- U.P. 54(13).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'CV'.**

Object :—To find out suitable date of sowing for different varieties of Barley.

**1. BASAL CONDITIONS :**

(i) (a) No. (b) *Sanai*. (c) Nil. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) As per treatments. (iv) (a) Planking 6 times, 1 victory and 2 *desi* ploughings and cultivator once. (b) Sown by *kudali* (c) 80 lb./ac. (d) Rows 9" apart. (e) N.A. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) 2 weedings. (ix) N.A. (x) 31.3.1955.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 4 varieties :  $V_1=K-12$ ,  $V_2=NP-21$ ,  $V_3=CN-292$  and  $V_4=CN-294$ .(2) 4 dates of sowing :  $D_1=23.10.1954$ ,  $D_2=30.10.1954$ ,  $D_3=6.11.1954$  and  $D_4=13.11.1954$ .**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 18'×6'. (b) 16'×6'. (v) 1' along length on either side of the plot. (vi) Yes.

**4. GENERAL :**

(i) Satisfactory. (ii) Smut attack heavy in  $V_2$  and  $V_3$  plots. (iii) Grain yie d. (iv) (a) 1952—contd. (b) No. (c) Nil. (v) to (vii) N.A.

**5. RESULTS :**

(i) 2300 lb./ac. (ii) 295.7 lb./ac. (iii) All effects are highly significant. (iv) Av. yield of grain in lb./ac.

	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	Mean
V <sub>1</sub>	3296	3180	2916	2494	2972
V <sub>2</sub>	3616	2916	3107	2538	3044
V <sub>3</sub>	1516	1531	1313	1589	1487
V <sub>4</sub>	1707	1648	1575	1852	1696
Mean	2534	2319	2228	2118	2300

S.E. of any marginal mean = 73.9 lb./ac.

S.E. of body of table = 147.8 lb./ac.

**Crop :- Barley (Rabi).****Ref :- U.P. 55(3).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'CV'.**

Object :—To find out suitable date of sowing for different varieties of Barley.

**1. BASAL CONDITIONS :**

(i) (a) No. (b) *Sanai*. (c) Nil. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) As per treatments. (iv) (a) 1 victory plough, 1 cultivator and 2 *desi* ploughings. (b) Sown behind *kassi*. (c) 80 lb./ac. (d) Rows 9" apart. (e) N.A. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 11.4.1956.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 4 varieties :  $V_1=K-12$ ,  $V_2=NP-21$ ,  $V_3=CN-292$  and  $V_4=CN-294$ .(2) 4 dates of sowing :  $D_1=1.11.1955$ ,  $D_2=10.11.1955$ ,  $D_3=20.11.1955$  and  $D_4=30.11.1955$ .**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 15'×6'. (b) 13'×4½'. (v) 1'×9'. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Traces of yellow rust and smut observed. (iii) Grain yield. (iv) (a) 1952—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1207 lb./ac. (ii) 257.6 lb./ac. (iii) Main effect of V is significant and effect of D is significant. (iv) Av. yield of grain in lb./ac.

	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	Mean
V <sub>1</sub>	1556	1795	1627	1460	1609
V <sub>2</sub>	1364	1915	1507	1651	1609
V <sub>3</sub>	646	790	646	623	676
V <sub>4</sub>	814	1029	861	1029	933
Mean	1095	1382	1160	1191	1207

S.E. of any marginal mean = 64.4 lb./ac.

S E. of body of table = 128.8 lb./ac.

**Crop :- Barley (Rabi).**

**Ref :- U.P. 56(237).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'CV'.**

Object :- To find out the optimum sowing date for different varieties of Barley.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Moong*. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Kanpur. (iii) As per treatments. (iv) (a) N.A. (b) By *kudali*. (c) 80 lb./ac. (d) Rows 9" apart. (e) N.A. (v) N.A. (vi) As per treatments. (vii) Irrigated. (viii) 2 weedings with *khurpi* and 3 hoeines. (ix) N.A. (x) 29.3.1957 and 2.4.1957.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 varieties : V<sub>1</sub>=NP-21 (medium late), V<sub>2</sub>=K-12 (mid. early), V<sub>3</sub>=CN-292 (early) and V<sub>4</sub>=CN-294 (mid. early).

(2) 4 dates of sowing : D<sub>1</sub>=1.11.1956, D<sub>2</sub>=10.11.1956, D<sub>3</sub>=20.11.1956 and D<sub>4</sub>=30.11.1956.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 16.5'×6'. (b) 14.5'×4.5'. (v) 1'×9". (vi) Yes.

## 4. GENERAL :

(i) Good, some lodging in V<sub>3</sub> and V<sub>4</sub> plots. (ii) Yellow and black rust attack ; on control measures adopted. (iii) Germination %, flowering dates, smut incidence, lodging %, maturity dates, yields of fresh sheaf, grain and straw. (iv) (a) 1952—1956. (b) and (c) No. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1553 lb./ac. (ii) 347.4 lb./ac. (iii) Main effects of V and D are highly significant. (iv) Av. yield of grain in lb./ac.

	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	Mean
V <sub>1</sub>	2146	2146	1996	1373	1915
V <sub>2</sub>	2081	2232	2253	1695	2065
V <sub>3</sub>	944	1073	1330	1116	1116
V <sub>4</sub>	1137	1073	1287	966	1116
Mean	1577	1631	1716	1288	1553

S.E. of any marginal mean = 86.8 lb./ac.  
S.E. of body of table = 173.7 lb./ac.

**Crop :- Barley (Rabi).**

**Ref :- U.P. 59(439).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'CV'.**

Object :—To find out the optimum sowing date for different varieties of Barley.

### 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) As per treatments. (iv) (a) N.A. (b) By *kudali*. (c) 80 lb./ac. (d) Rows 1' apart. (e) N.A. (v) N.A. (vi) As per treatments. (vii) to (ix) N.A. (x) 16, 18, 26.4.1960.

### 2. TREATMENTS :

**Main-plot treatments :**

5 dates of sowing :  $D_1=30.10.1959$ ,  $D_2=14.11.1959$ ,  $D_3=1.12.1959$ ,  $D_4=15.12.1959$  and  $D_5=31.12.1959$ .

**Sub-plot treatments :**

20 varieties :  $V_1=C-251$  (medium),  $V_2=NP-21$  (medium),  $V_3=K-12$  (medium),  $V_4=K-14$  (medium),  $V_5=K-18$  (medium),  $V_6=K-19$  (medium),  $V_7=I.W.-112;B-7$  (late),  $V_8=I.W.-112;B-2$  (late),  $V_9=I.W.-112$  (late),  $V_{10}=C-84$  (medium),  $V_{11}=C-50$  (medium),  $V_{12}=K-23$  (medium),  $V_{13}=K-24$  (medium),  $V_{14}=K.N.-16$  (medium),  $V_{15}=K.N.-28$  (medium),  $V_{16}=C.N.-294$  (medium),  $V_{17}=K-20$  (medium),  $V_{18}=K-3$  (medium),  $V_{19}=K.N.-29$  (medium) and  $V_{20}=K.N.-73$  (medium).

### 3. DESIGN :

(i) Split-plot. (ii) (a) 5 main-plots/replication ; 20 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) and (b)  $14' \times 15'$ . (v) Nil. (vi) Yes.

### 4. GENERAL :

(i) N.A. (ii) Rust attack. (iii) Germination %, flowering dates, tillering, maturity dates, rust (yellow and black) and yield of grain and straw. (iv) (a) 1959—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

### 5. RESULTS :

(i) 1279 lb./ac. (ii) (a) 1107.2 lb./ac. (b) 365.2 lb./ac. (iii) All the effects are highly significant. (iv) Av. yield of grain in lb./ac.

	V <sub>1</sub>	V <sub>2</sub>	V <sub>3</sub>	V <sub>4</sub>	V <sub>5</sub>	V <sub>6</sub>	V <sub>7</sub>	V <sub>8</sub>	V <sub>9</sub>	V <sub>10</sub>
D <sub>1</sub>	2632	3248	2950	3003	3560	2919	3131	3649	2215	2445
D <sub>2</sub>	2136	2359	2415	1681	2230	1868	2013	2004	1291	2103
D <sub>3</sub>	1226	1946	1420	2151	1750	1562	1642	1572	968	1372
D <sub>4</sub>	463	801	634	763	551	669	695	943	467	672
D <sub>5</sub>	176	331	235	303	337	216	336	321	125	248
Mean	1327	1737	1531	1580	1686	1445	1563	1698	1013	1369

  

	V <sub>11</sub>	V <sub>12</sub>	V <sub>13</sub>	V <sub>14</sub>	V <sub>15</sub>	V <sub>16</sub>	V <sub>17</sub>	V <sub>18</sub>	V <sub>19</sub>	V <sub>20</sub>	Mean
D <sub>1</sub>	2790	2963	3057	1623	1769	1263	3381	3207	962	657	2571
D <sub>2</sub>	1709	2223	2035	957	915	735	1731	2261	499	1080	1712
D <sub>3</sub>	1647	1738	1515	845	608	375	1951	2045	363	270	1349
D <sub>4</sub>	671	426	523	408	214	125	592	720	77	79	525
D <sub>5</sub>	358	151	431	260	103	168	268	334	31	71	240
Mean	1435	1500	1516	819	722	533	1585	1713	386	431	1279

S.E. of difference of two

1. D marginal means	= 175.1 lb./ac.
2. V marginal means	= 115.5 lb./ac.
3. V means at the same level of D	= 258.2 lb./ac.
4. D means at the same level of V	= 306.6 lb./ac.

**Crop :- Barley (Rabi).****Ref :- U.P. 56(188).****Site :- B. R. College Insttl. Res. Farm, Bichpuri.****Type :- 'I'.**

Object :—To study the effect of irrigation on the yield of Barley.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Cucurbits. (c) N.A. (ii) (a) Light loam. (b) Refer soil analysis, Bichpuri. (iii) 26.10.1956. (iv) (a) 2 ploughings by tractor driven disc harrow, 1 *desi* ploughing and 1 planking. (b) In lines by 'Nai' (country plough). (c) 50 lb./ac. (d) 9" between rows. (e) N.A. (v) 150 mds./ac. of compost. (vi) K—13. (vii) As per treatments. (viii) 2 weedings. (ix) 4.98". (x) 21.3.1957.

**2. TREATMENTS :**2 sources of irrigation :  $S_1$  = Surface well water and  $S_2$  = Tube well water.**3. DESIGN :**

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 25' × 18'. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Nil. (iii) Plant height and tillers. (iv) (a) 1956—1957. (b) No. (c) Nil. (v) a and b N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 2839 lb./ac. (ii) 174.4 lb./ac. (iii) Treatment difference is not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$S_1$	$S_2$
Av. yield	2855	2822

S.E./mean = 87.2 lb./ac.

**Crop :- Barley (Rabi).****Ref :- U.P. 56(223).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'I'.**

Object :—To study the effect of irrigation on the yield of Barley.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Sanai*. (c) Nil. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 20.11.1956. (iv) (a) N.A. (b) Behind the plough. (c) 80 lb./ac. (d) Rows 9" apart. (e) N.A. (v) *Sanai* as G.M. (vi) NP—21 (medium late) (vii) As per treatments. (viii) 1 hoeing by *Naini* wheel hoe. (ix) N.A. (x) 10.4.1957.

**2. TREATMENTS :** $I_1$  = One irrigation one day after sowing on 21.11.1956 and  $I_2$  = One irrigation at usual time on 28.12.1956.**3. DESIGN :**

(i) Paired-plot. (ii) (a) 2. (b) 36' × 30'. (iii) 4. (iv) (a) 36' × 12'. (b) 32' × 10.5'. (v) 2' × 9". (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Yellow and black rust attack, no control measures adopted. (iii) Germination %, flowering dates, incidence of smut, maturity dates, fresh yield of sheaf, grain and straw yield. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1088 lb./ac. (ii) 153.1 lb./ac. (iii) Treatment difference is not significant. (iv) Av. yield of grain in lb./ac.

Treatment	I <sub>1</sub>	I <sub>2</sub>
Av. yield	1096	1079

S.E./mean = 76.5 lb./ac.

**Crop :- Barley (Rabi).**

**Ref :- U.P. 55(213).**

**Site :- Agri. College Farm, B.H.U., Varansi.**

**Type :- 'IM'.**

Object :— To study the effect of manures under irrigated conditions.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Jowar* fodder. (c) N.A. (ii) (a) Light loam. (b) Refer soil analysis, Varansi. (iii) 6.11.1955. (iv) (a) 7 ploughings and 1 harrowing. (b) N.A. (c) 50 srs./ac. (d) and (e) N.A. (v) Nil. (vi) C-251. (vii) As per treatments. (viii) Nil. (ix) N.A. (x) 15.3.1956.

**2. TREATMENTS :****Main-plot treatments :**

4 levels of irrigation : I<sub>0</sub>=No irrigation, I<sub>1</sub>=One irrigation 45 days after sowing, I<sub>2</sub>=Two irrigations, 1st 30 days after sowing and 2nd one month after 1st irrigation and I<sub>3</sub>=Three irrigations, first 25 days after sowing and the other two 25 days and 50 days after the first irrigation.

**Sub-plot treatments :**

4 sources of 40 lb./ac. of N : S<sub>0</sub>=Control, S<sub>1</sub>=A/S, S<sub>2</sub>=B.M. and S<sub>3</sub>=Castor cake.

B.M. and Castor cake was applied one week before sowing and A/S broadcast at the time of sowing.

**3. DESIGN :**

(i) Split-plot. (ii) (a) 4 main-plots replication ; 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 35'×18'. (b) 31'×14'. (v) 2'×2'. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Growth character and yield of grain. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 2370 lb./ac (ii) (a) 277 0 lb./ac. (b) 208.5 lb./ac. (iii) Main effects of N and I are highly significant. (iv) Av. yield of grain in lb./ac.

	S <sub>0</sub>	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean
I <sub>0</sub>	1522	1924	1613	1753	1703
I <sub>1</sub>	2133	2971	2502	2544	2538
I <sub>2</sub>	2226	2794	2461	2715	2549
I <sub>3</sub>	2236	3004	2579	2936	2689
Mean	2029	2673	2289	2487	2370

S.E. of difference of two

1. I marginal means = 97.9 lb./ac.
2. S marginal means = 73.7 lb./ac.
3. S means at the same level of I = 147.4 lb./ac.
4. I means at the same level of S = 160.9 lb./ac.

**Crop :- Barley (Rabi).****Ref :- U.P. 57(136).****Site :- Reg. Res. Stn., Amrukh.****Type :- 'D'.**

Object :- To study the effect of soaking of seed for smut control in Barley.

**1. BASAL CONDITIONS :**(i) (a) Nil. (b) and (c) N.A. (ii) (a) *Kabar*. (b) N.A. (iii) 30.10.1957. (iv) (a) 1 ploughing by *desi* plough and 2 *bakharings*. (b) Line sowing. (c) to (e) N.A. (v) Nil (vi) NP-21. (vii) Irrigated. (iii) Nil. (ix) N.A. (x) 21.3.1958.**2. TREATMENTS :**

All combinations of (1) and (2)+a control

(1) 4 dates of soaking :  $D_0$ =Mid. May,  $D_2$ =Mid. June,  $D_3$ =Early Oct. and  $D_4$ =Mid. October.(2) 2 periods of soaking :  $S_1$ =16 and  $S_2$ =20 hours.**3. DESIGN :**

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) and (b) 22'×9'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Normal. (ii) Smut attack, control measures as per treatments. (iii) Yield of grain. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1203 lb./ac. (ii) 181.5 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

Control = 1117 lb./ac.

	$D_1$	$D_2$	$D_3$	$D_4$	Mean
$S_1$	1273	1040	1216	1165	1174
$S_2$	1281	1187	1315	1236	1255
Mean	1277	1114	1266	1200	1214

S.E. of S marginal mean = 45.6 lb./ac.

S.E. of D marginal mean = 64.2 lb./ac.

S.E. of body of table or control mean = 90.7 lb./ac.

**Crop :- Barley (Rabi).****Ref :- U.P. 58(10).****Site :- Reg. Res. Stn., Hardoi.****Type :- 'D'.**

Object :- To study the effect of soaking of seed for smut control in Barley.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Hardoi. (iii) 9.11.1958. (iv) to (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 7 to 10.4.1959.

**2. TREATMENTS :**

Same as in expt. no. 57(136) above.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 20'×12'. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Attack of smut, control measures as per treatments. (iii) Yield of grain. (iv) (a) and (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1535 lb./ac. (ii) 366.8 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

Control = 1389 lb./ac.

	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	Mean
S <sub>1</sub>	1679	1436	1633	1709	1614
S <sub>2</sub>	1399	1341	1592	1633	1491
Mean	1539	1389	1613	1671	1553

S.E. of S marginal mean = 91.7 lb./ac.  
 S.E. of D marginal mean = 129.7 lb./ac.  
 S.E. of body of table or control mean = 183.4 lb./ac.

Crop :- Barley (*Rabi*).

Ref :- U.P. 47(478).

Site :- Reg. Res. Stn., Hardoi.

Type :- 'D'.

Object :—To study the effect of soaking of seed for smut control in Barley.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanai*. (c) Nil. (ii) (a) Loam. (b) Refer soil analysis, Hardoi. (iii) and (iv) N.A. (v) *Sanai* as G.M. (vi) N.A. (vii) Irrigated. (viii) 1 weeding with *khurpi* on 2.12.1957. (ix) N.A. (x) 17, 18.3.1958.

## 2. TREATMENTS :

All combinations of (1) and (2) + a control

(1) 4 dates of soaking : M<sub>1</sub>=Mid. May, M<sub>2</sub>=Mid. June, M<sub>3</sub>=Early October and M<sub>4</sub>=Mid. October.(2) 2 durations of soaking : D<sub>1</sub>=16 and D<sub>2</sub>=24 hours.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 23'×9'9". (b) 20'×8'3". (v) 1½'×9". (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Incidence of smut, control measures as per treatments. (iii) Yields of fresh sheaf, grain and straw. (iv) (a) and (b) No. (c) Nil. (v) (a) Nawabganj, Varanasi, Amrukh and Meerut. (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 3185 lb./ac. (ii) 236.0 lb./ac. (iii) Main effect of M is highly significant and effect of D is significant. (iv) Av. yield of grain in lb./ac.

Control = 3352 lb./ac.

	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	M <sub>4</sub>	Mean
D <sub>1</sub>	2758	3080	2995	3428	3065
D <sub>2</sub>	3046	2978	3275	3751	3263
Mean	2902	3029	3135	3590	3164

S.E. of D marginal mean = 59.0 lb./ac.  
 S.E. of M marginal mean = 83.4 lb./ac.  
 S.E. of body of table or control mean = 118.0 lb./ac.

**Crop :- Barley (Rabi).****Ref :- U.P. 56(224).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'D'.**

Object :—To study the effect of inoculation and Agrosan G.N. on smutted Barley.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Sanai*. (c) Nil. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 20.11.1956. (iv) (a) N.A. (b) By dibbling. (c) N.A. (d) 9"×6". (e) 3. (v) *Sanai* (G.M.). (vi) NP—21 (medium late). (vii) Irrigated. (viii) 1 hoeing by *Naini* wheel hoe. (ix) N.A. (x) 10.4.1957.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 2 seed inoculations : I<sub>0</sub>=Seeds uninoculated and I<sub>1</sub>=Seeds inoculated.(2) 2 seed treatments : T<sub>0</sub>=Seeds untreated and T<sub>1</sub>=Seeds treated with Agrosan G.N.**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 4. (b) 10'×30'. (iii) 4. (iv) (a) and (b) 10'×6'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good. (b) Yellow, black rust and smut attack ; control measures as per treatments. (iii) Germination %, flowering dates, smut incidence, maturity dates, yield of fresh sheaf, grain, straw and dry grain yield. (iv) (a) 1956—1957. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 2287 lb./ac. (ii) 191.8 lb./ac. (iii) Main effect of T is highly significant. (iv) Av. yield of grain in lb./ac.

	T <sub>0</sub>	T <sub>1</sub>	Mean
I <sub>0</sub>	2450	2450	2450
I <sub>1</sub>	1960	2287	2124
Mean	2205	2368	2287

S.E. of any marginal mean = 67.8 lb./ac.

S.E. of body of table = 95.9 lb./ac.

**Crop :- Barley (Rabi).****Ref :- U.P. 57(280).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'D'.**

Object :—To study the effect of inoculation and Agrosan G.N. on smutted Barley.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Sanai*. (c) Nil. (ii) (a) Light loam. (b) Refer soil analysis, Kanpur. (iii) 5.11.1957. (iv) (a) N.A. (b) Behind the plough. (c) 80 lb./ac. (d) Rows 9" apart. (e) N.A. (v) *Sanai* (G.M.). (vi) NP—21 (medium late). (vii) Irrigated. (viii) 1 weeding with *khurpi* on 4.1.1958. (ix) N.A. (x) 2 4.1958.

**2. TREATMENTS :**

Same as in expt. no. 56(224) above.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) 22'×12'. (b) 18'×10.5'. (v) 2'×9". (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Yellow rust and smut ; control measures adopted against smut as per treatments. (iii) Germination %, flowering dates, height of plant, maturity dates, yield of fresh sheaf, grain and straw yield. (iv) (a) 1956—1957. (b) and (c) No. (v) to (vii) Nil.



## 5. RESULTS :

(i) 1917 lb./ac. (ii) 387.5 lb./ac. (iii) Main effect of T alone is significant. (iv) Av. yield of grain in lb./ac.

	T <sub>0</sub>	T <sub>1</sub>	Mean
I <sub>0</sub>	1741	2326	2034
I <sub>1</sub>	1637	1963	1800
Mean	1689	2144	1917

S.E. of any marginal mean = 137.0 lb./ac.  
S.E. of body of table = 193.7 lb./ac.

**Crop :- Barley (Rabi).**

**Ref :- U.P. 57(296).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'D'.**

Object :—To study the effect of pre-sowing soaking of seed on smutted Barley.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanai*. (c) Nil. (ii) (a) Sandy loam to light loam. (b) Refer soil analysis, Kanpur. (iii) 4.11.1957. (iv) (a) N.A. (b) *By kudali*. (c) 80 lb./ac. (d) Rows 1' apart. (e) N.A. (v) *Sanai* for G.M. (vi) NP-21 (medium late). (vii) Irrigated. (viii) 1 weeding with *shurpi* on 4.1.1958. (ix) N.A. (x) 8.4.1958.

## 2. TREATMENTS :

All combinations of (1) and (2) + a control

(1) 2 dates of soaking : P<sub>1</sub> = Early October (9.10.1957) and P<sub>2</sub> = Mid. October (17.10.1957.).

(2) 4 durations of soaking : D<sub>1</sub> = 16, D<sub>2</sub> = 24, D<sub>3</sub> = 32 and D<sub>4</sub> = 40 hours soaking.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) and (b) 7.5' × 2'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Rust incidence and smut attack ; control measures as per treatments. (iii) Germination %, flowering dates, smut incidence, height of plants, maturity dates, yield of fresh sheaf, grain and straw and dry grain yields. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 5476 lb./ac. (ii) 829.0 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

Control = 5507 lb./ac.

	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	Mean
P <sub>1</sub>	5414	5787	5134	5694	5507
P <sub>2</sub>	5321	6161	5134	5134	5438
Mean	5368	5974	5134	5414	5472

S.E. of D marginal mean = 293.1 lb./ac.  
S.E. of P marginal mean = 207.2 lb./ac.  
S.E. of body of table or control mean = 414.5 lb./ac.

**Crop :- Barley (Rabi).****Ref :- U.P. 58(211).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'D'.**

Object :—To study the effect of Agrosan G.N. and Fernasan compound on the yield of Barley.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Kanpur. (iii) 20.11.1958. (iv) (a) N.A. (b) Behind the plough. (c) 80 lb./ac. (d) Rows 9" apart. (e) N.A. (v) N.A. (vi) NP—21 (medium). (vii) and (viii) N.A. (ix) 0.78". (x) 9.4.1958.

**2. TREATMENTS :**

5 seed dressing treatments :  $T_0$ =Control,  $T_1$ =Agrosan G.N. at 6 ozs. per 112 lb. of seed,  $T_2$ =Fernasan "75 W" at 4 ozs. per 112 lb. of seed,  $T_3$ =Fernasan "75 W" at 8 ozs. per 112 lb. of seed and  $T_4$ =Fernasan "75 W" at 12 ozs. per 112 lb. of seed.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 29'×11'3". (b) 25'×9'9". (v) 2'×9". (vi) Yes.

**4. GENERAL :**

(i) Lodging occurred. (ii) Yellow rust and smut attack. (iii) Germination %, flowering dates, tillering, plant height, lodging %, maturity dates and yield of grain and straw. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 2219 lb./ac. (ii) 486.1 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$T_0$	$T_1$	$T_2$	$T_3$	$T_4$
Av. yield	1893	2509	2137	2325	2229

S.E./mean = 217.4 lb./ac.

**Crop :- Barley (Rabi).****Ref :- U.P. 57(45).****Site :- Reg. Res. Stn., Meerut.****Type :- 'D'.**

Object :— To study the effect of soaking of seed for smut control in Barley.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Silt loam. (b) Refer soil analysis, Meerut. (iii) 13.11.1957. (iv) (a) 2 ploughings by *desi* plough. (b) Behind the plough in rows. (c) 80 lb./ac. (d) 9" between rows. (e) N.A. (v) Nil. (vi) C—251 (medium). (vii) Irrigated. (viii) 1 weeding with *khurpi* on 22.12.1957. (ix) 1.31". (x) 8.5.1958.

**2. TREATMENTS :**

All combinations of (1) and (2) + a control

(1) 2 durations of soaking :  $D_1$ =16 and  $D_2$ =24 hours.

(2) 3 times of soaking :  $T_1$ =May,  $T_2$ =Early October and  $T_3$ =Mid October.

Seed soaking was done in water.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 7. (b) 63'6"×23'9". (iii) 4. (iv) (a) 23.75'×9.5'. (b) 21'×8'. (v) 1.65"×9". (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Attack of smut, control measure as per treatments. (iii) Yield of grain and no. of smutted plants. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :****For grain**

(i) 1449 lb./ac. (ii) 385.7 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

Control = 1475 lb./ac.

	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	Mean
D <sub>1</sub>	1377	1426	1183	1329
D <sub>2</sub>	1540	1540	1604	1561
Mean	1458	1483	1394	1445

S.E. of D marginal mean = 111.3 lb./ac.

S.E. of T marginal mean = 136.3 lb./ac.

S.E. of body of table or control mean = 192.8 lb./ac.

**For smutted plants**(i) 5.00  $\sqrt{x}$ /plot. (ii) 1.20  $\sqrt{x}$ /plot. (iii) Main effect of T alone is significant. (iv) Av. yield of smutted plants.Control = 6.00  $\sqrt{x}$ /plot

	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	Mean
D <sub>1</sub>	3.66	5.44	5.82	4.97
D <sub>2</sub>	3.76	5.07	5.23	4.69
Mean	3.71	5.26	5.52	4.83

S.E. of T marginal mean = 0.42  $\sqrt{x}$ /plot.S.E. of D marginal mean = 0.36  $\sqrt{x}$ /plot.S.E. of body of table or control mean = 0.60  $\sqrt{x}$ /plot.Where  $x$  = No. of smutted plants.**Crop :- Barley (Rabi).****Ref :- U.P. 58(44).****Site :- Reg. Res. Stn., Meerut.****Type :- 'D'.**

Object :— To study the effect of soaking of seed for smut control in Barley.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Dhaincha*. (c) Nil. (ii) (a) Silt loam. (b) Refer soil analysis, Meerut. (iii) 7.11.1958. (iv) (a) 1 ploughing by soil turning plough and 4 to 5 ploughings by *desi* plough. (b) Behind the plough in rows. (c) 35 srs./ac. (d) Rows 10" apart. (e) N.A. (v) G.M. by *dhaincha*. (vi) C—251 (medium). (vii) Irrigated. (viii) 1 weeding. (ix) 8.84". (x) 2.4.1959.

**2. TREATMENTS .**

All combinations of (1) and (2) + a control (no soaking)

(1) 2 durations of soaking : D<sub>1</sub>=16 and D<sub>2</sub>=24 hours.(2) 2 times of soaking : T<sub>1</sub>=May and T<sub>2</sub>=Early October.

Soaking of seeds done in water.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 5. (b) 12' × 174'. (iii) 4. (iv) (a) 32' × 12'. (b) 29' × 9'. (v) 1½' × 1½'. (vi) Yes.

**4. GENERAL :**

(i) Fair. (ii) Attack of smut, control measures as per treatments. (iii) Germination, no. of smutted plants, ears, and yield of grain. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :****For grain**

(i) 1977 lb./ac. (ii) 343.2 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

Control = 1955 lb./ac.

	D <sub>1</sub>	D <sub>2</sub>	Mean
T <sub>1</sub>	1786	1945	1866
T <sub>2</sub>	2076	2122	2099
Mean	1931	2034	1983

S.E. of any marginal mean = 121.3 lb./ac.

S.E. of body of table or control mean = 171.6 lb./ac.

## For smutted heads

(i) 10.59  $\sqrt{x}$ /plot. (ii) 2.56  $\sqrt{x}$ /plot. (iii) None of the effects is significant. (iv) Av. yield of smutted plants/plot.Control = 10.39  $\sqrt{x}$ /plot

	D <sub>1</sub>	D <sub>2</sub>	Mean
T <sub>1</sub>	12.41	8.38	10.39
T <sub>2</sub>	10.32	11.46	10.89
Mean	11.36	9.92	10.64

S.E. of any marginal mean = 0.90  $\sqrt{x}$ /plot.S.E. of body of table or control mean = 1.28  $\sqrt{x}$ /plot.

Where x=No. of smutted plants.

**Crop :- Barley (Rabi).****Ref :- U.P. 59(27).****Site :- Reg. Res. Stn., Meerut.****Type :- 'D'.**

Object :-To find out a simple method of control for the covered smut of Barley.

**1. BASAL CONDITIONS :**(i) (a) Nil. (b) *Jowar* for fodder. (c) Nil. (ii) (a) Silt loam. (b) Refer soil analysis, Meerut. (iii) 10.10.1959. (iv) (a) 1 ploughing by soil turning plough and 3 ploughings by *desi* plough. (b) Behind the plough in rows. (c) 30 srs./ac. (d) 9" between rows. (e) Nil. (v) Nil. (vi) K—12 (early). (vii) Irrigated. (viii) 1 weeding. (ix) 2.78". (x) 6.4.1960.**2. TREATMENTS :**6 soaking treatments : T<sub>0</sub>=Control (no soaking), T<sub>1</sub>=Seed soaked in water for 16 hrs. in October, T<sub>2</sub>=Seed soaked in water for 24 hrs. in October, T<sub>3</sub>=Seed soaked in C/S 0.1% solution for 4 hrs., T<sub>4</sub>=Seed soaked in C/S 0.5% solution for 4 hrs. and T<sub>5</sub>=Seed treated with Agrosan G.N.**3. DESIGN ;**

(i) R.B.D. (ii) (a) 6. (b) 60' × 73'. (iii) 4. (iv) (a) 35' × 18'. (b) 32' × 15'. (v) 1½' × 1½'. (vi) Yes.

**4. GENERAL:**

(i) Good. (ii) Barley covered smut, control measures as per treatments, roguing of smutted ear heads. (iii) Germination, no. of smutted ears of barley and yield of grain. (iv) (a) 1959—contd. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 2104 lb./ac. (ii) 205.1 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	T <sub>5</sub>
Av. yield	2167	1962	2300	1951	1951	2291

S.E./mean = 102.5 lb./ac.

**Crop :- Barley (Rabi).**

**Ref :- U.P. 57(423).**

**Site :- Reg. Res. Stn., Nawabganj.**

**Type :- 'D'.**

Object :—To study the effect of soaking of seed for smut control in Barley.

#### 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Nawabganj. (ii) 5.11.1957. (iv) (a) N.A. (b) Behind the plough. (c) 80 srs./ac. (d) Rows 9" apart. (e) N.A. (v) 10 lb./ac. of N as A/S applied on 3.11.1957. (vi) N.A. (vii) Irrigated (viii) N.A. (ix) 0.59". (x) 1.4.1958.

#### 2. TREATMENTS :

All combinations of (1) and (2) + a control (no soaking).

(1) 4 times of soaking of seed : T<sub>1</sub>=Mid. May, T<sub>2</sub>=Mid. June, T<sub>3</sub>=Early October and T<sub>4</sub>=Mid. October.

(2) 2 periods of soaking of seed : P<sub>1</sub>=16 and P<sub>2</sub>=24 hours.

Seed soaked in water.

#### 3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 23'×9'9". (b) 20'×8'3". (v) 1½'×9". (vi) Yes.

#### 4. GENERAL :

(i) and (ii) N.A. (iii) % germination, flowering, rust, height and tiller, smut, yield of grain and straw. (iv)

(a) and (b) No. (c) Nil. (v) (a) Hardoi, Varanasi, Amrukh and Meerut. (b) N.A. (vi) and (vii) Nil.

#### 5. RESULTS :

(i) 941 lb./ac. (ii) 286.5 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

Control = 1109 lb./ac.

	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	Mean
P <sub>1</sub>	721	916	1043	942	905
P <sub>2</sub>	959	975	789	1017	935
Mean	840	945	916	979	920

S.E. of T marginal mean = 101.3 lb./ac.

S.E. of P marginal mean = 71.6 lb./ac.

S.E. of body of table or control mean = 143.2 lb./ac.

**Crop :- Barley (Rabi).**

**Ref :- U.P. 57(91).**

**Site :- Reg. Res. Stn., Varanasi.**

**Type :- 'D'.**

Object :—To study the effect of soaking of seed for smut control in Barley.

#### 1. BASAL CONDITIONS :

(i) (a) Paddy—Barley. (b) Paddy. (c) Compost, A/S, Super and K<sub>2</sub>SO<sub>3</sub>. (ii) (a) Clayey loam. (b) Refer soil analysis, Varanasi. (iii) 10.12.1957. (iv) (a) 2 *desi* ploughings. (b) Behind the plough. (c) 80 lb./ac. (d) 9" between rows. (e) N.A. (v) N.A. (vi) K—12 (early). (vii) Irrigated. (viii) N.A. (ix) 1.01". (x) 4.4.1958.

#### 2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 57(423) above.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) and (b) No. (c) Nil. (v) (a) Hardoi, Nawabganj, Amrukh and Meerut. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 840 lb./ac. (ii) 170.9 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

Control = 857 lb./ac.

	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	Mean
P <sub>1</sub>	738	738	969	928	843
P <sub>2</sub>	833	866	795	837	833
Mean	785	802	882	882	838

S.E. of P marginal mean = 42.7 lb./ac.  
 S.E. of T marginal mean = 60.4 lb./ac.  
 S.E. of body of table or control mean = 85.4 lb./ac.

**Crop :- Barley.**

**Site :- Vivekananda Lab., Almora.**

**Ref :- U.P. 54(3).**

**Type :- 'DV'.**

Object :—To study the vernalised response of different varieties of Barley.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) 200 mds./ac. of compost and 2 mds./ac. of N, P and K in 10 : 12 : 8 proportions. (ii) (a) Loam. (b) Refer soil analysis, Almora. (iii) 3.12.1954. (iv) (a) 3 ploughings. (b) Dibbling. (c) 6 srs./ac. (d) 9"×3". (e) 1. (v) 200 mds./ac. of compost and 5 mds./ac. of oil cake. (vi) As per treatments. (vii) Irrigated. (viii) 1 weeding. (ix) 9.08". (x) 13.5.1955.

## 2. TREATMENTS :

**Main-plot treatments :**

2 varieties of barley : V<sub>1</sub>=T<sub>5</sub> (medium) and V<sub>2</sub>=Colonial (late).

**Sub-plot treatments :**

2 types of seed : T<sub>0</sub>=Control and T<sub>1</sub>=Vernalised seed.

Seeds were chilled for 6 weeks at 0°C to 4°C.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 2 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) and (b) 9'×6'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Control plants of V<sub>2</sub> were very heavily infested with rust and V<sub>1</sub> was also infested. (iii) Vegetative phase and yield of grain. (iv) (a) 1954—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 2276 lb./ac. (ii) (a) 558.9 lb./ac. (b) 262.1 lb./ac. (iii) Main effect of V and interaction V×T are highly significant and effect of T is significant. (iv) Av. yield of grain in lb./ac.

	T <sub>0</sub>	T <sub>1</sub>	Mean
V <sub>1</sub>	4356	3086	3721
V <sub>2</sub>	519	1141	830
Mean	2438	2114	2276

## S.E. of difference of two

1. V marginal means	=	279.4 lb./ac.
2. T marginal means	=	131.0 lb./ac.
3. T means at the same level of V	=	185.3 lb./ac.
4. V means at the same level of T	=	308.6 lb./ac.

**Crop :- Barley.****Ref :- U.P. 55(12).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'DV'.**

Object :—To study the effect of soaking and sunning on different varieties of Barley.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Moong*. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 18.11.1955. (iv) (a) 1 victory plough, 1 cultivator and 2 *desi* ploughings. (b) N.A. (c) 80 lb./ac. (d) Rows 9" apart. (e) N.A. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) Weeding, hoeing and harrowing. (ix) N.A. (x) 10.4.1956.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 2 varieties :  $V_1 = NP-21$  and  $V_2 = C-251$ .(2) 2 seed soaking treatments :  $T_1 = \text{Soaked}$  and  $T_2 = \text{Unsoaked}$ .(3) 3 periods of sunning the seeds :  $S_1 = \text{Unsunned}$ ,  $S_2 = 8$  and  $S_3 = 16$  days.**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 2. (b) N.A. (iii) 4. (iv) (a) 8'×6'. (b) 6'×4'6'. (v) 1'×9". (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Heavy attack of yellow rust and traces of brown rust. (iii) Grain yield. (iv) (a) 1955—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**(i) 2156 lb./ac. (ii) 322.7 lb./ac. (iii) Main effect of V, T and interactions  $V \times T$  and  $V \times T \times S$  are highly significant. (iv) Av. yield of grain in lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean	T <sub>1</sub>	T <sub>2</sub>
V <sub>1</sub>	2024	2411	2411	2282	2144	2420
V <sub>2</sub>	2384	2178	1530	2030	1693	2368
Mean	2204	2294	1970	2156	1918	2394
T <sub>1</sub>	1893	2281	1581			
T <sub>2</sub>	2516	2307	2360			

S.E. of V or T marginal mean = 65.9 lb./ac.

S.E. of S marginal mean = 80.7 lb./ac.

S.E. of body of  $V \times S$  or  $T \times S$  table = 114.1 lb./ac.S.E. of body of  $V \times T$  table = 93.1 lb./ac.**Crop :- Oats (*Rabi*).****Ref :- U.P. 55(233).****Site :- Allahabad Agri. Instt., Allahabad.****Type :- 'M'.**

Object :—To study the effect of N, P and K alone and in combination on Oats.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Fine sandy loam. (b) Refer soil analysis, Allahabad. (iii) to (x) N.A.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 2 levels of N as A/S :  $N_0=0$  and  $N_1=200$  lb./ac.

(2) 2 levels of  $P_2O_5$  as Super :  $P_0=0$  and  $P_1=250$  lb./ac.

(3) 2 levels of  $K_2O$  as Potash :  $K_0=0$  and  $K_1=100$  lb./ac.

Fertilizers were applied by hand on ploughed land and mixed in the surface soil by cultivators.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) N.A. (b)  $9' \times 36'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of green fodder and grain. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 237 lb./ac. (ii) 35.0 lb./ac. (iii) Main effects of N, K and interactions  $N \times K$ ,  $P \times K$  and  $N \times P \times K$  are highly significant. (iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	Mean	$K_0$	$K_1$
$N_0$	293	259	276	428	124
$N_1$	189	207	198	288	108
Mean	241	233	237	358	116
$K_0$	341	375			
$K_1$	141	91			

S.E. of any marginal mean = 8.7 lb./ac.

S.E. of body of any table = 12.4 lb./ac.

**Crop :- Oats (Rabi).**

**Ref :- U.P. 57(404).**

**Site :- Usar Reclamation Farm, Chakeri.**

**Type :- 'M'.**

Object :- To study the effect of N, P and K alone and in combination on the yield of Oats.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy. (c) N.A. (ii) (a) Saline alkaline soil. (b) Refer soil analysis, Chakeri. (iii) 25.11.1957. (iv) to (ix) N.A. (x) 11.4.1958.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 2 levels of N as A/S/N :  $N_0=0$  and  $N_1=30$  lb./ac.

(2) 2 levels of  $P_2O_5$  as Super :  $P_0=0$  and  $P_1=40$  lb./ac.

(3) 2 levels of  $K_2O$  as Mur. Pot. :  $K_0=0$  and  $K_1=60$  lb./ac.

Super and Mur. Pot. were placed deep in bands with the help of manure drill and A/S/N broadcast on 24.11.1957.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) and (b) 1/161.33 ac. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1099 lb./ac. (ii) 236.0 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.



	P <sub>0</sub>	P <sub>1</sub>	Mean	K <sub>0</sub>	K <sub>1</sub>
N <sub>0</sub>	1269	1029	1149	1097	1201
N <sub>1</sub>	1029	1069	1049	1039	1059
Mean	1149	1049	1099	1068	1130
K <sub>0</sub>	1188	948			
K <sub>1</sub>	1110	1150			

S.E. of any marginal mean = 59.0 lb./ac.  
 S.E. of body of any table = 83.4 lb./ac.

**Crop :- Oats (Rabi).**

**Ref :- U.P. 59(222).**

**Site :- Agri. College Farm, B.H.U., Varanasi.**

**Type :- 'M'.**

Object :—To find out the optimum level of N for Oats.

#### 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Medium alluvial soil. (b) Refer soil analysis, Varanasi. (iii) 4.9.1959. (iv) (a) Ploughing by victory plough, 4 by country plough and 2 *desi* ploughings. (b) Behind the plough. (c) 40 srs./ac. (d) and (e) N.A. (v) N.A. (vi) Algerian. (vii) Irrigated. ((viii) Weeding after 1st irrigation. (ix) N.A. (x) 1st cutting on 8.3.1960.

#### 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 sources of N : S<sub>1</sub>=A/S, S<sub>2</sub>=A/N and S<sub>3</sub>=Urea.

(2) 4 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=30, N<sub>2</sub>=60 and N<sub>3</sub>=90 lb./ac.

Fertilizer was applied in two doses, 1st dose applied when plants were 6" high and 2nd dose at 1st cutting.

#### 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 40'×24'. (b) 36'×20'. (v) 2'×2'. (vi) Yes.

#### 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of fodder and grain. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

#### 5. RESULTS :

##### Grain yield

(i) 611 lb./ac. (ii) 67.2 lb./ac. (iii) Main effect of N alone is highly significant. (iv) Av. yield of grain in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	Mean
S <sub>1</sub>	—	498	575	787	620
S <sub>2</sub>	—	559	665	756	660
S <sub>3</sub>	—	620	650	740	670
Mean	494	559	630	761	—

S.E. of N marginal mean = 19.4 lb./ac.  
 S.E. of S marginal mean = 19.4 lb./ac.  
 S.E. of body of table = 33.6 lb./ac.

##### Fodder yield

(i) 4.06 tons/ac. (ii) 0.051 tons/ac. (iii) Only main effect of N is highly significant. (iv) Av. yield of fodder in tons/ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	Mean
S <sub>1</sub>	—	3.67	4.42	5.13	4.41
S <sub>2</sub>	—	3.55	4.44	5.12	4.37
S <sub>3</sub>	—	3.61	4.42	5.09	4.37
Mean	3.08	3.61	4.43	5.11	—

S.E. of N marginal mean = 0.0147 tons/ac.  
 S.E. of S marginal mean = 0.0147 tons/ac.  
 S.E. of body of table = 0.0255 tons/ac.

**Crop :- Oats (Rabi).**

**Ref :- U.P. 58(205).**

**Site :- Agri. College Farm, B.H.U., Varanasi.**

**Type :- 'CM'.**

Object :—To study the effect of N and different seed rates on the yield of Oats.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Medium alluvial soil. (b) Refer soil analysis, Varanasi. (iii) 18.11.1958. (iv) (a) 6 ploughings and planking. (b) N.A. (c) As per treatments. (d) and (e) N.A. (v) N.A. (vi) Algerian. (vii) Irrigated. (viii) Weedings. (ix) and (x) N.A.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 3 seed rates : S<sub>1</sub>=30, S<sub>2</sub>=40 and S<sub>3</sub>=50 srs./ac.

(2) 4 levels of N as A/S : N<sub>0</sub>=0, N<sub>1</sub>=30, N<sub>2</sub>=60 and N<sub>3</sub>=90 lb./ac.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) and (b) 24' × 10'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 3080 lb./ac. (ii) 787.5 lb./ac. (iii) Main effect of N alone is highly significant. (iv) Av. yield of grain in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	Mean
S <sub>1</sub>	2523	3176	3939	3753	3348
S <sub>2</sub>	2273	2899	3548	3321	3010
S <sub>3</sub>	2151	2691	3376	3308	2882
Mean	2316	2922	3621	3461	3080

S.E. of N marginal mean = 227.3 lb./ac.  
 S.E. of S marginal mean = 196.9 lb./ac.  
 S.E. of body of table = 393.7 lb./ac.

**Crop :- Jowar (Kharif).**

**Ref :- U.P. 55(235).**

**Site :- Allahabad Agri. Instt., Allahabad.**

**Type :- 'M'.**

Object :—To study the effect of N, P and K applied alone and in combination on the yield of Jowar.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N A. (ii) (a) Fine sandy loam. (b) Refer soil analysis, Allahabad. (iii) to (x) N.A.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 2 levels of N as A/S :  $N_0=0$  and  $N_1=200$  lb./ac.

(2) 2 levels of  $P_2O_5$  as Super :  $P_0=0$  and  $P_1=250$  lb./ac.

(3) 2 levels of  $K_2O$  as Potash :  $K_0=0$  and  $K_1=100$  lb./ac.

Fertilizers were applied by hand on ploughed land and mixed in the surface soil by cultivator.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) N.A. (b)  $9' \times 36'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) Original plot wise yield data was not available.

## 5. RESULTS :

(i) 1684 lb./ac. (ii) and (iii) N.A. (iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	Mean	$K_0$	$K_1$
$N_0$	1641	1728	1684	1806	1503
$N_1$	1641	1728	1684	1572	1797
Mean	1641	1728	1684	1719	1650
$K_0$	1780	1659			
$K_1$	1503	1797			

S.E.'s — N.A.

**Crop :- Jowar (*Khari*).**

**Ref :- U.P. 57(222).**

**Site :- Reg. Res. Stn., Amrukh.**

**Type :- 'M'.**

**Object :-** To study the effect of N and P applied alone and in combination on the yield of Jowar.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Wheat. (c) N.A. (ii) (a) *Parwa*. (b) N.A. (iii) 29.7.1957. (iv) (a) 1 ploughing and 1 planking. (b) In lines behind the plough. (c) 5 srs./ac. (d) and (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) 1 interculture and 1 weeding. (ix) 17.3". (x) 3.12 1957.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N as A/S :  $N_0=0$ ,  $N_1=20$  and  $N_2=40$  lb./ac.

(2) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=20$  and  $P_2=40$  lb./ac.

N was surface dressed and  $P_2O_5$  placed deep in bands on 29.7.1957.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 9. (b)  $66' \times 172.5'$ . (iii) 4. (iv) (a) and (b)  $66' \times 16.5'$ . (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) Heavy and undistributed rainfall. (vii) Water logging affected certain parts in many of the plots.

## 5. RESULTS :

(i) 507 lb./ac. (ii) 115.8 lb./ac. (iii) Main effect of P alone is highly significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	350	420	580	450
N <sub>1</sub>	470	520	560	517
N <sub>2</sub>	460	540	660	553
Mean	427	493	600	507

S.E. of any marginal mean = 33.4 lb./ac.

S.E. of body of table = 57.9 lb./ac.

**Crop :- Jowar (Kharif).**

**Ref :- U.P. 57(137).**

**Site :- Reg. Res. Stn., Amrukh.**

**Type :- 'M'.**

Object :— To study the effect of N and P applied alone and in combination on the yield of Jowar.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Wheat. (c) Nil. (ii) (a) *Kabar* and *parwa*. (b) N.A. (iii) 29.7.1957. (iv) (a) 1 *bokharing*. (b) to (e) N.A. (v) Nil. (vi) *Malwa*. (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 3.12.1957.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=25 and N<sub>2</sub>=50 lb./ac.

(2) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=30 and P<sub>2</sub>=60 lb./ac.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) and (b) 66' × 16'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Poor. (ii) Nil. (iii) Yield of grain. (iv) (a) 1957—1958. (b) N.A. (c) Nil. (v) and (vi) Nil. (vii) Experiment conducted during the year 1958 failed due to heavy rain fall.

**5. RESULTS :**

(i) 520 lb./ac. (ii) 118.6 lb./ac. (iii) Main effect of P alone is highly significant. (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	376	443	601	473
N <sub>1</sub>	501	545	581	542
N <sub>2</sub>	456	520	655	544
Mean	444	503	612	520

S.E. of any marginal mean = 34.2 lb./ac.

S.E. of body of table = 59.3 lb./ac.

**Crop :- Jowar (Kharif).**

**Ref :- U.P. 57(362).**

**Site :- Reg. Res. Stn., Hardoi.**

**Type :- 'M'.**

Object :— To study the effect of N and P applied alone and in combination on the yield of Jowar.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Medium loam. (b) Refer soil analysis, Hardoi. (iii) 19.7.1957. (iv) (a) 4 ploughings by victory plough and *Sabash* plough. (b) In lines by seed drill. (c) to (e) N.A. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) 2 weedings and 3 thinnings. (ix) and (x) N.A.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N as A/S :  $N_0=0$ ,  $N_1=20$  and  $N_2=40$  lb./ac.

(2) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=20$  and  $P_2=40$  lb./ac.

Super was applied deep in bands with the help of manure drill and A/S was applied by broadcast on 18.7.1957.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) and (b)  $49' \times 22'$ . (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) Sowing was delayed due to rains.

## 5. RESULTS :

(i) 1198 lb./ac. (ii) 67.2 lb./ac. (iii) Main effects of N and P are highly significant and interaction  $N \times P$  is significant. (iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	$P_2$	Mean
$N_0$	748	818	899	822
$N_1$	1061	1182	1394	1212
$N_2$	1374	1546	1758	1559
Mean	1061	1182	1350	1198

S.E. of any marginal mean = 19.4 lb./ac.

S.E. of body of table = 33.6 lb./ac.

**Crop :- Jowar (*Kharif*).**

**Ref :- U.P. 57(125).**

**Site :- Reg. Res. Stn., Nawabganj.**

**Type :- 'M'.**

Object :- To study the effect of N and P on the yield of Jowar.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Nawabganj. (iii) 16, 17.7.1957 (iv) (a) N.A. (b) Behind the plough in rows. (c) 6 srs./ac. (d) Rows  $1\frac{1}{2}'$  apart. (e) N.A. (v) As per treatments. (vi) to (x) N.A.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N as A/S :  $N_0=0$ ,  $N_1=20$  and  $N_2=40$  lb./ac.

(2) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=20$  and  $P_2=30$  lb./ac.

N and  $P_2O_5$  applied on 14.7.1957 and 16.7.1957 respectively.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) and (b)  $36' \times 30'$ . (v) Nil. (vi) Yes.

## 4. GENERAL:

(i) N.A. (ii) *Jowar* borer infestation. (iii) Percentage of *jowar* borer infestation. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 21.76 degrees. (ii) 4.47 degrees. (iii) Interaction  $N \times P$  is highly significant. (iv) Av. infestation of borer in degrees and transformed % of infestation.

Av. infestation in degrees

Transformed back mean percentage

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean		N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean
P <sub>0</sub>	24.07	18.67	17.83	20.19	P <sub>0</sub>	16.98	10.63	9.79	12.47
P <sub>1</sub>	22.96	27.18	21.70	23.95	P <sub>1</sub>	15.55	21.16	14.04	16.92
P <sub>2</sub>	18.41	21.53	23.45	21.13	P <sub>2</sub>	10.37	13.84	16.18	13.46
Mean	21.81	22.46	20.99	21.76	Mean	14.30	15.21	13.34	14.28

S.E. of any marginal mean = 1.29 degrees

S.E. of body of table = 2.23 degrees

**Crop :- Jowar (*Kharif*).**

**Ref :- U.P. 54(291).**

**Site :- Agri. College Farm, B.H.U., Varanasi.**

**Type :- 'M'.**

Object :—To study the residual effect of N, P and K applied to wheat crop on Jowar.

#### 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) As per treatments. (ii) (a) Loam. (b) Refer soil analysis, Varanasi. (iii) N.A. (iv) (a) 2 ploughings and 1 planking. (b) to (e) N.A. (v) 15 lb./ac. of N as A/S on 17.9.1954 as surface dressing. (vi) N.A. (vii) and (viii) Nil. (ix) 20.1". (x) N.A.

#### 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 2 levels of N as A/S : N<sub>0</sub>=0 and N<sub>1</sub>=30 lb./ac.

(2) 2 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0 and P<sub>1</sub>=60 lb./ac.

(3) 3 levels of K<sub>2</sub>O as Pot. Sul. : K<sub>0</sub>=0, K<sub>1</sub>=60 and K<sub>2</sub>=120 lb./ac.

Treatments applied to previous wheat crop.

#### 3. DESIGN :

(i) 3×2×2 partially balanced confd. confounding N×P and N×P×K interactions. (ii) (a) 6 plots/block ; 2 blocks/replication. (b) N.A. (iii) 4. (iv) (a) and (b) 37'×26'. (v) Nil. (vi) Yes.

#### 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

#### 5. RESULTS :

(i) 216 lb./ac. (ii) 135.8 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	K <sub>0</sub>	K <sub>1</sub>	K <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>
N <sub>0</sub>	187	161	258	202	198	206
N <sub>1</sub>	187	236	271	231	250	213
Mean	187	198	264	216	224	209
P <sub>0</sub>	199	226	247			
P <sub>1</sub>	175	171	282			

S.E. of N or P marginal mean = 27.7 lb./ac.

S.E. of K marginal mean = 33.9 lb./ac.

S.E. of body of N×K or P×K table = 48.0 lb./ac.

S.E. of body of P×N table = 39.2 lb./ac.

**Crop :- Jowar (Kharif).****Ref :- U.P. 59(SFT).****Centre :- Farrukhabad (c.f.).****Type :- 'M'.**

Object :—Type A—To study the response of Wheat to levels of N, P and K applied individually and in combinations.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) Alluvial. (iii) to (v) N.A. (vi) June—July, 1959. (vii) Unirrigated. (viii) and (ix) N.A. (x) October, 1959.

**2. TREATMENTS :**

0 =Control (no manure).

n =20 lb./ac. of N as A/S.

p =20 lb./ac. of  $P_2O_5$  as Super.np =20 lb./ac. of N as A/S+20 lb./ac. of  $P_2O_5$  as Super.k =20 lb./ac. of  $K_2O$  as Mur. Pot.nk =20 lb./ac. of N as A/S+20 lb./ac. of  $K_2O$  as Mur. Pot.pk =20 lb./ac. of  $P_2O_5$  as Super+20 lb./ac. of  $K_2O$  as Mur. Pot.npk=20 lb./ac. of N as A/S+20 lb./ac. of  $P_2O_5$  as Super+20 lb./ac. of  $K_2O$  as Mur. Pot.**3. DESIGN :**

(i) and (ii) The district has been divided into four agriculturally homogeneous zones and one field assistant has been posted in each zone. The field assistant conducts the trials in one revenue circle or *thana* in the zone and the circle/*thana* is changed once in two years within the same zone. Each field assistant is required to conduct 31 trials in a year, 8 on a *kharif* cereal, 8 on a *rabi* cereal, 8 on cash crops, 4 on an oilseed crop and 3 on a leguminous crop. Half the number of trials conducted are of type A and the other half of type B on crops other than the legumes. The three trials on legumes are of type C. Residual effects of phosphate application are studied on type C trials in two out of the four zones in each district every year. The above experiments are laid out in randomly located fields in randomly selected villages in each of the 4 zones at the rate of one experiment per village. (iii) (a) N.A. (b) 1/30 ac. (iv) Yes.

**4. GENERAL :**

(i) Normal. (ii) N.A. (iii) Grain yield. (iv) (a) 1959—contd. (b) No. (c) N.A. (v) As per design. (vi) and (vii) N.A.

**5. RESULTS :**

Effect	n	p	k	S.E.	np	nk	pk	npk	S.E.
Av. response of grain in lb./ac.	156	107	49	16.5	25	0	25	25	9.9

Control yield = 387 lb./ac. and no. of trials = 15.

**Crop :- Jowar (Kharif).****Ref :- U.P. 59(SFT).****Centre :- Farrukhabad (c.f.).****Type :- 'M'.**

Object :—Type B—To investigate the relative efficiency of different nitrogenous fertilizers at different doses.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) Alluvial. (iii) to (v) N.A. (vi) June—July, 1959. (vii) Unirrigated. (viii) and (ix) N.A. (x) October, 1959.

**2. TREATMENTS :**

0 =Control (no manure).

 $n_1$  =20 lb./ac. of N as A/S. $n_2$  =40 lb./ac. of N as A/S. $n_1'$  =20 lb./ac. of N as Urea. $n_2'$  =40 lb./ac. of N as Urea. $n_1''$  =20 lb./ac. of N as A/S/N. $n_2''$  =40 lb./ac. of N as A/S/N.**3. DESIGN and 4. GENERAL :**

Same as in expt. no. 59(SFT) type A above conducted at Farrukhabad

## 5. RESULTS :

Treatment	0	n <sub>1</sub>	n <sub>2</sub>	n <sub>1</sub> '	n <sub>2</sub> '	n <sub>1</sub> ''	n <sub>2</sub> ''
Av. yield of grain in lb./ac.	477	592	823	617	773	650	773

G.M. = 673 lb./ac. ; S.E./mean = 18.6 lb./ac. and no. of trials = 13.

**Crop :- Jowar (Kharif).**

**Ref :- U.P. 59(348).**

**Centre :- Kurara (Hamirpur, c.f.).**

**Type :- 'M'.**

Object :—To study the effect of different doses of N applied through different sources on the yield of Jowar.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) *Parwa*. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

## 2. TREATMENTS :

All combinations of (1) and (2) + a control

(1) 3 sources of N : S<sub>1</sub>=A/S, S<sub>2</sub>=Urea and S<sub>3</sub>=A/S/N.

(2) 2 levels of N : N<sub>1</sub>=20 and N<sub>2</sub>=40 lb./ac.

N broadcast before sowing.

## 3. DESIGN :

(i) and (ii) One field in each of the 4 villages was selected randomly and 7 treatments were applied randomly to 7 plots in each field. (iii) (a) N.A. (b) 33' × 33'. (iv) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Grain yield. (iv) (a) 1959—contd. (b) and (c) Nil. (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 957 lb./ac. (ii) 51.7 lb./ac. (iii) Main effect of N and 'control vs. others' are highly significant. (iv) Av. yield of grain in lb./ac.

Control = 797 lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean
N <sub>1</sub>	914	906	856	892
N <sub>2</sub>	1023	1095	1110	1076
Mean	968	1000	983	984

S.E. of N marginal mean = 14.9 lb./ac.

S.E. of S marginal mean = 18.3 lb./ac.

S.E. of body of table or control mean = 25.9 lb./ac.

**Crop :- Jowar (Kharif).**

**Ref :- U.P. 59(352).**

**Centre :- Kurara (Hamirpur, c.f.).**

**Type :- 'M'.**

Object :—To study the effect of N, P and K applied alone and in combination on Jowar.

## 1. BASAL CONDITIONS:

(i) (a) to (c) N.A. (ii) *Parwa*. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.



**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 2 levels of N as A/S :  $N_0=0$  and  $N_1=20$  lb./ac.

(2) 2 levels of  $P_2O_5$  as Super :  $P_0=0$  and  $P_1=20$  lb./ac.

(3) 2 levels of  $K_2O$  as Mur. Pot.  $K_0=0$  and  $K_1=20$  lb./ac.

N and  $K_2O$  applied by broadcast and  $P_2O_5$  deep in furrows.

**3. DESIGN :**

(i) and (ii) One field in each of the 3 villages was selected and treatments applied randomly in each field.

(iii) (a) N.A. (b)  $33' \times 33'$ . (iv) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1959—contd. (b) and (c) N.A. (v) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 944 lb./ac. (ii) 60.1 lb./ac. (iii) Main effect of N, P and K are highly significant. (iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	Mean	$K_0$	$K_1$
$N_0$	837	889	863	765	961
$N_1$	971	1079	1025	975	1075
Mean	904	984	944	870	1018
$K_0$	839	901			
$K_1$	969	1067			

S.E. of any marginal mean

= 17.3 lb./ac.

S.E. of body of any table

= 24.5 lb./ac.

**Crop :- Jowar (Kharif).**

**Ref :- U.P. 59(347).**

**Centre :- Rath (Hamirpur, c.f.).**

**Type :- 'M'.**

Object :—To study the effect of N, P and K applied alone and in combination on Jowar.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) *Parwa* and *kabar*. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

**2. TREATMENTS to 4. GENERAL :**

Same as in expt. no. 59(352) on page 639.

**5. RESULTS :**

(i) 1156 lb./ac. (ii) 21.6 lb./ac. (iii) Main effects of N, P and K and interaction  $N \times P \times K$  are highly significant. (iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	Mean	$K_0$	$K_1$
$N_0$	1050	1154	1102	1068	1136
$N_1$	1166	1254	1210	1190	1230
Mean	1108	1204	1156	1129	1183
$K_0$	1066	1172			
$K_1$	1130	1236			

S.E. of any maginal mean = - 6.2 lb./ac.  
 S.E. of body of any table = 8.8 lb./ac.

**Crop :- Jowar (*Khariif*).**

**Ref :- U.P. 59(349).**

**Centre :- Rath (Hamirpur, c.f.).**

**Type :- 'M'.**

Object :—To study the effect of different sources and levels of N on Jowar.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) *Parwa* and *kabar*. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

Same as in expt. no. 59(352) on page 639 conducted at Kurara.

3. DESIGN :

(i) and (ii) 1 field in each of 3 villages was selected and treatments applied randomly in each field. (iii) (a) N.A. (b) 33'×33'. (iv) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1959—N.A. (b) and (c) N.A. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1114 lb./ac. (ii) 37.6 lb./ac. (iii) Main effect of N and "control vs. others" are highly significant. (iv) Av. yield of grain in lb./ac.

Control = 937 lb /ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean
N <sub>1</sub>	1121	1103	1071	1098
N <sub>2</sub>	1211	1168	1184	1188
Mean	1166	1135	1127	1143

S.E. of N marginal mean = 12.5 lb./ac.  
 S.E. of S marginal mean = 15.3 lb./ac.  
 S.E. of body of table or control mean = 21.7 lb./ac.

**Crop :- Jowar (*Khariif*).**

**Ref :- U.P. 54(214).**

**Site :- B.R. College Insttl. Res. Farm, Bichpuri.**

**Type :- 'MV'.**

Object :—To study the response of different varieties of Jowar to different levels of N.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) N.A. (ii) (a) Light loam. (b) Refer soil analysis. Bichpuri. (iii) 30.7.1954. (iv) (a) 2 ploughings with tractor driven *disc* harrow. (b) Behind the *desi* plough. (c) 10 srs. ac. (d) 2' between rows. (e) N.A. (v) Nil. (vi) As per treatments. (vii) Unirrigated. (viii) 1 Thinning and 1 weeding. (ix) 20.2". (x) 8.12.1954.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 6 varieties : V<sub>1</sub>=Agra local, V<sub>2</sub>=Delhi local, V<sub>3</sub>=Gwalior (12-2), V<sub>4</sub>=Indore (IP<sub>3</sub>), V<sub>5</sub>=Kanpur (I<sub>3</sub>) and V<sub>6</sub>=*Malwa* (Jhansi local).

(2) 3 levels of N as A/S : N<sub>0</sub>=0, N<sub>1</sub>=25 and N<sub>2</sub>=50 lb./ac.

N broadcast before sowing.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 18. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 24'×18'. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Stem borer attack on  $V_3$  and  $V_5$  varieties. Attacked plants were removed and burnt. Grain smut was also noted in  $V_3$ ,  $V_4$  and  $V_6$  varieties. Red pigmentation on  $V_1$ ,  $V_3$  and  $V_5$  varieties. (iii) Germination, stand of plant, height and grain yield. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1083 lb./ac. (ii) 129.2 lb./ac. (iii) All the effects are highly significant. (iv) Av. yield of grain in lb./ac.

	$V_1$	$V_2$	$V_3$	$V_4$	$V_5$	$V_6$	Mean
$N_0$	829	781	424	617	1374	545	762
$N_1$	1280	1010	848	756	1447	736	1016
$N_2$	2088	1344	968	1707	1652	1071	1472
Mean	1399	1045	747	1027	1491	784	1083

S.E. of N marginal mean = 30.4 lb./ac.

S.E. of V marginal mean = 43.1 lb./ac.

S.E. of body of table = 74.6 lb./ac.

**Crop :- Jowar (*Kharif*).**

**Ref :- U.P. 59(13).**

**Site :- Reg. Res. Stn., Hardoi.**

**Type :- 'CM'.**

**Object :-** To study the effect of manures and number of plants per hill on the yield of Jowar.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Hardoi. (iii) 13 to 15.7.1959. (iv) (a) N.A. (b) Dibbling. (c) and (d) N.A. (e) As per treatments. (v) and (vi) N.A. (vii) Irrigated. (viii) Weeding by *khurpi*. (ix) N.A. (x) 20.11.1959.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 3 manurial treatments :  $M_0$ =Control (no. manure),  $M_1$ =30 lb./ac. of N+15 lb./ac. of  $P_2O_5$  and  $M_2$ =60 lb./ac. of N+30 lb./ac. of  $P_2O_5$

(2) 3 no. of plants/hill :  $H_1$ =2,  $H_2$ =3 and  $H_3$ =4.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) and (b) 33'×18'. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) Satisfactory. (ii) N.A. (iii) Yield of grain. (iv) (a) 1959—contd. (b) and (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1710 lb./ac. (ii) 241.2 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	$C_1$	$C_2$	$C_3$	Mean
$M_0$	1551	1845	1695	1697
$M_1$	1855	1525	1711	1697
$M_2$	1760	1662	1786	1736
Mean	1722	1677	1731	1710

S.E. of any marginal mean = 69.6 lb./ac.

S.E. of body of table = 120.6 lb./ac.

**Crop :- Jowar (Kharif).****Ref :- U.P. 59(281).****Centre :- Saranpur (Allahabad, c.f.).****Type :- 'CM'.**

Object :— To study the effect of different methods of sowing and application of N, P and K. on Jowar

**1. BASAL CONDITIONS :**

(i) to (iv) N.A. (v) (a) N.A. (b) As per treatments. (c) to (e) N.A. (vi) 22.7.1959. (vii) N.A. (viii) As per treatments. (ix) and (x) N.A.

**2. TREATMENTS :** $M_1$ =Local method of sowing and no fertilizer,  $M_2$ =Villagers method of sowing and 30 lb./ac. of N+30 lb./ac. of  $P_2O_5$ +30 lb./ac. of  $K_2O$ ,  $M_3$ =Improved method (line sowing) and interculture and no fertilizers,  $M_4$ =Improved method (line sowing) and interculture and 30 lb./ac. of N+30 lb./ac. of  $P_2O_5$ +30 lb./ac. of  $K_2O$  and  $M_5$ =Improved method (line sowing) and interculture and 60 lb./ac. of N+60 lb./ac. of  $P_2O_5$ +60 lb./ac. of  $K_2O$ **3. DESIGN :**

(i) and (ii) R.B.D. with 2 replications. (iii) (a) N.A. (b) 20'×40'. (iv) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1956—only (b) and (c) Nil. (v) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1478 lb./ac. (ii) 269.1 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$M_1$	$M_2$	$M_3$	$M_4$	$M_5$
Av. yield	1540	1274	1176	1400	2002

S.E./mean = 190.2 lb./ac.

**Crop :- Jowar (Kharif).****Ref :- U.P. 57(431).****Site :- Govt. Agri. Res. Farm, Kalianpur.****Type :- 'D'.**

Object.— To study the effect of insecticidal treatments against Jowar stem borer.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loam soil. (b) Refer soil analysis, Kalianpur. (iii) 15.7.1957. (iv) and (v) N.A. (vi) 8—B. (vii) to (ix) N.A. (x) 8.12.1957.

**2. TREATMENTS :**6 insecticidal sprayings :  $T_0$ =Control (no insecticide),  $T_1$ =Spraying with 1 lb. of actual Endrine+1% Ovicide in 60 gallons of water/ac.,  $T_2$ =Spraying with 1½ lb. of actual Endrine+1% Ovicide in 60 gallons of water/ac.,  $T_3$ =Spraying with 0.25% Parathion+1% Ovicide in 60 gallons of water/ac.,  $T_4$ =Spraying with 0.1% Metasystox in 60 gallons of water and  $T_5$ =Spraying 0.1% Pestox 3 in 60 gallons of water/ac.

Two applications of insecticides were done on 1.9.1957 and after 2 weeks.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) and (b) 35'×31'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) As per treatments. (iii) Percentage of affected plants after every application of insecticides. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 27.80 degrees. (ii) 2.50 degrees. (iii) Treatment differences are highly significant. (iv) Mean infection of sumt in degrees.

Treatment	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	T <sub>5</sub>
Mean angle	32.57	27.21	23.56	24.32	29.20	29.96
Transformed back mean percentage.	29.19	21.20	16.32	17.29	24.06	25.19

S.E./mean = 1.25 degrees.

**Crop :- Jowar (Kharif).**

**Ref :- U.P. 58(400).**

**Site :- Govt. Agri. Res. Farm, Kalianpur.**

**Type :- 'D'.**

**Object :-** To study the effect of insecticides against Jowar stem borer.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Kalianpur. (iii) 15.7.1958. (iv) and (v) N.A. (vi) 8—B. (vii) to (ix) N.A. (x) 16 and 17.12.1958.

**2. TREATMENTS :**

7 insecticidal sprayings: T<sub>0</sub>=Control, T<sub>1</sub>=Spraying with 2 lb. of actual Endrine at 80 gallons/ac., T<sub>2</sub>=Spraying with 2 lb. of actual Endrine+1% Ovicide at 80 gallons /ac., T<sub>3</sub>=Spraying with 0.5% Folidol at 80 gallons./ac., T<sub>4</sub>=Spraying with 0.5 % Folidol+1% Ovicide at 80 gallons/ac., T<sub>5</sub>=Spraying with 0.075% Diazinon at 80 gallons/ac. and T<sub>6</sub>=Spraying with 0.1% Lindane at 80 gallons./ac.

Insecticides sprayed on 3.9.1958 and after two weeks interval.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 5. (iv) (a) and (b) 35' × 31'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) As per treatments. (iii) % of affected plants. (iv) (a) 1958—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 30.20 degrees. (ii) 1.99 degrees. (iii) Treatment differences are highly significant. (iv) Mean infection of smut in degrees.

Treatment	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	T <sub>5</sub>	T <sub>6</sub>
Mean angle	36.38	27.68	26.54	29.04	27.94	31.69	32.13
Transformed back mean percentage	35.33	21.86	20.27	23.83	22.34	27.82	28.50

S.E./mean = 0.89 degree

**Crop :- Jowar (Kharif).**

**Ref :- U.P. 54(284).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'D'.**

**Object :-** To test the efficacy of seed dressing fungicides to control smut of Jowar.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 27.7.1954. (iv) (a) N.A. (b) Sown in lines. (c) N.A. (d) 2' between rows. (e) N.A. (v) N.A. (vi) 8—B. (vii) and (viii) N.A. (ix) 23.72". (x) N.A.

**2. TREATMENTS :**

13 fungicidal treatments : T<sub>0</sub>=Control, T<sub>1</sub>=Agrosan G.N. (1 : 400), T<sub>2</sub>=Agrosan G.N. (1 : 750), T<sub>3</sub>=Cereson (1 : 400), T<sub>4</sub>=Cereson (1 : 750), T<sub>5</sub>=Harvason (1 : 400), T<sub>6</sub>=Harvason (1 : 750), T<sub>7</sub>=Fernason (1 : 400), T<sub>8</sub>=Fernason (1 : 750), T<sub>9</sub>=Tritisian (1 : 400), T<sub>10</sub>=Tritisian (1 : 750), T<sub>11</sub>=Asiosan (1 : 400) and T<sub>12</sub>=Asiosan (1 : 750).

Firstly the seeds were inoculated with smut spores and then seeds thoroughly mixed with chemicals in the ratio of 1 part by weight of chemical to 400 or 750 parts by weight of seeds.

### 3. DESIGN :

(i) R.B.D. (ii) (a) 13. (b) N.A. (iii) 2. (iv) (a) and (b) 25' × 4'. (v) Nil. (vi) Yes.

### 4. GENERAL :

(i) N.A. (ii) As per treatments. (iii) Percentage of affected ear heads. (iv) (a) 1954—1956. (Treatments changed every year). (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) There was no infection in both the replications of treatments T<sub>2</sub>, T<sub>4</sub>, T<sub>6</sub>, T<sub>7</sub> and T<sub>9</sub> and hence not included in the analysis.

### 5. RESULTS :

(i) 14.95 degrees. (ii) 7.94 degrees. (iii) Treatment differences are not significant. (iv) Mean infection of smut in degrees.

Treatment	T <sub>0</sub>	T <sub>1</sub>	T <sub>3</sub>	T <sub>5</sub>	T <sub>8</sub>	T <sub>10</sub>	T <sub>11</sub>	T <sub>12</sub>
Mean angle	28.40	6.97	13.39	10.69	5.07	24.06	4.82	26.23
Transformed back mean percentage	20.90	1.95	5.80	3.90	1.27	16.95	1.20	19.83

S.E./mean = 5.61 degrees.

**Crop :- Jowar (Kharif).**

**Ref :- U.P. 55(342).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'D'.**

Object :—To test the efficacy of seed dressing fungicides to control smut of Jowar.

### 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loam. (b) Refer soil Analysis, Kanpur (iii) 4.7.1955. (iv) (a) N.A. (b) Sown in lines. (c) to (e) N.A. (v) N.A. (vi) 8—B. (vii) and (viii) N.A. (ix) 36.63". (x) N.A.

### 2. TREATMENTS :

17 fungicidal treatments : T<sub>0</sub>=Control, T<sub>1</sub>=Agrosan (1 : 300), T<sub>2</sub>=Agrosan (1 : 400), T<sub>3</sub>=Agrosan (1 : 500), T<sub>4</sub>=Agrosan (1 : 600), T<sub>5</sub>=Agrosan (1 : 750), T<sub>6</sub>=Ceresan (1 : 400), T<sub>7</sub>=Ceresan (1 : 750), T<sub>8</sub>=Hervasan (1 : 400), T<sub>9</sub>=Harvasan (1 : 750), T<sub>10</sub>=Asicsan (1 : 400), T<sub>11</sub>=Asiosan (1 : 750), T<sub>12</sub>=Fernasan (1 : 400), T<sub>13</sub>=Fernasan (1 : 750), T<sub>14</sub>=Tritisian (1 : 400), T<sub>15</sub>=Tritisian (1 : 750) and T<sub>16</sub>=Ash (1 : 30).

Before weighing the required dose of the fungicides one gram of each fungicide was well mixed with 9 grams of dung ash (very fine) and then samples were weighed having the required quantity of the fungicide. The seeds were artificially inoculated with smut spores on 23.6.1956 at 1 gm. of spores for 1000 gm. of seed.

### 3. DESIGN :

(i) R.B.D. (ii) (a) 17. (b) N.A. (iii) 2. (iv) (a) and (b) N.A. (v) Nil. (vi) Yes.

### 4. GENERAL :

(i) N.A. (ii) As per treatments. (iii) Total numbers of ear heads and smutted ear heads. (iv) (a) 1954—1956. (Treatments changed every year). (b) No. (c) Nil. (v) and (vi) Nil. (vii) There was no infection in treatments T<sub>1</sub>, T<sub>2</sub>, T<sub>3</sub>, T<sub>6</sub> and T<sub>14</sub>—in all replications—and hence not included in the analysis.

### 5. RESULTS :

(i) 14.83 degrees. (ii) 18.84 degrees. (iii) Treatment differences are not significant. (iv) Mean incidence of smut in degrees.

Treatment	T <sub>0</sub>	T <sub>4</sub>	T <sub>5</sub>	T <sub>7</sub>	T <sub>8</sub>	T <sub>9</sub>	T <sub>10</sub>	T <sub>11</sub>	T <sub>12</sub>	T <sub>13</sub>	T <sub>15</sub>	T <sub>16</sub>
Mean angle	18.85	12.59	8.85	4.81	4.17	15.00	21.90	12.09	21.52	18.59	16.09	23.49
back mean % Transformed	10.83	5.20	2.84	1.19	1.02	7.13	14.27	4.83	13.81	10.56	8.10	16.23

S.E./mean = 13.32 degrees.

**Crop :- Jowar (Kharif).****Ref :- U.P. 56(363).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'D'.**

Object :—To test the efficacy of various seed dressings against smut of Jowar.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kanpur (iii) 5.7.1956. (iv) (a) N.A. (b) Line sowing. (c) N.A. (d) 2' between rows. (e) N.A. (v) N.A. (vi) 8--B. (vii) to (x) N.A.

**2. TREATMENTS :**16 fungicidal treatments : T<sub>0</sub>=Control, T<sub>1</sub>=Agrosan (1 : 300), T<sub>2</sub>=Agrosan (1 : 400), T<sub>3</sub>=Agrosan (1 : 500), T<sub>4</sub>=Ceresan (1 : 300), T<sub>5</sub>=Ceresan (1 : 400), T<sub>6</sub>=Ceresan (1 : 500), T<sub>7</sub>=Tritisan (1 : 300), T<sub>8</sub>=Tritisan (1 : 400), T<sub>9</sub>=Tritisan (1 : 500), T<sub>10</sub>=Fungus sulphur (1 : 250), T<sub>11</sub>=Fungus sulphur (1 : 400), T<sub>12</sub>=Fungus sulphur (1 : 500), T<sub>13</sub>=Baluchistan sulphur (1 : 250), T<sub>14</sub>=Baluchistan sulphur (1 : 400) and T<sub>15</sub>=Baluchistan sulphur G.N. (1 : 500).**3. DESIGN :**

(i) R.B.D. (ii) (a) 16. (b) N.A. (iii) 6. (iv) (a) and (b) N.A. (v) Nil. (vi) Yes.

**4. GENERAL :**(i) N.A. (ii) As per treatments. (iii) Total ear heads and diseased ear heads. (iv) (a) 1954—1956 (treatments changed every year). (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) There was no incidence in all the 6 replications in treatments T<sub>1</sub>, T<sub>2</sub>, T<sub>3</sub>, T<sub>10</sub> and T<sub>13</sub> and hence not included in the analysis.**5. RESULTS :**

(i) 9.42 degrees. (ii) 10.71 degrees. (iii) Treatment differences are not significant. (iv) Incidence of smutted heads in degrees.

Treatment	T <sub>0</sub>	T <sub>3</sub>	T <sub>5</sub>	T <sub>6</sub>	T <sub>7</sub>	T <sub>8</sub>	T <sub>9</sub>	T <sub>11</sub>	T <sub>12</sub>	T <sub>14</sub>	T <sub>15</sub>
Mean angle	10.12	3.69	2.40	9.21	15.93	8.80	13.73	13.21	2.67	19.01	4.85
Mean %	3.56	0.91	6.67	3.03	7.96	2.81	6.07	5.67	9.71	11.00	1.2

S.E./mean = 4.37 degrees

**Crop :- Jowar (Kharif).****Ref :- U.P. 57(469).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'D'.**

Object :—To study the effect of insecticidal treatments against Jowar stem borer.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Alluvial loam. (b) Refer soil analysis, Kanpur. (iii) 6.8.1957. (iv) and (v) N.A. (vi) B-8. (vii) to (x) N.A.

**2. TREATMENTS :**6 insecticidal treatments : T<sub>0</sub>=Control, T<sub>1</sub>=Spraying with 1 lb. of actual Endrin+1% ovicide in 60 gallons of water/ac., T<sub>2</sub>=Spraying with 1½ lb. of actual Endrin+1%Ovicid in 60 gallons of water/ac., T<sub>3</sub>=Spraying with 0.25% of Parathion+1% Ovicide in 60 gal./ac., T<sub>4</sub>=Spraying with 0.1% Metasytox at 60 gal./ac. and T<sub>5</sub>=Spraying with 0.1 %Pestox 3' at 60 gallons/ac.**3. DESIGN :**

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) and (b) 35'×31'. (v) Nil. (vi) Yes.

**4. GENERAL :**(i) N.A. (ii) As per treatments (grain destroyed by parrots and other birds). (iii) Plants in each plot were selected at random at the time of taking observations. (iv) (a) 1957—N.A. (b) and (c) N.A. (v) and (vi) Nil. (vii) No yield data could be obtained as the *jowar* seed was eaten away by the parrots and other birds.

## 5 RESULTS :

(i) 20.27 degrees. (ii) 2.02 degrees. (iii) Treatment differences are highly significant. (iv) Incidence of affected plants in degrees.

Treatment	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	T <sub>5</sub>
Mean angle	23.92	11.22	17.89	18.40	20.66	21.52
Mean %	16.78	1.22	9.85	10.36	12.83	13.83

S.E./mean = 1.01 degree

**Crop :- Bajra (Kharif).**

**Ref :- U.P. 55(205).**

**Site :- B.R. College Insttl. Res. Farm, Bichpuri.**

**Type :- 'M'.**

Object :— To study the effect of N and P on the yield of Bajra.

## BASAL CONDITIONS :

(i) (a) *Sanai*—Wheat—*Bajra*—Gram. (b) Wheat. (c) A/S (d) see N.A. (ii) (a) Light loam. (b) Refer soil analysis; Bichpuri. (iii) 24.7.1955. (iv) (a) 2 ploughings with *disc* harrow. (b) Behind the plough in furrows by hand. (c) 85 lb./ac. (d) and (e) N.A. (v) N.A. (vi) Local. (vii) N.A. (viii) 1 ridge making and weeding. (ix) 32.14". (x) 24.10.1955.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 times of application of 30 lb./ac. of N : T<sub>0</sub>=Control (no application), T<sub>1</sub>=Applied at sowing and T<sub>2</sub>=Half at sowing+half at earing.

(2) 2 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0 and P<sub>1</sub>=60 lb./ac.

A/S broadcast before sowing and Super placed in furrows at a distance of 1.5'.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 36'×15'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) N.A. (iii) Length of ear of main shoot, ear bearing tillers/plant and yield of grain and straw. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 844 lb./ac. (ii) 140.0 lb./ac. (iii) The effect of "T vs. T<sub>0</sub>" and interaction T×P are highly significant. (iv) Av. yield of grain in lb./ac.

T<sub>1</sub> = 1011 lb./ac. and T<sub>2</sub> = 943 lb./ac.

	T <sub>0</sub>	T <sub>1</sub> +T <sub>2</sub>	Mean
P <sub>0</sub>	527	888	768
P <sub>1</sub>	637	1062	920
Mean	582	975	844

S.E. of P marginal mean = 33.0 lb./ac.

S.E. of T<sub>0</sub> marginal mean = 40.4 lb./ac.

S.E. of (T<sub>1</sub>+T<sub>2</sub>) marginal mean = 28.6 lb./ac.



**Crop :- Bajra (Kharif).****Ref :- U.P. 56(179).****Site :- B.R. College Insttl. Res. Farm, Bichpuri.****Type :- 'M'.**

Object :—To study the effect of N and P on the yield of Bajra.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Gram. (c) N.A. (ii) (a) Light loam. (b) Refer soil analysis, Bichpuri. (iii) 6.8.1956. (iv) (a) 2 ploughings and 1 planking. (b) Broadcasting. (c) 8 lb./ac. (d) and (e) N.A. (v) Nil. (vi) Local. (vii) Irrigated. (viii) 1 weeding. (ix) 36.30". (x) 27.10.1956.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 4 times of application of N as A/S :  $T_0$ =Control,  $T_1$ =25 lb./ac. of N at sowing,  $T_2$ =25 lb./ac of N at sowing+25 lb./ac. of N at earing and  $T_3$ =50 lb./ac. of N at sowing.

(2) 2 levels of  $P_2O_5$  as Super :  $P_0$ =0 and  $P_1$ =60 lb./ac.

N broadcast at sowing and top dressed at earing and  $P_2O_5$  drilled.**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 36'×15'. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) and (b) No. (c) Nil. (v) and (vi) Nil. (vii) Original data and two-way tables are not available.

**5. RESULTS :**

(i) 745 lb./ac. (ii) 132.6 lb./ac. (iii) Main effect of N alone is highly significant (iv) Av. yield of grain in lb./ac.

Treatment	$T_0$	$T_1$	$T_2$	$T_3$	$P_0$	$P_1$
Av. yield	412	745	862	968	720	770
	S.E. of T marginal mean			=	33.1 lb./ac.	
	S.E. of P marginal mean			=	46.9 lb./ac.	

**Crop :- Bajra (Kharif).****Ref :- U.P. 58(185).****Site :- Soil. Cons. Res. Demons. and Trg. Farm, Chhalesar.****Type :- 'M'.**

Object :—To find out the effect of different sources and levels of N on the yield of Bajra.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Sandy to sandy loam. (b) Refer soil analysis, Chhalesar. (iii) 14.8.1958. (iv) (a) 3 ploughings after levelling. (b) By seed drill. (c) 8 lb./ac. (d) 9" to 12" between rows. (e) N.A. (v) 5 C.L./ac. of F.Y.M. applied on 9.8.1958 before ploughing. (vi) Isolated. (vii) Unirrigated. (viii) N.A. (ix) 16.4". (x) N.A.

**2. TREATMENTS :**

All combinations of (1) and (2)+a control

(1) 4 sources of N :  $S_1$ =A/S,  $S_2$ =A/N,  $S_3$ =Urea and  $S_4$ =Castor cake.

(2) 2 levels of N :  $N_1$ =15 and  $N_2$ =30 lb./ac.

N drilled at the time of sowing.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 5. (iv) (a) 17'×50.4'. (b) 15'×48.4'. (v) 1'×1'. (vi) Yes.

**4. GENERAL :**

(i) Normal. (ii) Nil. (iii) Growth and grain yield. (iv) (a) 1958—1959. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Unfavourable weather and heavy rains at flowering time. (vii) Nil.

## 5. RESULTS :

(i) 112 lb./ac. (ii) 121.3 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

Control = 132 lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>	Mean
N <sub>1</sub>	153	101	94	168	129
N <sub>2</sub>	77	123	63	93	89
Mean	115	112	78	131	109

S.E. of S marginal mean = 38.4 lb./ac.  
 S.E. of N marginal mean = 27.1 lb./ac.  
 S.E. of body of table = 54.2 lb./ac.

**Crop :- Bajra (Kharif).**

**Ref :- U.P. 59(214).**

**Site :- Soil Cons. Res. Demons. & Trg. Farm, Chhalesar. Type :- 'M'.**

Object :—To study the effect of different levels and sources of N on Bajra.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy to sandy loam. (b) Refer soil analysis, Chhalesar. (iii) 12.8.1959. (iv) (a) 2 ploughings and 1 harrowing. (b) By seed drill. (c) 8 lb./ac. (d) Row to row 9" to 12". (e) N.A. (v) 5 C.L./ac. of F.Y.M. (vi) Isolated. (vii) Unirrigated. (viii) 1 weeding and 1 interculture. (ix) 10.9". (x) 13, 14.11.1959.

## 2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 58(185) on page 648

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) N.A. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 149 lb./ac. (ii) 61.1 lb./ac. (iii) Main effect of N alone is significant. (iv) Av. yield of grain in lb./ac.

Control = 107 lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>	Mean
N <sub>1</sub>	131	180	88	140	135
N <sub>2</sub>	141	163	163	224	173
Mean	136	171	126	182	154

S.E. of N marginal mean = 12.5 lb./ac.  
 S.E. of S marginal mean = 17.6 lb./ac.  
 S.E. of body of table = 24.9 lb./ac.

**Crop :- Bajra (Kharif).**

**Ref :- U.P. 59(SFT).**

**Centre :- Aligarh (c.f.).**

**Type :- 'M'.**

Object :—Type A—To study the response of Bajra to levels of N, P and K applied individually and in combinations.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Alluvial. (iii) to (v) N.A. (vi) June—July, 1959. (vii) Unirrigated. (viii) and (ix) N.A. (x) October, 1959.

## 2. TREATMENTS :

0 =Control (no manure).

n =20 lb./ac. of N as A/S.

p =20 lb./ac. of  $P_2O_5$  as Super.

np =20 lb./ac. of N as A/S+20 lb./ac. of  $P_2O_5$  as Super.

k =20 lb./ac. of  $K_2O$  as Mur. Pot.

nk =20 lb./ac. of N as A/S+20 lb./ac. of  $K_2O$  as Mur. Pot.

pk =20 lb./ac. of  $P_2O_5$  as Super+20 lb./ac. of Mur. Pot.

npk =20 lb./ac. of N as A/S+20 lb./ac. of  $P_2O_5$  as Super+20 lb./ac. of  $K_2O$  as Mur. Pot.

## 3. DESIGN :

(i) and (ii) The district has been divided into four agriculturally homogeneous zones and one field assistant has been posted in each zone. The field assistant conducts the trials in one revenue circle or *thana* in the zone and the circle *thana* is changed once in two years within the same zone. Each field assistant is required to conduct 31 trials in a year, 8 on a *khari*f cereal, 8 on a *rabi* cereal, 8 on cash crops, 4 on an oilseed crop and 3 on a leguminous crop. Half the number of trials conducted are of type A and the other half of type B on crops other than the legumes. The three trials on legumes are of type C. Residual effects of phosphate application are studied on type C trials in two out of the four zones in each district every year. The above experiments are laid out in randomly located fields in randomly selected villages in each of the 4 zones at the rate of one experiment per village. (iii) (a) N.A. (b) 1/80 ac. (iv) Yes.

## 4. GENERAL :

(i) Normal. (ii) N.A. (iii) Grain yield. (iv) (a) 1959—contd. (b) No. (c) N.A. (v) As per design. (vi) and (vii) N.A.

## 5. RESULTS :

Effect	n	p	k	S.E.	np	nk	pk	npk	S.E.
Av. response of grain in lb./ac.	148	148	132	23.0	8	49	-33	16	18.1

Control yield = 864 lb./ac. and no. of trials = 13.

**Crop :- Bajra (Kharif).**

**Centre :- Bulandshahr (c.f.).**

**Ref :- U.P. 59(SFT).**

**Type :- 'M'.**

Object :—Type A—To study the response of Bajra to levels of N, P and K applied individually and in combinations.

## 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 59(SFT) type A on page 649 conducted at Aligarh.

## 5. RESULTS :

Effect	n	p	k	S.E.	np	nk	pk	npk	S.E.
Av. response of grain in lb./ac.	346	156	25	22.2	-58	-8	8	16	15.6

Control yield = 1029 lb./ac. and no. of trials = 12.

**Crop :- Bajra (Kharif).**

**Centre :- Meerut (c.f.).**

**Ref :- U.P. 59(SFT).**

**Type :- 'M'.**

Object :—Type A—To study the response of Bajra to levels of N, P and K applied individually and in combinations.

## 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 59(SFT) type A on page 649 conducted at Aligarh.

## 5. RESULTS :

Effect	n	p	k	S.E.	np	nk	pk	npk	S.E.
Av. response of grain in lb./ac.	206	156	140	14.0	0	41	8	16	13.2

Control yield = 773 lb./ac. and no. of trials = 8.

**Crop :- Bajra (Kharif).**

**Ref :- U.P. 59(SFT).**

**Centre :- Bulandshahr (c.f.).**

**Type :- 'M'.**

Object :—Type B—To investigate the relative efficiency of different nitrogenous fertilizers applied individually and in combinations.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Alluvial. (iii) to (v) N.A. (vi) June—July, 1959. (vii) Unirrigated. (viii) and (ix) N.A. (x) October, 1959.

## 2. TREATMENTS :

0 = Control (no manure).

$n_1$  = 20 lb./ac. of N as A/S.

$n_2$  = 40 lb./ac. of N as A/S.

$n_1'$  = 20 lb./ac. of N as Urea.

$n_2'$  = 40 lb./ac. of N as Urea.

$n_1''$  = 20 lb./ac. of N as A/S/N.

$n_2''$  = 40 lb./ac. of N as A/S/N.

## 3. DESIGN and 4. GENERAL :

Same as in expt. no. 59(SFT) type A on page 649 conducted at Aligarh.

## 5. RESULTS :

Treatment	0	$n_1$	$n_2$	$n_1'$	$n_2'$	$n_1''$	$n_2''$
Av. yield of grain in lb./ac.	1045	1308	1506	1308	1539	1292	1539

G.M. = 1362 lb./ac. ; S.E./mean = 18.6 lb./ac. and no. of trials = 11.

**Crop :- Bajra (Kharif).**

**Ref :- U.P. 59(SFT).**

**Centre :- Meerut (c.f.).**

**Type :- 'M'.**

Object :—Type B—To investigate the relative efficiency of different nitrogenous fertilizers applied individually and in combinations.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Alluvial. (iii) to (v) N.A. (vi) June—July, 1959. (vii) Unirrigated. (viii) and (ix) N.A. (x) October, 1959.

## 2. TREATMENTS :

0 = Control (no manure).

$n_1$  = 20 lb./ac. of N as A/S.

$n_2$  = 40 lb./ac. of N as A/S.

$n_1'$  = 20 lb./ac. of N as Urea.

$n_2'$  = 40 lb./ac. of N as Urea.

$n_1''$  = 20 lb./ac. of N as A/S/N.

$n_2''$  = 40 lb./ac. of N as A/S/N.

## 3. DESIGN and 4. GENERAL :

Same as in expt. no. 59(SFT) type A on page 649 conducted at Aligarh.

## 5. RESULTS :

Treatment	0	$n_1$	$n_2$	$n_1'$	$n_2'$	$n_1''$	$n_2''$
Av. yield of grain in lb./ac.	667	782	938	839	922	839	1012

G.M. = 857 lb./ac. ; S.E./mean = 19.2 lb./ac. and no. of trials = 8.

**Crop :- Bajra (Kharif).**

**Ref :- U.P. 59(SFT).**

**Centre :- Aligarh (c.f.).**

**Type :- 'M'.**

Object :-Type B—To investigate the relative efficiency of different nitrogenous fertilizers applied individually and in combinations.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Alluvial. (iii) to (v) N.A. (vi) June—July, 1959. (vii) Unirrigated. (viii) and (ix) N.A. (x) October, 1959.

## 2. TREATMENTS :

0 = Control (no manure).  
 $n_1$  = 20 lb./ac. of N as A/S.  
 $n_2$  = 40 lb./ac. of N as A/S.  
 $n_1'$  = 20 lb./ac. of N as Urea.  
 $n_2'$  = 40 lb./ac. of N as Urea.  
 $n_1''$  = 20 lb./ac. of N as A/S/N.  
 $n_2''$  = 40 lb./ac. of N as A/S/N.

## 3. DESIGN and 4. GENERAL :

Same as in expt. no. 59(SFT) type A on page 649 conducted at Aligarh.

## 5. RESULTS :

Treatment	0	$n_1$	$n_2$	$n_1'$	$n_2'$	$n_1''$	$n_2''$
Av. yield of grain in lb./ac.	864	987	1218	1061	1230	1070	1210

G.M. = 1092 lb./ac. ; S.E./mean = 26.8 lb./ac. and no. of trials = 13.

**Crop :- Bajra (Kharif).**

**Ref :- U.P. 56(430).**

**Centre :- Ballia (Ballia, c.f.).**

**Type :- 'M'.**

Object :-To study the residual effect of N and P applied to previous Barley crop.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Barley. (c) As per treatments. (ii) 3 trials in sandy soil and 1 trial in loam soil. (iii) 15 lb./ac. of N as A/S. (iv) and (v) N.A. (vi) 14 to 16.8.1956. (vii) Irrigated. (viii) and (ix) N.A. (x) 6 to 8.11.1956.

## 2. TREATMENTS :

5 manurial treatments:  $M_0$  = Control,  $M_1$  = 25 lb./ac. of N as A/S,  $M_2$  =  $M_1$  + 30 lb./ac. of  $P_2O_5$  as triple Super,  $M_3$  =  $M_1$  + 60 lb./ac. of  $P_2O_5$  as triple Super and  $M_4$  =  $M_1$  + 60 lb./ac. of  $P_2O_5$  as Ammo. Phos.

## 3. DESIGN :

(i) and (ii) Out of the 8 trials conducted in 4 villages in the *tehsil* during *rabi*, 1955 residual effect has been tested only in 4 trials distributed in 2 villages at 1 trial in 1 village and 3 trials in the other village. (iii) (a) N.A. (b) 33' × 33'. (iv) Yes.

## 4. GENERAL :

(i) Fair in 3 trials and good in 1 trial. There was water logging also in 1 trial. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1956 only (b) and (c) Nil. (v) N.A. (vi) Nil. (vii) Crop was affected due to drought and abnormal weather conditions.

## 5. RESULTS :

(i) 710 lb./ac. (ii) 49.9 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	M <sub>0</sub>	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	M <sub>4</sub>
Av. yield	610	620	730	840	750

S.E./mean = 24.9 lb./ac.

**Crop :- Bajra (Kharif).**

**Ref :- U.P. 59(416).**

**Site :- Govt. Agri. Res. Farm, Kalianpur.**

**Type :- 'MV'.**

Object :—To study the effect of different levels of N and P on different varieties of Bajra.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Kalianpur. (iii) N.A. (iv) (a) N.A. (b) Line sowing behind the plough. (c) N.A. (d) 18" × 6". (e) 1. (v) N.A. (vi) As per treatments. (vii) to (ix) N.A. (x) 9.11.1959.

## 2. TREATMENTS :

**Main-plot treatments :**

2 varieties : V<sub>1</sub>=Isolated (late) and V<sub>2</sub>=Local (late).

**Sub-plot treatments :**

All combinations of (1) and (2)

(1) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=20 and N<sub>2</sub>=40 lb./ac.

(2) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=20 and P<sub>2</sub>=40 lb./ac.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 9 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 1/57 ac. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Height of plant, spike length and yield of grain. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1360 lb./ac. (ii) (a) 510.1 lb./ac. (b) 167.5 lb./ac. (iii) Main effect of N and interaction N × V are significant. (iv) Av. yield of grain in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
V <sub>1</sub>	1194	1420	1411	1342	1388	1325	1312
V <sub>2</sub>	1363	1270	1501	1378	1336	1415	1384
Mean	1279	1345	1456	1360	1362	1370	1348
P <sub>0</sub>	1195	1423	1467				
P <sub>1</sub>	1295	1378	1436				
P <sub>2</sub>	1347	1234	1463				

## S.E. of difference of two

1. V marginal means	=	138.8 lb./ac.
2. N or P marginal means	=	45.8 lb./ac.
3. N or P means at the same level of V	=	78.5 lb./ac.
4. V means at the same level of N or P	=	153.1 lb./ac.
S.E. of body of N × P table	=	68.4 lb./ac.

**Crop :- Bajra (*Kharif*).**

**Ref :- U.P. 54(213).**

**Site :- B.R. College Insttl. Res. Farm, Bichpuri.**

**Type :- 'C'.**

**Object :-** To study the effect of different spacings on the yield of Bajra.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) N.A. (ii) (a) Light loam. (b) Refer soil analysis, Bichpuri. (iii) 28.7.1954. (iv) (a) 2 ploughings by off set disc harrow and levelling by *karha*. (b) Behind the plough in furrows. (c) 5 srs./ac. (d) As per treatments. (e) N.A. (v) 40 lb./ac. of N as A/S and 20 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super. (vi) Local. (vii) Unirrigated. (viii) 1 weeding. (ix) 20.19". (x) 18.10.1954.

## 2. TREATMENTS :

## Main-plot treatments :

3 spacings between rows : R<sub>1</sub>=12", R<sub>2</sub>=18" and R<sub>3</sub>=24".

## Sub-plot treatments

3 spacings between plants : S<sub>1</sub>=6", S<sub>2</sub>=12" and S<sub>3</sub>=18".

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a, N.A. (b) 24' × 18'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Tillering, length, weight of shoots and grain yield. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1135 lb./ac. (ii) (a) 298.3 lb./ac. (b) 70.2 lb./ac. (iii) Main effect of S and interaction R × S are highly significant. (iv) Av. yield of grain in lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean
R <sub>1</sub>	1103	1358	1218	1226
R <sub>2</sub>	1366	1072	979	1139
R <sub>3</sub>	1267	979	873	1040
Mean	1245	1136	1023	1135

## S.E. of difference of two

1. R marginal means	=	121.8 lb. ac.
2. S marginal means	=	28.7 lb./ac.
3. S means at the same level of R	=	50.4 lb./ac.
4. R means at the same level of S	=	123.3 lb./ac.

**Crop :- Bajra (*Kharif*).**

**Ref :- U.P. 58(236).**

**Site :- B.R. College Insttl. Res. Farm, Bichpuri.**

**Type :- 'C'.**

**Object :-** To study the effect of methods of sowing and mixed cropping practices on the yield of Bajra.

## 1. BASAL CONDITIONS :

- (i) (a) *Sanai*—Wheat—*Bajra*. (b) Wheat. (c) N.A. (ii) (a) Light loam. (b) Refer soil analysis, Bichpuri. (iii) 10.7.1958. (iv) (a) 1 hot weather cultivation and 2 ploughings. (b) Behind the plough. (c) 2 srs./ac. (d) and (e) N.A. (v) 20 lb./ac. of N as A/S+20 lb./ac. of  $P_2O_5$  as Super. (vi) Isolated. (vii) N.A. (viii) 1 ridge making, 1 weeding and 1 thinning. (ix) N.A. (x) 16.10.1958.

## 2. TREATMENTS :

## Main-plot treatments :

2 methods of sowing :  $S_1$ =Line sowing and  $S_2$ =Broadcast.

## Sub-plot treatments :

5 mixtures of seed :  $M_1$ =*Bajra* alone,  $M_2$ = $\frac{3}{4}$  *bajra*+ $\frac{1}{4}$  *moong*,  $M_3$ = $\frac{2}{4}$  *bajra*+ $\frac{2}{4}$  *moong*,  $M_4$ = $\frac{1}{4}$  *bajra*+ $\frac{3}{4}$  *urd* and  $M_5$ = $\frac{3}{4}$  *bajra*+ $\frac{1}{4}$  *moong*.

## 3. DESIGN :

- (i) Split-plot. (ii) (a) 2 main-plots/replication ; 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 39'×22'. (b) 35'×18'. (v) 2'×2'. (vi) Yes.

## 4. GENERAL :

- (i) Average. (ii) Nil. (iii) Grain and straw yield. (iv) (a) and (b) No. (c) Nil. (v) and (vi) Nil. (vii) No original data and two-way table is available.

## 5. RESULTS :

- (i) 1262 lb./ac. (ii) (a) 599.0 lb./ac. (b) 211.8 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

Treatment	$S_1$	$S_2$	$M_1$	$M_2$	$M_3$	$M_4$	$M_5$
Av. yield	1318	1206	1227	1278	1442	1173	1188

S.E. of difference of two

1. S marginal means = 189.4 lb./ac.  
2. M marginal means = 105.9 lb./ac.

**Crop :- Bajra (Kharif).**

**Ref :- U.P. 59(12).**

**Site :- Reg. Res. Stn., Hardoi.**

**Type :- 'C'.**

Object :- To study the effect of interculturing and method of sowing on Bajra.

## 1. BASAL CONDITIONS :

- (i) (a) to (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Hardoi. (iii) N.A. (iv) (a) N.A. (b) As per treatments. (c) About 3 srs./ac. (d) As per treatments. (e) N.A. (v) to (viii) N.A. (ix) 20.01" (x) N.A.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 methods of sowing :  $M_1$ =Rows 9" apart,  $M_2$ =Rows 1½' apart and  $M_3$ =Broadcasting.

(2) 2 intercultural operations :  $I_0$ =Without interculture and  $I_1$ =With interculture.

## 3. DESIGN :

- (i) Fact. in R.B.D. (ii) (a) 6. (b) 194'×18'. (iii) 4. (iv) (a) 32'×18'. (b) 30'×15'. (v) 1½'×1'. (vi) Yes.

## 4. GENERAL :

- (i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1959—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1091 lb./ac. (ii) 162.2 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.



	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	Mean
I <sub>0</sub>	1294	1048	1026	1123
I <sub>1</sub>	1087	1033	1058	1059
Mean	1190	1040	1042	1091

S.E. of M marginal mean = 57.3 lb./ac.  
 S.E. of I marginal mean = 46.8 lb./ac.  
 S.E. of body of table = 81.1 lb./ac.

**Crop :- Bajra (Kharif).**

**Ref :- U.P. 54(211).**

**Site :- B.R. College Insttl. Res. Farm, Bichpuri.**

**Type :- 'CM'.**

Object :— To study the effect of different levels of N with different types of weeding on Bajra.

### 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) N.A. (ii) (a) Light loam. (b) Refer soil analysis, Bichpuri. (iii) 30.7.1954.  
 (iv) (a) 4 ploughings. (b) Behind the plough. (c) 2 srs./ac. (d) Rows 3' apart. (e) N.A. (v) 60 lb./ac.  
 of N as A/S. (vi) Local. (vii) N.A. (viii) 1 ridge and channel making, thinning and gap-filling. (ix) 25".  
 (x) 10.11.1954.

### 2. TREATMENTS :

**Main-plot treatments :**

3 methods of weeding : W<sub>0</sub>=No weeding, W<sub>1</sub>=*Khurpi* weeding and W<sub>2</sub>=Cultivator weeding.

**Sub-plot treatments :**

3 levels of N as A/S : N<sub>0</sub>=0, N<sub>1</sub>=20 and N<sub>2</sub>=40 lb./ac.

Weeding done after 15 days of sowing and manuring on 30.6.1954.

### 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 3 sub-plots/main-plot. (b) 88' × 78'. (iii) 4. (v) (a) N.A.  
 (b) 24' × 18'. (v) N.A. (vi) Yes.

### 4. GENERAL :

(i) Good. (ii) Green ear disease. (iii) Germination, no. of leaves, fresh and dry weight, leaf area and yield of grain. (iv) (a) and (b) No. (c) Nil. (v) and (vi) N.I. (vii) No original data and two : way table is available.

### 5. RESULTS :

(i) 781 lb./ac. (ii) (a) 422.3 lb./ac. (b) 159.3 lb./ac. (iii) Main effect of N is highly significant and effect of W is significant. (iv) Av. yield of grain in lb./ac.

Treatment	W <sub>0</sub>	W <sub>1</sub>	W <sub>2</sub>	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>
Av. yield	400	1024	920	565	782	995

S.E. of difference of two

1. W marginal means = 172.4 lb./ac.  
 2. N marginal means = 65.0 lb./ac.

**Crop :- Bajra (Kharif).**

**Ref :- U.P. 54(210).**

**Site :- B.R. College Insttl. Res. Farm, Bichpuri.**

**Type :- 'CM'.**

Object :—To study the effect of different levels of N and plant spacings on yield of Bajra.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) N.A. (ii) (a) Light loam. (b) Refer soil analysis, Bichpuri. (iii) 28.7.1954.  
 (iv) (a) 1 ploughing with tractor driven offset disc harrow and 1 planking. (b) Behind the plough. (c) 2 srs./ac. (d) 2' between rows. (e) N.A. (v) 30 lb./ac. of  $P_2O_5$  as Super. (vi) Local. (vii) N.A. (viii) 1 weeding with *khurpi*. (ix) 25". (x) 28.10.1954.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N as A/S :  $N_0=0$ ,  $N_1=25$ ,  $N_2=50$  and  $N_3=75$  lb./ac.

(2) 3 spacings between plants:  $S_1=6"$ ,  $S_2=12"$  and  $S_3=18"$ .

Fertilizers were applied through a '*pora*' attached behind a *desi* plough at a depth of 3" in the soil.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 24'×18'. (v) 1.5'×1.5'. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) N.A. (iii) Grain and straw yield. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1069 lb./ac. (ii) 285.1 lb./ac. (iii) Main effect of N alone is highly significant. (iv) Av. yield of grain in lb./ac.

	$N_0$	$N_1$	$N_2$	$N_3$	Mean
$S_1$	913	1061	1284	1465	1181
$S_2$	782	1119	1111	1218	1058
$S_3$	708	930	1062	1177	969
Mean	801	1037	1152	1287	1069

S.E. of S marginal mean = 71.3 lb./ac.

S.E. of N marginal mean = 82.3 lb./ac.

S.E. of body of table = 142.5 lb./ac.

**Crop :- Bajra (Kharif).**

**Ref :- U.P. 54(216).**

**Site :- B. R. College Insttl. Res. Farm, Bichpuri.**

**Type :- 'CM'.**

Object :— To study the effect of different levels of N and plant spacings on the yield of Bajra.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) N.A. (ii) (a) Light loam. (b) Refer soil analysis, Bichpuri. (iii) 28.7.1954.  
 (iv) (a) 2 disc ploughings and 1 levelling by *karha*. (b) Behind the plough. (c) 2 srs./ac. (d) 2' between rows. (e) N.A. (v) 30 lb./ac. of  $P_2O_5$  as Super. (vi) Local. (vii) Unirrigated. (viii) 1 weeding. (ix) 20.19". (x) 27.10.1954.

## 2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 54(210) on page 656.

N drilled in soil before sowing.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Tillering, plant height and grain yield. (iv) (a) and (b) No. (c) Nil. (v) and (vi) Nil. (vii) Original data and two-way table are not available.

## 5. RESULTS :

(i) 1015 lb./ac. (ii) 269.9 lb./ac. (iii) Main effect of N and S are significant (iv) Av. yield of grain in lb./ac.

Treatment	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>
Av. yield	819	1008	1060	1174	959	1099	987
	S.E. of N marginal mean			=	67.5 lb./ac.		
	S.E. of S marginal mean			=	77.9 lb./ac.		

**Crop :- Bajra (Kharif).**

**Ref :- U.P. 58(234).**

**Site :- B. R. College Insttl. Res. Farm, Bichpuri.**

**Type :- 'CM'.**

Object :—To study the effect of spacings and different levels of N and P on Bajra.

### 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Wheat. (c) N.A. (ii) (a) Light loam. (b) Refer soil analysis, Bichpuri. (iii) 9.7.1958. (iv) (a) 2 ploughings with tractor drawn offset disc harrow followed by planking. (b) Behind the plough. (c) 6 lb./ac. (d) Rows 2' apart. (e) N.A. (v) As per treatments. (vi) Iso ated. (vii) N.A. (viii) 1 ridge making, 1 thinning and gap-filling, 1 weeding and 1 harrowing. (ix) N.A. (x) 20.10.1958.

### 2. TREATMENTS :

All combinations of (1), (2) and (3)

- (1) 2 spacings between plants : S<sub>1</sub>=6" and S<sub>2</sub>=12".
- (2) 3 levels of N as A/S : N<sub>1</sub>=25, N<sub>2</sub>=50 and N<sub>3</sub>=75 lb./ac.
- (3) 2 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0 and P<sub>1</sub>=50 lb./ac.

### 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 31' × 14'. (v) 1.5' × 1.5'. (vi) Yes.

### 4. GENERAL :

(i) Good. (ii) N.A. (iii) Grain and straw yield. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) Original data and two way tables are not available.

### 5. RESULTS :

(i) 1242 lb./ac. (ii) 226.9 lb./ac. (iii) Main effect of N and S are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	S <sub>1</sub>	S <sub>2</sub>	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	P <sub>0</sub>	P <sub>1</sub>
Av. yield	1358	1126	1059	1249	1418	1182	1301
	S.E. of N marginal mean			=	56.7 lb./ac.		
	S.E. of P or S marginal mean			=	46.3 lb./ac.		

**Crop :- Bajra (Kharif).**

**Ref :- U.P. 59(242).**

**Site :- B.R. College Insttl. Res. Farm, Bichpuri.**

**Type :- 'CM'.**

Object :—To study the effect of spacings and different levels of N and P on Bajra.

### 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Gram. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Bichpuri. (iii) 15.7.1959. (iv) (a) 2 ploughings with a tractor driven offset disc harrow. (b) In furrows opened by *deri* plough. (c) 6 lb./ac. (d) and (e) N.A. (v) Nil. (vi) Isolated. (vii) and (viii) N.A. (ix) 25". (x) N.A.

### 2. TREATMENTS :

All combinations of (1), (2) and (3)

- (1) 3 levels of N as A/S : N<sub>1</sub>=25, N<sub>2</sub>=50 and N<sub>3</sub>=75 lb./ac.
- (2) 2 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0 and P<sub>1</sub>=40 lb./ac.
- (3) 3 spacings between plants : S<sub>1</sub>=6", S<sub>2</sub>=9" and S<sub>3</sub>=12".

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 18. (b) N.A. (iii) 3. (iv) (a) 40'×19.5'. (b) 37'×16.5'. (v) 1½'×1½'. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) N.A. (iii) Grain and straw yield. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) Original data and two way tables are not available.

## 5. RESULTS :

(i) 1201 lb./ac. (ii) 188.7 lb./ac. (iii) Interaction N×P×S alone is significant. (iv) Av. yield of grain in lb./ac.

Treatment	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	P <sub>0</sub>	P <sub>1</sub>	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>
Av. yield	1151	1201	1252	1251	1151	1278	1140	1185

S.E. of N or S marginal mean = 44.5 lb./ac.

S.E. of P marginal mean = 36.3 lb./ac.

**Crop :- Bajra (Kharif).**

**Ref :- U.P. 58(237).**

**Site :- B.R. College, Insttl. Res. Farm, Bichpuri.**

**Type :- 'CM'.**

Object :—To study the effect of N and different methods of sowing on Bajra.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) N.A. (ii) (a) Light loam. (b) Refer soil analysis, Bichpuri. (iii) 10.7.1958. (iv) (a) 2 ploughings with the off set disc harrow followed by planking. (b) As per treatments. (c) 2 srs./ac. (d) and (e) N.A. (v) Nil. (vi) Local. (vii) N.A. (viii) 1 ridge making and 1 thinning. (ix) N.A. (x) 23.10.1958.

## 2. TREATMENTS :

**Main-plot treatments :**

2 methods of sowing : S<sub>1</sub>=Broadcast and S<sub>2</sub>=Line sowing.

**Sub-plot treatments :**

5 manurial treatments : M<sub>1</sub>=Full dose of N as A/S at sowing, M<sub>2</sub>=Full dose of N as M.C. at sowing, M<sub>3</sub>=½ N as A/S+½ N as M.C. at sowing, M<sub>4</sub>=¾ N as A/S at sowing+¼ N as A/S as top dressing and M<sub>5</sub>=¾ N as M.C. at sowing+¼ N as A/S as top dressing.

Level of N applied—N.A.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 5 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 39'×22'. (b) 35'×18'. (v) 2'×2'. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) N.A. (iii) Grain and straw yield. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) Original data and two way table are not available.

## 5. RESULTS :

(i) 1188 lb./ac. (ii) (a) 521.9 lb./ac. (b) 129.0 lb./ac. (iii) Main effect of N alone is highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	M <sub>4</sub>	M <sub>5</sub>	S <sub>1</sub>	S <sub>2</sub>
Av. yield	1276	997	1150	1408	1112	1222	1154

S.E. of difference of two

1. S marginal means = 165.0 lb./ac.

2. M marginal means = 64.5 lb./ac.

**Crop :- Bajra (Kharif).****Ref :- U.P. 59(246).****Site :- B.R. College Insttl. Res. Farm, Bichpuri.****Type :- 'CM'.**

Object :—To study the effect of seed rate and methods of application on the yield of Bajra.

**1. BASAL CONDITIONS :**

(i) (a) Gram—*Bajra* (b) Gram. (c) N.A. (ii) (a) Light loam. (b) Refer soil analysis, Bichpuri. (iii) 17.7.1959. (iv) (a) 2 ploughings with a tractor drawn offset disc harrow. (b) and (c) As per treatments. (d) Rows 1.5' apart. (e) N.A. (v) As per treatments. (vi) Isolated. (vii) N.A. (viii) 1 ridge making and 2 weedings. (ix) 25" (x) 15.10.1959.

**2. TREATMENTS :****Main-plot treatments :**2 methods of sowing :  $S_1$ =Line sowing and  $S_2$ =Broadcast.**Sub-plot treatments :**

All combinations of (1) and (2)

(1) 4 manurial treatments :  $M_1$ =50 lb./ac. of N as A/S at sowing,  $M_2$ =50 lb./ac. of N as compost at sowing,  $M_3$ =25 lb./ac. of N as A/S+25 lb./ac. of N as compost at sowing and  $M_4$ =37.5 lb./ac. of N as compost at sowing+12.5 lb./ac. of N as A/S as top dressing 45 days after sowing.

(2) 2 seed rates :  $R_1$ =1 and  $R_2$ =2 srs./ac.**3. DESIGN :**

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 8 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) and (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) N.A. (iii) Crop stand, growth, yield of grain and straw. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) Original data was not available.

**5. RESULTS :**

(i) 1540 lb./ac. (ii) (a) 202.1 lb./ac. (b) 210.7 lb./ac. (iii) Main effect of R alone is significant. (iv) Av. yield of grain in lb./ac.

	$R_1$	$R_2$	Mean
$S_1$	1293	1557	1425
$S_2$	1660	1653	1656
Mean	1476	1605	1540

Treatment	$M_1$	$M_2$	$M_3$	$M_4$
Av. yield	1590	1434	1616	1523

**S.E. of difference of two**

1. S marginal means	= 58.3 lb./ac.
2. M marginal means	= 86.0 lb./ac.
3. R marginal means	= 60.8 lb./ac.
4. R means at the same level of S	= 86.0 lb./ac.
5. S means at the same level of R	= 84.3 lb./ac.

**Crop :- Bajra (Kharif).****Ref :- U.P. 59(422).****Site :- Govt. Agri. Res. Farm, Kalianpur.****Type :- 'CM'.**

Object :—To study the effect of directions of sowing and spacings at different levels of N on Bajra.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Kalianpur. (iii) N.A. (iv) (a) N.A. (b) Line sowing behind the plough. (c) N.A. (d) As per treatments. (e) 1. (v) to (ix) N.A. (x) 4.12.1959.

## 2. TREATMENTS :

**Main-plot treatments :**

2 spacings :  $S_1=18'' \times 6''$  and  $S_2=12'' \times 12''$ .

**Sub-plot treatments :**

All combinations of (1) and (2)

(1) 2 directions of sowing :  $D_1$ =North to south and  $D_2$ =East to west.

(2) 3 levels of N :  $N_0=0$ ,  $N_1=20$  and  $N_2=40$  lb./ac.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 6 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b)  $33' \times 13\frac{1}{2}'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Height, of plants, tillers, spike length and grain yield. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1168 lb./ac. (ii) (a) 75.2 lb./ac. (b) 177.5 lb./ac. (iii) Main effect of S is highly significant and effect of D is significant. (iv) Av. yield of grain in lb./ac.

	$D_1$	$D_2$	Mean	$N_0$	$N_1$	$N_2$
$S_1$	1359	1189	1274	1194	1244	1384
$S_2$	1090	1036	1063	993	1114	1082
Mean	1224	1113	1168	1093	1179	1233
$N_0$	1228	958				
$N_1$	1194	1164				
$N_2$	1252	1215				

## S.E. of difference of two

1. S marginal means	= 21.7 lb./ac.	5. S means at the same level of D	= 55.6 lb./ac.
2. D marginal means	= 51.2 lb./ac.	6. N means at the same level of S	= 88.7 lb./ac.
3. N marginal means	= 62.7 lb./ac.	7. S means at the same level of N	= 75.6 lb./ac.
4. D means at the same level of S	= 72.5 lb./ac.	S.E. of body of $N \times D$ table	= 88.7 lb./ac.

**Crop :- Bajra (Kharif).**

**Ref :- U.P. 59(430).**

**Site :- Govt. Agri. Res. Farm, Kalianpur.**

**Type :- 'CM'.**

Object :—To study the effect of spacings, time of sowing, and levels of N on the yield of Bajra.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Alluvial soil. (b) Refer soil analysis, Kalianpur. (iii) As per treatments. (vi) (a) N.A. (b) Line sowing behind the plough. (c) N.A. (d) As per treatments (e) 1. (v) N.A. (vi) Local (late). (vii) to (ix) N.A. (x) 22.11.1959.

## 2. TREATMENTS :

**Main-plot treatments :**

All combinations of (1) and (2)

(1) 3 spacings between rows :  $S_1=18'' \times 6''$ ,  $S_2=24'' \times 6''$  and  $S_3=30'' \times 6''$ .

(2) 3 dates of sowing :  $D_1=26$ th July,  $D_2=7$ th August and  $D_3=19$ th August 1959.

**Sub-plot treatments :**

3 levels of N as A/S :  $N_0=0$ ,  $N_1=20$  and  $N_2=40$  lb./ac.

**3. DESIGN :**

(i) Split-plot. (ii) (a) 9 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a) 15'×36'. (b) 13½'×33'. (v) 1.5'×9". (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Height of plants, tillers per plant and yield of grain. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS:**

(i) 1113 lb./ac. (ii) (a) 227.6 lb./ac. (b) 158.4 lb./ac. (iii) Main effect of N is highly significant. Effect of S and interaction N×D are significant. (iv) Av. yield of grain in lb./ac.

	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	Mean	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>
S <sub>1</sub>	1140	1287	1244	1224	1022	1207	1442
S <sub>2</sub>	1012	1066	1314	1131	1002	1083	1307
S <sub>3</sub>	1073	1002	882	986	845	1032	1079
Mean	1075	1118	1147	1113	956	1107	1276
N <sub>0</sub>	852	976	1043				
N <sub>1</sub>	992	1230	1100				
N <sub>2</sub>	1381	1149	1297				

S.E. of difference of two

- |  |                 |
|--|-----------------|
| 1. S or D marginal means               | = 75.8 lb./ac.  |
| 2. N marginal means                    | = 52.8 lb./ac.  |
| 3. N means at the same level of S or D | = 91.4 lb./ac.  |
| 4. D or S means at the same level of N | = 106.4 lb./ac. |
| S.E. of body of S×D table              | = 92.9 lb./ac.  |

**Crop :- Bajra (Kharif).**

**Ref :- U.P. 54(217).**

**Site :- B. R. College Insttl. Res. Farm, Bichpuri.**

**Type :- 'D'.**

**Object :-**To study the effect of 2, 4-D Chlorophe-noxy acetate on weeds of Bajra.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Wheat. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Bichpuri. (iii) 28.7.1954. (iv) (a) 2 ploughings by tractor and 1 planking. (b) Drilling with country seed drill. (c) 3 srs./ac. (d) 1'×9". (e) N.A. (v) Nil. (vi) Local. (vii) Unirrigated. (viii) Thinning and gap-filling. (ix) 20.2". (x) 30.10.1954.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 2 stages of spraying : S<sub>1</sub>=Spray of 2, 4-D three weeks after sowing and S<sub>2</sub>=Spray of 2, 4-D five weeks after sowing.

(2) 4 concentrations of 2, 4-D : C<sub>0</sub>=0, C<sub>1</sub>=0.75, C<sub>2</sub>=1.50 and C<sub>3</sub>=2.25 lb./ac.

Spraying was done on 20.8.1954 and 3.9.1954. by knap sack sprayer.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 18'×24'. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) Normal. (ii) Nil. (iii) Height of shoots, no. of tillers and grain yield. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

- (i) 781 lb./ac. (ii) 128.3 lb./ac. (iii) Main effect of S is highly significant. Interaction S×C is significant.  
 (iv) Av. yield of grain in lb./ac.

$$C_0 = 739 \text{ lb./ac.}$$

	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	Mean
S <sub>1</sub>	911	909	829	883
S <sub>2</sub>	717	708	699	708
Mean	814	808	764	795

S.E. of C marginal mean	= 45.4 lb./ac.
S.E. of S marginal mean	= 37.0 lb./ac.
S.E. of body of table	= 64.2 lb./ac.

**Crop :- Bajra (Kharif).**

**Ref :- U.P. 58(374).**

**Site :- Botanical Gardens, Govt. Agri. College, Kanpur. Type :- 'D'.**

Object :—To study the mode of smut infection of Bajra.

## 1. BASAL CONDITIONS :

- (i) (a) to (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 18.8.1958. (iv) and (v) N.A. (vi) Local. (vii) N.A. (viii) Thinning. (ix) 18.7". (x) N.A.

## 2. TREATMENTS :

4 infect ons treatments : T<sub>0</sub>=Sterilized soil+hot water treated seeds (control), T<sub>1</sub>=Soil sterilized (something burned on soil) and hot water treated seeds mixed with spores of smut, T<sub>2</sub>=Sterilized soil mixed with spores+hot water treated seeds and T<sub>3</sub>=Sterilized soil+hot water treated seeds+floral (spraying of smut suspensions) infection.

Inoculations on 26th and 28th Oct. 1958 in all the treatments. Bagging (enclosed with polythene bags) of few ear heads was done in each treatment at the time of just emerging out.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) and (b) 5'×5'. (v) Nil. (vi) Yes.

## 4. GENERAL :

- (i) Germination of seeds was good and very satisfactory. (ii) Attack of smut in *bajra*. (iii) Incidence of infection. (iv) (a) 1958—1959. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Inoculation was done on 26 and 28.10.1958 to some plants in all the plots in addition to the treatments.

## 5. RESULTS :

## I. Infection of smutted-heads (uninoculated)

- (i) 35.11 degrees. (ii) 15.43 degrees. (iii) Treatment differences are not significant. (iv) Av. infection of smut (smutted heads-uninoculated).

Treatment	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>
Mean angle	38.33	43.40	30.94	27.78
Mean %	38.58	47.25	26.66	22.01

S.E./mean = 7.71 degrees.

## III. Mean % of infection (inoculated)

Treatment	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>
Mean %	75.00	83.33	68.75	87.50



**Crop :- Bajra (*Kharif*).**

**Ref :- U.P. 59(400).**

**Site :- Botanical Gardens, Govt. Agri. College, Kanpur. Type :- 'D'.**

Object: —To study the mode of smut infection of Bajra.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 12.8.1959. (iv) to (viii) N.A. (ix) 11.5". (x) 27 and 28.11.1959.

**2. TREATMENTS and 3. DESIGN :**

Same as in expt. no. 58(374) on page 663.

**4. GENERAL :**

(i) N.A. (ii) Attack of smut in *bajra*. (iii) Incidence of infection. (iv) (a) 1958—1959. (b) No. (c) Nil. (vi) and (vi) Nil. (vii) Inoculation was done to some plants in all the plots in addition to the treatments.

**5. RESULTS :**

**I. Infection of smuts (uninoculated)**

(i) 10.72 degrees. (ii) 5.27 degrees. (iii) Treatment differences are not significant. (iv) Av. infection of smuts on uninoculated heads in degrees.

Treatment	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>
Mean angle	8.29	6.53	14.91	13.15
Mean %	2.56	1.77	7.05	5.63

S.E./mean = 2.64 degrees.

**II. Infection of smuts (inoculated)**

(i) 43.06 degrees. (ii) 9.67 degrees. (iii) Treatment differences are not significant. (iv) Av. infection of smuts on inoculated heads in degrees.

Treatment	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>
Mean angle	38.88	38.94	44.36	50.05
Mean %	39.50	39.60	48.89	58.68

S.E./mean = 4.83 degrees.

**Crop :- Maize (*Kharif*).**

**Ref :- U.P. 54(236).**

**Site :- Allahabad Agri. Instt., Allahabad.**

**Type :- 'M'.**

Object: — To study the effect of N, P and K on Maize.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Fine sandy loam. (b) Refer soil analysis, Allahabad. (iii) 9.7.1954. (iv) (a) N.A. (b) In lines. (c) N.A. (d) Lines 3' apart. (e) N.A. (v) N.A. (vi) Jaunpur yellow. (vii) N.A. (viii) 3 weedings with cultivator and 1 weeding with a *khurpi*. (ix) N.A. (x) 8.9.1954.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 2 levels of N as A/S : N<sub>0</sub>=0 and N<sub>1</sub>=200 lb./ac.

(2) 2 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0 and P<sub>1</sub>=250 lb./ac.

(3) 2 levels of K<sub>2</sub>O as Potash : K<sub>0</sub>=0 and K<sub>1</sub>=100 lb./ac.

**3. DESIGN :**

(i) Fact. in R B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 9' × 36'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1954—1956. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 2425 lb./ac. (ii) and (iii) N.A. (iv) Av. yield of grain in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	Mean	K <sub>0</sub>	K <sub>1</sub>
P <sub>0</sub>	1497	3082	2290	2514	2065
P <sub>1</sub>	1959	3163	2561	2699	2423
Mean	1728	3123	2425	2607	2244
K <sub>0</sub>	2185	3028			
K <sub>1</sub>	1271	3217			

S.E's.—N.A.

**Crop :- Maize (Kharif).****Ref :- U.P. 55(234).****Site :- Allahabad Agri. Instt., Allahabad.****Type :- 'M'.**

Object :— To study the effect of N, P and K on Maize.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Fine sandy loam. (b) Refer soil analysis, Allahabad. (iii) to (x) N.A.

## 2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 54(236) on page 664.

Fertilizers applied by hand after ploughing and mixed with soil with cultivator.

## 5. RESULTS :

(i) 1050 lb./ac. (ii) and (iii) N.A. (iv) Av. yield of grain in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	Mean	K <sub>0</sub>	K <sub>1</sub>
P <sub>0</sub>	951	1192	1072	1106	1037
P <sub>1</sub>	1002	1054	1028	1089	968
Mean	977	1123	1050	1098	1002
K <sub>0</sub>	864	1330			
1	1089	916			

S.E's.—N.A.

**Crop :- Maize (Kharif).****Ref :- U.P. 58(257).****Site :- Allahabad Agri. Instt., Allahabad.****Type :- 'M'.**

Object :—To study the effect of trace elements on growth and yield of Maize at different levels of N.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Fine sandy loam. (b) Refer soil analysis, Allahabad. (iii) and (iv) N.A. (v) 124 gm./litre of P<sub>2</sub>O<sub>5</sub> as Super and 144 gm./litre of K<sub>2</sub>O as Pot. Nitrate. (vi) to (ix) N.A. (x) Oct., 1958.

## 2. TREATMENTS :

## Main-plot treatments :

4 levels of N as A/S :  $N_1=405$ ,  $N_2=437$ ,  $N_3=462$  and  $N_4=486$  gms /litre.

## Sub-plot treatments :

$T_0$ =Without trace-elements and  $T_1$ =With trace elements  $CuSO_4$ , Borax,  $ZnSO_4$  and Ammo. Molybdate.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 2 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b)  $31' \times 20'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) and (b) No. (c) Nil. (v) to (vi) Nil.

## 5. RESULTS :

(i) 370 lb./ac. (ii) (a) 109.3 lb./ac. (b) 119.5 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

	$N_1$	$N_2$	$N_3$	$N_4$	Mean
$T_0$	307	445	494	291	384
$T_1$	353	409	307	352	355
Mean	330	427	401	322	370

S.E. of difference of two

1. N marginal means = 54.7 lb./ac.
2. T marginal means = 42.2 lb./ac.
3. T means at the same level of N = 84.5 lb./ac.
4. N means at the same level of T = 81.0 lb./ac.

**Crop :- Maize (Kharif).**

**Ref :- U.P. 58(141).**

**Site :- Reg. Res Stn., Amrukh.**

**Type :- 'M'.**

Object :- To study the effect of P on Maize.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) *Kabar* soil. (b) N.A. (iii) 15.7.1958. (iv) (a) 2 *bakharings*. (b) N.A. (c) 9 srs /ac. (d) and (e) N.A. (v) F.Y.M. at 35 mds./ac. and A/S at 116 lb./ac. (vi) N.A. (vii) Unirrigated. (viii) 1 weeding. (ix) N.A. (x) 21.9.1958.

## 2. TREATMENTS :

3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=16$ , and  $P_2=32$  lb./ac.

## 3. DESIGN :

(i) R.B D. (ii) (a) 3. (b) N.A. (iii) 8. (iv) (a) and (b)  $21' \times 52'$ . (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1958-N.A. (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1198 lb./ac. (ii) 371.8 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$P_0$	$P_1$	$P_2$
Av. yield	1112	1213	1269

S.E./mean = 131.4 lb./ac.

**Crop :- Maize (Kharif).****Ref :- U.P. 58(13).****Site :- Reg. Res. Stn., Hardoi.****Type :- 'M'.**

Object :—To study the effect of P on hybrid Maize.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loam soil. (b) Refer soil analysis, Hardoi. (iii) 22.7.1958. (iv) (a) to (e) N.A. (v) N as urea at 20 lb./ac. (vi) to (viii) N.A. (ix) 31.86" (annual). (x) N.A.

**2. TREATMENTS :**

Same as in expt. no. 58(141) on page 666.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 10. (iv) (a) and (b) 26½' × 18'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Water logging in many plots. (ii) N.A. (iii) Yield of grain. (iv) (a) and (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 387 lb./ac. (ii) 188.9 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
Av. yield	440	352	370

S.E./mean = 59.7 lb./ac.

**Crop :- Maize (Kharif).****Ref :- U.P. 59(9).****Site :- Reg. Res. Stn., Hardoi.****Type :- 'M'.**

Object :—To study the effect of organic and inorganic manures on Maize.

**1. BASAL CONDITIONS :**(i) (a) to (c) N.A. (ii) (a) Loam soil. (b) Refer soil analysis, Hardoi. (iii) to (v) N.A. (vi) Hybrid maize. (vii) N.A. (viii) Weedings by *khurpi* from July 24 to 26. (ix) 20.01" (annual). (x) N.A.**2. TREATMENTS :**10 manurial treatments: M<sub>0</sub>=Control, M<sub>1</sub>=20 lb./ac. of N as A/S, M<sub>2</sub>=40 lb./ac. of N as A/S, M<sub>3</sub>=20 lb./ac. of N as A/S+40 lb./ac. of P<sub>2</sub>O<sub>5</sub>, M<sub>4</sub>=20 lb./ac. of N as F.Y.M., M<sub>5</sub>=40 lb./ac. of N as F.Y.M., M<sub>6</sub>=20 lb./ac. of N as F.Y.M.+40 lb./ac. of P<sub>2</sub>O<sub>5</sub>, M<sub>7</sub>=20 lb./ac. of N as A/S+20 lb./ac. of N as F.Y.M., M<sub>8</sub>=20 lb./ac. of N as A/S+20 lb./ac. of N as F.Y.M.+40 lb./ac. of P<sub>2</sub>O<sub>5</sub> and M<sub>9</sub>=40 lb./ac. of P<sub>2</sub>O<sub>5</sub>.**3. DESIGN :**

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) and (b) 36' × 20'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) and (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1121 lb./ac. (ii) 296.4 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	M <sub>0</sub>	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	M <sub>4</sub>	M <sub>5</sub>	M <sub>6</sub>	M <sub>7</sub>	M <sub>8</sub>	M <sub>9</sub>
Av. yield	972	1252	1237	1011	1050	1042	957	1353	1229	1105

S.E./mean = 148.2 lb./ac.

**Crop :- Maize (Kharif).****Ref :- U.P. 55(287).****Site :- Students' Instrl. Farm, Govt. Agri. College, Kanpur.****Type :- 'M'.**

Object :— To study the effect of N, P and K alone and in combinations on Maize.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Pea and Tomato. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Kanpur. (iii) 19.7.1955. (iv) (a) 1 ploughing by victory plough, 3 ploughings by *desi* plough and 5 plankings. (b) In furrows. (c) 11 srs./ac. (d) and (e) N.A. (v) Nil. (vi) T—41. (vii) Unirrigated. (viii) 1 weeding and 1 hoeing. (ix) 26.58". (x) 4, 5.9.1955.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 3 levels of N as A/S :  $N_0=0$ ,  $N_1=40$  and  $N_2=80$  lb./ac.(2) 2 levels of  $P_2O_5$  as Super :  $P_0=0$  and  $P_1=40$  lb./ac.(3) 2 levels of  $K_2O$  as Pot. Sul. :  $K_0=0$  and  $K_1=40$  lb./ac.N and  $K_2O$  were mixed together and broadcast on 18.7.1955 and  $P_2O_5$  was placed 1" deep on 19.7.1955.**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 23'×22'. (b) 20'×19'. (v) 1.5'×1.5'. (vi) Yes.

**4. GENERAL :**

(i) Normal. (ii) Mild attack of grass hoppers, but damage was negligible. Some plants were found affected with stem-borer. (iii) Germination count, shoot height and grain yield. (iv) (a) 1955—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 2558 lb./ac. (ii) 344.8 lb./ac. (iii) Main effect of P and interaction  $N \times K$  are highly significant. (iv) Av. yield of grain in lb./ac.

	$K_0$	$K_1$	Mean	$P_0$	$P_1$
$N_0$	2062	2533	2297	2319	2276
$N_1$	2815	2294	2554	2369	2739
$N_2$	2824	2820	2822	2695	2949
Mean	2567	2549	2558	2461	2655
$P_0$	2561	2362			
$P_1$	2573	2736			

S.E. of N marginal mean = 86.2 lb./ac.

S.E. of P or K marginal mean = 70.4 lb./ac.

S.E. of body of  $N \times P$  or  $N \times K$  table = 121.9 lb./ac.S.E. of body of  $P \times K$  table = 99.5 lb./ac.**Crop :- Maize (Kharif).****Ref :- U.P. 58(269).****Site :- Students' Instrl. Farm, Govt. Agri. College, Kanpur.****Type :- 'M'.**

Object :— To study the effect of varying levels of N and P on growth and yield of Maize.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Pea—Wheat. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Kanpur. (iii) 29, 30.7.1958. (iv) (a) 2 ploughings. (b) In lines at a depth of 2" by *khurpi*. (c) 30 srs./ac. (d) 2'×1'. (e) 2. (v) 20 lb./ac. of N as castor cake on 22.7.1958. (vi) T—41. (vii) Unirrigated. (viii) 2 weedings, 2 hoeings, 1 thinning and 1 earthing. (ix) 20.4". (x) N.A.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 6 levels of N as A/S :  $N_0=0$ ,  $N_1=30$ ,  $N_2=60$ ,  $N_3=90$ ,  $N_4=120$  and  $N_5=150$  lb./ac.

(2) 6 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=30$ ,  $P_2=60$ ,  $P_3=90$ ,  $P_4=120$  and  $P_5=150$  lb./ac.

Super was placed 4" deep in the root zone of the plants in furrows made by spades. A/S applied in two equal doses at sowing and earthing time.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 36. (b) N.A. (iii) 2. (iv) (a) 22'×38'. (b) 19'×35'. (v) 1.5'×1.5'. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Attack of stem : borer, leaf-roller and leaf-blight. (iii) Shoot height, growth and yield of grain (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1675 lb./ac. (ii) 205.0 lb./ac. (iii) N effect is highly significant. (iv) Av. yield of grain in lb./ac.

	$N_0$	$N_1$	$N_2$	$N_3$	$N_4$	$N_5$	Mean
$P_0$	979	1179	1405	1900	1926	1736	1521
$P_1$	1048	1281	1546	2099	2034	1798	1634
$P_2$	1051	1346	1605	2162	1965	1831	1660
$P_3$	1277	1412	1736	2224	2067	1801	1753
$P_4$	1114	1503	1798	2296	1965	1831	1751
$P_5$	1182	1441	1739	2227	1991	1801	1730
Mean	1108	1360	1638	2151	1991	1800	1675

S.E. of any marginal mean = 59.2 lb./ac.

S.E. of body of table = 144.9 lb./ac.

**Crop :- Maize (Kharif).**

**Ref :- U.P. 58(361).**

**Site :- Reg. Res. Stn., Majhera.**

**Type :- 'M'.**

Object :—To study the effect of top-dressing of N on Maize.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Wheat. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Majhera. (iii) 9.7 1958. (iv) (a) 2 ploughings. (b) Line sowing. (c) 4 srs./ac. (d) 2' between rows. (e) N.A. (v) 4 lb./ac. of N as Urea in all plots. (vi) Local (medium). (vii) Unirrigated. (viii) 2 weedings. (ix) N.A. (x) 24.9 1958.

**2. TREATMENTS :**

6 levels of N as Urea :  $N_0=0$ ,  $N_1=20$ ,  $N_2=30$ ,  $N_3=40$ ,  $N_4=50$  and  $N_5=60$  lb./ac.  
Urea was top-dressed.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) and (b) 14'×8'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Normal. (ii) Nil. (iii) Yield of grain. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 665 lb./ac. (ii) 236.9 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	N <sub>4</sub>	N <sub>5</sub>
Av. yield	450	688	575	850	725	700

S.E./mean = 118.4 lb./ac.

**Crop :- Maize (Kharif).**

**Ref :- U.P. 57(40).**

**Site :- Reg. Res. Stn., Meerut.**

**Type :- 'M'.**

**Object :-** To study the effect of different methods of application of N and P on Maize.

### 1. BASAL CONDITIONS :

(i) (a) Maize—Pea. (b) and (c) N.A. (ii) (a) Silt loam. (b) Refer soil analysis, Meerut. (iii) 1.8.1957. (iv) (a) 1 ploughing by soil turning plough and 2 by *desi* plough on 23.7.1957 and 26.7.1957. (b) Behind the plough in rows. (c) 12 to 15 srs./ac. (d) 2' × 1.5'. (e) 1. (v) Nil. (vi) Type—41 (medium). (vii) Irrigat.d. (viii) 2 weedings, 1 thinning and 1 interculturing. (ix) 23.95%. (x) 16.10.1957.

### 2. TREATMENTS :

**Main-plot treatments :**

All combinations of (1) and (2) + control (3 plots).

(1) 3 sources of 36 lb./ac. of N : S<sub>1</sub>—A/S, S<sub>2</sub>—Urea and S<sub>3</sub>—A/S/N.

(2) 3 methods of application : M<sub>1</sub>—Basal dressing, M<sub>2</sub>—Top dressing and M<sub>3</sub>—Basal dressing + top dressing.

**Sub-plot treatments :**

2 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>—0 and P<sub>1</sub>—18 lb./ac.

### 3. DESIGN :

(i) Split-plot. (ii) (a) 12 main-plots/replication ; 2 sub-plots/main-plot. (b) 75' × 286'. (iii) 2. (iv) (a) 36' × 22'. (b) 33' × 18'. (v) 1.5' × 2'. (vi) Yes.

### 4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of grain. (iv) (a) 1957—1959. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

### 5. RESULTS :

(i) 768 lb./ac. (ii) (a) 159.7 lb./ac. (b) 165.0 lb./ac. (iii) Main effect of S, interaction S × M and 'control vs. others' are significant. (iv) Av. yield of grain in lb./ac.

Control = 671 lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>
M <sub>1</sub>	612	732	903	749	782	716
M <sub>2</sub>	872	769	708	783	805	761
M <sub>3</sub>	779	724	1101	868	924	812
Mean	754	742	904	800	837	763
P <sub>0</sub>	793	776	942			
P <sub>1</sub>	717	706	866			

S.E. of difference of two

1. M or S marginal means = 65.2 lb./ac.
  2. P marginal means = 55.0 lb./ac.
  3. P means at the same level of M or S = 95.3 lb./ac.
  4. M or S means at the same level of P = 93.7 lb./ac.
- S.E. of body of M × S table = 79.8 lb./ac.

**Crop :- Maize (Kharif).****Ref :- U.P. 58(39).****Site :- Reg. Res. Stn., Meerut.****Type :- 'M'.**

Object :—To study the effect of different methods of application of N and P on Maize.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Wheat. (c) N.A. (ii) (a) Silt loam. (b) Refer soil analysis, Meerut. (iii) 10.6.1958. (iv) (a) 1 ploughing by soil turning plough and 2 by *desi* plough. (b) Behind the plough. (c) 10 srs./ac. (d) 2'×1.5'. (e) 1. (v) Nil. (vi) T—41 (medium). (vii) Unirrigated. (viii) 1 weeding. (ix) 30.66". (x) 8.9.1958.

**2. TREATMENTS and 3. DESIGN :**

Same as in expt. no. 57(40) on page 670.

**4. GENERAL :**

(i) Germination and growth not good. Excessive rains created water logging conditions. (ii) Nil. (iii) Plant height and yield of grain. (iv) (a) 1957—1959. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 358 lb./ac. (ii) (a) 130.5 lb./ac. (b) 157.1 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

Control (P<sub>0</sub>+P<sub>1</sub>) = 290 lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>
M <sub>1</sub>	447	324	338	369	341	398
M <sub>2</sub>	421	359	290	357	368	345
M <sub>3</sub>	507	433	315	418	431	406
Mean	458	372	314	381	380	383
P <sub>0</sub>	491	383	266			
P <sub>1</sub>	425	361	363			

S.E. of difference of two

1. M or S marginal means = 53.7 lb./ac.
  2. P marginal means = 52.4 lb./ac.
  3. P means at the same level of M or S = 90.7 lb./ac.
  4. M or S means at the same level of P = 83.4 lb./ac.
- S.E. of body of M×S table = 65.3 lb./ac.

**Crop :- Maize (Kharif).****Ref :- U.P. 59(43).****Site :- Reg. Res. Stn., Meerut.****Type :- 'M'.**

Object :—To study the effect of different methods of application of N and P on Maize.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Wheat. (c) G.M. by *dhaincha*. (ii) (a) Silt loam. (b) Refer soil analysis, Meerut. (iii) 12.6.1959. (iv) (a) 1 ploughing by soil turning plough and 2 by *desi* plough. (b) By dibbling in rows 2' apart. (c) 10 srs./ac. (d) 1½'×2'. (e) 2. (v) Nil. (vi) T—41 (medium). (vii) Irrigated. (viii) N.A. (ix) 17.18". (x) 8.9.1959.

**2. TREATMENTS :**

Same as in expt. no. 57(40) on page 670.



## 3. DESIGN :

(i) Split-plot. (ii) (a) 12 main-plots/replication ; 2 sub-plots/main-plot. (b) 56' × 357'. (iii) 2. (iv) (a) 27' × 26'. (b) 24' × 22½'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Average. (ii) Dusting and nipping on the borer affected plants on 20.7.1959. Dusting on 24.7.1959 by B.H.C. and Gammexane at 25 lb./ac. (iii) Germination and yield of grain. (iv) (a) 1957—1959. (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 963 lb./ac. (ii) (a) 261.7 lb./ac. (b) 202.5 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

Control ( $P_0 + P_1$ ) = 960 lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>
M <sub>1</sub>	851	902	920	891	775	1007
M <sub>2</sub>	983	827	1105	971	956	987
M <sub>3</sub>	875	1056	1159	1030	1065	994
Mean	903	928	1061	964	932	996
P <sub>0</sub>	866	859	1072			
P <sub>1</sub>	939	998	1051			

S.E. of difference of two

1. M or S marginal means = 106.8 lb./ac.
  2. P marginal means = 67.5 lb./ac.
  3. P means at the same level of M or S = 116.9 lb./ac.
  4. M or S means at the same level of P = 135.1 lb./ac.
- S.E. of body of M × S table = 130.9 lb./ac.

Crop :- Maize (*Kharif*).

Ref :- U.P. 57(MAE).

Site :- B. R. College Insttl. Res. Farm, Bichpuri.

Type :- 'M'.

Object :- Type III - To study the effect of continuous application of manures on Maize.

## 1. BASAL CONDITIONS :

(i) (a) Maize - Pea - *Moong* T<sub>1</sub> - Wheat. (b) and (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Bichpuri. (iii) 10.7.1957. (iv) (a) 1 ploughing with tractor. (b) Sown in lines behind the plough. (c) N.A. (d) 18" × 12". (e) N.A. (v) Nil. (vi) Type-41 (80 days). (vii) Irrigated. (viii) 1 weeding. (ix) 30". (x) 29.9.1957.

## 2. TREATMENTS

Treatment	1	2	3	4	5	6	7	8
1st year	M	M	M	M	0	0	0	0
2nd year	M	M	0	0	M	M	0	0
3rd year	M	0	M	0	M	0	M	0

Notation : 0 = Control and M = 30 lb./ac. of N as A/S + 30 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 2. (iv) (a) 32' × 18'. (b) 29' × 15'. (v) 1.5' × 1.5'. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1957 - contd. (1st crop). (b) Yes. (c) N.A. (v) to (vii) Nil.

## 5. RESULTS :

(i) 461 lb./ac. (ii) 178.8 lb./ac. (iii) Treatment difference is highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	M	0
Av. yield	650	272

S.E./mean = 63.2 lb./ac.

**Crop :- Maize (Kharif).**

**Ref :- U.P. 57(MAE).**

**Site :- Govt. Res. Farm, Pura.**

**Type :- 'M'.**

Object :- Type VI(TCM)—To study the effect of continuous application of N and P on Maize.

## 1. BASAL CONDITIONS :

(i) (a) Wheat—Maize—Pea—Fallow. (b) Wheat. (c) As per treatments. (ii) (a) Alluvial soil. (b) Refer soil analysis, Pura. (iii) 2.7.1957. (iv) (a) 2 ploughings with *desi* plough. (b) Sown behind the plough. (c) 12 lb./ac. (d) 18". (e) N.A. (v) Nil. (vi) Type—41 (80 days). (vii) Irrigated: (viii) 2 weedings. (ix) N.A. (x) 21.9.1957.

## 2. TREATMENTS :

Treatment	1	2	3	4	5	6	7	8	9	10	11	12
1st crop	0	C	C	C	C	C	C	P <sub>1</sub>	P <sub>2</sub>	P <sub>½</sub>	P <sub>1</sub>	P <sub>2</sub>
2nd crop	0	C	C	C	C	P <sub>1</sub>	P <sub>2</sub>	C	C	P <sub>½</sub>	P <sub>1</sub>	P <sub>2</sub>
3rd crop	0	C	C	P <sub>1</sub>	P <sub>2</sub>	C	C	C	C	P <sub>½</sub>	P <sub>1</sub>	P <sub>2</sub>

There are only 11 distinct treatments. Plots under one treatment do not receive any fertilizer. Plots under other ten treatments receive a basal dose of N. One of the ten treatments consists of the application of basal dose of N only. This treatment which serves as a control is applied to two plots in each block. Various symbols are : 0=No manure, C=20 lb./ac. of N, p<sub>½</sub> = 10, p<sub>1</sub>=20 and p<sub>2</sub>=40 lb./ac. of P<sub>2</sub>O<sub>5</sub>.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 2. (iv) (a) N.A. (b) 45'×16'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) *Kharif* 1955—contd. (4th crop): (b) Yes. (c) N.A. (v) (a) Varanasi. (b) Nil. (vi) Crop suffered due to continuous and heavy rains. (vii) Nil.

## 5. RESULTS :

(i) 481 lb./ac. (ii) 165.2 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2,3	4	5	6	7	8	9	10	11	12
Av. yield	370	576	453	428	337	551	543	321	510	765	346

S.E./mean except (2, 3)=116.8 lb./ac. ; S.E. for (2, 3)=82.6 lb./ac.

**Crop :- Maize (Kharif).**

**Ref :- U.P. 58(MAE).**

**Site :- Govt. Res. Farm, Pura.**

**Type :- 'M'.**

Object :- Type VI (TCM)—To study the effect of continuous application of N and P on Maize.

## 1. BASAL CONDITIONS :

(i) (a) Wheat—Maize—Pea—Fallow. (b) Wheat. (c) As per treatments. (ii) (a) Alluvial soil. (b) Refer soil analysis, Pura. (iii) 2nd week of July, 1958. (iv) (a) 2 ploughings. (b) N.A. (c) 15 lb./ac. (d) 18"×9". (e) N.A. (v) Nil. (vi) Type—41 (90 days). (vii) Irrigated. (viii) 2 weedings. (ix) N.A. (x) 1st week of Oct. 1958.

## 2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 57(MAE) type VI (TCM) on page 673.

## 5. RESULTS :

(i) 585 lb./ac. (ii) 153.3 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2,3	4	5	6	7	8	9	10	11	12
Av. yield	400	665	400	600	727	328	820	580	660	680	500

S.E./mean except (2, 3) = 108.4 lb./ac. ; S.E. for (2, 3) = 76.6 lb./ac.

**Crop :- Maize (Kharif) .**

**Ref :- U.P. 59(MAE).**

**Site :- Govt. Res. Farm, Pura.**

**Type :- 'M'.**

Object :—Type VI(TCM)—To study the effect of continuous application of N and P on Maize.

## 1. BASAL CONDITIONS :

(i) (a) Wheat—Maize—Pea—Fallow. (b) Wheat. (c) As per treatments. (ii) (a) Alluvial soil. (b) Refer soil analysis, Pura. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

## 2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 57(MAE) type VI (TCM) conducted at Pura on page 673.

## 5. RESULTS :

(i) 1057 lb./ac. (ii) 480.5 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2,3	4	5	6	7	8	9	10	11	12
Av. yield	1399	1185	1094	1037	897	494	1317	1720	798	1201	362

S.E./mean except (2, 3) = 339.8 lb./ac. ; S.E. for (2, 3) = 240.2 lb./ac.

**Crop :- Maize (Kharif).**

**Ref :- U.P. 57(MAE)**

**Site :- Reg. Res. Stn., Varanasi.**

**Type :- 'M'.**

Object :— Type VI (TCM)—To study the effect of continuous application of N and P on Maize.

## 1. BASAL CONDITIONS :

(i) (a) Wheat—Maize—Pea—Fallow. (b) Wheat. (c) As per treatments. (ii) (a) Alluvial soil. (b) Refer soil analysis, Varanasi. (iii) 27.6.1957. (iv) (a) 6 ploughings. (b) Sown behind the plough. (c) 20 lb./ac. (d) 18°×9°. (e) N.A. (v) Nil. (vi) Local (77 days). (vii) Irrigated. (viii) 3 weedings and hoeing. (ix) 39°. (x) 3rd week of Sept., 1957.

## 2. TREATMENTS :

Same as in expt. no. 57(MAE) type VI (TCM) conducted at Pura on page 673.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N A. (iii) 2. (iv) (a) N.A. (b) 23'×48'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1955—contd. (b) Yes. (c) N.A. (v) (a) Varanasi. (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 939 lb./ac. (ii) 198.2 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2,3	4	5	6	7	8	9	10	11	12
Av. yield	716	1210	864	872	963	1037	691	798	1053	996	856

S.E./mean except (2, 3) = 140.1 lb./ac. and S.E. for (2, 3) = 99.1 lb./ac.

**Crop :- Maize (Kharif).**

**Ref :- U.P. 58(MAE).**

**Site :- Reg. Res. Stn., Varanasi.**

**Type :- 'M'.**

Object :— Type VI (TCM)—To study the effect of continuous application of N and P on Maize.

**1. BASAL CONDITIONS :**

(i) (a) Wheat—Maize—Pea—Fallow. (b) Wheat. (c) As per treatments. (ii) (a) Loam soil. (b) Refer soil analysis, Varanasi. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

**2. TREATMENTS :**

Same as in expt. no. 57(MAE) type VI (TCM) conducted at Pura on page 673.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 2. (iv) (a) N.A. (b) 23'×48'. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1955—contd. (b) Yes. (c) N.A. (v) (a) Pura. (b) Nil. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 2304 lb./ac. (ii) 115.2 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2,3	4	5	6	7	8	9	10	11	12
Av. yield	1448	2831	2436	979	1481	1547	4347	2633	1300	2065	3752

S.E./mean except (2, 3) = 81.5 lb./ac. ; S.E. for (2, 3) = 57.6 lb./ac.

**Crop :- Maize (Kharif).**

**Ref :- U.P. 59(MAE).**

**Site :- Reg. Res. Stn., Varanasi.**

**Type :- 'M'.**

Object :— Type VI (TCM)—To study the effect of continuous application of N and P on Maize.

**1. BASAL CONDITIONS :**

(i) (a) Wheat—Maize—Pea—Fallow. (b) Wheat. (c) As per treatment. (ii) (a) Loam soil. (b) Refer soil analysis, Varanasi. (iii) 7.6.1959. (iv) (a) to (e) N.A. (v) Nil. (vi) Type—41 (95 days). (vii) Irrigated. (viii) and (ix) N.A. (x) 10.9.1959.

**2. TREATMENTS :**

Same as in expt. no. 57(MAE) type VI (TCM) conducted at Pura on page 673.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 2. (iv) (a) N.A. (b) 23'×48'. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) Normal. (ii) N.A. (iii) Grain yield. (iv) (a) 1955—contd. (b) Yes. (c) N.A. (v) (a) Pura. (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1200 lb./ac. (ii) 231.7 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

Treatment	1	2,3	4	5	6	7	8	9	10	11	12
Av. yield	963	1201	1218	987	1613	979	1168	1407	1070	1251	1341

S.E./mean except (2, 3) = 163.8 lb./ac. ; S.E. for (2, 3) = 115.8 lb./ac.

**Crop :- Maize (Kharif).**

**Ref :- U.P. 59(SFT).**

**Centre :- Bulandshahr (c.f.).**

**Type :- 'M'.**

Object :—Type A—To study the response of Maize to levels of N, P and K applied individually and in combinations.

### 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Alluvial. (iii) to (v) N.A. (vi) June—July, 1959. (vii) Unirrigated. (viii) and (ix) N.A. (x) October, 1959.

### 2. TREATMENTS :

0 =Control (no manure).

n =20 lb./ac. of N as A/S.

p =20 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.

np =20 lb./ac. of N as A/S+20 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.

k =20 lb./ac. of K<sub>2</sub>O as Mur. Pot.

nk =20 lb./ac. of N as A/S+20 lb./ac. of K<sub>2</sub>O as Mur. Pot.

pk =20 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super+20 lb./ac. of K<sub>2</sub>O as Mur. Pot.

npk =20 lb./ac. of N as A/S+20 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super+20 lb./ac. of K<sub>2</sub>O as Mur. Pot.

### 3. DESIGN :

(i) and (ii) The district has been divided into four agriculturally homogeneous zones and one field assistant has been posted in each zone. The field assistant conducts the trials in one revenue circle or *thana* in the zone and the circle/*thana* is changed once in two years within the same zone. Each field assistant is required to conduct 31 trials in a year, 8 on a *kharif* cereal, 8 on a *rabi* cereal, 8 on cash crops, 4 on an oilseed crop and 3 on a leguminous crop. Half the number of trials conducted are of type A and the other half of type B on crops other than the legumes. The three trials on legumes are of type C. Residual effects of phosphate application are studied on type C trials in two out of the four zones in each district every year. The above experiments are laid out in randomly located fields in randomly selected villages in each of the 4 zones at the rate of one experiment per village. (iii) (a) N.A. (b) 1/80 ac. (iv) Yes.

### 4. GENERAL :

(i) Normal. (ii) N.A. (iii) Grain yield. (iv) (a) 1959—contd (b) No. (c) N.A. (v) As per design. (vi) and (vii) Nil.

### 5. RESULTS :

Effect	n	p	k	S.E.	np	nk	pk	npk	S.E.
Av. response of grain in lb./ac.	123	91	16	12.3	—8	—16	8	16	12.3

Control yield = 1284 lb./ac. and no. of trials = 4.

**Crop :- Maize (Kharif).**

**Ref :- U.P. 59(SFT).**

**Centre :- Meerut (c.f.).**

**Type :- 'M'.**

Object :—Type A—To study the response of Maize to levels of N, P and K applied individually and in combinations.

### 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 59(SFT) type A above conducted at Bulandshahr.

## 5. RESULTS :

Effect	n	p	k	S.E.	np	nk	pk	npk	S.E.
Av. response of grain in lb./ac.	181	123	41	8.2	8	0	16	41	7.4

Control yield = 1226 lb./ac. and no. of trials = 8.

**Crop :- Maize (Kharif).**

**Ref :- U.P. 59(SFT).**

**Centre :- Muzaffarnagar (c.f.).**

**Type :- 'M'.**

Object :—Type A—To study the response of Maize to levels of N, P and K applied individually and in combinations.

## 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 59(SFT) type A on page 676 conducted at Bulandshahr.

## 5. RESULTS :

Effect	n	p	k	S.E.	np	nk	pk	npk	S.E.
Av. response of grain in lb./ac.	132	156	25	22.2	41	—16	16	8	25.5

Control yield = 897 lb./ac. and no. of trials = 4.

**Crop :- Maize (Kharif).**

**Ref :- U.P. 59(SFT).**

**Centre :- Bulandshahr (c.f.).**

**Type :- 'M'.**

Object :—Type B—To investigate the relative efficiency of different nitrogenous fertilizers at different doses.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Alluvial. (iii) to (v) Nil. (vi) June—July, 1959. (vii) Unirrigated. (viii) and (ix) N.A. (x) October, 1959.

## 2. TREATMENTS :

0 = Control (no manure).

$n_1$  = 20 lb./ac. of N as A/S.

$n_2$  = 40 lb./ac. of N as A/S.

$n_1'$  = 2 lb./ac. of N as Urea.

$n_2'$  = 40 lb./ac. of N as Urea.

$n_1''$  = 20 lb./ac. of N as A/S/N.

$n_2''$  = 40 lb./ac. of N as A/S/N.

## 3. DESIGN and 4. GENERAL :

Same as in expt. no. 59(SFT) type A on page 676 conducted at Bulandshahr.

## 5. RESULTS :

Treatment	0	$n_1$	$n_2$	$n_1'$	$n_2'$	$n_1''$	$n_2''$
Av. yield of grain in lb./ac.	1218	1440	1514	1415	1506	1432	1547

G.M. = 1439 lb./ac. ; S.E./mean = 30.3 lb./ac. and no. of trials = 4.

**Crop :- Maize (Kharif).**

**Ref :- U.P. 59(SFT).**

**Centre :- Meerut (c.f.).**

**Type :- 'M'.**

Object :—Type B—To investigate the relative efficiency of different nitrogenous fertilizers at different doses.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Alluvial. (iii) to (v) Nil. (vi) June—July, 1959. (vii) Unirrigated. (viii) and (ix) N.A. (x) October, 1959.

## 2. TREATMENTS :

0 = Control (no manure).  
 $n_1$  = 20 lb./ac. of N as A/S.  
 $n_2$  = 40 lb./ac. of N as A/S.  
 $n_1'$  = 20 lb./ac. of N as Urea.  
 $n_2'$  = 40 lb./ac. of N as Urea.  
 $n_1''$  = 20 lb./ac. of N as A/S/N.  
 $n_2''$  = 40 lb./ac. of N as A/S/N.

## 3. DESIGN and 4. GENERAL :

Same as in expt. no. 59(SFT) type A on page 676 conducted at Bulandshahr.

## 5. RESULTS :

Treatment	0	$n_1$	$n_2$	$n_1'$	$n_2'$	$n_1''$	$n_2''$
Av. yield of grain in lb./ac.	1349	1670	2008	1679	1958	1744	2000

G.M. = 1773 lb./ac. ; S.E./mean = 36.7 lb./ac. and no. of trials = 8.

**Crop :- Maize (*Kharif*).**

**Ref :- U.P. 59(SFT).**

**Centre :- Muzaffarnagar (c.f.)**

**Type :- 'M'.**

Object :—Type B—To investigate the relative efficiency of different nitrogenous fertilizers at different doses.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Alluvial. (iii) to (v) Nil. (vi) June—July, 1959. (vii) Unirrigated. (viii) and (ix) N.A. (x) October, 1959.

## 2. TREATMENTS :

0 = Control (no manure).  
 $n_1$  = 20 lb./ac. of N as A/S.  
 $n_2$  = 40 lb./ac. of N as A/S.  
 $n_1'$  = 20 lb./ac. of N as Urea.  
 $n_2'$  = 40 lb./ac. of N as Urea.  
 $n_1''$  = 20 lb./ac. of N as A/S/N.  
 $n_2''$  = 40 lb./ac. of N as A/S/N.

## 3. DESIGN and 4. GENERAL :

Same as in expt. no. 59(SFT) type A on page 676 conducted at Bulandshahr.

## 5. RESULTS :

Treatment	0	$n_1$	$n_2$	$n_1'$	$n_2'$	$n_1''$	$n_2''$
Av. yield of grain in lb./ac.	1119	1621	2049	1605	1958	1596	2032

G.M. = 1711 lb./ac. ; S.E./mean = 56.4 lb./ac. and no. of trials = 4.

**Crop :- Maize (*Kharif*).**

**Ref :- U.P. 58(253).**

**Site :- Allahabad Agri. Instt., Allahabad.**

**Type :- 'C'.**

Object :—The study the effect of different cultivation practices on Maize yield under dry farming conditions.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Fine sandy loam. (b) Refer soil analysis, Allahabad. (iii) 31.8.1958. (iv) (a) N.A. (b) Broadcast in rows. (c) 9 srs./ac. (d) and (e) N.A. (v) N.A. (vi) Jaunpur yellow. (vii) Unirrigated. (viii) As per treatments. (ix) and (x) N.A.

## 2. TREATMENTS :

4 cultural treatments : C<sub>1</sub>=Primary operation and interculture by local method, C<sub>2</sub>=Primary operation and interculture by cultivator, C<sub>3</sub>=Primary operations by mould-board plough, local interculture and 3 intercultures by cultivator and C<sub>4</sub>=Primary operations by mould-board plough and 6 intercultures by cultivator.

## 3. DESIGN :

(i) L. Sq. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 40'×40'. (v) 3'×3'. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1958—N.A. (b) No. (c) Nil (v) (a) and (b) N.A. (vi) Water logging, late rains, late sowing and resowing on 25.9.1958 where germination was poor. (vii) Nil.

## 5. RESULTS :

(i) 885 lb./ac. (ii) 615.9 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	C <sub>4</sub>
Av. yield	850	348	1111	1110

S.E./mean = 307.9 lb./ac.

**Crop :- Maize (Kharif).**

**Ref :- U.P. 58(140).**

**Site :- Reg. Res. Stn., Amrukh.**

**Type :- 'C'.**

Object :- To study the effect of cultural treatments on hot weather cultivation of Maize.

## 1. BASAL CONDITIONS :

(i) (a) to (c) Nil. (ii) (a) *Kabar* soil. (b) N.A. (iii) 14.7.1958. (iv) (a) As per treatments. (b) N.A. (c) 27½ srs./ac. (d) and (e) N.A. (v) F.Y.M. at 35 mds./ac. on 2.6.1958. and A/S at 70 lb./ac. on 14.7.1958. A/S top dressed on 19.8.1958. (vi) N.A. (vii) Unirrigated. (viii) 2 weedings. (ix) N.A. (x) 21.9.1958.

## 2. TREATMENTS :

3 cultural practices : C<sub>1</sub>=*Bakhering*+*Bakhering*, C<sub>2</sub>=*Bakhering*+*desi* ploughing and C<sub>3</sub>=*Bakhering*+*Mecormick* cultivator.

## 3. DESIGN :

(i) R B.D. (ii) (a) 3. (b) N.A. (iii) 8. (iv) (a) and (b) 54'×20'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1958—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1448 lb./ac. (ii) 509.1 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>
Av. yield	1395	1401	1547

S.E./mean = 180.0 lb./ac.



**Crop :- Maize (Kharif).****Ref :- U.P. 55(384).****Site :- Govt. Agri. Res. Farm, Kalianpur.****Type :- 'C'.**

Object :—To find out the effect of different spacings on the yield of Maize.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Kalianpur. (iii) 16.7.1955. (iv) (a) 2 ploughings by watts plough after *palewa*. Cultivated thrice with cultivator followed by planking. (b) Dibbling. (c) N.A. (d) and (e) As per treatments. (v) N.A. (vi) K.T.—41 (mid-late). (vii) Unirrigated. (viii) 1 hand weeding, earthing up of plants along rows except in treatment  $T_2$ . (ix) 39.2". (x) N.A.

**2. TREATMENTS :**

All combinations of (1) and (2)+2 extra treatments.

(1) 2 spacings :  $S_1=2' \times 1'$  and  $S_2=2' \times \frac{1}{2}'$ .(2) 2 numbers of plants/hill :  $P_1=1$  and  $P_2=2$ .Extra treatment :  $T_1$ =Almost continuous sowing with  $2' \times \frac{1}{4}'$  spacing and  $T_2$ =Broadcasting.**3. DESIGN :**(i) Youden's square. (ii) (a) 6. (b)  $24' \times 48'$ . (iii) 7. (iv) (a) and (b)  $24' \times 8'$ . (v) Nil. (vi) N.A.**4. GENERAL :**

(i) N.A. (ii) Negligible damage by stem-borer and aphid. (iii) Yield of grain. (iv) (a) 1954—1956. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Expt. conducted during 1954 not included as proper analysis could not be done in the absence of lay-out plan.

**5. RESULTS :**

(i) 1493 lb./ac. (ii) 477.5 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$S_1P_1$	$S_1P_2$	$S_2P_1$	$S_2P_2$	$T_1$	$T_2$
Av. yield	1550	1680	1602	1327	1716	1086

S.E./mean = 178.7 lb./ac.

**Crop :- Maize (Kharif).****Ref :- U.P. 56(439).****Site :- Govt. Agri. Res. Farm, Kalianpur.****Type :- 'C'.**

Object :—To find out the effect of different spacings on the yield of Maize.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Kalianpur. (iii) 6.7.1956. (iv) (a) 2 ploughings by watts plough after *palewa*, cultivated thrice with cultivator followed by planking. (b) Dibbling. (c) N.A. (d) and (e) As per treatments. (v) and (vi) N.A. (vii) Unirrigated. (viii) 1 hand weeding and earthing up of plants along rows except in treatment  $T_2$ . (ix) 31.17". (x) N.A.

**2. TREATMENTS to 4. GENERAL :**

Same as in expt. no. 55(384) above.

**5. RESULTS :**

(i) 2553 lb./ac. (ii) 479.7 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$S_1P_1$	$S_1P_2$	$S_2P_1$	$S_2P_2$	$T_1$	$T_2$
Av. yield	3082	2785	2950	2126	2403	1981

S.E./mean = 183.1 lb./ac.

**Crop :- Maize (Kharif).****Ref :- U.P. 58(360).****Site :- Reg. Res. Stn., Majhera.****Type :- 'C'.**

Object :—To study the effect of spacing on the yield of Maize.

**BASAL CONDITIONS :**

(i) (a) No. (b) Wheat. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Majhera. (iii) 5.7.1958.  
 (iv) (a) 2 ploughings. (b) As per treatments. (c) 4 srs./ac. (d) As per treatments. (e) N.A. (v) 40 lb./ac.  
 of N as G.N.C. and 66 lb./ac. of N as Urea. (vi) Local (medium). (vii) Unirrigated. (viii) 2 weeding, hoeings and earthings. (ix) N.A. (x) 22, 23.9.1958.

**2. TREATMENTS :**

3 spacings between rows and plants :  $S_1=2\frac{1}{2}' \times 1'$ ,  $S_2=2' \times 1'$  and  $S_3=1\frac{1}{2}' \times 1'$ .

**3. DESIGN :**

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 4. (iv) (a) and (b)  $30' \times 20'$ . (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Normal growth. (ii) Nil. (iii) Germination percentage and yield of grain. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Heavy rains and storm. (vii) Nil.

**5. RESULTS :**

(i) 962 lb./ac. (ii) 365.4 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	$S_1$	$S_2$	$S_3$
Av. yield	719	838	1330

S.E./mean = 182.7 lb./ac.

**Crop :- Maize (Kharif).****Ref :- U.P. 56(79).****Site :- State Soil Cons. Res. Demons & Trg. Centre, Rehmankhara. Type :- 'C'.**

Object :—To find out suitable method of sowing Maize in order to check the erosion of the soil.

**1. BASAL CONDITIONS :**

(i) (a) No. (b) and (c) N.A. (ii) (a) Loamy sand to sandy loam. (b) Refer soil analysis, Rehmankhara. (iii) 3.7.1956. (iv) (a) Preparation of land. (b) As per treatments. (c) 8 srs./ac. (d) As per treatments. (e) N.A. (v) 200 mds./ac. of F.Y.M. (vi) T-41 (medium). (vii) Unirrigated. (viii) 1 weeding. (ix) N.A. (x) 21.9.1956.

**2. TREATMENTS :**

3 cultural treatments :  $C_1$ =Sown on flat  $1' \times 1'$  apart,  $C_2$ =Sown on ridges up and down the slope  $1'$  apart from centre to centre. Plants being  $1'$  apart on the ridges and  $C_3$ =Sown on ridges across the slope and  $1'$  apart from centre to centre plants being  $1'$  apart on the ridges.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 5. (iv) (a)  $60' \times 22'$ . (b)  $56' \times 18'$ . (v)  $2' \times 2'$ . (vi) Yes.

**4. GENERAL :**

(i) Normal. (ii) No. (iii) Yield of grain. (iv) (a) 1956—1959 (modified). (b) Yes. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1767 lb./ac. (ii) 401.1 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of grain in lb./ac.

Treatment	$C_1$	$C_2$	$C_3$
Av. yield	1382	1756	2164

S.E./mean = 179.4 lb./ac.

**Crop :- Maize (Kharif).****Ref :- U.P. 57(114).****Site :- State Soil Cons. Res. Demons & Trg. Centre, Rehmanckhera. Type :- 'C'.**

Object :- To find out suitable method of sowing Maize in order to check the erosion of the soil.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loamy sand to sandy loam. (b) Refer soil analysis, Rehmanckhera. (iii) 19, 20.7.1957. (iv) (a) N.A. (b) As per treatments. (c) 8 srs./ac. (d) As per treatments. (e) N.A. (v) N.A. (vi) T-41 (medium). (vii) Unirrigated. (viii) 1 thinning, 1 weeding and 1 hoeing. (ix) N.A. (x) 2.10.1957.

**2. TREATMENTS :**

3 cultural treatments : C<sub>1</sub>=Sown on flat 1½' × 9" apart, C<sub>2</sub>=Sown on ridges up and down the slope 1.5' apart from centre to centre and C<sub>3</sub>=Sown on ridges.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 5. (iv) (a) 60' × 20'. (b) 56' × 18'. (v) 2' × 1'. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1956—1959. (b) Yes. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 768 lb./ac. (ii) 380.4 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>
Av. yield	510	762	1033

S.E./mean = 170.1 lb./ac.

**Crop :- Maize (Kharif).****Ref :- U.P. 58(116).****Site :- State Soil Cons. Res. Demons & Trg. Centre, Rehmanckhera. Type :- 'C'.**

Object :- To find out suitable method of sowing Maize in order to check the erosion of the soil.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loamy sand to sandy loam. (b) Refer soil analysis, Rehmanckhera. (iii) N.A. (iv) (a) Preparation of land. (b) As per treatments. (c) 8 srs./ac. (d) As per treatments. (e) N.A. (v) N.A. (vi) T-41 (medium). (vii) Unirrigated. (viii) to (x) N.A.

**2. TREATMENTS :**

3 cultural treatments : C<sub>1</sub>=Sown on flat 1½' × 9" apart, C<sub>2</sub>=Sown on ridge, up and down the slope and 6' apart from centre to centre. Plants being 9" apart on the ridges and C<sub>3</sub>=Sown on the ridges across the slope and 1½' apart from centre to centre. Plants being 9" apart on the ridges.

**3. DESIGN and 4. GENERAL :**

Same as in expt. no. 57(114) above.

**5. RESULTS :**

(i) 1365 lb./ac. (ii) 355.9 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>
Av. yield	1454	1458	1182

S.E./mean = 159.2 lb./ac.

**Crop :- Maize (Kharif).**

**Ref:- U.P. 59(109).**

**Site :- State Soil Cons. Res. Demons. & Trg. Centre, Rehmankhara. Type :- 'C'.**

Object :— To find out suitable method of sowing Maize in order to check the erosion of the soil.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loamy sand to sandy loam. (b) Refer soil analysis, Rehmankhara. (iii) 7.7.1959. (iv) (a) Summer cultivation while mixing with compost. Harvesting and planking. (b) As per treatments. (c) 8 srs./ac. (d) As per treatments. (e) N.A. (v) N.A. (vi) T-41 (medium). (vii) Unirrigated. (viii) and (ix) N.A. (x) 29.9.1959.

**2. TREATMENTS :**

3 cultural treatments : C<sub>1</sub>=Sown on flat 1½' × 9", C<sub>2</sub>=Sown on ridges up and down the slope 6" apart from centre to centre and C<sub>3</sub>=Sown on ridges.

**3. DESIGN and 4. GENERAL :**

Same as in expt. no. 57(114) on page 682.

**5. RESULTS :**

(i) 1683 lb./ac. (ii) 386.2 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>
Av. yield	1597	1756	1696

S.E./mean = 172.7 lb./ac.

**Crop :- Maize (Kharif).**

**Ref :- U.P. 54(219).**

**Site :- B.R. College Insttl. Res. Farm, Bichpuri.**

**Type :- 'CM'.**

Object :—To study the effect of manuring and spacing on Maize.

**1. BASAL CONDITIONS :**

(i) (a) No. (b) Wheat. (c) N.A. (ii) (a) Sandy loam with low nitrogen contents. (b) Refer soil analysis, Bichpuri. (iii) 29.7.1954. (iv) (a) 1 disc harrow, 1 cross discing, 1 planking and 3 ploughings. (b) Planted in furrows opened by *desi* plough. (c) N.A. (d) 2' between rows. Between plants as per treatments. (e) N.A. (v) 40 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super. (vi) T-4111. (vii) Irrigated. (viii) Thinning and weeding. (ix) 20.19". (x) 11.10.1954.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 4 levels of N as A/S : N<sub>0</sub>=0, N<sub>1</sub>=25, N<sub>2</sub>=50 and N<sub>3</sub>=75 lb./ac.

(2) 3 spacings between plants in rows : S<sub>1</sub>=6", S<sub>2</sub>=12" and S<sub>3</sub>=18".

Fertilizers placement at the time of sowing.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 18' × 24'. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Mild attack of grass hoppers. (iii) Stand, shoot height, cobs for plant and grain yield. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1449 lb./ac. (ii) 287.5 lb./ac. (iii) Main effect of N is highly significant. S effect and interaction N × S are significant. (iv) Av. yield of grain in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	Mean
S <sub>1</sub>	996	1459	1754	2182	1598
S <sub>2</sub>	938	1343	1761	2044	1521
S <sub>3</sub>	810	1266	1462	1379	1227
Mean	915	1356	1659	1865	1449

S.E. of N marginal mean = 83.0 lb./ac.  
 S.E. of S marginal mean = 71.9 lb./ac.  
 S.E. of body of table = 143.7 lb./ac.

**Crop :- Maize (Kharif).**

**Ref :- U.P. 59(11).**

**Site :- Reg. Res. Stn., Hardoi.**

**Type :- 'CM'.**

**Object :-** To study the effect of manures along with spacings and dates of sowing on hybrid Maize.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Hardoi. (iii) As per treatments. (iv) and (v) N.A. (vi) Hybrid—Maize. (vii) Irrigated. (viii) 1 weeding. (ix) and (x) N.A.

**2. TREATMENTS :**

**Main-plot treatments :**

2 levels of manures : M<sub>1</sub>=75 lb./ac. of N as Urea+75 lb./ac. of P<sub>2</sub>O<sub>5</sub> as single Super and M<sub>2</sub>=2M<sub>1</sub>.

**Sub-plot treatments :**

All combinations of (1) and (2)

(1) 3 spacings : S<sub>1</sub>=3'×1', S<sub>2</sub>=2½'×9" and S<sub>3</sub>=2'×9".

(2) 2 dates of sowing : D<sub>1</sub>=12.6.1959 and D<sub>2</sub>=26.6.1959.

Half dose of N as basal and half as top dressing. P<sub>2</sub>O<sub>5</sub> applied as basal dressing.

**3. DESIGN :**

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 6 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) and (b) 30'×20'. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) to (iii) N.A. (iv) (a) 1959—contd. (b) Yes. (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 3000 lb./ac. (ii) (a) 522.7 lb./ac. (b) 490.8 lb./ac. (iii) Main effect of S is highly significant. (iv) Av. yield of grain in lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean	D <sub>1</sub>	D <sub>2</sub>
M <sub>1</sub>	2750	2828	3370	3018	2891	3074
M <sub>2</sub>	2875	2673	3506	2982	3192	2844
Mean	2812	2750	3438	3000	3041	2959
D <sub>1</sub>	2881	2626	3618			
D <sub>2</sub>	2744	2875	3258			

**S.E. of difference of two**

- |                                   |                 |                                   |                 |
|-----------------------------------|-----------------|-----------------------------------|-----------------|
| 1. M marginal means               | = 174.2 lb./ac. | 5. M means at the same level of D | = 239.0 lb./ac. |
| 2. S marginal means               | = 200.4 lb./ac. | 6. S means at the same level of M | = 283.4 lb./ac. |
| 3. D marginal means               | = 163.6 lb./ac. | 7. M means at the same level of S | = 289.7 lb./ac. |
| 4. D means at the same level of M | = 231.3 lb./ac. | S.E. of body of S×D table         | = 200.4 lb./ac. |

**Crop :- Maize (Kharif).****Ref :- U.P. 56(242).****Site :- Govt. Agri. College, Kanpur.****Type :- 'CM'.**

Object :- To study the effect of cultural and manurial treatments on Maize.

**1. BASAL CONDITIONS :**

(i) (a) No. (b) Barley. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Kanpur. (iii) 19.7.1956.  
 (iv) (a) 1 ploughing with victory plough, ploughing with *desi* plough and 1 planking. (b) In furrows opened by *desi* plough. (c) 20 lb./ac. (d) 20" between rows. (e) N.A. (v) 8 C.L./ac. of F.Y.M. (vi) T--41.  
 (vii) Unirrigated. (viii) 2 weedings and 1 hoeing with *khurpi*. (ix) N.A. (x) 5.10.1956.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 3 sources of N at 60 lb./ac. :  $S_0$ =Control,  $S_1$ =A/S and  $S_2$ =Urea.(2) 2 seed treatment with cerasan :  $T_0$ =Untreated and  $T_1$ =Treated seeds in 1 : 400 ratio.(3) 2 levels of earthing operation :  $E_0$ =No earthing and  $E_1$ =Earthing.

Fertilizers mixed with soil and broadcast on 8.8.1956.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 12. (b) 180'×242'. (iii) 4. (iv) (a) 19'×41'. (b) 15'×37'. (v) 2'×2'. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Nil. (iii) Germination, shoot height, leaf area, stand at harvest and grain yield. (iv) (a) and (b) No. (c) Nil. (v) and (vi) Nil. (vii) Two-way tables are not available.

**5. RESULTS :**

(i) 2839 lb./ac. (ii) 379.2 lb./ac. (iii) Main effect of S is highly significant and T is significant. (iv) Av. yield of grain in lb./ac.

Treatment	$S_0$	$S_1$	$S_2$	$T_0$	$T_1$	$E_0$	$E_1$
Av. yield	2518	2905	3094	2728	2950	2781	2896
	S.E. of N marginal mean				= 94.8 lb./ac.		
	S.E. of T or E marginal mean				= 77.4 lb./ac.		

**Crop :- Maize (Kharif).****Ref :- U.P. 58(260).****Site :- Govt. Agri. College, Kanpur.****Type :- 'CM'.**

Object :- To study the effects of various spacings and different levels of N on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) No. (b) Wheat. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Kanpur. (iii) 2.8.1958.  
 (iv) (a) 5 ploughings followed by planking. (b) N.A. (c) 8 srs./ac. (d) N.A. (e) 2. (v) Nil. (vi) T--41 (late). (vii) Unirrigated. (viii) Thinning after 15 days of sowing, leaving 1 plant/hill, 2 weedings and 2 hoeings. (ix) 18.70". (x) 20.10.1958.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 3 levels of N as A/S :  $N_1$ =30,  $N_2$ =60 and  $N_3$ =90 lb./ac.(2) 4 spacings :  $S_1$ =1'×1',  $S_2$ =2'×1',  $S_3$ =2'×1.5' and  $S_4$ =2'×2'.

½ dose of A/S broadcast mixed with equal quantity of fine earth before planting. Another ½ dose after 36 days of sowing by ring placement method.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 12. (b) 240'×161'. (iii) 4. (iv) (a) 34'×17'. (b) 31'×14'. (v) 1.5'×1.5'. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Chilozonelbus noticed in the last week of August and negligible damage was done. Grass hoppers also attacked the crop. Leaf spot was common. (iii) Shoot height, leaf area, girth of plants and grain yield. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1329 lb./ac. (ii) 111.4 lb./ac. (iii) Main effects of N and S are highly significant. (iv) Av. yield of grain in lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>	Mean
N <sub>1</sub>	1836	1157	986	758	1184
N <sub>2</sub>	2087	1318	1063	903	1343
N <sub>3</sub>	2232	1465	1129	1020	1461
Mean	2052	1313	1059	894	1329

S.E. of N marginal mean = 27.8 lb./ac.  
 S.E. of S marginal mean = 32.2 lb./ac.  
 S.E. of body of table = 55.7 lb./ac.

**Crop :- Maize (Kharif).**

**Ref :- U.P. 59(307).**

**Site :- Govt. Agri. College, Kanpur.**

**Type :- 'CM'.**

**Object :-** To study the effect of direction of sowing, spacing and levels of N on Maize.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) Tomato. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Kanpur. (iii) 31.7.1959. (iv) (a) 3 ploughings and 1 planking. (b) Drilling. (c) 10 srs./ac. (d) As per treatments. (e) 2. (v) Nil. (vi) T-41. (vii) Irrigated. (viii) Thinning, gap sowing, 1 weeding and 2 hoeings. (ix) 15.5". (x) 19, 20.10.1959.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 2 spacings : S<sub>1</sub>=2' × 1' and S<sub>2</sub>=3' × 8".

(2) 2 levels of N as Urea : N<sub>1</sub>=45 and N<sub>2</sub>=90 lb./ac.

(3) 2 directions of sowing : D<sub>1</sub>=North-South and D<sub>2</sub>=East-West.

Urea broadcast on 1.8.1959 (1st dose). 90 lb./ac. of N dose was split into two. The second dose was applied after 36 days of sowing.

## 3. DESIGN :

(i) R B D. (ii) (a) 8. (b) 192' × 122'. (iii) 4. (iv) (a) 26' × 14'. (b) 24' × 10'. (v) 1' × 2'. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Maize stem borer. (iii) Germination, shoot height, leaf area and grain yield. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 2328 lb./ac. (ii) 252.3 lb./ac. (iii) Main effect of D is highly significant. (iv) Av. yield of grain in lb./ac.

	D <sub>1</sub>	D <sub>2</sub>	Mean	N <sub>1</sub>	N <sub>2</sub>
S <sub>1</sub>	2555	2181	2418	2251	2585
S <sub>2</sub>	2361	2116	2238	2232	2245
Mean	2508	2148	2328	2241	2415
N <sub>1</sub>	2403	2080			
N <sub>2</sub>	2613	2217			

S.E. of any marginal mean = 63.1 lb./ac.  
 S.E. of body of any table = 89.2 lb./ac.

**Crop :- Maize (Kharif).****Ref :- U.P. 57(269).****Site :- B.R. College Insttl. Res. Farm, Bichpuri****Type :- 'CMV'.**

Object :—To study the effect of variation in plant density and soil fertility on growth and yield of two varieties of Maize.

**1. BASAL CONDITIONS :**

(i) (a) No. (b) Wheat. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Bichpuri. (iii) 6.7.1955. (iv) (a) 1 *palewa*, 2 ploughings with a tractor drawn off set disc harrow. (b) Behind the plough. (c) N.A. (d) Lines 3' apart. (e) N.A. (v) 40 lb./ac. of  $P_2O_5$  as Super. (vi) As per treatments. (vii) 8.8.1957. (vi.i) 1 ridge making, 1 thinning, 2 weedings and 1 hoeing. (ix) 32.14". (x) 26.9.1957.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 2 varieties :  $V_1=T-4111$  and  $V_2=Kansas-1639$ .

(2) 3 plant to plant spacings :  $S_1=12''$ ,  $S_2=18''$  and  $S_3=24''$ .

(3) 3 levels of N as A/S :  $N_1=40$ ,  $N_2=80$  and  $N_3=120$  lb./ac.

A/S applied in 2 equal doses at sowing time (broadcast) and 22 days after sowing (placement).

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 18. (b) N.A. (iii) 3. (iv) (a)  $36' \times 21'$ . (b)  $30' \times 15'$ . (v)  $3' \times 3'$  (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) and (b) No. (c) Nil. (v) and (vi) Nil. (vii) Two-way tables are not available in the records.

**5. RESULTS :**

(i) 762 lb./ac. (ii) 158.5 lb./ac. (iii) Main effects of V, S, N and interaction  $N \times S$  are highly significant. Interaction  $V \times S$  is significant. (iv) Av. yield of grain in lb./ac.

Treatment	$V_1$	$V_2$	$S_1$	$S_2$	$S_3$	$N_1$	$N_2$	$N_3$
Av. yield	849	675	988	747	551	569	756	962

S.E. of N or S marginal mean = 37.4 lb./ac.

S.E. of V marginal mean = 30.5 lb./ac.

**Crop :- Maize (Kharif).****Ref :- U.P. 56(186).****Site :- B.R. College Insttl. Res. Farm, Bichpuri.****Type :- 'D'.**

Object :— To study the comparative effect of chemical and mechanical method of weed control in Maize crop.

**1. BASAL CONDITIONS :**

(i) (a) No. (b) and (c) N.A. (ii) (a) Light loam. (b) Refer soil analysis, Bichpuri. (iii) 6.8.1956. (iv) (a) and (b) N.A. (c) 8 srs./ac. (d)  $18'' \times 6''$ . (e) N.A. (v) Nil. (vi) T-4111. (vii) Unirrigated. (viii) N.A. (ix) 36.30". (x) N.A.

**2. TREATMENTS :**

All combinations of (1), (2) and (3) + 5 extra treatments

(1) 5 chemicals :  $W_1=2, 4-D$  acetic acid (4 lb./ac. in case of pre-emergence and 2 lb./ac. in case of emergence),  $W_2=2, 4-D$  acetamide (doses as in  $W_1$ ),  $W_3=Crag$  herbicide (2, 4-D ethyl sulphate, doses as in  $W_1$ ),  $W_4=Trichlorobenzonic$  acid (1.5 lb./ac. in case of pre-emergence and 0.5 lb./ac. in case of emergence) and  $W_5=General$  weed killer (6.0 lb./ac. in case of pre-emergence and 4.0 lb./ac. in case of emergence).

(2) 2 times of application :  $E_1=Pre-emergence$  (3rd day after sowing and  $E_2=Emergence$  (10th day after the sowing).

(3) 2 post-emergence operations :  $P_1=Spraying$  with 2, 4-D sodium salt at 1.25 lb./ac. on 45th day after sowing and  $P_2=Cultivation$  (45th day after sowing).

Extra treatments :  $T_0=Control$  (no weeding),  $T_1=Hand$  weeding on 21st day ( $H_1$ ) +  $P_1$ ,  $T_2=H_1 P_2$ ,  $T_3=No$  weeding upto 45th day ( $H_2$ ) +  $P_1$  and  $T_4=H_2 P_2$ .



## 3. DESIGN :

(i) R.B.D. (ii) (a) 25. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 18'×12'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Weed density, no. of leaves and yield of grain. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 814 lb./ac. (ii) 289.0 lb./ac. (iii) Main effect P and interaction W×E are highly significant. E effect is significant. (iv) Av. yield of grain in lb./ac.

$T_0=580, T_1=878, T_2=943, T_3=839$  and  $T_4=1029$  lb./ac.

	W <sub>1</sub>	W <sub>2</sub>	W <sub>3</sub>	W <sub>4</sub>	W <sub>5</sub>	Mean	E <sub>1</sub>	E <sub>2</sub>
P <sub>1</sub>	737	565	793	762	625	696	556	737
P <sub>2</sub>	952	1075	941	786	801	911	799	1024
Mean	845	820	867	774	713	804	727	880
E <sub>1</sub>	468	720	889	690	868			
E <sub>2</sub>	1221	920	845	858	558			

S.E. of W marginal mean	=	83.4 lb./ac.
S.E. of P or E marginal mean	=	52.8 lb./ac.
S.E. of body of P×W or E×W table	=	118.0 lb./ac.
S.E. of E×P table	=	74.6 lb./ac.
S.E. of T mean	=	166.9 lb./ac.

**Crop :- Maize.**

**Ref :- U.P. 54(85).**

**Site :- Govt. Agri. Res. Farm, Kalianpur.**

**Type :- 'D'.**

**Object :-** To study the effect of fungicide on the yield of Maize.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) Mustard. (c) G.M. (dose N.A.). (ii) (a) Sandy loam. (b) Refer soil analysis, Kalianpur. (iii) 28.7.1954. (iv) (a) 2 ploughings with watts plough after *palewa*. Cultivated thrice with cultivator followed by planking. (b) N.A. (c) Dibbling. (d) 2'×1'. (e) 2. (v) 3.63 C.L./ac. of F.Y.M. broadcast in the whole field. (vi) 41—(medium late). (vii) Unirrigated. (viii) 1 hand weeding and earthing up. (ix) 24". (x) 20.10.1954.

## 2. TREATMENTS :

6 fungicidal treatments : D<sub>0</sub>=Control, D<sub>1</sub>=Agrosan G.N. (1 : 400), D<sub>2</sub>=Ferasan (1 : 400), D<sub>3</sub>=Hervasan (1 : 400), D<sub>4</sub>=Ceresan (1 : 400) and C<sub>5</sub>=Hervasan (1 : 750).

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) and (b) 45'×4'. (v) No. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Considerable damage to young seedlings by rats, particularly in two out of six replications. Poison baiting was done which proved quite effective in controlling the pest. (iii) Yield of grain. (iv) (a) 1951—1955. (b) No. (c) Nil. (v) (a) and (b) No. (vi) Nil. (vii) The layout was originally latin square but two blocks were severely damaged by rates. Hence analysis done as R.B.D.

## 5. RESULTS :

(i) 1211 lb./ac. (ii) 301.3 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	D <sub>0</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	D <sub>5</sub>
Av. yield	1335	1286	1240	1176	1127	1104

S.E./mean = 150.7 lb./ac.

**Crop :- Maize (Kharif).**

**Ref. :- U.P. 55(364).**

**Site :- Govt. Agri. Res. Farm, Kalianpur**

**Type :- 'D'**

Object :—To find out the effect of seed treatment with fungicides on the yield of Maize.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Alluvial loam. (b) Refer soil analysis, Kalianpur. (iii) 16.7.1955. (iv) and (v) N.A. (vi) K.T.—41 (medium late). (vii) Unirrigated. (viii) N.A. (ix) 39.2". (x) 6.10.1955.

**2. TREATMENTS :**

Same as in expt. no. 54(185) on page 688.

**3. DESIGN :**

(i) L. Sq. (ii) (a) 6. (b) 40'×24'. (iii) 6. (iv) (a) and (b) 40'×4'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Normal. (ii) Negligible damage by stem-borer (*chilozoneilus*) and aphid. (iii) Yield of grain. (iv) (a) 1954—1956. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 2696 lb./ac. (ii) 600.8 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	D <sub>0</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	D <sub>5</sub>
Av. yield	2586	3011	2410	2773	2708	2688

S.E./mean = 245.3 lb./ac.

**Crop :- Maize (Kharif).**

**Ref. :- U.P. 58(241).**

**Site :- Allahabad Agri. Instt., Allahabad.**

**Type :- 'C'**

Object :—To study the effect of 2, 4—D post emergence application under varying cultural practices on Maize.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Fine sandy loam. (b) Refer soil analysis, Allahabad. (iii) 7.7.1958. (iv) (a) to (e) N.A. (v) 50 lb./ac. of N as A/S. (vi) and (vii) N.A. (viii) As per treatments. (ix) and (x) N.A.

**2. TREATMENTS :**

**Main-plot treatments :**

4 concentration : D<sub>0</sub>=0, D<sub>1</sub>=0.50, D<sub>2</sub>=0.75 and D<sub>3</sub>=1.0 lb. acid equivalent per acre of 2, 4—D.

**Sub-plot treatments :**

3 cultural operations : C<sub>0</sub>=0, C<sub>1</sub>=1, and C<sub>2</sub>=2 cultivation after spray.

**3. DESIGN :**

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 3 sub-plot/main-plots. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 21'×22'. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) Unsatisfactory. (ii) Attack of white ants. (iii) Yield of cobs, germination and yield of grain. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Unfavourable climatic conditions. Cobs damaged by parrots, crows and jackals. (vii) Nil.

**5. RESULTS :**

(i) 897.2 lbs./ac. (ii) and (iii) N.A. (iv) Av. yield of grain in lb./ac.

	D <sub>0</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	Mean
C <sub>0</sub>	922	871	922	802	879
C <sub>1</sub>	888	854	888	905	884
C <sub>2</sub>	1043	905	854	905	927
Mean	1951	877	888	871	897

S. E's.—N.A.

**Crop :- Maduwa (Kharif).****Ref :- U.P. 59(394).****Site :- Reg. Res. Stn., Majhera.****Type :- 'M'.****Object :—**To study the efficiency of organic and inorganic manures with and without P on Maduwa.**1. BASAL CONDITIONS :**

(i) (a) No. (b) Wheat. (c) N.A. (ii) (a) Hilly soil—sandy loam. (b) Refer soil analysis, Majhera. (iii) 4.6.1959. (iv) (a) 2 ploughings. (b) Line sowing. (c) 6 srs./ac. (d) 6" between rows. (e) N.A. (v) Nil. (vi) T—28—B. (vii) Unirrigated. (viii) 2 hoeings and 2 weedings. (ix) N.A. (x) 29.9.1959 and 7.10.1959.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)+one control

(1) 2 levels of N : N<sub>1</sub>=15 and N<sub>2</sub>=30 lb./ac.(2) 2 sources of N : S<sub>1</sub>=Urea and S<sub>2</sub>=F.Y.M.(3) 2 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0 and P<sub>1</sub>=20 lb./ac.**3. DESIGN :**

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) and (b) 25'×5'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Normal growth. (ii) Nil. (iii) Germination % and yield of grain. (iv) (a) 1959—contd. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1373 lb./ac. (ii) 276.3 lb./ac. (iii) Main effect of S and 'control vs. others' are highly significant. (iv) Av. yield of grain in lb./ac.

Control = 986 lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	N <sub>1</sub>	N <sub>2</sub>
S <sub>1</sub>	1495	1719	1607	1467	1747
S <sub>2</sub>	1221	1249	1235	1215	1255
Mean	1358	1484	1421	1341	1501
N <sub>1</sub>	1305	1378			
N <sub>2</sub>	1411	1591			

S.E. of any marginal mean = 69.1 lb./ac.

S.E. of body of any table = 97.7 lb./ac.

S.E. of control mean = 138.2 lb./ac.

**Crop :- Maduwa (Kharif).****Ref :- U.P. 58(359).****Site :- Reg. Res. Stn., Majhera.****Type :- 'C'.**

Object :—To test the efficiency of transplanting and line sowing of Maduwa against usual broadcast.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Barley. (c) N.A. (ii) (a) Hilly soil—sandy loam. (b) Refer soil analysis, Majhera. (iii) 3rd week of May, 1958. (iv) (a) N.A. (b) As per treatments. (c) 4 srs./ac. (d) 12" between rows. (e) N.A. (v) N.A. (vi) Local (medium). (vii) Unirrigated. (viii) 1 weeding and 1 hoeing. (ix) N.A. (x) 28.9.1958 and 7, 11.10.1958.

**2. TREATMENTS :**

3 methods of sowing : C<sub>1</sub>=Line sowing, C<sub>2</sub>=Transplanting and C<sub>3</sub>=Broadcasting.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) and (b) 25'×5'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Normal except in case of transplanting where growth was poor. (ii) Nil. (iii) Germination percentage and yield of grain. (iv) (a) 1958—contd. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 511 lb./ac. (ii) 266.7 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>
Av. yield	441	680	411

S.E./mean = 108.9 lb./ac.

**Crop :- Maduwa (Kharif).****Ref :- U.P. 59(393).****Site :- Reg. Res. Stn., Majhera.****Type :- 'C'.**

Object :—To test the efficiency of transplanting as well as line sowing of Maduwa against usual broadcast.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Wheat. (c) N.A. (ii) (a) Hilly soil—sandy loam. (b) Refer soil analysis, Majhera. (iii) 24.5.1959/30.6.1959. (iv) (a) 2 ploughings. (b) As per treatments. (c) 6 srs./ac. (d) 12" between rows. (e) N.A. (v) 2 mds./ac. of Super and 2 mds./ac. of mixture no. 10. (vi) T—28—B (medium). (vii) Unirrigated. (viii) 2 hoeings and 2 weedings. (ix) N.A. (x) 19 and 28.9.1959.

**2. TREATMENTS :**

3 methods of sowing : C<sub>1</sub>=Line sowing, C<sub>2</sub>=Transplanting and C<sub>3</sub>=Broadcasting.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) and (b) 20'3"×20'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Normal growth in all except in transplanted plots. (ii) Nil. (iii) Germination percentage and yield of grain. (iv) (a) 1958—contd. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1146 lb./ac. (ii) 224.2 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>
Av. yield	1189	1189	1060

S.E./mean = 91.5 lb./ac.

**Crop :- Maduwa (Kharif).****Ref :- U.P. 53(342).****Site :- Reg. Res. Stn., Majhera.****Type :- 'C'.****Object :-**To test the efficiency of line sowing of Maduwa as against usual broadcast.**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Barley. (c) N.A. (ii) (a) Hilly soil—sandy loam. (b) Refer soil analysis, Majhera. (iii) 23.5.1958. (iv) (a) 2 ploughings. (b) As per treatments. (c) 4 srs./ac. (d) 12" between rows. (e) N.A. (v) N.A. (vi) Local (medium). (vii) Unirrigated. (viii) 1 hoeing and 1 weeding. (ix) N.A. (x) 15.10.1958:

**2. TREATMENTS :**

2 methods of sowing :  $M_1$  = Sowing in lines and  $M_2$  = Usual broadcast.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 12. (iv) (a) and (b) 22' × 5'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Normal growth. (ii) Nil. (iii) Germination percentage and yield of grain. (iv) (a) 1958—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Heavy rains and storm. (vii) Nil.

**5. RESULTS :**

(i) 1358 lb./ac. (ii) 191.3 lb./ac. (iii) Treatment difference is highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	$M_1$	$M_2$
Av. yield	1519	1196

S.E./mean = 55.2 lb./ac.

**Crop :- Maduwa (Kharif).****Ref :- U.P. 59(390).****Site :- Reg. Res. Stn., Majhera.****Type :- 'C'.****Object :-**To study the effect of proper spacings on Maduwa crop in hills.**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Wheat. (c) N.A. (ii) (a) Hilly soil—sandy loam. (b) Refer soil analysis, Majhera. (iii) 1.6.1959/4.7.1959. (iv) (a) 2 ploughings. (b) Line sowing and broadcast. (c) 6 srs./ac. (d) As per treatments. (e) N.A. (v) N.A. (vi) T—28—B. (vii) Unirrigated. (viii) 2 hoeings and 2 weedings. (ix) N.A. (x) 8.10.1959.

**2. TREATMENTS :**

All combinations of (1) and (2) + control (broadcast)

(1) 2 spacings between rows :  $R_1=9''$  and  $R_2=12''$ .

(2) 3 spacings between plants :  $P_1=6''$ ,  $P_2=9''$  and  $P_3=12''$ .

**3. DESIGN :**

(i) R.B.D. (ii) (a) 7. (b) 118' × 56' (iii) 4. (iv) (a) and (b) 24' × 6'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Normal growth. (ii) Nil. (iii) Number of plants and yield of grain. (iv) 1959—contd. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1564 lb./ac. (ii) 322.6 lb./ac. (iii) Main effect of P alone is highly significant. (iv) Av. yield of grain in lb./ac.

Control = 1672 lb./ac.

	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	Mean
R <sub>1</sub>	2256	1332	1381	1656
R <sub>2</sub>	1818	1342	1147	1436
Mean	2037	1337	1264	1546

S.E. of R marginal mean = 93.1 lb./ac.  
 S.E. of P marginal mean = 114.1 lb./ac.  
 S.E. of body of table or control mean = 161.3 lb./ac.

**Crop :- Potato (Rabi).****Ref :- U.P. 55(218).****Site :- Allahabad Agri. Instt., Allahabad.****Type :- 'M'.**

Object :—To study the effect of different levels of N on the yield of Potato.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Fine sandy loam. (b) Refer soil analysis, Allahabad. (iii) N.A. (iv) (a) to (c) N.A. (d) 2'×6'. (e) N.A. (v) 32 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super. (vi) *Phulwa*. (vii) to (x) N.A.

**2. TREATMENTS :**

4 levels of N as A/S+Castor cake in 1 : 2 ratio : N<sub>0</sub>=0, N<sub>1</sub>=30, N<sub>2</sub>=60 and N<sub>3</sub>=90 lb./ac.

**3. DESIGN :**

(i) L. Sq. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 20'×13'. (v) 1.5'×1.5'. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Bacterial rot attack. (iii) Yield of tuber. (iv) (a) 1955—1956. (b) No. (c) Nil. (v) a and (b) N.A. (vi) Heavy rains. (vii) Nil.

**5. RESULTS :**

(i) 4.27 tons/ac. (ii) 0.72 tons/ac. (iii) Treatment differences are significant. (iv) Av. yield of tuber in tons/ac.

Treatment	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>
Av. yield	3.44	3.75	4.83	5.05

S.E./mean = 0.36 tons/ac.

**Crop :- Potato (Rabi).****Ref :- U.P. 56(214).****Site :- Allahabad Agri. Instt., Allahabad.****Type :- 'M'.**

Object :—To study the effect of different levels of N on the yield of Potato.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Fine sandy loam. (b) Refer soil analysis, Allahabad. (iii) and (iv) N.A. (v) G.M. as *sannhemp* + A/S+32 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super. (vi) *Phulwa*. (vii) to (x) N.A.

**2. TREATMENTS :**

4 levels of N as A/S : N<sub>0</sub>=0, N<sub>1</sub>=30, N<sub>2</sub>=60 and N<sub>3</sub>=90 lb./ac.  
 N applied as top dressing.

**3. DESIGN :**

(i) L. Sq. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 20'×18'. (v) 1.5' border. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of tuber. (iv) (a) 1953—1956. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

6.16 tons/ac. (ii) and (iii) N.A. (iv) Av. yield of tuber in tons/ac.

Treatment	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>
Av. yield	5.03	5.71	7.21	6.67

S.E./mean = N.A.

**Crop :- Potato (Rabi).**

**Ref :- U.P. 54(239).**

**Site :- Allahabad Agri. Instt., Allahabad.**

**Type :- 'M'.**

**Object :-**To study the effect of different levels of N on the yield of Potato.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Fine sandy loam. (b) Refer soil analysis, Allahabad. (iii) N.A. (iv) (a) to (c) N.A. (d) 2' × 6". (e) N.A. (v) N.A. (vi) *Phulwa*. (vii) to (x) N.A.

## 2. TREATMENTS :

4 levels of N as Sodium Nitrate: N<sub>0</sub>=0, N<sub>1</sub>=30, N<sub>2</sub>=60 and N<sub>3</sub>=90 lb./ac.

## 3. DESIGN :

(i) L. Sq. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 20' × 13'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of tuber. (iv) (a) 1953—1956. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Frost and porcupine attack.

## 5. RESULTS :

(i) 6.66 tons/ac. (ii) 0.53 tons/ac. (iii) Treatment differences are highly significant. (iv) Av. yield of tuber in tons/ac.

Treatment	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>
Av. yield	5.55	6.32	6.49	8.28

S.E./mean = 0.26 tons/ac.

**Crop :- Potato (Rabi).**

**Ref :- U.P. 54(205).**

**Site :- B.R. College Insttl. Res. Farm, Bichpuri.**

**Type :- 'M'.**

**Object :-**To study the effect of different sources of N and its times of application on the yield of Potato.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Onion. (c) NA. (ii) (a) Light loam. (b) Refer soil analysis, Bichpuri. (iii) 4.11.1954. (iv) (a) 8 ploughings and 2 plankings. (b) Planted in furrows. (c) 8 lb./ac. (d) 1'9" × 9". (e) N.A. (v) Nil. (vi) Patna—*Phulwa*. (vii) Irrigated. (viii) 2 earthings. (ix) 1.50". (x) 15 to 17.4.1955.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 sources of 150 lb./ac. of N : S<sub>0</sub>=Control (no N), S<sub>1</sub>=A/S and S<sub>2</sub>=Sodium Nitrate.

(2) 3 times of application of N : T<sub>1</sub>=At sowing, T<sub>2</sub>=At earthing and T<sub>3</sub>= $\frac{1}{2}$  at sowing +  $\frac{1}{2}$  at earthing.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 9. (b) 101.5' × 137'. (iii) 4. (iv) (a) N.A. (b) 16' × 12.25'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Germination, height of plants and yield of tuber. (iv) (a) 1954 and 1956. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) Other treatment yields and two-way tables are not available.

## 5. RESULTS :

(i) 9.03 tons/ac. (ii) 0.88 tons/ac. (iii) Main effect of S alone is highly significant. (iv) Av. yield of tuber in tons/ac.

Treatment	S <sub>0</sub>	S <sub>1</sub>	S <sub>2</sub>
Av. yield	6.40	10.80	9.88

S.E./mean = 0.25 tons/ac.

**Crop :- Potato (Rabi).**

**Ref :- U.P. 56(169).**

**Site :- B.R. College Insttl. Res. Farm, Bichpuri.**

**Type :- 'M'.**

Object :—To study the effect of different sources of N and its time of application on the yield of Potato.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) N.A. (ii) (a) Light loam. (b) Refer soil analysis, Bichpuri. (iii) 30.10.1956. (iv) (a) 6 ploughings by *desi* plough, 2 plankings and 1 harrowing by spike tooth harrow. (b) Planted in furrows. (c) 8 mds./ac. (d) 1'9"×9". (e) N.A. (v) Nil. (vi) Patna—*Phulwa*. (vii) Irrigated. (viii) Earthing. (ix) 4.98". (x) 14.3.1957.

## 2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 54(205) on page 694.

## 5. RESULTS :

(i) 8.80 tons/ac. (ii) 1.67 tons/ac. (iii) Main effect of S alone is highly significant. (iv) Av. yield of tuber in tons/ac.

Treatment	S <sub>0</sub>	S <sub>1</sub>	S <sub>2</sub>
Av. yield	6.28	10.29	9.84

S.E./mean = 0.48 tons/ac.

**Crop :- Potato (Rabi).**

**Ref :- U.P. 56(375).**

**Site :- Institute of Crop Physiology, Dilkusha.**

**Type :- 'M'.**

Object :—To study the effect of N, P and K on the yield of Potato.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Dilkusha. (iii) to (x) N.A.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 2 levels of N : N<sub>0</sub>=0 and N<sub>1</sub>=100 lb./ac.

(2) 2 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0 and P<sub>1</sub>=60 lb./ac.

(3) 2 levels of K<sub>2</sub>O : K<sub>0</sub>=0 and K<sub>1</sub>=75 lb./ac.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 15'×26'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of tuber (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.



**5. RESULTS :**

(i) 6.00 tons/ac. (ii) 0.75 tons/ac. (iii) Main effect of N alone is highly significant. (iv) Av. yield of tuber in tons/ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	K <sub>0</sub>	K <sub>1</sub>
N <sub>0</sub>	4.75	4.91	4.74	4.64	4.85
N <sub>1</sub>	7.38	7.13	7.26	7.22	7.30
Mean	5.98	6.03	6.00	5.93	6.07
K <sub>0</sub>	5.93	5.92			
K <sub>1</sub>	6.02	6.12			

S.E. of any marginal mean = 0.188 tons/ac.

S.E. of body of any table = 0.266 tons/ac.

**Crop :- Potato (Rabi).**

**Ref :- U.P. 57(343).**

**Site :- Institute of Crop Physiology, Dilkusha.**

**Type :- 'M'.**

**Object :-**To study the effect of N, P and K on the yield of Potato.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Moong*. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Dilkusha. (iii) 3.11.1957. (iv) (a) 11 ploughings and planking. (b) and (c) N.A. (d) 1'9"×9". (e) N.A. (v) *Moong* turned in on 18.9.1957 as G.M. (vi) Patna red. (vii) Irrigated. (viii) and (ix) N.A. (x) 10 and 11.3.1958.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 2 levels of N as A/S : N<sub>0</sub>=0 and N<sub>1</sub>=100 lb./ac.

(2) 2 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0 and P<sub>1</sub>=60 lb./ac.

(3) 2 levels of K<sub>2</sub>O as Potash : K<sub>0</sub>=0 and K<sub>1</sub>=75 lb./ac.

Super applied by placement 3" to 4" deep in soil before sowing, F.Y.M. 2 to 3 weeks before sowing, A/S half at planting and half at first earthing and Potash as surface dressing.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 26'×20.5'. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Leaf curling. (iii) Yield of tuber. (iv) (a) 1956—contd. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 5.30 tons/ac. (ii) 0.30 tons/ac. (iii) Main effect of N is highly significant and effect of P is significant (iv) Av. yield of tuber in tons/ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	K <sub>0</sub>	K <sub>1</sub>
N <sub>0</sub>	4.45	4.75	4.59	4.58	4.61
N <sub>1</sub>	5.83	6.17	6.00	5.76	6.24
Mean	5.14	5.45	5.30	5.17	5.42
K <sub>0</sub>	5.08	5.25			
K <sub>1</sub>	5.19	5.66			

S.E. of any marginal mean = 0.09 tons/ac.

S.E. of body of any table = 0.12 tons/ac.

**Crop :- Potato (Rabi).****Ref :- U.P. 58(302).****Site :- Institute of Crop Physiology, Dilkusha.****Type :- 'M'.**

Object :—To study the effect of N, P and K on the yield of Potato.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Dhaincha*. (c) N.A. (ii) (a) Light sandy loam. (b) Refer soil analysis, Dilkusha. (iii) 11.11.1958. (iv) (a) 13 ploughings, cultivating and planking. (b) In lines. (c) 10 mds./ac. (d) 1'9" × 9". (e) N.A. (v) *Dhaincha* as G.M.+4 truck load of T.C. and 7 mds. 19 srs. of oil cakes. (vi) Patna red (early). (vii) Irrigated. (viii) and (ix) N.A. (x) 14 to 16.3.1959.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 2 levels of N as F.Y.M. and A/S in 1 : 1 ratio :  $N_0=0$  and  $N_1=100$  lb./ac.(2) 2 levels of  $P_2O_5$  as super :  $P_0=0$  and  $P_1=60$  lb./ac.(3) 2 levels of  $K_2O$  as Pot. Sul. :  $K_0=0$  and  $K_1=75$  lb./ac.

Manures applied on 10, 11.11.1958.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 26' × 12'. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of tuber. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 4.11 tons/ac. (ii) 1.04 tons/ac. (iii) Main effect of N is highly significant. (iv) Av. yield of tuber in tons/ac.

	$N_0$	$N_1$	Mean	$P_0$	$P_1$
$K_0$	3.62	4.71	4.16	4.00	4.32
$K_1$	3.31	4.81	4.06	3.74	4.38
Mean	3.46	4.76	4.11	3.87	4.35
$P_0$	3.08	4.66			
$P_1$	3.84	4.86			

S.E. of any marginal mean = 0.30 tons/ac.

S.E. of body of any table = 0.42 tons/ac.

**Crop :- Potato (Rabi).****Ref. :- U.P. 55(241).****Site :- Institute of Crop Physiology, Dilkusha.****Type :- 'M'.**

Object :—To study the effect of trace-elements on the yield of Potato.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Dilkusha. (iii) 7.11.1955. (iv) (a) 4 ploughings and harrowing. (b) in lines behind the plough. (c) N.A. (d) 1½' × 9". (e) N.A. (v) 60 lb./ac. of N as F.Y.M.+100 lb./ac. of N as A/S+75 lb./ac. of  $P_2O_5$  as Super. (vi) Patna red (vii) Irrigated. (viii) and (ix) N.A. (x) 2 to 7.3.1956.

**2. TREATMENTS :**

6 trace-element treatments :  $T_0$ =Control,  $T_1$ =5 lb./ac. of Borax,  $T_2$ =15 lb./ac. of C/S,  $T_3$ =15 lb./ac. of Zn. Sul.,  $T_4$ =10 lb./ac. of Manganese sulphate and  $T_5$ =1 lb./ac. of Molybdic acid.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 26' × 20½'. (b) 26' × 19½'. (v) 6' on either side of the plot. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Potato virus. (iii) Yield of tuber. (iv) (a) 1955-1956. (b) and (c) N.A. (v) to (vii) Nil.

**5. RESULTS :**

(i) 9.03 tons/ac. (ii) 1.04 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of tuber in tons/ac.

Treatment	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	T <sub>5</sub>
Av. yield	8.69	8.96	8.87	9.01	9.11	9.52

S.E./mean = 0.52 tons/ac.

**Crop :- Potato (Rabi).**

**Ref :- U.P. 56(255).**

**Site :- Institute of Crop Physiology, Dilkusha.**

**Type :- 'M'.**

Object :— To study the effect of trace-elements on Potato.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Dilkusha. (iii) to (x) N.A.

**2. TREATMENTS :**

Same as in expt. no.55(241) on page 697.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 3. (iv) and (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of tuber. (iv) (a) 1955—1956. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 3.66 tons/ac. (ii) 1.04 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of tuber in tons/ac.

Treatment	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	T <sub>5</sub>
Av. yield	4.15	3.31	2.85	4.03	3.85	3.80

S.E./mean = 0.60 tons/ac.

**Crop :- Potato (Rabi).**

**Ref :- U.P. 59(435).**

**Site :- Institute of Crop Physiology, Dilkusha.**

**Type :- 'M'.**

Object :— To study the effect of N applied as foliar spray on the yield of Potato.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) *Moong*. (c) N.A. (ii) (a) Light sandy loam. (b) Refer soil analysis, Dilkusha. (iii) 27.10.1959. (iv) (a) to (e) N.A. (v) Nil. (vi) Patna red. (vii) to (x) N.A.

**2. TREATMENTS :**

**Main-plot treatments :**

2 basal manurings : B<sub>0</sub>=No basal manuring and B<sub>1</sub>=Basal manuring with 50 lb./ac. of N as A/S+40 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super+40 lb./ac. of K<sub>2</sub>O as Pot. Sul.

**Sub-plot treatments :**

All combinations of (1) and (2)

(1) 3 concentration of the solution :  $C_0=0$ ,  $C_1=0.2\%$  N and  $C_2=0.4\%$  normal solution.(2) 3 no. of sprayings :  $S_1=1$  spraying after 20 days of sowing,  $S_2=2$  sprayings, first after 20 days and second after 40 days of sowing and  $S_3=3$  sprayings, first after 20 days, second after 40 days and third after 60 days of sowing.

N applied on 29.11.1959 and P, K applied on 26.10.1959.

**3. DESIGN :**(i) Split-plot. (ii) (a) 2 main-plots/replication ; 9 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a)  $16' \times 13'$ . (b)  $14' \times 11'$ . (v)  $1' \times 1'$ . (vi) Yes.**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of tuber. (iv) (a) 1959—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS ;**

(i) 8.66 tons/ac. (ii) (a) 1.54 tons/ac. (b) 1.69 tons/ac. (iii) None of the effects is significant. (iv) Av. yield of tuber in tons/ac.

	$C_0$	$C_1$	$C_2$	Mean	$S_1$	$S_2$	$S_3$
$B_0$	7.58	7.88	7.95	7.81	7.40	7.74	8.28
$B_1$	9.07	9.88	9.58	9.51	9.35	9.67	9.51
Mean	8.32	8.88	8.76	8.66	8.38	8.70	8.89
$S_1$	8.71	8.09	8.33				
$S_2$	7.74	9.80	8.57				
$S_3$	8.52	8.77	9.39				

## S.E. of difference of two

1. B marginal means	= 0.42 tons/ac.
2. C or S marginal means	= 0.56 tons/ac.
3. C or S means at the same level of B	= 0.80 tons/ac.
4. B means at the same level of C or S	= 0.77 tons/ac.
S.E. of body of $C \times S$ table	= 0.69 tons/ac.

**Crop :- Potato.****Ref :- U.P. 55(24).****Site :- Govt. Potato Res. Stn., Farrukhabad.****Type :- 'M'.**

Object :—To study the effect of organic and inorganic manures on the yield of Potato.

**1. BASAL CONDITIONS :**(i) (a) Nil. (b) *Sanai*. (c) Nil. (ii) (a) Loam. (b) Refer soil analysis, Farrukhabad. (iii) 27.10.1955. (iv) (a) 5 ploughings. (b) N.A. (c) 16 seeds/row. (d)  $1\frac{1}{2}' \times 9''$ . (e) N.A. (v) Nil. (vi) *Phulwa* (sand storage.) (vii) Irrigated. (viii) 1 weeding, hoeing and earthing. (ix) N.A. (x) 5.3.1956.**2. TREATMENTS :**8 manurial treatments :  $M_0$ =Control,  $M_1=5.05$  tons/ac. of local compost (city refuse),  $M_2=9.09$  tons/ac. of F.Y.M.,  $M_3=0.44$  tons/ac. of Castor cake,  $M_4=0.44$  tons/ac. of G.N.C.,  $M_5=226$  lb./ac. of Urea and  $M_6=56$  lb./ac. of A/S and 622 lb./ac. of C/N.

Manures broadcast on 27.10.1955.

**3. DESIGN :**(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) and (b)  $16\frac{1}{2}' \times 12'$ . (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination and yield of tuber. (iv) (a) 1955—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 8.15 tons/ac. (ii) 0.56 tons/ac. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in lb./ac.

Treatment	M <sub>0</sub>	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	M <sub>4</sub>	M <sub>5</sub>	M <sub>6</sub>	M <sub>7</sub>
Av. yield	7.32	7.42	7.27	8.53	8.84	8.43	8.33	9.09

S.E./mean = 0.28 tons/ac.

**Crop :- Potato.**

**Ref :- U.P. 54(41).**

**Site :- Govt. Potato Res. Stn., Farrukhabad.**

**Type :- 'M'.**

Object :—To study the effect of N, P and K on the yield of Potato.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Lobia*. (c) Nil. (ii) (a) Loam. (b) Refer soil analysis, Farrukhabad. (iii) 5.11.1954. (v) (a) 7 ploughings. (b) N.A. (c) 24 seeds/row. (d) 1½' × 9". (e) N.A. (v) N.A. (vi) *Phulwa* (cold storage). (vii) Irrigated. (viii) Weeding, hoeing and 2 earthings. (ix) N.A. (x) 14, 15.3.1955.

## 2. TREATMENTS :

All combinations (1., (2) and (3)

(1) 2 levels of N as A/S : N<sub>0</sub>=0 and N<sub>1</sub>=100 lb./ac.

(2) 3 levels of K<sub>2</sub>O as Potash : K<sub>0</sub>=0, K<sub>1</sub>=60 and K<sub>2</sub>=120 lb./ac.

(3) 2 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0 and P<sub>1</sub>=150 lb./ac.

Manures applied on 4.11.1954.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) and (b) 18' × 15'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Attack of frost. (iii) Yield of potato. (iv) (a) 1954—contd. (b) No. (c) N.I. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 3.61 tons/ac. (ii) 0.25 tons/ac. (iii) Main effects of N and P are highly significant. Interaction P × K is significant. (iv) Av. yield of tuber in tons/ac.

	K <sub>0</sub>	K <sub>1</sub>	K <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>
N <sub>0</sub>	2.91	2.96	2.96	2.94	2.68	3.21
N <sub>1</sub>	4.27	4.26	4.32	4.28	3.89	4.68
Mean	3.59	3.61	3.64	3.61	3.28	3.94
P <sub>0</sub>	3.13	3.41	3.32			
P <sub>1</sub>	4.05	3.82	3.96			

S.E. of N or P marginal mean = 0.05 tons/ac.

S.E. of K marginal mean = 0.06 tons/ac.

S.E. of body of K × N or K × P table = 0.09 tons/ac.

S.E. of body of N × P table = 0.07 tons/ac.

**Crop :- Potato.****Ref :- U.P. 55(31).****Site :- Govt. Potato Res. Stn., Farrukhabad.****Type :- 'M'.**

Object :—To study the effect of N, P and K on the yield of Potato.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Lobia*. (c) Nil. (ii) (a) Loam soil. (b) Refer soil analysis, Farrukhabad. (iii) 6.11.1955.  
 (iv) (a) 5 ploughings. (b) N.A. (c) 16 seeds/row. (d) 1'9"×9". (e) N.A. (v) Nil. (vi) *Phulwa* (in sprouted condition). (vii) Irrigated. (viii) Weeding, hoeing and 2 earthings. (ix) N.A. (x) 15.3.1956.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 2 levels of N as A/S :  $N_0=0$  and  $N_1=100$  lb./ac.(2) 2 levels of P as Super :  $P_0=0$  and  $P_1=150$  lb./ac.(3) 2 levels of K as Potash :  $K_0=0$  and  $K_1=150$  lb./ac.**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) and (b) 22'9"×12'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Satisfactory. (ii) Effect of frost in the trial and attack of bat roll. (iii) Germination and yield of potato. (iv) (a) 1954—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 6.69 tons/ac. (ii) 0.44 tons/ac. (iii) Main effect of N and P are highly significant. (iv) Av. yield of tuber in tons/ac.

	$P_0$	$P_1$	Mean	$K_0$	$K_1$
$N_0$	4.76	6.78	5.77	5.61	5.93
$N_1$	6.34	8.86	7.60	7.51	7.69
Mean	5.55	7.82	6.69	6.56	6.81
$K_0$	5.49	7.62			
$K_1$	5.60	8.02			

S.E. of any marginal mean = 0.11 tons/ac.  
 S.E. of body of any table = 0.16 tons/ac.

**Crop :- Potato (Rabi).****Ref :- U.P. 59(233).****Site :- Govt. Potato Res. Stn., Farrukhabad.****Type :- 'M'.**

Object :—To study the effect of different sources of N on the yield of Potato.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) *Sanai*. (c) Nil. (ii) (a) Loam soil. (b) Refer soil analysis, Farrukhabad. (iii) 8.11.1959.  
 (iv) (a) 4 ploughings. (b) By *kudali*. (c) 33 seeds/row. (d) 1½'×9". (e) N.A. (v) *Sanai* (G.M.) at 40 lb./ac. of N. (vi) Military (early). (vii) Irrigated. (viii) 2 earthings and 1 hoeing. (ix) N.A. (x) 3.3.1960.

**2. TREATMENTS :**

8 sources of 100 lb./ac. of N :  $S_0$ =Control (no N),  $S_1$ =A/S,  $S_2$ =C/N,  $S_3$ =Urea,  $S_4$ =½ A/S+½ G.N.C.,  
 $S_5$ =½ Urea+½ G.N.C.,  $S_6$ =½ C/N+½ G.N.C. and  $S_7$ =½ F.Y.M.+½ A/S.

Other fertilizers applied on 8.11.1959 and C/N on 2.1.1960 at earthing time.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) and (b) 8'9"×24'9". (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Poor. (ii) Spraying with Fytalon at 3 lb./ac. in 100 gallons of water against mosaic, late blight and leaf roll. (iii) Germination and yield of tuber. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 2.92 tons/ac. (ii) 0.37 tons/ac. (iii) Treatment differences are highly significant. (iv) Av. yield of tuber in tons/ac.

Treatment	S <sub>0</sub>	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>	S <sub>5</sub>	S <sub>6</sub>	S <sub>7</sub>
Av. yield	2.54	2.68	2.63	2.86	3.00	2.77	3.33	3.56

S.E./mean = 0.18 tons/ac.

**Crop :- Potato (Rabi).**

**Ref :- U.P. 59(234).**

**Site :- Govt. Potato Res. Stn., Farrukhabad.**

**Type :- 'M'.**

Object :—To study the effect of P and K on the yield of Potato.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai*. (c) Nil. (ii) (a) Loam soil. (b) Refer soil analysis, Farrukhabad. (iii) 14.11.1959. (iv) (a) 4 ploughings. (b) Sown by *kudaji*. (c) 33 seeds/row. (d) 21" × 9". (e) N.A. (v) 40 lb./ac. of N as *sanai* (G.M.), 260 lb./ac. of N as G.N.C. and 100 lb./ac. of N as Urea. (vi) *Kufri* red (late). (vii) Irrigated. (viii) 1 weeding, 1 hoeing and 1 earthing. (ix) N.A. (x) 8.3.1960.

## 2. TREATMENTS :

5 manurial treatments : M<sub>0</sub>=Control (2 plots), M<sub>1</sub>=100 lb./ac. of P<sub>2</sub>O<sub>5</sub>, M<sub>2</sub>=200 lb./ac. of P<sub>2</sub>O<sub>5</sub>, M<sub>3</sub>=100 lb./ac. of K<sub>2</sub>O and M<sub>4</sub>=200 lb./ac. of K<sub>2</sub>O.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) and (b) 24.75' × 8.75'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Germination irregular and crop condition is poor. (ii) Spraying with Fytalon at 3 lb./ac. in 100 gallons of water on 3.2.1960 against mosaic and late blight. (iii) Germination and yield of tuber. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 5.08 tons/ac. (ii) 0.51 tons/ac. (iii) Treatment differences are highly significant. (iv) Av. yield of tuber in tons/ac.

Treatment	M <sub>0</sub>	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	M <sub>4</sub>
Av. yield	3.65	6.00	6.60	5.40	5.17

S.E./mean except M<sub>0</sub> = 0.25 tons/ac.

S.E. of M<sub>0</sub> mean = 0.18 tons/ac.

**Crop :- Potato (Rabi).**

**Ref :- U.P. 58(223).**

**Site :- Govt. Potato Res. Stn., Farrukhabad.**

**Type :- 'M'.**

Object :—To study the effect of different sources of N on the yield of Potato.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai*. (c) Nil. (ii) (a) Loam soil. (b) Refer soil analysis, Farrukhabad. (iii) 10.11.1958. (iv) (a) 6 ploughings. (b) By *kudali*. (c) 15 to 20 mds./ac. (d) 1'9" × 9". (e) N.A. (v) *Sanai* as G.M. (vi) Military (early). (vii) Irrigated. (viii) 1 weeding, 1 hoeing and 1 earthing. (ix) N.A. (x) 7.3.1959.

**2. TREATMENTS :**

8 sources of 100 lb./ac. of N :  $S_0$ =Control (no N),  $S_1$ =A/S,  $S_2$ =C/N,  $S_3$ =Urea,  $S_4$ = $\frac{1}{2}$  A/S+ $\frac{1}{2}$  G.N.C.,  $S_5$ = $\frac{1}{2}$  Urea+ $\frac{1}{2}$  G.N.C.,  $S_6$ = $\frac{1}{2}$  C/N+ $\frac{1}{2}$  G.N.C. and  $S_7$ = $\frac{1}{2}$  A/S+ $\frac{1}{2}$  F.Y.M.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) and (b) 8.75'×24.75'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Late blight and leaf roll. (iii) Germination and yield of tuber. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 4.69 tons/ac. (ii) 0.50 tons/ac. (iii) Treatment differences are significant. (iv) Av. yield of tuber in tons/ac.

Treatment	$S_0$	$S_1$	$S_2$	$S_3$	$S_4$	$S_5$	$S_6$	$S_7$
Av. yield	3.97	4.43	4.85	4.85	4.39	4.76	5.31	4.94

S.E./mean = 0.25 tons/ac.

**Crop :- Potato (Rabi).**

**Ref :- U.P. 56(234).**

**Site :- Govt. Potato Res. Stn., Farrukhabad.**

**Type :- 'M'.**

Object :—To study the comparative merits of various organic and inorganic manures on the yield of Potato.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Sanai*. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Farrukhabad. (iii) 16.11.1956. (iv) (a) 5 ploughings. (b) By *kudali*. (c) 15 to 20 mds./ac. (d) 18"×9". (e) N.A. (v) *Sanai* as G.M. (vi) *Phulwa* (late). (vii) Irrigated. (viii) 1 earthing and 1 weeding. (ix) N.A. (x) 24.3.1957.

**2. TREATMENTS :**

8 sources of 100 lb./ac. of N :  $S_0$ =Control (no N),  $S_1$ =Local compost,  $S_2$ =F.Y.M.,  $S_3$ =Castor cake,  $S_4$ =G.N.C.,  $S_5$ =Urea,  $S_6$ =A/S and  $S_7$ =C/N.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 8. (b) 54'×35'. (iii) 4. (iv) (a) and (b) 16.5'×12'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) N.A. (iii) Germination and yield of tuber. (iv) (a) 1955—1957. (b) No. (c) Nil. (v) (a) Kanpur. (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 6.63 tons/ac. (ii) 0.98 tons/ac. (iii) Treatment differences are highly significant. (iv) Av. yield of tuber in tons/ac.

Treatment	$S_0$	$S_1$	$S_2$	$S_3$	$S_4$	$S_5$	$S_6$	$S_7$
Av. yield	5.46	5.40	6.06	6.77	6.52	6.67	7.73	8.44

S.E./mean = 0.49 tons/ac.

**Crop :- Potato (Rabi).**

**Ref. :- U.P. 58(261).**

**Site :- Govt. Potato Res. Stn., Farrukhabad.**

**Type :- 'M'.**

Object :—To find out the optimum levels of N and P for Potato.



## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanai*. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Farrukhabad. (iii) 10.11.1958. (iv) (a) 6 ploughings. (b) By *kudali*. (c) 15 to 20 mds./ac. (d) 1'9" × 9". (e) N.A. (v) G.M. by *Sanai*. (vi) *Phulwa* (late). (vii) Irrigated. (viii) 1 weeding, 1 hoeing and 1 earthing. (ix) N.A. (x) 19.3.1959.

## 2. TREATMENTS :

7 manurial treatments :  $M_0$ =Control (2 plots),  $M_1$ =60 lb./ac. of N,  $M_2$ =90 lb./ac. of N,  $M_3$ =120 lb./ac. of N,  $M_4$ =150 lb./ac. of N,  $M_5$ =75 lb./ac. of  $P_2O_5$  and  $M_6$ =150 lb./ac. of  $P_2O_5$ .

## 3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) and (b) 8.75' × 24.75'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Early and late blight and leaf roll. (iii) Germination and yield of tuber. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 2.19 tons/ac. (ii) 2.24 tons/ac. (iii) Treatment differences highly significant. (iv) Av. yield of tuber in tons/ac.

Treatment	$M_0$	$M_1$	$M_2$	$M_3$	$M_4$	$M_5$	$M_6$
Av. yie d	1.71	2.49	2.54	2.40	2.54	1.99	2.12

S.E./mean except  $M_0$  = 0.12 tons/ac.

S.E. of  $M_0$  mean = 0.08 tons/ac.

**Crop :- Potato (*Rabi*).**

**Ref :- U.P. 57(315).**

**Site :- Govt. Potato Res. Stn., Farrukhabad.**

**Type :- 'M'.**

Object :—To study the comparative merits of various organic and inorganic manures on the yield of Potato.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanai*. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Farrukhabad. (iii) 20.10.1957. (iv) (a) 6 ploughings. (b) By *Kudali*. (c) 15 to 20 mds./ac. (d) 1½' × 9" (e) N.A. (v) *Sanai* as G.M. (vi) *Phulwa* (late). (vii) Irrigated. (viii) 1 weeding and 1 earthing. (ix) N.A. (x) 28.2.1958.

## 2. TREATMENTS :

8 sources of 100 lb./ac. of N :  $S_0$ =Control (2 plots),  $S_1$ =Local compost,  $S_2$ =F.Y.M.,  $S_3$ =Castor cake,  $S_4$ =G.N.C.,  $S_5$ =Urea,  $S_6$ =A/S and  $S_7$ =C/N.  $S_5$  and  $S_7$  applied on 20.11.1957 and others applied on 19.10.1957.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) and (b) 16.5' × 12'. (v) No. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) N.A. (iii) Germination and yield of tuber. (iv) (a) 1955-1957. (b) No. (c) Nil. (v) (a) Kanpur. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 7.09 tons/ac. (ii) 0.57 tons/ac. (iii) Treatment differences are highly significant. (iv) Av. yield of tuber in tons/ac.

Treatment	$S_0$	$S_1$	$S_2$	$S_3$	$S_4$	$S_5$	$S_6$	$S_7$
Av. yield	6.52	6.62	6.62	6.92	7.42	7.27	7.73	8.23

S.E./mean except  $S_0$  = 0.28 tons/ac.

S.E. of  $S_0$  mean = 0.20 tons/ac.

**Crop :- Potato (Rabi).****Ref :- U.P. 54(297).****Site :- Govt. Potato Res. Stn., Farrukhabad.****Type :- 'M'.**

Object :—To study the effect of N, P and K on the yield of Potato.

**1. BASAL CONDITIONS :**(i) (a) N.A. (b) *Lobia*. (c) N.A. (ii) (a) Loam soil. (b) Refer soil analysis, Farrukhabad. (iii) 5.11.1954.  
(iv) (a) and (b) N.A. (c) 16 mds./ac. (d) and (e) N.A. (v) N.A. (vi) *Phulwa*. (vii) to (x) N.A.**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 2 levels of N as A/S :  $N_0=0$  and  $N_1=100$  lb./ac.(2) 2 levels of  $P_2O_5$  as Super :  $P_0=0$  and  $P_1=150$  lb./ac.(3) 3 levels of  $K_2O$  as Pot. Sul. :  $K_0=0$ ,  $K_1=60$  and  $K_2=120$  lb./ac.

Super and Pot. Sul. applied in furrows and A/S applied by broadcast on 4.11.1954.

**3. DESIGN :**(i)  $3 \times 2 \times 2$  partially confd ; confounding  $N \times P$  and  $N \times P \times K$  interactions. (ii) (a) 6 plots/block ; 2 blocks/  
replication. (b) N.A. (iii) 4. (iv) (a) and (b)  $18' \times 15'$ . (v) Nil. (vi) Yes.**4. GENERAL :**(i) and (ii) N.A. (iii) Yield of tuber. (iv) (a) and (b) No. (c) Nil. (v) (a) Pura. (b) N.A. (vi) and  
(vii) Nil.**5. RESULTS :**(i) 3.58 tons/ac. (ii) 0.27 tons/ac. (iii) Main effects of N and P are highly significant. (iv) Av. yield of  
tuber in tons/ac.

	$K_0$	$K_1$	$K_2$	Mean	$P_0$	$P_1$
$N_0$	2.86	2.93	2.92	2.90	2.63	3.18
$N_1$	4.23	4.26	4.28	4.26	3.85	4.66
Mean	3.55	3.60	3.60	3.58	3.24	3.92
$P_0$	3.08	3.38	3.27			
$P_1$	4.02	3.82	3.93			

S.E. of N or P marginal mean = 0.05 tons/ac.  
 S.E. of K marginal mean = 0.07 tons/ac.  
 S.E. of body of  $N \times K$  or  $P \times K$  table = 0.09 tons/ac.  
 S.E. of body of  $N \times P$  table = 0.08 tons/ac.

**Crop :- Potato (Rabi)****Ref :- U.P. 55(319).****Site :- Govt. Potato Res. Stn., Farrukhabad.****Type :- 'M'.**

Object :—To study the effect of N, P and K on the yield of Potato.

**1. BASAL CONDITIONS :**(i) (a) N.A. (b) *Lobia*. (c) Nil. (ii) (a) Loam soil. (b) Refer soil analysis, Farrukhabad. (iii) 6 and 7.11.1955.  
(iv) (a) 5 ploughings. (b) Sown in furrows. (c) 16 seeds/row. (d) and (e) N.A. (v) Nil. (vi) *Phulwa*.  
(vii) Irrigated. (viii) 1 weeding, 1 hoeing and 2 thinnings. (ix) N.A. (x) 15.3.1956.**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 2 levels of N as A/S :  $N_0=0$  and  $N_1=100$  lb./ac.(2) 2 levels of  $P_2O_5$  as Super :  $P_0=0$  and  $P_1=150$  lb./ac.(3) 2 levels of  $K_2O$  as Pot. Sul. :  $K_0=0$  and  $K_1=150$  lb./ac.Pot. Sul. and Super applied in furrows before sowing and A/S broadcast at sowing. N, P and K applied on  
6.11.1955.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) 12'×196'. (iii) 4. (iv) b) 22.75'×12'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of tuber. (iv) (a) 1955—1957. (c) Nil. (v) (a) Pura. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 3.34 tons/ac. (ii) 0.44 tons/ac. (iii) Main effects of N are highly significant. (iv) Av. yield of tuber in tons/ac.

	P <sub>0</sub>	P <sub>1</sub>	M	K <sub>0</sub>	K <sub>1</sub>
N <sub>0</sub>	2.38	3.39	2.8	2.80	2.97
N <sub>1</sub>	3.17	4.43	3.8	3.75	3.85
Mean	2.78	3.91	3.3	3.28	3.41
K <sub>0</sub>	2.75	3.81			
K <sub>1</sub>	2.80	4.01			

S.E. of any marginal mean  
S.E. of body of any table

11 tons/ac.  
16 tons/ac.

**Crop :- Potato (Rabi).**

**Site :- Govt. Potato Res. Stn., Farrukhabad**

**Ref :- U.P. 56(343).**

**Type :- 'M'.**

Object :— To study the effect of N, P and K on the yield of

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loam soil. (b) Refer to (iii) 15.11.1956. (iv) (a) 6 ploughings. (b) Sown in lines. (c) 6.75 mds./ac. <9°. (e) N.A. (v) N.A. (vi) Phulwa. (vii) Irrigated. (viii) 1 weeding, 1 hoeing and 1 earthing. (x) 20 and 21.3.1957.

## 2. TREATMENTS :

Same as in expt. no. 55(319) on page 705.  
N applied as A/S/N and manures applied on 14.11.1956.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) 19.5'×129'. (iii) 4. (iv) (b) 19.5'×13.5'. (v) Nil. (vi) Yes.

## 4. GENERAL :

Same as in expt. no. 55(319) on page 705.

## 5. RESULTS :

(i) 7.59 tons/ac. (ii) 0.79 tons/ac. (iii) Main effects of N are highly significant. (iv) Av. yield of tuber in tons/ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	K <sub>0</sub>	K <sub>1</sub>
N <sub>0</sub>	6.11	7.00	6.56	28	6.83
N <sub>1</sub>	7.94	9.33	8.63	51	8.75
Mean	7.03	8.16	7.59	40	7.79
K <sub>0</sub>	6.89	7.90			
K <sub>1</sub>	7.17	8.42			

S.E. of any marginal mean = 0.20 tons/ac.  
S.E. of body of any table = 0.28 tons/ac.

**Crop :- Potato (Rabi).**

**Ref :- U.P. 57(378).**

**Site :- Govt. Potato Res. Stn., Farrukhabad.**

**Type :- 'M'.**

Object :— To study the effect of N, P and K on the yield of Potato.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) *Chari*. (c) Nil. (ii) (a) Loam soil. (b) Refer soil analysis, Farrukhabad. (iii) 19.10.1957. (iv) (a) 5 ploughings by *desi* plough. (b) Sown in ridges. (c) 20 seeds/row. (d) and (e) N.A. (v) N.A. (vi) O.N.—208. (vii) Irrigated. (viii) 1 weeding and 1 earthing. (ix) N.A. (x) 8.2.1958.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 2 levels of N as A/S/N :  $N_0=0$  and  $N_1=100$  lb./ac.

(2) 2 levels of  $P_2O_5$  as Super :  $P_0=0$  and  $P_1=150$  lb./ac.

(3) 2 levels of  $K_2O$  as Mur. Pot. :  $K_0=0$  and  $K_1=150$  lb./ac.

Super and Mur. Pot. were placed deep in bands below the ridges while A/S/N was applied by broadcast on 18.10.1957.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) and (b)  $15' \times 15'$ . (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of tuber. (iv) (a) 1955—1957. (b) No. (c) Nil. (v) (a) Pura. (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 4.24 tons/ac. (ii) 0.67 tons/ac. (iii) Main effect of N alone is highly significant. (iv) Av. yield of tuber in tons/ac.

	$P_0$	$P_1$	Mean	$K_0$	$K_1$
$N_0$	2.52	2.97	2.74	2.57	2.91
$N_1$	5.67	5.80	5.74	5.65	5.83
Mean	4.10	4.38	4.24	4.11	4.37
$K_0$	4.06	4.16			
$K_1$	4.13	4.61			

S.E. of any marginal mean = 0.17 tons/ac.  
S.E. of body of any table = 0.24 tons/ac.

**Crop :- Potato (Rabi).**

**Ref :- U.P. 55(186).**

**Site :- Reg. Res. Stn., Hardoi.**

**Type :- 'M'.**

Object :—To study the effect of trace elements on the yield of Potato.

**1. BASAL CONDITIONS :**

(i) (a) *Moong*—Potato. (b) *Moong*. (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Hardoi. (iii) 5.11.1955 to 8.11.1955. (iv) (a) 4 ploughings. (b) In ridges. (c) 13 to 15 mds./ac. (d)  $3'' \times 3''$ . (e) N.A. (v) 100 lb./ac. of N as A/S+60 lb./ac. of  $P_2O_5$  as Super+40 lb./ac. of  $K_2O$  as Pot. Sul. (vi) Military special. (vii) Irrigated. (viii) and (ix) N.A. (x) 22.2.1956 to 25.2.1956.

## 2. TREATMENTS :

6 trace-element treatments :  $T_0$ =Control,  $T_1$ =5 lb./ac. of Borax,  $T_2$ =15 lb./ac. of C/S,  $T_3$ =15 lb./ac. of Zn. Sul.,  $T_4$ =10 lb./ac. of Manganese Sulphate and  $T_5$ =1 lb./ac. of Molybdic acid.

Trace-elements mixed with fine dry earth and applied as surface dressing a day before sowing.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 43'×38'. (b) 40'×35'. (v) 1.5'×1.5'. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of tuber. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 6.94 tons/ac. (ii) 0.15 tons/ac. (iii) Treatment differences are highly significant. (iv) Av. yield of tuber in tons/ac.

Treatment	$T_0$	$T_1$	$T_2$	$T_3$	$T_4$	$T_5$
Av. yield	6.94	6.64	6.88	7.07	7.00	7.14

S.E./mean = 0.07 tons/ac.

**Crop :- Potato (Rabi).**

**Ref :- U.P. 54(36).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type : 'M'.**

**Object :-** To study the effect of time of application of B.M., F.Y.M. and Castor cake on the yield of Potato.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanai*. (c) Nil. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 18, 19.3.1955. (iv) (a) and (b) N.A. (c) 23 tubers/row. (d) 1'9"×9". (e) N.A. (v) N.A. (vi) *Phulwa* (well sprouted). (vii) Irrigated. (viii) 2 earthings. (ix) N.A. (x) 18 and 19.3.1955.

## 2. TREATMENTS :

10 manurial treatments :  $M_0$ =Control,  $M_1$ =B.M. at sowing,  $M_2$ =B.M. one week before sowing,  $M_3$ =Castor cake one week before sowing,  $M_4$ =Castor cake+B.M. at sowing,  $M_5$ =Castor cake+B.M. one week before sowing,  $M_6$ =F.Y.M. one week before sowing,  $M_7$ =F.Y.M. at sowing,  $M_8$ =F.Y.M.+B.M. at sowing and  $M_9$ =F.Y.M.+B.M. one week before sowing.

Sowing done on 13.11.1954. F.Y.M. and Castor cake applied at 100 lb./ac. of N. B.M. applied at 480 lb./ac.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) and (b) 23'×17'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) No. (iii) Yield of tuber. (iv) (a) 1954-contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 8.11 tons/ac. (ii) 1.00 tons/ac. (iii) Treatment differences are significant. (iv) Av. yield of tuber in tons/ac.

Treatment	$M_0$	$M_1$	$M_2$	$M_3$	$M_4$	$M_5$	$M_6$	$M_7$	$M_8$	$M_9$
Av. yield	7.49	6.72	7.36	8.49	8.39	8.79	7.24	8.95	8.64	9.03

S.E./mean = 0.50 tons/ac

**Crop :- Potato.****Ref :- U.P. 55(45).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'M'.**

Object :—To study the effect of time of application of B.M., F.Y.M. and Castor cake on the yield of Potato.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Sanai*. (c) Nil. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 9.11.1955. (iv) (a) and (b) N.A. (c) 20 seeds/row. (d) 1'9"×9". (e) N.A. (v) *Sanai* ploughed in on 19.8.1955 and 14 C.L./ac. of F.Y.M. applied on 9.10.1955. (vi) *Phulwa*. (vii) Irrigated. (viii) 2 earthings. (ix) N.A. (x) 22.3.1956 and 31.3.1956.

**2. TREATMENTS :**

Same as in expt. no. 54(36) on page 708.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) and (b) 28'×15'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Leaf roll incidence. (iii) Yield of tuber. (vi) (a) 1954—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 5.48 tons/ac. (ii) 0.69 tons/ac. (iii) Treatment differences are highly significant. (iv) Av. yield of tuber in tons./ac.

Treatment	M <sub>0</sub>	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	M <sub>4</sub>	M <sub>5</sub>	M <sub>6</sub>	M <sub>7</sub>	M <sub>8</sub>	M <sub>9</sub>
Av. yield	4.47	4.19	5.33	7.69	7.12	7.12	4.63	4.76	5.16	4.31

S.E./mean = 0.34 tons/ac.

**Crop :- Potato.****Ref :- U.P. 54(30).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'M'.**

Object :—To study the effect of different sources of N on the yield of Potato.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Maize. (c) Nil. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 4.11.1954. (iv) (a) and (b) N.A. (c) 20 tubers/row. (d) 1'9"×9". (e) N.A. (v) *Sanai* as G.M. and 8 mds./ac. of Castor cake. (vi) *Phulwa* (little sprouted). (vii) Irrigated. (viii) 6 earthings. (ix) N.A. (x) 14, 15.3.1955.

**2. TREATMENTS :**

4 sources of 50 lb./ac. of N : S<sub>0</sub>=Control, S<sub>1</sub>=C/N, S<sub>2</sub>=A/S/N and S<sub>3</sub>=A/S.  
N applied on 4.11.1954.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) and (b) 15'×28'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Nil. (iii) Yield of tuber. (iv) (a) 1952—1954. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 11.06 tons/ac. (ii) 0.46 tons/ac. (iii) Treatment differences are significant. (iv) Av. yield of tuber in tons/ac.

Treatment	S <sub>0</sub>	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>
Av. yield	10.47	11.29	11.18	11.32

S.E./mean = 0.18 tons/ac.

**Crop :- Potato.****Ref :- U.P. 54(32).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'M'.**

Object :—To study the effect of P and different sources of N on the yield of Potato.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Maize. (c) Nil. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 5.11.1954. (iv) (a) and (b) N.A. (c) 27 seeds/row. (d) 1'9" × 9". (e) N.A. (v) Nil. (vi) *Phulwa*. (vii) Irrigated. (viii) 3 earthings. (ix) N.A. (x) 17, 18.3.1955.

**2. TREATMENTS :**

9 manurial treatments :  $M_0$ =Control,  $M_1$ =F.Y.M.,  $M_2$ =Castor cake,  $M_3$ =A/S,  $M_4$ =Castor cake+B.M.,  $M_5$ =A/S+B.M.,  $M_6$ =F.Y.M.+B.M.,  $M_7$ =A/S/N and  $M_8$ =G.N.C.  
Sources of N applied at 100 lb./ac. and B.M. applied at 100 lb./ac. of  $P_2O_5$ . Manures applied at sowing.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) and (b) 21' × 20'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Nil. (iii) Yield of tuber. (iv) (a) 1952—1954. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 8.69 tons/ac. (ii) 0.78 tons/ac. (iii) Treatment differences are significant. (iv) Av. yield of tuber in tons/ac.

Treatment	$M_0$	$M_1$	$M_2$	$M_3$	$M_4$	$M_5$	$M_6$	$M_7$	$M_8$
Av. yield	7.26	8.40	9.40	9.00	9.29	9.09	7.93	8.00	9.81

S.E./mean = 0.39 tons/ac.

**Crop :- Potato.****Ref :- U.P. 55(47).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'M'.**

Object :—To study the effect of P and different sources of N on the yield of Potato.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Sanai*. (c) Nil. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 10.11.1955. (iv) (a) and (b) N.A. (c) 24 tubers/row. (d) 1'9" × 9". (e) N.A. (v) N.A. (vi) *Phulwa*. (vii) Irrigated. (viii) 3 earthings. (ix) N.A. (x) 20, 21.3.1956.

**2. TREATMENTS :**

Same as in expt. no. 54(32) above.  
Manures applied on 9.11.1955.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) and (b) 21' × 18'. (v) Nil. (vi) Yes.

**4. GENERAL :**

Same as in expt. no. 54(32) above.

**5. RESULTS :**

(i) 6.88 tons/ac. (ii) 0.56 tons/ac. (iii) Treatment differences are highly significant. (iv) Av. yield of tuber in tons/ac.

Treatment	$M_0$	$M_1$	$M_2$	$M_3$	$M_4$	$M_5$	$M_6$	$M_7$	$M_8$
Av. yield	4.57	5.18	7.59	7.49	7.85	8.09	5.66	7.30	8.20

S.E./mean = 0.28 tons/ac.

**Crop :- Potato.****Ref :- U.P. 55(49).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'M'.**

Object :—To study the effect of organic and inorganic manures on the yield of Potato.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Sanai*. (c) Nil. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 17.11.1955. (iv) (a) and (b) N.A. (c) 336 seeds/plot. (d) 1'9"×9". (e) N.A. (v) *Sanai* was ploughed in on 14.8.1955 and 13 C.L./ac. of F.Y.M. applied on 10.6.1955. (vi) *Phulwa*. (vii) Irrigated. (viii) 3 earthings. (ix) N.A. (x) 18, 19.3.1956.

**2. TREATMENTS :**

9 manurial treatments:  $M_0$ =Control,  $M_1$ =Castor cake,  $M_2$ =G.N.C.,  $M_3$ =Urea,  $M_4$ =A/S,  $M_5$ =C/N,  $M_6$ =A/S/N,  $M_7$ =F.Y.M. and  $M_8$ =B.M.

Sources of N applied at 100 lb./ac. of N. B.M. applied at 100 lb./ac. of  $P_2O_5$ .

**8. DESIGN :**

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) and (b) 24½'×18'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Leaf roll incidence. (iii) Yield of potato. (iv) (a) 1955—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 7.83 tons/ac. (ii) 0.72 tons/ac. (iii) Treatment differences are highly significant. (iv) Av. yield of tuber in tons/ac.

Treatment	$M_0$	$M_1$	$M_2$	$M_3$	$M_4$	$M_5$	$M_6$	$M_7$	$M_8$
Av. yield	5.14	8.23	8.43	9.09	8.66	9.11	8.61	6.46	6.73

S.E./mean = 0.36 tons/ac.

**Crop :- Potato.****Ref :- U.P. 54(35).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'M'.**

Object :—To study the effect of N, P and K on the yield of Potato.

**1. BASAL CONDITIONS :**

(i) (a) Nil (b) Maize. (c) Nil. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 7, 8.11.1954. (iv) (a) and (b) N.A. (c) 20 seeds/row. (d) 1'9"×9". (e) N.A. (v) *Sanai* ploughed in on 19.8.1955+8 mds/ac. of Castor cake. (vi) *Phulwa* (little sprouted). (vii) Irrigated. (viii) 4 earthings. (ix) N.A. (x) 24, 28.3.1955.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 3 levels of N as A/S :  $N_0=0$ ,  $N_1=50$  and  $N_2=100$  lb./ac.

(2) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=75$  and  $P_2=150$  lb./ac.

(3) 3 levels of  $K_2O$  as Pot. Sul. :  $K_0=0$ ,  $K_1=75$  and  $K_2=150$  lb./ac.

N and  $P_2O_5$  applied by broadcast and  $K_2O$  applied in furrows at the time of sowing.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 27. (b) N.A. (iii) 4. (iv) (a) and (b) 18'×15'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Nil. (iii) Yield of potato. (iv) (a) 1951—1955. (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 8.12 tons/ac. (ii) 0.64 tons/ac. (iii) Main effect of N and P are highly significant. Effect of K and interaction N×P are significant. (iv) Av. yield of tuber in tons/ac.



	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	K <sub>0</sub>	K <sub>1</sub>	K <sub>2</sub>
P <sub>0</sub>	7.00	7.81	7.84	7.55	7.22	7.51	7.91
P <sub>1</sub>	7.07	8.60	9.06	8.24	8.21	8.40	8.12
P <sub>2</sub>	7.45	8.76	9.49	8.56	8.24	8.71	8.74
Mean	7.17	8.39	8.80	8.12	7.89	8.21	8.26
K <sub>0</sub>	6.95	8.12	8.60				
K <sub>1</sub>	7.21	8.58	8.85				
K <sub>2</sub>	7.35	8.48	8.94				

S.E. of any marginal mean

= 0.11 tons/ac.

S.E. of body of any table

= 0.18 tons/ac.

**Crop :- Potato.****Ref :- U.P. 55(56).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'M'.**

Object :—To study the effect of N, P and K on the yield of Potato.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Sanai*. (c) Nil. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 24.11.1955. (iv) (a) and (b) N.A. (c) 20 seeds/row. (d) 1'9" × 9". (e) N.A. (v) *Sanai* ploughed in on 19.8.1955. (vi) *Phulwa*. (vii) Irrigated. (viii) 2 earthings. (ix) N.A. (x) 4.4.1956 to 10.4.1956.

**2. TREATMENTS to 4. GENERAL :**

Same as in expt. no. 54(35) on page 711.

**5. RESULTS :**

(i) 6.05 tons/ac. (ii) 0.66 tons/ac. (iii) Main effect of N and P are highly significant. (iv) Av. yield of tuber in tons/ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	K <sub>0</sub>	K <sub>1</sub>	K <sub>2</sub>
P <sub>0</sub>	5.21	5.56	5.85	5.54	5.41	5.69	5.52
P <sub>1</sub>	5.58	6.48	6.54	6.20	6.02	6.19	6.39
P <sub>2</sub>	5.60	6.63	6.96	6.40	6.34	6.35	6.50
Mean	5.46	6.22	6.45	6.05	5.92	6.08	6.14
K <sub>0</sub>	5.43	6.01	6.32				
K <sub>1</sub>	5.56	6.29	6.38				
K <sub>2</sub>	5.40	6.35	6.65				

S.E. of any marginal mean

= 0.11 tons/ac.

S.E. of body of any table

= 0.19 tons/ac.

**Crop :- Potato (Rabi).**  
**Site :- Govt. Res. Farm, Kanpur.**

**Ref :- U.P. 56(229).**  
**Type :- 'M'.**

Object :—To study the effect of different oil cake manures on the yield of Potato.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Sanai*. (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 17.11.1956. (iv) (a) N.A. (b) By *kudali*. (c) 15 to 20 mds./ac. (d) 1'9"×9". (e) N.A. (v) *Sanai* (G.M.). (vi) *Phulwa* (late). (vii) Irrigated. (viii) 2 earthings. (ix) N.A. (x) 29, 30.3.1957.

**2. TREATMENTS :**

6 sources of 100 lb./ac. of N : S<sub>0</sub>=Control, S<sub>1</sub>=Castor cake, S<sub>2</sub>=G.N.C., S<sub>3</sub>=*Mahuwa* cake, S<sub>4</sub>=*Neem* cake and S<sub>5</sub>=Urea cake.

Sources of N applied on 16.11.1956.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 6. (b) 18'×123'. (iii) 6. (iv) (a) and (b) 18'×18'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Leaf roll attack ; no control measures adopted. (iii) Germination %, leaf roll incidence and yield of tuber. (iv) (a) 1956—1958. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 5.04 tons/ac. (ii) 0.51 tons/ac. (iii) Treatment differences are highly significant. (iv) Av. yield of tuber in tons/ac.

Treatment	S <sub>0</sub>	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>	S <sub>5</sub>
Av. yield	3.97	5.19	5.95	3.95	5.39	5.82

S.E./mean = 0.21 tons/ac.

**Crop :- Potato (Rabi).**  
**Site :- Govt. Res. Farm, Kanpur.**

**Ref :- U.P. 57(289).**  
**Type :- 'M'.**

Object :—To study the effect of different oil cake manures on the yield of Potato.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Sanai*. (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 6.11.1957. (iv) (a) N.A. (b) By *kudali*. (c) 15 to 20 mds./ac. (d) 1'9"×9". (e) N.A. (v) *Sanai* (G.M.). (vi) *Phulwa* (late). (vii) Irrigated. (viii) 2 earthings. (ix) N.A. (x) 24, 25.3.1958.

**2. TREATMENTS and 3. DESIGN :**

Same as in expt. no. 56(229) above.

**4. GENERAL :**

(i) Good. (ii) Leaf roll and mosaic attack ; no control measures adopted. (iii) Germination and yield of tuber. (iv) (a) 1956—1958. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 3.66 tons/ac. (ii) 0.32 tons/ac. (iii) Treatment differences are highly significant. (iv) Av. yield of tuber in tons/ac.

Treatment	S <sub>0</sub>	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>	S <sub>5</sub>
Av. yield	2.96	3.85	4.24	3.31	3.91	3.66

S.E./mean = 0.13 tons/ac.

**Crop :- Potato (Rabi).****Ref :- U.P. 58(221).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'M'.**

Object :— To study the effect of various oil cake manures on the yield of Potato.

**1. BASAL CONDITIONS :**(i) (a) to (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 1.11.1958. (iv) (a) N.A. (b) Sown by *kudali*. (c) 15 to 20 mds./ac. (d) 1'9"×9". (e) N.A. (v) N.A. (vi) *Phalwa* (late). (vii) Irrigated. (viii) Earthing. (ix) 0.78". (x) 9.3.1959.**2. TREATMENTS :**6 sources of 100 lb./ac. of N : S<sub>0</sub>=Control, S<sub>1</sub>=A/S, S<sub>2</sub>=*Mahuwa* cake, S<sub>3</sub>=Castor cake, S<sub>4</sub>=G.N.C. and S<sub>5</sub>=Urea.

Sources of N mixed with the soil and applied before sowing.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 6. (b) 24.75'×62.5'. (iii) 5. (iv) (a) and (b) 8.75'×24.75'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Satisfactory. (ii) Attack of mosaic and leaf roll. (iii) Germination %, no. of diseased plants and yield of potato. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 5.23 tons/ac. (ii) 0.48 tons/ac. (iii) Treatment differences are highly significant. (iv) Av. yield of tuber in tons/ac.

Treatm.nt	S <sub>0</sub>	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>	S <sub>5</sub>
Av. yield	4.62	5.84	4.91	5.73	5.47	5.14

S.E./mean = 0.21 tons/ac.

**Crop :- Potato (Rabi).****Ref :- U.P. 56(235).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'M'.**

Object :— To study the comparative merits of organic and inorganic manures on the yield of Potato.

**1. BASAL CONDITIONS :**(i) (a) Nil. (b) *Sanai*. (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 30.16.1956. (iv) (a) N.A. (b) By *kudali*. (c) 15 to 20 mds./ac. (d) 1'9"×9". (e) N.A. (v) *Sanai* as G.M. (vi) *Paulwa* (late). (vii) Irrigated. (viii) 4 earthings. (ix) N.A. (x) 20.3.1957.**2. TREATMENTS :**9 sources of 100 lb./ac. of N : S<sub>0</sub>=Control (no N), S<sub>1</sub>=Castor cake, S<sub>2</sub>=G.N.C., S<sub>3</sub>=Urea, S<sub>4</sub>=A/S, S<sub>5</sub>=C/N, S<sub>6</sub>=A/S/N, S<sub>7</sub>=F.Y.M. and S<sub>8</sub>=Nitro chalk.Treatments S<sub>1</sub> to S<sub>4</sub>, S<sub>6</sub> and S<sub>7</sub> applied on 30.10.1956. S<sub>5</sub> applied on 20.11.1956 and S<sub>8</sub> applied on 13.11.1956.**3. DESIGN :**

(i) R.B.D. (ii) (a) 9. (b) 60'×79.5'. (iii) 4. (iv) (a) and (b) 24.5'×15'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Leaf roll incidence ; no control measure adopted. (iii) Germination and yield of potato. (iv) (a) 1955—1957. (b) No. (c) Nil. (v) (a) Farrukhabad. (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 8.52 tons/ac. (ii) 0.64 tons/ac. (iii) Treatment differences are highly significant. (iv) Av. yield of tuber in tons/ac.

Treatment	S <sub>0</sub>	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>	S <sub>5</sub>	S <sub>6</sub>	S <sub>7</sub>	S <sub>8</sub>
Av. yield	7.14	8.82	9.23	8.80	8.75	8.96	9.14	7.85	8.01

S.E./mean = 0.32 tons/ac.

**Crop :- Potato (Rabi).****Ref :- U.P. 57(303).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'M'.**

Object :—To study the comparative efficiency of organic and inorganic manures on the yield of Potato.

**1. BASAL CONDITIONS :**(i) (a) Nil. (b) *Sanai*. (c) N.A. (ii) (a) Loam. (b) Refer soil analysis Kanpur. (iii) 21.1.1957. (iv) (a) N.A. (b) By *kudali*. (c) 15 to 20 mds./ac. (d) 1'9"×9". (e) N.A. (v) *Sanai* as G.M. (vi) *Phulwa* (late). (vii) Irrigated. (viii) Earthing. (ix) N.A. (x) 17 to 19.3.1958.**2. TREATMENTS to 4. GENERAL :**

Same as in expt. no. 56(235) on page 714.

**5. RESULTS :**

(i) 5.33 tons/ac. (ii) 0.36 tons/ac. (iii) Treatment differences are significant. (iv) Av. yield of tuber in tons/ac.

Treatment	S <sub>0</sub>	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>	S <sub>5</sub>	S <sub>6</sub>	S <sub>7</sub>	S <sub>8</sub>
Av. yield	4.97	5.44	5.94	5.17	5.28	5.15	5.13	5.19	5.69

S.E./mean = 0.18 tons/ac.

**Crop :- Potato (Rabi).****Ref :- U.P. 56(265).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'M'.**

Object :—To find out the optimum time of application of P and different sources of N on Potato.

**1. BASAL CONDITIONS :**(i) (a) Nil. (b) *Sanai*. (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 13.11.1956. (iv) (a) N.A. (b) By *kudali*. (c) 15 to 20 mds./ac. (d) 1'9"×9". (e) N.A. (v) *Sanai* as G.M. (vi) *Phulwa* (late). (vii) Irrigated. (viii) 2 earthings. (ix) N.A. (x) 26 to 28.3.1957.**2. TREATMENTS :**

All combinations of (1) and (2)+One control

(1) 5 levels of fertilizers : F<sub>1</sub>=100 lb./ac. of P<sub>2</sub>O<sub>5</sub> as B.M., F<sub>2</sub>=100 lb./ac. of N as F.Y.M., F<sub>3</sub>=100 lb./ac. of N as Castor cake, F<sub>4</sub>=F<sub>2</sub>+F<sub>1</sub> and F<sub>5</sub>=F<sub>3</sub>+F<sub>1</sub>.(2) 2 times of application : T<sub>1</sub>=One week before sowing (7.11.1956) and T<sub>2</sub>=At planting (13.11.1956).**3. DESIGN :**

(i) R.B.D. (ii) (a) 11. (b) 18'×184'. (iii) 4. (iv) (a) and (b) 14'×18'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Leaf roll incidence ; no control measure adopted. (iii) Germination and yield of potato. (iv) (a) 1954—1956. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 5.57 tons/ac. (ii) 0.96 tons/ac. (iii) Main effect of F alone is significant. (iv) Av. yield of tuber in tons/ac.

Control = 4.76 tons/ac.

	F <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>	F <sub>4</sub>	F <sub>5</sub>	Mean
T <sub>1</sub>	4.88	5.28	6.83	5.75	4.29	5.41
T <sub>2</sub>	4.88	5.99	6.31	5.75	6.59	5.90
Mean	4.88	5.64	6.57	5.75	5.44	5.66

S.E. of F marginal mean	= 0.34 tons/ac.
S.E. of T marginal mean	= 0.21 tons/ac.
S.E. of body of table or control mean	= 0.48 tons/ac.

**Crop :- Potato (Rabi).**

**Ref :- U.P. 58(298).**

**Site :- Student's Instructional Farm, Govt. Agri. College, Kanpur. Type :- 'M'.**

Object :—To study the effect of different levels of A/S and Castor cake on Potato.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Sanai*. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Kanpur. (iii) 4.11.1958. (iv) (a) 1 ploughing for turning in of *sanai*, 4 ploughings each followed by 2 plankings. (b) Sown at a depth of 3". (c) N.A. (d) 1'9"×9". (e) 1. (v) Nil. (vi) *Phulwa*. (vii) Irrigated. (viii) 1 weeding and 1 hoeing. (ix) 2.1". (x) 23.3 1959.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 6 levels of N as A/S :  $N_0=0$ ,  $N_1=40$ ,  $N_2=80$ ,  $N_3=120$ ,  $N_4=160$  and  $N_5=200$  lb./ac.

(2) 6 levels of N as Castor cake :  $N_0'=0$ ,  $N_1'=40$ ,  $N_2'=80$ ,  $N_3'=120$ ,  $N_4'=160$  and  $N_5'=200$  lb./ac.

Castor cake broadcast on 29.10.1958 and A/S in two equal doses on 3.11.1958 and 17.12.1958.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 36. (b) N.A. (iii) 3. (iv) (a) 10'6"×8'9". (b) 9'×5'3". (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Infection of the virus disease was severe. (iii) Height of shoots, germination and yield of potato. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 9.44 tons/ac. (ii) 0.89 tons/ac. (iii) Main effect of N' and interaction  $N \times N'$  are highly significant. Effect of N is significant. (iv) Av. yield of tuber in tons/ac.

	$N_0'$	$N_1'$	$N_2'$	$N_3'$	$N_4'$	$N_5'$	Mean
$N_0$	8.19	7.53	10.04	9.30	9.63	9.84	9.09
$N_1$	11.19	9.26	10.66	9.14	10.12	8.85	9.87
$N_2$	11.40	10.37	10.25	10.25	8.35	9.88	10.08
$N_3$	9.96	9.38	10.08	8.03	9.14	10.29	9.48
$N_4$	8.97	9.63	10.54	9.26	9.10	7.49	9.16
$N_5$	8.31	9.75	9.59	8.89	8.5	9.14	8.97
Mean	9.67	9.32	10.19	9.14	9.08	9.25	9.44

S.E. of any marginal mean = 0.51 tons/ac.

S.E. of body of table = 0.21 tons/ac.

**Crop :- Potato (Rabi).**

**Ref :- U.P. 58(291).**

**Site :- Student's Instructional Farm, Govt. Agri. College, Kanpur. Type :- 'M'.**

Object :—To study the effect of different levels of N and P on Potato.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Chari*. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Kanpur. (iii) Nov., 1958. (iv) (a) Ploughings and harrowings. (b) Flat method. (c) N.A. (d) 1'9"×9". (e) N.A. (v) 120 lb./ac. of Castor cake as basal dressing to maintain fertility on 25th Sept. (vi) *Phulwa*. (vii) Irrigated. (viii) 2 weedings, 2 hoeings and 1 earthing. (ix) 2.1". (x) March, 1959.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 6 levels of N as A/S :  $N_0=0$ ,  $N_1=40$ ,  $N_2=80$ ,  $N_3=120$ ,  $N_4=160$  and  $N_5=200$  lb./ac.

(2) 6 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=40$ ,  $P_2=80$ ,  $P_3=120$ ,  $P_4=160$  and  $P_5=200$  lb./ac.

$P_2O_5$  mixed with fine moist earth was applied to each plot in furrows opened by *kudali* at a depth of 6" one day before sowing.  $\frac{1}{2}$  dose of A/S applied in the same way as  $P_2O_5$  and  $\frac{1}{2}$  dose of A/S applied 44 days after sowing.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 36. (b) N.A. (iii) 2. (iv) (a) 18'×14'. (b) 14.5'×11'. (v) 1'9"×1'6". (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Attack of mosaic disease ; no control measure adopted. (iii) Germination count, height, no. of flowered plants and yield of tuber. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 7.43 tons/ac. (ii) 0.64 ton/ac. (iii) All effects are highly significant. (iv) Av. yield of tuber in tons/ac.

	$N_0$	$N_1$	$N_2$	$N_3$	$N_4$	$N_5$	Mean
$P_0$	3.12	4.88	7.24	6.05	6.19	4.43	5.32
$P_1$	4.83	7.70	6.61	8.23	6.75	8.21	7.05
$P_2$	5.32	6.89	9.51	9.80	8.09	6.17	7.63
$P_3$	6.48	9.27	10.49	11.05	7.54	8.98	8.97
$P_4$	5.88	6.10	10.01	8.88	9.68	9.10	8.27
$P_5$	4.01	8.63	6.64	9.05	9.51	6.38	7.37
Mean	4.94	7.24	8.42	8.84	7.96	7.21	7.43

S.E. of any marginal mean = 0.18 tons/ac.

S.E. of body of table = 0.45 tons/ac.

**Crop :- Potato.**

**Ref :- U.P. 55(38).**

**Site :- Potato Sub-Stn., Kausani.**

**Type :- 'M'.**

Object :—To study the effect of different levels of N on the yield of Potato.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Maduwa*. (c) Nil. (ii) (a) Hilly soil. (b) N.A. (iii) 15.3.1955. (iv) (a) and (b) N.A. (c) 16 tubers/row. (d) 2'×9". (e) N.A. (v) Cowdung on 18.2.1955 and Castor cake on 25.2.1955. (vi) *Garhwal*. (vii) Unirrigated. (viii) 1 weeding and 1 earthing. (ix) N.A. (x) 22.8.1955.

## 2. TREATMENTS :

4 levels of N :  $N_1=100$ ,  $N_2=150$ ,  $N_3=200$  and  $N_4=250$  lb./ac.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 2. (iv) (a) and (b) 12'×12'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) No. (iii) Germination and yield of tuber. (iv) (a) 1955—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 6.35 tons/ac. (ii) 0.40 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of tuber in tons/ac.

Treatment	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	N <sub>4</sub>
Av. yield	5.69	6.81	6.66	6.25

S.E./mean = 0.28 tons/ac.

**Crop :- Potato (Kharif).**

**Ref :- U.P. 57(308).**

**Site :- Potato Sub-Stn., Kausani.**

**Type :- 'M'.**

Object :—To study the effect of P and K on the yield of Potato.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Hilly soil. (b) N.A. (iii) 29.3.1957. (iv) (a) N.A. (b) By *kudali*. (c) 15 to 20 mds./ac. (d) 2' × 9". (e) N.A. (v) Castor cake on 16.2.1957. (vi) *Garhwal* (late). (vii) Unirrigated. (viii) 1 weeding and 1 earthing. (ix) N.A. (x) 5.8.1957.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 2 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0 and P<sub>1</sub>=150 lb./ac.

(2) 2 levels of K<sub>2</sub>O : K<sub>0</sub>=0 and K<sub>1</sub>=150 lb./ac.

**3. DESIGN :**

(i) Fact. in R B D. (ii) (a) 4. (b) N.A. (iii) 2. (iv) (a) and (b) 9' × 6'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) N.A. (iii) Yield of tuber. (iv) (a) 1957—1958. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 4.80 tons/ac. (ii) 0.87 tons/ac. (iii) None of the effects is significant. (iv) Av. yield of tuber in tons/ac.

	K <sub>0</sub>	K <sub>1</sub>	Mean
P <sub>0</sub>	3.47	5.60	4.54
P <sub>1</sub>	4.44	5.70	5.07
Mean	3.96	5.65	4.80

S.E. of any marginal mean = 0.43 tons/ac.

S.E. of body of table = 0.61 tons/ac.

**Crop :- Potato (Kharif).**

**Ref :- U.P. 58(249).**

**Site :- Potato Sub-Stn., Kausani.**

**Type :- 'M'.**

Object :—To study the effect of P and K on the yield of Potato.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Hilly soil. (b) N.A. (iii) 11.3.1958. (iv) (a) N.A. (b) By *kudali*. (c) 15 to 20 mds./ac. (d) 2' × 9". (e) N.A. (v) Castor cake at 120 lb./ac. of N. (vi) *Garhwal* (late). (vii) Unirrigated. (viii) 2 earthings, 1 weeding and 1 hoeing. (ix) N.A. (x) 9.8.1958.

**2. TREATMENTS :**

Same as in expt. no. 57(308) above.

P and K applied on 11.3.1958.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 4. (b) 9' × 30'. (iii) 4. (iv) (a) and (b) 9' × 6'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) 4 sprayings by D.D.T. (iii) Germination and yield of tuber. (iv) (a) 1957—1958. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 4.25 tons/ac. (ii) 0.25 tons/ac. (iii) Main effect of P alone is highly significant. (iv) Av. yield of tuber in tons/ac.

	K <sub>0</sub>	K <sub>1</sub>	Mean
P <sub>0</sub>	3.67	3.72	3.70
P <sub>1</sub>	4.66	4.95	4.80
Mean	4.16	4.34	4.25

S.E. of any marginal mean = 0.09 tons/ac.  
S.E. of body of table = 0.12 tons/ac.

**Crop :- Potato (Kharif).**

**Ref :- U.P. 57(305).**

**Site :- Potato Sub-Stn., Kausani.**

**Type :- 'M'.**

Object :—To study the effect of top dressing with A/S and Urea on the yield of Potato.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Hilly soil. (b) N.A. (iii) 27.3.1957. (iv) (a) N.A. (b) By *kudali*. (c) 15 to 20 mds./ac. (d) 2' × 9". (e) N.A. (v) Cowdung and Castor cake applied to give 120 lb./ac. of N on 27.1.1959 and 16.2.1957. (vi) *Garhwal* (late). (vii) Unirrigated. (viii) 1 weeding and 1 earthing. (ix) N.A. (x) 5.8.1957.

## 2. TREATMENTS :

3 manurial treatments : M<sub>0</sub>=Control, M<sub>1</sub>=Top dressing with A/S at 50 lb./ac. of N and M<sub>2</sub>=Top dressing with Urea at 50 lb./ac. of N.

N applied on 21.5.1957.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) 7.5' × 63'. (iii) 4. (iv) (a) and (b) 20' × 7.5'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) N.A. (iii) Yield of tuber. (iv) (a) 1956—1958. (b) and (c) No. (v) to (vii) Nil.

## 5. RESULTS :

(i) 6.51 tons/ac. (ii) 1.94 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of tuber in tons/ac.

Treatment	M <sub>0</sub>	M <sub>1</sub>	M <sub>2</sub>
Av. yield	6.00	6.20	7.33

S.E./mean = 0.97 tons/ac.

**Crop :- Potato (Kharif).**

**Ref :- U.P. 58(246).**

**Site :- Potato Sub-Stn., Kausani.**

**Type :- 'M'.**

Object :—To study the effect of top dressing with Urea and Castor cake on the yield of Potato.



## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Hilly soil. (b) N.A. (iii) 11.3.1958. (iv) (a) N.A. (b) By *kudali*. (c) 15 to 20 mds./ac. (d) 2' × 9". (e) N.A. (v) Cowdung+Castor cake at 120 lb./ac. of N. (vi) *Garhwal* (late). (vii) Unirrigated. (viii) 2 earthings. (ix) N.A. (x) 13.8.1958.

## 2. TREATMENTS :

3 manurial treatments :  $M_0$ =Control,  $M_1$ =Top dressing with Urea at 50 lb./ac. of N and  $M_2$ =Top dressing with Castor cake at 50 lb./ac. of N.

N applied on 1.5.1958.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) 10.5' × 28'. (iii) 4. (iv) (a) and (b) 10.5' × 8'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) N.A. (iii) Germination and yield of tuber. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 2.86 tons/ac. (ii) 0.20 tons/ac. (iii) Treatment differences are highly significant. (iv) Av. yield of tuber in tons/ac.

Treatment	$M_0$	$M_1$	$M_2$
Av. yield	2.23	3.62	2.72

S.E./mean = 0.10 tons/ac.

**Crop :- Potato (*Kharif*).**

**Ref :- U.P. 57(304).**

**Site :- Potato Sub-Stn., Kausani.**

**Type :- 'M'.**

Object :- To study the comparative efficiency of different sources of N on the yield of Potato.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) Fallow. (c) Nil. (ii) (a) Hilly soil. (b) N.A. (iii) 26.3.1957. (iv) (a) N.A. (b) By *kudali*. (c) 15 to 20 mds./ac. (d) 1½' × 9". (e) N.A. (v) Cowdung at 30 lb./ac. of N and Castor cake at 20 lb./ac. of N. (vi) *Garhwal* (late). (vii) Unirrigated. (viii) 1 weeding and 1 earthing. (ix) N.A. (x) 5.8.1957.

## 2. TREATMENTS :

All combinations of (1) and (2) + one control

(1) 3 sources of 100 lb./ac. of N :  $S_1$ =A/S,  $S_2$ =Castor cake and  $S_3$ =Urea.

(2) 2 methods of application :  $M_1$ =Full dose at planting and  $M_2$ =½ at planting + ½ at earthing.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) and (b) 12 × 4.5'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) N.A. (iii) Yield of tuber. (iv) (a) to (c) No. (v) to (vii) Nil.

## 5. RESULTS :

(i) 6.14 tons/ac. (ii) 1.31 tons/ac. (iii) Main effect of N is highly significant. 'Control vs. others' is significant. (iv) Av. yield of tuber in tons/ac.

Control = 4.44 tons/ac.

	$S_1$	$S_2$	$S_3$	Mean
$M_1$	5.93	8.33	5.93	6.73
$M_2$	5.37	8.15	4.82	6.11
Mean	5.65	8.24	5.38	6.42

S.E. of S marginal mean	= 0.46 tons/ac.
S.E. of M marginal mean	= 0.38 tons/ac.
S.E. of body of table or control mean	= 0.66 tons/ac.

**Crop :- Potato (Kharif).**

**Ref :- U.P. 58(250).**

**Site :- Potato Sub-Stn., Kausani.**

**Type :- 'M'.**

Object :- To study the comparative efficiency of different sources of N on the yield of Potato.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Hilly soil. (b) N.A. (iii) 18.3.1958. (iv) (a) N.A. (b) By *kudali*. (c) 15 to 20 mds./ac. (d) 2' x 9". (e) N.A. (v) 100 mds./ac. of N as Castor cake. (vi) *Garhwal* (late). (vii) Unirrigated. (viii) 4 earthings. (ix) N.A. (x) 9.8.1958.

**2. TREATMENTS :**

All combinations of (1) and (2) + a control

(1) 3 levels of fertilizers :  $F_1=150$  lb./ac. of  $P_2O_5$  as Super,  $F_2=50$  lb./ac. of N as Castor cake and  $F_3=50$  lb./ac. of N as Urea.

(2) 2 times of application :  $T_1=$ All at planting and  $T_2=\frac{1}{2}$  at planting +  $\frac{1}{2}$  at 1st earthing.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 7. (b) 10.5' x 68'. (iii) 4. (iv) (a) and (b) 10.5' x 8'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) D.D.T. sprayed 4 times. (iii) Germination and yield of potato. (iv) (a) 1958—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 3.64 tons/ac. (ii) 0.18 tons/ac. (iii) 'Control vs. others' is highly significant. Interaction  $F \times T$  is significant. (iv) Av. yield of tuber in tons/ac.

Control = 3.27 tons/ac.

	$F_1$	$F_2$	$F_3$	Mean
$T_1$	3.41	3.70	3.98	3.70
$T_2$	3.37	3.97	3.73	3.69
Mean	3.39	3.84	3.86	3.70

S.E. of F marginal mean	= 0.06 tons/ac.
S.E. of T marginal mean	= 0.05 tons/ac.
S.E. of body of table or control mean	= 0.09 tons/ac.

**Crop :- Potato (Kharif).**

**Ref :- U.P. 56(274).**

**Site :- Potato Sub-Stn., Kausani.**

**Type :- 'M'.**

Object :- To study the effect of top dressing of Potato crop with different levels of N.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Fallow. (c) N.A. (ii) (a) Hilly soil. (b) N.A. (iii) 29.3.1956. (iv) (a) N.A. (b) By *kudali*. (c) 15 to 20 mds./ac. (d) 1'6" x 9". (e) N.A. (v) Cowdung applied on 13.2.1956. and Castor cake applied on 22.3.1956 to give 120 lb./ac. of N. (vi) *Garhwal* (late). (vii) Unirrigated. (viii) 1 weeding, 2 earthings and 1 hoeing. (ix) N.A. (x) 15.8.1956.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 levels of N as Urea :  $N_1=25$  and  $N_2=50$  lb./ac.

(2) 2 times of application :  $T_1=At$  1st earthing and  $T_2=At$  2nd earthing.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) and (b)  $4.5' \times 12'$ . (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Fair. (ii) N.A. (iii) Germination and yield of potato. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1.47 tons/ac. (ii) 0.55 tons/ac. (iii) None of the effects is significant. (iv) Av. yield of tuber in tons/ac.

	$T_1$	$T_2$	Méan
$N_1$	1.39	1.54	1.46
$N_2$	1.27	1.67	1.47
Mean	1.33	1.60	1.47

S.E. of any marginal mean = 0.16 tons/ac.

S.E. of body of table = 0.22 tons/ac.

**Crop :- Potato (Kharif).**

**Ref :- U.P. 56(277).**

**Site :- Potato Sub-Stn., Kausani.**

**Type :- 'M'.**

Object :- To study the effect of different sources of N on the yield of Potato.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) N.A. (ii) (a) Hilly soil. (b) N.A. (iii) 5.4.1956. (iv) (a) N.A. (b) By kudali. (c) 15 to 20 mds./ac. (d)  $2' \times 9''$ . (e) N.A. (v) 50 lb./ac. of N as Castor cake applied on 4.4.1956. (vi) Garhwal (late). (vii) Unirrigated. (viii) 1 weeding and 2 earthings. (ix) N.A. (x) 18.8.1956.

## 2. TREATMENTS :

All combinations of (1) and (2) + a control

(1) 3 sources of 100 lb./ac. of N :  $S_1=A/S$ ,  $S_2=$  Castor cake and  $S_3=$  Urea.

(2) 3 times of application :  $T_1=At$  planting,  $T_2=\frac{1}{2}$  at planting +  $\frac{1}{2}$  at 1st earthing and  $T_3=\frac{1}{2}$  at 1st earthing +  $\frac{1}{2}$  at 2nd earthing.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) and (b)  $6' \times 10.5'$ . (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Fair. (ii) N.A. (iii) Germination and yield of potato. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 0.66 tons/ac. (ii) 0.28 tons/ac. (iii) Main effect of S is highly significant. Interaction  $T \times S$  and "control vs. others" are significant. (iv) Av. yield of tuber in tons/ac.

Control = 0.95 tons/ac.

	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	Mean
S <sub>1</sub>	0.30	0.48	0.38	0.39
S <sub>2</sub>	0.76	0.94	0.86	0.85
S <sub>3</sub>	0.59	0.31	1.03	0.64
Mean	0.55	0.58	0.76	0.63

S.E. of any marginal mean = 0.08 tons/ac.

S.E. of body of table or control mean = 0.13 tons/ac.

**Crop :- Potato (Kharif).****Ref :- U.P. 59(494).****Site :- Potato Sub-Stn., Kausani.****Type :- 'M'.**

Object :—To study the effect of Urea and Castor cake and Super applied at different times on Potato.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Fallow. (c) Nil. (ii) (a) Hilly soil. (b) N.A. (iii) 11.3.1959. (iv) (a) N.A. (b) By *kudali* (c) 15 to 20 mds./ac. (d) 2' × 9". (e) N.A. (v) Compost at 50 lb./ac. of N applied on 10.3.1959. (vi) *Gharva* (early). (vii) Nil. (viii) 2 earthings. (ix) N.A. (x) 11.8.1959.

**2. TREATMENTS :**

9 manurial treatments : M<sub>0</sub>=Control, M<sub>1</sub>=Urea at 100 lb./ac. of N+Super at 50 lb./ac. of P<sub>2</sub>O<sub>5</sub> at planting, M<sub>2</sub>=Urea at 50 lb./ac. of N at planting+Super at 50 lb./ac. of P<sub>2</sub>O<sub>5</sub> at planting +Urea at 50 lb./ac. of N at 1st earthing, M<sub>3</sub>=Urea at 100 lb./ac. of N at planting, M<sub>4</sub>=Urea at 50 lb./ac. of N at planting+Urea at 50 lb./ac. of N at 1st earthing, M<sub>5</sub>=Castor cake at 100 lb./ac. of N at planting+Super at 50 lb./ac. of P<sub>2</sub>O<sub>5</sub> at planting, M<sub>6</sub>=Castor cake at 50 lb./ac. of N at planting+Super at 50 lb./ac. of P<sub>2</sub>O<sub>5</sub> at planting+Urea at 50 lb./ac. of N at 1st earthing, M<sub>7</sub>=Castor cake at 100 lb./ac. of N at planting and M<sub>8</sub>=Castor cake at 50 lb./ac. of N at planting+Castor cake at 50 lb./ac. of N at 1st earthing.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) and (b) 10.5' × 6'. (v) Nil. (vi) Yes

**4. GENERAL :**

(i) N.A. (ii) 4 sprayings of D.D.T. and 1 spraying of Bordeaux mixture. (iii) Germination and yield of potato. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 0.91 tons/ac. (ii) 0.65 tons/ac. (iii) Treatment differences are not significant. (vi) Av. yield of tuber in tons/ac.

Treatment	M <sub>0</sub>	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	M <sub>4</sub>	M <sub>5</sub>	M <sub>6</sub>	M <sub>7</sub>	M <sub>8</sub>
Av. yield	0.56	1.19	0.73	0.71	0.56	0.56	1.27	1.31	1.31

S.E./mean = 0.32 tons/ac.

**Crop :- Potato (Rabi).****Ref :- U.P. 57(33).****Site :- Reg. Res. Stn., Meerut.****Type :- 'M'.**

Object :—To study the effect of N, P and K on the yield of Potato.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Silt loam. (b) Refer soil analysis, Meerut. (iii) 15.11.1957. (iv) (a) 1 ploughing by soil turning plough and 3 to 4 ploughings by *desi* plough. (b) By dibbling in lines. (c) 10 to 12 mds./ac. (d) 18"×9". (e) N.A. (v) Nil. (vi) *Phulwa* (early). (vii) Irrigated. (viii) 1 weeding and 1 earthing. (ix) 1.31". (x) 20, 27 and 28.3.1958.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 2 levels of N as F.Y.M. + A/S in 1 : 1 ratio :  $N_0=0$  and  $N_1=100$  lb./ac.

(2) 2 levels of  $P_2O_5$  as Super :  $P_0=0$  and  $P_1=60$  lb./ac.

(3) 2 levels of  $K_2O$  as Pot. Sul. :  $K_0=0$  and  $K_1=75$  lb./ac.

Super applied by placement 3" to 4" deep in soil before sowing. F.Y.M. applied 2 to 3 weeks before sowing, A/S applied  $\frac{1}{2}$  at planting +  $\frac{1}{2}$  at first earthing and Pot. Sul. as surface dressing before sowing.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) 82'×112'. (iii) 4. (iv) (a) 41'×28'. (b) 38'×25'. (v) 1½'×1½'. (vi) Yes.

## 4. GENERAL:

(i) Very poor. (ii) Heavy attack of blight spoiled the experiment, though three sprayings with Bordeaux mixture were given. (iii) Yield of tuber. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1.16 tons/ac. (ii) 0.23 tons/ac. (iii) Main effect of N alone is significant. (iv) Av. yield of tuber in tons/ac.

	$P_0$	$P_1$	Mean	$K_0$	$K_1$
$N_0$	0.95	1.18	1.06	1.12	1.01
$N_1$	1.24	1.25	1.25	1.13	1.37
Mean	1.10	1.22	1.16	1.12	1.19
$K_0$	1.07	1.18			
$K_1$	1.12	1.26			

S.E. of any marginal mean = 0.06 tons/ac.

S.E. of body of any table = 0.08 tons/ac.

Crop :- Potato (*Rabi*).

Ref :- U.P. 55(243).

Site :- Reg. Res. Stn., Meerut.

Type :- 'M'.

Object :- To study the effect of trace-elements on the yield of Potato.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Meerut. (iii) 30.10.1955. (iv) (a) 4 deep ploughings. (b) and (c) N.A. (d) 3"×3". (e) N.A. (v) 100 lb./ac. of N as A/S + 60 lb./ac. of  $P_2O_5$  as Super + 40 lb./ac. of  $K_2O$  as Pot. Sul. (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

## 2. TREATMENTS :

6 trace-element treatments :  $T_0$ =Control,  $T_1$ =5 lb./ac. of Borax,  $T_2$ =15 lb./ac. of C/S,  $T_3$ =15 lb./ac. of Zn. Sul.,  $T_4$ =10 lb./ac. of Manganese Sulphate and  $T_5$ =15 lb./ac. of Molybdc acid.

Trace-elements mixed with fine dry earth and applied as surface dressing a day before sowing.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 58'×27'. (b) 55'×24'. (v) 1.5'×1.5'. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Yield of tuber. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 3.08 tons/ac. (ii) 0.55 tons/ac. (iii) Treatment differences are significant. (iv) Av. yield of tuber in tons/ac.

Treatment	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	T <sub>5</sub>
Av. yield	1.94	3.32	3.25	3.16	3.37	3.45

S.E./mean = 0.28 tons/ac.

**Crop :- Potato (Rabi).**

**Ref :- U.P. 54(294).**

**Site :- Govt. Res. Farm, Pura.**

**Type :- 'M'.**

Object :—To study the effect of N, P and K on the yield of Potato.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Pura. (iii) to (v) N.A. (vi) Darziling. (vii) to (x) N.A.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 2 levels of N : N<sub>0</sub>=0 and N<sub>1</sub>=100 lb./ac.

(2) 2 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0 and P<sub>1</sub>=150 lb./ac.

(3) 3 levels of K<sub>2</sub>O : K<sub>0</sub>=0, K<sub>1</sub>=60 and K<sub>2</sub>=120 lb./ac.

## 3. DESIGN :

(i) 2<sup>2</sup> × 3 partially confd ; confounding N × P and N × P × K interactions. (ii) (a) 6 plots/block ; 2 blocks/replication. (b) N.A. (iii) 4. (iv) (a) and (b) 25' × 21.8'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of tuber. (iv) (a) and (b) No. (c) Nil. (v) (a) Farrukhabad. (v) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 3.47 tons/ac. (ii) 0.70 tons/ac. (iii) None of the effects is significant. (iv) Av. yield of tuber in tons/ac.

	K <sub>0</sub>	K <sub>1</sub>	K <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>
N <sub>0</sub>	3.28	3.21	3.61	3.37	3.55	3.18
N <sub>1</sub>	3.64	3.51	3.58	3.57	3.44	3.70
Mean	3.46	3.36	3.60	3.47	3.50	3.44
P <sub>0</sub>	3.32	3.35	3.82			
P <sub>1</sub>	3.59	3.36	3.37			

S.E. of N or P marginal mean = 0.14 tons/ac.

S.E. of K marginal mean = 0.17 tons/ac.

S.E. of body of N × K or P × K table = 0.25 tons/ac.

S.E. of body of N × P table = 0.20 tons/ac.

**Crop :- Potato (Rabi).****Ref :- U.P. 54(296).****Site :- Govt. Res. Farm, Pura.****Type :- 'M'.**

Object :—To study the effect of N, P and K on the yield of Potato.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Maize. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Pura. (iii) 7 and 8.10.1954.  
 (iv) (a) 8 ploughings. (b) Sown on ridges. (c) 6.25 mds./ac. (d) and (e) N.A. (v) F.Y.M. applied on  
 1.10.1954. (vi) Military. (vii) Irrigated. (viii) 2 weedings and 3 earthings (ix) N.A. (x) N.A.

**2. TREATMENTS and 3. DESIGN :**

Same as in expt. no. 54(294) on page 725.

**4. GENERAL :**

(i) Germination was poor. (ii) N.A. (iii) Yield of tuber. (iv) (a) and (b) No. (c) Nil. (v) (a) Farrukhabad.  
 (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 0.87 tons/ac. (ii) 0.12 tons/ac. (iii) Main effect of N alone is highly significant. (v) Av. yield of tuber  
 in tons/ac.

	K <sub>0</sub>	K <sub>1</sub>	K <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>
N <sub>0</sub>	0.71	0.80	0.76	0.76	0.78	0.73
N <sub>1</sub>	1.03	0.96	0.95	0.98	0.97	0.99
Mean	0.87	0.88	0.86	0.87	0.88	0.86
P <sub>0</sub>	0.86	0.87	0.90			
P <sub>1</sub>	0.88	0.89	0.81			

S.E. of N or P marginal mean	= 0.02 tons/ac.
S.E. of K marginal mean	= 0.03 tons/ac.
S.E. of body of N×K or P×K table	= 0.04 tons/ac.
S.E. of body of N×P table	= 0.03 tons/ac.

**Crop :- Potato (Rabi).****Ref :- U.P. 55(318).****Site :- Govt. Res. Farm, Pura.****Type :- 'M'.**

Object :—To study the effect of N, P and K on the yield of Potato.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Maize. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Pura. (iii) 3 and 4.11.1955.  
 (iv) (a) 12 ploughings. (b) to (e) N.A. (v) F.Y.M. at 100 mds./ac., Castor cake at 15 mds./ac. and 1 bag of  
 A/S. (vi) *Phulwa*. (vii) Irrigated. (viii) 1 hoeing and 3 earthings. (ix) N.A. (x) 16 and 17.3.1956.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 2 levels of N as A/S : N<sub>0</sub>=0 and N<sub>1</sub>=100 lb./ac.(2) 2 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0 and P<sub>1</sub>=150 lb./ac.(3) 2 levels of K<sub>2</sub>O as Pot. Sul. : K<sub>0</sub>=0 and K<sub>1</sub>=150 lb./ac.

N, P and K applied on 3.11.1955. Pot. Sul. and Super were applied in furrows, then seeds were sown and after that A/S was broadcast.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) and (b) 37.5'×14.5'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of tuber. (iv) (a) 1955—1957. (b) No. (c) Nil. (v) (a) Farrukhabad. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 7.08 tons/ac. (ii) 0.73 tons/ac. (iii) Main effect of P and interaction N×P are significant. (iv) Av. yield of tuber in tons/ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	K <sub>0</sub>	K <sub>1</sub>
N <sub>0</sub>	7.11	7.02	7.07	6.90	7.24
N <sub>1</sub>	6.43	7.76	7.09	7.33	6.85
Mean	6.77	7.39	7.08	7.12	7.04
K <sub>0</sub>	6.66	7.57			
K <sub>1</sub>	6.88	7.21			

S.E. of any marginal mean = 0.18 tons/ac.  
S.E. of body of any table = 0.26 tons/ac.

**Crop :- Potato (Rabi).**

**Ref :- U.P. 56(342).**

**Site :- Govt. Res. Farm, Pura.**

**Type :- 'M'.**

Object :— To study the effect of N, P and K on the yield of Potato.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Maize. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Pura. (iii) 10.11.1956. (iv) (a) 6 ploughings. (b) to (e) N.A. (v) F.Y.M. applied on 7.9.1956. (vi) N.A. (vii) Irrigated. (viii) 1 weeding and 2 earthings. (ix) N.A. (x) 11.4.1957.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 2 levels of N as A/S/N : N<sub>0</sub>=0 and N<sub>1</sub>=100 lb./ac.

(2) 2 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0 and P<sub>1</sub>=150 lb./ac.

(3) 2 levels of K<sub>2</sub>O as Mur. Pot. : K<sub>0</sub>=0 and K<sub>1</sub>=150 lb./ac.

Super and Mur. Pot. were placed deep in bands below the ridges. A/S/N was applied by broadcast on 9.11.1956.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) 26'×178.2'. (iii) 4. (iv) (a) and (b) 26'×20.9'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of tuber. (iv) (a) 1955—1957. (b) No. (c) Nil. (v) (a) Farrukhabad. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 5.12 tons/ac. (ii) 0.60 tons/ac. (iii) Main effect of N alone is highly significant. (iv) Av. yield of tuber in tons/ac.



	P <sub>0</sub>	P <sub>1</sub>	Mean	K <sub>0</sub>	K <sub>1</sub>
N <sub>0</sub>	4.62	4.51	4.56	4.55	4.57
N <sub>1</sub>	5.67	5.67	5.67	5.64	5.71
Mean	5.14	5.09	5.12	5.10	5.14
K <sub>0</sub>	5.07	5.12			
K <sub>1</sub>	5.22	5.06			

S.E. of any marginal mean = 0.15 tons/ac.  
 S.E. of body of any table = 0.21 tons/ac.

**Crop :- Potato (Rabi).**

**Ref :- U.P. 57(377).**

**Site :- Govt. Res. Farm, Pura.**

**Type :- 'M'.**

**Object :-** To study the effect of N, P and K on the yield of Potato.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Maize. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Pura. (iii) 13.10.1957.  
 (iv) (a) 2 ploughings. (b) to (e) N.A. (v) F.Y.M. applied on 10.10.1957. (vi) N.A. (vii) Irrigated. (viii) 3 earthings. (ix) N.A. (x) 6 and 7.2.1958.

**2. TREATMENTS to 4. GENERAL :**

Same as in expt. no. 56(342) on page 727.

**5. RESULTS :**

(i) 7.61 tons/ac. (ii) 1.08 tons/ac. (iii) Main effect of N and P are highly significant. Interaction P×K is significant. (iv) Av. yield of tuber in tons/ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	K <sub>0</sub>	K <sub>1</sub>
N <sub>0</sub>	6.14	7.30	6.72	6.94	6.50
N <sub>1</sub>	7.50	9.50	8.50	8.71	8.28
Mean	6.82	8.40	7.61	7.83	7.39
K <sub>0</sub>	7.46	8.20			
K <sub>1</sub>	6.18	8.61			

S.E. of any marginal mean = 0.27 tons/ac.  
 S.E. of body of any table = 0.38 tons/ac.

**Crop :- Potato (Rabi).**

**Ref :- U.P. 57(89).**

**Site :- Reg. Res. Stn., Varanasi.**

**Type :- 'M'.**

**Object :-** To study the effect of N, P and K on the yield of Potato.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Guar. (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Varanasi. (iii) 26.11.1957.  
 (iv) (a) 1 ploughing and 1 palewa. (b) and (c) N.A. (d) Row to row 1½'. (e) N.A. (v) N.A. (vi) ON--2236.  
 (vii) Irrigated. (viii) 1 hoeing and 1 earthing. (ix) 1.01". (x) 18.3.1958.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 2 levels of N as A/S :  $N_0=0$  and  $N_1=100$  lb./ac.

(2) 2 levels of  $P_2O_5$  as Super :  $P_0=0$  and  $P_1=60$  lb./ac.

(3) 2 levels of  $K_2O$  as Potash :  $K_0=0$  and  $K_1=75$  lb./ac.

N, P and K applied on 26.11.1957 and 30.1.1958.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a)  $41' \times 27'$ . (b)  $38' \times 24'$ . (v)  $1.5' \times 1.5'$ .  
(vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) There was attack of early blight in the season. Leaves and stems were affected. (iii) Yield of tuber. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1.83 tons/ac. (ii) 0.22 tons/ac. (iii) Main effect of K is highly significant and that of P is significant.  
(iv) Av. yield of tuber in tons/ac.

	$P_0$	$P_1$	Mean	$K_0$	$K_1$
$N_0$	1.81	1.88	1.84	1.71	1.98
$N_1$	1.69	1.95	1.82	1.66	1.98
Mean	1.75	1.92	1.83	1.68	1.98
$K_0$	1.58	1.79			
$K_1$	1.92	2.05			

S.E. of any marginal mean = 0.05 tons/ac.  
S E. of body of any table = 0.86 tons/ac.

**Crop :- Potato.**

**Ref :- U.P. 58(SFT).**

**Centre :- Aligarh (c.f.).**

**Type :- 'M'.**

Object :—Type A—To study the response of Potato to levels of N, P and K applied individually and in combinations.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Alluvial. (iii) to (vi) N.A. (vii) Unirrigated. (viii) to (x) N.A.

## 2. TREATMENTS :

0 = Control (no manure).

n = 50 lb./ac. of N as A/S.

p = 25 lb./ac. of  $P_2O_5$  as Super.

np = 50 lb./ac. of N as A/S+25 lb./ac. of  $P_2O_5$  as Super.

k = 50 lb./ac. of  $K_2O$  as Mur. Pot.

nk = 50 lb./ac. of N as A/S+50 lb./ac. of  $K_2O$  as Mur. Pot.

pk = 25 lb./ac. of  $P_2O_5$  as Super+50 lb./ac. of  $K_2O$  as Mur. Pot.

npk = 50 lb./ac. of N as A/S+25 lb./ac. of  $P_2O_5$  as Super+50 lb./ac. of  $K_2O$  as Mur. Pot.

## 3. DESIGN :

(i) and (ii) The district has been divided into four agriculturally homogenous zones and one field assistant has been posted in each zone. The field assistant conducts the trials in one revenue circle or *thana* in the zone and the circle/*thana* is changed once in two years within the same zone. Each field assistant is required to conduct 31 trials in a year, 8 on a *kharif* cereal, 8 on a *rabi* cereal, 8 on cash crops, 4 on an oilseed crop and 3 on a leguminous crop. Half the number of trials conducted are of type A and the other half of type B on crops other than the legumes. Three trials on legumes are of type C. Residual effects of phosphate application are studied on type C trials in two out of the four zones in each district every year. The above experiments are laid out in randomly located fields in randomly selected villages in each of the 4 zones at the rate of one experiment per village. (iii) (a) N.A. (b) 1/80 ac. (iv) Yes.

## 4. GENERAL :

(i) Normal. (ii) N.A. (iii) Tuber yield. (iv) (a) 1958—contd. (b) No. (c) N.A. (v) As per design. (vi) and (vii) N.A.

## 5. RESULTS :

Effect	n	p	k	S.E.	np	nk	pk	npk	S.E.
Av. response of tuber in tons/ac.	1.183	0.397	0.331	0.467	0.209	0.107	-0.026	0.092	0.262

Control yield = 4.280 tons/ac. and no. of trials = 4.

**Crop :- Potato.**

**Ref :- U.P. 58(SFT).**

**Centre :- Allahabad (c.f.).**

**Type :- 'M'.**

Object :—Type A—To study the response of Potato to levels of N, P and K applied individually and in combinations.

## 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 58(SFT) type A on page 729 conducted at Aligarh.

## 5. RESULTS :

Effect	n	p	k	S.E.	np	nk	pk	npk	S.E.
Av. response of tuber in tons/ac.	1.991	0.456	0.312	0.230	0.070	0.088	0.136	0.147	0.129

Control yield = 4.298 tons/ac. and no. of trials = 8.

**Crop :- Potato.**

**Ref :- U.P. 58(SFT).**

**Centre :- Bulandshahr (c.f.).**

**Type :- 'M'.**

Object :—Type A—To study the response of Potato to levels of N, P and K applied individually and in combinations.

## 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 58(SFT) type A on page 729 conducted at Aligarh.

## 5. RESULTS :

Effect	n	p	k	S.E.	np	nk	pk	npk	S.E.
Av. response of tuber in tons/ac.	1.385	0.525	0.121	0.383	0.327	0.165	-0.129	0.114	0.237

Control yield = 5.338 tons/ac. and no. of trials = 4.

**Crop :- Potato.**

**Ref :- U.P. 58(SFT).**

**Centre :- Jaunpur (c.f.).**

**Type :- 'M'.**

Object :—Type A—To study the response of Potato to levels of N, P and K applied individually and in combinations.

## 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 58(SFT) type A on page 729 conducted at Aligarh.

## 5. RESULTS :

Effect	n	p	k	S.E.	np	nk	pk	npk	S.E.
Av. response of tuber in tons/ac.	1.576	1.025	0.547	0.295	-0.242	-0.345	0.511	-0.353	0.419
Control yield = 6.528 tons/ac. and no. of trials = 4.									

**Crop :- Potato.****Ref :- U.P. 59(SFT).****Centre :- Jaunpur (c.f.).****Type :- 'M'.**

Object :—Type A—To study the response of Potato to levels of N, P and K applied individually and in combinations.

## 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 58(SFT) type A on page 729 conducted at Aligarh.

## 5. RESULTS :

Effect	n	p	k	S.E.	np	nk	pk	npk	S.E.
Av. response of tuber in tons/ac.	1.157	0.753	0.918	0.184	0.239	0.353	0.165	-0.018	0.165
Control yield = 5.988 tons/ac. and no. of trials = 4.									

**Crop :- Potato.****Ref :- U.P. 58(SFT).****Centre :- Meerut (c.f.).****Type :- 'M'.**

Object :—Type A—To study the response of Potato to levels of N, P and K applied individually and in combinations.

## 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 58(SFT) type A on page 729 conducted at Aligarh.

## 5. RESULTS :

Effect	n	p	k	S.E.	np	nk	pk	npk	S.E.
Av. response of tuber in tons/ac.	2.340	0.147	0.118	0.349	1.014	0.885	1.131	-0.213	0.283
Control yield = 9.129 tons/ac. and no. of trials = 4.									

**Crop :- Potato.****Ref :- U.P. 59(SFT).****Centre :- Rae-Bareilly (c.f.).****Type :- 'M'.**

Object :—Type A—To study the response of Potato to levels of N, P and K applied individually and in combinations.

## 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 58(SFT) type A on page 729 conducted at Aligarh.

## 5. RESULTS :

Effect	n	p	k	S.E.	np	nk	pk	npk	S.E.
Av. response of tuber in tons/ac.	1.161	1.216	0.481	0.282	0.408	0.040	0.004	-0.015	0.176
Control yield = 4.592 tons/ac. and no. of trials = 4.									

**Crop :- Potato.****Ref :- U.P. 58(SFT).****Centre :- Allahabad (c.f.).****Type :- 'M'.**

Object :— Type B—To investigate the relative efficiency of different nitrogenous fertilizers at different doses.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) Alluvial. (iii) to (vi) N.A. (vii) Unirrigated. (viii) to (x) N.A.

**2. TREATMENTS :**

0 = Control (no manure).

 $n_1$  = 50 lb./ac. of N as A/S. $n_2$  = 100 lb./ac. of N as A/S. $n_1'$  = 50 lb./ac. of N as Urea. $n_2'$  = 100 lb./ac. of N as Urea. $n_1''$  = 50 lb./ac. of N as A/S/N. $n_2''$  = 100 lb./ac. of N as A/S/N.**3. DESIGN :**

(i) and (ii) The district has been divided into four agriculturally homogeneous zones and one field assistant has been posted in each zone. The field assistant conducts the trials in one revenue circle or *thana* in the zone and the circle/*thana* is changed once in two years within the same zone. Each field assistant is required to conduct 31 trials in a year, 8 on a *khurif* cereal, 8 on a *rabi* cereal, 8 on each crops, 4 on an oilseed crop and 3 on a leguminous crop. Half the number of trials conducted are of type A and the other half of type B on crops other than the legumes. The three trials on legumes are of type C. Residual effects of phosphate application are studied on type C trials in two out of the four zones in each district every year. The experiments are laid out in randomly located fields in randomly selected villages in each of the 4 zones at the rate of one experiment per village. (iii) (a) N.A., (b) 1/80 ac. (iv) Yes.

**4. GENERAL :**

(i) Normal. (ii) N.A. (iii) Tuber yield. (iv) (a) 1958—contd. (b) No. (c) N.A. (v) As per design. (vi) and (vii) N.A.

**5. RESULTS :**

Treatment	0	$n_1$	$n_2$	$n_1'$	$n_2'$	$n_1''$	$n_2''$
Av. yield of tuber in tons/ac.	6.072	8.339	9.367	7.259	9.121	7.751	8.930

G.M. = 8.120 tons/ac.; S.E./mean = 0.332 tons/ac. and no. of trials = 8.

**Crop :- Potato.****Ref :- U.P. 58(SFT).****Centre :- Bulandshahr (c.f.).****Type :- 'M'.**

Object :—Type B— To investigate the relative efficiency of different nitrogenous fertilizers at different doses.

**1. BASAL CONDITIONS to 4. GENERAL :**

Same as in expt. no. 58(SFT) type B above conducted at Allahabad.

**5. RESULTS :**

Treatment	0	$n_1$	$n_2$	$n_1'$	$n_2'$	$n_1''$	$n_2''$
Av. yield of tuber in tons/ac.	4.581	7.101	9.165	7.174	7.971	7.116	8.651

G.M. = 7.394 tons/ac.; S.E./mean = 0.278 tons/ac. and no. of trials = 4.

**Crop :- Potato.****Ref :- U.P. 58(SFT).****Centre :- Jaunpur (c.f.).****Type :- 'M'.**

Object :— Type B—To investigate the relative efficiency of different nitrogenous fertilizers at different doses.

## 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 58(SFT) type B on page 732 conducted at Allahabad.

## 5. RESULTS :

Treatment	0	$n_1$	$n_2$	$n_1'$	$n_2'$	$n_1''$	$n_2''$
Av. yield of tuber in tons/ac.	4.970	6.135	6.844	5.925	6.697	6.293	7.079

G.M. = 6.278 tons/ac. ; S.E./mean = 0.159 tons/ac. and no. of trials = 4.

**Crop :- Potato.**

**Ref :- U.P. 58(SFT).**

**Centre :- Meerut (c.f.).**

**Type :- 'M'.**

Object :— Type B—To investigate the relative efficiency of different nitrogenous fertilizers at different doses.

## 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 58(SFT) type B on page 732 conducted at Allahabad.

## 5. RESULTS :

Treatment	0	$n_1$	$n_2$	$n_1'$	$n_2'$	$n_1''$	$n_2''$
Av. yield of tuber in tons/ac.	8.805	9.257	10.936	10.348	9.929	10.040	11.204

G.M. = 10.074 tons/ac. ; S.E./mean = 0.234 tons/ac. and no. of trials = 4.

**Crop :- Potato (Rabi).**

**Ref :- U.P. 56(239).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'MV'.**

Object :—To study the effect of Potash manuring on Potato varieties.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanai*. (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 1.11.1956. (iv) (a) N.A. (b) By *kudali*. (c) 15 to 20 mds/ac. (d)  $1\frac{1}{2}' \times 9''$ . (e) N.A. (v) *Sanai* as G.M.+100 lb./ac. of N as A/S,  $\frac{1}{2}$  at 1st earthing on 11.12.1956 and  $\frac{1}{2}$  at 2nd earthing on 4.1.1957+50 lb./ac. of N as A/S applied on 31.1.1957. (vi) As per treatments. (vii) Irrigated. (viii) 3 earthings. (ix) N.A. (x) 16.2.1957.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 varieties :  $V_1$ =*Phulwa* (late),  $V_2$ =Up to-date (early),  $V_3$ =O.N.—45 (mid. early) and  $V_4$ =D.R.R. (mid. early).

(2) 2 levels of  $K_2O$  as Pot. Sul :  $K_0$ =0 and  $K_1$ =150 lb./ac.

$K_2O$  applied in furrows on 20.11.1956.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b)  $12' \times 133'$ . (iii) 6. (iv) (a) and (b)  $12' \times 14'$ . (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) N.A. (iii) Germination and yield of tuber. (iv) (a) 1956—1957. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 7.63 tons/ac. (ii) 0.86 tons/ac. (iii) Main effect of V alone is highly significant. (iv) Av. yield of tuber in tons/ac.

	V <sub>1</sub>	V <sub>2</sub>	V <sub>3</sub>	V <sub>4</sub>	Mean
K <sub>0</sub>	6.71	6.91	8.37	8.37	7.59
K <sub>1</sub>	6.67	6.63	9.13	8.22	7.66
Mean	6.69	6.77	8.75	8.30	7.63

S.E. of V marginal mean = 0.25 tons/ac.  
 S.E. of K marginal mean = 0.18 tons/ac.  
 S.E. of body of table = 0.35 tons/ac.

**Crop :- Potato (Rabi).**

**Ref :- U.P. 57(284).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'MV'.**

Object :—To study the effect of Potash on different varieties of Potato.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Sanai*. (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 1.11.1957. (iv) (a) N.A. (b) By *kudali*. (c) 15 to 20 mds./ac. (d) 1½'×9". (e) N.A. (v) G.M. (*sanai*). (vi) As per treatments. (vii) Irrigated. (viii) 2 earthings. (ix) N.A. (x) 25, 26.2.1958 for V<sub>2</sub>, V<sub>3</sub> and V<sub>4</sub> and 16.3.1958 for V<sub>1</sub>.

**2. TREATMENTS and 3. DESIGN :**

Same as in expt. no. 56(239) on page 733.

**4. GENERAL :**

(i) Good. (ii) Leaf roll and mosaic incidence. (iii) Germination, leaf roll and mosaic incidence and yield of tuber. (iv) (a) 1956—1957. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 6.46 tons/ac. (ii) 1.04 tons/ac. (iii) Main effect of V alone is highly significant. (iv) Av. yield of tuber in tons/ac

	V <sub>1</sub>	V <sub>2</sub>	V <sub>3</sub>	V <sub>4</sub>	Mean
K <sub>0</sub>	5.08	4.76	7.10	8.45	6.35
K <sub>1</sub>	4.44	6.19	7.46	8.22	6.58
Mean	4.76	5.48	7.28	8.33	6.46

S.E. of V marginal mean = 0.30 tons/ac.  
 S.E. of K marginal mean = 0.21 tons/ac.  
 S.E. of body of table = 0.42 tons/ac.

**Crop :- Potato (Rabi).**

**Ref :- U.P. 58(434).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'MV'.**

Object :—To study the effect of N on different varieties of Potato.

**1. BASAL CONDITIONS ;**

(i) (a) N.A. (b) *Sanai*. (c) Nil. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 3.11.1958. (iv) (a) N.A. (b) By *kudali*. (c) 15 to 20 mds./ac. (d) 1½'×9". (e) N.A. (v) G.M. (*sanai*). (vi) As per treatments. (vii) Irrigated. (viii) 2 earthings. (ix) N.A. (x) 6 and 9.3.1959.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 varieties :  $V_1=Phulwa$  (late) and  $V_2=D.R.R.$  (late).

(2) 8 sources of 100 lb./ac. of N :  $S_0$ =control (no N),  $S_1=A/S$ ,  $S_2=C/N$ ,  $S_3=Urea$ ,  $S_4=\frac{1}{2}$  as  $A/S+\frac{1}{2}$  as G.N.C.,  $S_5=\frac{1}{2}$  as  $Urea+\frac{1}{2}$  as G.N.C.,  $S_6=\frac{1}{2}$  as  $C/N+\frac{1}{2}$  as G.N.C. and  $S_7=\frac{1}{2}$  as  $A/S+\frac{1}{2}$  as F.Y.M.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 16. (b)  $36' \times 84'$ . (iii) 4. (iv) (a) and (b)  $8.75' \times 16.5'$ . (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Germination % and yield of tuber. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 7.88 tons/ac. (ii) 1.16 tons/ac. (iii) Only main effect of V is highly significant. (iv) Av. yield of tuber in tons/ac.

	$S_0$	$S_1$	$S_2$	$S_3$	$S_4$	$S_5$	$S_6$	$S_7$	Mean
$V_1$	4.16	5.54	5.40	5.47	5.40	5.54	5.26	5.40	5.27
$V_2$	9.49	10.11	10.88	10.53	10.46	10.46	11.50	10.46	10.49
Mean	6.82	7.82	8.14	8.00	7.93	8.00	8.38	7.93	7.88

S.E. of S marginal mean = 0.41 tons/ac.

S.E. of V marginal mean = 0.21 tons/ac.

S.E. of body of table = 0.58 tons/ac.

**Crop :- Potato (Rabi).**

**Ref :- U.P. 54(229).**

**Site :- Allahabad Agri. Instt., Allahabad.**

**Type :- 'C'.**

Object :—To study the effect of different spacings on the yield of Potato.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Fine sandy loam. (b) Refer soil analysis, Allahabad. (iii) N.A. (iv) (a) to (c) N.A. (d) As per treatments. (e) N.A. (v) 60 lb./ac. of N as C/N. (vi) *Phulwa*. (vii) to (x) N.A.

## 2. TREATMENTS :

4 spacings :  $S_1=24'' \times 8''$ ,  $S_2=28'' \times 8''$ ,  $S_3=24'' \times 6''$  and  $S_4=21'' \times 4''$ .

## 3. DESIGN :

(i) L. Sq. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) N.A. (b)  $18' \times 13'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of potato. (iv) (a) 1953—1956. (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) Frost and porcupine attack. (vii) Nil.

## 5. RESULTS :

(i) 4.43 tons/ac. (ii) and (iii) N.A. (iv) Av. yield of tuber in tons/ac.

Treatment	$S_1$	$S_2$	$S_3$	$S_4$
Av. yield	4.65	4.56	4.48	4.02

S.E./mean N.A.



**Crop :- Potato (Rabi).****Ref :- U.P. 55(220).****Site :- Allahabad Agri. Instt., Allahabad.****Type :- 'C'.**

Object :—To find out the optimum spacing for planting Potato tubers.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Forage grasses. (c) N.A. (ii) (a) Fine sandy loam. (b) Refer soil analysis, Allahabad. (iii) N.A. (iv) (a) to (c) N.A. (d) As per treatments. (e) N.A. (v) 60 lb./ac. of N as A/S. (vi) *Phulwa*. (vii) to (x) N.A.

**2. TREATMENTS :**

4 spacings :  $S_1=21'' \times 4''$ ,  $S_2=24'' \times 6''$ ,  $S_3=27'' \times 6''$  and  $S_4=30'' \times 8''$ .

**3. DESIGN :**

(i) L. Sq. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) N.A. (b)  $18' \times 13'$ . (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Bacterial rot caused 15% damage. (iii) Yield of tuber. (iv) (a) 1953—1956. (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) Heavy rains. (vii) Nil.

**5. RESULTS :**

(i) 4.22 tons/ac. (ii) 0.18 tons/ac. (iii) Treatment differences are highly significant. (iv) Av. yield of tuber in tons/ac.

Treatment	$S_1$	$S_2$	$S_3$	$S_4$
Av. yield	5.33	4.96	3.78	2.83

S.E./mean = 0.09 tons/ac.

**Crop :- Potato (Rabi).****Ref :- U.P. 56(215).****Site :- Allahabad Agri. Instt., Allahabad.****Type :- 'C'.**

Object :—To find out the optimum spacing for planting Potato tubers.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Forage grasses. (c) Nil. (ii) (a) Fine sandy loam. (b) Refer soil analysis, Allahabad. (iii) N.A. (iv) (a) to (c) N.A. (d) As per treatments. (e) N.A. (v) G.M.+A/S as top dressing. (vi) *Phulwa*. (vii) to (x) N.A.

**2. TREATMENTS :**

4 spacings :  $S_1=21'' \times 4''$ ,  $S_2=27'' \times 6''$ ,  $S_3=24'' \times 6''$  and  $S_4=27'' \times 8''$ .

**3. DESIGN :**

(i) L. Sq. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) N.A. (b)  $18' \times 13'$ . (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of tuber. (iv) (a) 1953—1956. (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 4.42 tons/ac. (ii) 0.12 tons/ac. (iii) Treatment differences are highly significant. (iv) Av. yield of tuber in tons/ac.

Treatment	$S_1$	$S_2$	$S_3$	$S_4$
Av. yield	5.03	4.74	4.32	3.57

S.E./mean = 0.06 tons/ac.

**Crop :- Potato (Rabi).****Ref :- U.P. 54(204).****Site :- B. R. College Insttl. Res. Farm, Bichpuri.****Type :- 'C'.**

Object :—To study the effect of earthings and mulching on the growth, yield and quality of Potato.

**1. BASAL CONDITIONS :**

(i) (a) No. (b) *Sanai*. (c) 2 mds./ac. of Super. (ii) (a) Light loam. (b) Refer soil analysis, Bichpuri. (iii) 31.10.1954. (iv) (a) 2 ploughings by soil turning plough, 2 ploughings with tractor and 1 planking. (b) Planted in furrows opened by *desi* plough. (c) 6 mds./ac. (d) 18"×9". (e) N.A. (v) 265 lb./ac. of N as basal dressing. Turning in of green material. 3 mds./ac. of Super at the time of planting of tubers. (vi) Local *phulwa*. (vii) Irrigated. (viii) As per treatments. (ix) 1.50". (x) 19.4.1955.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 3 levels of earthing :  $E_0$ =No earthing,  $E_1$ =1 earthing on 6.12.1954 and  $E_2$ =2 earthings on 6.12.1954 and 18.12.1954.(2) 2 levels of mulching (soil mulch) :  $M_0$ =No mulching (no hoeing) and  $M_1$ =Mulching (hoeing with *khurpi*).

Light hoeing after each irrigation was done when the soil became workable.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 6. (b) 72'×62'. (iii) 4. (iv) (a) 17'×10.5'. (b) 14'×7'. (v) 1½'×1¼'. (vi) Yes.

**4. GENERAL :**

(i) Normal. (ii) Nil. (iii) Height of plant, weight of plant and tuberisation and yield of tuber. (iv) (a) and (b) No. (c) Nil. (v) and (vi) Nil. (vii) Two-way tables are not available in the records.

**5. RESULTS :**

(i) 8.32 tons/ac. (ii) 0.49 tons/ac. (iii) Main effects of E and M are highly significant. (iv) Av. yield of tuber in tons/ac.

Treatment	$E_0$	$E_1$	$E_2$	$M_0$	$M_1$
Av. yield	7.42	8.38	9.15	8.02	8.61
	S.E. of E marginal mean				= 0.17 tons/ac.
	S.E. of M marginal mean				= 0.14 tons/ac.

**Crop :- Potato (Rabi).****Ref :- U.P. 54(140).****Site :- Instt. of Crop Physiology, Dilkusha.****Type :- 'C'.**

Object :—To study the effect of sowing whole vs. peeled Potato tubers.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Dilkusha. (iii) and (iv) N.A. (v) 80 lb./ac. of N as F.Y.M.+60 lb./ac. of N as A/S+75 lb./ac. of  $P_2O_5$  as Super+60 lb./ac. of  $K_2O$  as Pot. Sul. (vi) to (x) N.A.

**2. TREATMENTS :**2 types of seed :  $S_1$ =Whole tubers and  $S_2$ =Tubers with skin removed.**3. DESIGN :**

(i) Paired-plot. (ii) (a) 2. (b) N.A. (iii) 10. (iv) (a) 18'×20'. (b) 14'×16'. (v) 2'×2'. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of tuber. (iv) (a) 1954—contd. (b) N.A. (c) Nil. (v) (a) Varanasi. (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1108.8 gms./3 plants. (ii) 201.16 gms./3 plants. (iii) Treatment difference is not significant. (iv) Av. yield of tuber in gms./3 plants.

Treatment	S <sub>1</sub>	S <sub>2</sub>
Av. yield	1064.1	1153.4

S.E./mean = 63.61 gms./3 plants.

**Crop :- Potato (Rabi).**

**Ref :- U.P. 55(274).**

**Site :- Instt. of Crop Physiology, Dilkusha.**

**Type :- 'C'.**

Object :—To study the effect of sowing whole vs. peeled Potato tubers.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Dilkusha. (iii) 2.11.1955. (iv) (a) 7 ploughings. (b) On ridges. (c) N.A. (d) 2'×9". (e) N.A. (v) F.Y.M. and compost at 100 mds./ac. + 100 lb./ac. of N as A/S+75 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super. (vi) Military special. (vii) Irrigated. (viii) and (ix) N.A. (x) 20.3.1956.

**2. TREATMENTS :**

2 types of seed : S<sub>1</sub>=Whole and S<sub>2</sub>=Peeled.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 4. (iv) (a) 25'×18'. (d) 16'×20'. (v) 2½'×1'. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of tuber. (iv) (a) 1954—contd. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 2.83 tons/ac. (ii) 0.52 tons/ac. (iii) Treatment difference is not significant. (iv) Av. yield of tuber in tons/ac.

Treatment	S <sub>1</sub>	S <sub>2</sub>
Av. yield	2.66	3.00

S.E./mean = 0.26 tons/ac.

**Crop :- Potato (Rabi).**

**Ref :- U.P. 55(275).**

**Site :- Instt. of Crop Physiology, Dilkusha.**

**Type :- 'C'.**

Object :—To study the effect of sowing whole vs. peeled potato tubers.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Dilkusha. (iii) 2.11.1955. (iv) (a) 7 ploughings. (b) On ridges. (c) N.A. (d) 2'×9". (e) N.A. (v) F.Y.M. and compost at 100 mds./ac. + 100 lb./ac. of N as A/S+75 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super. (vi) Patna red. (vii) Irrigated. (viii) and (ix) N.A. (x) 20.3.1956.

**2. TREATMENTS to 4. GENERAL :**

Same as in expt. no. 55(274) above.

**5. RESULTS :**

(i) 5.52 tons/ac. (ii) 0.14 tons/ac. (iii) Treatment difference is highly significant. (iv) Av. yield of tuber in tons/ac.

Treatment	S <sub>1</sub>	S <sub>2</sub>
Av. yield	6.67	4.38

S.E./mean = 0.07 tons/ac.

**Crop :- Potato (Rabi).****Ref :- U.P. 54(111).****Site :- Govt. Agri. Farm, Faizabad.****Type :- 'C'.**

Object :—To study the effect of sowing whole vs. peeled Potato tubers.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, Faizabad. (iii) 17.11.1954. (iv) (a) N.A. (b) Dibbling. (c) 3 to 4 mds./ac (d)  $1\frac{1}{4}'$  to  $1\frac{1}{2}' \times 9''$ . (e) N.A. (v) 80 lb./ac. of N as F.Y.M.+60 lb./ac. of N as A/S+75 lb./ac. of  $P_2O_5$  as Super+60 lb./ac. of  $K_2O$  as Pot. Sul. applied on 1.11.1954. (vi) Patna red. (vii) Irrigated. (viii) and (ix) N.A. (x) 18, 19 and 22.3.1955.

**2. TREATMENTS :**

2 types of seed :  $S_1$ =Whole tubers and  $S_2$ =Tubers with skin (periderm) removed.

**3. DESIGN :**

(i) Paired-plot. (ii) (a) 2. (b) N.A. (iii) 16. (iv) (a)  $27' \times 33'$ . (b)  $24' \times 30'$ . (v)  $1\frac{1}{2}' \times 1\frac{1}{2}'$ . (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) tuber yield. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 2.81 tons/ac. (ii) 0.63 tons/ac. (iii) Treatment difference is not significant. (iv) Av. yield of tuber in tons/ac.

Treatment	$S_1$	$S_2$
Av. yield	2.84	2.78

S.E./mean = 0.16 tons/ac.

**Crop :- Potato.****Ref :- U.P. 54(38).****Site :- Govt. Potato Res. Stn., Farrukhabad.****Type :- 'C'.**

Object :—To find out the best earthing dates for Potato.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Sanai*. (c) Nil. (ii) (a) Loam. (b) Refer soil analysis, Farrukhabad. (iii) 20.10.1954. (iv) (a) 3 ploughings. (b) N.A. (c) 14 seeds/row. (d)  $1\frac{1}{2}' \times 9''$ . (e) N.A. (v) G.N.C. at 20 mds./ac.+5 mds./ac. of A/S on 30.11.1954, 10.12.1954 and 20.12.1954. (vi) *Phulwa* (sprouts were just to come out). (vii) Irrigated. (viii) 1 weeding 1 hoeing and earthing as per treatments. (ix) N.A. (x) 3.3.1955.

**2. TREATMENTS :**

6 dates of earthing :  $D_1$ =20.11.1954, 30.11.1954,  $D_2$ =20.11.1954, 10.12.1954,  $D_3$ =30.11.1954, 10.12.1954,  $D_4$ =30.11.1954, 20.12.1954,  $D_5$ =20.11.1954, 20.12.1954 and  $D_6$ =30.11.1954, 30.12.1954.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) and (b)  $17.5' \times 10.5'$ . (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) crop attacked by frost (pink coloured). (iii) Germination and yield of potato. (iv) (a) 1954—1957. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 5.37 tons/ac. (ii) 0.35 tons/ac. (iii) Treatment differences are significant. (iv) Av. yield of tuber in tons/ac.

Treatment	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	D <sub>5</sub>	D <sub>6</sub>
Av. yield	5.48	5.41	5.70	5.04	5.52	5.08

S.E./mean = 0.14 tons/ac.

**Crop :- Potato.**

**Ref :- U.P. 55(25).**

**Site :- Govt. Potato Res. Stn., Farrukhabad.**

**Type :- 'C'.**

Object :- To find out the best earthing dates for Potato.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Sanai*. (c) Nil. (ii) (a) Loam. (b) Refer soil analysis, Farrukhabad. (iii) 28.10.1955. (iv) (a) 5 ploughings. (b) N.A. (c) 14 seeds/row. (d) 1½' × 9". (e) N.A. (v) G N.C. at 20 mds/ac. + 5 mds./ac. of A/S on 20.11.1955., 10.12.1955., 20.12.1955 and 30.12.1955. (vi) *Phulwa Kalmi* sand stored in sprouted condition. (vii) Irrigated. (viii) 1 weeding and earthing as per treatments. (ix) N.A. (x) 5.3.1956.

**2. TREATMENTS :**

6 dates of earthing : D<sub>1</sub>=20.11.1955, 30.11.1955, D<sub>2</sub>=20.11.1955, 10.12.1955, D<sub>3</sub>=30.11.1955, 10.12.1955, D<sub>4</sub>=30.11.1955, 20.12.1955, D<sub>5</sub>=20.11.1955, 20.12.1955 and D<sub>6</sub>=30.11.1955, 30.12.1955.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) and (b) 17.5' × 10.5'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) No. (iii) Germination and yield of tuber. (iv) (a) 1954--1957. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 9.50 tons/ac. (ii) 0.62 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of tuber in tons/ac.

Treatment	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	D <sub>5</sub>	D <sub>6</sub>
Av. yield	10.01	9.80	9.69	9.04	9.07	9.40

S.E./mean = 0.25 tons/ac.

**Crop :- Potato (*Rabi*).**

**Ref :- U.P. 56(271).**

**Site :- Govt. Potato Res. Stn., Farrukhabad.**

**Type :- 'C'.**

Object :- To find out the best earthing dates for Potato.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Sanai*. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Farrukhabad. (iii) 30.10.1956 and 1.11.1956. (iv) (a) 5 ploughings. (b) By *kudali*. (c) 15 to 20 mds/ac. (d) 1½' × 9". (e) N.A. (v) *Sanai* as G.M. and Castor cake applied at 30 mds./ac. on 31.10.1956. 5 mds/ac. of A/S top dressed on 30.11.1956, 10.12.1956 and 20.12.1956. (vi) *Phulwa* (late). (vii) Irrigated. (viii) 1 weeding and earthing as per treatments. (ix) N.A. (x) 24 and 25.3.1957.

**2. TREATMENTS :**

6 dates of earthing : D<sub>1</sub>=20.11.1956, 30.11.1956, D<sub>2</sub>=20.11.1956, 10.12.1956, D<sub>3</sub>=20.11.1956, 10.12.1956, D<sub>4</sub>=30.11.1956, 20.12.1956, D<sub>5</sub>=20.11.1956, 20.12.1956 and D<sub>6</sub>=30.11.1956, 30.12.1956.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 6. (b) 37' × 35.5'. (iii) 6. (iv) (a) and (b) 17.5' × 10.5'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) N.A. (iii) Germination and yield of potato. (iv) (a) 1954—1957. (b) No. (c) Nil. (v) (a) Kanpur. (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 9.23 tons/ac. (ii) 0.48 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of tuber in tons/ac.

Treatment	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	D <sub>5</sub>	D <sub>6</sub>
Av. yield	9.43	9.03	9.69	9.18	8.93	9.11

S.E./mean = 0.20 tons/ac.

**Crop :- Potato (*Rabi*).**

**Ref :- U.P. 57(313).**

**Site :- Govt. Potato Res. Stn, Farrukhabad.**

**Type :- 'C'.**

Object :—To find the best earthing dates for Potato.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Early maize. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Farrukhabad. (iii) 26.10.1957. (iv) (a) 6 ploughings. (b) By *kudali*. (c) 15 to 20 mds./ac. (d) 1½' × 9". (e) N.A. (v) Castor cake at 50 mds./ac. on 25.10.1957. (vi) *Phulwa* (late) cold stored. (vii) Irrigated. (viii) 2 weedings and earthings as per treatments. (ix) N.A. (x) 26.2.1958

## 2. TREATMENTS :

6 dates of earthing : D<sub>1</sub>=20.11.1957, 30.11.1957, D<sub>2</sub>=20.11.1957, 10.12.1957, D<sub>3</sub>=30.11.1957, 10.12.1957, D<sub>4</sub>=30.11.1957, 20.12.1957, D<sub>5</sub>=20.11.1957, 20.12.1957 and D<sub>6</sub>=30.11.1957, 30.12.1957.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) 17.5' × 73'. (iii) 6. (iv) (a) and (b) 17.5' × 10.5'. (v) No. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) N.A. (iii) Germination and yield of tuber. (iv) (a) 1954—1957. (b) No. (c) Nil. (v) (a) Kanpur. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 6.86 tons/ac. (ii) 0.69 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of tuber in tons/ac.

Treatment	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	D <sub>5</sub>	D <sub>6</sub>
Av. yield	7.15	6.79	7.30	7.08	6.79	6.06

S.E./mean = 0.28 tons/ac.

**Crop :- Potato.**

**Ref :- U.P. 54(39).**

**Site :- Govt. Potato Res. Stn., Farrukhabad.**

**Type :- 'C'.**

Object :—To find out the best earthing dates for Potato.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanai*. (c) Nil. (ii) (a) Loam. (b) Refer soil analysis, Farrukhabad. (iii) 21.10.1954. (iv) (a) 7 ploughings. (b) N.A. (c) 16 seeds/row. (d) 1½' × 9". (e) N.A. (v) 20 mds./ac. of G.N.C. and 12 chks./plot of A/S on 20, 30.11.1954, 10, 20 and 30.12.1954. (vi) *Phulwa* (sprouts were just to come out). (vii) Irrigated. (viii) 1 weeding and earthing as per treatments. (ix) N.A. (x) 17.3.1955.

## 2. TREATMENTS :

5 dates of earthing : D<sub>1</sub>=20.11.1954, D<sub>2</sub>=30.11.1954, D<sub>3</sub>=10.12.1954, D<sub>4</sub>=20.12.1954 and D<sub>5</sub>=30.12.1954.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) and (b) 17.5' × 12'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Crop was affected by frost (pink colour). (iii) Germination and yield of tuber. (iv) (a) 1954—1957. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 6.06 tons/ac. (ii) 0.26 tons/ac. (iii) Treatment differences are highly significant. (iv) Av. yield of tuber in tons/ac.

Treatment	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	D <sub>5</sub>
Av. yield	6.26	6.26	6.16	5.97	5.68

S.E./mean = 0.11 tons/ac.

**Crop :- Potato.**

**Ref :- U.P. 55(30).**

**Site :- Govt. Potato Res. Stn., Farrukhabad.**

**Type :- 'C'.**

Object :—To find out the best earthing dates for Potato.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Chari* for fodder. (c) Nil. (ii) (a) Loam. (b) Refer soil analysis, Farrukhabad. (iii) 2.11.1955. (iv) (a) 5 ploughings. (b) N.A. (c) 16 seeds/row. (d) 1 $\frac{3}{4}$ ' × 9". (e) N.A. (v) 40 mds./ac. of G.N.C.+5 mds./ac. of A/S on 30.11.1955, 10, 20, 30.12.1955 and 10.1.1956. (vi) *Phulwa*. (Cold stored in sprouted condition). (vii) Irrigated. (viii) 1 weeding and earthing as per treatments. (ix) N.A. (x) 14.3.1956.

## 2. TREATMENTS :

5 dates of earthing : D<sub>1</sub>=30.11.1955, D<sub>2</sub>=10.12.1955, D<sub>3</sub>=20.12.1955, D<sub>4</sub>=30.12.1955 and D<sub>5</sub>=10.1.1956.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) and (b) 17.5' × 12'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) No. (iii) Germination and yield of tuber. (iv) (a) 1954—1957. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 11.27 tons/ac. (ii) 0.59 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of tuber in tons/ac.

Treatment	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	D <sub>5</sub>
Av. yield	11.18	11.65	11.53	10.95	11.05

S.E./mean = 0.24 tons/ac.

**Crop :- Potato (*Rabi*).**

**Ref :- U.P. 56(270).**

**Site :- Govt. Potato Res. Stn., Farrukhabad.**

**Type :- 'C'.**

Object :—To find out the best earthing date for Potato.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanai*. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Farrukhabad. (iii) 31.10.1956. (iv) (a) 15 ploughings. (b) By *kudali*. (c) 15 to 20 mds./ac. (d) 1 $\frac{3}{4}$ ' × 9". (e) N.A. (v) *Sanai* G.M. and Castor cake at 30 mds./ac. applied on 31.10.1956. A/S top dressed on 30.11.1956, 10, 20, 30.12.1956 and 10.1.1957. (vi) *Phulwa* (late). (vii) Irrigated. (viii) 1 weeding and earthings as per treatments. (ix) N.A. (x) 20.3.1957.

## 2. TREATMENTS :

5 dates of earthing :  $D_1=30.11.1956$ ,  $D_2=30.12.1956$ ,  $D_3=20.12.1956$ ,  $D_4=30.12.1956$  and  $D_5=10.1.1957$ .

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b)  $17.5' \times 68'$ . (iii) 6. (iv) (a) and (b)  $17.5' \times 12'$ . (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) N.A. (iii) Germination and yield of tuber. (iv) (a) 1954—1957. (b) No. (c) Nil. (v) (a) Kanpur. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 8.93 tons/ac. (ii) 0.75 tons/ac. (iii) Treatment differences are significant. (iv) Av. yield of tuber in tons/ac.

Treatment	$D_1$	$D_2$	$D_3$	$D_4$	$D_5$
Av. yield	9.65	9.17	9.11	8.45	8.29

S.E./mean = 0.31 tons/ac.

**Crop :- Potato (*Rabi*).**

**Ref :- U.P. 57(311).**

**Site :- Govt. Potato Res. Stn., Farrukhabad.**

**Type :- 'C'.**

Object :—To find out the best earthing dates for Potato.

## 1. BASAL CONDITIONS .

(i) (a) Nil. (b) Early maize. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Farrukhabad. (iii) 14.10.1957. (iv) (a) 5 ploughings. (b) By *kudali*. (c) 15 to 20 mds./ac. (d)  $1\frac{1}{2}' \times 9''$ . (e) N.A. (v) Castor cake at 30 mds./ac. on 13.10.1957. (vi) *Phulwa* (late), cold stored. (vii) Irrigated. (viii) 1 weeding and earthings as per treatments. (ix) N.A. (x) 24.2.1958.

## 2. TREATMENTS :

5 dates of earthing :  $D_1=20.11.1957$ ,  $D_2=30.11.1957$ ,  $D_3=10.12.1957$ ,  $D_4=20.12.1957$  and  $D_5=30.12.1957$ .

## 3. DESIGN and 4. GENERAL :

Same as in expt. no. 56(270) on page 742.

## 5. RESULTS :

(i) 6.55 tons/ac. (ii) 0.82 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of tuber in tons/ac.

Treatment	$D_1$	$D_2$	$D_3$	$D_4$	$D_5$
Av. yield	6.98	6.64	7.02	6.03	6.10

S.E./mean = 0.33 tons/ac.

**Crop :- Potato.**

**Ref :- U.P. 54(40).**

**Site :- Govt. Potato Res. Stn., Farrukhabad.**

**Type :- 'C'.**

Object :—To study the effect of earthings on the yield of Potato.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanai* (c) Nil. (ii) (a) Loam. (b) Refer soil analysis, Farrukhabad. (iii) 21.10.1954. (iv) (a) 7 ploughings. (b) N.A. (c) 16 seeds/row. (d)  $1\frac{1}{2}' \times 9''$ . (e) N.A. (v) 20 mds./ac. of G.N.C. on 21.10.1954 and 150 lb./ac. of A/S on 12, 16.12.1954. (vi) *Phulwa* (sprouted). (vii) Irrigated. (viii) 1 weeding and 1 hoeing. (ix) N.A. (x) 17.3.1955.



**2. TREATMENTS :**

3 earthing treatments :  $E_1=1$  earthing on 16.12.1954,  $E_2=2$  earthings on 12 and 24.12.1954 and  $E_3=3$  earthings on 8, 16 and 24.12.1954.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 5. (iv) (a) and (b)  $17.5' \times 12'$ . (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Crop was affected by frost (pink colour). (iii) Yield of potato. (iv) (a) 1952—1957. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 5.60 tons/ac. (ii) 0.58 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of tuber in tons/ac.

Treatment	$E_1$	$E_2$	$E_3$
Av. yield	5.68	5.56	5.56

S.E./mean = 0.26 tons/ac.

**Crop :- Potato.**

**Site :- Govt. Potato Res. Stn., Farrukhabad.**

**Ref :- U.P. 55(28).**

**Type :- 'C'.**

Object :—To study the effect of earthings on the yield of Potato.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Sanai*. (c) Nil. (ii) (a) Loam. (b) Refer soil analysis, Farrukhabad. (iii) 31.10.1955. (iv) (a) 6 ploughings. (b) N.A. (c) 16 seeds/row. (d)  $1\frac{1}{2}' \times 9''$ . (e) N.A. (v) City refuse at 250 mds./ac. on 20.10.1955, 20 mds./ac. of G.N.C. on 31.10.1955, 5 mds./ac. of A/S on 12.12.1955 and 16.12.1955. (vi) *Phulwa* cold stored (in sprouted condition) (vii) Irrigated. (viii) 1 weeding and earthing as per treatments. (ix) N.A. (x) 7.3.1956.

**2. TREATMENTS :**

3 earthing treatments :  $E_1=1$  earthing on 16.12.1955,  $E_2=2$  earthings on 12 and 24.12.1955 and  $E_3=3$  earthings on 8, 16 and 24.12.1955.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 5. (iv) (a) and (b)  $17.5' \times 82'$ . (v) N.I. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) No. (iii) Germination and yield of tuber. (iv) (a) 1952—1957. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 6.29 tons/ac. (ii) 0.17 tons/ac. (iii) Treatment differences are highly significant. (iv) Av. yield of tuber in tons/ac.

Treatment	$E_1$	$E_2$	$E_3$
Av. yield	6.44	5.98	6.44

S.E./mean = 0.08 tons/ac.

**Crop :- Potato (*Rabi*).**

**Site :- Govt. Potato Res. Stn., Farrukhabad.**

**Ref :- U.P. 56(269).**

**Type :- 'C'.**

Object :—To study the effect of earthings on Potato yield.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Lobia* for green fodder. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Farrukhabad. (iii) 29.10.1956. (iv) (a) 3 ploughings. (b) By *kudali*. (c) 15 to 20 mds./ac. (d)  $1\frac{3}{4}' \times 9''$ . (e) N.A. (v) Village compost at 180 mds./ac. on 25.10.1956. Castor cake at 20 mds./ac. on 28.10.1956. 5 mds /ac. of A/S on 12.12.1956 and 16.12.1956. (vi) *Phulwa* (late). (vii) Irrigated. (viii) 1 weeding, 1 hoeing and earthings as per treatments. (ix) N.A. (x) 25.3.1957.

## 2. TREATMENTS :

3 earthing treatments :  $E_1$ =One earthing on 16.12.1956,  $E_2$ =2 earthings on 12.12.1956 and 24.12.1956 and  $E_3$ =3 earthings on 8.12.1956, 16.12.1956 and 24.12.1956.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 5. (iv) (a) and (b)  $17.5' \times 12'$ . (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) N.A. (iii) Germination and yield of tuber. (iv) (a) 1952—1957. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 10.85 tons/ac. (ii) 0.45 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of tuber in tons/ac.

Treatment	$E_1$	$E_2$	$E_3$
Av. yield	10.82	10.82	10.90

S.E./mean = 0.20 tons/ac.

**Crop :- Potato (*Rabi*).**

**Ref :- U.P. 57(312).**

**Site :- Govt. Potato Res. Stn., Farrukhabad.**

**Type :- 'C'.**

Object :—To find out the best earthing dates for Potato.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Early *bajra* for fodder. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Farrukhabad. (iii) 14.10.1957. (iv) (a) 8 ploughings. (b) By *kudali*. (c) 15 to 20 mds./ac. (d)  $1\frac{3}{4}' \times 9''$ . (e) N.A. (v) Castor cake at 30 mds./ac. on 14.10.1957. Castor cake at 15 mds./ac. at the time of first earthing *i.e.* on 8.12.1957, 12.12.1957 and 16.12.1957. (vi) *Phulwa* (late) cold stored. (vii) Irrigated. (viii) 1 weeding, 1 hoeing and earthing as per treatments. (ix) N.A. (x) 13.2.1958.

## 2. TREATMENTS :

3 earthing treatments :  $E_1$ =One earthing on 16.12.1957,  $E_2$ =2 earthings on 12.12.1957 and 24.12.1957 and  $E_3$ =3 earthings on 8.12.1957, 16.12.1957 and 24.12.1957.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b)  $12' \times 56.5'$ . (iii) 5. (iv) (a) and (b)  $17.5' \times 12'$ . (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) N.A. (iii) Germination and yield of tuber. (iv) (a) 1952—1957. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 7.07 tons/ac. (ii) 0.19 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of tuber in tons/ac.

Treatment	$E_1$	$E_2$	$E_3$
Av. yield	7.16	7.05	7.01

S.E./mean = 0.08 tons/ac.

**Crop :- Potato.****Ref :- U.P. 54(37).****Site :- Govt. Potato Res. Stn., Farrukhabad.****Type :- 'C'.**

Object :—To study the effect of different dates of sowing and harvesting on the yield of Potato.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Maize. (c) Nil. (ii) (a) Loam. (b) Refer soil analysis, Farrukhabad. (iii) As per treatments. (iv) (a) 5 ploughings. (b) N.A. (c) 16 seeds/row. (d)  $1\frac{1}{2}' \times 9'$ . (e) N.A. (v) 20 mds./ac. of G.N.C. on 15.10.1954, 4 chks./plot of A/S on 13.12.1954. (vi) *Phulwa* (sprouts are just to come out). (vii) Irrigated. (viii) 1 weeding, 1 hoeing and 1 earthing. (ix) N.A. (x) As per treatments.

**2. TREATMENTS :****Main-plot treatments :**

8 dates of sowing :  $D_1=15.10.1954$ ,  $D_2=22.10.1954$ ,  $D_3=29.10.1954$ ,  $D_4=5.11.1954$ ,  $D_5=12.11.1954$ ,  $D_6=19.11.1954$ ,  $D_7=26.11.1954$ , and  $D_8=3.12.1954$ .

**Sub-plot treatments :**

4 dates of harvesting :  $H_1=20.2.1955$ ,  $H_2=27.2.1955$ ,  $H_3=6.3.1955$  and  $H_4=13.3.1955$ .

**3. DESIGN :**

(i) Split-plot. (ii) (a) 8 main-plots/replication ; 4 sub-plots/main-plot. (b)  $48' \times 12'$ . (iii) 4. (iv) (a) and (b)  $21' \times 6'$ . (v) Nil. (vi) No.

**4. GENERAL :**

(i) Good. (ii) Effect of forst. (iii) Yield of tuber. (iv) (a) 1952—1956. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 0.46 tons/ac. (ii) (a) 0.10 tons/ac. (b) 0.09 tons/ac. (iii) Main effects of D and H are highly significant. (iv) Av. yield of tuber in tons/ac.

	$D_1$	$D_2$	$D_3$	$D_4$	$D_5$	$D_6$	$D_7$	$D_8$	Mean
$H_1$	0.60	0.33	0.42	0.38	0.39	0.26	0.22	0.15	0.34
$H_2$	0.76	0.43	0.51	0.48	0.48	0.35	0.32	0.24	0.45
$H_3$	0.72	0.48	0.45	0.53	0.53	0.47	0.41	0.36	0.49
$H_4$	0.67	0.45	0.46	0.60	0.57	0.58	0.52	0.44	0.54
Mean	0.69	0.42	0.46	0.50	0.49	0.42	0.37	0.30	0.46

**S.E. of difference of two**

1. D marginal means = 0.04 tons/ac.
2. H marginal means = 0.02 tons/ac.
3. H means at the same level of D = 0.06 tons/ac.
4. D means at the same level of H = 0.07 tons/ac.

**Crop :- Potato.****Ref :- U.P. 55(27).****Site :- Govt. Potato Res. Stn., Farrukhabad.****Type :- 'C'.**

Object :—To study the effect of different dates of sowing and harvesting on the yield of Potato.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Lobia* for fodder. (c) Nil. (ii) (a) Loam. (b) Refer soil analysis, Farrukhabad. (iii) As per treatments. (iv) (a) 5 ploughings. (b) and (c) 48 seeds/plot. (d)  $1\frac{1}{2}' \times 9'$ . (e) N.A. (v) 10 mds./ac. of G.N.C. 1 chks./row of A/S on 13, 29.12.1955 and 11.1.1956. (vi) *Phulwa* of cold stored (in sprouted condition). (vii) Irrigated. (viii) 1 weeding and 3 earthings. (ix) N.A. (x) As per treatments.

**2. TREATMENTS :****Main-plot treatments :**

8 dates of sowing :  $D_1=29.10.1955$ ,  $D_2=5.11.1955$ ,  $D_3=12.11.1955$ ,  $D_4=19.11.1955$ ,  $D_5=26.11.1955$ ,  $D_6=3.12.1955$ ,  $D_7=10.12.1955$  and  $D_8=17.12.1955$ .

**Sub-plot treatments :**

4 dates of harvesting : H<sub>1</sub>=Middle of Feb., H<sub>2</sub>=End of Feb., H<sub>3</sub>=Mid. of March and H<sub>4</sub>=End of March, 1956.

**3. DESIGN :**

(i) Split-plot. (ii) (a) 8 main-plots/replication and 4 sub-plots/main-plot. (b) 48'×12'. (iii) 4. (iv) (a) and (b) 12'×6'. (v) Nil. (vi) No.

**4. GENERAL :**

(i) Good. (ii) No. (iii) Germination and yield of tuber. (iv) (a) 1952—1956. (b) No. (c) Nil. (v) No. (vii) Nil.

**5. RESULTS :**

(i) 1.08 tons/ac. (ii) (a) 0.24 tons/ac. (b) 0.15 tons/ac. (iii) Main effects of D and H are highly significant. (iv) Av. yield of tuber in tons/ac.

	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	D <sub>5</sub>	D <sub>6</sub>	D <sub>7</sub>	D <sub>8</sub>	Mean
H <sub>1</sub>	1.57	1.16	0.98	0.91	0.58	0.43	0.19	0.09	0.74
H <sub>2</sub>	1.69	1.59	1.45	1.41	0.93	0.82	0.50	0.36	1.09
H <sub>3</sub>	2.01	1.92	1.61	1.64	1.16	0.97	0.65	0.46	1.30
H <sub>4</sub>	1.78	1.82	1.58	1.30	1.22	0.92	0.58	0.35	1.19
Mean	1.76	1.62	1.40	1.32	0.97	0.78	0.48	0.32	1.08

**S. E. of difference of two**

1. D marginal means = 0.09 tons/ac.
2. H marginal means = 0.04 tons/ac.
3. H means at the same level of D = 0.10 tons/ac.
4. D means at the same level of H = 0.12 tons/ac.

**Crop :- Potato (Rabi).**

**Ref :- U.P. 56(445).**

**Site :- Govt. Potato Res. Stn., Farrukhabad.**

**Type :- 'C'.**

Object :- To find out the optimum sowing and harvesting dates for Potato.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Lobia* for green fodder. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Farrukhabad. (iii) As per treatments. (iv) (a) 3 ploughings. (b) By *kudali*. (c) 15 to 20 mds./ac. (d) 1½'×9". (e) N.A. (v) Local manure applied at 180 mds./ac. on 25.10.1956 and Castor cake at 20 mds./ac. on 28.10.1956. (vi) *Phulwa* (late). (vii) Irrigated. (viii) 3 earthings and 1 weeding. (ix) N.A. (x) As per treatments.

**2. TREATMENTS :****Main-plot treatments :**

8 dates of sowing : D<sub>1</sub>=29.10.1956, D<sub>2</sub>=5.11.1956, D<sub>3</sub>=12.11.1956, D<sub>4</sub>=19.11.1956, D<sub>5</sub>=26.11.1956, D<sub>6</sub>=3.12.1956, D<sub>7</sub>=10.12.1956 and D<sub>8</sub>=17.12.1956.

**Sub-plot treatments :**

4 dates of harvesting : H<sub>1</sub>=Middle of Feb., 1957, H<sub>2</sub>=End of Feb., 1957, H<sub>3</sub>=Middle of March, 1957 and H<sub>4</sub>=End of March, 1957.

**3. DESIGN :**

(i) Split-plot. (ii) (a) 8 main-plots/replication ; 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) and (b) 9'×1½'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Yellow mosaic. (iii) Germination and yield of tuber. (iv) (a) 1952—1956. (b) No. (c) Nil. (v) (a) Kanpur. (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 8.17 tons/ac. (ii) (a) 1.56 tons/ac. (b) 1.07 tons/ac. (iii) Main effects of D, H and interaction  $D \times H$  are highly significant. (iv) Av. yield of tuber in tons/ac.

	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	D <sub>5</sub>	D <sub>6</sub>	D <sub>7</sub>	D <sub>8</sub>	Mean
H <sub>1</sub>	11.76	10.28	7.22	6.57	4.86	3.84	1.85	0.74	5.89
H <sub>2</sub>	12.04	10.46	9.21	9.07	6.34	6.30	4.72	5.19	7.92
H <sub>3</sub>	13.43	10.46	9.63	9.63	9.72	7.78	6.71	5.60	9.12
H <sub>4</sub>	13.01	11.71	9.82	10.56	9.77	8.24	7.73	7.34	9.74
Mean	12.56	10.73	8.97	8.96	7.67	6.54	5.25	4.64	8.17

S.E. of difference of two

1. D marginal means = 0.55 tons/ac.
2. H marginal means = 0.27 tons/ac.
3. H means at the same level of D = 0.76 tons/ac.
4. D means at the same level of H = 0.86 tons/ac.

**Crop :- Potato.**

**Ref :- U.P. 55(26).**

**Site :- Govt. Potato Res. Stn., Farrukhabad.**

**Type :- 'C'.**

**Object :-** To study the effect of different spacings and methods of sowing on the yield of Potato.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Lobia* for fodder. (c) Nil. (ii) (a) Loam. (b) Refer soil analysis, Farrukhabad. (iii) 29.10.1955. (iv) (a) 5 ploughings. (b) Flat sowing. (c) N.A. (d) As per treatments. (e) N.A. (v) 7 mds./ac. of G.N.C and  $\frac{1}{2}$  Srs /plot of A/S on 11.2.1955. (vi) *Phulwa* in sprouted condition. (vii) Irrigated. (viii) 1 earthing on 11.12.1955. (ix) N.A. (x) 14.3.1956.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 spacings between rows :  $R_1=1\frac{1}{2}'$  and  $R_2=2'$ .

(2) 2 spacings between seeds :  $S_1=9''$  and  $S_2=12''$ .

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) and (b)  $12' \times 9'$ . (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination and yield of tuber. (iv) (a) 1955—contd. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 3.10 tons/ac. (ii) 0.48 tons/ac. (iii) None of the effects is significant. (iv) Av. yield of tuber in tons/ac.

	R <sub>1</sub>	R <sub>2</sub>	Mean
S <sub>1</sub>	3.33	3.06	3.20
S <sub>2</sub>	3.33	2.68	3.00
Mean	3.33	2.87	3.10

S.E. of any marginal mean = 0.17 tons/ac.

S.E. of body of table = 0.24 tons/ac.

**Crop :- Potato (Rabi).****Ref :- U.P. 56(232).****Site :- Govt. Potato Res. Stn., Farrukhabad.****Type :- 'C'.**

Object :—To compare seed from different cold stores and seed from ordinary stores.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Lobia* for green fodder. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Farrukhabad. (iii) 29.10.1956. (iv) (a) 3 ploughings. (b) By *kudali*. (c) 15 to 20 mds./ac. (d)  $1\frac{1}{2}' \times 9''$ . (e) N.A. (v) Local manure at 180 mds./ac. applied on 25.10.1956. Castor cake at 40 mds./ac. applied on 28.10.1956 and 5 mds./ac. of A/S on 12.12.1956. (vi) *Phulwa* (late). (vii) Irrigated. (viii) 1 weeding, 1 hoeing and 1 earthing. (ix) N.A. (x) 26.3.1957.

**2. TREATMENTS :**

5 places for storing the seeds :  $P_0$ =Sand,  $P_1$ =Mother India cold store,  $P_2$ =Meerut cold store,  $P_3$ =Gopal (Hind) cold store and  $P_4$ =Bharat cold store.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 5. (b)  $18' \times 83'$ . (iii) 4. (iv) (a) and (b)  $15' \times 8'$ . (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) N.A. (iii) Germination and yield of potato. (iv) (a) 1955—1957. (b) No. (c) Nil. (v) (a) and (b) No. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 12.28 tons/ac. (ii) 0.70 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of tuber in tons/ac.

Treatment	$P_0$	$P_1$	$P_2$	$P_3$	$P_4$
Av. yield	11.83	12.67	12.50	12.67	11.75

S.E./mean = 0.35 tons/ac.

**Crop :- Potato (Rabi).****Ref :- U.P. 57(314).****Site :- Govt. Potato Res. Stn., Farrukhabad.****Type :- 'C'.**

Object :—To compare seed from different seed stores and seed from ordinary stores.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Early *bajra* for green fodder. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Farrukhabad. (iii) 15.10.1957. (iv) (a) 8 ploughings. (b) By *kudali*. (c) 15 to 20 mds./ac. (d)  $1\frac{1}{2}' \times 9''$ . (e) N.A. (v) Castor cake at 30 mds./ac. on 15.10.1957. (vi) *Phulwa* (late). (vii) Irrigated. (viii) 1 weeding and 1 earthing. (ix) N.A. (x) 27.2.1958.

**2. TREATMENTS to 4. GENERAL :**

Same as in expt. no. 56(232) above.

**3. RESULTS :**

(i) 8.93 tons/ac. (ii) 0.65 tons/ac. (iii) Treatment differences are significant. (iv) Av. yield of tuber in tons/ac.

Treatment	$P_0$	$P_1$	$P_2$	$P_3$	$P_4$
Av. yield	9.83	8.25	8.75	9.50	8.33

S.E./mean = 0.32 tons/ac.

**Crop :- Potato (Rabi).****Ref :- U.P. 56(444).****Site :- Govt. Potato Res. Stn., Farrukhabad.****Type :- 'C'.**

Object:—To study the effect of different row and seed spacings on the yield of Potato.

**1. BASAL CONDITIONS :**

(i) (a) No. (b) *Lobia* for green fodder. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Farrukhabad. (iii) 17.11.1956. (iv) (a) 6 ploughings. (b) Flat sowing by *kudal*. (c) N.A. (d) As per treatments. (e) N.A. (v) F.Y.M. at 200 mds./ac. + castor cake at 20 mds./ac. +  $\frac{1}{2}$  seer/plot of A.S. (vi) *Phulwa* (late). (vii) Irrigated. (viii) 1 weeding, hoeing and 1 earthing. (ix) N.A. (x) 26.3.1957.

**2. TREATMENTS :****Treatments in one direction :**2 row spacings :  $R_1=1\frac{1}{2}'$  and  $R_2=2'$ .**Treatments in orthogonal direction :**2 seed spacings :  $S_1=9''$  and  $S_2=12''$ .**3. DESIGN :**(i) Strip-plot. (ii) (a) 4. (b)  $26' \times 20'$ . (iii) 4. (iv) (a) and (b)  $12' \times 9'$ . (v) Nil. (vi) Yes.**4. GENERAL :**

(i) Good. (ii) N.A. (iii) Germination and yield of potato. (iv) (a) 1955–1957. (b) No. (c) Nil. (v) (a) and (b) No. (vi) and (vii) Nil.

**5. RESULTS :**(i) 11.25 tons/ac. (ii) (a) 0.96 tons/ac for R. (b) 1.71 tons/ac. for S. (c) 0.96 tons/ac. for  $R \times S$ . (iii) None of the effects is significant. (iv) Av. yield of tuber in tons/ac.

	$R_1$	$R_2$	Mean
$S_1$	12.22	10.74	11.48
$S_2$	11.48	10.56	11.02
Mean	11.85	10.65	11.25

S.E. of difference of two

1. R marginal means	= 0.48 tons/ac.
2. S marginal means	= 0.86 tons/ac.
3. R means at the same level of S	= 0.68 tons/ac.
4. S means at the same level of R	= 0.98 tons/ac.

**Crop :- Potato (Rabi).****Ref :- U.P. 57(481).****Site :- Govt. Potato Res. Stn., Farrukhabad.****Type :- 'C'.**

Object:—To study the effect of different row and seed spacings on the yield of Potato.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Early maize. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Farrukhabad. (iii) N.A. (iv) (a) 5 ploughings. (b) By *kudal*. (c) N.A. (d) As per treatments. (e) N.A. (v) Castor cake at 20 mds./ac. on 13.10.1957 + castor cake at 20 mds./ac. on 14.12.1957 at first earthing. (vi) *Phulwa* (late). (vii) Irrigated. (viii) 1 weeding and hoeing. (ix) N.A. (x) 25.2.1958.

**2. TREATMENTS to 4. GENERAL :**

Same as in expt no. 56(444) above.

**5. RESULTS:**(i) 5.49 tons/ac. (ii) (a) 0.65 tons/ac. for R. (b) 1.41 tons/ac. for S. (c) 0.51 tons/ac. for  $R \times S$ . (iii) None of the effects is significant. (iv) Av. yield of tuber in tons/ac.

	S <sub>1</sub>	S <sub>2</sub>	Mean
R <sub>1</sub>	5.46	5.09	5.28
R <sub>2</sub>	5.74	5.65	5.70
Mean	5.60	5.37	5.49

S.E. of difference of two

1. R marginal means = 0.23 tons/ac.
2. S marginal means = 0.50 tons/ac.
3. S means at the same level of R = 0.41 tons/ac.
4. R means at the same level of S = 0.75 tons/ac.

**Crop :- Potato (Rabi).**

**Ref :- U.P. 54(129).**

**Site :- Govt. Agri. Res. Farm, Kalianpur.**

**Type :- 'C'.**

Object :— To study the effect of sowing whole vs. peeled and pithless potato tuber on Potato yield.

**1. BASAL CONDITIONS :**

(i) (a) o (c) N.A. (ii) (a) Loam soil. (b) Refer soil analysis, Kalianpur. (iii) N.A. (iv) (a) to (c) N.A. (d) Seed to seed 9". (e) N.A. (v) 80 lb./ac. of N as F.Y.M.+60 lb./ac. of N as A/S+75 lb./ac. of P<sub>2</sub>O<sub>6</sub> as Super+60 lb./ac. of K<sub>2</sub>O as Pot. Sul. (vi) to (x) N.A.

**2. TREATMENTS :**

2 types of seed : S<sub>1</sub>=Whole tuber and S<sub>2</sub>=Whole tuber with skin (periderm) removed.

**3. DESIGN :**

(i) Paired plot. (ii) (a) 2. (b) N.A. (iii) 16. (iv) (a) 32'×22'. (b) 29'×19'. (v) 1½'×1½'. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of potato. (iv) (a) 1954—contd. (b) N.A. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 11.94 tons/ac. (ii) 0.77 tons/ac. (iii) Treatment difference is not significant. (iv) Av. yield of tuber in tons/ac.

Treatment	S <sub>1</sub>	S <sub>2</sub>
Av. yield	11.92	11.96

S.E./mean = 0.19 tons/ac.

**Crop :- Potato (Rabi).**

**Ref :- U.P. 55(187).**

**Site :- Govt. Agri. Res. Farm, Kalianpur.**

**Type :- 'C'.**

Object :— To study the effect of sowing whole vs. peeled potato tuber on Potato yield.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Moong* T<sub>1</sub>. (c) N.A. (ii) Loam. (b) Refer soil analysis, Kalianpur. (iii) 24, 26.11.1955. (iv) (a) 5 plougings. (b) and (c) N.A. (d) Seed to seed 4". (e) N.A. (v) 60 lb./ac. of N as F.Y.M.+100 lb./ac. of N as A/S+75 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super. (vi) *Phulwa* red. (vii) Irrigated. (viii) and (ix) N.A. (x) 16 to 18 3.1956.

**2. TREATMENTS :**

2 types of seed : S<sub>1</sub>=Whole tuber and S<sub>2</sub>=Whole tuber with skin (periderm) removed.



## 3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 8. (iv) (a) 42'×28'. (b) 39'×25'. (v) 1½'×1½'. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Yield of potato. (iv) (a) 1954—contd. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 7.87 tons/ac. (ii) 1.49 tons/ac. (iii) Treatment difference is not significant. (iv) Av. yield of tuber in tons/ac.

Treatment	S <sub>1</sub>	S <sub>2</sub>
Av. yield	8.14	7.60

S.E /mean = 0.53 tons/ac.

**Crop :- Potato (Rabi).**

**Ref :- U.P. 54(348).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'C'.**

Object :—To study the effect of different methods of planting different sizes of seeds on the yield of Potato.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai*. (c) Nil (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 8.11.1954. (iv) (a) N.A. (b) As per treatments. (c) 128 tubers/plot. (d) 1½'×9". (e) N.A. (v) G.M. (*sanai*) + castor cake at 4 mds. (vi) N.A. (vii) Irrigated. (viii) 3 earthings. (ix) N.A. (x) 25.3 1955.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 seed sizes : S<sub>1</sub>=Big and S<sub>2</sub>= Small.

(2) 4 methods of sowing : M<sub>1</sub>=Sown in deep furrows and levelled up, M<sub>2</sub>=Sown in shallow furrows and lightly ridged up, M<sub>3</sub>=Sown in shallow furrows and heavily ridged up and M<sub>4</sub>=Sown in heavy ridges.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) 55.5'×30.5'. (iii) 4. (iv) (a) and (b) 12'×14'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Light mosaic. (iii) Germination %, mosaic % and yield of potato. (iv) (a) 1954–1956. (b) N.A. (c) Nil. (v) (a) and (b) No. (vi) and (vii) Nil.

## 5. RESULTS:

(i) 4.79 tons/ac. (ii) 1.09 tons/ac. (iii) Main effect of S alone is highly significant. (iv) Av. yield of tuber in tons/ac.

	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	M <sub>4</sub>	Mean
S <sub>1</sub>	4.88	5.60	6.31	5.89	5.67
S <sub>2</sub>	4.11	3.99	4.11	3.39	3.90
Mean	4.50	4.80	5.21	4.64	4.79

S.E. of S marginal mean = 0.27 tons/ac.

S.E. of M marginal mean = 0.39 tons/ac.

S.E. of body of table = 0.54 tons/ac.

**Crop :- Potato.****Ref :- U.P. 55(50).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'C'.**

Object :—To study the effect of different methods of planting different sizes of seeds on the yield of Potato.

**1. BASAL CONDITIONS :**

(i) (a) No. (b) *Sanai*. (c) No. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 18.11.1955. (iv) (a) and (b) N.A. (c) 16 seeds/row. (d)  $1\frac{3}{4}' \times 9''$ . (e) N.A. (v) Ploughed *sanai* on 14.8.1955. 13 C.L./ac. cf F.Y.M. on 10.6.1955. (vi) *Phulwa*. (vii) Irrigated. (viii) 2 earthings. (ix) N.A. (x) 20.3.1956.

**2. TREATMENTS and 3. DESIGN :**

Same as in expt. no 54(348) on page 752.

**4. GENERAL :**

(i) Good. (ii) No. (iii) Yield of potato. (iv) (a) 1954—1956. (b) No. (c) Nil. (v) (a) No. (b) Nil. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 5.68 tons/ac. (ii) 0.67 tons/ac. (iii) None of the effects is significant. (iv) Av. yield of tuber in tons/ac.

	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	M <sub>4</sub>	Mean
S <sub>1</sub>	6.01	5.77	6.19	5.72	5.92
S <sub>2</sub>	5.18	5.48	5.60	5.48	5.44
Mean	5.60	5.62	5.89	5.60	5.68

S.E. of S marginal mean = 0.17 tons/ac.

S.E. of M marginal mean = 0.24 tons/ac.

S.E. of body of table = 0.34 tons/ac.

**Crop :- Potato (*Rabi*).****Ref :- U.P. 56(268).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'C'.**

Object :—To study the effect of different methods of planting different sizes of seeds on the yield of Potato.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Sanai*. (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 31.10.1956. (iv) (a) N.A. (b) As per treatments. (c) N.A. (d)  $1\frac{3}{4}' \times 9''$ . (e) N.A. (v) G.M. (*sanai*). (vi) *Phulwa* (late). (vii) Irrigated. (viii) 2 earthings. (ix) N.A. (x) 22, 23.3.1957.

**2. TREATMENTS :**

Same as in expt. no. 54(348) on page 752.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 8. (b)  $30.5' \times 55.5'$ . (iii) 6. (iv) (a) and (b)  $12' \times 14'$ . (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) N.A. (iii) Germination and yield of potato. (iv) (a) 1954—1956. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 7.96 tons/ac. (ii) 0.74 tons/ac. (iii) None of the effects is significant. (iv) Av. yield of tuber in tons/ac.

	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	M <sub>4</sub>	Mean
S <sub>1</sub>	8.41	7.54	7.62	7.94	7.88
S <sub>2</sub>	7.66	8.02	7.94	8.49	8.03
Mean	8.04	7.78	7.78	8.22	7.96

S.E. of S marginal mean = 0.15 tons/ac.  
 S.E. of M marginal mean = 0.21 tons/ac.  
 S.E. of body of table = 0.30 tons/ac.

**Crop :- Potato.**

**Ref :- U.P. 54(31).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'C'.**

Object :—To find out the optimum number of earthing required for Potato.

**1. BASAL CONDITIONS :**

(i) (a) No. (b) Maize. (c) No. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 5.11.1954. (iv) (a) and (b) N.A. (c) 27 seeds/row. (d) 1½' × 9". (e) N.A. (v) 2 mds./ac. of castor cake. (vi) *Phulwa* (little sprouted). (vii) Irrigated. (viii) 3 weedings and earthing as per treatments. (ix) N.A. (x) 16.3.1955.

**2. TREATMENTS :**

3 earthing treatments : E<sub>1</sub>=1, E<sub>2</sub>=2 and E<sub>3</sub>=3 earthings.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) and (b) 20' × 21'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) No. (iii) Yield of potato. (iv) (a) 1952—1955. (b) No. (c) Nil. (v) (a) Farrukhabad. (b) Nil. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 7.04 tons./ac. (ii) 0.96 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of tuber in tons/ac.

Treatment	E <sub>1</sub>	E <sub>2</sub>	E <sub>3</sub>
Av. yield	6.86	7.25	7.00

S.E./mean = 0.39 tons/ac.

**Crop :- Potato.**

**Ref :- U.P. 55(46).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'C'.**

Object :—To find out the best earthing date for Potato.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Sanai*. (c) No. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 10.11.1955. (iv) (a) and (b) N.A. (c) 24 seeds/row. (d) 1½' × 9". (e) N.A. (v) *Sanai* ploughed up on 14.8.1955. (vi) *Phulwa*. (vii) Irrigated. (viii) Earthings as per treatments. (ix) N.A. (x) 8, 9.3.1955.

**2. TREATMENTS :**

3 earthing treatments : E<sub>1</sub>=1 earthing on 15.12.1955, E<sub>2</sub>=2 earthings on 15.12.1955 and 30.12.1955 and E<sub>3</sub>=3 earthings on 15.12.1955, 30.12.1955 and 31.1.1956.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) and (b) 18' × 21'. (v) Nil. (vi) Yes.

BASAL :

(i) Good. (ii) Nil. (iii) Yield of potato. (iv) (a) 1952—1955. (b) No. (c) Nil. (v) (a) Farrukhabad. (b) Nil. (vi) and (vii) Nil.

#### 5. RESULTS :

(i) 3.41 tons/ac. (ii) 0.33 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of tuber in tons/ac.

Treatment	E <sub>1</sub>	E <sub>2</sub>	E <sub>3</sub>
Av. yield	3.40	3.46	3.37
S.E./mean = 0.13 tons/ac.			

**Crop :- Potato.**

**Ref :- U.P. 54(33).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'C'.**

Object :—To study the optimum date for single earthing for Potato.

#### 1. BASAL CONDITIONS :

(i) (a) No. (b) *Sanai*. (c) No. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 6.11.1954. (iv) (a) and (b) N.A. (c) 14 seeds/row. (d) 1½' × 9". (e) N.A. (v) *Sanai* was turned in and 4 mds./ac. of Castor cake. (vi) *Phulwa* (medium sprouted). (vii) Irrigated. (viii) As per treatments. (ix) N.A. (x) 22, 23.3.1955.

#### 2. TREATMENTS:

5 dates of earthing : D<sub>1</sub>=6.12.1954, D<sub>2</sub>=17.12.1954, D<sub>3</sub>=20.12.1954, D<sub>4</sub>=24.12.1954 and D<sub>5</sub>=4.1.1955.

#### 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) and (b) 24½' × 10½'. (v) Nil. (vi) Yes.

#### 4. GENERAL :

(i) Good. (ii) No. (iii) Yield of potato. (iv) (a) 1954—1956. (b) No. (c) Nil. (v) (a) No. (b) Nil. (vi) and (vii) Nil.

#### 5. RESULTS :

(i) 8.26 tons/ac. (ii) 1.17 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of tuber in tons/ac.

Treatment	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	D <sub>5</sub>
Av. yield	8.06	8.66	7.78	8.37	8.42
S.E./mean = 0.48 tons/ac.					

**Crop :- Potato.**

**Ref :- U.P. 55(52).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'C'.**

Object :—To study the optimum date for single earthing for Potato .

#### 1. BASAL CONDITIONS :

(i) (a) No. (b) *Sanai*. (c) No. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 19.11.1955. (iv) (a) and (b) No. (c) 16 seeds/row. (d) 1½' × 9". (e) N.A. (v) Ploughed *sanai* on 18.8.1955. 14 C.L./ac. of F.Y.M. on 9.10.1955. (vi) *Phulwa*. (vii) Irrigated. (viii) As per treatments. (ix) N.A. (x) 3.4.1956.

#### 2. TREATMENTS :

3 dates of earthing : D<sub>1</sub>=20.12.1955, D<sub>2</sub>=1.1.1956 and D<sub>3</sub>=11.1.1956.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 10. (iv) (a) and (b) 12'×24½'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) No. (iii) Yield of potato. (iv) (a) 1954—1956. (b) No. (c) Nil. (v) (a) Farrukhabad. (b) Nil. (vi) Nil. (vii) Actual earthing dates are given.

**5. RESULTS :**

(i) 4.43 tons/ac. (ii) 0.50 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of tuber in tons/ac.

Treatment	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>
Av. yield	4.54	4.38	4.37

S.E./mean = 0.16 tons/ac.

**Crop :- Potato (Rabi).**

**Ref :- U.P. 56(230).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'C'.**

Object :—To study the optimum date for single earthing for Potato.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Sanai*. (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 8.11.1956. (iv) (a) N.A. (b) By *kudali*. (c) 15 to 20 mds./ac. (d) 1½'×9". (e) N.A. (v) G.M. (*sanai*). (vi) *Phulwa* (late). (vii) Irrigated. (viii) As per treatments. (ix) N.A. (x) 26.3.1957.

**2. TREATMENTS :**

3 dates of earthing : D<sub>1</sub>=22.12.1956, D<sub>2</sub>=1.1.1957 and D<sub>3</sub>=23.1.1957.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 3. (b) 12'×46'. (iii) 10. (iv) (a) and (b) 14'×12'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) N.A. (iii) Germination % and yield of potato. (iv) (a) 1954—1956. (b) No. (c) Nil. (v) (a) Farrukhabad. (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 7.33 tons/ac. (ii) 0.36 tons/ac. (iii) Treatment differences are highly significant. (iv) Av. yield of tuber in tons/ac.

Treatment	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>
Av. yield	7.76	7.14	7.10

S.E./mean = 0.11 tons/ac.

**Crop :- Potato.**

**Ref :- U.P. 54(34).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'C'.**

Object :—To study the optimum dates for two earthings for Potato.

**1. BASAL CONDITIONS :**

(i) (a) No. (b) *Sanai*. (c) No. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 6.11.1954. (iv) (a) and (b) N.A. (c) 18 seeds/row. (d) 1½'×9". (e) N.A. (v) *Sanai* was turned in +4 mds./ac. of castor cake. (vi) *Kalmi sala* (medium sprouted). (vii) Irrigated. (viii) As per treatments. (ix) N.A. (x) 23, 24.3.1955.

## 2. TREATMENTS :

6 pairs of dates of earthing :  $D_1=20.11.1954, 30.11.1954$  (6.12.1954, 20.12.1954),  $D_2=20.11.1954, 10.12.1954$  (6.12.1954, 22.12.1954),  $D_3=30.11.1954, 10.12.1954$  (6.12.1954, 24.12.1954),  $D_4=30.11.1954, 20.12.1954$  (17.12.1954, 20.12.1954),  $D_5=20.11.1954, 20.12.1954$  (17.12.1954, 24.12.1954) and  $D_6=30.11.1954, 30.12.1954$  (20.12.1954, 4.1.1955).

Dates within brackets are actual dates of earthings. Original dates had to be changed because of excessive moisture in the fields.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) and (b)  $13\frac{1}{2}' \times 24\frac{1}{2}'$ . (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Mosaic incidence 0.07%. (iii) Yield of potato. (iv) (a) 1954—1957. (b) No. (c) Nil. (v) (a) No. (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 6.98 tons/ac. (ii) 0.92 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of tuber in tons/ac.

Treatment	$D_1$	$D_2$	$D_3$	$D_4$	$D_5$	$D_6$
Av. yield	6.44	7.23	7.08	7.08	6.89	7.14

S.E./mean = 0.46 tons/ac.

**Crop :- Potato.**

**Ref :- U.P. 55(51).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'C'.**

Object :—To study the optimum dates for two earthings for Potato.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) *Sanai*. (c) No. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 19.11.1955. (iv) (a) and (b) N.A. (c) 20 seeds/row. (d)  $1\frac{3}{4}' \times 9''$ . (e) N.A. (v) Ploughed *sanai* on 18.8.1955. 14 C.L./ac. of F.Y.M. on 9.10.1955. (vi) *Phulwa*. (vii) Irrigated. (viii) As per treatments. (ix) N.A. (v) 1.4.1956.

## 2. TREATMENTS :

3 pairs of dates of earthing :  $D_1=21.12.1955, 2.1.1956$ ,  $D_2=21.12.1955, 9.1.1956$  and  $D_3=21.12.1955, 23.1.1956$ .

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 8. (iv) (a) and (b)  $15' \times 24\frac{1}{2}'$ . (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) No attack. (iii) Yield of potato. (iv) (a) 1954—1957. (b) No. (c) Nil. (v) (a) Farrukhabad. (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 4.90 tons/ac. (ii) 0.47 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of tuber in tons/ac.

Treatment	$D_1$	$D_2$	$D_3$
Av. yield	5.01	4.80	4.90

S.E./mean = 0.17 tons/ac.

**Crop :- Potato (Rabi).**

**Ref :- U.P. 56(228).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'C'.**

Object :—To study the optimum dates for two earthings for Potato.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanai*. (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 8.11.1956. (iv) (a) N.A. (b) By *kudali*. (c) 15 to 20 mds./ac. (d)  $1\frac{1}{2}' \times 9'$ . (e) N.A. (v) G.M. (*Sanai*). (vi) *Phulwa* (late). (vii) Irrigated. (viii) As per treatments. (ix) N.A. (x) 23.3.1957.

## 2. TREATMENTS :

3 pairs dates of earthing:  $D_1=21.12.1956$ , and 6.1.1957,  $D_2=21.12.1957$  and 23.1.1957 and  $D_3=21.12.1956$ , and 29.1.1957.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b)  $12' \times 46'$ . (iii) 10. (iv) (a) and (b)  $14' \times 12'$ . (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. (b) N.A. (iii) Germination % and yield of potato. (iv) (a) 1954—1957. (b) No. (c) Nil. (v) (a) Farrukhabad. (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 7.10 tons/ac. (ii) 0.58 tons/ac. (iii) Treatment differences are significant. (iv) Av. yield of tuber in tons/ac.

Treatment	$D_1$	$D_2$	$D_3$
Av. yield	7.45	7.12	6.74

S.E./mean = 0.18 tons/ac.

**Crop :- Potato (*Rabi*).**

**Ref :- U.P. 57(285).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'C'.**

Object :- To find out optimum dates for two earthings for Potato.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanai*. (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 2.11.1957. (iv) (a) N.A. (b) By *kudali*. (c) 15 to 20 mds./ac. (d)  $1\frac{1}{2}' \times 9'$ . (e) N.A. (v) G.M. (*Sanai*). (vi) *Phulwa* (late). (vii) Irrigated. (viii) As per treatments. (ix) N.A. (x) 17, 18.3.1958.

## 2. TREATMENTS :

3 pairs of dates of earthing:  $D_1=21, 24.12.1957$  and 10.1.1958,  $D_2=21, 24.12.1957$  and 20.1.1958 and  $D_3=21, 24.12.1957$  and 27.1.1958.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b)  $12' \times 47'$ . (iii) 10. (iv) (a) and (b)  $14' \times 12'$ . (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Leaf roll and mosaic incidence. (iii) Germination, leaf roll, mosaic incidence and yield of potato. (iv) (a) 1954—1957. (b) No. (c) Nil. (v) (a) Farrukhabad. (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 4.48 tons/ac. (ii) 0.54 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of tuber in tons/ac.

Treatment	$D_1$	$D_2$	$D_3$
Av. yield	4.62	4.40	4.43

S.E./mean = 0.17 tons/ac.

**Crop :- Potato.****Ref :- U.P. 55(48).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'C'.**

Object :— To study the effect of sowing Potato at different depths.

**1. BASAL CONDITIONS :**(i) (a) Nil. (b) *Sanai*. (c) No. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 11.11.1955. (iv) (a) and (b) N.A. (c) 30 seeds/row. (d)  $1\frac{1}{2}' \times 9''$ . (e) N.A. (v) Nil. (vi) *Phulwa*. (vii) Irrigated. (viii) Earthings. (ix) N.A. (x) 8.3.1956.**2. TREATMENTS :**4 depths of sowing :  $D_1=1''$ ,  $D_2=2''$ ,  $D_3=3''$  and  $D_4=4''$ .**3. DESIGN :**(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) and (b)  $1\frac{1}{2}' \times 23'$ . (v) Nil. (vi) Yes.**4. GENERAL :**

(i) Good, (ii) No. (iii) Yield of potato. (iv) (a) 1955—1957. (b) No. (c) Nil. (v) (a) No. (b) Nil. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 3.52 tons/ac. (ii) 0.71 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of tuber in tons/ac.

Treatment	$D_1$	$D_2$	$D_3$	$D_4$
Av. yield	3.66	3.54	3.48	3.42

S.E./mean = 0.36 tons/ac.

**Crop :- Potato (*Rabi*).****Ref :- U.P. 56(227).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'C'.**

Object :— To study the effect of sowing Potato at different depths.

**1. BASAL CONDITIONS :**(i) (a) Nil. (b) *Sanai*. (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 2.11.1956. (iv) (a) N.A. (b) By *kudali*. (c) 15 to 20 mds./ac. (d) Plant 9" apart. (e) N.A. (v) G.M. (*sanai*). (vi) *Phulwa* (late). (vii) Irrigated. (viii) 2 earthings. (ix) N.A. (x) 9.3.1957.**2. TREATMENTS :**4 depths of sowing :  $D_1=1''$ ,  $D_2=2''$ ,  $D_3=3''$  and  $D_4=4''$ .**3. DESIGN :**(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 8. (iv) (a) and (b)  $12' \times 1.75'$ . (v) No. (vi) Yes.**4. GENERAL :**

(i) Good. (ii) N.A. (iii) Yield of potato. (iv) (a) 1955—1957. (b) No. (c) Nil. (v) (a) and (b) No. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 6.08 tons/ac. (ii) 0.97 tons/ac. (iii) Treatment differences are significant. (iv) Av. yield of tuber in tons/ac.

Treatment	$D_1$	$D_2$	$D_3$	$D_4$
Av. yield	5.92	6.73	5.30	6.37

S.E./mean = 0.34 tons/ac.



**Crop :- Potato (Rabi).****Ref :- U.P. 57(288).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'C'.****Object :-** To study the effect of sowing Potato at different depths.**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Sanai*. (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 4.10.1957. (iv) (a) N.A. (b) By *kudali*. (c) 15 to 20 mds./ac. (d) Plants 9" apart. (e) N.A. (v) G.M. (*sanai*). (vi) *Phulwa* (late). (vii) Irrigated. (viii) 1 earthing. (ix) N.A. (x) 20.3.1958.

**2. TREATMENTS :**

4 depths of sowing :  $D_1=1"$ ,  $D_2=2"$ ,  $D_3=3"$  and  $D_4=4"$ .

**3. DESIGN :**

(i) R.B.D. (ii) (a) 4. (b)  $12' \times 5.25'$ . (iii) 8. (iv) (a) and (b)  $12' \times 1.75'$ . (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) N.A. (iii) Germination and yield of potato. (iv) (a) 1955—1957. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 4.11 tons/ac. (ii) 0.77 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of tuber in tons/ac.

Treatment	$D_1$	$D_2$	$D_3$	$D_4$
Av. yield	4.18	3.87	4.20	4.18

S.E./mean = 0.27 tons/ac.

**Crop :- Potato (Rabi).****Ref :- U.P. 54(346).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'C'.****Object :-** To study the optimum sowing and harvesting dates for Potato.**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) *Sanai*. (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (ii) As per treatments. (iv) (a) N.A. (b) By *kudali*. (c) 20 tubers/row. (d) Plants 9" apart. (e) N.A. (v) G.M. (*sanai*). (vi) *Phulwa* well sprouted (late). (vii) Irrigated. (viii) 7 earthings. (ix) N.A. (x) As per treatments.

**2. TREATMENTS :****Main-plot treatments :**

9 sowing dates :  $S_1=8.10.1954$ ,  $S_2=15.10.1954$ ,  $S_3=22.10.1954$ ,  $S_4=29.10.1954$ ,  $S_5=5.11.1954$ ,  $S_6=12.11.1954$ ,  $S_7=19.11.1954$ ,  $S_8=26.11.1954$  and  $S_9=3.12.1954$ .

**Sub plot treatments :**

4 harvesting dates :  $H_1=10.12.1955$ ,  $H_2=25.2.1955$ ,  $H_3=15.3.1955$  and  $H_4=31.3.1955$ .

**3. DESIGN :**

(i) Split-plot. (ii) (a) 9 main-plots/replication ; 4 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) and (b)  $1.75' \times 15'$ . (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of potato. (iv) (a) 1952—contd. (b) No. (c) Nil. (v) (a) Farrukhabad. (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 8.20 tons/ac. (ii) (a) 1.12 tons/ac. (b) 1.03 tons/ac. (iii) Main effects of S, H and  $S \times H$  interaction are highly significant. (iv) Av. yield of tuber in tons/ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>	S <sub>5</sub>	S <sub>6</sub>	S <sub>7</sub>	S <sub>8</sub>	S <sub>9</sub>	Mean
H <sub>1</sub>	8.68	8.89	9.51	8.57	8.11	6.67	5.86	3.16	1.76	6.80
H <sub>2</sub>	9.52	10.67	10.67	10.43	9.81	7.49	6.89	5.11	4.14	8.30
H <sub>3</sub>	10.21	10.16	10.29	9.87	9.11	8.29	8.13	7.18	5.19	8.71
H <sub>4</sub>	8.86	11.03	10.16	11.33	9.21	7.95	7.83	7.13	7.27	8.97
Mean	9.32	10.19	10.16	10.05	9.06	7.60	7.18	5.64	4.59	8.20

## S.E. of difference of two

1. S marginal means = 0.32 tons/ac.
2. H marginal means = 0.20 tons/ac.
3. H means at the same level of S = 0.59 tons/ac.
4. S means at the same level of H = 0.61 tons/ac.

**Crop :- Potato.****Ref :- U.P. 55(41).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'C'.**

Object :—To study the optimum dates of sowing and harvesting for Potato.

**1. BASAL CONDITIONS :**

- (i) (a) No. (b) Paddy. (c) No. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) As per treatments. (iv) (a) and (b) N.A. (c) 20 tubers/row. (d) 1½' × 9". (e) N.A. (v) 9 C.L./ac. of F.Y.M. on 24.8.1955. (vi) *Phulwa*. (vii) Irrigated. (viii) 5 earthings. (ix) N.A. (x) As per treatments.

**2. TREATMENTS :****Main-plot treatments :**

9 sowing dates : S<sub>1</sub>=20.10.1955, S<sub>2</sub>=4.11.1955, S<sub>3</sub>=11.11.1955, S<sub>4</sub>=18.11.1955, S<sub>5</sub>=25.11.1955, S<sub>6</sub>=2.12.1955, S<sub>7</sub>=9.12.1955, S<sub>8</sub>=16.12.1955 and S<sub>9</sub>=23.12.1955.

**Sub-plot treatments :**

4 harvesting dates : H<sub>1</sub>=13.2.1956, H<sub>2</sub>=28.2.1956, H<sub>3</sub>=16.3.1956 and H<sub>4</sub>=31.3.1956.

**3. DESIGN :**

- (i) Split-plot. (ii) (a) 9 main-plots/replication ; 4 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) and (b) 7' × 15'. (v) Nil. (vi) Yes.

**4. GENERAL :**

- (i) Good. (ii) No. (iii) Yield of potato. (iv) (a) 1952—contd. (b) No. (c) Nil. (v) (a) Farrukhabad. (b) Nil. (vi) and (vii) Nil.

**5. RESULTS :**

- (i) 4.61 tons/ac. (ii) (a) 0.31 tons/ac. (b) 0.81 tons/ac. (iii) Main effects of S, H and interaction S × H are highly significant. (iv) Av. yield of tuber in tons/ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>	S <sub>5</sub>	S <sub>6</sub>	S <sub>7</sub>	S <sub>8</sub>	S <sub>9</sub>	Mean
H <sub>1</sub>	4.51	4.03	4.51	4.59	3.49	2.94	1.70	1.25	3.18	3.36
H <sub>2</sub>	4.64	5.02	5.65	5.40	5.02	4.00	3.75	3.37	2.16	4.33
H <sub>3</sub>	5.46	5.08	6.29	6.48	6.41	5.65	4.64	4.64	3.46	5.36
H <sub>4</sub>	5.14	5.72	6.22	6.86	6.48	5.84	4.83	4.44	2.98	5.39
Mean	4.94	4.96	5.67	5.83	5.35	4.61	3.73	3.42	2.97	4.61

## S.E. of difference of two

- |                                   |   |               |
|-----------------------------------|---|---------------|
| 1. S marginal means               | = | 0.09 tons/ac. |
| 2. H marginal means               | = | 0.16 tons/ac. |
| 3. H means at the same level of S | = | 0.47 tons/ac. |
| 4. S means at the same level of H | = | 0.41 tons/ac. |

**Crop :- Potato.****Ref :- U.P. 55(43).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'C'.**

Object :—To study the optimum dates of sowing and harvesting for Potato.

**1. BASAL CONDITIONS :**

(i) (a) No. (b) Paddy. (c) No. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) As per treatments. (iv) (a) and (b) N.A. (c) 20 tubers/row. (d)  $1\frac{3}{4}' \times 9''$ . (e) N.A. (v) 9 C.L./ac. of F.Y.M. on 24.3.1955. (vi) O.N.—45. (vii) Irrigated. (viii) 7 earthings. (ix) N.A. (x) As per treatments.

**2. TREATMENTS :****Main-plot treatments :**

6 sowing dates :  $S_1=28.10.1955$ ,  $S_2=4.11.1955$ ,  $S_3=11.11.1955$ ,  $S_4=18.11.1955$ ,  $S_5=25.11.1955$  and  $S_6=2.12.1955$ .

**Sub-plot treatments :**

4 harvesting dates :  $H_1=18.1.1956$ ,  $H_2=13.2.1956$ ,  $H_3=28.2.1956$  and  $H_4=16.3.1956$ .

**3. DESIGN :**

(i) Split-plot. (ii) (a) 6 main-plots/replication ; 4 sub-plot/main-plot. (b) N.A. (iii) 2. (iv) (a) and (b)  $7' \times 15'$ . (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) No. (iii) Yield of potato. (iv) (a) 1954—contd. (b) Yes. (c) Nil. (v) (a) No. (b) Nil. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 4.32 tons/ac. (ii) (a) 0.16 tons/ac. (b) 0.63 tons/ac. (iii) Main effect of S is significant and that of H is highly significant. (iv) Av. yield of tuber in tons/ac.

	$S_1$	$S_2$	$S_3$	$S_4$	$S_5$	$S_6$	Mean
$H_1$	4.33	4.00	3.00	2.05	3.19	3.14	3.28
$H_2$	4.19	4.81	3.76	3.52	4.76	3.43	4.08
$H_3$	6.29	4.95	4.57	4.00	4.57	4.19	4.76
$H_4$	5.52	5.33	5.52	5.52	5.14	4.00	5.17
Mean	5.08	4.77	4.21	3.77	4.42	3.69	4.32

## S.E. of difference of two

- |                                   |   |               |
|-----------------------------------|---|---------------|
| 1. S marginal means               | = | 0.08 tons/ac. |
| 2. H marginal means               | = | 0.26 tons/ac. |
| 3. H means at the same level of S | = | 0.63 tons/ac. |
| 4. S means at the same level of H | = | 0.55 tons/ac. |

**Crop :- Potato (Rabi).****Ref :- U.P. 56(440).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'C'.**

Object :—To find out optimum sowing and harvesting dates for Potato.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) Paddy. (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) As per treatments. (iv) (a) N.A. (b) By *kudali*. (c) 15 to 20 mds./ac. (d)  $1\frac{1}{2}' \times 9''$ . (e) N.A. (v) N.A. (vi) *Phulwa* (late). (vii) Irrigated. (viii) 3 earthings. (ix) N.A. (x) As per treatments.

## 2. TREATMENTS :

## Main-plot treatments :

8 sowing dates :  $S_1=24.10.1956$ ,  $S_2=1.11.1956$ ,  $S_3=7.11.1956$ ,  $S_4=13.11.1956$ ,  $S_5=21.11.1956$ ,  $S_6=28.11.1956$ ,  $S_7=5.12.1956$  and  $S_8=12.12.1956$ .

## Sub-plot treatments :

4 harvesting dates :  $H_1=15.2.1957$ ,  $H_2=1.3.1957$ ,  $H_3=13.3.1957$  and  $H_4=30.3.1957$ .

## 3. DESIGN :

(i) Split-plot. (ii) (a) 8 main-plots/replications ; 4 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) and (b)  $1\frac{1}{2}' \times 15'$ . (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) N.A. (iii) Germination and yield of potato. (iv) (a) 1952—1957. (b) No. (c) Nil. (v) (a) Farrukhabad. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 5.34 tons/ac. (ii) (a) 1.68 tons/ac. (b) 0.99 tons/ac. (iii) All the effects are highly significant. (iv) Av. yield of tuber in tons/ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>	S <sub>5</sub>	S <sub>6</sub>	S <sub>7</sub>	S <sub>8</sub>	Mean
H <sub>1</sub>	8.67	4.98	4.73	4.73	4.13	3.37	2.22	1.17	4.25
H <sub>2</sub>	6.64	5.91	7.46	6.19	5.33	4.83	4.06	2.64	5.38
H <sub>3</sub>	7.62	6.29	6.92	6.79	5.78	5.02	4.76	3.62	5.85
H <sub>4</sub>	6.81	6.73	6.98	7.18	5.65	5.21	4.68	3.67	5.86
Mean	7.44	5.98	6.52	6.22	5.22	4.61	3.93	2.78	5.34

## S.E. of difference of two

- |                                   |                 |
|-----------------------------------|-----------------|
| 1. S marginal means               | = 0.48 tons/ac. |
| 2. H marginal means               | = 0.20 tons/ac. |
| 3. H means at the same level of S | = 0.57 tons/ac. |
| 4. S means at the same level of H | = 0.69 tons/ac. |

**Crop :- Potato (*Rabi*).**

**Ref :- U.P. 57(483).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'C'.**

Object :—To study the optimum dates of sowing and harvesting for Potato.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) *Sanai* or G.M. (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) As per treatments. (iv) (a) N.A. (b) By *kudali*. (c) 15 to 20 mds./ac. (d) Plants 9" apart. (e) N.A. (v) *Sanai* (G.M.). (vi) *Phulwa* (late). (vii) Irrigated. (viii) 4 earthings. (ix) N.A. (x) As per treatments.

## 2. TREATMENTS :

## Main-plot treatments :

7 sowing dates :  $S_1=28.10.1957$ ,  $S_2=4.11.1957$ ,  $S_3=11.11.1957$ ,  $S_4=18.11.1957$ ,  $S_5=25.11.1957$ ,  $S_6=2.12.1957$  and  $S_7=13.12.1957$ .

## Sub-plot treatments :

4 harvesting dates :  $H_1=15.2.1958$ ,  $H_2=1.3.1958$ ,  $M_3=15.3.1958$  and  $M_4=1.4.1958$ .

## 3. DESIGN :

(i) Split-plot. (ii) (a) 7 main-plots/replication ; 4 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) and (b)  $1\frac{1}{2}' \times 15'$ . (v) No. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Leaf roll and mosaic incidence. No control measure adopted. (iii) Yield of potato. (iv) (a) 1952—1957. (b) No. (c) Nil. (v) (a) and (b) No. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 4.34 tons/ac. (ii) (a) 0.89 tons/ac. (b) 0.74 tons/ac. (iii) Main effect of S and interaction H×S are highly significant. (iv) Av. yield of tuber in tons/ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>	S <sub>5</sub>	S <sub>6</sub>	S <sub>7</sub>	Mean
H <sub>1</sub>	8.45	4.70	5.46	4.13	3.75	3.24	1.65	4.48
H <sub>2</sub>	5.84	5.65	5.27	4.19	3.87	3.43	2.54	4.40
H <sub>3</sub>	6.10	4.95	5.14	3.94	4.19	3.43	2.48	4.32
H <sub>4</sub>	5.65	5.21	4.76	4.64	3.81	3.17	1.97	4.17
Mean	6.51	5.13	5.16	4.22	3.90	3.32	2.16	4.34

S E. of difference of two

1. S marginal means = 0.26 tons/ac.
2. H marginal means = 0.16 tons/ac.
3. H means at the same level of S = 0.43 tons/ac.
4. S means at the same level of H = 0.45 tons/ac.

**Crop :- Potato.**

**Ref :- U.P. 55(42).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'C'.**

Object :- To study the optimum dates of sowing and harvesting for Potato.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) Paddy. (c) No. (ii) (a) Sandy loam. (b) Refer soil analysis, Kanpur. (iii) As per treatments. (iv) (a) and (b) N.A. (c) 20 tubers/row. (d) 1½' × 5". (e) N.A. (v) 9 C.L./ac. of F.Y.M. on 24.8.1955. (vi) Up to-date. (vii) Irrigated. (viii) 6 earthings. (ix) N.A. (x) As per treatments.

## 2. TREATMENTS :

**Main-plot treatments :**

4 sowing dates : S<sub>1</sub>=28.10.1955, S<sub>2</sub>=4.11.1955, S<sub>3</sub>=11.11.1955 and S<sub>4</sub>=18.11.1955.

**Sub-plot treatments :**

4 harvesting dates : H<sub>1</sub>=18.1.1956, H<sub>2</sub>=13.2.1956, H<sub>3</sub>=28.2.1956 and H<sub>4</sub>=16.3.1956.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) and (b) 7' × 15'. (v) Nil. (vi) No.

## 4. GENERAL :

(i) Good. (ii) No. (iii) Yield of potato. (iv) (a) 1954—1957. (b) No. (c) Nil. (v) (a) No. (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 6.40 tons/ac. (ii) (a) 0.27 tons/ac. (b) 0.87 tons/ac. (iii) All the effects are highly significant. (iv) Av. yield of tuber in tons/ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>	Mean
H <sub>1</sub>	4.81	6.26	5.17	4.14	5.10
H <sub>2</sub>	5.02	6.26	6.02	7.50	6.20
H <sub>3</sub>	5.81	7.24	7.91	8.29	7.31
H <sub>4</sub>	5.43	7.14	7.52	7.81	6.98
Mean	5.27	6.72	6.66	6.94	6.40

S.E. of difference of two

- |                                   |                 |
|-----------------------------------|-----------------|
| 1. S marginal means               | = 0.10 tons/ac. |
| 2. H marginal means               | = 0.31 tons/ac. |
| 3. H means at the same level of S | = 0.62 tons/ac. |
| 4. S means at the same level of H | = 0.54 tons/ac. |

**Crop :- Potato (Rabi).****Ref :- U.P. 56(441).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'C'.**

Object :—To find out optimum dates of sowing and harvesting for Potato.

**1. BASAL CONDITIONS :**

(i) (a) No. (b) Paddy. (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) As per treatments. (iv) (a) to (c) N.A. (d)  $1\frac{1}{2}' \times 9''$ . (e) N.A. (v) N.A. (vi) O.N.—45 (medium early). (vii) Irrigated. (viii) 2 earthings. (ix) N.A. (x) As per treatments.

**2. TREATMENTS :****Main-plot treatments :**4 sowing dates:  $S_1=24.10.1956$ ,  $S_2=1.11.1956$ ,  $S_3=7.11.1956$  and  $S_4=13.11.1956$ .**Sub-plot treatments :**4 harvesting dates:  $H_1=15.1.1957$ ,  $H_2=15.2.1957$ ,  $H_3=1.3.1957$  and  $13.3.1957$ .**3. DESIGN :**

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 4 sub-plots/main-plot. (b)  $15' \times 31.5'$ . (iii) 4. (iv) (a) and (b)  $1\frac{1}{2}' \times 15'$ . (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) N.A., (iii) Germination and yield of potato. (iv) (a) 1954—1957. (b) No. (c) Nil. (v) (a) and (b) No. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 9.18 tons/ac. (ii) (a) 1.67 tons/ac. (b) 2.02 tons/ac. (iii) Main effects of S and H are highly significant. (iv) Av. yield of tuber in tons/ac.

	$S_1$	$S_2$	$S_3$	$S_4$	Mean
$H_1$	5.41	7.10	4.33	2.29	4.78
$H_2$	8.91	10.86	9.05	8.14	9.24
$H_3$	10.67	13.43	12.48	9.91	11.62
$H_4$	10.00	12.10	12.29	9.91	11.08
Mean	8.75	10.87	9.54	7.56	9.18

S.E. of difference of two

- |                                   |                 |
|-----------------------------------|-----------------|
| 1. S marginal means               | = 0.59 tons/ac. |
| 2. H marginal means               | = 0.71 tons/ac. |
| 3. H means at the same level of S | = 1.43 tons/ac. |
| 4. S means at the same level of H | = 1.37 tons/ac. |

**Crop :- Potato (Rabi).****Ref :- U.P. 57(484).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'C'.**

Object :—To find out optimum dates of sowing and harvesting for Potato.

**1. BASAL CONDITIONS :**

(i) (a) No. (b) *Sanai* for G.M. (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) As per treatments. (iv) (a) N.A. (b) By *kudali*. (c) 15 to 20 mds./ac. (d) Plants 9" apart. (e) N.A. (v) *Sanai* G.M. (vi) Upto date (early). (vii) Irrigated. (viii) 4 earthings. (ix) N.A. (x) As per treatments.

**2. TREATMENTS :****Main-plot treatments :**

4 sowing dates :  $S_1=21.10.1957$ ,  $S_2=4.11.1957$ ,  $S_3=11.11.1957$  and  $S_4=18.11.1957$ .

**Sub-plot treatments :**

4 harvesting dates :  $H_1=20.1.1958$ ,  $H_2=17.2.1958$ ,  $H_3=28.2.1958$  and  $H_4=14.3.1958$ .

**3. DESIGN and 4. GENERAL :**

Same as in expt. no. 56(441) on page 765.

**5. RESULTS :**

(i) 7.72 tons/ac. (ii) (a) 1.26 tons/ac. (b) 1.23 tons/ac. (iii) Main effect of H alone is highly significant. (iv) Av. yield of tuber in tons/ac.

	$S_1$	$S_2$	$S_3$	$S_4$	Mean
$H_1$	7.76	5.64	7.29	5.40	6.52
$H_2$	7.52	7.91	8.95	7.81	8.05
$H_3$	9.25	8.57	8.67	8.76	8.81
$H_4$	8.10	6.48	7.52	7.81	7.48
Mean	8.16	7.15	8.11	7.44	7.72

**S.E. of difference of two**

- |                                   |                 |
|-----------------------------------|-----------------|
| 1. S marginal means               | = 0.45 tons/ac. |
| 2. H marginal means               | = 0.43 tons/ac. |
| 3. H means at the same level of S | = 0.87 tons/ac. |
| 4. S means at the same level of H | = 0.88 tons/ac. |

**Crop :- Potato (*Rabi*).**

**Ref :- U.P. 56(231).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'C'.**

**Object :-**To study the effect of double row and single row cultivation on the yield of Potato.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Sanai*. (c) Nil. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 30.10.1956. (iv) (a) N.A. (b) By *kudali*. (c) N.A. (d) As per treatments. Plants 9" apart. (e) N.A. (v) G.M. (*sanai*). (vi) *Phulwa* (late). (vii) Irrigated. (viii) 2 earthings. (ix) N.A. (x) 9.3.1957.

**2. TREATMENTS :**

2 cultivation treatments :  $T_1=10$  single rows 1½' apart and  $T_2=5$  double rows with 6" distance between pair of rows.

**5. DESIGN :**

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 3. (iv) (a) and (b) 18'×15'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of potato. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 4.42 tons/ac. (ii) 0.90 tons/ac. (iii) Treatment difference is not significant. (iv) Av. yield of tuber in tons/ac.

Treatment	T <sub>1</sub>	T <sub>2</sub>
Av. yield	4.25	4.59

S.E./mean = 0.52 tons/ac.

**Crop :- Potato (Rabi).**

**Ref :- U.P. 56(267).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'C'.**

Object :—To study the effect of seed size, space and seed rate on Potato crop.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Sanai*. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 29.10.1956. (iv) (a) N.A. (b) By *kudali*. (c) As per treatments. (d) As per treatments (plant spacing), 1 row/plot. (e) N.A. (v) G.M. (*sanai*). (vi) *Phulwa* (late). (vii) Irrigated. (viii) 1 earthing. (ix) N.A. (x) 8.3.1957.

**2. TREATMENTS :**

14 cultural treatments : T<sub>1</sub>=S<sub>1</sub>R<sub>1</sub>C<sub>1</sub>, T<sub>2</sub>=S<sub>1</sub>R<sub>1</sub>C<sub>2</sub>, T<sub>3</sub>=S<sub>2</sub>R<sub>1</sub>C<sub>1</sub>, T<sub>4</sub>=S<sub>2</sub>R<sub>1</sub>C<sub>2</sub>, T<sub>5</sub>=S<sub>3</sub>R<sub>1</sub>C<sub>1</sub>, T<sub>6</sub>=S<sub>3</sub>R<sub>1</sub>C<sub>2</sub>, T<sub>7</sub>=S<sub>3</sub>R<sub>1</sub>C<sub>3</sub>, T<sub>8</sub>=S<sub>3</sub>R<sub>2</sub>C<sub>1</sub>, T<sub>9</sub>=S<sub>3</sub>R<sub>2</sub>C<sub>2</sub>, T<sub>10</sub>=S<sub>4</sub>R<sub>1</sub>C<sub>1</sub>, T<sub>11</sub>=S<sub>4</sub>R<sub>1</sub>C<sub>2</sub>, T<sub>12</sub>=S<sub>4</sub>R<sub>1</sub>C<sub>3</sub>, T<sub>13</sub>=S<sub>4</sub>R<sub>2</sub>C<sub>1</sub> and T<sub>14</sub>=S<sub>4</sub>R<sub>2</sub>C<sub>2</sub>

Where 4 spacings are : S<sub>1</sub>=3", S<sub>2</sub>=4.5", S<sub>3</sub>=6" and S<sub>4</sub>=9".

2 seed rates are : R<sub>1</sub>=Single seed and R<sub>2</sub>=Double seed.

3 seed sizes are : C<sub>1</sub>=Small, C<sub>2</sub>=medium and C<sub>3</sub>=large.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 14. (b) N.A. (iii) 4. (iv) (a) and (b) 15' × 1.75'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) N.A. (iii) Germination and yield of potato. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 7.64 tons/ac. (ii) 1.10 tons/ac. (iii) Treatment differences are highly significant. (iv) Av. yield of tuber in tons/ac.

Treatment	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	T <sub>5</sub>	T <sub>6</sub>	T <sub>7</sub>
Av. yield	7.43	9.52	6.76	7.24	6.57	7.14	6.57
Treatment	T <sub>8</sub>	T <sub>9</sub>	T <sub>10</sub>	T <sub>11</sub>	T <sub>12</sub>	T <sub>13</sub>	T <sub>14</sub>
Av. yield	7.05	9.43	6.86	7.81	7.14	8.00	9.43

S.E./mean = 0.55 tons/ac.

**Crop :- Potato (Rabi).**

**Ref :- U.P. 58(217).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'C'.**

Object :—To study the incidence of diseases of potato due to seeds sent to cold store on different dates.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) *Sanai*. (c) Nil. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 5.11.1958. (iv) (a) N.A. (b) Sown by *kudali*. (c) 15 to 20 mds./ac. (d) 1½' × 9". (e) N.A. (v) G.M. (*sanai*). (vi) *Phulwa* (late). (vii) Irrigated. (viii) 2 earthings. (ix) 0.78". (x) 5.3.1959.

**2. TREATMENTS :**

5 dates of sending the seeds to cold store : D<sub>0</sub>=18.3.1958 (control), D<sub>1</sub>=15.4.1958, D<sub>2</sub>=30.4.1958, D<sub>3</sub>=15.5.1958 and D<sub>4</sub>=1.6.1958.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 5. (b) 7' × 48'. (iii) 3. (iv) (a) and (b) 7' × 8'. (v) Nil. (vi) Yes.



## 4. GENERAL :

(i) N.A. (ii) Leaf roll and mosaic disease. (iii) Germination %, yield of potato, % of leaf roll and % of mosaic. (iv) (a) 1957—1958. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 6.53 tons/ac. (ii) 1.43 tons/ac. (iii) Treatment differences are significant. (iv) Av. yield of tuber in tons/ac.

Treatment	D <sub>0</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>
Av. yield	3.21	6.13	7.44	7.32	8.57

S.E./mean = 0.83 ton/ac.

## Incidence of diseases on different dates

Treatment		D <sub>0</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>
Av. leaf roll % on	30.12.1958	34.80	11.77	6.30	7.63	10.53
	19.1.1959	79.80	35.30	21.13	21.80	28.67
Av. mosaic % on	30.12.1958	1.10	1.67	1.60	0.00	0.53
	19.1.1959	2.80	3.23	0.53	0.53	1.10

**Crop :- Potato (Rabi).**

**Ref :- U.P. 59(229).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'C'.**

Object :—To study the effect of different methods of seed storing on the yield of Potato.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 23.10.1956. (iv) (a) N.A. (b) Sown by *kudali*. (c) 15 to 20 mds./ac. (d)  $1\frac{1}{2}' \times \frac{1}{2}'$ . (e) N.A. (v) N.A. (vi) As per treatments. (vii) Irrigated. (viii) 1 earthing. (ix) Negligible. (x) 17.2.1960.

## 2. TREATMENTS :

2 seed treatments : S<sub>1</sub>=D.D.R. —sand stored and S<sub>2</sub>=Kurfi red—cold stored.

## 3. DESIGN :

(i) Paired-plot. (ii) (a) 2. (b)  $10' \times 14\frac{1}{2}'$ . (iii) 5. (iv) (a) and (b)  $10' \times 6'$ . (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good growth. (ii) Very mild attack of mosaic, leaf roller and late blight. Fytolan sprayed on 8.12.1959, and 21.12.1959. (iii) Germination %, and yield of potato. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 10.25 tons/ac. (ii) 4.86 tons/ac. (iii) Treatment difference is not significant. (iv) Av. yield of tuber in tons/ac.

Treatment	S <sub>1</sub>	S <sub>2</sub>
Av. yield	7.90	12.60

S.E./mean = 2.17 tons/ac.

**Crop :- Potato (Rabi).**

**Ref :- U.P. 59(232).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'C'.**

Object :—To study the effect of North-South vs. East-West sowing on Potato yield.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) N.A. (iv) (a) N.A. (b) Sown by *kudali*. (c) 15 to 20 mds./ac. (d)  $1\frac{1}{2}' \times \frac{1}{2}'$ . (e) N.A. (v) N.A. (vi) O.N.—2236 (medium early). (vii) and (viii) N.A. (ix) Negligible. (x) 4.3.1960.

## 2. TREATMENTS :

2 directions of sowing : D<sub>1</sub>=North—South and D<sub>2</sub>=East—West.

## 3. DESIGN :

(i) Paired-plot. (ii) (a) 2. (b)  $9' \times 32\frac{1}{2}'$ . (iii) 4. (iv) (a) and (b)  $15' \times 9'$ . (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Germination % and yield of potato. (iv) (a) 1959—contd. (b) No. (c) Nil (v) to (vii) Nil.

## 5. RESULTS :

(i) 7.73 tons/ac. (ii) 1.46 tons/ac. (iii) Treatment difference is not significant. (iv) Av. yield of tuber in tons/ac.

Treatment	D <sub>1</sub>	D <sub>2</sub>
Av. yield	7.28	8.19

S.E./mean = 0.73 tons/ac.

**Crop :- Potato.**

**Ref :- U.P. 55(39).**

**Site :- Potato Sub-Stn., Kausani.**

**Type :- 'C'.**

Object :—To study the effect of flowering on Potato yield.

## 1. BASAL CONDITIONS :

(i) No. (b) *Maduwa*. (c) No. (ii) (a) Hilly tract. (b) N.A. (iii) 17.3.1955. (iv) (a) and (b) N.A. (c) 15 tubers/row. (d)  $2' \times 9''$ . (e) N.A. (v) Cowdung on 18.2.1955 and castor cake on 25, 26.2.1955. (vi) *Garhwal*. (vii) Unirrigated. (viii) 1 weeding and 1 earthing. (ix) N.A. (x) 17, 18.8.1955.

## 2. TREATMENTS :

3 flowering treatments : F<sub>1</sub>=Allowed to flower and to fruit undisturbed, F<sub>2</sub>=Allowed to flower and not allowed to fruit by picking up the fruit as soon as formed and F<sub>3</sub>=Not allowed to flower nipping the floral bud clusters as they develop.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 8. (iv) (a) and (b)  $10' \times 11'3''$ . (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) No. (iii) Germination and yield of potato. (iv) (a) 1954—contd. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 6.21 tons/ac. (ii) 0.66 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of tuber in tons/ac.

Treatment	F <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>
Av. yield	6.31	5.78	6.53

S.E./mean = 0.23 tons/ac.

**Crop :- Potato (*Kharif*).**

**Ref :- U.P. 55(247).**

**Site :- Potato Sub-Stn., Kausani.**

**Type :- 'C'.**

Object :—To study the efficiency of wilt affected and healthy seed of Garhwal variety on the yield of Potato.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Maduwa*. (c) No. (ii) (a) Hilly soil. (b) N.A. (iii) 12.3.1955. (iv) (a) N.A. (b) By *kudali*. (c) 15 to 20 mds./ac. (d)  $2' \times 9''$ . (e) N.A. (v) N.A. (vi) *Garhwal* (late). (vii) Unirrigated. (viii) 1 weeding, 1 hoeing and 1 earthing. (ix) N.A. (x) 27, 28 and 30.8.1955.

## 2. TREATMENTS :

2 seed treatments : S<sub>1</sub>=Wilt affected seed and S<sub>2</sub>=Healthy seed.

**3. DESIGN :**

(i) Paired-plot. (ii) (a) 2. (b) N.A. (iii) 12. (iv) (a) and (b) 14' × 12'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Nil. (iii) Germination and yield of potato. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 4.10 tons/ac. (ii) 0.68 tons/ac. (iii) Treatment difference is highly significant. (iv) Av. yield of tuber in tons/ac.

Treatment	S <sub>1</sub>	S <sub>2</sub>
Av. yield	3.54	4.66

S.E./mean = 0.20 tons/ac.

**Crop :- Potato.**

**Ref :- U.P. 54(52).**

**Site :- Potato Sub-Stn., Kausani.**

**Type :- 'C'.**

Object :— To study the effect of different seed sizes and spacings on potato yield.

**1. BASAL CONDITIONS :**

(i) (a) No. (b) *Jowar*. (c) No. (ii) (a) Hill tract. (b) N.A. (iii) 27, 28.3.1954. (iv) (a) to (c) N.A. (d) As per treatments. (e) N.A. (v) 20 mds./ac. of castor cake applied on 13.2.1954 and cowdung on 13.2.1954. (vi) *Garhwal*. (vii) Unirrigated. (viii) 1 weeding and 2 earthings. (ix) N.A. (x) 24, 25.8.1954.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 2 seed sizes : C<sub>1</sub>=Small and C<sub>2</sub>=Large.

(2) 2 seed spacings : S<sub>1</sub>=6" and S<sub>2</sub>=9".

(3) 2 row spacings : R<sub>1</sub>=1½' and R<sub>2</sub>=1¾'.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) and (b) 10.5' × 21'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Cutworms damaged some of the plants. (iii) Yield of potato. (iv) (a) 1953—1956. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1.73 tons/ac. (ii) 0.98 tons/ac. (iii) Main effect of R alone is significant. (iv) Av. yield of tuber in tons/ac.

	S <sub>1</sub>	S <sub>2</sub>	Mean	R <sub>1</sub>	R <sub>2</sub>
C <sub>1</sub>	1.54	1.63	1.58	2.08	1.99
C <sub>2</sub>	2.30	1.46	1.88	2.22	1.53
Mean	1.92	1.54	1.73	2.15	1.31
R <sub>1</sub>	2.48	1.83			
R <sub>2</sub>	1.36	1.26			

S.E. of any marginal mean = 0.24 tons/ac.

S.E. of body of any table = 0.35 tons/ac.

**Crop :- Potato.****Ref :- U.P. 55(40).****Site :- Potato Sub-Stn., Kausani.****Type :- 'C'.**

Object :— To study the effect of different seed sizes and spacings on Potato yield.

**1. BASAL CONDITIONS :**

(i) (a) No. (b) *Maduwa*. (c) Nil. (ii) (a) Hilly soil. (b) N.A. (iii) 18 and 19.3.1955. (iv) (a) to (c) N.A. (d) As per treatments. (e) N.A. (v) Cowdung applied on 18.2.1955 and castor cake applied on 25.2.1955. (vi) *Garhwal*. (vii) Unirrigated. (viii) 1 weeding, 1 hoeing and 2 earthings. (ix) N.A. (x) 1, 7 and 8.9.1955.

**2. TREATMENTS :**

Same as in expt. no. 54(52) on page 770.

**3. DESIGN :**(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) and (b)  $10\frac{1}{2}' \times 10\frac{1}{2}'$ . (v) Nil. (vi) Yes.**4. GENERAL :**

(i) Good. (ii) No. (iii) Germination and yield of potato. (iv) (a) 1953—1956. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 6.02 tons/ac. (ii) 1.41 tons/ac. (iii) Main effect of C alone is highly significant. (iv) Av. yield of tuber in tons/ac.

	S <sub>1</sub>	S <sub>2</sub>	Mean	R <sub>1</sub>	R <sub>2</sub>
C <sub>1</sub>	4.67	4.94	4.80	4.67	4.94
C <sub>2</sub>	8.12	6.35	7.24	6.94	7.53
Mean	6.40	5.64	6.02	5.80	6.24
R <sub>1</sub>	6.67	4.94			
R <sub>2</sub>	6.12	6.35			

S.E. of any marginal mean = 0.35 tons/ac.

S.E. of body of any table = 0.50 tons/ac.

**Crop :- Potato (*Kharif*).****Ref :- U.P. 56(446).****Site :- Potato Sub-Stn., Kausani.****Type :- 'C'.**

Object :— To study the effect of different seed sizes and spacings on Potato yield.

**1. BASAL CONDITIONS :**

(i) (a) No. (b) *Maduwa*. (c) N.A. (ii) (a) Hilly soil. (b) N.A. (iii) 1.4.1956. (iv) (a) N.A. (b) By *kudali*. (c) N.A. (d) As per treatments. (e) N.A. (v) Cowdung on 12.2.1956 and castor cake at 20 mds./ac. on 28.3.1956. (vi) *Garhwal*. (vii) Unirrigated. (viii) 1 weeding and 1 earthing. (ix) N.A. (x) 14 and 15.8.1956.

**2. TREATMENTS :****Main-plot treatments :**2 row spacings : R<sub>1</sub>=1½' and R<sub>2</sub>=1¾'.**Sub-plot treatments :**2 plants spacings : P<sub>1</sub>=6" and P<sub>2</sub>=9".**Sub-sub-plot treatments :**2 seed sizes : S<sub>1</sub>=Small and S<sub>2</sub>=Large.**3. DESIGN :**(i) Split-plot. (ii) (a) 2 main-plots/replication ; 2 sub-plots/main-plot and 2 sub-sub-plots/sub-plot. (b) N.A. (iii) 4. (iv) (a) and (b)  $10\frac{1}{2}' \times 10\frac{1}{2}'$ . (v) Nil. (vi) Yes.

## 4. GENERAL:

(i) Good. (ii) N.A. (iii) Germination and yield of potato. (iv) (a) 1953—1956. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 5.50 tons/ac. (ii) (a) 1.71 tons/ac. (b) 0.92 tons/ac. (c) 0.70 tons/ac. (iii) Main effect of S is highly significant and that of P is significant. Other effect are not significant. (iv) Av. yield of tuber in tons/ac.

	P <sub>1</sub>	P <sub>2</sub>	Mean	S <sub>1</sub>	S <sub>2</sub>
R <sub>1</sub>	5.76	5.26	5.51	4.67	6.35
R <sub>2</sub>	6.08	4.90	5.49	5.13	5.85
Mean	5.92	5.08	5.50	4.90	6.10
S <sub>1</sub>	5.26	4.54			
S <sub>2</sub>	6.58	5.62			

## S.E. of difference of two

- |                                   |                 |  |                 |
|-----------------------------------|-----------------|--|-----------------|
| 1. R marginal means               | = 0.63 tons/ac. | 5. R means at the same level of P      | = 0.69 tons/ac. |
| 2. P marginal means               | = 0.33 tons/ac. | 6. S means at the same level of P or R | = 0.35 tons/ac. |
| 3. S marginal means               | = 0.25 tons/ac. | 7. P means at the same level of S      | = 0.41 tons/ac. |
| 4. P means at the same level of R | = 0.46 tons/ac. | 8. R means at the same level of S      | = 0.65 tons/ac. |

**Crop :- Potato.**

**Ref :- U.P. 54(53).**

**Site :- Potato Sub-Stn., Kausani.**

**Type :- 'C'.**

Object :- To determine the efficiency of cut and whole tuber sown on different dates on the yield of Potato.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) Fallow. (c) No. (ii) (a) Hilly tract. (b) N.A. (iii) As per treatments. (iv) (a) and (b) N.A. (c) 20 tubers/row (d) 2' × 9". (e) N.A. (v) Cowdung in the 2nd week of March. (vi) Garhwal. (vii) Unirrigated. (viii) 3 weedings and 1 earthing. (ix) N.A. (x) 25.8.1954.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 seed sizes : S<sub>1</sub>=Cut and S<sub>2</sub>=Whole.

(2) 2 dates of sowing : D<sub>1</sub>=30.3.1954 and D<sub>2</sub>=11.4.1954.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) and (b) 10' × 15'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Attack of cut-worm more severe. (iii) Yield of potato. (iv) (a) 1953—1956. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 0.36 tons/ac. (ii) 0.42 tons./ac. (iii) None of the effects is significant. (iv) Av. yield of tuber in tons/ac.

	D <sub>1</sub>	D <sub>2</sub>	Mean
S <sub>1</sub>	0.58	0.22	0.40
S <sub>2</sub>	0.41	0.21	0.31
Mean	0.50	0.22	0.36

S.E. of any marginal mean = 0.12 tons/ac.

S. E. of body of table = 0.17 tons/ac.

**Crop :- Potato.****Ref :- U.P. 55(37).****Site :- Potato Sub-Stn., Kausani.****Type :- 'C'.**

Object :—To determine the efficiency of cut and whole tuber sown on different dates on the yield of Potato.

**1. BASAL CONDITIONS :**

(i) (a) No. (b) *Maduwa*. (c) No. (ii) (a) Hilly soil. (b) N.A. (iii) As per treatments. (iv) (a) and (b) N.A. (c) 10 tubers/row. (d) 2'×9". (e) N.A. (v) Cowdung on 17, 18.2.1955 and castor cake on 25.2.1955. (vi) *Garhwal*. (vii) Unirrigated. (viii) 1 weeding and 2 earthings. (ix) N.A. (x) 20.8.1955.

**TREATMENTS :**

All combinations of (1) and (2)

(1) 2 seed sizes :  $S_1$ =Cut and  $S_2$ =Whole.(2) 2 dates of sowing :  $D_1$ =14.3.1955 and  $D_2$ =30.3.1955.**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) and (b) 18'×7½'. (v) Nil. (vi) No.

**4. GENERAL :**

(i) Good. (ii) No. (iii) Germination and yield of potato. (iv) (a) 1953—1956. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 5.98 tons/ac. (ii) 1.24 tons/ac. (iii) Main effect of D alone is highly significant. (iv) Av. yield of tuber in tons/ac.

	$D_1$	$D_2$	Mean
$S_1$	7.56	3.70	5.63
$S_2$	8.37	4.30	6.34
Mean	7.96	4.00	5.98

S.E. of any marginal mean = 0.44 tons/ac.

S.E. of body of table = 0.62 tons/ac.

**Crop :- Potato (*Kharif*).****Ref :- U.P. 56(275).****Site :- Potato Sub-Stn., Kausani.****Type :- 'C'.**

Object :—To determine the efficiency of cut and whole tuber sown on different dates on the yield of Potato.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Fallow. (c) N.A. (ii) (a) Hilly soil. (b) N.A. (iii) As per treatments. (iv) (a) N.A. (b) By *kudali*. (c) 15 to 20 mds./ac. (d) 2'×9". (e) N.A. (v) Cowdung applied on 18.3.1956 and castor cake applied on 18.3.1956 at 20 mds./ac. (vi) *Garhwal* (late). (vii) Unirrigated. (viii) 1 weeding and 1 earthing. (ix) N.A. (x) 10.8.1956.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 2 seed sizes :  $S_1$ =Cut and  $S_2$ =Whole.(2) 2 dates of sowing :  $D_1$ =20.3.1956 and  $D_2$ =31.3.1956.**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) and (b) 18'×7.5'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) N.A. (iii) Germination and yield of potato. (iv) (a) 1953—1956. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 3.68 tons/ac. (ii) 0.79 tons/ac. (iii) Main effect of S alone is significant. (iv) Av. yield of tuber in tons/ac.

	D <sub>1</sub>	D <sub>2</sub>	Mean
S <sub>1</sub>	4.44	3.85	4.14
S <sub>2</sub>	3.48	2.96	3.22
Mean	3.96	3.40	3.68

S.E. of any marginal mean = 0.28 tons/ac.  
S.E. of body of table = 0.40 tons/ac.

**Crop :- Potato.**

**Ref :- U.P. 54(51).**

**Site :- Potato Sub-Stn., Kausani.**

**Type :- 'C'.**

Object :—To determine optimum sowing time of Potato in the hills.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Hilly tract. (b) N.A. (iii) As per treatments. (iv) (a) and (b) N.A. (c) 27 tubers/row. (d) 2' × 9". (e) N.A. (v) Cowdung in 2nd week of March, 1954 and castor cake on respective sowing dates at 20 mds./ac. (vi) *Garhwal*. (vii) Unirrigated. (viii) 1 weeding and 6 earthings. (ix) N.A. (x) 26.8.1954.

## 2. TREATMENTS :

6 dates of sowing : D<sub>1</sub>=8.3.1954, D<sub>2</sub>=15.3.1954, D<sub>3</sub>=22.3.1954, D<sub>4</sub>=29.3.1954, D<sub>5</sub>=5.4.1954 and D<sub>6</sub>=12.4.1954.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) and (b) 8' × 20'3". (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of potato. (iv) (a) 1950—contd. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 0.76 tons/ac. (ii) 0.34 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of tuber in tons/ac.

Treatment	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	D <sub>5</sub>	D <sub>6</sub>
Av. yield	1.10	1.01	0.82	0.54	0.53	0.54

S.E./mean = 0.17 tons/ac.

**Crop :- Potato.**

**Ref :- U.P. 55(36).**

**Site :- Potato Sub-Stn., Kausani.**

**Type :- 'C'.**

Object :—To determine optimum sowing time of Potato in the hills.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) *Maduwa*. (c) No. (ii) (a) Hilly tract. (b) N.A. (iii) As per treatments. (iv) (a) and (b) N.A. (c) 12 tubers/row. (d) 2' × 9". (e) N.A. (v) Cowdung and castor cake on 17.2.1955. (vi) *Garhwal*. (vii) Unirrigated. (viii) 1 weeding and 1 earthing. (ix) N.A. (x) 27 to 31.8.1955.

**2. TREATMENTS :**

7 sowing dates :  $D_1=11.3.1955$ ,  $D_2=18.3.1955$ ,  $D_3=25.3.1955$ ,  $D_4=1.4.1955$ ,  $D_5=8.4.1955$ ,  $D_6=15.4.1955$  and  $D_7=22.4.1955$ .

**3. DESIGN :**

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) and (b)  $12' \times 9'$ . (v) Nil. (vi) No.

**4. GENERAL :**

(i) Good. (ii) No. (iii) Germination and yield of potato. (iv) (a) 1950—contd. (b) No. (c) Nil (v) to (vii) Nil.

**5. RESULTS :**

(i) 3.31 tons/ac. (ii) 0.82 tons/ac. (iii) Treatment differences are significant. (iv) Av. yield of tuber in tons/ac.

Treatment	$D_1$	$D_2$	$D_3$	$D_4$	$D_5$	$D_6$	$D_7$
Av. yield	5.09	3.98	2.69	3.24	2.87	2.78	2.50

S.E./mean = 0.41 tons/ac.

**Crop :- Potato (*Kharif*).**

**Ref :- U.P. 56(447).**

**Site :- Potato Sub-Stn., Kausani.**

**Type :- 'C'.**

Object :—To determine optimum sowing time of Potato in the hills.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Fallow. (c) N.A. (ii) (a) Hill soil. (b) N.A. (iii) As per treatments. (iv) (a) to (c) N.A. (d)  $2' \times 9'$ . (e) N.A. (v) Castor cake on 18 and 19.3.1956. (vi) *Garhwal* (late). (vii) Unirrigated. (viii) 1 weeding and 1 earthing. (ix) N.A. (x) 13.8.1956.

**2. TREATMENTS :**

6 sowing dates :  $D_1=19.3.1956$ ,  $D_2=26.3.1956$ ,  $D_3=2.4.1956$ ,  $D_4=9.4.1956$ ,  $D_5=16.4.1956$  and  $D_6=23.4.1956$ .

**3. DESIGN :**

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) and (b)  $6' \times 9'$ . (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Very poor germination. Percentage germination went down according to sowing dates. (ii) N.A. (iii) Germination and yield of potato. (iv) (a) 1950—contd. (b) N.A. (c) Nil. (v) and (vi) Nil. (vii) Treatments  $D_4$ ,  $D_5$  and  $D_6$  have been rejected for the purpose of analysis because seeds corresponding to the above treatments did not germinate.

**5. RESULTS :**

(i) 0.73 tons/ac. (ii) 0.34 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of tubers in tons/ac.

Treatment	$D_1$	$D_2$	$D_3$
Av. yield	0.82	0.76	0.62

S.E./mean = 0.17 tons/ac.

**Crop :- Potato.**

**Ref :- U.P. 54(55).**

**Site :- Potato Sub-Stn., Kausani.**

**Type :- 'C'.**

Object :—To study the effect of different numbers of earthing on the yield of Potato.



**1. BASAL CONDITIONS :**

(i) (a) No. (b) *Juar.* (c) No. (ii) (a) Medium type of soil (hilly tract). (b) N.A. (iii) 2.4.1954. (iv) (a) and (b) N.A. (c) 14 tubers/row. (d) 2' x 9". (e) N.A. (v) Cowdung on 12.2.1954 and castor cake at 20 mds./ac. on 12.4.1954. (vi) *Garhwal.* (vii) Unirrigated. (viii) 1 weeding and earthings as per treatments. (ix) N.A. (x) 28.8.1954.

**2. TREATMENTS :**

3 earthing treatments :  $E_0$ =No earthing,  $E_1$ =1 earthing and  $E_2$ =2 earthings.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) and (b) 14' x 10.5'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Few plants damaged by cut-worm. (iii) Yield of potato. (iv) (a) 1953—1956. (b) No. (c) Nil. (v) to (vii) Nil.

**RESULTS :**

(i) 0.42 tons/ac. (ii) 0.48 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of tuber in tons/ac.

Treatment	$E_0$	$E_1$	$E_2$
Av. yield	0.30	0.50	0.45

S.E./mean = 0.20 tons/ac.

**Crop :- Potato.**

**Ref :- U.P. 55(35).**

**Site :- Potato Sub-Stn., Kausani.**

**Type :- 'C'.**

Object :—To study the effect of different numbers of earthing on the yield of Potato.

**1. BASAL CONDITIONS :**

(i) (a) No. (b) N.A. (c) No. (ii) (a) Hilly tract. (b) N.A. (iii) 10.3.1955. (iv) (a) and (b) N.A. (c) 20 tubers/row. (d) 2' x 9". (e) N.A. (v) Cowdung and castor cake applied on 17.2.1955. (vi) *Garhwal.* (vii) Unirrigated. (viii) 1 weeding and earthings as per treatments. (ix) N.A. (x) 12, 13, 14.8.1955 and 21.8.1955.

**2. TREATMENTS :**

3 earthing treatments :  $E_0$ =No earthing,  $E_1$ =1 earthing and  $E_2$ =2 earthings.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 8. (iv) (a) and (b) 12' x 15'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) No. (iii) Germination and yield of potato. (iv) (a) 1953—1955. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 7.55 tons/ac. (ii) 1.89 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of tuber in tons/ac.

Treatment	$E_0$	$E_1$	$E_2$
Av. yield	6.64	7.81	8.20

S.E./mean = 0.67 tons/ac.

**Crop :- Potato (Kharif).****Ref :- U.P. 56(272).****Site :- Potato Sub-Stn., Kausani.****Type :- 'C'.**

Object :—To study the effect of different numbers of earthing on the yield of Potato.

**1. BASAL CONDITIONS :**

(i) a) Nil. (b) Fallow. (c) N.A. (ii) (a) Hilly soil. (b) N.A. (iii) 2.4.1956. (iv) (a) N.A. (b) By *kudali*. (c) 15 to 20 mds./ac. (d) 2'×9". (e) N.A. (v) Castor cake on 29.3.1956. (vi) *Garhwal* (late). (vii) Unirrigated. (viii) 1 weeding and earthings as per treatments. (ix) N.A. (x) 11.8.1956.

**2. TREATMENTS :**3 earthing treatments :  $E_0$ =No earthing,  $E_1$ =1 earthing and  $E_2$ =2 earthings.**3. DESIGN :**

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 4. (iv) (a) and (b) 10'×15'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) N.A. (iii) Germination and yield of potato. (iv) (a) 1953—1956. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 2.87 tons/ac. (ii) 0.29 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of tuber in tons/ac.

Treatment	$E_0$	$E_1$	$E_2$
Av. yield	2.80	2.80	3.00

S.E./mean = 0.14 tons/ac.

**Crop :- Potato (Kharif).****Ref :- U.P. 56(273).****Site :- Potato Sub Stn., Kausani.****Type :- 'C'.**

Object :—To study the effect of earthing up Potato in the hills.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Fallow. (c) N.A. (ii) (a) Hilly soil. (b) N.A. (iii) 2.4.1956. (iv) (a) N.A. (b) By *kudali*. (c) 15 to 20 mds./ac. (d) 2'×9". (e) N.A. (v) Castor cake on 29.3.1956. (vi) Up to-date (early). (vii) Unirrigated. (viii) 1 weeding and earthings as per treatments. (ix) N.A. (x) 11.8.1956.

**2. TREATMENTS :**3 earthing treatments :  $E_0$ =No earthing,  $E_1$ =1 earthing and  $E_2$ =2 earthings.**3. DESIGN :**

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 4. (iv) (a) and (b) 10'×15'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Fair. (ii) N.A. (iii) Germination and yield of potato. (iv) (a) 1956—1958. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1.32 tons/ac. (ii) 0.55 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of tuber in tons/ac.

Treatment	$E_0$	$E_1$	$E_2$
Av. yield	1.00	1.88	1.09

S.E./mean = 0.28 tons/ac.

**Crop :- Potato (Kharif).****Ref :- U.P. 57(309).****Site :- Potato Sub-Stn., Kausani.****Type :- 'C'.**

Object :—To study the effect of earthing up of Potato in the hills.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Hilly soil. (b) N.A. (iii) 24.3.1957. (iv) (a) N.A. (b) By *kudali*. (c) 15 to 20 mds./ac. (d) 2' × 9". (e) N.A. (v) Cowdung on 26.1.1957. Castor cake on 17.2.1957. (vi) Up-to-date (early). (vii) Unirrigated. (viii) 1 weeding and earthings as per treatment. (ix) N.A. (x) 27.7.1957.

**2. TREATMENTS :**3 earthing treatments :  $E_0$ =No earthing,  $E_1$ =1 earthing and  $E_2$ =2 earthings.1st earthing in treatments  $E_1$  and  $E_2$  on 1.5.1957, 2nd earthing in treatment  $E_2$  on 4.5.1957.**3. DESIGN :**

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) and (b) 12.75' × 4'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) N.A. (iii) Yield of potato. (iv) (a) 1956 to 1958. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 7.23 tons/ac. (ii) 0.95 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of tuber in tons/ac.

Treatment	$E_0$	$E_1$	$E_2$
Av. yield	7.45	7.19	7.06

S.E./mean = 0.39 tons/ac.

**Crop :- Potato (Kharif).****Ref :- U.P. 58(247).****Site :- Potato Sub-Stn., Kausani.****Type :- 'C'.**

Object :—To study the effect of earthing up of Potato in the Hills.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Hilly soil. (b) N.A. (iii) 15.3.1958. (iv) (a) N.A. (b) By *kudali*. (c) 15 to 20 mds./ac. (d) 2' × 9". (e) N.A. (v) Castor cake at 40 mds./ac. on 11.3.1958. (vi) Up-to-date (early). (vii) Unirrigated. (viii) As per treatments. (ix) N.A. (x) 13.8.1958.

**2. TREATMENTS :**3 earthing treatments :  $E_0$ =No earthing,  $E_1$ =1 earthing and  $E_2$ =2 earthings.**3. DESIGN :**

(i) R.B.D. (ii) (a) 3. (b) 12' × 16'. (iii) 6. (iv) (a) and (b) 12' × 4'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) D.D.T. sprayed on 6.4.1958, 16.4.1958, 17.5.1958 and 20.7.1958. (iii) Germination and yield of potato. (iv) (a) 1956—1958. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1.80 tons/ac. (ii) 0.06 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of tuber in tons/ac.

Treatment	$E_0$	$E_1$	$E_2$
Av. yield	1.76	1.79	1.84

S.E./mean = 0.02 tons/ac.

**Crop :- Potato (Kharif).****Ref :- U.P. 56(236).****Site :- Potato Sub-Stn., Kausani.****Type :- 'C'.**

Object :—To study the effect of different harvesting dates on Potato.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Maduwa*. (c) N.A. (ii) (a) Hilly soil. (b) N.A. (iii) 1.4.1956. (iv) (a) N.A. (b) By *kudali*. (c) 15 to 20 mds./ac. (d) 2'×9". (e) N.A. (v) Cowdung on 12.2.1956. Castor cake on 28.3.1958. (vi) *Garhwal* (late). (vii) Unirrigated. (viii) 1 weeding and 1 earthing. (ix) N.A. (x) As per treatments.

**2. TREATMENTS :**

4 harvesting dates : D<sub>1</sub>=Harvesting 2 weeks after full flowering i.e. 21.7.1956, D<sub>2</sub>=Harvesting 3 weeks after full flowering, D<sub>3</sub>=Harvesting 4 weeks after full flowering and D<sub>4</sub>=Harvesting after plants dry up i.e. 10.8.1956.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 8. (iv) (a) and (b) 4'×22.5'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) N.A. (iii) Germination and yield of potato. (iv) (a) 1956—1959. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Expt. conducted in modified form in 1958 and 1959.

**5. RESULTS :**

(i) 4.49 tons/ac. (ii) 0.56 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of tuber in tons/ac.

Treatment	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>
Av. yield	4.89	4.33	4.56	4.17

S.E./mean = 0.20 tons/ac.

**Crop :- Potato (Kharif).****Ref :- U.P. 57(306).****Site :- Potato Sub-Stn., Kausani.****Type :- 'C'.**

Object :—To study the effect of different harvesting dates on Potato.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Hilly soil. (b) N.A. (iii) 18.3.1957. (iv) (a) N.A. (b) By *kudali*. (c) 15 to 20 mds./ac. (d) 2'×9". (e) N.A. (v) Cow dung on 25.1.1957. Castor cake on 18.2.1957. (vi) *Garhwal* (late). (vii) Unirrigated. (viii) 1 weeding and 1 earthing. (ix) N.A. (x) As per treatments.

**2. TREATMENTS :**

4 dates of harvesting : D<sub>1</sub>=Harvesting 2 weeks after full flowering i.e. 15.7.1957, D<sub>2</sub>=Harvesting 3 weeks after full flowering i.e. 22.7.1957, D<sub>3</sub>=Harvesting 4 weeks after full flowering i.e. 29.7.1957. and D<sub>4</sub>=Harvesting after plants dry up i.e. 19.8.1957.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 8. (iv) (a) and (b) 10.5'×8'. (v) No. (vi) Yes.

**4. GENERAL :**

Same as in expt. no. 56(236) above.

**5. RESULTS :**

(i) 7.89 tons/ac. (ii) 1.30 tons/ac. (iii) Treatment differences are highly significant. (iv) Av. yield of tuber in tons/ac.

Treatment	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>
Av. yield	6.31	6.96	9.11	9.17

S.E./mean = 0.46 tons/ac.

**Crop :- Potato (Kharif).**

**Ref :- U.P. 58(248).**

**Site :- Potato Sub-Stn., Kausani.**

**Type :- 'C'.**

**Object :-**To study the effect of different harvesting dates on Potato.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Hilly soil. (b) N.A. (iii) 10.3.1958. (vi) (a) N.A. (b) By *kudali*. (c) 15 to 20 mds./ac. (d) 2' x 9". (e) N.A. (v) Castor cake at 40 mds./ac. on 10.3.1958. (vi) *Garhwal* (late). (vii) Unirrigated. (viii) 2 earthings and 1 weeding. (ix) N.A. (x) As per treatments.

**2. TREATMENTS :**

5 harvesting dates : D<sub>1</sub>=Harvesting 3 weeks after full flowering i.e. 19.7.1958, D<sub>2</sub>=Harvesting 4 weeks after full flowering i.e. 26.7.1958, D<sub>3</sub>=Harvesting 5 weeks after full flowering i.e. 2.8.1958, D<sub>4</sub>=Harvesting 6 weeks after full flowering i.e. 9.8.1958. and D<sub>5</sub>=Harvesting, after the plants dry up i.e. 19.8.1958.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) and (b) 10.5' x 8'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) D.D.T. sprayed four times. (iii) Germination and yield of potato. (iv) (a) 1956--1959. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Expt. conducted in modified form in 1958 and 1959.

**5. RESULTS :**

(i) 3.49 tons/ac. (ii) 0.24 tons/ac. (iii) Treatment differences are highly significant. (iv) Av. yield of tuber in tons/ac.

Treatment	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	D <sub>5</sub>
Av. yield	2.92	3.53	3.57	3.69	3.76

S.E./mean = 0.10 tons/ac.

**Crop :- Potato (Kharif).**

**Ref :- U.P. 59(236).**

**Site :- Potato Sub-Stn., Kausani.**

**Type :- 'C'.**

**Object :-**To study the effect of different harvesting dates on the yield of Potato.

**1. BASAL CONDITIONS :**

(i) (a) No. (b) Fallow. (c) Nil. (ii) (a) Hilly soil. (b) N.A. (iii) 11.3.1959. (iv) (a) N.A. (b) By *kudali*. (c) 15 to 20 mds./ac. (d) 2' x 9". (e) N.A. (v) *Garhwal* (early). (vi) Nil. (vii) Nil. (viii) 2 earthings. (ix) N.A. (x) As per treatments.

**2. TREATMENTS :**

5 harvesting dates : D<sub>1</sub>=Harvesting 3 weeks after full flowering (28.7.1959), D<sub>2</sub>=Harvesting 4 weeks after full flowering (4.8.1959), D<sub>3</sub>=Harvesting 5 weeks after flowering (11.8.1959), D<sub>4</sub>=Harvesting 6 weeks after full flowering (18.8.1959) and D<sub>5</sub>=Harvesting after plants dry up (20.8.1959).

**3. DESIGN :**

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) and (b) 10.5' x 8'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) 4 sprayings with D.D.T. Sprayings with Bordeaux mixture on 30.5.1959. (iii) Germination and yield of Potato. (iv) (a) 1956--1959. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Experiment conducted in modified form in 1958--1959.

**5. RESULTS :**

(i) 1.37 tons/ac. (ii) 0.37 tons/ac. (iii) Treatment differences are significant. (iv) Av. yield of tuber in tons/ac.

Treatment	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	D <sub>5</sub>
Av. yield	1.95	1.43	1.14	1.14	1.17

S.E./mean = 0.17 tons/ac.

**Crop :- Potato (Kharif).****Ref :- U.P. 57(310).****Site :- Potato Sub-Stn., Kausani.****Type :- 'C'.**

Object :—To study the efficiency of cultural operations on Potato sown on different dates in the hills.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Hilly soil. (b) N.A. (iii) As per treatments. (iv) (a) N.A. (b) By *kudali*. (c) 15 to 20 mds./ac. (d) 2'×9". (e) N.A. (v) Cowdung on 26.1.1957 and castor cake on 17.2.1957. (vi) *Garhwal* (late). (vii) Unirrigated. (viii) As per treatments. (ix) N.A. (x) 6 and 7.8.1957.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 2 dates of sowing :  $D_1=24.3.1957$  and  $D_2=4.4.1957$ .(2) 3 intervals of weeding and hoeings :  $C_1=$ Weekly,  $C_2=$ Fortnightly and  $C_3=$ Monthly.

Cultural operations from 27.4.1957 to 20.7.1957.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 8. (iv) (a) and (b) 10.5'×8'. (v) No. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) N.A. (iii) Yield of potato. (iv) (a) 1957—1959. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 7.77 tons/ac. (ii) 1.62 tons/ac. (iii) Main effect of D alone is highly significant. (iv) Av. yield of tuber in tons/ac.

	$C_1$	$C_2$	$C_3$	Mean
$D_1$	9.35	7.68	8.27	8.43
$D_2$	7.38	7.26	6.67	7.10
Mean	8.36	7.47	7.47	7.77

S.E. of D marginal mean = 0.33 tons/ac.

S.E. of C marginal mean = 0.40 tons/ac.

S.E. of body of the table = 0.57 tons/ac.

**Crop :- Potato (Kharif).****Ref :- U.P. 58(251).****Site :- Potato Sub-Stn., Kausani.****Type :- 'C'.**

Object :—To study the efficiency of cultural operations on Potato sown on different dates in the hills.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Hilly soil. (b) N.A. (iii) As per treatments. (iv) (a) N.A. (b) By *kudali*. (c) 15 to 20 mds./ac. (d) 2'×9". (e) N.A. (v) Castor cake at 40 mds./ac. (vi) *Garhwal* (late). (vii) Unirrigated. (viii) As per treatments. (ix) N.A. (x) 3 and 4.8.1958.

**2. TREATMENTS :****Main-plot treatments :**2 dates of sowing :  $S_1=1.3.1958$  and  $S_2=15.3.1958$ .**Sub-plot treatments :**3 intervals for weeding and hoeings :  $C_1=$ Weekly,  $C_2=$ Fortnightly and  $C_3=$ Monthly.**3. DESIGN :**

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 3 sub-plots/main-plot. (b) 10.5'×55.5'. (iii) 6. (iv) (a) and (b) 10.5'×8'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) D.D.T. sprayed four times. (iii) Germination and yield of potato. (iv) (a) 1957—1959. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 2.14 tons/ac. (ii) (a) 0.26 tons/ac. (b) 0.14 tons/ac. (iii) None of the effects significant. (iv) Av. yield of tuber in tons/a.

	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	Mean
S <sub>1</sub>	2.26	2.18	2.03	2.16
S <sub>2</sub>	2.12	2.15	2.11	2.13
Mean	2.19	2.16	2.07	2.14

S.E. of difference of two

- |                                   |                 |
|-----------------------------------|-----------------|
| 1. S marginal means               | = 0.09 tons/ac. |
| 2. C marginal means               | = 0.05 tons/ac. |
| 3. C means at the same level of S | = 0.08 tons/ac. |
| 4. S means at the same level of C | = 0.11 tons/ac. |

**Crop :- Potato (Kharif).**

**Ref :- U.P. 59(495).**

**Site :- Potato Sub-Stn., Kausani.**

**Type :- 'C'.**

Object :--To study the efficiency of cultural operations on Potato sown on different dates in hills.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow. (c) Nil. (ii) (a) Hilly soil. (b) N.A. (iii) As per treatments. (iv) (a) N.A. (b) By *kudali*. (c) 15 to 20 mds./ac. (d)  $1\frac{3}{4}' \times 1\frac{1}{4}'$ . (e) N.A. (v) 30 mds./ac. of castor cake and 20 lb./ac. of N as Urea. (vi) *Garhwal* (early). (vii) Nil. (viii) As per treatments. (ix) N.A. (x) 11.8.1959.

## 2. TREATMENTS :

Main-plot treatments :

2 dates of sowing : S<sub>1</sub>=3.3.1959 and S<sub>2</sub>=18.3.1959.

Sub-plot treatments :

3 intervals for hoeings and weedings : C<sub>1</sub>=Weekly, C<sub>2</sub>=Fortnightly and C<sub>3</sub>=Monthly.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) and (b) 10.5' × 8'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Light blight and ring root. D.D.T. spraying four times, spraying of Bordeaux mixture on 30.5.1959. (iii) Germination and yield of potato. (iv) (a) 1957—1959. (b) N.A. (c) Nil. (v) and (vi) Nil. (vii) The yields are very low and vary greatly from plot to plot.

## 5. RESULTS :

(i) 0.90 tons/ac. (ii) (a) 0.91 tons/ac. (b) 0.22 tons/ac. (iii) Main effect of C alone is significant. (iv) Av. yield of tuber in tons/ac.

	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	Mean
S <sub>1</sub>	0.80	0.59	0.50	0.63
S <sub>2</sub>	1.31	1.15	1.05	1.17
Mean	1.06	0.87	0.77	0.90

S.E. of difference of two

- |                                   |                 |
|-----------------------------------|-----------------|
| 1. S marginal means               | = 0.30 tons/ac. |
| 2. C marginal means               | = 0.09 tons/ac. |
| 3. C means at the same level of S | = 0.13 tons/ac. |
| 4. S means at the same level of C | = 0.32 tons/ac. |

**Crop :- Potato (Rabi).****Ref :- U.P. 55(126).****Site :- Reg. Res. Stn., Varanasi.****Type :- 'C'.**

Object :— To study the effect of sowing whole vs. peeled Potato tubers on growth and yield.

**1. BASAL CONDITIONS :**

(i) (a) *Jowar + Arhar—Arhar—Moong—Barley—Sawan—Potato*. (b) *Sawan*. (c) N.A. (ii) (a) Light loam. (b) Refer soil analysis, Varanasi. (iii) 31.10.1955 and 2.11.1955. (iv) (a) 2 ploughings. (b) Dibbling. (c) N.A. (d) 3'×3'. (e) N.A. (v) N.A. (vi) D.R.R. and *phulwa*. (vii) Irrigated. (viii) to (x) N.A.

**2. TREATMENTS :**2 types of seed : S<sub>1</sub>=Whole tuber and S<sub>2</sub>=Tubers with skin removed.**3. DESIGN :**

(i) Paired plot. (ii) (a) 2. (b) N.A. (iii) 16. (iv) (a) 42'×28'. (b) 39'×25'. (v) 1½'×1½'. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of potato. (iv) (a) 1954—1955. (b) N.A. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 2.06 tons/ac. (ii) 0.64 tons/ac. (iii) Treatment difference is not significant. (iv) Av. yield of tuber in tons/ac. ✓

Treatment	S <sub>1</sub>	S <sub>2</sub>
Av. yield	2.20	1.92

S.E./mean = 0.16 tons/ac.

**Crop :- Potato (Rabi).****Ref :- U.P. 55(203).****Site :- B.R. College, Hort. Gardens, Bichpuri.****Type :- 'CV'.**

Object :— To study the effect of spacing on yield of different varieties of Potato.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Sanai*. (c) N.A. (ii) (a) Light loam. (b) Refer soil analysis, Bichpuri. (iii) 1.11.1955. (iv) (a) 11 ploughings and planking. (b) By *desi* plough. (c) V<sub>1</sub>=7.5, V<sub>2</sub>=8.3, V<sub>3</sub>=6.2 and V<sub>4</sub>=7.2 mds/ac. (d) As per treatments. (e) N.A. (v) G.M. as *sanai*+50 mds./field of M.C. (vi) As per treatments. (vii) Irrigated. (viii) 2 earthings and 1 weeding. (ix) N.A. (x) V<sub>1</sub>=15.2.1956, V<sub>2</sub>=1.2.1956, V<sub>3</sub>=24.2.1956 and V<sub>4</sub>=16.2.1956.

**2. TREATMENTS :****Main-plot treatments :**3 spacings : S<sub>1</sub>=1'×9", S<sub>2</sub>=1.5'×9" and S<sub>3</sub>=2'×9".**Sub-plot treatments :**4 varieties : V<sub>1</sub>=Darjeeling red round, V<sub>2</sub>=Up-to-date, V<sub>3</sub>=Patna *phulwa* and V<sub>4</sub>=Patna red.**3. DESIGN :**

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 15'×12'. (v) N.A. (vi) Yes.



## 4. GENERAL :

(i) Good. (ii) N.A. (iii) Yield of tuber. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 6.54 tons/ac. (ii) (a) 0.60 tons/ac. (b) 0.54 tons/ac. (iii) Main effect of V and interaction S×V are highly significant. Main effect of S is significant. (iv) Av. yield of tuber in tons/ac.

	V <sub>1</sub>	V <sub>2</sub>	V <sub>3</sub>	V <sub>4</sub>	Mean
S <sub>1</sub>	6.26	5.49	6.56	6.11	6.10
S <sub>2</sub>	8.25	3.80	7.75	7.81	6.90
S <sub>3</sub>	6.81	3.26	9.96	6.47	6.62
Mean	7.11	4.18	8.09	6.80	6.54

S.E. of difference of two

- |                                   |   |               |
|-----------------------------------|---|---------------|
| 1. S marginal means               | = | 0.21 tons/ac. |
| 2. V marginal means               | = | 0.22 tons/ac. |
| 3. V means at the same level of S | = | 0.38 tons/ac. |
| 4. S means at the same level of V | = | 0.39 tons/ac. |

**Crop :- Potato (*Rabi*).**

**Ref :- U.P. 54(203).**

**Site :- B.R. College Insttl. Res. Farm, Bichpuri.**

**Type :- 'CV'.**

Object :- To study the effect of different dates of sowing on the yield of different varieties of Potato.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) Fallow. (c) Nil. (ii) (a) Light loam. (b) Refer soil analysis, Bichpuri. (iii) As per treatments. (iv) (a) 5 ploughings and 3 harrowings. (b) Planted in furrows opened by *desi* plough. (c) V<sub>1</sub>=11.5, V<sub>2</sub>=8.0, V<sub>3</sub>=5.6 and V<sub>4</sub>=7.3 mds/ac. (d) 18"×9". (e) N.A. (v) M.C. on 5.9.1954, Super at sowing and A/S from 3 to 17.11.1954 at 1 chatak per row as top dressing. (vi) As per treatments. (vii) Irrigated. (viii) 4 weedings and 1 earthing. (ix) 1.50". (x) 26.12.1954 to 21.3.1955.

## 2. TREATMENTS :

All combinations of (1) and (2)

- (1) 4 varieties : V<sub>1</sub>=Darjeeling red round, V<sub>2</sub>=Up-to-date, V<sub>3</sub>=Patna *phulwa* and V<sub>4</sub>=Patna red.  
 (2) 4 dates of sowing : D<sub>1</sub>=9.10.1954, D<sub>2</sub>=23.10.1954, D<sub>3</sub>=6.11.1954 and D<sub>4</sub>=20.11.1954.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 16. (b) 174'×166'. (iii) 4. (iv) (a) N.A. (b) 18'×15'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Tuber yield. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 8.07 tons/ac. (ii) 1.07 tons/ac. (iii) Main effects of V, D and interaction V×D are highly significant. (iv) Av. yield of tuber in tons/ac.

	V <sub>1</sub>	V <sub>2</sub>	V <sub>3</sub>	V <sub>4</sub>	Mean
D <sub>1</sub>	7.14	3.18	9.93	6.48	6.68
D <sub>2</sub>	10.38	8.96	11.47	10.52	10.33
D <sub>3</sub>	10.34	7.27	9.61	9.04	9.06
D <sub>4</sub>	6.92	5.34	6.67	5.83	6.19
Mean	8.69	6.19	9.42	7.97	8.07

S.E. of any marginal mean	= 0.27 tons/ac.
S.E. of body of table	= 0.54 tons/ac.

**Crop :- Potato (Rabi).**

**Ref :- U.P. 56(170).**

**Site :- B.R. College Insttl. Res. Farm, Bichpuri.**

**Type :- 'CV'.**

Object :— To study the effect of spacings on the yield of different varieties of Potato.

**1. BASAL CONDITIONS :**

(i) (a) No. (b) Fallow. (c) Nil. (ii) (a) Light loam. (b) Refer soil analysis, Bichpuri. (iii) 13.10.1956. (iv) (a) 9 plankings and ploughings. (b) Planted in furrows. (c)  $V_1=12.9$ ,  $V_2=30.6$ ,  $V_3=7.4$  and  $V_4=12.4$  mds./ac. (d) As per treatments. (e) N.A. (v) 170 lb./ac. of N as M.C on 23.9.1956 and 20 lb./ac. of N as top dressing on 15.12.1956. (vi) As per treatments. (vii) Irrigated. (viii) 1 earthing. (ix) 4.98". (x) 30.1.1957 to 14.2.1957.

**2. TREATMENTS :**

**Main-plot treatments :**

3 spacings :  $S_1=12'' \times 9''$ ,  $S_2=18'' \times 9''$  and  $S_3=24'' \times 9''$ .

**Sub-plot treatments :**

4 varieties :  $V_1$ =Darjeeling red round,  $V_2$ =Military special,  $V_3$ =Patna *phulwa* and  $V_4$ =Patna red.

**3. DESIGN :**

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 4 sub-plots/main-plot. (b)  $171' \times 99'$ . (iii) 4. (iv) (a)  $18' \times 15'$ . (b)  $15' \times 12'$ . (v)  $1.5' \times 1.5'$ . (vi) Yes.

**4. GENERAL :**

(i) Normal. (ii) Nil. (iii) Germination, height of plant, shoot per tuber and yield of potato. (iv) (a) and (b) No. (c) Nil. (v) and (vi) Nil. (vii) Two-way table of mean yields is not available.

**5. RESULTS :**

(i) 6.16 tons/ac. (ii) (a) 0.68 tons/ac. (b) 1.34 tons/ac. (iii) Main effects of S and V are highly significant. (iv) Av. yield of tuber in tons/ac.

Treatment	$S_1$	$S_2$	$S_3$	$V_1$	$V_2$	$V_3$	$V_4$
Av. yield	6.66	6.33	5.50	6.15	4.78	6.63	7.09

S.E. of difference of two

1. S marginal means	= 0.24 tons/ac.
2. V marginal means	= 0.55 tons/ac.

**Crop :- Potato (Rabi).**

**Ref :- U.P. 59(219).**

**Site :- B. R. College Insttl. Res. Farm, Bichpuri.**

**Type :- 'CV'.**

Object :—To study the effect of different varieties and methods of planting on yield of Potato.

**1. BASAL CONDITIONS :**

(i) (a) *Jowar*—Potato. (b) *Jowar*. (c) Nil. (ii) (a) Light to sandy loam. (b) Refer soil analysis, Bichpuri. (iii) 23.10.1959. (iv) (a) 3 ploughings, 3 discings and 1 *palewa*. (b) As per treatments. (c)  $V_1=4.6$ ,  $V_2=4.2$  and  $V_3=6.7$  mds./ac. (d)  $18'' \times 9''$ . (e) N.A. (v) 180 lb./ac. of N as M.C.+180 lb./ac. of N as A/S half at sowing and half at earthing up+60 lb./ac. of  $P_2O_5$  as Super in furrows at planting. (vi) As per treatments. (vii) Irrigated. (viii) 1 weeding and raking in flat beds. (ix) N.A. (x)  $V_1$  and  $V_3=23.2.1960$ . and  $V_2=23.3.1960$ .

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 3 varieties :  $V_1$ =C.P.R.I. Red,  $V_2$ =*Phulwa* and  $V_3$ =Up-to-date.

(2) 4 methods of planking :  $M_1$ =In furrow and then planking,  $M_2$ =In furrows and ridge making,  $M_3$ =In ridges in single row and  $M_4$ =In ridges in double row.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 18'×15'. (b) 12'×9'. (v) 3'×3'. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Early bright attack and Phytolon sprayed. (iii) Tuber yield. (iv) (a) and (b) No. (c) Nil. (v) to (vi) Nil. (vii) Two-way table of mean yields is not available in records.

**5. RESULTS :**

(i) 6.65 tons/ac. (ii) 0.14 tons/ac. (iii) Main effects of V and M alone are highly significant. (iv) Av. yield of tuber in tons/ac.

Treatment	V <sub>1</sub>	V <sub>2</sub>	V <sub>3</sub>	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	M <sub>4</sub>
Av. yield	9.96	6.76	3.20	5.06	7.47	6.19	7.89

S.E. of V marginal mean = 0.04 tons/ac.

S.E. of M marginal mean = 0.04 tons/ac.

**Crop :- Potato.**

**Ref :- U.P. 55(29).**

**Site :- Govt. Potato Res. Stn., Farrukhabad.**

**Type :- 'CV'.**

Object :—To study the effect of different planting dates on different Potato varieties.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Sanai*. (c) Nil. (ii) (a) Loam. (b) Refer soil analysis, Farrukhabad. (iii) As per treatments. (iv) (a) 5 ploughings. (b) N.A. (c) 12 seeds/row. (d) 1½'×1'. (e) N.A. (v) City refuse at 300 mds./ac., G.N.C. at 20 mds./ac. and A/S at 5 mds./ac. (vi) As per treatments. (vii) Irrigated. (viii) 3 weedings, 3 hoeings and 2 earthings. (ix) N.A. (x) 7.3.1956.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 3 varieties : V<sub>1</sub>=*Phulwa*, V<sub>2</sub>=Up-to-date and V<sub>3</sub>=O.N.—45.

(2) 4 dates of planting : D<sub>1</sub>=End of Oct., 1955, D<sub>2</sub>=Mid of Nov., 1955, D<sub>3</sub>=End of Nov., 1955 and D<sub>4</sub>=Mid of Dec., 1955.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) and (b) 18'×12'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) No. (iii) Germination and yield of potato. (iv) (a) 1955—1957. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 4.33 tons/ac. (ii) 0.68. (iii) Main effect of V, D and interaction V×D are highly significant. (iv) Av. yield of tuber in tons/ac.

	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	Mean
V <sub>1</sub>	7.55	7.69	5.97	4.03	6.31
V <sub>2</sub>	4.25	5.79	3.66	2.50	4.08
V <sub>3</sub>	2.41	3.43	2.32	2.22	2.60
Mean	4.77	5.64	3.98	2.92	4.33

S.E. of V marginal mean = 0.17 tons/ac.

S.E. of D marginal mean = 0.20 tons/ac.

S.E. of body of table = 0.34 tons/ac.

**Crop :- Potato (Rabi).****Ref :- U.P. 56(442).****Site :- Govt. Potato Res. Stn., Farrukhabad.****Type :- 'CV'.**

Object :—To study the effect of different planting dates on different Potato varieties.

**1. BASAL CONDITIONS :**

(i) (a) No. (b) *Lobia*. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Farrukhabad. (iii) As per treatments. (iv) (a) 3 ploughings. (b) By *kudali*. (c) 15 to 20 mds./ac. (d) 18"×9". (e) N.A. (v) Local manure at 180 mds./ac. and castor cake at 20 mds./ac. (vi) As per treatments. (vii) Irrigated. (viii) 1 weeding and 2 earthings. (ix) N.A. (x) 25.3.1957.

**2. TREATMENTS :****Treatments in one direction :**3 varieties :  $V_1 = \text{Phulwa}$ ,  $V_2 = \text{O.N.—45}$  and  $V_3 = \text{Up-to-date}$ .**Treatments in orthogonal direction :**4 dates of sowing :  $D_1 = \text{End of October}$ ,  $D_2 = \text{Mid. of November}$ ,  $D_3 = \text{End of November}$  and  $D_4 = \text{Mid. of December}$ .**3. DESIGN :**

(i) Strip-plot. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) and (b) 9'×6'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) (a) Good. (ii) N.A. (iii) Germination and yield of tuber. (iv) (a) 1955—1957. (b) No. (c) Nil. (v) (a) Kanpur. (b) Nil. (vi) and (vii) Nil.

**5. RESULTS :**(i) 4.41 tons/ac. (ii) (a) 1.32 tons/ac. for D. (b) 0.94 tons/ac. for V. (c) 0.91 tons/ac. for  $D \times V$ . (iii) Main effects of D, V and interaction  $D \times V$  are highly significant. (iv) Av. yield of tuber in tons/ac.

	$D_1$	$D_2$	$D_3$	$D_4$	Mean
$V_1$	11.85	8.70	6.67	4.82	8.01
$V_2$	3.52	3.15	2.41	2.59	2.92
$V_3$	1.85	2.59	2.59	2.22	2.31
Mean	5.74	4.81	3.89	3.21	4.41

S.E. of difference of two

- |                                   |                 |
|-----------------------------------|-----------------|
| 1. D marginal means               | = 0.54 tons/ac. |
| 2. V marginal means               | = 0.33 tons/ac. |
| 3. V means at the same level of D | = 0.65 tons/ac. |
| 4. D means at the same level of V | = 0.75 tons/ac. |

**Crop :- Potato (Rabi).****Ref :- U.P. 57(479).****Site :- Govt. Potato Res. Stn., Farrukhabad.****Type :- 'CV'.**

Object :—To study the effect of different planting dates on different Potato varieties.

**1. BASAL CONDITIONS :**

(i) (a) No. (b) Maize. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Farrukhabad. (iii) As per treatments. (iv) and (v) N.A. (vi) As per treatments. (vii) Irrigated. (viii) 1 weeding and 2 earthings. (ix) N.A. (x) 14.3.1958.

**2. TREATMENTS :**

Same as in expt. no. 56(442) above

**3. DESIGN :**

(i) Strip-plot. (ii) (a) 12. (b) N.A. (iii) 4. (iv) and (b) 9'×6'. (v) No. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) N.A. (iii) Germination and yield of tuber. (iv) (a) 1955—1957. (b) No. (c) Nil. (v) (a) Kanpur. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 2.27 tons/ac. (ii) (a) 0.75 tons/ac. for D. (b) 0.78 tons/ac. for V. (c) 0.58 tons/ac. for D×V. (iii) Main effects of D, V and interaction D×V are highly significant. (iv) Av. yield of tuber in tons/ac.

	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	Mean
V <sub>1</sub>	2.04	2.22	1.67	1.11	1.76
V <sub>2</sub>	1.30	2.41	1.48	0.93	1.53
V <sub>3</sub>	5.74	4.26	2.59	1.48	3.52
Mean	3.03	2.96	1.91	1.17	2.27

S.E. of difference of two

1. D marginal means = 0.35 tons/ac.
2. V marginal means = 0.28 tons/ac.
3. V means at the same level of D = 0.45 tons/ac.
4. D means at the same level of V = 0.45 tons/ac.

**Crop :- Potato (Rabi).**

**Ref :- U.P. 58(437).**

**Site :- Govt. Potato Res. Stn., Farrukhabad.**

**Type :- 'CV'.**

Object :—To find out the early strains of Potato suitable for taking two crops of Potato from the same field.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai*. (c) Nil. (ii) (a) Loam. (b) Refer soil analysis, Farrukhabad. (iii) 9.11.1958. (iv) (a) 6 ploughings. (b) By *kudali*. (c) N.A. (d) 21"×9". (e) N.A. (v) G.M. by *sanai*. Local compost at 200 mds./ac. G.N.C. at 12 mds./ac. (vi) As per treatments. (vii) Irrigated. (viii) 1 hoeing, 1 weeding and 2 earthings. (ix) N.A. (x) As per treatments.

## 2. TREATMENTS :

**Treatments in one direction :**

4 harvesting periods : H<sub>1</sub>=60, H<sub>2</sub>=75, H<sub>3</sub>=90 and H<sub>4</sub>=120 days after sowing.

**Treatments in orthogonal direction :**

5 varieties : V<sub>1</sub>=Military (early), V<sub>2</sub>=*Gola*, V<sub>3</sub>=O.N.—208, V<sub>4</sub>=O.N.—2236 and V<sub>5</sub>=O.N.—45.

## 3. DESIGN :

(i) Strip-plot. (ii) (a) 20. (b) N.A. (iii) 3. (iv) (a) and (b) 16½'×8½'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Mosaic, blight and leaf roll. (iii) Germination and yield of tubers. (iv) (a) 1958—contd. (b) No. (c) Nil. (v) and (vi) N.A. (vii) Details about the 2nd crop N.A.

## 5. RESULTS :

(i) 4.25 tons/ac. (ii) (a) 0.34 tons/ac. for H. (b) 0.66 tons/ac. for V. (c) 0.34 tons/ac. for H×V. (iv) Av. yield of tuber in tons/ac.

	V <sub>1</sub>	V <sub>2</sub>	V <sub>3</sub>	V <sub>4</sub>	V <sub>5</sub>	Mean
H <sub>1</sub>	2.19	2.86	1.71	4.18	0.16	2.22
H <sub>2</sub>	4.16	5.45	3.60	7.11	0.58	4.18
H <sub>3</sub>	4.90	5.73	3.97	8.68	0.76	4.81
H <sub>4</sub>	5.73	6.79	5.36	9.79	1.20	5.77
Mean	4.24	5.21	3.66	7.44	0.68	4.25

## S.E. of difference of two

- |                                   |                 |
|-----------------------------------|-----------------|
| 1. H marginal means               | = 0.12 tons/ac. |
| 2. V marginal means               | = 0.24 tons/ac. |
| 3. V means at the same level of H | = 0.36 tons/ac. |
| 4. H means at the same level of V | = 0.28 tons/ac. |

Crop :- Potato (*Rabi*).

Ref :- U.P. 58(436).

Site :- Govt. Potato Res. Stn., Farrukhabad.

Type :- 'CV'.

Object :—To find out the optimum spacings for different varieties of Potato,

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Maize. (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Farrukhabad. (iii) 6.11.1958. (iv) (a) 7 ploughings. (b) By *kudali*. (c) N.A. (d) As per treatments. (e) N.A. (v) 120 lb./ac. of N as local compost, 112 lb./ac. of N as G.N.C. and 68 lb./ac. of N as A/S. (vi) As per treatments. (vii) Irrigated. (viii) 1 weeding 1 hoeing and 2 earthings. (ix) N.A. (x) 6.3.1959.

## 2. TREATMENTS :

## Main-plot treatments :

2 varieties :  $V_1$  = Military (early) and  $V_2$  = Darjeeling red round (late).

## Sub-plot treatments :

2 row spacings :  $R_1 = 1.5'$  and  $R_2 = 2'$ .

## Sub-sub-plot treatments :

3 plant spacings :  $P_1 = 6''$ ,  $P_2 = 9''$  and  $P_3 = 18''$ .

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 2 sub-plots/main-plot and 3 sub-sub-plots/sub-plot. (b) N.A. (iii) 4. (iv) (a) and (b)  $16.5' \times 8.75'$ . (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Mosaic, late blight and leaf roll. (iii) Germination and yield of tuber. (iv) (a) 1953—contd. (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 7.52 tons/ac. (ii) (a) 1.40 tons/ac. (b) 0.53 tons/ac. (c) 0.73 tons/ac. (iii) Main effects of R and P are highly significant. (iv) Av. yield of tuber in tons/ac.

	$R_1$	$R_2$	Mean	$P_1$	$P_2$	$P_3$
$V_1$	7.85	6.26	7.05	8.14	7.10	5.92
$V_2$	8.45	7.53	7.99	8.83	8.35	6.79
Mean	8.15	6.89	7.52	8.48	7.72	6.36
$P_1$	9.42	7.55				
$P_2$	8.24	7.20				
$P_3$	6.79	5.92				

## S.E. of difference of two

- |                                   |                 |                                   |                 |
|-----------------------------------|-----------------|-----------------------------------|-----------------|
| 1. V marginal means               | = 0.40 tons/ac. | 6. P means at the same level of V | = 0.37 tons/ac. |
| 2. R marginal means               | = 0.15 tons/ac. | 7. V means at the same level of P | = 0.50 tons/ac. |
| 3. P marginal means               | = 0.26 tons/ac. | 8. P means at the same level of R | = 0.37 tons/ac. |
| 4. R means at the same level of V | = 0.22 tons/ac. | 9. R means at the same level of P | = 0.34 tons/ac. |
| 5. V means at the same level of R | = 0.43 tons/ac. |                                   |                 |

**Crop :- Potato (Rabi).**

**Ref :- U.P. 59(490).**

**Site :- Govt. Potato Res. Stn., Farrukhabad.**

**Type :- 'CV'.**

Object :—To find out the optimum spacing for different varieties of Potato.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) *Lobia*. (c) Nil. (ii) (a) Loam. (b) Refer soil analysis, Farrukhabad. (iii) 18.11.1959. (iv) (a) 3 ploughings. (b) By *kudali*. (c) N.A. (d) As per treatments. (e) N.A. (v) 20 lb./ac. of N as G.M. (*lobia*), 200 lb./ac. of N as G.N.C. and 80 lb./ac. of N as A/N. (vi) As per treatment. (vii) Irrigated. (viii) 1 weeding, 1 hoeing and 1 earthing. (ix) N.A. (x) 11 and 26.1.1960.

**2. TREATMENTS to 4. GENERAL :**

Same as in expt. no. 58(436) on page 789.

**5. RESULTS :**

(i) 5.82 tons/ac. (ii) (a) 1.28 tons/ac. (b) 1.08 tons/ac. (c) 0.51 tons/ac. (iii) Main effects of R and P alone are highly significant. (iv) Av. yield of tuber in tons/ac.

	R <sub>1</sub>	R <sub>2</sub>	Mean	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>
V <sub>1</sub>	7.09	4.66	5.88	6.58	5.85	5.20
V <sub>2</sub>	6.65	4.90	5.77	6.86	5.37	5.09
Mean	6.87	4.78	5.82	6.72	5.61	5.14
P <sub>1</sub>	7.86	5.58				
P <sub>2</sub>	6.62	4.61				
P <sub>3</sub>	6.13	4.16				

**S.E. of difference of two :**

- |                                   |                 |                                   |                 |
|-----------------------------------|-----------------|-----------------------------------|-----------------|
| 1. V marginal means               | = 0.37 tons/ac. | 6. P means at the same level of V | = 0.26 tons/ac. |
| 2. R marginal means               | = 0.31 tons/ac. | 7. V means at the same level of P | = 0.42 tons/ac. |
| 3. P marginal means               | = 0.18 tons/ac. | 8. P means at the same level of R | = 0.26 tons/ac. |
| 4. R means at the same level of V | = 0.44 tons/ac. | 9. R means at the same level of P | = 0.37 tons/ac. |
| 5. V means at the same level of R | = 0.48 tons/ac. |                                   |                 |

**Crop :- Potato (Rabi).**

**Ref :- U.P. 54(347).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'CV'.**

Object :—To study the optimum spacing for different varieties of Potato.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Maize. (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 2.11.1954. (iv) (a) to (c) N.A. (d) As per treatments. (e) N.A. (v) 8 mds./ac. of castor cake. (vi) As per treatments. (vii) Irrigated. (viii) 2 earthings. (ix) N.A. (x) V<sub>1</sub> on 28.2.1955 and V<sub>2</sub> on 12 and 13.3.1955.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 2 varieties : V<sub>1</sub>=Up-to-date (early) and V<sub>2</sub>=*Phulwa* (late).

(2) 3 row spacings : R<sub>1</sub>=1.5', R<sub>2</sub>=1.75' and R<sub>3</sub>=2'.

(3) 2 plant spacings : P<sub>1</sub>=9" and P<sub>2</sub>=12".

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 3. (iv) (a) and (b) 18' × 15'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Germination and yield of tuber. (iv) (a) 1952—1954. (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 10.77 tons/ac. (ii) 0.80 tons/ac. (iii) Main effects of R and V are highly significant. Main effect of P and interaction  $V \times P \times R$  are significant. (iv) Av. yield of tubers in tons/ac.

	R <sub>1</sub>	R <sub>2</sub>	R <sub>3</sub>	Mean	P <sub>1</sub>	P <sub>2</sub>
V <sub>1</sub>	10.94	10.12	9.88	10.31	10.93	9.70
V <sub>2</sub>	11.98	10.94	10.77	11.23	11.31	11.15
Mean	11.46	10.53	10.32	10.77	11.12	10.42
P <sub>1</sub>	11.70	11.21	10.45			
P <sub>2</sub>	11.21	9.85	10.20			

S.E. of V or P marginal mean	= 0.19 tons/ac.
S.E. of R marginal mean	= 0.23 tons/ac.
S.E. of body of $V \times R$ or $P \times R$ table	= 0.33 tons/ac.
S.E. of body of $V \times P$ table	= 0.27 tons/ac.

**Crop :- Potato (Rabi).**

**Ref :- U.P. 56(266).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'CV'.**

**Object :-** To find out the best sowing date for different Potato varieties when sown as cut-seed.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanai*. (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) As per treatments. (iv) (a) N.A. (b) By *kudali*. (c) 15 to 20 mds./ac. (d)  $1\frac{3}{4}' \times 9'$  apart. (e) N.A. (v) *Sanai* as G.M. (vi) As per treatments. (vii) Irrigated. (viii) 2 earthings. (ix) N.A. (x) 19.2.1957.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 varieties : V<sub>1</sub>=*Phulwa* (late), V<sub>2</sub>=D.R.R. (mid-early), V<sub>3</sub>=O.N-45 (mid-early) and V<sub>4</sub>=Up-to-date (early).

(2) 4 dates of sowing : S<sub>1</sub>=2.11.1956, S<sub>2</sub>=7.11.1956, S<sub>3</sub>=13.11.1956 and S<sub>4</sub>=21.11.1956.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 6. (iv) (a) and (b)  $12' \times 1.75'$ . (v) Nil. (vi) No.

## 4. GENERAL :

(i) Good. (ii) N.A. (iii) Yield of tuber. (iv) (a) 1956-1957. (b) No. (c) Nil. (v) (a) Farrukhabad. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 5.53 tons/ac. (ii) 1.12 tons/ac. (iii) Main effects of V, S and interaction  $V \times S$  are highly significant. (iv) Av. yield of tuber in tons/ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>	Mean
V <sub>1</sub>	2.46	4.29	3.89	3.65	3.57
V <sub>2</sub>	7.90	7.10	8.41	6.51	7.48
V <sub>3</sub>	8.18	6.98	5.75	5.00	6.48
V <sub>4</sub>	3.49	5.52	5.16	4.13	4.58
Mean	5.51	5.97	5.80	4.82	5.53



S.E. of any marginal mean = 0.23 tons/ac.  
S.E. of body of table = 0.46 tons/ac.

**Crop :- Potato (Rabi).**

**Ref :- U.P. 57(482).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'CV'.**

**Object :-** To find out the best sowing date for different Potato varieties when sown as cut seed.

**1. BASAL CONDITIONS :**

(i) No. (b) *Sanai*. (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) As per treatments. (iv) (a) N.A. (b) By *kudali*. (c) N.A. (d)  $1\frac{1}{2}' \times 9''$ . (e) N.A. (v) *Sanai* as G.M. (vi) As per treatments. (vii) Irrigated. (viii) 1 earthing. (ix) N.A. (x) 13.3.1958.

**2. TREATMENTS :**

**Main-plot treatments :**

4 varieties :  $V_1 = \text{D.R.R.}$ ,  $V_2 = \text{O.N.—45}$ ,  $V_3 = \text{Up-to-date}$  and  $V_4 = \text{Phulwa}$ .

**Sub-plot treatments :**

4 dates of sowing :  $S_1 = 4\text{th}$ ,  $S_2 = 11\text{th}$ ,  $S_3 = 18\text{th}$  and  $S_4 = 25\text{th}$ , Nov., 1957.

**3. DESIGN :**

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 4 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) and (b)  $12' \times 1\frac{1}{2}'$ . (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) N.A. (iii) Yield of tuber. (iv) (a) 1956—1957. (b) No. (c) Nil. (v) (a) Farrukhabad. (b) N.A. (vi) N.A. (vii) Nil.

**5. RESULTS :**

(i) 5.66 tons/ac. (ii) (a) 1.40 tons/ac. (b) 1.03 tons/ac. (iii) Main effects of V, S and interaction  $S \times V$  are highly significant. (iv) Av. yield of tuber in tons/ac.

	$S_1$	$S_2$	$S_3$	$S_4$	Mean
$V_1$	6.43	7.38	7.14	5.08	6.51
$V_2$	8.41	6.59	7.14	6.91	7.26
$V_3$	3.73	5.95	4.68	4.13	4.62
$V_4$	5.16	3.02	4.92	3.81	4.23
Mean	5.93	5.74	5.97	4.98	5.66

S.E. of difference of two

1. V marginal means = 0.40 tons/ac.
2. S marginal means = 0.30 tons/ac.
3. S means at the same level of V = 0.60 tons/ac.
4. V means at the same level of S = 0.66 tons/ac.

**Crop :- Potato (Rabi).**

**Ref :- U.P. 59(492).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'CV'.**

**Object :-** To study the effect of different dates of harvest on different Potato varieties.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 6.11.1959. (iv) (a) N.A. (b) By *kudali*. (c) 15 to 20 mds/ac. (d)  $21'' \times 9''$ . (e) N.A. (v) N.A. (vi) As per treatments. (vii) Irrigated. (viii) 2 earthings. (ix) N.A. (x) As per treatments.

**2. TREATMENTS :****Main-plot treatments :**

4 harvesting dates :  $H_1=5.1.1960$ ,  $H_2=21.1.1960$ ,  $H_3=5.2.1960$  and  $H_4=20.2.1960$ .

**Sub-plot treatments**

6 varieties :  $V_1=Kufri\ red\ (late)$ ,  $V_2=Up-to-date\ (early)$ ,  $V_3=Gola\ (medium\ early)$ ,  $V_4=O.N.-2236\ (medium\ early)$ ,  $V_5=O.N.-1360\ (medium)$  and  $V_6=H.-27\ (medium)$ .

**3. DESIGN :**

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 6 sub-plots/main-plot. (b)  $61.25' \times 73.5'$ : (iii) 4. (iv) (a) and (b)  $16.5' \times 8.75'$ . (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Satisfactory. (ii) Attack of mosaic, leaf roll and late blight. (iii) Germination %, no. of diseased plants and yield of potato. (iv) (a) 1959—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 5.74 tons/ac. (ii) (a) 1.61 ton/sac. (b) 0.99 tons/ac. (iii) Main effects of H and V are highly significant. (iv) Av. yield of tuber in tons/ac.

	$V_1$	$V_2$	$V_3$	$V_4$	$V_5$	$V_6$	Mean
$H_1$	4.09	3.39	3.26	4.43	2.56	3.53	3.54
$H_2$	6.65	4.16	4.71	6.51	4.36	4.85	5.21
$H_3$	8.94	6.86	6.51	6.86	4.16	7.07	6.73
$H_4$	9.01	7.00	6.65	9.01	5.89	7.41	7.50
Mean	7.17	5.35	5.28	6.70	4.24	5.72	5.74

**S.E. of difference of two**

- |                                   |                 |
|-----------------------------------|-----------------|
| 1. H marginal means               | = 0.46 tons/ac. |
| 2. V marginal means               | = 0.34 tons/ac. |
| 3. V means at the same level of H | = 0.70 tons/ac. |
| 4. H means at the same level of V | = 0.79 tons/ac. |

**Crop :- Potato.****Ref :- U.P. 54(54).****Site :- Potato Sub-Stn., Kausani.****Type :- 'CV'.**

Object :—To study the effect of flowering on different varieties of Potato.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Hilly soil. (b) N.A. (iii) 31.3.1954 and 1.4.1954. (iv) (a) and (b) N.A. (c) 10 seeds/row. (d)  $2' \times 9''$ . (e) N.A. (v) Cowdung and castor cake. (vi) As per treatments. (vii) Unirrigated. (viii) 1 weeding and 1 earthing. (ix) N.A. (x) 27.8.1954.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 3 varieties :  $V_1=Garhwal$ ,  $V_2=Majestic$  and  $V_3=Up-to-date$ .

(2) 2 flowering treatments :  $F_1=Allowed\ to\ flower$  and  $F_2=Not\ allowed\ to\ flower$ .

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) and (b)  $20' \times 7.5'$ . (v) Nil. (vi) No.

**4. GENERAL :**

(i) Good. (ii) Few plants damaged by cut-worm. (iii) Yield of potato. (iv) (a) 1954—1957. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 0.30 tons/ac. (ii) 0.23 tons/ac. (iii) Main effect of V alone is highly significant. (iv) Av. yield of tuber in tons/ac.

	V <sub>1</sub>	V <sub>2</sub>	V <sub>3</sub>	Mean
F <sub>1</sub>	0.48	0.07	0.41	0.32
F <sub>2</sub>	0.29	0.07	0.50	0.29
Mean	0.38	0.07	0.46	0.30

S.E. of F marginal mean = 0.07 tons/ac.  
 S.E. of V marginal mean = 0.08 tons/ac.  
 S.E. of body of table = 0.12 tons/ac.

**Crop :- Potato (Kharif).**

**Ref :- U.P. 56(276).**

**Site :- Potato Sub-Stn., Kausani.**

**Type :- 'CV'.**

Object :- To study the effect of flowering on different varieties of Potato.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Fallow. (c) N.A. (ii) (a) Hilly soil. (b) N.A. (iii) 30.3.1956. (iv) (a) N.A. (b) By kudali. (c) 15 to 25 mds./ac. (d) 2' x 9". (e) N.A. (v) Cowdung and castor cake. (vi) As per treatments. (vii) Unirrigated. (viii) 1 weeding and 1 earthing. (ix) N.A. (x) 18.8.1956.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 2 varieties : V<sub>1</sub> = Up-to-date (early) and V<sub>2</sub> = Garhwal (late).

(2) 3 flowering treatments : F<sub>1</sub> = Allowed to flower and fruit, F<sub>2</sub> = Allowed to flower but not fruit and F<sub>3</sub> = Not allowed to flower.

In F<sub>2</sub> first picked up as soon as it formed and in F<sub>3</sub> floral bud clusters nipped as soon as formed.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) and (b) 10' x 11.25'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) N.A. (iii) Germination and yield of tuber. (iv) (a) 1954—1957. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 2.61 ton/ac. (ii) 0.56 tons/ac. (iii) Main effect of F alone is significant. (iv) Av. yield of tubers in tons/ac.

	F <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>	Mean
V <sub>1</sub>	2.76	2.76	2.40	2.64
V <sub>2</sub>	2.49	3.29	1.96	2.58
Mean	2.62	3.02	2.18	2.61

S.E. of V marginal mean = 0.16 tons/ac.  
 S.E. of F marginal mean = 0.20 tons/ac.  
 S.E. of body of table = 0.28 tons/ac.

**Crop :- Potato (Kharif).**

**Ref :- U.P. 57(307).**

**Site :- Potato Sub-Stn., Kausani.**

**Type :- 'CV'.**

Object :- To study the effect of flowering on different varieties of Potato.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Hilly soil. (b) N.A. (iii) 17.3.1957. (iv) (a) N.A. (b) By *kudali*. (c) 15 to 20 mds./ac. (d) 2' × 9". (e) N.A. (v) Cowdung, castor cake and 30 lb./ac. of N as Urea as top dressing. (vi) As per treatments. (vii) Unirrigated. (viii) 1 weeding and 1 earthing. (ix) N.A. (x) 28.7.1957 for V<sub>1</sub> and 7 and 8.8.1957 for V<sub>2</sub>

## 2. TREATMENTS :

Same as in expt. no. 56(276) on page 794.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) and (b) 10.5' × 8'. (v) Nil. (vi) Yes.

## 4. GENERAL :

Same as in expt. no. 56(276) on page 794.

## 5. RESULTS :

(i) 8.88 tons/ac. (ii) 1.15 tons/ac. (iii) Main effect of V alone is significant. (iv) Av. yield of tubers in tons/ac.

	F <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>	Mean
V <sub>1</sub>	8.81	8.49	8.10	8.47
V <sub>2</sub>	9.45	9.29	9.13	9.29
Mean	9.13	8.89	8.62	8.88

S.E. of V marginal mean = 0.27 tons/ac.  
 S.E. of F marginal mean = 0.33 tons/ac.  
 S.E. of body of table = 0.47 tons/ac.

**Crop :- Potato (*Rabi*).**

**Ref :- U.P. 58(235).**

**Site :- B. R. College Insttl. Res. Farm, Bichpuri.**

**Type :- 'CM'.**

Object :— To study the effect of N and spacings on Potato yield.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Maize. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Bichpuri. (iii) 1.11.1958. (iv) (a) 4 ploughings each followed by plankings. (b) In furrows opened by *desi* plough at a depth of 3". (c) N.A. (d) Row to row 2', and plant to plant as per treatments. (e) N.A. (v) 80 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super. (vi) Patna red. (vii) Irrigated. (viii) 1 earthing and 1 weeding. (ix) N.A. (x) 5.3.1959.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

- (1) 2 sources of N : F<sub>1</sub>=Farm compost and F<sub>2</sub>=A/S.  
 (2) 3 levels of N : N<sub>1</sub>=150, N<sub>2</sub>=200 and N<sub>3</sub>=250 lb./ac.  
 (3) 3 seed spacings : S<sub>1</sub>=6", S<sub>2</sub>=9" and S<sub>3</sub>=12".

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 18. (b) N.A. (iii) 3. (iv) (a) 18' × 15'. (b) 15' × 12'. (v) 1.5' × 1.5'. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) N.A. (iii) Yield of potato. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 6.33 tons/ac. (ii) 0.41 tons/ac. (iii) Main effects of F, S and interaction F × S are highly significant. Interaction F × N and N × S are significant. (iv) Av. yield of tuber in tons/ac.

	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	Mean	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>
F <sub>1</sub>	3.12	3.18	3.39	3.23	3.55	3.20	2.94
F <sub>2</sub>	9.12	9.36	9.81	9.43	10.39	9.78	8.12
Mean	6.12	6.27	6.60	6.33	6.97	6.49	5.53
S <sub>1</sub>	6.98	6.77	7.16				
S <sub>2</sub>	6.31	6.55	6.61				
S <sub>3</sub>	5.07	5.49	6.03				

S.E. of F marginal mean	= 0.08 tons/ac.
S.E. of N or S marginal mean	= 0.10 tons/ac.
S.E. of body of F×N or F×S table	= 0.14 tons/ac.
S.E. of body of N×S table	= 0.17 tons/ac.

**Crop :- Potato (Rabi).**

**Ref :- U.P. 59(241).**

**Site :- B.R. College Insttl. Res. Farm, Bichpuri.**

**Type :- 'CM'.**

**Object :-** To study the effect of N and spacings on Potato yield.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) *Sorghum*+*Guar*. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Bichpuri. (iii) 28.10.1959. (iv) (a) 3 ploughings with a tractor followed by planking. (b) Planting in furrows. (c) For S<sub>1</sub>=41 tubers/row, S<sub>2</sub>=36 tubers/row and S<sub>3</sub>=24 tubers/row. (d) Row to row 1½' and plant to plant as per treatments. (e) N.A. (v) Nil. (vi) Patna red. (vii) Irrigated. (viii) 1 earthing. (ix) N.A. (x) 11.2.1960.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

- (1) 2 sources of N : F<sub>1</sub>=A/S and F<sub>2</sub>=M.C.  
 (2) 2 levels of N : N<sub>1</sub>=250 and N<sub>2</sub>=300 lb./ac.  
 (3) 3 seed spacings : S<sub>1</sub>=6", S<sub>2</sub>=9" and S<sub>3</sub>=12".

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 24'×18'. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) N.A. (iii) Yield of potato. (iv) (a) and (b) No. (c) Nil. (v) and (vi) Nil. (vii) Two-way tables of mean yields are not available.

**5. RESULTS :**

(i) 4.08 tons/ac. (ii) 0.91 tons/ac. (iii) Main effect of F alone is highly significant. (iv) Av. yield of tuber in tons/ac.

Treatment	F <sub>1</sub>	F <sub>2</sub>	N <sub>1</sub>	N <sub>2</sub>	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>
Av. yield	3.09	5.08	4.21	3.96	4.35	4.13	3.78

S.E. of F or N marginal mean = 0.19 tons/ac.

S.E. of S marginal mean = 0.23 tons/ac.

**Crop :- Potato (Rabi).**

**Ref :- U.P. 57(244).**

**Site :- B. R. College Insttl. Res. Farm, Bichpuri.**

**Type :- 'CM'.**

**Object :-** To study the effect of spacings on the yield of Potato.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Tinda*. (c) Nil. (ii) (a) Light loam. (b) Refer soil analysis, Bichpuri. (iii) 12.10.1957. (iv) (a) 5 ploughings and 3 plankings. (b) Planted in furrows. (c)  $S_1=31.4$  mds./ac.  $S_2=20.9$  mds./ac. (d)  $1\frac{1}{2}'$  between rows and between seeds as per treatments. (e) N.A. (v) 50 lb./ac. of  $P_2O_5$  as Super in furrows at the time of sowing. 120 lb./ac. of N as A/S,  $\frac{1}{2}$  before sowing and  $\frac{1}{2}$  at first earthing as common dressing. (vi) Patna red. (vii) Irrigated. (viii) Earthings. (ix) Nil. (x) 13 and 14.2.1958.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 spacings between plants :  $S_1=6''$ ,  $S_2=9''$  and  $S_3=12''$ .

(2) 4 levels of N as M.C. :  $N_0=0$ ,  $N_1=120$ ,  $N_2=240$  and  $N_3=360$  lb./ac. M.C. applied on 24.9.1957.

## 3. DESIGN:

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a)  $18' \times 24'$ . (b)  $12' \times 18'$ . (v)  $3' \times 3'$ . (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Tuberization, height of plant, weight of tuber and tuber yield. (iv) (a) 1957—contd. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 12.01 tons/ac (ii) 0.97 tons/ac. (iii) Main effect of N and interaction  $S \times N$  are highly significant. Main effect of S is significant. (iv) Av. yield of tuber in tons/ac.

	$N_0$	$N_1$	$N_2$	$N_3$	Mean
$S_1$	10.96	11.21	13.22	14.50	12.47
$S_2$	11.55	12.89	12.17	11.80	12.10
$S_3$	10.82	11.98	11.78	11.21	11.45
Mean	11.11	12.03	12.39	12.50	12.01

S.E. of N marginal mean = 0.28 tons/ac.  
 S.E. of S marginal mean = 0.24 tons/ac.  
 S.E. of body of table = 0.48 tons/ac.

**Crop :- Potato (*Rabi*).**

**Ref :- U.P. 58(197).**

**Site :- B. R. College Insttl. Res. Farm, Bichpuri.**

**Type :- 'CM'.**

Object :- To study the effect of spacings and N on the yield of Potato.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Cucurbits*. (c) N.A. (ii) (a) Light loam. (b) Refer soil analysis, Bichpuri. (iii) 30.10.1958. (iv) (a) 5 ploughings and 3 plankings. (b) Planted in furrows. (c)  $S_1=15.7$  mds./ac.,  $S_2=10.5$  mds./ac. and  $S_3=7.8$  mds./ac. (d)  $18''$  between rows and plant to plant as per treatments. (e) N.A. (v) 50 lb./ac. of  $P_2O_5$  as Super in furrows at the time of sowing. 120 lb./ac. of N as A/S,  $\frac{1}{2}$  before sowing and  $\frac{1}{2}$  at first earthing. (vi) Patna red. (vii) Irrigated. (viii) 1 weeding and 1 earthing. (ix)  $1.80''$ . (x) 10, 11.3.1959.

## 2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 57(244) above.  
 M.C. applied on 16.10.1958.

## 5. RESULTS :

(i) 9.82 tons/ac. (ii) 1.12 tons/ac. (iii) Main effects of S and N are significant. (iv) Av. yield of tuber in tons/ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	Mean
S <sub>1</sub>	9.04	8.79	10.57	10.16	9.64
S <sub>2</sub>	8.87	11.03	10.68	11.55	10.53
S <sub>3</sub>	9.63	9.28	8.80	9.49	9.30
Mean	9.18	9.70	10.02	10.40	9.82

S.E. of N marginal mean = 0.37 tons/ac.  
 S.E. of S marginal mean = 0.32 tons/ac.  
 S.E. of body of table = 0.65 tons/ac.

**Crop :- Potato (*Rabi*).**

**Ref :- U.P. 59(220).**

**Site :- B. R. College Insttl. Res. Farm, Bichpuri.**

**Type :- 'CM'.**

Object :—To study the effect of spacings and N on the yield of Potato.

#### 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Light loam. (b) Refer soil analysis, Bichpuri. (iii) 27.10.1959. (iv) (a) 3 ploughings, 3 discings and 1 *palewa*. (b) N.A. (c) 5.7 mds. for whole field. (d) Row to row 1½' and plant to plant as per treatments. (e) Tubers for S<sub>1</sub>=36, S<sub>2</sub>=24 and S<sub>3</sub>=18. (v) 120 lb./ac. of N as A/S half at sowing and half at earthing+60 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super in furrows at planting. (vi) *Phulwa*. (vii) Irrigated. (viii) 1 ridge making and 1 earthing. (ix) N.A. (x) 27.3.1960.

#### 2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 57 244) on page 797.

#### 4. GENERAL :

(i) Good (ii) Early blight attack. Spraying with Phytolon. (iii) Germination, height per plant and yield of tuber. (iv) (a) 1957—contd. (b) No. (c) Nil. (v) to (vii) Nil.

#### 5. RESULTS:

(i) 7.60 tons/ac. (ii) 0.09 tons/ac. (iii) Main effects of S, N and interaction S×N are highly significant. (iv) Av. yield of tuber in tons/ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	Mean
S <sub>1</sub>	6.72	6.88	11.02	11.40	9.00
S <sub>2</sub>	6.58	7.24	6.88	7.96	7.16
S <sub>3</sub>	5.48	7.08	6.18	7.76	6.62
Mean	6.26	7.07	8.03	9.04	7.60

S.E. of N marginal mean = 0.03 tons/ac.  
 S.E. of S marginal mean = 0.02 tons/ac.  
 S.E. of body of table = 0.04 tons/ac.

**Crop :- Potato (*Rabi*).**

**Ref :- U.P. 59(491).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'CM'.**

Object :—To study the effect of spacings between rows and plants at different levels of N, on the yield of Potato.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 22.10.1959. (iv) (a) N.A. (b) Sown by *kudali*. (c) N.A. (d) As per treatments. (e) N.A. (v) N.A. (vi) Kufri red (late). (vii) Irrigated. (viii) 1 earthing. (ix) N.A. (x) 15 to 17.2.1960.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 levels of N :  $N_1=75$ ,  $N_2=125$  and  $N_3=175$  lb./ac.

(2) 2 row spacings :  $R_1=2'$  and  $R_2=1.5'$ .

(3) 3 plant spacings :  $P_1=6''$ ,  $P_2=9''$  and  $P_3=12''$ .

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 18. (b)  $74' \times 50.5'$ . (iii) 4. (iv) (a) and (b)  $24' \times 6'$ . (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good growth. (ii) Attack of mosaic, leaf roll and light blight. 2 sprayings with Fytolon. (iii) Germination %, no. of diseased plants and yield of tuber. (iv) (a) 1959—contd. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 13.04 tons/ac. (ii) 1.92 tons/ac. (iii) Main effect of N alone is highly significant. (iv) Av. yield of tuber in tons/ac.

	$P_1$	$P_2$	$P_3$	Mean	$R_1$	$R_2$
$N_1$	12.33	11.74	11.91	11.99	11.71	12.27
$N_2$	13.68	13.75	13.33	13.59	12.99	14.19
$N_3$	14.20	13.27	13.20	13.56	13.15	13.96
Mean	13.40	12.92	12.81	13.04	12.62	13.47
$R_1$	12.94	12.29	12.62			
$R_2$	13.87	13.54	13.01			

S.E. of N or P marginal mean = 0.39 tons/ac.

S.E. of R marginal mean = 0.32 tons/ac.

S.E. of body of N×P table = 0.68 tons/ac.

S.E. of body of R×P or R×N table = 0.55 tons/ac.

**Crop :- Potato (*Rabi*).**

**Ref :- U.P. 57(262).**

**Site :- Agri. College. Farm, B.H.U., Varanasi.**

**Type :- 'CM'.**

Object :— To study the effect of different seed sizes, times and methods of application of fertilizers on the yield of Potato.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Mustard. (c) N.A. (ii) (a) Medium alluvial soil. (b) Refer soil analysis, Varanasi. (iii) 11.11.1957. (iv) (a) 6 ploughings and 4 plankings. (b) Sowing in row. (c) N.A. (d) Plant to plant  $9''$ . (e) N.A. (v) F.Y.M.+80 lb./ac. of N as A/S+40 lb./ac. of  $P_2O_5$  as Super. (vi) Darjeeling red. (vii) Irrigated. (viii) 2 weedings, 2 hoeings and 1 earthing. (ix) N.A. (x) 2.3.1958.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 seed sizes :  $S_1=\frac{1}{2}''$ ,  $S_2=1''$  and  $S_3=1\frac{1}{2}''$  diameter.

(2) 2 methods of placements of fertilizers :  $M_1$ =Placement of the fertilizers at seed level in between the plants in row by hand and  $M_2$ =Broadcast.

(3) 2 times of application of fertilizers :  $T_1$ =Full quantity at sowing and  $T_2$ =Full quantity at 1st earthing.

80 lb./ac. of N as A/S+50 lb./ac. of  $P_2O_5$  mixed together and applied as above.



## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 13.5' × 10.5'. (b) 12' × 9'. (v) 9" × 9". (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Spraying with Bordeaux mixture (5 : 5 : 50). (iii) Yield of tuber. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) No. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 4.90 tons/ac. (ii) 1.00 tons/ac. (iii) Main effect of S is highly significant and main effect of T is significant. (iv) Av. yield of tuber in tons/ac.

	T <sub>1</sub>	T <sub>2</sub>	Mean	P <sub>1</sub>	P <sub>2</sub>
S <sub>1</sub>	3.07	2.41	2.74	2.93	2.56
S <sub>2</sub>	5.65	4.72	5.18	5.03	5.34
S <sub>3</sub>	7.13	6.42	6.78	7.07	6.48
Mean	5.28	4.52	4.90	5.01	4.79
P <sub>1</sub>	5.55	5.01			
P <sub>2</sub>	5.02	4.79			

S.E. of S marginal mean	= 0.25 tons/ac.
S.E. of P or T marginal mean	= 0.20 tons/ac.
S.E. of body of S × T or S × P table	= 0.35 tons/ac.
S.E. of body of T × P table	= 0.29 tons/ac.

**Crop :- Potato (Rabi).**

**Ref :- U.P. 58(433).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'CMV'.**

Object :— To study the effect of N and spacing on Potato varieties.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (ii) 4.11.1958. (iv) (a) N.A. (b) By *kudali*. (c) N.A. (d) As per treatments. (e) N.A. (v) N.A. (vi) As per treatments. (vii) Irrigated. (viii) 3 earthings. (ix) N.A. (x) 5, 6.3.1959.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 2 varieties : V<sub>1</sub> = O.N. 45 (medium) and V<sub>2</sub> = Up-to-date (early).

(2) 3 levels of N : N<sub>1</sub> = 75, N<sub>2</sub> = 125 and N<sub>3</sub> = 200 lb./ac.

(3) 3 spacings : S<sub>1</sub> = 2' × 1', S<sub>2</sub> = 1½' × 9" and S<sub>3</sub> = 1½' × 6".

Manures applied on 4.11.1958.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 18. (b) 58' × 55.5'. (iii) 3. (iv) (a) and (b) 8' × 16.5'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good growth. (ii) Mosaic, leaf roller and late blight. (iii) Germination, no. of diseased plants and yield of tuber. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 5.67 tons/ac. (ii) 0.92 tons/ac. (iii) Main effects of S and V are highly significant. (iv) Av. yield of tuber in tons/ac.

	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	Mean	V <sub>1</sub>	V <sub>2</sub>
S <sub>1</sub>	4.29	4.50	4.50	4.43	3.91	4.95
S <sub>2</sub>	5.91	6.16	6.01	6.03	5.42	6.63
S <sub>3</sub>	6.77	6.01	6.87	6.55	5.79	7.31
Mean	5.66	5.56	5.79	5.67	5.04	6.30
V <sub>1</sub>	5.02	4.92	5.19			
V <sub>2</sub>	6.30	6.20	6.40			

S.E. of S or N marginal mean	= 0.22 tons/ac.
S.E. of V marginal mean	= 0.18 tons/ac.
S.E. of body of N×S table	= 0.38 tons/ac.
S.E. of body of N×V or S×V table	= 0.31 tons/ac.

**Crop :- Potato.**

**Ref :- U.P. 55(32).**

**Site :- Govt. Potato. Res. Stn., Farrukhabad.**

**Type :- 'IV'.**

Object :- To find out optimum number of irrigations for different varieties of Potato.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Sanai*. (c) Nil. (ii) (a) Loam. (b) Refer soil analysis, Farrukhabad. (iii) 6.11.1955. (iv) (a) 6 ploughings. (b) N.A. (c) 13 seeds/row. (d) 1½' × 9". (e) N.A. (v) G.N.C. at 20 mds./ac. and A/S at 5 mds./ac. (vi) As per treatments. (vii) Irrigated. (viii) Weeding, hoeing and earthing. (ix) N.A. (x) 13.3.1956.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 2 varieties : V<sub>1</sub>=*Phulwa* and V<sub>2</sub>=O.N. 45.

(2) 5 levels of irrigations : I<sub>1</sub>=4, I<sub>2</sub>=6 I<sub>3</sub>=8, I<sub>4</sub>=10 and I<sub>5</sub>=12 irrigations.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) and (b) 16½' × 10½'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) No. (iii) Germination and yield of potato. (iv) (a) 1955—1957. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 7.09 tons/ac. (ii) 0.85 tons/ac. (iii) Main effects of V and I are highly significant. (iv) Av. yield of tuber in tons/ac.

	I <sub>1</sub>	I <sub>2</sub>	I <sub>3</sub>	I <sub>4</sub>	I <sub>5</sub>	Mean
V <sub>1</sub>	6.58	6.75	7.10	9.81	10.22	8.09
V <sub>2</sub>	4.62	4.73	6.64	6.75	7.68	6.08
Mean	5.60	5.74	6.87	8.28	8.95	7.09

S.E. of V marginal mean	= 0.19 tons/ac.
S.E. of I marginal mean	= 0.30 tons/ac.
S.E. of body of table	= 0.42 tons/ac.

**Crop :- Potato (Rabi).****Ref :- U.P. 56(443).****Site :- Govt. Potato Res. Stn., Farrukhabad.****Type :- 'IV'.**

Object :— To find out optimum number of irrigations for different varieties of Potato.

**1. BASAL CONDITIONS :**

(i) (a) No. (b) *Sanai*. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Farrukhabad. (iii) 11.11.1956.  
 (iv) (a) 5 ploughings. (b) By *kudali*. (c) 15 to 20 mds./ac. (d)  $1\frac{1}{2}' \times 9'$ . (e) N.A. (v) *Sanai* G.M.+40  
 mds./ac. of castor cake+5 mds./ac. of A/S. (vi) As per treatments. (vii) Irrigated. (viii) 1 weeding. (ix)  
 N.A. (x) 26.3.1957.

**2. TREATMENTS :****Treatment in one direction :**2 varieties :  $V_1 = \text{Phulwa}$  and  $V_2 = \text{O.N. 208}$ .**Treatments in orthogonal direction :**5 levels of irrigations :  $I_1 = 4, I_2 = 6, I_3 = 8, I_4 = 10$  and  $I_5 = 12$  irrigations.**3. DESIGN :**(i) Strip-plot. (ii) (a) 10. (b)  $35' \times 53'$ . (iii) 4. (iv) (a) and (b)  $16\frac{1}{2}' \times 9'$ . (v) Nil. (vi) Yes.**4. GENERAL :**

(i) Good. (ii) N.A. (iii) Germination and yield of tuber. (iv) (a) 1955—1957. (b) No. (c) Nil. (v) (a) and (b) No. (vi) and (vii) Nil.

**5. RESULTS :**(i) 8.60 tons./ac. (ii) (a) 0.77 tons/ac. for V. (b) 0.63 tons/ac. for I. (c) 0.77 tons/ac. for  $V \times I$ . (iii) Main effect of I and interaction  $V \times I$  are significant. (iv) Av. yield of tuber in tons/ac.

	$I_1$	$I_2$	$I_3$	$I_4$	$I_5$	Mean
$V_1$	8.39	8.61	8.32	8.61	10.06	8.80
$V_2$	7.96	7.60	9.19	8.32	8.97	8.41
Mean	8.18	8.10	8.76	8.46	9.52	8.60

S.E. of difference of two

- |                                   |                 |
|-----------------------------------|-----------------|
| 1. I marginal means               | = 0.39 tons/ac. |
| 2. V marginal means               | = 0.20 tons/ac. |
| 3. V means at the same level of I | = 0.53 tons/ac. |
| 4. I means at the same level of V | = 0.55 tons/ac. |

**Crop :- Potato (Rabi).****Ref :- U.P. 57(480).****Site :- Govt. Potato Res. Stn., Farrukhabad.****Type :- 'IV'.**

Object :— To find out optimum number of irrigations for different varieties of Potato.

**1. BASAL CONDITIONS :**

(i) (a) No. (b) *Sanai*. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Farrukhabad. (iii) 18.10.1957.  
 (iv) (a) 6 ploughings. (b) By *kudali*. (c) 15 to 20 mds./ac. (d)  $1\frac{1}{2}' \times 9'$ . (e) N.A. (v) *Sanai* G.M.+60  
 mds./ac. of castor cake. (vi) As per treatments. (vii) Irrigated. (viii) 1 weeding and 1 earthing. (ix) N.A.  
 (x) 27.2.1958.

**2. TREATMENTS :**

Same as in expt. no. 56(443) above.

**3. DESIGN :**(i) Strip-plot. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) and (b)  $16\frac{1}{2}' \times 7\frac{1}{2}'$ . (v) Nil. (vi) Yes.**4. GENERAL :**

Same as in expt. no. 56(443) above

## 5. RESULTS :

(i) 8.78 tons/ac. (ii) (a) 0.61 tons/ac. for I. (b) 1.09 tons/ac. for V. (c) 0.08 tons/ac. for I×V. (iii) Main effect of I and interaction I×V are highly significant. (iv) Av. yield of tuber in tons/ac.

	I <sub>1</sub>	I <sub>2</sub>	I <sub>3</sub>	I <sub>4</sub>	I <sub>5</sub>	Mean
V <sub>1</sub>	7.27	8.32	9.13	8.73	9.29	8.55
V <sub>2</sub>	7.03	8.97	9.54	9.70	9.78	9.00
Mean	7.15	8.64	9.34	9.22	9.54	8.78

S.E. of difference of two

1. I marginal means = 0.31 tons/ac.
2. V marginal means = 0.34 tons/ac.
3. V means at the same level of I = 0.39 tons/ac.
4. I means at the same level of V = 0.31 tons/ac.

**Crop :- Potato (Rabi).**

**Ref :- U. P. 58(222).**

**Site :- Govt. Potato Res. Stn., Farrukhabad.**

**Type :- 'D'.**

Object :— To study the comparative efficiency of various soil fungicides and insecticides on the incidence of diseases and pests of Potato crop.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Bajra*. (c) Nil. (ii) (a) Loam. (b) Refer soil analysis, Farrukhabad. (iii) 4.11.1958. (iv) (a) 7 ploughings. (b) By *kudali*. (c) 15 to 20 mds./ac. (d) 21"×9". (e) N.A. (v) 120 lb./ac. of N as local compost, 40 lb./ac. of N as A/S and 140 lb./ac. of N as G.N.C. (vi) *Phulwa* (late). (vii) Irrigated. (viii) 1 weeding, 1 hoeing and 2 earthings. (ix) N.A. (x) 19.3.1959.

## 2. TREATMENTS :

4 fungicidal treatments : F<sub>0</sub>=Control, F<sub>1</sub>=Gammexane, F<sub>2</sub>=Aldrex 5% dust and F<sub>3</sub>=Hexammer.

## 3. DESIGN :

(i) L. Sq. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) and (b) 24.75'×8.75'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Mosaic and light blight. (iii) Germination and yield of tuber. (iv) (a) and (b) No. (c) Nil. (v) (a) Kanpur. (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 6.06 tons/ac. (ii) 0.35 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of tuber in tons/ac.

Treatment	F <sub>0</sub>	F <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>
Av. yield	5.63	6.47	6.10	6.05

S.E./mean = 0.18 tons/ac.

**Crop :- Potato (Rabi).**

**Ref :- U.P. 57(282).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'D'.**

Object :—To study the effect of Agallol on germination and yield of Potato.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanai*. (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 28.10.1957. (iv) (a) N.A. (b) By *kudali*. (c) 15 to 20 mds./ac. (d) 1.5' × 9". (e) N.A. (v) *Sanai* as G.M. (vi) *Phulwa* (late). (vii) Irrigated. (viii) 4 earthings. (ix) N.A. (x) 20.3.1958.

## 2. TREATMENTS :

2 levels of Agallol : T<sub>0</sub>=Untreated and T<sub>1</sub>=Agallol treated.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 10. (iv) (a) and (b) 7.5' × 4.5'. (v) No. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Leaf roll and mosaic incidence. (iii) Germination, leaf roll, mosaic incidence and yield of tuber. (iv) (a) 1957—1958. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 6.86 tons/ac. (ii) 0.87 tons/ac. (iii) Treatment difference is not significant. (iv) Av. yield of tuber in tons/ac.

Treatment	T <sub>0</sub>	T <sub>1</sub>
Av. yield	6.62	7.09

S.E./mean = 0.28 tons/ac.

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**Crop :- Potato (*Rabi*).**

**Ref :- U.P. 58(218).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'D'.**

Object :—To study the effect of Agallol on germination and yield of Potato.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai*. (c) Nil. (ii) (a) Loam. (b) Refer soil analysis, Kanpur (iii) N.A. (iv) (a) N.A. (b) Sown by *kudali*. (c) 15 to 20 mds./ac. (d) 21" × 9". (e) N.A. (v) *Sanai* as G.M. (vi) *Phulwa* (late). (vii) Irrigated. (viii) 1 earthing. (ix) 0.78". (x) 4.3.1959.

## 2. TREATMENTS :

2 levels of Agollol : T<sub>0</sub>=Untreated and T<sub>1</sub>=Agallol treated.

## 3. DESIGN :

(i) Paired-plot. (ii) (a) 2. (b) 16'6" × 19.5'. (iii) 6. (iv) (a) and (b) 8.75' × 16.5'. (v) Nil. (vi) Yes.

## 4. GENERAL .

(i) N.A. (ii) Nil. (iii) Germination %, tillers per plant and yield of tuber. (iv) (a) 1957—1958. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 3.35 tons/ac. (ii) 0.21 tons/ac. (iii) Treatment difference is not significant. (iv) Av. yield of tuber in tons/ac.

Treatment	T <sub>0</sub>	T <sub>1</sub>
Av. yield	3.33	3.38

S.E./mean = 0.09 tons/ac.

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**Crop :- Potato (*Rabi*).**

**Ref :- U.P. 57(283).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'D'.**

Object :—To study the incidence of disease on Potato, when seeds were sent to cold storage on different dates.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanai*. (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 1.11.1957. (iv) (a) N.A. (b) By *kudali*. (c) 15 to 20 mds./ac. (d) 21"×9". (e) N.A. (v) *Sanai* as G.M. (vi) *Phulwa* (late). (vii) Irrigated. (viii) 1 earthing. (ix) N.A. (x) 16, 17.3.1958.

## 2. TREATMENTS :

5 dates of sending the seeds to cold store :  $D_0=3.4.1957$  (control),  $D_1=15.4.1957$ ,  $D_2=30.4.1957$ ,  $D_3=15.5.1957$  and  $D_4=3.6.1957$ .

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) 12'×82'. (iii) 6. (iv) (a) and (b) 12'×14'. (v) No. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Leaf roll and mosaic incidence. (iii) Germination, leaf roll, mosaic incidence and yield of tuber. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 5.66 tons/ac. (ii) 0.47 tons/ac. (iii) Treatment differences are highly significant. (iv) Av. yield of tuber in tons/ac.

Treatment	$D_0$	$D_1$	$D_2$	$D_3$	$D_4$
Av. yield	4.29	4.33	4.48	7.22	7.98

S.E./mean = 0.19 tons/ac.

**Crop :- Potato (*Rabi*).**

**Ref :- U.P. 58(220).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'D'.**

Object :- To study the comparative efficiency of various soil fungicides.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai*. (c) Nil. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 1.11.1958. (iv) (a) N.A. (b) Sown by *kudali*. (c) 15 to 20 mds./ac. (d) 21"×9". (e) N.A. (v) *Sanai* as G.M. (vi) *Phulwa* (late). (vii) Irrigated. (viii) 1 earthing. (ix) 0.78". (x) 10.3.1959.

## 2. TREATMENTS :

4 fungicidal treatments :  $T_0$ =Control,  $T_1$ =Hexamer at 20 lb./ac.,  $T_2$ =Aldrex 5% dust at 20 lb./ac. and  $T_3$ =Gammexane at 20 lb./ac.

Fungicides applied on 1.11.1958.

## 3. DESIGN :

(i) L.Sq. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) and (b) 8.75'×24.75'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good growth. (ii) Mosaic and leaf roller. (iii) Germination %, disease % and yield of tuber. (iv) (a) and (b) No. (c) Nil. (v) (a) Farrukhabad. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 4.86 tons/ac. (ii) 0.28 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of tuber in tons/ac.

Treatment	$T_0$	$T_1$	$T_2$	$T_3$
Av. yield	4.80	4.62	4.90	5.13

S.E./mean = 0.14 tons/ac.

## Percentage of leaf roller and mosaic on 30.12.1958

Treatment	$T_0$	$T_1$	$T_2$	$T_3$
% leaf roller	26.25	21.25	18.75	20.00
% mosaic	0.88	0.88	1.62	0.62

**Crop :- Potato (Rabi).****Ref :- U.P. 58(219).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'D'.**

Object :—To study the effect of thiourea treatment on dormancy and yield of Potato.

**1. BASAL CONDITIONS :**(i) (a) N.A. (b) *Sanai*. (c) Nil. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 30.10.1958. (iv) (a) N.A. (b) Sown by *kudali*. (c) 15 to 20 mds./ac. (d) 21' × 9". (e) N.A. (v) *Sanai* as G.M. (vi) *Phulwa* (late). (vii) Irrigated. (viii) 1 earthing. (ix) 0.78". (x) 4.3.1959.**2. TREATMENTS :**4 thiourea solutions for dipping seed : T<sub>0</sub>=Control, T<sub>1</sub>=1%, T<sub>2</sub>=1.5 % and T<sub>3</sub>=2.0 %.**3. DESIGN :**

(i) L. Sq. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) and (b) 16.5' × 8.75'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Nil. (iii) Germination %, tillers/plant and yield of tuber. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 2.38 tons/ac. (ii) 0.10 tons/ac. (iii) Treatment differences are highly significant. (iv) Av. yield of tuber in tons/ac.

Treatment	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>
Av. yield	3.08	2.42	1.84	2.16

S.E./mean = 0.05 tons/ac.

**Crop :- Potato (Rabi).****Ref :- U.P. 59(228).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'D'.**

Object :—To study the use of phygon—XL, dithane Z—78 and gebrallic acid for control of diseases in Potato.

**1. BASAL CONDITIONS :**(i) (a) to (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 24.11.1959. (iv) (a) N.A. (b) Sown by *kudali*. (c) 15 to 20 mds./ac. (d) 21" × 9". (e) N.A. (v) to (viii) N.A. (ix) 0.02". (x) 16.3.1960.**2. TREATMENTS :**4 insecticidal treatments : T<sub>0</sub>=Control, T<sub>1</sub>=Phygon—XL, T<sub>2</sub>=Dithane—Z—78 and T<sub>3</sub>=Gebrallic acid.**3. DESIGN :**

(i) R.B.D. (ii) (a) 4. (b) 15' × 19.25'. (iii) 4. (iv) (a) and (b) 15' × 3.5'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good growth (ii) No. (iii) Germination %, tillers per plant, height of plant, disease record and yield of tuber. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 5.79 tons/ac. (ii) 0.74 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of tuber in tons/ac.

Treatment	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>
Av. yield	5.86	5.95	5.52	5.81

S.E./mean = 0.37 tons/ac.

**Crop :- Potato (Rabi).****Ref :- U.P. 59(230).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'D'.**

**Object :-** To study the comparative efficiency of various fungicides and rate of degeneration of seed Potatoes.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 24.10.1959. (iv) (a) N.A. (b) Sown by *kudali*. (c) 15 to 20 mds./ac. (d)  $1\frac{3}{4}' \times 9''$ . (e) N.A. (v) N.A. (vi) Kufri safed (late). (vii) Irrigated. (viii) 2 earthings. (ix) 0.02". (x) 19 and 20.2.1960.

**2. TREATMENTS :**

5 fungicidal treatments:  $T_0$ =Control,  $T_1$ =Fytolan at  $\frac{1}{2}$  oz. in 50 gallons of water,  $T_2$ =Bordeaux mixture (4 ozs.  $CuSO_4$ +4 ozs. quick lime in 50 gallons of water),  $T_3$ =Fytolan (as in  $T_1$ )+Basudine (1 oz. of Basudine in 6 gallons of water and  $T_4$ =Bordeaux mixture+Basudine (1 oz. of Basudine in 6 gallons of water).

Spraying was done on 18.12.1959 and 4.1.1960 in such a manner that each leaf was completely wet.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 5. (b)  $24.75' \times 53.75'$ . (iii) 6. (iv) (a) and (b)  $24.75' \times 8.75'$ . (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good growth. (ii) Very slight attack of mosaic, leaf roll and late blight. (iii) Germination %, no. of diseased plants and yield of tuber. (iv) (a) 1959—contd. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 5.79 tons/ac. (ii) 0.87 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of tuber in tons/ac.

Treatment	$T_0$	$T_1$	$T_2$	$T_3$	$T_4$
Av. yield	5.60	5.76	5.82	5.91	5.88

S.E./mean = 0.36 tons/ac.

**Crop :- Potato (Rabi).****Ref :- U.P. 59(401).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'D'.**

**Object :-** To test the efficacy of different fungicides and their prophylactic sprays for the control of early and late blight of Potato.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 4.11.1959. (iv) (a) to (c) N.A. (d) 6" between plants. (e) N.A. (v) F.Y.M. and compost. (vi) Kufri red. (vii) and (viii) N.A. (ix) 0.02". (x) 8 and 9.3.1960.

**2. TREATMENTS :**

6 fungicidal treatments:  $T_0$ =Control,  $T_1$ =Cupramar 0.4% solution,  $T_2$ =Cupravit 0.4% solution,  $T_3$ =Fytolan 0.4% solution,  $T_4$ =Bordeaux mixture (5 : 5 : 50) 1% and  $T_5$ =Micop W—50 0.3% solution.

Spraying on 4, 19.12.1959 and 7, 30.1.1960 at 60 to 80 gallons/ac.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 6. (b)  $26' \times 78'9''$ . (iii) 4. (iv) (a) and (b)  $12' \times 26'3''$ . (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Blight infection and yield of tuber. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 11.72 tons/ac. (ii) 1.24 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of tuber in tons/ac.



Treatment	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	T <sub>5</sub>
Av. yield	11.59	12.03	11.84	12.72	10.87	11.26

S.E./mean = 0.62 tons/ac.

Percentage of blight infection (based on 100 leaves per treatment selected at random).

Treatment	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	T <sub>5</sub>
Percentage	6.2	20.0	2.7	3.0	3.5	4.0

**Crop :- Potato (Rabi).**

**Ref :- U.P 58(31).**

**Site :- Reg. Res. Stn., Meerut.**

**Type :- 'D'.**

**Object :-** To study the effect of different fungicides for control of Potato blight.

### 1. BASAL CONDITIONS :

(i) (a) Maize—Potato. (b) Maize. (c) 50 lb./ac. of N as A/S and F.Y.M. (ii) (a) Silt loam. (b) Refer soil analysis, Meerut. (iii) 3.11.1958 and gap filling on 3.12.1958. (iv) (a) 1 ploughing by soil turning plough and 3 to 4 ploughings by *desi* plough. (b) Dibbling. (c) 5 mds./ac. (d) 2' between rows. (e) 1. (v) 100 lb./ac. of N as F.Y.M. (vi) Military special (medium). (vii) Irrigated. (viii) 1 hoeing and 1 earthing. (ix) 8.74". (x) 27.3.1959.

### 2. TREATMENTS :

**Main-plot treatments :**

2 times of sprayings : T<sub>1</sub>=At 1st appearance of disease in the locality and T<sub>2</sub>=At the time of 1st earthing.

**Sub-plot treatments :**

4 fungicides for spraying : F<sub>0</sub>=Control (water), F<sub>1</sub>=Bordeaux mixture 1 % (5 : 5 : 50), F<sub>2</sub>=Fytolan 0.3 % and F<sub>3</sub>=Blitox 0.5 % "50".

Spraying done at the rate of 80 gallons/ac.

### 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 4 sub-plots/main-plot. (b) 104' × 34'. (iii) 3. (iv) (a) 25' × 16'. (b) 21' × 12'. (v) 2' × 2'. (vi) Yes.

### 4. GENERAL :

(i) Very poor. (ii) Potato blight. Control measures as per treatments. (iii) Germination, % of blight damage on 3.3.1959 and yield of tuber. (iv) (a) 1958—contd. (modified in 1959). (b) No. (c) Nil. (v) to (vii) Nil.

### 5. RESULTS :

(i) 2.80 tons/ac. (ii) (a) 0.95 tons/ac. (b) 0.29 tons/ac. (iii) Main effect of F alone is highly significant. (iv) Av. yield of tuber in tons/ac.

	F <sub>0</sub>	F <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>	Mean
T <sub>1</sub>	2.39	2.59	2.65	3.13	2.69
T <sub>2</sub>	2.59	2.70	3.05	3.27	2.90
Mean	2.49	2.64	2.85	3.20	2.80

S.E. of difference of two

1. T marginal means = 0.39 tons/ac.
2. F marginal means = 0.17 tons/ac.
3. F means at the same level of T = 0.24 tons/ac.
4. T means at the same level of F = 0.44 tons/ac.

### Incidence of blight

(i) 25.90 degrees. (ii) (a) 0.61 degrees. (b) 4.55 degrees. (iii) Main effect of F alone is highly significant. (iv) Av. incidence of blight in degrees.

	F <sub>0</sub>	F <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>	Mean
T <sub>1</sub>	31.93	29.69	22.37	19.89	25.97
T <sub>2</sub>	32.09	24.82	24.46	21.95	25.83
Mean	32.01	27.26	23.42	20.92	25.90

S.E. of difference of two

1. T marginal means = 0.25 degrees.
2. F marginal means = 2.63 degrees.
3. F means at the same level of T = 3.72 degrees.
4. T means at the same level of F = 3.23 degrees.

**Crop :- Potato (Rabi).**

**Ref :- U.P. 59(38).**

**Site :- Reg. Res. Stn., Meerut.**

**Type :- 'D'.**

Object :—To find out the comparative efficiency of various fungicides in the control of Potato blight.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Dhaincha*. (c) Nil. (ii) (a) Silt loam. (b) Refer soil analysis, Meerut. (iii) 20.10.1959. (iv) (a) 1 ploughing by soil turning plough and 4 to 5 ploughings by *desi* plough. (b) Dibbling. (c) 12 mds./ac. (d) 1½'×9". (e) 1. (v) *Dhaincha* as G.M.+F.Y.M. at 50 lb./ac. of N. (vi) Military special red. (vii) Irrigated. (viii) 1 earthing. (ix) 1.80". (x) 17.3.1960.

2. TREATMENTS :

4 fungicides for spraying : F<sub>0</sub>=Control (water), F<sub>1</sub>=Bordeaux mixture 5 : 5 : 50, F<sub>2</sub>=Fytolan 0.3 % and F<sub>3</sub>=Blitox 0.3 %.

Spraying done three times at the rate of 80 gallons/ac.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) 63'×39'. (iii) 6. (iv) (a) 30'×18'. (b) 27'×15'. (v) 1.5'×1.5'. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Potato blight, control measures as per treatments. (iii) Tuber yield. (iv) (a) 1959—contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 4.02 tons/ac. (ii) 0.38 tons/ac. (iii) Treatment differences are significant. (iv) Av. yield of tuber in tons/ac.

Treatment	F <sub>0</sub>	F <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>
Av. yield	4.02	3.58	4.28	4.20

S.E./mean = 0.16 tons/ac.

**Crop :- Potato (Rabi).**

**Ref :- U.P. 59(136).**

**Site :- Reg. Res. Stn., Nawabganj.**

**Type :- 'D'.**

Object :—To control early blight of Potato by fungicides.

1. BASAL CONDITIONS :

(i) (a) Paddy—Potato. (b) Paddy. (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Nawabganj. (iii) 4.11.1959. (iv) (a) N.A. (b) Line sowing. (c) 8 to 10 mds./ac. (d) Rows 2' apart. (e) N.A. (v) F.Y.M. at 30 mds./ac.+1 mds./ac. of Super+4 mds./ac. of B.M.+2 mds./ac. of A/S as top dressing. (vi) *Phulwa*. (vii) N.A. (viii) 2 hoeings and 2 earthings. (ix) and (x) N.A.

**2. TREATMENTS :**

3 fungicides for spraying :  $F_0$ =Control,  $F_1$ =Bordeaux mixture 1 % and  $F_2$ =0.3 % Fytolan.  
Spraying done 3 times.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 8. (iv) (a) and (b)  $30' \times 18'$ . (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Average. (ii) N.A. (iii) Yield of tuber. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

**RESULTS :**

(i) 3.13 tons/ac. (ii) 0.35 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of tuber in tons/ac.

Treatment	$F_0$	$F_1$	$F_2$
Av. yield	3.10	3.36	2.93

S.E./mean = 0.13 tons/ac.

**Crop :- Potato (Rabi).**

**Ref :- U.P. 59(153).**

**Site :- Govt. Hort. Res. Instt., Saharanpur.**

**Type :- 'D'.**

**Object :-**To reduce the number of sprayings in early blight disease of Potato.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Saharanpur. (iii) 27, 28.10.1959. (iv) (a) to (c) N.A. (d) Row to row  $1\frac{1}{2}'$ . (e) N.A. (v) N.A. (vi) Military special. (vii) to (x) N.A.

**2. TREATMENTS :**

8 numbers of sprayings :  $S_0$ =Control (untreated),  $S_1$ =2 sprayings on 2, 16.12.1959,  $S_2$ =3 sprayings on 2, 16, 30.12.1959,  $S_3$ =4 sprayings on 2, 16, 30.12.1959, 16.1.1960,  $S_4$ =5 sprayings on 2, 16, 30.12.1959; 16, 30.1.1960,  $S_5$ =5 sprayings on 2, 30.12.1959; 23, 30.1.1960; 6.2.1960 and  $S_6$ =6 sprayings on 2, 16, 30.12.1959; 16, 30.1.1960 and 13.2.1960.

Spraying done with 0.2% Dithane Z-78+Tritan B-1956.

$S_6$  has been taken in 2 plots in each blo.k.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 2. (iv) (a) and (b)  $7\frac{1}{2}' \times 33'$ . (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of Potato. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 4.77 tons/ac. (ii) 0.09 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of tuber in tons/ac.

Treatment	$S_0$	$S_1$	$S_2$	$S_3$	$S_4$	$S_5$	$S_6$
Av. yield	4.24	4.79	4.75	5.11	5.03	4.37	4.68

S.E./mean except  $S_6$  = 0.06 tons/ac.

S.E./mean for  $S_6$  = 0.04 tons/ac.

**Crop :- Potato (Rabi).**

**Ref :- U.P. 59(155).**

**Site :- Govt. Hort. Res. Instt., Saharanpur.**

**Type :- 'D'.**

**Object :-**To study the effect of spraying with different fungicides at different intervals on the incidence of late and early blight of Potato.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Saharanpur. (iii) 12, 13.11.1959. (iv) (a) to (c) N.A. (d) Between rows  $1\frac{1}{2}'$ . (e) N.A. (v) N.A. (vi) 1645. (vii) to (x) N.A.

## 2. TREATMENTS :

## Main-plot treatments :

7 fungicidal treatments :  $F_0$ =Control,  $F_1$ =Flit 406—0.2%,  $F_2$ =Flit 406—0.3%,  $F_3$ =Dithane—0.15%,  $F_4$ =Dithane—0.2%,  $F_5$ =Fytolan—0.3% and  $F_6$ =Fytolan—0.4%.

## Sub-plot treatments :

2 intervals of spraying :  $I_1=7$  and  $I_2=14$  days.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 7 main-plots/replication ; 2 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) N.A. (b)  $7\frac{1}{2}' \times 33'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of tuber. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 4.82 tons/ac. (ii) (a) 0.66 tons/ac. (b) 0.45 tons/ac. (iii) None of the effects is significant. (iv) Av. yield of tuber in tons/ac.

	$F_0$	$F_1$	$F_2$	$F_3$	$F_4$	$F_5$	$F_6$	Mean
$I_1$	5.05	4.45	5.00	4.69	4.27	4.87	5.53	4.84
$I_2$	4.95	4.61	4.58	4.56	4.30	5.37	5.19	4.79
Mean	5.00	4.53	4.79	4.62	4.28	5.12	5.36	4.82

## S.E. of difference of two

- |                                   |                 |
|-----------------------------------|-----------------|
| 1. F marginal means               | = 0.38 tons/ac. |
| 2. I marginal means               | = 0.14 tons/ac. |
| 3. I means at the same level of F | = 0.37 tons/ac. |
| 4. F means at the same level of I | = 0.46 tons/ac. |

**Crop :- Potato (*Zaid*).**

**Ref :- U.P. 55(85).**

**Centre :- Ranikhet (Almora, c.f.).**

**Type :- 'D'.**

Object :- To study the effect of insecticides to assess their suitability for the control of Kurmul grubs.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow. (c) Nil. (ii) Clay soil. (iii) Nil. (iv) *Garhwal* seed and long keeper. (v) (a) to (e) N.A. (vi) 7.9 1955. (vii) Irrigated. (viii) Weedings, hoeings and earthings. (ix) N.A. (x) Nov., 1955.

## 2. TREATMENTS :

6 insecticidal treatments :  $T_0$ =Control,  $T_1$ =30 lb./ac. of Aldrin dust 5%,  $T_2$ =50 lb./ac. of Dieldrin dust 1%,  $T_3$ =50 lb./ac. of Chlordane dust 5%,  $T_4$ =65 lb./ac. of Lindane dust 0.65% and  $T_5$ =50 lb./ac. of D.D.T. dust 5%.

Treatments applied on 24.9.1955 by mixing insecticidal dust in the soil with the help of rake to a depth of 3".

## 3. DESIGN :

(i) R.B.D. with 6 plots/block and 4 replications. (ii) N.A. (iii) (a) and (b) 300 sq. ft. (iv) Yes.

## 4. GENERAL :

(i) Good. (ii) Tubers and roots of the plants damaged by the grubs. (iii) % reduction in the population of K grubs during Oct., 1955. (iv) (a) and (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 37.16 %. (ii) 6.53 %. (iii) Treatment differences are highly significant. (iv) % reduction of K grubs/plot.

Treatment	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	T <sub>5</sub>
% reduction	17.80	45.72	45.20	43.98	41.12	29.15

S.E./mean = 3.265 %.

**Crop :- Potato (*Zaid*).**

**Ref :- U.P. 56(41).**

**Centre :- Ranikhet (Almora, c.f.).**

**Type :- 'D'.**

**Object :-** To test the efficacy of insecticidal dusts in preventing damage to Potato crop by beetle grubs of *Kurmula*.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Wheat. (c) 60 lb./ac. of N as F.Y.M. (ii) Clay. (iii) Nil. (iv) *Garhwal* seed and long keeper. (v) (a) to (e) N.A. (vi) 22.2.1956. (vii) Unirrigated. (viii) Weeding, hoeing and earthing. (ix) N.A. (x) August, 1956.

**2. TREATMENTS :**

7 insecticidal dusts at 100 lb./ac. : D<sub>0</sub>=Control, D<sub>1</sub>=B.H.C. dust 5%, D<sub>2</sub>=Dieldrin dust 1%, D<sub>3</sub>=Aldrin dust 5%, D<sub>4</sub>=Lindane dust 0.65%, D<sub>5</sub>=D.D.T. dust 5% and D<sub>6</sub>=Chlordane dust 5%.

The dust was mixed in small quantity of soil and broadcast evenly on the surface of the soil and hoed in upto a depth of 4" on 20.2.1956 and 7.4.1956.

**3. DESIGN :**

(i) R.B.D. with 7 plots/block with 4 replications. (ii) N.A. (iii) (a) 271 sq. ft. (b) 270 sq. ft. (iv) Yes.

**4. GENERAL :**

(i) Good. (ii) Feeding upon potato tubers and roots. (iii) Population of *kurmula* grubs from 5 places each 1' x 1' x 8" from each plot was recorded. (iv) (a) and (b) No. (c) Nil. (v) N.A. (vi) Nil. (vii) Heavy reduction in population of grubs under D<sub>0</sub> at the time of final observation, is supposed to be due to leaching of insecticides from treated plots due to heavy rains.

**5. RESULTS :**

(i) 73.09 degrees. (ii) 7.37 degrees. (iii) Treatment differences are highly significant. (iv) Av. reduction of *kurmula* grubs in degrees.

Treatment	D <sub>0</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	D <sub>5</sub>	D <sub>6</sub>
Av. reduction	58.96	78.55	70.77	85.82	76.46	67.02	74.03

S.E./mean = 3.68 degrees.

**Crop :- Potato (*Zaid*).**

**Ref :- U.P. 57(14).**

**Centre :- Metila (Almora, c.f.).**

**Type :- 'D'.**

**Object :-** To test the efficacy of insecticidal dusts against the Potato cutworm.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Fallow. (c) Nil. (ii) Clay loam. (iii) Nil. (iv) Up-to-date and seed from Bareilly. (v) (a) to (e) N.A. (vi) March, 1957. (vii) Unirrigated. (viii) Hoeing, weeding and earthing. (ix) N.A. (x) September, 1957.

**2. TREATMENTS :**

7 insecticidal dusts at 10 lb./ac. : D<sub>0</sub>=Control, D<sub>1</sub>=Aldrin dust 5%, D<sub>2</sub>=Chlordane dust 5%, D<sub>3</sub>=Lindane dust 1.3 %, D<sub>4</sub>=B.H.C. dust 7 %, D<sub>5</sub>=Dieldrin dust 2.5 % and D<sub>6</sub>=D.D.T. dust 5 % + Pynethrum.

The dusts were mixed into the soil upto a depth of 4" after diluting them with 20 times of soil on 6.6.1957.

## 3. DESIGN :

(i) R.B.D. with 7 plots/block and 4 replications. (ii) and (iii) N.A. (iv) Yes.

## 4. GENERAL :

(i) Good. (ii) Plants cut just above the ground level. (iii) Number of cut plants/plot was counted and number of cut plants/1000 potato plants calculated. (iv) (a) and (b) No. (c) Nil. (v) N.A. (vi) Nil. (vii) All the cut plants were removed before the application on 5.6.1957.

## 5. RESULTS :

(i) 2.21 cut plants/1000 plants. (ii) 2.33 cut plants/1000 plants. (iii) Treatment differences are significant. (iv) Av. number of cut plants/1000 plants.

Treatments	D <sub>0</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	D <sub>5</sub>	D <sub>6</sub>
Av. number	7.00	1.00	1.25	1.25	1.50	1.75	1.75

S.E./mean 1.16 cut plants/1000 plants.

**Crop :- Potato (*Zaid*).**

**Ref :- U.P. 56(30).**

**Centre :- Gobaria Khan (Nainital, c.f.).**

**Type :- 'D'.**

Object :—To test the efficacy of insecticidal dusts against the Potato cutworm.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Wheat. (c) F.Y.M. at 250 lb./ac. (ii) Clay loam. (iii) Nil. (iv) Long keeper. (v) (a) to (e) N.A. (vi) 15.3.1956. (vii) Unirrigated. (viii) Weeding, hoeing and earthing. (ix) N.A. (x) Aug., Sept., 1956.

## 2. TREATMENTS :

6 insecticides : D<sub>0</sub>=Control, D<sub>1</sub>=D.D.T. dust 10 % at 25 lb./ac., D<sub>2</sub>=Aldrin dust 5 % at 25 lb./ac., D<sub>3</sub>=Chlordane dust 5 % at 50 lb./ac., D<sub>4</sub>=Aldrin dust 1 % at 50 lb./ac. and D<sub>5</sub>=Dieldrin dust 1 % at 50 lb./ac.

The dust insecticides were mixed in the soil to a depth of 2" on 21.4.1956.

## 3. DESIGN :

(i) R.B.D. with 6 plots/block and 4 replications. (ii) and (iii) N.A. (iv) Yes.

## 4. GENERAL :

(i) Good. (ii) Plants cut just above the ground level by cut-worm. (iii) Number of cut plants on 1.5.1956. (iv) (a) and (b) No. (c) Nil. (v) N.A. (vi) Nil. (vii) The cut plants before the application of treatment had been removed.

## 5. RESULTS :

(i) 1.50 %. (ii) 1.05 %. (iii) Treatment differences are significant. (iv) Mean % of cut plants.

Treatment	D <sub>0</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	D <sub>5</sub>
Percentage	2.75	1.00	0.25	1.00	2.00	2.00

S.E./mean = 0.52 %.

**Crop :- Potato (*Kharif*).**

**Ref :- U.P. 56(497).**

**Centre :- Mukteshwar (Nainital, c.f.).**

**Type :- 'D'.**

Object :—To study the comparative efficacy of insecticidal dust in preventing damage to Potato plants.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow. (c) N.A. (ii) Clay loam. (iii) Nil. (iv) Improved. (v) (a) and (b) N.A. (c) 30 srs./ac. (d) and (e) N.A. (vi) 12.5.1956. (vii) Irrigated. (viii) to (x) N.A.

## 2. TREATMENTS :

7 insecticides : D<sub>0</sub>=Control, D<sub>1</sub>=Dieldrin dust 2.5 %, D<sub>2</sub>=Chlordane dust 5 %, D<sub>3</sub>=D.D.T. dust 5 % + Pyrethrum, D<sub>4</sub>=Aldrin dust 5 %, D<sub>5</sub>=Lindane dust 1.3 % and D<sub>6</sub>=B.H.C. dust 5 %.

## 3. DESIGN :

(i) R.B.D. with 7 plots/block and 4 replications. (ii) N.A. (iii) (a) and (b) 50 sq. yds. (iv) Yes.

## 4. GENERAL :

(i) N.A. (ii) Cut worm disease. (iii) Population of cut plants. (iv) (a) 1955—contd. (b) N.A. (c) Nil. (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 2.16 degrees. (ii) 3.01 degrees. (iii) Treatment differences are not significant. (iv) Av. number of cut plants in degrees.

Treatment	D <sub>0</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	D <sub>5</sub>	D <sub>6</sub>
Av. cut plants	2.72	1.36	1.36	2.30	2.48	2.48	2.45

S.E./mean = 1.50 degrees.

**Crop :- Potato (Rabi).**

**Ref :- U.P. 58(139).**

**Centre :- Saharanpur (Saharanpur, c.f.).**

**Type :- 'D'.**

Object :- To study the control measures of late blight disease of Potato.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Sandy loam. (iii) N.A. (iv) Daryching red. (v) (a) to (c) N.A. (d) Between rows 1½'. (e) N.A. (vi) to (ix) N.A. (x) 10, 11.3.1959

## 2. TREATMENTS :

## Main-plot treatments :

8 sprayings in 100 gallons : S<sub>0</sub>=Control, S<sub>1</sub>=Flit 406—0.15%—1½ lb., S<sub>2</sub>=Flit 406—0.2%—2 lb., S<sub>3</sub>=Flit 406—0.3%—3 lb., S<sub>4</sub>=Fytolan—0.3%—3 lb., S<sub>5</sub>=Fytolan—0.4%—4 lb., S<sub>6</sub>=Dithane Z—78—0.15%—1½ lb. and S<sub>7</sub>=Dithane Z—78—0.2%—2 lb.

## Sub-plot treatments :

2 intervals of sprayings : I<sub>1</sub>=7 and I<sub>2</sub>=14 days.

## 3. DESIGN :

(i) Split-plot with 8 main-plots/block and 2 sub-plots/main-plot and 3 replications. (ii) and (iii) N.A. (iv) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of tuber. (iv) (a) and (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 17.54 tons/ac. (ii) (a) 3.12 tons/ac. (b) 1.87 tons/ac. (iii) None of the effects is significant. (iv) Av. yield of tuber in tons/ac.

	S <sub>0</sub>	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>	S <sub>5</sub>	S <sub>6</sub>	S <sub>7</sub>	Mean
I <sub>1</sub>	14.38	15.77	19.25	16.66	18.20	20.90	17.60	16.50	17.41
I <sub>2</sub>	13.07	15.37	17.81	17.55	19.56	19.77	20.43	16.60	17.67
Mean	13.72	16.07	18.53	17.10	18.88	20.34	19.02	16.55	17.54

## S.E. of difference of two

1. S marginal means = 1.80 tons/ac.
2. I marginal means = 0.54 tons/ac.
3. I means at the same level of S = 1.53 tons/ac.
4. S means at the same level of I = 2.10 tons/ac.

**Crop :- Potato (Rabi).****Ref :- U.P. 59(157).****Centre :- Saharanpur (Saharanpur, c.f.).****Type :- 'D'.**

Object :—To study the effect of spraying with 0.2% Dithane Z—78 at different intervals.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) Sandy loam. (iii) to (x) N.A.

**2. TREATMENTS :**4 spraying treatments :  $S_0$ =Control (no spraying),  $S_1$ =7 sprayings at 7 days interval,  $S_2$ =5 sprayings at 14 days interval and  $S_3$ =3 sprayings at 21 days interval.**3. DESIGN :**

(i) R.B.D. with 4 plots/block and 4 replications. (ii) N.A. (iii) (a) and (b) 23'×9'. (iv) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of tuber. (iv) (a) and (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 6.54 tons/ac. (ii) 1.07 tons/ac. (iii) Treatment differences are highly significant. (iv) Av. yield of tuber in tons/ac.

Treatment	$S_0$	$S_1$	$S_2$	$S_3$
Av. yield	4.20	7.80	7.12	7.05

S.E./mean = 0.54 tons/ac.

**Crop :- Potato (Rabi).****Ref :- U.P. 59(235).****Site :- Govt. Potato Res. Stn., Farrukhabad.****Type 'DM'.**

Object :— To study the effect of spraying with Fytolan and Urea on the yield of Potato.

**1. BASAL CONDITIONS :**(i) (a) N.A. (b) Maize. (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Farrukhabad. (iii) 2.11.1959. (iv) (a) 4 ploughings. (b) By *kudali*. (c) 33 seeds/ac. (d) 21"×9". (e) N.A. (v) 50 lb./row of N as local compost+40 lb./ac. of  $P_2O_5$ . (vi) O.N.—2236 (medium). (vii) Irrigated. (viii) 1 weeding and 1 earthing. (ix) N.A. (x) 29.2.1960.**2. TREATMENTS :**4 spraying treatments :  $T_0$ =Control,  $T_1$ =3 lb./ac. of Fytolan in 100 gallons of water,  $T_2$ =30 lb./ac. of N as urea and  $T_3$ = $T_1+T_2$ .**3. DESIGN :**

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) and (b) 24.75'×8.75'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Late blight. (iii) Germination and yield of tuber. (iv) (a) 1959—contd. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 7.19 tons/ac. (ii) 0.72 tons/ac. (iii) Treatment differences are highly significant. (iv) Av. yield of tuber in tons/ac.

Treatment	$T_0$	$T_1$	$T_2$	$T_3$
Av. yield	6.90	6.43	8.16	7.27

S.E./mean = 0.30 tons/ac.



**Crop :- Potato (Rabi).****Ref :- U.P. 59(231).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'DM'.**

Object :— To study the effect of spraying with Fytolan and N on the yield of Potato.

**1. BASAL CONDITIONS :**(i) (a) to (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 23.10.1959. (iv) (a) N.A. (b) Sown by *kudali*. (c) 15 to 20 mds./ac. (d) 21"×9". (e) N.A. (v) N.A. (vi) Kufri Red (late). (vii) Irrigated. (viii) 2 earthings. (ix) Negligible. (x) 9.2.1960.**2. TREATMENTS :**4 spraying treatments :  $T_0$ =Control,  $T_1$ =0.5 ozs. of Fytolan/50 gallons of water,  $T_2$ =30 lb./ac. of N as urea as foliar application+50 lb./ac. of N as A/S as basal application and  $T_3=T_1+T_2$ .**3. DESIGN :**

(i) R B.D. (ii) (a) 4. (b) 24'9"×42.5'. (iii) 6. (iv) (a) and (b) 24.75'×8.75'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Vigorous growth. (ii) Slight attack of mosaic, leaf roll and late blight. (iii) Germination %, no. of diseased plants and yield of tuber. (iv) (a) 1959—contd. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 9.40 tons/ac. (ii) 0.86 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of tuber in tons/ac.

Treatment	$T_0$	$T_1$	$T_2$	$T_3$
Av. yield	9.17	9.11	9.51	9.79

S.E./mean = 0.35 tons/ac.

**Crop :- Potato (Rabi).****Ref :- U.P. 58(435).****Site :- Govt. Potato Res. Stn., Farrukhabad.****Type :- 'CD'.**

Object :—To find out the effect of seed sizes and various affected seeds on the mosaic incidence of Potato.

**1. BASAL CONDITIONS :**(i) (a) N.A. (b) Maize. (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Farrukhabad. (iii) 7.11.1958. (iv) (a) 7 ploughings. (b) By *kudali*. (c) 15 to 20 mds./ac. (d) 21"×9". (e) N.A. (v) 120 lb./ac. of N as local compost, 140 lb./ac. of N as G.N.C. and 40 lb./ac. of N as A/S. (vi) *Phulwa* (late). (vii) Irrigated. (viii) 1 weeding, 1 hoeing and 2 earthings. (ix) N.A. (x) 18.3.1959.**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 2 seed sizes :  $S_1$ =Large and  $S_2$ =Small.(2) 2 conditions of seed :  $C_1$ =Healthy and  $C_2$ =Virus affected (mosaic).**3. DESIGN :**

(i) Fact. in R B.D. (ii) (a) 4. (b) 8.75'×105'. (iii) 4. (iv) (a) and (b) 24.75'×8.75'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Early and late blight and leaf roll. Mosaic under study. (iii) Germination, no. of plants affected by mosaic and yield of tuber. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 6.19 tons/ac. (ii) 0.47 tons/ac. (iii) Main effects of S and C alone are highly significant. (iv) Av. yield of tuber in tons/ac.

	S <sub>1</sub>	S <sub>2</sub>	Mean
C <sub>1</sub>	8.87	4.76	6.82
C <sub>2</sub>	7.57	3.56	5.56
Mean	8.22	4.16	6.19

S.E. of any marginal mean = 0.17 tons/ac.

S.E. of body of table = 0.24 tons/ac.

(i) 5.43. (ii) 0.62. (iii) Main effect of C and interaction C×S are highly significant. Main effect of S is significant. (iv) Mean value of mosaic affected plants. [Transformed values by the transformation of  $\sqrt{x+0.5}$ ].

	S <sub>1</sub>	S <sub>2</sub>	Mean
C <sub>1</sub>	2.42	1.91	2.16
C <sub>2</sub>	7.43	9.95	8.69
Mean	4.93	5.93	5.43

S.E. of any marginal mean = 0.22.

S.E. of body of table = 0.31.

**Crop :- Potato (Rabi).**

**Ref :- U.P. 54(283).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'CD'.**

**Object:—**To find out the effect of seed sizes and seed condition on Potato crop.

#### 1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 12.11.1954. (iv) (a) and (b) N.A. (c) 660 tubers per plot. (d) 2'×9". (e) N.A. (v) Nil. (vi) to (viii) N.A. (ix) 1.06%. (x) N.A.

#### 2. TREATMENTS :

##### Main-plot treatments :

2 types of plants for collecting seed : P<sub>1</sub>=Healthy plants and P<sub>2</sub>=Diseased plants.

##### Sub-plot treatments :

3 seed sizes : S<sub>1</sub>=Diameter less than  $\frac{1}{2}$ ", S<sub>2</sub>=Diameter less than 1" and S<sub>3</sub>=Diameter less than 1.5".

#### 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) and (b) 24'×38'. (v) Nil. (vi) Yes.

#### 4. GENERAL :

(i) N.A. (ii) Infection of mosaic virus. (iii) Mosaic infection and yield of tuber. (iv) (a) 1954—1955. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

#### 5. RESULTS :

(i) 3.53 tons/ac. (ii) (a) 1.41 tons/ac. (b) 0.60 tons/ac. (iii) Main effect of S alone is significant. (iv) Av. yield of tuber in tons/ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean
P <sub>1</sub>	3.70	4.39	5.17	4.43
P <sub>2</sub>	2.10	2.73	3.10	2.64
Mean	2.90	3.56	4.13	3.53

## S.E. of difference of two

1. P marginal means = 0.66 tons/ac.
2. S marginal means = 0.35 tons/ac.
3. S means at the same level of P = 0.49 tons/ac.
4. P means at the same level of S = 0.77 tons/ac.

## Mosaic Incidence

(i) 46.03 degrees. (ii) (a) 2.00 degrees. (b) 1.63 degrees. (iii) Main effects of P, S and interaction P×S are highly significant. (iv) Av. incidence of mosaic in degrees.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean
P <sub>1</sub>	28.49	26.71	25.42	26.87
P <sub>2</sub>	72.09	64.04	59.44	65.19
Mean	50.29	45.37	42.43	46.03

## S.E. of difference of two

1. P marginal means = 0.94 degrees
2. S marginal means = 0.94 degrees
3. S means at the same level of P = 1.33 degrees
4. P means at the same level of S = 1.44 degrees

**Crop :- Potato (Rabi).**

**Ref :- U.P. 55(343).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'CD'.**

**Object :-** To find out the effect of seed size and seed condition on Potato crop.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 21.11.1955. (iv) (a) to (c) N.A. (d) 2' between rows. (e) N.A. (v) to (viii) N.A. (ix) 2.19". (x) N.A.

## 2. TREATMENTS :

Same as in expt. no. 54(283) on page 817.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication, 3 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) and (b) 42'×24'. (v) Nil. (vi) Yes.

## 4. GENERAL :

Same as in expt. no. 54(283) on page 817.

## 5. RESULTS :

(i) 37.66 degrees. (ii) (a) 1.08 degrees. (b) 2.93 degrees. (iii) Main effects of P and S alone are highly significant. (iv) Av. incidence of mosaic in degrees.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean
P <sub>1</sub>	25.71	21.44	20.22	22.46
P <sub>2</sub>	57.43	53.69	47.49	52.87
Mean	41.57	37.56	33.85	37.66

## S.E. of difference of two

1. P marginal means = 0.51 degrees.
2. S marginal means = 1.69 degrees.
3. S means at the same level of P = 2.39 degrees.
4. P means at the same level of S = 2.02 degrees.

**Crop :- Potato.****Ref :- U.P. 55(54).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'CD'.**

Object :—To study the effect of thiourea on dormancy and yield of Potato.

**1. BASAL CONDITIONS :**(i) (a) No. (b) *Sanai*. (c) Nil. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 23.11.1955. (iv) (a) and (b) N.A. (c) 16 tubers/row. (d)  $1\frac{1}{2}' \times 9''$ . (e) N.A. (v) 14 C.L. of F.Y.M. (vi) Up-to-date. (vii) Irrigated. (viii) 2 earthings. (ix) N.A. (x) 2.3.1956.**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 3 types of seed :  $T_0$ =Untreated,  $T_1$ =Water treated and  $T_2$ =Thiourea (1 % solution) treated.(2) 2 seed sizes :  $S_1$ =Whole seed and  $S_2$ =Cut seed.**3. DESIGN :**(i) Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 2. (iv) (a) and (b)  $1\frac{1}{2}' \times 12'$ . (v) Nil. (vi) No.**4. GENERAL :**

(i) Good. (ii) No. (iii) Yield of tuber. (iv) (a) and (b) No. (c) Nil. (v) (a) Kausani. (b) Nil. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 4.76 tons/ac. (ii) 0.46 tons/ac. (iii) None of the effects is significant. (iv) Av. yield of tubers in tons/ac.

	$T_0$	$T_1$	$T_2$	Mean
$S_1$	4.76	4.76	4.52	4.68
$S_2$	5.00	5.00	4.52	4.84
Mean	4.88	4.88	4.52	47.6

S.E. of S marginal mean = 0.19 tons/ac.

S.E. of T marginal mean = 0.23 tons/ac.

S.E. of body of table = 0.33 tons/ac.

**Crop :- Potato.****Ref :- U.P. 55(44).****Site :- Govt. Res. Farm, Kanpur.****Type :- 'CD'.**

Object :—To study the effect of thiourea on dormancy and yield of Potato.

**1. BASAL CONDITIONS :**(i) (a) No. (b) *Sanai*. (c) No. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 28.10.1955. (iv) (a) and (b) N.A. (c) 20 tubers/row. (d)  $1\frac{1}{2}' \times 9''$ . (e) N.A. (v) Nil. (vi) *Phulwa*. (vii) Irrigated. (viii) Earthings. (ix) N.A. (x) 16.3.1956.**2. TREATMENTS :**

Same as in expt. no. 55(54) above.

**3. DESIGN :**(i) Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 2. (iv) (a) and (b)  $1\frac{1}{2}' \times 15'$ . (v) Nil. (vi) Yes.**4. GENERAL :**

(i) Good. (ii) No. (iii) Yield of tuber. (iv) (a) 1955—1957. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 4.03 tons/ac. (ii) 0.50 tons/ac. (iii) None of the effects is significant. (iv) Av. yield of tuber in tons/ac.

	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	Mean
S <sub>1</sub>	4.57	3.81	4.29	4.22
S <sub>2</sub>	4.00	3.81	3.71	3.84
Mean	4.28	3.81	4.00	4.03

S.E. of S marginal mean = 0.20 tons/ac.  
 S.E. of T marginal mean = 0.25 tons/ac.  
 S.E. of body of table = 0.35 tons/ac.

**Crop :- Potato (Rabi).**

**Ref :- U.P. 56(233).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'CD'.**

**Object :-**To study the effect of thiourea on dormancy and yield of Potato.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 17.10.1956.  
 (iv) (a) N.A. (b) By *kudali*. (c) 15 to 20 mds/ac. (d) Plants 9" apart. (e) N.A. (v) N.A. (vi) *Phulwa*  
 (late). (vii) Irrigated. (viii) 1 earthing. (ix) N.A. (x) 2.3.1957.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 3 types of seed : T<sub>0</sub>=Untreated, T<sub>1</sub>=Water treated and T<sub>2</sub>=Thiourea (1% solution) treated.  
 (2) 2 seed sizes : S<sub>1</sub>=Whole seed and S<sub>2</sub>=Cut seed.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 6. (b) 7.5'×7.5'. (iii) 10. (iv) (a) and (b) 7.5'×1.5'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) N.A. (iii) Germination and yield of tuber. (iv) (a) 1955—1957. (b) No. (c) Nil. (v) (a)  
 and (b) No. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 2.79 tons/ac. (ii) 1.09 tons/ac. (iii) Main effect of S alone is highly significant. (iv) Av. yield of tuber  
 in tons/ac.

	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	Mean
S <sub>1</sub>	3.24	3.51	2.84	3.20
S <sub>2</sub>	2.89	2.36	1.87	2.37
Mean	3.06	2.94	2.36	2.79

S E. of T marginal mean = 0.24 tons/ac.  
 S.E. of S marginal mean = 0.20 tons/ac.  
 S.E. of body of table = 0.34 tons/ac.

**Crop :- Potato (Rabi).**

**Ref :- U.P. 57(287).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'CD'.**

**Object :-**To study the effect of thiourea on dormancy and yield of Potato.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanai* (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 28.10.1957. (iv) (a) N.A. (b) By *kudali*. (c) N.A. (d) Plants 9' apart. (e) N.A. (v) *Sanai* as G.M. (vi) *Phulwa* (late). (vii) Irrigated. (viii) 4 earthings. (ix) N.A. (x) 21.3.1958.

## 2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 56(233) on page 820.

## 4. GENERAL :

(i) Good. (ii) Leaf roll and mosaic incidence. (iii) Germination, leaf roll, mosaic incidence and yield of tuber. (iv) (a) 1955—1957. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 5.24 tons/ac. (ii) 1.51 tons/ac. (iii) Main effect of S alone is highly significant. (iv) Av. yield of tuber in tons/ac.

	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	Mean
S <sub>1</sub>	5.27	5.60	6.49	5.79
S <sub>2</sub>	4.89	4.82	4.36	4.69
Mean	5.08	5.21	5.42	5.24

S.E. of S marginal mean = 0.28 tons/ac.  
 S.E. of T marginal mean = 0.34 tons/ac.  
 S.E. of body of table = 0.48 tons/ac.

**Crop :- Potato.**

**Ref :- U.P. 55(55).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'CD'.**

Object :—To study the effect of thiourea on dormancy and yield of Potato.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanai*. (c) Nil. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 23.11.1955. (iv) (a) and (b) N.A. (c) 31 tubers/row. (d) 1½' × 9". (e) N.A. (v) Ploughed *sanai* on 19.8.1955. (vi) O.N.—45. (vii) Irrigated. (viii) 1 earthing. (ix) N.A. (x) 13.3.1956.

## 2. TREATMENTS :

Same as in expt. no. 56(233) on page 820.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 2. (iv) (a) and (b) 1½' × 15½'. (v) Nil. (vi) Yes.

## GENERAL :

(i) Good. (ii) No. (iii) Yield of tuber. (iv) (a) 1955—1957. (b) No. (c) Nil. (v) (a) Kausani. (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 3.94 tons/ac. (ii) 0.74 tons/ac. (iii) None of the effects is significant. (iv) Av. yield of tuber in tons/ac.

	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	Mean
S <sub>1</sub>	4.30	4.95	3.23	4.16
S <sub>2</sub>	3.23	4.30	3.66	3.73
Mean	3.76	4.62	3.44	3.94

S.E. of S marginal mean	= 0.30 tons/ac.
S.E. of T marginal mean	= 0.37 tons/ac.
S.E. of body of table	= 0.52 tons/ac.

**Crop :- Potato (*Rabi*).**

**Ref :- U.P. 56(238).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'CD'.**

Object :—To study the effect of thiourea on dormancy and yield of Potato.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 22.10.1956. (iv) (a) N.A. (b) By *kudali*. (c) 15 to 20 mds./ac. (d) Plants 9" apart. (e) N.A. (v) N.A. (vi) O.N. 45 (mid-early). (vii) Irrigated. (viii) 1 earthing. (ix) N.A. (x) 2.3.1957.

**2. TREATMENTS to 4. GENERAL :**

Same as in expt. no 56 (233) on page 820.

**5. RESULTS :**

(i) 5.94 tons/ac. (ii) 1.71 tons/ac. (iii) Main effects of S alone is significant. (iv) Av. yield of tuber in tons/ac.

	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	Mean
S <sub>1</sub>	4.84	5.62	5.60	5.35
S <sub>2</sub>	5.82	6.40	7.38	6.53
Mean	5.33	6.01	6.49	5.94

S.E. of T marginal mean	= 0.38 tons/ac.
S.E. of S marginal mean	= 0.31 tons/ac.
S.E. of body of table	= 0.54 tons/ac.

**Crop :- Potato (*Rabi*).**

**Ref :- U.P. 57(286).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'CD'.**

Object :—To study the effect of thiourea on dormancy and yield of Potato.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Sanai*. (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 28.10.1957. (iv) (a) N.A. (b) By *kudali*. (c) N.A. (d) Plants 9" apart. (e) N.A. (v) *Sanai* as G.M. (vi) O.N. 45 (medium early). (vii) Irrigated. (viii) 4 earthings. (ix) N.A. (x) 20.3.1958.

**2. TREATMENTS and 3. DESIGN :**

Same as in expt. no. 56(233) on page 820.

**4. GENERAL :**

(i) Good. (ii) Leaf roll and mosaic incidence. (iii) Germination, leaf roll, mosaic incidence and yield of tuber. (iv) (a) 1955—1957. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 8.79 tons/ac. (ii) 2.63 tons/ac. (iii) None of the effects is significant. (iv) Av. yield of tuber in tons/ac.

	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	Mean
S <sub>1</sub>	8.69	9.51	9.78'	9.33
S <sub>2</sub>	8.13	8.62	8.02	8.26
Mean	8.41	9.06	8.90	8.79

S.E. of S marginal mean = 0.48 tons/ac.

S.E. of T marginal mean = 0.59 tons/ac.

S.E. of body of table = 0.83 tons/ac.

**Crop :- Bhindi.**

**Ref :- U.P. 54(352).**

**Site :- Govt. Veg. Res. Stn., Kalianpur.**

**Type :- 'D'.**

**Object :-**To find out the effect of different insecticides against spotted boll worm of Bhindi.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kalianpur. (iii) N.A. (iv) (a) to (c) N.A. (d) 1½' × 1'. (e) 256 plants/plot. (v) and (vi) N.A. (viii) to (x) N.A.

**2. TREATMENTS :**

4 insecticidal treatments : D<sub>0</sub>=Control, D<sub>1</sub>=Spraying with Malathion emulsion (1 oz. in 1000 gallon of water) at 40 gallon/ac., D<sub>2</sub>=5 % B.H.C. dust (gamma D<sub>0</sub>-25) dusting at 10-12 lb./ac. and D<sub>3</sub>=Dusting with geigy vegetable dust at 10-12 lb./ac.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) and (b) 31' × 12'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Incidence of spotted boll worm. Control measures as per treatments. (iii) Healthy and bored fruits. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 16.44 degrees. (b) 2.44 degrees. (iii) Treatment differences are not significant. (iv) Mean % of bored fruits in degrees.

Treatment	D <sub>0</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>
Mean angle	18.15	16.16	14.28	17.16
% of bored fruits	18.10	8.17	6.52	9.11

S.E./mean = 1.22 degrees.

**Crop :- Bhindi.**

**Ref :- U.P. 55(387).**

**Site :- Govt. Veg. Res. Stn., Kalianpur.**

**Type :- 'D'.**

**Object :-**To study the effect of Heeng on virus disease.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kalianpur. (iii) 25.6.1955. (iv) (a) to (c) N.A. (d) 1½' × ½'. (e) N.A. (v) and (vi) N.A. (vii) Irrigated. (viii) and (ix) N.A. (x) 17.8.1955 to 8.10.1955.

**2. TREATMENTS :**

2 insecticidal treatments : D<sub>0</sub>=Control and D<sub>1</sub>=Spraying of heeng at 3 lb./ac. in 100 gallon of water.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 2. (b) 25' × 26.5'. (iii) 6. (iv) (a) and (b) 12' × 25'. (v) Nil. (vi) Yes.



## 4. GENERAL :

(i) N.A. (ii) Incidence of virus disease. Control measures as per treatments. (iii) Yield and number of diseased plants. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 3222 lb./ac. (ii) 367.9 lb./ac. (iii) Treatment difference is not significant. (iv) Av. yield of *bhindi* in lb./ac.

Treatment	D <sub>0</sub>	D <sub>1</sub>
Av. yield	3209	3234

S.E./mean = 150.2 lb./ac.

(i) 89.2 % diseased plants. (ii) 6.74 % diseased plants. (iii) Treatment difference is not significant. (iv) Percentage of diseased plants.

Treatment	D <sub>0</sub>	D <sub>1</sub>
% diseased plant	87.2	91.1

S.E./mean = 2.75 % diseased plants.

**Crop :- Bhindi.**

**Ref :- U.P. 56(460).**

**Site :- Govt. Veg. Res. Stn., Kalianpur.**

**Type :- 'D'.**

Object :— To find out the effect of different insecticides against spotted boll worm of Bhindi.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kalianpur. (iii) N.A. (iv) (a) to (c) N.A. (d) 3½' × 3½'. (e) 1. (v) N.A. (vi) Long green (medium). (vii) Irrigated. (viii) to (x) N.A.

## 2. TREATMENTS :

4 insecticidal treatments : D<sub>0</sub>=Control, D<sub>1</sub>=Spraying the crop with 0.015% Endrine emulsion, D<sub>2</sub>=Spraying the crop with 1.0% Malathion emulsion and D<sub>3</sub>=Spraying the crop with Diazinon (Basudin) at 1 lb./ac. commercial Basudin/ac.

Insecticides sprayed on 5, 20.5.1956 and 5.6.1956.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) and (b) 25' × 15'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Incidence of spotted boll worm. Control measures as per treatments. (iii) Yield of *bhindi* seeds and bored fruits. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 172 lb./ac. (ii) 50.9 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of *bhindi* in lb./ac.

Treatment	D <sub>0</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>
Av. yield	105	109	236	240

S.E./mean = 25.5 lb./ac.

(i) 25.00 degrees. (ii) 2.29 degrees. (iii) Treatment differences are highly significant. (iv) Mean % of bored fruits in degrees.

Treatment	D <sub>0</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>
Mean angle	27.63	16.99	27.64	27.72
% bored fruits	21.79	8.95	21.80	21.92

S.E./mean = 1.15 degrees.

**Crop :- Bhindi.****Ref :- U.P. 58(445).****Site :- Govt. Veg. Res. Stn., Kalianpur.****Type :- 'D'.**

Object :— To find out suitable insecticides for Bhindi borer.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kalianpur. (iii) N.A. (iv) (a) to (c) N.A. (d) 3' × 3½'. (e) 1. (v) N.A. (vi) Long green (medium). (vii) Irrigated. (viii) and (ix) N.A. (x) 27.10.1958.

**2. TREATMENTS :**4 insecticidal treatments : D<sub>0</sub>=Control, D<sub>1</sub>=Spraying with 0.02% Endrin emulsion at 40-70 gallon/ac., D<sub>2</sub>=Spraying with Diazinon (Basudin) at 1 lb./ac. in 80-100 gallon of water at 40-70 gallon/ac. and D<sub>3</sub>=Spraying with Malathion at 1 lb./ac. at 40-70 gallon/ac.**3. DESIGN :**

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) and (b) 15' × 20'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Incidence of spotted boll worm. Control measures as per treatments. (iii) % bored fruits. (iv) (a) 1958—only. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 24.98 degrees. (ii) 2.28 degrees. (iii) Treatment differences are highly significant. (iv) Mean % of bored fruits in degrees.

Treatment	D <sub>0</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>
Av. yield	27.57	16.99	27.72	27.64
% bored fruits	21.70	0.95	21.92	21.80

S.E./mean = 1.14 degrees.

**Crop :- Bhindi.****Ref :- U.P. 59(509).****Site :- Govt. Veg. Res. Stn., Kalianpur.****Type :- 'D'.**

Object :— To study the effect of different insecticides against the spotted boll worm of cotton on Bhindi crop.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kalianpur. (iii) 20.7.1959. (iv) (a) to (c) N.A. (d) 3' between plants. (e) N.A. (v) to (x) N.A.

**2. TREATMENTS :**4 insecticidal treatments : D<sub>0</sub>=Control, D<sub>1</sub>=0.015 % Endrin emulsion, D<sub>2</sub>=0.02 % Endrin emulsion and D<sub>3</sub>=Geigy vegetables dust (Based on gamma isomer).

Insecticides sprayed on 16.9.1959 and 6.10.1959.

**3. DESIGN**

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) and (b) 20' × 25'. (v) Nil. (vi) No. (Some randomization in each replication).

**4. GENERAL :**

(i) N.A. (ii) Incidence of spotted boll worm, control measures as per treatments. (iii) Number of healthy and bored fruits on the five centre rows of each plot. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 16.04 degrees. (ii) 2.42 degrees. (iii) Treatment differences are significant. (iv) Mean % of bored fruits in degrees.

Treatment	D <sub>0</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>
Mean angle	19.96	15.03	13.26	15.91
% of bored fruits	12.04	7.15	5.71	12.04

S.E./mean = 1.21 degrees.

**Crop :- Bhindi (Kharif).**

**Ref :- U.P. 55 (389).**

**Site :- Govt. Veg. Res. Stn., Kalianpur.**

**Type :- 'D'.**

Object :—To see the effect of trace-elements on yellow vein disease (Mosaic) of Bhindi.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kalianpur. (iii) 25.6.1955. (iv) (a) to (c) N.A. (d) 1½' × ½' (e) N.A. (v) to (ix) N.A. (x) 17.8.1955 to 5.10.1955.

**2. TREATMENTS :**

4 insecticidal treatments : D<sub>0</sub>=Control, D<sub>1</sub>=3 lb./ac. of Borax, D<sub>2</sub>=3 lb./ac. of Zinc sulphate and D<sub>3</sub>=3 lb./ac. of C/S.

Insecticides applied on 25.6.1955, 25.7.1955 and 25.8.1955.

**3. DESIGN .**

(i) R.B.D. (ii) (a) 4. (b) 25' × 55.5'. (iii) 6. (iv) (a) and (b) 12' × 25' (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Incidence of yellow vein disease. Control measures as per treatments. (iii) No. of total and diseased plants noted on 25.7.1955 and 25.8.1955 and yield of vegetable. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1427 lb./ac. (ii) 378.4 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of *bhindi* in lb./ac.

Treatment	D <sub>0</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>
Av. yield	1505	1225	1314	1665

S.E./mean = 154.5 lb./ac.

(i) 69.75 degrees. (ii) 7.52 degrees. (iii) Treatment differences are not significant. (iv) Mean % of diseased plant in degrees.

Treatment	D <sub>0</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>
Mean angle	69.93	72.64	65.95	70.50
% of diseased plant	87.84	90.69	83.06	88.47

S.E./mean = 3.07 degrees.

**Crop :- Bhindi (Rabi).**

**Ref :- U.P. 54(350).**

**Centre :- Faizabad (c.f.).**

**Type :- 'D'.**

Object :—To find out an effective acaricide for the control of red mite of Bhindi.

**1. BASAL CONDITIONS :**

(i) to (x) N.A.

**2. TREATMENTS :**

6 insecticidal treatments : D<sub>0</sub>=Control, D<sub>1</sub>=Spraying with lime sulphur wash (dilution 1 : 20, D<sub>2</sub>=Spraying with Parathion emulsion 0.05 %, D<sub>3</sub>=Spraying with Chlordane emulsion 0.2 %, D<sub>4</sub>=Spraying with Toxaphene emulsion 0.2 % and D<sub>5</sub>=Spraying with Enphyton winter (mineral oil emulsion 1 %).

**3 DESIGN :**

(i) and (ii) R.B.D. with 4 replications. (iii) (a) and (b) 8' × 12'. (iv) Yes.

**4. GENERAL :**

(i) N.A. (ii) Incidence of mite, control measures as per treatments. (iii) % mortality of mite 7 days after spraying of treatments. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 24.73 degrees. (ii) 10.68 degrees. (iii) Treatment differences are highly significant. (iv) Mean % mortality of mite in degree.

Treatment	D <sub>0</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	D <sub>5</sub>
Mean angle	3.95	43.06	51.03	12.28	7.10	30.96
% mortality of mite	0.98	43.18	60.35	14.97	2.01	26.71

S.E./mean = 5.34 degrees.

**Crop :- Bhindi**

**Ref :- U.P. 55(385).**

**Centre :- Faizabad (c.f.).**

**Type :- 'D'.**

Object :—To find out an effective acaricide for the control of mite tetranychus.

**1. BASAL CONDITIONS :**

(i) to (x) N.A.

**2. TREATMENTS :**

6 insecticidal treatment : D<sub>0</sub>=Control, D<sub>1</sub>=Spraying with Follidol E 605—0.03 %, D<sub>2</sub>=Spraying Chlorothion with 0.03 %, D<sub>3</sub>=Spraying with Malathion—0.03 %, D<sub>4</sub>=Spraying with Basudin—0.2 % and D<sub>5</sub>=Spraying with Lime sulphur 1 : 20 dilution.

**3. DESIGN :**

(i) and (ii) R.B.D. with 4 replications. (iii) (a) and (b) 14' × 10'. (iv) Yes.

**4. GENERAL :**

(i) N.A. (ii) Incidence of mites. Control measures as per treatments (iii) % of mortality mite 7 days after spraying the treatments. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 51.16 degrees. (ii) 2.98 degrees. (iii) Treatment differences are highly significant. (iv) Mean % mortality of mite 7 days after spraying in degrees.

Treatment	D <sub>0</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	D <sub>5</sub>
Mean angle	9.77	63.80	50.00	51.34	58.36	73.66
% of mortality of mite	3.35	80.21	58.59	60.87	72.26	91.66

S.E./mean = 1.49 degrees.

**Crop :- Bhindi**

**Ref :- U.P. 56(448).**

**Centre :- Faizabad (c.f.).**

**Type :- 'D'.**

Object :—To find out a satisfactory control of Bhindi mite.

**1. BASAL CONDITIONS :**

(i) to (x) N.A.

**2. TREATMENTS :**

7 insecticidal treatments :  $D_0$ =Control (2 plots),  $D_1$ =Spraying with Folidol E 605—0.05%,  $D_2$ =Spraying with Basudin 0.25 %,  $D_3$ =Spraying with A:amite 0.03 %,  $D_4$ =Spraying with Nicotine sulphate+oil emulsion,  $D_5$ =Spraying with lime sulphur : : 15 dilution with water and  $D_6$ =Spraying with Malathion 0.05%.

**3. DESIGN :**

(i) and (ii) R.B.D. with 4 replications. (iii) (a) and (b) 12'×11'. (iv) Yes.

**4. GENERAL :**

(i) N.A. (ii) Incidence of mite ; control measures as per treatments. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 33.49 degrees. (ii) 5.64 degrees. (iii) Treatment differences are highly significant. (iv) Mean % of mortality of mite in degrees.

Treatment	$D_0$	$D_1$	$D_2$	$D_3$	$D_4$	$D_5$	$D_6$
Mean angle	1.78	44.83	41.45	43.86	38.62	60.15	35.42
	S.E./mean (except $D_0$ ) = 2.82 degrees.						
	S.E. of $D_0$ mean = 1.99 degrees.						
% mortality of mite	0.60	49.70	43.88	48.02	39.02	74.98	33.74

**Crop :- Brinjal.**

**Ref :- U.P. 58(448).**

**Site :- Govt. Veg. Res. Stn., Kalianpur.**

**Type :- 'M'.**

Object :— To determine the optimum levels of N, P and K for maximising the yield of Brinjal.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kalianpur. (iii) 1.9.1958, gap filling on 15.9.1958. (iv) (a) N.A. (b) Transplanting. (c) N.A. (d) 3'×3'. (e) One. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) and (ix) N.A. (x) 15.11.1958 to 2.3.1959.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 3 levels of N :  $N_0=0$ ,  $N_1=75$  and  $N_2=150$  lb./ac.

(2) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=100$  and  $P_2=200$  lb./ac.

(3) 3 levels of  $K_2O$  :  $K_0=0$ ,  $K_1=50$  and  $K_2=100$  lb./ac.

**3. DESIGN :**

(i) 3<sup>3</sup> confd. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) and (b) 18'×12'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of brinjal. (iv) (a) 1958—1960. (b) N.A. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 13410 lb./ac. (ii) 6899 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of brinjal in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean	K <sub>0</sub>	K <sub>1</sub>	K <sub>2</sub>
N <sub>0</sub>	16778	13418	12611	14269	16688	11357	14762
N <sub>1</sub>	11850	17427	10147	13141	8803	13664	16957
N <sub>2</sub>	16262	94531	12746	12820	12320	10438	15702
Mean	14963	13433	11835	13410	12604	11820	15807
K <sub>0</sub>	13597	12298	11917				
K <sub>1</sub>	13933	13261	8266				
K <sub>2</sub>	17360	14739	15322				

S.E. of any marginal mean = 1626 lb./ac.

S.E. of body of any table = 4878 lb./ac.

**Crop :- Brinjal.**

**Ref :- U.P. 59(510).**

**Site :- Govt. Veg. Res. Stn., Kalianpur.**

**Type :- 'M'.**

**Object :-** To determine the optimum levels of N, P and K for maximising the yield of Brinjal.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kalianpur. (iii) 29.6.1959/4.9.1959. (iv) (a) N.A. (b) Transplanting. (c) N.A. (d) 3'x3'. (e) One. (v) and (vi) N.A. (vii) Irrigated. (viii) 1 hoeing, 1 weeding and gap-filling. (ix) N.A. (x) Pickings from 23.11.1959 to 15.2.1960.

**2. TREATMENTS to 4. GENERAL :**

Same as in expt. no. 58(448) on page 828.

**5. RESULTS :**

(i) 4466 lb./ac. (ii) 1751.2 lb./ac. (iii) N effect alone is highly significant. (iv) Av. yield of brinjal in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean	K <sub>0</sub>	K <sub>1</sub>	K <sub>2</sub>
N <sub>0</sub>	696	639	747	694	630	678	773
N <sub>1</sub>	5368	5458	4827	5218	4222	5502	5929
N <sub>2</sub>	7130	6948	8384	7487	7476	8158	6827
Mean	4398	4348	4653	4466	4109	4779	4510
K <sub>0</sub>	4300	3776	4252				
K <sub>1</sub>	4700	4754	4883				
K <sub>2</sub>	4192	4515	4823				

S.E. of any marginal mean = 412.8 lb./ac.

S.E. of body of any table = 714.9 lb./ac.

**Crop :- Brinjal.**

**Ref :- U.P. 54(29).**

**Site :- Govt. Veg. Res. Stn., Kalianpur.**

**Type :- 'D'.**

**Object :-** To study the effect of different insecticides on Brinjal fruit and shoot borer.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Light loam. (b) Refer soil analysis, Kalianpur. (iii) 23.7.1954/8.9.1954. (iv) (a) 2 to 3 ploughings with soil turning plough and pulverisation with cultivator and planking. (b) to (e) N.A. (v) 70 to 80 lb./ac. of N as F.Y.M. was applied 30 days before transplanting. (vi) Round purple (medium). (vii) Irrigated. (viii) 3 weedings. (ix) N.A. (x) 16.11.1954.

## 2. TREATMENTS :

4 insecticidal treatments :  $D_0$ =Control (2 plots),  $D_1$ =Spraying the crop with 0.25 % D.D.T. emulsion,  $D_2$ =Spraying the crop with 0.08 % Endrine and  $D_3$ =Dusting the crop with 5 % B.H.C. dust.

Infested shoots and fruits were picked off and destroyed before each application in the treatment.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) and (b) 17'×37'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Incidence of fruit and shoot borer. Control measures as per treatments. (iii) % of bored fruits and shoots. (iv) (a) 1952-1955. (b) and (c) No. (v) to (vii) Nil.

## 5. RESULTS :

(i) 17.05 degrees. (ii) 1.80 degrees. (iii) Treatment differences are highly significant. (iv) Mean % of bored fruits in degrees.

Treatment	$D_0$	$D_1$	$D_2$	$D_3$
Mean angle	19.64	16.92	15.56	13.49
% of bored fruits	8.36	8.89	7.63	5.89
	S.E./mean (except $D_0$ ) = 0.90 degrees.			
	S.E. of $D_0$ mean = 0.64 degrees.			

**Crop :- Brinjal.**

**Ref :- U.P. 55(24).**

**Site :- Govt. Veg. Res. Stn., Kalianpur.**

**Type :- 'D'.**

Object :- To study the effect of different insecticides on Brinjal fruit and shoot borer.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kalianpur. (iii) 28.8.1955. (iv) (a) 2 ploughings with soil turning plough followed by cultivator. (b) to (e) N.A. (v) 60 lb./ac. of N as F.Y.M. (vi) Round blue (medium). (vii) Irrigated. (viii) Weedings and hoeings twice. (ix) and (x) N.A.

## 2. TREATMENTS :

4 insecticidal treatments :  $D_0$ =Control,  $D_1$ =Picking and destroying the infested shoots,  $D_2$ =Spraying with 0.25 % D.D.T. emulsion after destruction of infested shoots and fruits and  $D_3$ =Dusting with 5 % B.H.C. dust after destruction of infested shoots.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 2. (iv) (a) 30'×60'. (b) 29'×59'. (v)  $\frac{1}{2}' \times \frac{1}{2}'$ . (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Brinjal fruit and shoot borer and cotton jassids. Control measures as per treatments. (iii) Healthy and bored fruits. (iv) (a) 1951—contd. (b) and (c) No. (v) to (vii) Nil.

## 5. RESULTS :

(i) 8.33 %. (ii) 1.34 %. (iii) Treatment differences are significant. (iv) Mean % of bored fruits.

Treatment	$D_0$	$D_1$	$D_2$	$D_3$
% of bored fruit	12.52	9.33	6.28	5.19
	S.E./mean = 0.95 %.			

**Crop :- Brinjal (Rabi).****Ref :- U.P. 56(462).****Site :- Govt. Veg. Res. Stn., Kalianpur.****Type :- 'D'.**

Object :—To study the effect of fungicidal spray on the Alternaria disease of Brinjal.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kalianpur. (iii) 27.9.1956. (iv) (a) N.A. (b) Transplanting. (c) N.A. (d) 3'×2.5'. (e) 1. (v) Nil. (vi) Black round (medium). (vii) Irrigated. (viii) and (ix) N.A. (x) Weekly pickings from 20.2.1957.

**2. TREATMENTS :**

3 insecticidal treatments : D<sub>0</sub>=Control (water spray), D<sub>1</sub>=Perenox 0.3 % and D<sub>2</sub>=Cupravit 0.7 %.  
Treatments sprayed with water in given strengths on 16, 31.1.1957 and 20.2.1957.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 3. (b) 20'×51'. (iii) 5. (iv) (a) N.A. (b) 15'×20'. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Incidence of *alternaria* disease. Control measures as per treatments. (iii) No. of diseased plants. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 12.80 degrees. (ii) 1.536 degrees. (iii) Treatment differences are highly significant. (iv) Mean % of diseased plants in degrees.

Treatment	D <sub>0</sub>	D <sub>1</sub>	D <sub>2</sub>
Mean angle	15.85	12.32	10.23
S.E./mean = 0.687 degrees.			
% diseased plants	7.89	5.00	3.62

**Crop :- Brinjal (Rabi).****Ref :- U.P. 57(499).****Site :- Govt. Veg. Res. Stn., Kalianpur.****Type :- 'D'.**

Object :—To study the effect of fungicidal spray on the Alternaria disease of Brinjal.

**I. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kalianpur. (iii) 20.9.1957. (iv) (a) N.A. (b) Transplanting. (c) N.A. (d) 3'×2.5'. (e) 1. (v) N.A. (vi) Black round (medium). (vii) Irrigated. (viii) and (ix) N.A. (x) Picking from 1.2.1958 at weekly intervals.

**2. TREATMENTS:**

4 fungicidal treatments : D<sub>0</sub>=Control (water spray), D<sub>1</sub>=Cupravit 0.7 %, D<sub>2</sub>=Formalin 0.1 % and D<sub>3</sub>=Dithane 0.2%.

Treatments applied 4 times at 10 days interval as spray.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 8'×12'. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Incidence of *alternaria* disease. Control measures as per treatments. (iii) No. of diseased plants. (iv) (a) and (b) No. (c) Nil. (v) and (vi) Nil. (vii) There were 24 plants in each plot.

**5. RESULTS :**

(i) 5195 diseased plants/ac. (ii) 1515 diseased plants/ac. (iii) Treatment differences are highly significant. (iv) Av. no. of diseased plants/ac.



Treatment	D <sub>0</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>
Diseased plants	3448	6806	2813	7714

S.E./mean = 677.5 diseased plants/ac.

**Crop :- Brinjal (Rabi).**

**Ref :- U.P. 58(460).**

**Site :- Govt. Veg. Res. Stn., Kalianpur.**

**Type :- 'D'.**

Object :—To study the effect of fungicidal spray on the *Alternaria* disease of Brinjal.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kalianpur. (iii) N.A. (iv) (a) N.A. (b) Transplanted. (c) to (e) N.A. (v) N.A. (vi) Black round (medium). (vii) to (x) N.A.

**2. TREATMENTS :**

3 fungicidal treatments : D<sub>0</sub>=Control (water spray), D<sub>1</sub>=Spraying with Fungi copper 0.3 % and D<sub>2</sub>=Spraying with Dithane Z—78, 0.2 %.

Sprayed 4 times at an interval of 15 days at 25 gallons/ac.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 5. (iv) (a) and (b) 12' × 15'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Incidence of *alternaria* disease. Control measures as per treatments. (iii) % of diseased plants. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 5.14 %. (ii) 1.076 %. (iii) Treatment differences are highly significant. (iv) Av. % of diseased plants.

Treatment	D <sub>0</sub>	D <sub>1</sub>	D <sub>2</sub>
% diseased plants	7.50	4.59	3.33

S.E./mean = 0.481 %.

**Crop :- Brinjal (Rabi).**

**Ref :- U.P. 59(517).**

**Site :- Govt. Veg. Res. Stn., Kalianpur.**

**Type :- 'D'.**

Object :—To study the effect of fungicidal spray on the *Alternaria* disease of Brinjal.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kalianpur. (iii) 23.9.1959. (iv) (a) N.A. (b) Transplanting. (c) N.A. (d) 3' × 3'. (e) 1. (v) N.A. (vi) T—3 (early). (vii) to (x) N.A.

**2. TREATMENTS :**

4 fungicidal treatments : D<sub>0</sub>=Control, D<sub>1</sub>=Blitox 50—0.3 % (cuprous oxyc chloride), D<sub>2</sub>=Dithane Z—78—0.2 % and D<sub>3</sub>=Bordeaux mixture 5 : 5 : 50 (cuprous oxide).

4 sprayings at 25 gallons/ac. on 1.12.1959, 20.12.1959, 10.1.1960 and 30.1.1960.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 4. (b) 18' × 60'. (iii) 5. (iv) (a) and (b) 12' × 18'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Incidence of *alternaria* disease. Control measures as per treatments. (iii) No. of healthy and diseased plants on 28.11.1959, 29.1.1960 and 1.3.1960. (iv) (a) and (b) No. (c) Nil. (v) and (vi) Nil. (vii) There were 35 plants per plot. Gap fillings have been done where the plants died down due to natural causes.

## 5. RESULTS :

(i) 27.22 degrees. (ii) 2.77 degrees. (iii) Treatment differences are highly significant. (iv) Av. % of diseased plants in degrees.

Treatment	D <sub>0</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>
Mean angle	40.84	16.29	28.76	23.00
% of diseased plants	42.84	8.29	23.42	15.61

S.E./mean = 1.24 degrees.

**Crop :- Brinjal.**

**Ref :- U.P. 58(224).**

**Site :- Botanical Gardens, Govt. Agri. College, Kanpur. Type :- 'D'.**

Object :—To study the effect of the starter solutions and hormones on the growth and yield of Brinjal.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Alluvial loam. (b) Refer soil analysis, Kanpur. (iii) 23.8.1958. (iv) (a) N.A. (b) Transplanting. (c) N.A. (d) 3'×2'. (e) N.A. (v) Green manuring with *sanai* (vi) Improved round : type 3. (vii) Irrigated. (viii) Weeding and hoeing (ix) 13.3". (x) N.A.

## 2. TREATMENTS :

8 insecticidal treatments : D<sub>0</sub>=Control, D<sub>1</sub>=Fresh cowdung, D<sub>2</sub>=4 lb./ac. of Super, D<sub>3</sub>=3 lb./ac. of C/N, D<sub>4</sub>=2 lb./ac. of A/S+3 lb. of potassium dihydrogen phosphate, D<sub>5</sub>=2 lb./ac. of C/N+2 lb. of Super, D<sub>6</sub>=L—Naphthalene acetic acid and D<sub>7</sub>=Indole Butyric acid.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 3. (iv) and (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Length of shoot, time of flowering etc. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 21056 lb./ac. (ii) 2016 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of brinjal in lb./ac.

Treatment	D <sub>0</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	D <sub>5</sub>	D <sub>6</sub>	D <sub>7</sub>
Av. yield	16934	22490	16957	26701	18413	25245	22131	19574

S.E./mean = 1164 lb./ac.

**Crop :- Brinjal (Rabi).**

**Ref :- U.P. 59(238).**

**Site :- Botanical Gardens, Govt. Agri. College, Kanpur.**

**Type :- 'D'.**

Object :—To study the effect of Maleic hydrazide on the growth and yield of Brinjal.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Alluvial loam. (b) Refer soil analysis, Kanpur. (iii) 10.9.1959/12.9.1959. (iv) (a) N.A. (b) Transplanting. (c) N.A. (d) 3'×3'. (e) N.A. (v) N.A. (vi) T. Kalyanpur. (vii) Irrigated. (viii) N.A. (ix) 1.0". (x) N.A.

**2. TREATMENTS :**

5 insecticidal treatments :  $D_0$ =Control (water only),  $D_1$ =Control (Pinched water only),  $D_2$ =Matalic hydrazide 0.02 %,  $D_3$ = Maleic hydrazide 0.04 % and  $D_4$ =Maleic hycrazide 0.08 %.

The weighed quantities of the chemical were desolved in distilled water of pH 6.0. Thirty days after trans-planting, seedlings were sprayed with solution of different concentration with the help of automizer.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) and (b)  $12' \times 12'$ . (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Nil. (iii) Height and diameter of main stem and percentage of fruit set. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 8296 lb./ac. (ii) 3233 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of brinjal in lb./ac.

Treatments	$D_0$	$D_1$	$D_2$	$D_3$	$D_4$
Av. yield	10110	10057	9737	6616	4962

S.E./mean = 1616.5 lb./ac.

**Crop :- Cabbage.**

**Ref :- U.P. 57(492).**

**Site :- Govt. Veg. Res. Stn., Kalianpur.**

**Type :- 'M'.**

Object :- To determine the optimum levels of N, P and K for maximising the yield of Cabbage.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kalianpur. (iii) 16.0.1957/13.11.1957. (iv) (a) N.A. (b) Transplanted. (c) N.A. (d)  $2' \times 2'$ . (e) 1. (v) Nil. (vi) Pride of India (medium). (vii) Irrigated. (viii) and (ix) N.A. (x) 22.1.1958 and 26.2.1958.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 3 levels of N as A/S :  $N_0=0$ ,  $N_1=75$  and  $N_2=150$  lb./ac.

(2) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=100$  and  $P_2=200$  lb./ac.

(3) 3 levels of  $K_2O$  as Mur. Pot. :  $K_0=0$ ,  $K_1=50$  and  $K_2=100$  lb./ac.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 27. (b) N.A. (iii) 3. (iv) (a) N.A. (b)  $8' \times 8'$ . (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of cabbage. (iv) (a) 1957—1959. (b) N.A. (c) No. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1419 lb./ac. (ii) 207.7 lb./ac. (iii) Main effect of N alone is highly significant. (iv) Av. yield of cabbage in lb./ac.

	$P_0$	$P_1$	$P_2$	Mean	$K_0$	$K_1$	$K_2$
$N_0$	769	769	694	744	728	626	878
$N_1$	1545	1511	1640	1566	1579	1593	1525
$N_2$	1783	2076	1981	1947	1838	1981	2021
Mean	1366	1452	1438	1419	1382	1400	1474
$K_0$	1293	1382	1470				
$K_1$	1341	1511	1348				
$K_2$	1463	1463	1497				

S.E. of any marginal mean = 40.0 lb./ac.  
S.E. of body of any table = 69.2 lb./ac.

**Crop :- Cabbage.**

**Ref :- U.P. 58(449).**

**Site :- Govt. Veg. Res. Stn., Kalianpur.**

**Type :- 'M'.**

**Object :-** To determine the optimum levels of N, P and K for maximising the yield of Cabbage.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kalianpur. (iii) 15.10.1958./22.11.1958. (iv) (a) to (c) N.A. (d) 2' x 2'. (e) N.A. (v) Nil. (vi) Pride of India (medium). (vii) Irrigated. (viii) to (x) N.A.

**2. TREATMENTS :**

Same as in expt. no. 57(492) on page 834.

**3. DESIGN :**

(i) 3<sup>3</sup> fact. confd. (w, x, y effects confounded). (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 22' x 10'. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of cabbage. (iv) (a) 1957—1959. (b) N.A. (c) No. (v) to (vii) Nil.

**5. RESULTS :**

(i) 400 lb./ac. (ii) 49.2 lb./ac. (iii) Main effect of N alone is highly significant. (iv) Av. yield of cabbage in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean	K <sub>0</sub>	K <sub>1</sub>	K <sub>2</sub>
N <sub>0</sub>	352	316	356	342	324	347	355
N <sub>1</sub>	404	382	418	401	394	392	417
N <sub>2</sub>	457	462	449	456	443	465	460
Mean	404	387	408	400	387	401	411
K <sub>0</sub>	379	390	392				
K <sub>1</sub>	422	380	402				
K <sub>2</sub>	412	389	431				

S.E. of any marginal mean = 9.5 lb./ac.  
S.E. of body of any table = 16.4 lb./ac.

**Crop :- Cabbage (Rabi).**

**Ref :- U.P. 56(192).**

**Site :- B.R. College Insttl. Res. Farm, Bichpuri.**

**Type :- 'P'**

**Object :-** To study the effect of irrigation water of varying salinity on Cabbage crop.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Light loam. (b) Refer soil analysis, Bichpuri. (iii) 22 and 23.10.1956. (iv) (a) 5 ploughings and 1 planking (b) Trasplanted. (c) N.A. (d) 2.5' x 2'. (e) 1. (v) 100 lb./ac. of N through M.C. (vi) N.A. (vii) Irrigated. (viii) 3 hoeings. (ix) 4.98". (x) N.A.

## 2. TREATMENTS :

2 levels of salinity :  $I_1$ =Saline water having salt contents of 845 ppm and  $I_2$ =Saline water having salt contents of 1430 ppm.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 5. (iv) and (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Yield of cabbage. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 17696 lb./ac. (ii) N.A. (iii) Treatment difference is not significant. (iv) Av. yield of cabbage in lb./ac.

Treatment	$I_1$	$I_2$
Av. yield	20339	15053

S.E.'s = N.A.

**Crop :- Cabbage (Rabi).**

**Ref :- U.P. 56(175).**

**Site :- B.R. College Hort. Gardens, Bichpuri.**

**Type :- 'IV'.**

Object :— To study the effect of the quality of irrigation water on the growth and yield of different varieties of Cabbage.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy soil. (b) Refer soil analysis, Bichpuri. (iii) 1.11.1956. (iv) (a) 8 ploughings and 6 plankings. (b) Transplanting. (c) N.A. (d) 2' between rows. (e) 4 seedlings/row. (v) 100 lb./ac. of N through M.C. (vi) As per treatments. (vii) Irrigated. (viii) 2 weedings and 2 hoeings. (ix) N.A. (x)  $V_1=2.2.1957$ ,  $V_2=18.2.1957$  and  $V_3=18.2.1957$ .

## 2. TREATMENTS :

## Main-plot treatments :

4 sources of water :  $W_1$ =Surface well water,  $W_2$ =Tube well water,  $W_3$ =First two irrigations with surface well water followed by tube well water and  $W_4$ =First two irrigations with tube well water followed by surface well water.

## Sub-plot treatments :

3 varieties :  $V_1$ =Golden acre,  $V_2$ =Late flat dutch and  $V_3$ =Earliest large drum head.

Analysis of water : Surface well water : pH=7.9, salt contents 655 p.p.m., E.c.c. 1.3 and tube well water pH=8.5, salt contents 1300 p.p.m. and E.c.c. 2.2.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 10' x 8'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) N.A. (iii) Yield of cabbage. (iv) (a) and (b) No. (c) Nil. (v) and (vi) Nil. (vii) Two-way table is not available.

## 5. RESULTS :

(i) 27.26 tons/ac. (ii) (a) 15.593 tons/ac. (b) 8.363 tons/ac. (iii) Main effect of V is highly significant and W effect is significant. (iv) Av. yield of cabbage in tons/ac.

Treatment	$W_1$	$W_2$	$W_3$	$W_4$	Mean	$V_1$	$V_2$	$V_3$
Av. yield	34.74	21.41	24.54	28.86	27.26	20.63	31.78	29.37

S.E. of difference of two

1. W marginal means = 6.366 tons/ac.
2. V marginal means = 2.957 tons/ac.

**Crop :- Cabbage.****Ref :- U.P. 56(489).****Site :- State Orchard, Bharsar.****Type :- 'D'.**

Object :— To test the toxicity of modern insecticides against the Cabbage aphid.

**1. BASAL CONDITIONS :**

(i) (a) Fallow—Cabbage. (b) Fallow. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) Oct., 1956. (iv) (a) Ploughing. (b) to (e) N.A. (v) Nil. (vi) Improved. (vii) Irrigated. (viii) Hoeing and weeding. (ix) N.A. (x) August, 1957.

**2. TREATMENTS :**

6 insecticides :  $D_1$ =Meta systox 1 : 800,  $D_2$ =Meta systox 1 : 1000,  $D_3$ =Endrine emulsion 0 : 1%,  $D_4$ =Diazinon 0.5%,  $D_5$ =Malathion 0.1% and  $D_6$ =Nicotine sulphate 40% 1 : 800+soap 1%.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) and (b) Each plot having 12 to 30 plants, each at a distance of 3' x 3'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Normal. (ii) Incidence of cabbage aphid, control measures as per treatments. (iii) Population of cabbage aphid per 25 pods/plot. (iv) (a) and (b) No. (c) Nil. (v) and (vi) N.A. (vii) Experiment conducted by Entomologist Chaubattia.

**5. RESULTS :**

(i) 10.99. (ii) 2.48. (iii) Treatment differences are highly significant. (iv) Mean value of population of cabbage aphid per 25 pods transformed values by  $\sqrt{x}$  transformation).

Treatment	$D_1$	$D_2$	$D_3$	$D_4$	$D_5$	$D_6$
Mean value	3.99	4.89	10.05	12.79	14.56	19.65

S.E./mean = 1.24.

**Crop :- Cabbage.****Ref :- U.P. 56(483).****Site :- Govt. Hill Fruit Res. Stn., Chaubattia.****Type :- 'D'.**Object :— To study the effect of different insecticides against *picta* on Cabbage.**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Cabbage. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, Chaubattia. (iii) and (iv) N.A. (v) Nil. (vi) Improved. (vii) Unirrigated. (viii) to (x) N.A.

**2. TREATMENTS :**

14 insecticides :  $D_0$ =Control,  $D_1$ =Rosin soap spray 4%,  $D_2$ =D.D.T. emulsion 6.5%,  $D_3$ =Basudin emulsion 20% 1 : 200 (0.1%),  $D_4$ =Malathion emulsion 50% 1 : 50 (0.1%),  $D_5$ =Endrine emulsion 19.5% 1 : 194 (0.1%),  $D_6$ =Systox 1 : 800 (0.05%),  $D_7$ =Parathion emulsion 20% 1 : 400 (0.05%),  $D_8$ =Aldrin dust 5%,  $D_9$ =D.D.T. 5% dust+Pyrethrum dust,  $D_{10}$ =D.D.T. 5%+B.H.C. 5% dust,  $D_{11}$ =Parathion dust 2%,  $D_{12}$ =Lindane dust 1.3% and  $D_{13}$ =B.H.C. dust 5%.

**3. DESIGN :**

(i) R.B.D. (ii) 14. (b) N.A. (iii) 5. (iv) and (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Incidence of *picta*. Control measures as per treatments. (iii) Population of pests. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 97.48 % reduction. (ii) 5.22% reduction. (iii) Treatment differences are not significant. (iv) % reduction in population of pest.

Treatment	D <sub>0</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	D <sub>5</sub>	D <sub>6</sub>
% reduction	92.00	94.28	100.00	96.28	95.00	98.00	98.52
Treatment	D <sub>7</sub>	D <sub>8</sub>	D <sub>9</sub>	D <sub>10</sub>	D <sub>11</sub>	D <sub>12</sub>	D <sub>13</sub>
% reduction	100.00	96.42	100.00	100.00	97.50	96.66	100.00

S.E./mean = 2.33% reduction.

**Crop :- Cabbage.**

**Ref :- U.P. 55(415).**

**Site :- Govt. Hill Fruit Res. Stn., Chaubattia.**

**Type :- 'D'.**

Object :—To test initial and residual toxicity of modern insecticides against Cabbage aphid.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, Chaubattia. (iii) October, 1955. (iv) (a) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) Ploughing, hoeing and weeding. (ix) N.A. (x) August, 1956.

**2. TREATMENTS :**

5 insecticides : D<sub>0</sub>=Control, D<sub>1</sub>=Systox emulsion 0.125 %, D<sub>2</sub>=Nicotine sulphate 40 % 1 : 800+Soap 1%, D<sub>3</sub>=Diazinon emulsion 0.04 % and D<sub>4</sub>=Malathion emulsion 0.062%.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) and (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) Normal. (ii) Incidence of cabbage aphid. Control measures as per treatments. (iii) Population of aphids before and after the application of treatments. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1313 counts/plot. (ii) 2175.88 counts/plot. (iii) Treatment differences are significant. (iv) Count of aphids.

Treatment	D <sub>0</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>
No. of aphids	4014	584	1699	1	268

S.E./mean = 888.3 counts/plot.

**Crop :- Cabbage.**

**Ref :- U.P. 57(16).**

**Site :- Govt. Hill Fruit Res. Stn., Chaubattia.**

**Type :- 'D'.**

Object :—To find out a control measure against Cabbage seed bug.

**1. BASAL CONDITIONS :**

(i) (a) Pea—Cabbage. (b) Pea. (c) Nil. (ii) (a) Clay loam. (b) Refer soil analysis, Chaubattia. (iii) March, 1957. (iv) (a) to (e) N.A. (v) Nil. (vi) Improved (medium). (vii) Irrigated. (viii) Hoeings and weedings. (ix) N.A. (x) July—August, 1957.

**2. TREATMENTS :**

10 insecticidal treatments : D<sub>0</sub>=Control, D<sub>1</sub>=Parathion emulsion 0.05%, D<sub>2</sub>=Malathion emulsion 0.1%, D<sub>3</sub>=Ekatin 1 : 1000, D<sub>4</sub>=Endrine emulsion 0.1%, D<sub>5</sub>=D.D.T. emulsion 0.5%, D<sub>6</sub>=B.H.C. sup 0.5%, D<sub>7</sub>=Metasytox 1 : 1000, D<sub>8</sub>=Diazinon emulsion 0.05% and D<sub>9</sub>=D.D.T. dust 5%+Pyrethrum.

Insecticides sprayed on 31.5.1957.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) and (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Puncturing cabbage seed inside the pods. (iii) No. of sound and punctured seeds from 5 pods per replication was determined under binocular on 21.6.1957 after application of treatments. (iv) (a) 1957 only. (b) and (c) No. (v) to (vii) Nil.

## 5. RESULTS :

(i) 7.44 %. (ii) 5.47 %. (iii) Treatment differences are highly significant. (iv) % of damaged seeds/plot.

Treatment	D <sub>0</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	D <sub>5</sub>	D <sub>6</sub>	D <sub>7</sub>	D <sub>8</sub>	D <sub>9</sub>
% of damaged seeds	24.06	1.60	2.20	2.22	3.36	4.76	5.78	8.61	10.28	11.54

S.E./mean = 2.74 %.

**Crop :- Cabbage.**

**Ref :- U.P. 57(528).**

**Site :- Govt. Hill Fruit Res. Stn., Chaubattia.**

**Type :- 'D'.**

Object :—To find out the effect of various aphidicides and predotons on Cabbage aphids.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow. (c) Nil. (ii) (a) Clay loam. (b) Refer soil analysis, Chaubattia. (iii) October, 1957. (iv) (a) to (e) N.A. (v) and (vi) Nil. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) August, 1958.

## 2. TREATMENTS :

11 insecticidal treatments : D<sub>0</sub>=Nicotine sulphate 40% (1 : 800)+Soap 1% (control), D<sub>1</sub>=Metasystox 0.05% spray, D<sub>2</sub>=Metasystox 0.025% spray, D<sub>3</sub>=Parathion emulsion 0.01%, D<sub>4</sub>=Malathion emulsion 0.1 %, D<sub>5</sub>=Diazinon emulsion 0.04 %, D<sub>6</sub>=Malathion emulsion 0.05%, D<sub>7</sub>=Parathion emulsion 0.05%, D<sub>8</sub>=Endrine emulsion 0.05%, D<sub>9</sub>=Ekatin 0.05% and D<sub>10</sub>=Ekatin 0.025%.

Insecticides applied on 27.3.1958, 14, 28.4.1958 and 15, 31.5.1958.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 11. (b) N.A. (iii) 3. (iv) and (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Presence of aphids in crowds on cabbage leaves, pods and stalks. (iii) The pods of 5 cabbage plants selected at random and marked before crop was harvested from each plot and the seed was weighed. (iv) (a) 1958 only. (b) and (c) No. (v) to (vii) Nil.

## 5. RESULTS :

(i) 10.28 ozs./five plants. (ii) 3.827 ozs./five plants. (iii) Treatment differences are not significant. (iv) Av. yield of cabbage seeds in ozs./5 plants.

Treatment	D <sub>0</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	D <sub>5</sub>	D <sub>6</sub>	D <sub>7</sub>	D <sub>8</sub>	D <sub>9</sub>	D <sub>10</sub>
Av. yield	5.60	13.33	13.00	12.83	12.17	11.83	10.33	10.37	10.17	7.17	6.33

S.E./mean = 2.21 ozs./five plants.

**Crop :- Cabbage.**

**Ref :- U.P. 57(417).**

**Site :- Govt. Hill Fruit Res. Stn., Chaubattia.**

**Type :- 'D'.**

Object :—To test the effect of various aphidicides on the population of cabbage aphid infecting Cabbage plants for seed production.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow. (c) Nil. (ii) (a) Clay loam. (b) Refer soil analysis, Chaubattia. (iii) October, 1957. (iv) (a) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) Hoeings and weedings. (ix) N.A. (x) August, 1958.



**TREATMENTS :**

11 insecticidal treatments : D<sub>1</sub>=Metasystox 1 : 2000 spray, D<sub>2</sub>=Metasystox 1 : 4000 spray, D<sub>3</sub>=Ekatin 1 : 2000 spray, D<sub>4</sub>=Ekatin 1 : 4000 spray, D<sub>5</sub>=Parathion emulsion 0.05% spray, D<sub>6</sub>=Diazinon emulsion 0.04% spray, D<sub>7</sub>=Malathion emulsion 0.1% spray, D<sub>8</sub>=Parathion emulsion 0.01% spray, D<sub>9</sub>=Malathion emulsion 0.05% spray, D<sub>10</sub>=Endrine emulsion 0.05% spray and D<sub>11</sub>=Nicotine sulphate (40%) 1 : 800+Soap 1% spray.

Insecticides applied on 27.3.1958, 14, 28.4.1958, 15 and 31.5.1958.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 11 (one plot containing 18 to 20 cabbage plants). (b) N.A. (iii) 3. (iv) and (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) Normal. (ii) Presence of aphids in crowds on cabbage leaves, pods and stalks. (iii) The population of aphid after treatments was recorded from 5 cabbage plants and population for the entire period of trial was worked out. (iv) (a) 1958 only. (b) and (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 211.52 aphid/plot. (ii) 54.28 aphid/plot. (iii) Treatment differences are highly significant. (iv) Av number of aphid per plot.

Treatment	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	D <sub>5</sub>	D <sub>6</sub>	D <sub>7</sub>	D <sub>8</sub>	D <sub>9</sub>	D <sub>10</sub>	D <sub>11</sub>
Av. number of aphid	73.67	83.67	94.67	107.33	147.00	172.67	190.00	196.33	242.00	262.67	755.67
	S.E./mean = 31.34 aphid/plot.										

**Crop :- Cabbage.**

**Ref :- U.P. 58(1).**

**Site :- Govt. Hill Fruit Res. Stn., Chaubattia.**

**Type :- 'D'.**

Object :—To find out the effect of various aphidicides and predators on cabbage aphid and yield of Cabbage seed.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Fallow. (c) Nil. (ii) (a) Clay loam. (b) Refer soil analysis, Chaubattia. (iii) October, 1958. (iv) (a) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) Hoeing and weeding. (ix) N.A. (x) August, 1959.

**2. TREATMENTS :**

9 insecticidal treatments : D<sub>1</sub>=Metasystox 0.05%, D<sub>2</sub>=Parathion emulsion 0.01%, D<sub>3</sub>=Ekatin 0.05%, D<sub>4</sub>=Metasystox 0.025%, D<sub>5</sub>=Ekatin 0.025%, D<sub>6</sub>=Diazinon emulsion 0.04%, D<sub>7</sub>=Nicotine 0.05% + Soap 1%, D<sub>8</sub>=Malathion emulsion 0.05% and D<sub>9</sub>=Biological control with C. Seplempunotacion.

Insecticides sprayed on 28.3.1959, 13.4.1959, 7.5.1959 and 1.6.1959.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 9 (one plot containing 25 to 36 cabbage plants). (b) N.A. (iii) 4. (iv) and (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) Normal. (ii) Incidence of cabbage aphid, control measures as per treatments. (iii) Number of aphids per 100 pods of cabbage after treatment. (iv) (a) 1959 only. (b) and (c) No. (v) to (vii) Nil.

**5. RESULTS :**

(i) 393 aphid/100 pods. (ii) 177.12 aphid/100 pods. (iii) Treatment differences are significant. (iv) Av. number of aphid per 100 pods.

Treatment	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	D <sub>5</sub>	D <sub>6</sub>	D <sub>7</sub>	D <sub>8</sub>	D <sub>9</sub>
Av. number of aphid	154	312	396	403	432	440	574	592	238

S.E./mean = 88.56 aphid/100 pods.

**Crop :- Cabbage.****Ref :- U.P. 59(544).****Site :- Govt. Hill Fruit Res. Stn., Chaubattia.****Type :- 'D'.**

Object :—To study the effect of aphidicides on the yield of Cabbage seeds.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Cabbage. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, Chaubattia. (iii) March, 1959. (iv) (a) to (e) N.A. (v) Nil. (vi) to (ix) N.A. (x) 10.7.1959.

**2. TREATMENTS :**9 insecticides : D<sub>1</sub>=Diazinon emulsion 0.04 %, D<sub>2</sub>=Parathion emulsion 0.01 %, D<sub>3</sub>=Malathion emulsion 0.05%, D<sub>4</sub>=Ekatin 1 : 4000 spray, D<sub>5</sub>=Metasystox 1 : 2000 spray, D<sub>6</sub>=Metasystox I : 4000 spray, D<sub>7</sub>=Ekatin 1 : 2000 spray, D<sub>8</sub>=Micolina sulphate 40 % + Soap 1 % (1 : 800) and D<sub>9</sub>= Biological control (Metasystox 1 : 2000 on 7.5.1959).**3. DESIGN :**

(i) R.B.D. (ii) (a) 9 (each plct containing 36 plants). (b) N.A. (iii) 4. (iv) and (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Incidence of aphid. Control measures as per treatments. (iii) Number and weight of cabbage seeds. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 47.64 ozs./25 plants. (ii) 7.007 ozs./25 plants. (iii) Treatment differences are highly significant. (iv) Av. yield in ozs./25 plants.

Treatment	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	D <sub>5</sub>	D <sub>6</sub>	D <sub>7</sub>	D <sub>8</sub>	D <sub>9</sub>
Av. yield	72.57	69.62	65.80	48.92	47.18	44.98	42.58	25.95	11.20

S.E./mean = 3.504 ozs./25 plants.

**Crop :- Cabbage.****Ref :- U.P. 59(508).****Site :- Govt. Veg. Res. Stn., Kalianpur.****Type :- 'D'.**

Object :—To study the effect of different insecticides in controlling Cabbage aphid.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kalianpur (iii) to (x) N.A.

**2. TREATMENTS :**3 insecticides : D<sub>0</sub>=Control, D<sub>1</sub>=0.03% Diazinon emulsion and D<sub>2</sub>=Nicotine sulphur with water in the ratio of 1 : 500.

Applied on 27.1.1960 and 27.2.1960.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 5. (iv) and (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Incidence of aphid ; control measures as per treatments. (iii) Number of aphid. (iv) (a) and (b) No. (v) Nil. (v) to (vii) Nil.

**5. RESULTS :****1st application**

(i) 76.44 % reduction. (ii) 41.72 % reduction. (iii) Treatment differences are not significant. (iv) Av. reduction in % of incidence of disease.

Treatment	D <sub>0</sub>	D <sub>1</sub>	D <sub>2</sub>
% reduction	63.28	89.16	76.88

S.E./mean = 18.66% reduction.

## 2nd application

(i) 85.20 % reduction. (ii) 27.74% reduction. (iii) Treatment differences are not significant. (iv) Av. reduction in % of incidence of disease.

Treatment	D <sub>0</sub>	D <sub>1</sub>	D <sub>2</sub>
% of reduction	60.20	99.14	96.26

S.E./mean = 12.41% of reduction

**Crop :- Cabbage.**

**Ref :- U.P. 56(121).**

**Centre :- Nainital (Nainital, c.f.).**

**Type :- 'D'.**

**Object :-**To study the effect of different insecticides on bagrada picta of Cabbage crop.

## 1. BASAL CONDITIONS :

(i) (a) to (c) Nil. (ii) Clay loam. (iii) Nil. (iv) Improved. (v) (a) Pruning. (b) to (e) N.A. (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

## 2. TREATMENTS :

4 insecticides : D<sub>0</sub>=Control, D<sub>1</sub>=Malathion emulsion 0.01 % at 20 gal./ac., D<sub>2</sub>=Alderin dust 5 % at 20 gal./ac. and D<sub>3</sub>=D.D.T. 5%+pyrethrum at 20 gal./ac.

## 3. DESIGN :

(i) and (ii) R.B.D. with 4 replication and by survey selection. (iii) (a) and (b) 1,200 ac. (iv) Nil.

## 4. GENERAL :

(i) N.A. (ii) Incidence of bagrada-picta ; control measures as per treatments. (iii) Population of pest. (iv) (a) 1956. (b) and (c) N.A. (v) to (vii) Nil.

## 5. RESULTS :

(i) 64.17 degrees. (ii) 10 96 degrees. (iii) Treatment differences are highly significant. (iv) Mean % of reduction of population of pest in degrees.

Treatment	D <sub>0</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>
Mean angle	30.58	72.73	77.47	75.90
% reduction	26.13	90.78	94.84	93.63

S.E./mean = 5.48 degrees.

**Crop :- Cauliflower (Rabi).**

**Ref :- U.P. 56(176).**

**Site :- B.R. College Hort. Gardens, Bichpuri.**

**Type :- 'M'.**

**Object :-**To study the effect of different levels of N and P on the growth and yield of Cauliflower.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Light loam. (b) Refer soil analysis, Bichpuri. (iii) 9.11.1956. (iv) (a) Repeated ploughings with *desi* plough followed by planking. (b) Transplanting. (c) N.A. (d) 1' × 1½'. (e) 40 seedlings/plot. (v) N.A. (vi) Local (late). (vii) Irrigated. (viii) 2 hoeings, weedings and 1 gap filling. (ix) N.A. (x) 27.2.1957 to 11.3.1957.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 5 levels of N as A/S : N<sub>0</sub>=0, N<sub>1</sub>=40, N<sub>2</sub>=80, N<sub>3</sub>=120 and N<sub>4</sub>=160 lb./ac.

(2) 2 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0 and P<sub>1</sub>=80 lb./ac.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) 13½' × 9½' and 13½' × 9'. (b) 10' × 6'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) N.A. (iii) Yield of cauliflower. (iv) (a) and (b) No. (c) Nil. (v) and (vi) Nil. (vii) Two-way table and plotwise yield data were not available.

## 5. RESULTS :

(i) 22.84 tons/ac. (ii) 0.236 tons/ac. (iii) Main effect of N alone is highly significant. (iv) Av. yield of cauliflower in tons/ac.

Treatment	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	N <sub>4</sub>
Av. yield	8.54	21.41	26.26	30.19	27.79

S.E./mean = 0.083 tons/ac.

**Crop :- Cauliflower (Rabi).**

**Ref :- U.P. 57(242).**

**Site :- B.R. College Insttl. Res. Farm, Bichpuri.**

**Type :- 'CM'.**

**Object :-**To study the effect of spacing and levels of N on growth, yield and quality of Cauliflower.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Light loam. (b) Refer soil analysis, Bichpuri. (iii) 24.10.1957/27.11.1957. (iv) (a) Ploughings and cross ploughings with country plough. Planking with heavy planks. (b) Transplanting. (c) N.A. (d) As per treatments. (e) 1 seedling/hole. (v) Nil. (vi) Sutton's Super snow ball (imported variety). (vii) Irrigated. (viii) Filling of gaps. (ix) Nil. (x) 16.2.1958 to 24.2.1958.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 spacings between plants : S<sub>1</sub>=12", S<sub>2</sub>=18" and S<sub>3</sub>=24".

(2) 4 levels of N as A/S : N<sub>0</sub>=0, N<sub>1</sub>=40, N<sub>2</sub>=80 and N<sub>3</sub>=120 lb./ac.

20 lb./ac. of N broadcast one month after transplanting and rest before transplanting.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. (b) 93'×66'. (iii) 3. (iv) (a) N.A. (b) 9'×6'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good growth. (ii) Nil. (iii) Spread and height of plant and yield. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

## RESULTS :

(i) 12.26 tons/ac. (ii) 1.49 tons/ac. (iii) Main effects of N and S are highly significant. (iv) Av. yield of cauliflower in tons/ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	Mean
S <sub>1</sub>	3.71	12.49	14.84	16.30	11.84
S <sub>2</sub>	5.92	12.71	14.89	20.50	13.50
S <sub>3</sub>	5.22	10.99	13.96	15.57	11.43
Mean	4.95	12.06	14.56	17.46	12.26

S.E. of N marginal mean = 0.50 tons/ac.

S.E. of S marginal mean = 0.43 tons/ac.

S.E. of body of table = 0.86 tons/ac.

**Crop :- Cauliflower (Rabi).****Ref :- U.P. 58(195).****Site :- B.R. College Insttl. Res. Farm, Bichpuri.****Type :- 'CM'.**

Object :—To study the effect of spacing and levels of N on growth, yield and quality of Cauliflower.

**1. BASAL CONDITIONS :**

(i) (a) No. (b) Cucurbits. (c) N.A. (ii) (a) Light loam with uniform fertility. (b) Refer soil analysis, Bichpuri. (iii) 19.11.1958. (iv) (a) 2 ploughings, 2 plankings and 1 harrowing. (b) Transplanting. (c) N.A. (d)  $1\frac{1}{2}'$  between rows. (e)  $S_1$  : 12 seedlings,  $S_2$  : 9 and  $S_3$  : 6. (v) Nil. (vi) Indian snowball. (vii) Irrigated. (viii) 3 weedings, 1 hoeing and 1 earthing. (ix) 1.80". (x) 26.1.1959 to 6.2.1959.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 3 spacings between plants in the row :  $S_1=12''$ ,  $S_2=18''$  and  $S_3=24''$ .

(2) 5 levels of N as A/S and M.C. in 1 : 1 ratio :  $N_0=0$ ,  $N_1=60$ ,  $N_2=120$ ,  $N_3=180$  and  $N_4=240$  lb./ac. M.C. applied on 12.11.1958. N as A/S applied in two instalments i.e. 20 lb./ac. of N as top dressing one month after transplanting and rest at transplanting

**3. DESIGN :**(i) Fact. in R.B.D. (ii) (a) 15. (b) N.A. (iii) 4. (iv) (a)  $16' \times 13'$ . (b)  $12 \times 9'$ . (v)  $2' \times 2'$ . (vi) Yes-**4. GENERAL :**

(i) Good. (ii) Nil. (iii) Height of plant, weight of whole plant and cauliflower yield. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 18.12 tons/ac. (ii) 1.87 tons/ac. (iii) Main effect of N and S and N  $\times$  S interaction are highly significant. (iv) Av. yield of cauliflower in tons/ac.

	$N_0$	$N_1$	$N_2$	$N_3$	$N_4$	Mean
$S_1$	12.74	18.50	19.51	23.38	24.20	19.67
$S_2$	11.79	15.35	21.04	21.33	22.28	18.36
$S_3$	10.97	14.48	15.38	20.35	20.47	16.33
Mean	11.83	16.11	18.64	21.69	22.32	18.12

S.E. of N marginal mean = 0.54 tons/ac.

S.E. of S marginal mean = 0.42 tons/ac.

S.E. of body of table = 0.94 tons/ac.

**Crop :- Cauliflower (Rabi).****Ref :- U.P. 58(196).****Site :- B.R. College Insttl. Res. Farm, Bichpuri.****Type :- 'CM'.**

Object :—To study the effects of starter solution, hardening and age of seedlings on growth, yield and quality of Cauliflower.

**1. BASAL CONDITIONS :**

(i) (a) No. (b) Tinda. (c) N.A. (ii) (a) Light loam with good fertility. (b) Refer soil analysis, Bichpuri. (iii) 9.11.1958 to 7.12.1958. (iv) (a) 3 ploughings by tractor and 2 discings. (b) Transplanting. (c) N.A. (d) 60 cm.  $\times$  60 cm. (e) 12 seedlings. (v) 1400 kg of sieved compound spreading on 2.11.1958 18 gm/plant of A/S top-dressing on 25.12.1958. (vi) Late Banaras. (vii) Irrigated. (viii) 3 weedings; 3 hoeings and 1 earthing. (ix) 1.80". (x) 4.1.1959 to 8.2.1959.

**2. TREATMENTS :**

All combinations (1), (2) and (3)

(1) 3 ages of seedlings at transplanting :  $A_1=3$ ,  $A_2=5$  and  $A_3=7$  weeks.(2) 2 hardening of seedlings :  $H_0=$ Unhardened and  $H_1=$ Hardened.

(3) 2 starter solutions :  $S_0=$ Without starter solution (with plain water) and  $S_1=$ With starter solution (i.e. 68 gm. of N, 19 gm. of K and 39 gm. of P per plot).

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 420 cms. × 360 cms. (b) 300 cms. × 240 cms. (v) 60 cms. × 60 cms. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Height of plants, spread of plants and yield of cauliflower. (iv) (a) and (b) No. (c) Nil. (v) and (vi) Nil. (vii) Two-way tables are not available in the records.

## 5. RESULTS :

(i) 10.52 tons/ac. (ii) 2.42 tons/ac. (iii) Main effect of A alone is highly significant. (iv) Av. yield of cauliflower in tons/ac.

Treatment	A <sub>1</sub>	A <sub>2</sub>	A <sub>3</sub>	H <sub>0</sub>	H <sub>1</sub>	S <sub>0</sub>	S <sub>1</sub>
Av. yield	11.92	14.75	4.90	10.44	10.60	10.37	10.68

S.E. of A marginal mean = 0.61 tons/ac.

S.E. of H or S marginal mean = 0.49 tons/ac.

**Crop :- Onion.**

**Ref :- U.P. 59(217).**

**Site :- B.R. College Hort. Gardens, Bichpuri.**

**Type :- 'M'.**

Object :— To study the effect of N on the yield of Onion.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) N.A. (ii) (a) Light loam. (b) Refer soil analysis, Bichpuri. (iii) 4 to 6.1.1959. (iv) (a) 5 ploughings, planking, bund making and levelling. (b) Transplanting. (c) N.A. (d) 6" × 4". (e) N.A. (v) Nil. (vi) Red bulb. (vii) Irrigated. (viii) 6 weedings. (ix) 1.78". (x) 3 and 4.6.1959.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 sources of N : S<sub>1</sub>=A/S and S<sub>2</sub>=NaNO<sub>3</sub>.

(2) 5 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=30, N<sub>2</sub>=60, N<sub>3</sub>=90 and N<sub>4</sub>=120 lb./ac.

½ of the fertilizers applied at planting and the other half as top dressing.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) 21' × 15'. (b) 18' × 12'. (v) 1.5' × 1.5'. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Wilting. No control measures taken. (iii) Yield of onion. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 7.98 tons/ac. (ii) 1.13 tons/ac. (iii) Main effect of N alone is highly significant. (iv) Av. yield of onion in tons/ac.

Control = 6.95 tons/ac.

	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	N <sub>4</sub>	Mean
S <sub>1</sub>	7.18	8.04	9.16	7.55	7.98
S <sub>2</sub>	7.81	7.80	10.41	7.93	8.49
Mean	7.50	7.92	9.78	7.74	8.24

S.E. of S marginal mean	= 0.28 tons/ac.
S.E. of N marginal mean or control mean	= 0.40 tons/ac.
S.E. of body of table	= 0.56 tons/ac.

**Crop :- Onion.**

**Ref :- U.P. 54(357).**

**Site :- Govt. Veg. Res. Stn., Kalianpur.**

**Type :- 'M'.**

Object :— To study the effect of different levels of C/S on the skin, colour and yield of Onion bulbs.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kalianpur. (iii) to (v) N.A. (vi) Red rounp (medium). (vii) Irrigated. (viii) to (x) N.A.

**2. TREATMENTS :**

4 levels of C/S :  $C_0=0$ ,  $C_1=3$ ,  $C_2=6$  and  $C_3=9$  lb./ac.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) and (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) No. (iii) Yield of onion. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 2.60 tons/ac. (ii) 0.62 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of onion in tons/ac.

Treatment	$C_0$	$C_1$	$C_2$	$C_3$
Av. yield	2.67	2.95	2.50	2.28

S.E./mean = 0.31 tons/ac.

**Crop :- Onion (Rabi).**

**Ref :- U.P. 55(212).**

**Site :- Agri. College Farm, B.H.U., Varanasi.**

**Type :- 'M'.**

Object :—To study the effect of P, K and CaO on the yield of Onion.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Light loam soil. (b) Refer soil analysis, Varanasi. (iii) 24.11.1955. (iv) (a) 4 ploughings by soil inverting plough, 4 ploughings by country plough and 4 plankings. (b) Transplanting. (c) N.A. (d)  $9'' \times 4''$ . (e) N.A. (v) 40 lb./ac. of N in form of castor cake and A/S. (vi) Patna red. (vii) Irrigated. (viii) 3 weedings and 3 hoeings. (ix) N.A. (x) 10.3.1956.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 2 levels of  $P_2O_5$  as Super :  $P_0=0$  and  $P_1=36$  lb./ac.

(2) 2 levels of  $K_2O$  as Pot. Sul. :  $K_0=0$  and  $K_1=72$  lb./ac.

(3) 2 levels of CaO as lime :  $C_0=0$  and  $C_1=144$  lb./ac.

Lime applied 15 days before transplanting on the surface. Super and Pot. Sul. were applied the day before transplanting.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 3. (iv) (a)  $24' \times 18'$ . (b)  $21' \times 15'$ . (v)  $1.5' \times 1.5'$ . (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of Onion. (iv) (a) 1955—1956 (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 2.99 tons/ac. (ii) 0.91 tons/ac. (iii) Interactions  $P \times K$  and  $P \times C$  are significant. (iv) Av. yield of onion in tons/ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	K <sub>0</sub>	K <sub>1</sub>
C <sub>0</sub>	2.35	3.83	3.09	3.56	2.62
C <sub>1</sub>	3.11	2.67	2.89	2.90	2.88
Mean	2.73	3.25	2.99	3.23	2.75
K <sub>0</sub>	2.50	3.96			
K <sub>1</sub>	2.96	2.54			

S.E. of any marginal mean = 0.26 tons/ac.

S.E. of body of any table = 0.37 tons/ac.

**Crop :- Onion (Rabi).**

**Ref :- U.P. 56(211).**

**Site :- Allahabad Agri. Instt., Allahabad.**

**Type :- 'C'.**

**Object :-** To find out the suitable spacing for Onion cultivation.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Cauliflower. (c) N.A. (ii) (a) Fine sandy loam. (b) Refer soil analysis, Allahabad. (iii) 6.12.1956/7.2.1957. (iv) (a) N.A. (b) As per treatments. (c) N.A. (d) 9" between rows. (e) N.A. (v) N.A. (vi) Giant red. (vii) to (x) N.A.

## 2. TREATMENTS :

**Main-plot treatments :**

2 methods of transplanting : T<sub>1</sub>=On the side of ridges and T<sub>2</sub>=On flat.

**Sub-plot treatments :**

4 spacings between plants : S<sub>1</sub>=2", S<sub>2</sub>=4", S<sub>3</sub>=6" and S<sub>4</sub>=8".

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 12' × 14'. (b) 10' × 12'. (v) 1' × 1'. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of onion bulbs and gradation. (iv) (a) 1956—1957. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 4.37 tons/ac. (ii) (a) 0.25 tons/ac. (b) 0.03 tons/ac. (iii) Main effect of S alone is significant. (iv) Av. yield of onion in tons/ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>	Mean
T <sub>1</sub>	5.22	4.21	4.27	3.56	4.32
T <sub>2</sub>	5.14	4.46	4.12	3.96	4.42
Mean	5.18	4.34	4.20	3.76	4.37

S.E. of difference of two

1. T marginal means = 0.09 tons/ac.
2. S marginal means = 0.02 tons/ac.
3. S means at the same level of T = 0.02 tons/ac.
4. T means at the same level of S = 0.09 tons/ac.



**Crop :- Onion (Rabi).****Ref :- U.P. 57(273).****Site :- Allahabad Agri. Instt., Allahabad.****Type :- 'C'.**

Object :—To find out suitable spacing for Onion cultivation.

**1. BASAL CONDITIONS :**

(i) (a) Cauliflower—Onion. (b) Cauliflower. (c) N.A. (ii) (a) Fine sandy loam. (b) Refer soil analysis, Allahabad. (iii) Nov., 1957. (iv) (a) N.A. (b) As per treatments. (c) N.A. (d) 9' between rows. (e) N.A. (v) N.A. (vi) Giant red. (vii) to (x) N.A.

**2. TREATMENTS to 4. GENERAL :**

Same as in expt. no. 56(211) on page 847.

**5. RESULTS :**

(i) 1.62 tons/ac. (ii) (a) 0.11 tons/ac. (b) 0.15 tons/ac. (iii) All the effects are highly significant. (iv) Av. yield of onion in tons/ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>	Mean
T <sub>1</sub>	1.81	1.49	1.31	1.54	1.54
T <sub>2</sub>	1.56	2.10	1.57	1.54	1.69
Mean	1.68	1.80	1.44	1.54	1.62

S.E. of difference of two

- |                                   |   |               |
|-----------------------------------|---|---------------|
| 1. T marginal means               | = | 0.04 tons/ac. |
| 2. S marginal means               | = | 0.08 tons/ac. |
| 3. S means at the same level of T | = | 0.11 tons/ac. |
| 4. T means at the same level of S | = | 0.10 tons/ac. |

**Crop :- Onion.****Ref :- U.P. 54(358).****Site :- Govt. Veg. Res. Stn., Kalianpur.****Type :- 'C'.**

Object :—To study the effect of sowing vs. transplanting on the yield of Onion.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kalianpur. (iii) N.A. (iv) (a) N.A. (b) As per treatments. (c) and (d) N.A. (e) 1. (v) N.A. (vi) Red round (medium). (vii) Irrigated. (viii) to (x) N.A.

**2. TREATMENTS :**2 cultural treatments : C<sub>1</sub>=Transplanting and C<sub>2</sub>=Seed sown by seed drill.**3. DESIGN :**

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 12. (iv) and (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) No. (iii) Yield of onion bulbs. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 2.71 tons/ac. (ii) 0.31 tons/ac. (iii) Treatment difference is highly significant. (iv) Av. yield of onion in tons/ac.

Treatment	C <sub>1</sub>	C <sub>2</sub>
Av. yield	3.13	2.29

S.E./mean = 0.09 tons/ac.

**Crop :- Onion.****Ref :- U.P. 54(356).****Site :- Govt. Veg. Res. Stn., Kalianpur.****Type :- 'C'.**

Object :—To study the effect of transplanting onion seedlings at different spacings on the yield of Onion bulb.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kalianpur. (iii) 25.12.1954 and 9.1.1955. (iv) (a) to (c) N.A. (d) As per treatments. (e) 1. (v) N.A. (vi) Red round (medium). (vii) Irrigated. (viii) to (x) N.A.

**2. TREATMENTS :**

4 spacings between plants :  $S_1=4'' \times 4''$ ,  $S_2=6'' \times 6''$ ,  $S_3=9'' \times 6''$  and  $S_4=9'' \times 9''$ .

**3. DESIGN :**

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) N.A. (b)  $12' \times 8'$ . (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) No. (iii) Yield of onion. (iv) (a) 1953—1954. (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 4578 lb./ac. (ii) 778.6 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of onion in lb./ac.

Treatment	$S_1$	$S_2$	$S_3$	$S_4$
Av. yield	5029	5315	4620	3347

S.E./mean = 389.3 lb./ac.

**Crop :- Onion (Rabi).****Ref :- U.P. 57(261).****Site :- Agri. College Farm, B.H.U., Varanasi.****Type :- 'CM'.**

Object :—To study the effect of N, P and age of seedlings on the yield of Onion.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Jowar*. (c) N.A. (ii) (a) Loamy soil. (b) Refer soil analysis, Varanasi. (iii) 1, 15.10.1957/3.11.1957. (iv) (a) 4 ploughings and planking. (b) Transplanting. (c) N.A. (d)  $5'' \times 9''$ . (e) N.A. (v) N.A. (vi) Patna red. (vii) Irrigated. (viii) Weeding and hoeing. (ix) and (x) N.A.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 3 levels of N :  $N_1=75$ ,  $N_2=100$  and  $N_3=125$  lb./ac.

(2) 3 levels of  $P_2O_5$  :  $P_1=75$ ,  $P_2=100$  and  $P_3=125$  lb./ac.

(3) 2 ages of seedlings at transplanting :  $A_1=2$  months old and  $A_2=1\frac{1}{2}$  month old.

N as A/S and  $P_2O_5$  as Super thoroughly mixed in soil.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 18. (b) N.A. (iii) 4. (iv) (a)  $14' \times 14'$ . (b)  $12' \times 12'$ . (v)  $1' \times 1'$ . (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of onion. (iv) (a) and (b) No. (c) Nil. (v) (a) No. (b) N.A. (vi) N.A. (vii) Nil.

**5. RESULTS :**

(i) 4.02 tons/ac. (ii) 0.60 tons/ac. (iii) Main effects of N and A are highly significant. (iv) Av. yield of onion in tons/ac.

	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	Mean	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>
A <sub>1</sub>	3.79	4.39	5.13	4.44	4.42	4.32	4.58
A <sub>2</sub>	2.98	3.61	4.24	3.61	3.54	3.60	3.69
Mean	3.39	4.00	4.68	4.02	3.98	3.96	4.13
P <sub>1</sub>	3.52	3.73	4.69				
P <sub>2</sub>	3.26	4.08	4.53				
P <sub>3</sub>	3.38	4.19	4.83				

S.E. of N or P marginal mean	= 0.12 tons/ac.
S.E. of A marginal mean	= 0.10 tons/ac.
S.E. of body of A×N or A×P table	= 0.17 tons/ac.
S.E. of body of P×N table	= 0.21 tons/ac.

**Crop :- Onion (Rabi).**

**Ref :- U.P. 57(259).**

**Site :- Agri. College Farm, B.H.U., Varanasi.**

**Type :- 'CM'.**

**Object :-**To study the effect of N, spacings and clipping of seedlings on the yield of Onion.

#### 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Loam soil. (b) Refer soil analysis, Varanasi. (iii) 24.12.1957.  
(iv) (a) 6 ploughings and 4 plankings. (b) Transplanting. (c) N.A. (d) As per treatments. (e) N.A. (v)  
N.A. (vi) Patna red. (vii) Irrigated. (viii) Hoeing. (ix) N.A. (x) 13.5.1958.

#### 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 levels of N : N<sub>1</sub>=60, N<sub>2</sub>=80 and N<sub>3</sub>=100 lb./ac.

(2) 3 spacings : S<sub>1</sub>=12"×4", S<sub>2</sub>=12"×8" and S<sub>3</sub>=12"×12".

(3) 2 clippings of seedlings : C<sub>1</sub>=Unclipped seedlings at transplanting and C<sub>2</sub>=Clipped seedlings at transplanting.

#### 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 18. (b) N.A. (iii) 3. (iv) (a) 14'×16'. (b) 11'×14'. (v) 1½'×1'. (vi) Yes.

#### 4. GENERAL :

(i) N.A. (ii) Crop was affected by thrips attack. Tobacco decoction at 60 gallons/ac. was sprayed. (iii) Yield of onion. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

#### 5. RESULTS :

(i) 2.12 tons/ac. (ii) 0.45 tons/ac. (iii) Main effect of S is highly significant and N effect is significant. (iv) Av. yield of onion in tons/ac.

	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	Mean	C <sub>1</sub>	C <sub>2</sub>
S <sub>1</sub>	2.46	3.40	2.43	2.76	2.80	2.73
S <sub>2</sub>	1.82	2.53	1.77	2.04	2.04	2.04
S <sub>3</sub>	1.69	1.37	1.64	1.57	1.50	1.63
Mean	1.99	2.43	1.95	2.12	2.11	2.3
C <sub>1</sub>	2.08	2.35	1.91			
C <sub>2</sub>	1.90	2.52	1.98			

S.E. of N or S marginal mean	= 0.11 tons/ac.
S.E. of C marginal mean	= 0.09 tons/ac.
S.E. of body of C×N and S×C table	= 0.15 tons/ac.
S.E. of body of S×N table	= 0.18 tons/ac.

**Crop :- Onion.**

**Ref :- U.P. 54(355).**

**Site :- Govt. Veg. Res. Stn., Kalianpur.**

**Type :- 'D'.**

Object :—To study the effect of insecticides in controlling Onion strips.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kalianpur. (iii) to (x) N.A.

**2. TREATMENTS :**

4 insecticides : D<sub>0</sub>=Control, D<sub>1</sub>=Dusting with geigy vegetable dust, D<sub>2</sub>=Dusting with 5 % B.H.C. dust and D<sub>3</sub>=Rhothane 25 % emulsion (1 quarter in 100 gal. water).

**3. DESIGN :**

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 31'×12'. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) and (ii) Incidence of onion strips. Control measures as per treatments. (iii) Yield of onion bulbs. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 2.12 tons/ac. (ii) 0.28 tons/ac. (iii) Treatment differences are not significant. (iv) Av. yield of onion in tons/ac.

Treatment	D <sub>0</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>
Av. yield	2.04	2.40	2.21	1.83

S.E./mean = 0.14 tons/ac.

**Crop :- Onion (Rabi).**

**Ref :- U.P. 58(232).**

**Site :- Botanical Gardens, Govt. Agri. College, Kanpur. Type :- 'D'.**

Object :—To study the effect of Alpha Naphthalene Acetic acid on the growth and development of Onion.

**1. BASAL CONDITIONS :**

(i) (a) No. (b) and (c) N.A. (ii) (a) Alluvial loam. (b) Refer soil analysis, Kanpur. (iii) 27.10.1958/9.12.1958. (iv) (a) N.A. (b) Transplanting. (c) N.A. (d) 6"×3". (e) N.A. (v) Nil. (vi) to (viii) N.A. (ix) 4.2". (x) N.A.

**2. TREATMENTS :**

7 hormonal treatments : H<sub>0</sub>=Control, H<sub>1</sub>=Seed treatment with Alpha—NAA 0.1 p.p.m. soaked for 8 hours, H<sub>2</sub>=Seed treatment with Alpha—NAA 0.2 p.p.m. soaked for 8 hours, H<sub>3</sub>=Treatment of seedling roots with Alpha—NAA 0.1 p.p.m. for 24 hours, H<sub>4</sub>=Treatment of seedling roots with Alpha—NAA 0.2 p.p.m. for 24 hours, H<sub>5</sub>=Application of 30 c.c. of 0.1 p.p.m. Alpha—NAA solution per plant after transplanting and H<sub>6</sub>=Application of 30 c.c. of 0.2 p.p.m. Alpha—NAA solution per plant after transplanting.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) and (b) 6'×8'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Nil. (iii) Height of plant and yield of onion. (iv) (a) and (b) No. (c) Nil. (v) to (vii) N

**5. RESULTS :**

(i) 5.33 tons/ac. (ii) 0.57 tons/ac. (iii) Treatment differences are highly significant. (iv) Av. yield of onion in tons/ac.

Treatment	H <sub>0</sub>	H <sub>1</sub>	H <sub>2</sub>	H <sub>3</sub>	H <sub>4</sub>	H <sub>5</sub>	H <sub>6</sub>
Av. yield	4.09	8.13	6.70	5.81	4.78	4.02	3.80

S.E./mean = 0.27 tons/ac.

**Crop :- Radish.**

**Ref :- U.P. 54(353).**

**Site :- Govt. Veg. Res. Stn., Kalianpur.**

**Type :- 'C'.**

Object :—To study the effect of growing different sizes of roots on the yield of Radish.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kalianpur. (iii) 5.11.1954. (iv) (a) and (b) N.A. (c) As per treatments. (d) 3'×3' between plants. (e) 15 roots/bed. (v) N.A. (vi) Kannanji (Unclassified). (vii) to (ix) N.A. (x) 5.12.1954.

**2. TREATMENTS :**

4 sizes of roots : C<sub>1</sub>=Planting entire root, C<sub>2</sub>=Planting  $\frac{2}{3}$  root, C<sub>3</sub>=Planting  $\frac{1}{2}$  root and C<sub>4</sub>=Planting  $\frac{1}{3}$  root.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 15'×9'. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of radish. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 179 lb./ac. (ii) 57.3 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of radish in lb./ac.

Treatment	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	C <sub>4</sub>
Av. yield	175	206	170	166

S.E./mean = 28.7 lb./ac.

**Crop :- Radish.**

**Ref :- U.P. 54(354).**

**Site :- Govt. Veg. Res. Stn., Kalianpur.**

**Type :- 'C'.**

Object :—To study the effect of growing different sizes of roots on the yield of Radish.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kalianpur. (iii) 28.9.1954. (iv) (a) and (b) N.A. (c) As per treatments. (d) 3'×3'. (e) 15 roots/bed. (v) N.A. (vi) Kannanji (Unclassified). (vii) to (ix) N.A. (x) 2.3.1955.

**2. TREATMENTS to 4. GENERAL :**

Same as in expt. no. 54(353) above.

**5. RESULTS :**

(i) 322 lb./ac. (ii) 46.9 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of radish in lb./ac.

Treatment	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	C <sub>4</sub>
Av. yield	331	459	272	227

S.E./mean = 23.5 lb./ac.

**Crop :- Radish.**

**Ref :- U.P. 58(447).**

**Site :- Govt. Veg. Res. Stn., Kalianpur.**

**Type :- 'D'.**

Object :— To study the effect of different insecticides in controlling aphids of Radish.

**1. BASAL CONDITION :**

(i) (a) to (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kalianpur. (iii) to (x) N.A.

**2. TREATMENTS :**

5 insecticides : D<sub>0</sub>=Control, C<sub>1</sub>=Diazinon at 20 c.c. per 20 pints of water, D<sub>2</sub>=Folidol E--605 at 3 c.c. per pint of water, D<sub>3</sub>=Nicotine sulphate 0.15% and soap 2.5% and D<sub>4</sub>=Fish oil Rosin soap emulsion 2%.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 3. (iv) and (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Incidence of aphids. Control measures as per treatments. (iii) No. of aphids. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 80.69 %. (ii) 1.253%. (iii) Treatment differences are highly significant. (iv) Percentage reduction in incidence of aphids.

Treatment	D <sub>0</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>
% reduction	3.43	100.00	100.00	100.00	100.00

S.E./mean = 0.723% reduction.

**Crop :- Radish.**

**Ref :- U.P. 58(446).**

**Site :- Govt. Veg. Res. Stn., Kalianpur.**

**Type :- 'D'**

Object :— To study the effect of different insecticides in controlling aphids of Radish.

**1. BASAL CONDITIONS to 4. GENERAL :**

Same as in expt no. 58(447) above.

**5. RESULTS :**

(i) 79.01%. (ii) 10.895%. (iii) Treatment differences are significant. (iv) Percentage reduction in incidence of aphids.

Treatment	D <sub>0</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>
% reduction	20.97	96.71	96.49	94.14	86.74

S.E./mean = 6.29%.

**Crop :- Radish.****Ref :- U.P. 58(228).****Site :- Botanical Gardens, Govt. Agri. College, Kanpur.****Type :- 'D'.**

Object :— To study the effect of hormonal treatment of seeds on the yield of Radish.

**1. BASAL CONDITIONS :**

(i) (a) No. (b) *Papaya*. (c) N.A. (ii) (a) Alluvial loam. (b) Refer soil analysis, Kanpur. (iii) 5.11.1958. (iv) (a) to (c) N.A. (d) 2' × 8". (e) N.A. (v) Nil. (vi) White long 5309-3-1 (Meerut). (vii) Irrigated. (viii) Hoeing and weeding. (ix) 6.2". (x) N.A.

**2. TREATMENTS :**

10 hormonal treatments : T<sub>1</sub>=Seed treated with Alpha.N.A.A. 0.01% soaked for 8 hours, T<sub>2</sub>=Seed treated with Alpha.N.A.A. 0.01% soaked for 12 hours, T<sub>3</sub>=Seed treated with Alpha N.A.A. 0.02% soaked for 8 hours, T<sub>4</sub>=Seed treated with Alpha.N.A.A. 0.02% soaked for 12 hours, T<sub>5</sub>=Seed treated with I.B.A. 0.01% soaked for 8 hours, T<sub>6</sub>=Seed treated with I.B.A. 0.01% soaked for 12 hours, T<sub>7</sub>=Seed treated with I.B.A. 0.02% soaked for 8 hours, T<sub>8</sub>=Seed treated with I.B.A. 0.02% soaked for 12 hours, T<sub>9</sub>=Seed soaked in distilled water for 8 hours and T<sub>10</sub>=Seed soaked in distilled water for 12 hours.

Hormones were dissolved in 95% ethyl alcohol then diluted with water for obtaining requisite concentration. The seeds were then immersed in these solutions as per treatments.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 3. (iv) (a) and (b) 4.5' × 6'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Nil. (iii) Number of leaves, diameter of roots and yield of radish. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 9.21 tons/ac. (ii) 0.37 tons/ac. (iii) Treatment differences are highly significant. (iv) Av. yield of radish in tons/ac.

Treatment	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	T <sub>5</sub>	T <sub>6</sub>	T <sub>7</sub>	T <sub>8</sub>	T <sub>9</sub>	T <sub>10</sub>
Av. yield	14.54	11.72	11.09	10.37	9.23	8.34	7.62	5.81	6.35	7.02

S.E./mean = 0.21 tons/ac.

**Crop :- Radish****Ref :- U.P. 58(230).****Site :- Botanical Gardens, Govt. Agri. College, Kanpur.****Type :- 'D'.**

Object :—To study the effect of spraying hormones on the growth and yield of Radish.

**1. BASAL CONDITIONS :**

(i) (a) No. (b) *Sannhemp*. (c) Nil. (ii) (a) Alluvial loam. (b) Refer soil analysis, Kanpur. (iii) 20.10.1958. (iv) (a) N.A. (b) Sown  $\frac{1}{2}$ " deep at the top of ridge. (c) N.A. (d) 3" × 12". (e) 1. (v) *Sannhemp* as G.M. in the middle of September. (vi) "White long". No. 5309-3-1 (Meerut). (vii) Irrigated. (viii) Hoeings and weedings. (ix) 4.2". (x) N.A.

**2. TREATMENTS :**

5 hormonal treatments : D<sub>0</sub>=Control, D<sub>1</sub>=Plants sprayed with 1000 ppm I.A.A. (Indole Acetic Acid), D<sub>2</sub>=Plants sprayed with 500 ppm I.A.A. (Indole Acetic Acid), D<sub>3</sub>=Plants sprayed with 1000 ppm I.B.A. (Indole Butyric Acid) and D<sub>4</sub>=Plants sprayed with 500 ppm I.B.A. (Indole Butyric Acid).

**3. DESIGN :**

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 3. (iv) (a) and (b) 6' × 8'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Nil. (iii) Yield of radish. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 13.85 tons/ac. (ii) 2.05 tons/ac. (iii) Treatment differences are highly significant. (iv) Av. yield of radish in tons/ac.

Treatment	D <sub>0</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>
Av. yield	9.46	12.76	15.79	13.42	17.83

S.E./mean = 1.18 tons/ac.

**Crop :- Radish.**

**Ref :- U.P. 58(231).**

**Site :- Botanical Gardens, Govt. Agri. College, Kanpur. Type :- 'D'.**

Object :—To study the effect of hormones on the growth and yield of Radish.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) *Sannhemp*. (c) Nil. (ii) (a) Alluvial loam. (b) Refer soil analysis, Kanpur. (iii) 20.10.1958. (iv) (a) N.A. (b) Sown  $\frac{1}{2}$ " deep at the top of ridge. (c) N.A. (d) 3" × 12". (e) 1. (v) *Sannhemp* at G.M. in the middle of September. (vi) "White Long". No. 5309—3—1 (Meerut). (vii) Unirrigated. (viii) Weedings and hoeings. (ix) 4.2". (x) N.A.

## 2. TREATMENTS :

5 hormonal treatments : D<sub>0</sub>=Control, D<sub>1</sub>=Plants treated with 0.02 ppm I.A.A. (Indole Acetic Acid), D<sub>2</sub>=Plants treated with 0.01 ppm I.A.A. (Indole Acetic Acid), D<sub>3</sub>=Plants treated with 0.02 ppm I.B.A. (Indole Butyric Acid) and D<sub>4</sub>=Plants treated with 0.01 ppm I.B.A. (Indole Butyric Acid).

Solution prepared by dissolving hormones in 95% alcohol and distilled water. A fortnight after the sowing of seed, each plant was given 50 c.c. of anxin solution through soil.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 3. (iv) (a) and (b) 6' × 8'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Yield of radish. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 16.79 tons/ac. (ii) 2.16 tons/ac. (iii) Treatment differences are highly significant. (iv) Av. yield of radish in tons/ac.

Treatment	D <sub>0</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>
Av. yield	9.83	17.02	18.65	20.12	18.32

S.E./mean = 1.25 tons/ac.

**Crop :- Pumpkin.**

**Ref :- U.P. 59(518).**

**Site :- Govt. Veg. Res. Stn., Kalianpur.**

**Type :- 'D'.**

Object :—To study the effect of spraying different insecticides against peroplasmopara cubensis disease of Pumpkin.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kalianpur. (iii) to (v) N.A. (vi) Local. (vii) to (x) N.A.

## 2. TREATMENTS :

4 insecticides : D<sub>0</sub>=Control, D<sub>1</sub>=Blitox 50—0.3% (cuprous oxychloride), D<sub>2</sub>=Bordeaux mixture 5 : 5 : 50 (cuprous oxide) and D<sub>3</sub>=Dithane Z—78 ; 0.2%.



## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 5. (iv) (a) and (b) 6'×15'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Incidence of *peroplasmopara cubensis*. Control measures as per treatments. (iii) % of diseased plants. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 26.14 degrees. (ii) 3.38 degrees. (iii) Treatment differences are not significant. (iv) Mean % of diseased plants in degrees.

Treatment	D <sub>0</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>
Mean angle	28.38	26.44	26.44	24.37

S.E./mean = 1.51 degrees.

% of diseased plants	22.87	20.13	20.13	17.36
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**Crop :- Tinda (Kharif).**

**Ref :- U.P. 57(243).**

**Site :- B.R. College Insttl. Farm, Bichpuri.**

**Type :- 'D'.**

Object :—To study the effect of hormones and the concentration of their solution on the fruit development and seedlessness of Tinda.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Bichpuri. (iii) 28.7.1957. (iv) (a) N.A. (b) Sown on ridges. (c) N.A. (d) 6'×3'. (e) 4. (v) 10 lb./ac. of N as A/S. (vi) Local. (vii) Irrigated. (viii) 3 weedings, 3 hoeings and thinning. (ix) and (x) N.A.

## TREATMENTS :

All combinations of (1) and (2)

(1) 2 hormones : H<sub>1</sub>=Indole Butyric Acid and H<sub>2</sub>=Naphthalene Acetic Acid.

(2) 5 concentrations : C<sub>0</sub>=Control (only distilled water), C<sub>1</sub>=50, C<sub>2</sub>=100, C<sub>3</sub>=200 and C<sub>4</sub>=400 ppm  
Hormone solution was sprayed by hand sprayer on 28.9.1957 just before opening of the flowers on the stigmas of selected female flowers

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 10. (b) 30'×27'. (iii) 4. (iv) (a) N.A. (b) 12'×6'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Gammexane was dusted on 25.9.1957 against cucurbit fruit fly as a precautionary measure. (iii) Seed yield. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 40.12 gms./fruit. (ii) 14.81 gms./fruit. (iii) Main effect of H and C are highly significant and interaction H×C is significant (iv) Av. yield of seed in gms./fruit.

Control = 69.12 gms./fruit.

	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	C <sub>4</sub>	Mean
H <sub>1</sub>	65.00	58.25	53.50	34.25	52.75
H <sub>2</sub>	20.75	18.50	10.00	2.75	13.00
Mean	42.87	38.37	31.75	18.50	32.87

S.E. of H marginal mean = 3.70 gms./fruit.

S.E. of C marginal mean = 5.24 gms./fruit.

S.E. of body of table or control mean = 7.40 gms./fruit.

**Crop :- Tinda.****Ref :- U.P. 59(216).****Site :- B. R. College Insttl. Farm, Bichpuri.****Type :- 'D'.**

Object :—To study the effect of hormones and the concentration of their solution on the fruit development and seedlessness of Tinda.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Cauliflower. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Bichpuri. (iii) 29.4.1959. (iv) (a) 1 *palewa*, 2 ploughings and 1 planking. (b) Sown in furrows. (c) N.A. (d) 2'×2'. (e) 5 plants/net-plot. (v)  $\frac{1}{2}$  sr./plant of compost. (vi) N.A. (vii) Irrigated. (viii) 3 weedings, 2 hoeings and 1 thinning to a distance of 3'. (ix) N.A. (x) 21.6.1959.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 2 hormones : P<sub>1</sub>=Indole 3-Butyric Acid and P<sub>2</sub>=Nepthalene Acetic Acid.

(2) 5 concentrations : C<sub>0</sub>=Control, C<sub>1</sub>=200, C<sub>2</sub>=400, C<sub>3</sub>=600 and C<sub>4</sub>=800 ppm.

Solution sprayed by hand sprayer.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) 21'×7'. (b) 15'×7'. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Red pumpkin beetle dusted with ash. (iii) Seed and fruit yield. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 10.28 gms./fruit. (ii) 1.70 gms./fruit. (iii) Main effects of P, C and interaction P×C are highly significant. (iv) Av. yield of seed in gm./fruit.

Control = 21.33 gms /fruit

	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	C <sub>4</sub>	Mean
P <sub>1</sub>	13.86	13.43	12.08	9.11	12.12
P <sub>2</sub>	8.34	2.16	1.09	0.13	2.93
Mean	11.10	7.80	6.58	4.62	7.52

S.E. of P marginal mean = 0.42 gm./fruit.

S.E. of C marginal mean = 0.60 gm./fruit.

S.E. of body of table or control mean = 0.85 gm./fruit.

**Crop :- Tomato (Rabi).****Ref :- U.P. 58(225).****Site :- Botanical Gardens, Govt. Agri. College, Kanpur.****Type :- 'M'.**

Object :—To study the effect of Urea spray on Tomato.

**1. BASAL CONDITIONS :**

(i) (a) No. (b) Fallow. (c) Nil. (ii) (a) Alluvial loam. (b) Refer soil analysis, Kanpur. (iii) 10.10.1958/9.11.1958. (iv) (a) N.A. (b) Transplanting. (c) N.A. (d) 3'×3'. (e) N.A. (v) Nil. (vi) *Semi*. (vii) Irrigated. (viii) Hoeing and weeding. (ix) 4.4". (x) N.A.

**2. TREATMENTS :**

9 manurial treatments : M<sub>0</sub>=Control (water only), M<sub>1</sub>=3 lb./ac. of urea, M<sub>2</sub>=4 lb./ac. of urea, M<sub>3</sub>=5 lb./ac. of urea, M<sub>4</sub>=6 lb./ac. of urea, M<sub>5</sub>=M<sub>1</sub>+17 lb./ac. of sucrose, M<sub>6</sub>=M<sub>2</sub>+22.5 lb./ac. of sucrose, M<sub>7</sub>=M<sub>3</sub>+28 lb./ac. of sucrose and M<sub>8</sub>=M<sub>4</sub>+34 lb./ac. of sucrose.

Plants were first sprayed on 24.11.1958 and subsequent sprayings were done on 29.12.1958, 24.12.1958, 8.1.1959, 23.1.1959 and 7.2.1959.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 3. (iv) (a) and (b) 11'×8'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Fruit size, number of branches and yield of tomato. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 4.44 tons/ac. (ii) 0.70 tons/ac. (iii) Treatment differences are highly significant. (iv) Av. yield of tomato in tons/ac.

Treatment	M <sub>0</sub>	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	M <sub>4</sub>	M <sub>5</sub>	M <sub>6</sub>	M <sub>7</sub>	M <sub>8</sub>
Av. yield	3.04	4.12	4.86	5.43	5.58	3.37	3.90	4.26	5.38

S.E /mean = 0.40 tons/ac.

**Crop :- Tomato (Rabi).**

**Ref :- U.P. 56(191).**

**Site :- B. R. College Insttl. Res. Farm, Bichpuri.**

**Type :- 'I'.**

Object :- To study the effect of irrigation water of varying salinity on Tomato yield.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) Fallow. (c) Nil. (ii) (a) Light loam. (b) Refer soil analysis, Bichpuri. (iii) 22 and 23.10.1956. (iv) (a) 5 ploughings and 1 planking. (b) Transplanted. (c) N.A. (d) 2½'×2'. (e) 1. (v) 100 lb./ac. N as M.C. (vi) N.A. (vii) Irrigated. (viii) 3 hoeings. (ix) 4.98". (x) N.A.

## 2. TREATMENTS :

2 levels of salinity : I<sub>1</sub>=Saline water having salt contents of 845 ppm. and I<sub>2</sub>=Saline water having salt contents of 1430 ppm.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 6. (iv) and (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Yield of tomato. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 13.26 tons/ac. (ii) N.A. (iii) Treatment difference is not significant. (iv) Av. yield of tomato in tons/ac.

Treatment	I <sub>1</sub>	I <sub>2</sub>
Av. yield	14.10	12.42

S.E.'s—N.A.

**Crop :- Tomato (Kharif).**

**Ref :- U.P. 56(209).**

**Site :- Botanical Gardens, Govt. Agri. College, Kanpur.**

**Type :- 'D'.**

Object :- To study the effect of hormones and starters on the growth and yield of Tomato.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) and (c) N.A. (ii) (a) Alluvial soil. (b) Refer soil analysis, Kanpur. (iii) 2.9.1956/2.10.1956. (iv) (a) 2 ploughings. (b) Transplanting. (c) N.A. (d) 2½'×2½'. (e) 1. (v) G.M. with *sanai*. (vi) 'Best of all'. (vii) Irrigated. (viii) Nil. (ix) and (x) N.A.

## 2. TREATMENTS :

8 insecticidal treatments :  $D_0$ =Control,  $D_1$ =Plants treated with chemical starter at  $\frac{1}{2}$  pint per plant,  $D_2$ =Plants treated with chemical starter at  $\frac{1}{4}$  pint per plant,  $D_3$ =Plants treated with dung starter at  $\frac{1}{2}$  pint per plant,  $D_4$ =Plants treated with I.B.A. at 8 ppm,  $D_5$ =Plants treated with I.B.A at 10 ppm,  $D_6$ =Plants treated with N.A.A at 2 ppm and  $D_7$ =Plants treated with N.A.A. at 4 ppm.

Seeds were treated with Sulphur prior to sowing in nursery.

Chemical starter : 2 lbs. of Ammo. phos. and 1 lb. of Potassium nitrate dissolved in 50 gallons of water.

Dung starter : 6 seers of fresh cow dung dissolved in 10 seers of water and filtered.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) and (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Yield of tomato. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 8.25 tons/ac. (ii) 0.62 tons/ac. (iii) Treatment differences are highly significant. (iv) Av. yield of tomato in tons/ac.

Treatment	$D_0$	$D_1$	$D_2$	$D_3$	$D_4$	$D_5$	$D_6$	$D_7$
Av. yield	6.13	10.08	7.93	9.65	9.14	7.17	8.11	7.76

S.E./mean = 0.31 tons/ac.

**Crop :- Tomato.**

**Ref :- U.P. 58(229).**

**Site :- Botanical Gardens, Govt. Agri. College, Kanpur. Type :- 'D'.**

Object :—To study the effect of Maleic Hydrazide on the growth and yield of Tomato.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) *Papaya*. (c) N.A. (ii) (a) Alluvial loam. (b) Refer soil analysis, Kanpur. (iii) 7.9.1958/13.9.1958. (iv) (a) N.A. (b) Transplanting. (c) N.A. (d) 3'×3'. (e) N.A. (v) G.M. with *sanai*. (vi) *Turi Alba*. (vii) Irrigated. (viii) N.A. (ix) 13.35". (x) N.A.

## 2. TREATMENTS :

4 concentrations of M.H. :  $C_0$ =Control,  $C_1$ =0.05 %,  $C_2$ =0.10 % and  $C_3$ =0.20%.

The solution of M.H. was prepared in distilled water at pH. 6.0 and 3.0 concentrations. Seedlings were sprayed on 12.10.1958. A small medicinal type of atonizer was employed for spraying with different concentrations. Only one spraying was practised.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 5. (iv) (a) and (b) 12'×12'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Yield of tomato. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 6.77 tons/ac. (ii) 2.03 tons/ac. (iii) Treatment differences are significant. (iv) Av. yield of tomato in tons/ac.

Treatment	$C_0$	$C_1$	$C_2$	$C_3$
Av. yield	8.70	8.20	5.46	4.73

S.E./mean = 0.91 tons/ac.

**Crop :- Tomato.****Ref :- U.P. 55(216).****Site :- Botanical Gardens, Govt. Agri. College, Kanpur. Type :- 'DC'.**

Object :—To study the effect of Alpha—Naphthalene Acetic acid on growth and yield of Tomato.

**1. BASAL CONDITIONS :**

(i) (a) No. (b) and (c) N.A. (ii) (a) Alluvial loam. (b) Refer soil analysis, Kanpur. (iii) As per treatments. (iv) (a) N.A. (ii) Transplanting. (c) N.A. (d) 2.5' × 2'. (e) N.A. (v) G.M. with *sanai*. (vi) Best of all. (vii) Irrigated. (viii) N.A. (ix) 10.56". (x) N.A.

**2. TREATMENTS :**

Main-plot treatments :

2 dates of planting :  $D_1 = 1.9.1955/1.10.1955$  and  $D_2 = 1.10.1955/31.10.1955$ 

Sub-plot treatments :

5 concentrations of Alfa—N.A.A. :  $C_0 = \text{Control}$ ,  $C_1 = 0.02$ ,  $C_2 = 0.04$ ,  $C_3 = 0.06$  and  $C_4 = 0.08$  ppm**3. DESIGN :**

(i) Split-plot. (i) (a) 2 main-plots/replication ; 5 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) and (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Nil. (iii) Yield of grain. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 7.40 tons/ac. (ii) (a) 0.87 tons/ac. (b) 1.13 tons/ac. (iii) Main effect of C is highly significant and D effect is significant. (iv) Av. yield of tomato in tons/ac.

	$C_0$	$C_1$	$C_2$	$C_3$	$C_4$	Mean
$D_1$	5.17	8.63	8.30	6.42	6.18	6.94
$D_2$	5.53	9.72	9.19	7.31	7.57	7.86
Mean	5.35	9.17	8.75	6.86	6.88	7.40

S.E. of difference of two

1. D marginal means = 0.28 tons/ac.
2. C marginal means = 0.57 tons/ac.
3. C means at the same level of D = 0.80 tons/ac.
4. D means at the same level of C = 0.76 tons/ac.

**Crop :- Ash gourd (Kharif).****Ref :- U.P. 56(77).****Site :- State Soil Cons. Res. Demons. & Trg. Centre, Rahmankhera. Type :- 'C'.**

Object :—To study the effect of sowing on flat plots and on contour listed plots on the yield of Ash gourd.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loamy sand to sandy loam. (b) Refer soil analysis, Rahmankhera. (iii) 2.7.1956. (iv) (a) N.A. (b) As per treatments. (c) N.A. (d) 4' × 8'. (e) N.A. (v) N.A. (vi) Local. (vii) Unirrigated. (viii) 2 weedings. (ix) N.A. (x) 24.12.1956.

**2. TREATMENTS :**2 cultural treatments :  $C_1 = \text{Sown on flat plot}$  and  $C_2 = \text{Sown on ridges on contour listed plots}$ .**3. DESIGN :**

(i) Paired-plot. (ii) (a) 2. (b) N.A. (iii) 6. (iv) (a) and (b) 22' × 60'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Attack of red pumpkin beetle. No control measures taken. (iii) Yield of ash gourd. (iv) (a) 1956—1959 (experiment failed in 1957). (b) N.A. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 8.69 tons/ac. (ii) 3.96 tons/ac. (iii) Treatment difference is not significant. (iv) Av. yield of ash gourd in tons/ac.

Treatment	C <sub>1</sub>	C <sub>2</sub>
Av. yield	8.19	9.19

S.E./mean = 1.62 tons/ac.

**Crop :- Ash gourd (Kharif).**

**Ref :- U.P. 58(105).**

**Site :- State Soil Cons. Res. Demons. & Trg. Centre, Rahmankhera Type :- 'C'.**

Object :--To study the effect of sowing on flat plots and on contour listed plots on the yield of Ash gourd.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loamy sand to sandy loam. (b) Refer soil analysis, Rahmankhera. (iii) 9.7.1953. (iv) (a) 2 ploughings and 2 plankings. (b) As per treatments. (c) and (d) N.A. (e) 4 seeds/pit. (v) N.A. (vi) Local. (vii) Unirrigated. (viii) to (x) N.A.

## 2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 56(77) on page 860.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of ash gourd. (iv) (a) 1956—1959 (expt. failed in 1957). (b) Yes. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 4.51 tons/ac. (ii) 0.51 tons/ac. (iii) Treatment difference is significant. (iv) Av. yield of ash gourd in tons/ac.

Treatment	C <sub>1</sub>	C <sub>2</sub>
Av. yield	4.05	4.97

S.E./mean = 0.21 tons/ac.

**Crop :- Ash gourd (Kharif).**

**Ref :- U.P. 59(103).**

**Site :- State Soil Cons. Res. Demons & Trg. Centre, Rahmankhera. Type :- 'C'.**

Object :— To study the effect of sowing on flat plots and on of contour listed plots on the yield of Ash gourd.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loamy sand to sandy loam. (b) Refer soil analysis, Rahmankhera. (iii) 9.7.1959. (iv) (a) 2 ploughings and 2 plankings. (b) As per treatments. (c) and (d) N.A. (e) 4. (v) 3 seers of compost per pit before sowing,  $\frac{1}{2}$  chk. of A/S per pit at 1st top dressing and  $\frac{1}{2}$  chk. of A/S per pit at 2nd top dressing. (vi) Local. (vii) Unirrigated. (viii) and (ix) Nil. (x) 1st harvest—N.A. and 2nd harvest 13.2.1960.

## 2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 56(77) on page 860.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of ash gourd. (iv) (a) 1956—1959 (experiment failed in 1957). (b) Yes. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS:

(i) 2.22 tons/ac. (ii) 0.54 tons/ac. (iii) Treatment difference is significant. (iv) Av. yield of ash gourd in tons/ac.

Treatment	C <sub>1</sub>	C <sub>2</sub>
Av. yield	1.69	2.74

S.E./mean = 0.22 tons/ac.

**Crop :- Spinach (Rabi).**

**Ref :- U.P. 54(223).**

**Site :- Agri. College Farm, B.H.U., Varanasi.**

**Type :- 'C'.**

Object :— To study the effect of organic and inorganic fertilizer on the growth of Spinach.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) Sugarcane (*ratoon*)— Fallow. (c) Nil. (ii) (a) Medium loam (b) Refer soil analysis, Varanasi. (iii) N.A. (iv) (a) 1 ploughing by tractor and 5 with *desi* plough and plankings. (b) Broadcast. (c) 2 seers/ac. (d) and (c) N.A. (v) Nil. (vi) Local. (vii) Irrigated. (viii) Weedings. (ix) and (x) N.A.

## 2. TREATMENTS :

13 manurial treatments : T<sub>1</sub>=No manure, T<sub>2</sub>=30 lb./ac. of N as F.Y.M., T<sub>3</sub>=40 lb./ac. of N as F.Y.M., T<sub>4</sub>=50 lb./ac. of N as F.Y.M., T<sub>5</sub>=30 lb./ac. of N as compost, T<sub>6</sub>=40 lb./ac. of N as compost, T<sub>7</sub>=50 lb./ac. of N as compost, T<sub>8</sub>=30 lb./ac. of N as A/S, T<sub>9</sub>=40 lb./ac. of N as A/S, T<sub>10</sub>=50 lb./ac. of N as A/S, T<sub>11</sub>=30 lb./ac. of N as A/S+60 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super+30 lb./ac. of K<sub>2</sub>O as Pot. Sul., T<sub>12</sub>=40 lb./ac. of N as A/S+80 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super+40 lb./ac. of K<sub>2</sub>O as Pot. Sul. and T<sub>13</sub>=50 lb./ac. of N as A/S+100 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super+50 lb./ac. of K<sub>2</sub>O as Pot. Sul.

These treatments were applied in 1953—1954 and seeds from the respective treatments were sown in 1954—1955. No manures were applied in 1954—1955.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 13. (b) 11.075' × 148.5'. (iii) 3. (iv) (a) N.A. (b) 8' × 9.075'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of spinach. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1195 lb./ac. (ii) 220 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of spinach in lb./ac.

Treatment	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	T <sub>5</sub>	T <sub>6</sub>	T <sub>7</sub>
Av. yield	1234	1123	1234	1234	1234	987	1234
Treatment	T <sub>8</sub>	T <sub>9</sub>	T <sub>10</sub>	T <sub>11</sub>	T <sub>12</sub>	T <sub>13</sub>	
Av. yield	987	1234	1234	1333	1234	1234	

S.E./mean = 127.6 lb./ac.

**Crop :- Spinach (Rabi).**

**Ref :- U.P. 54(224).**

**Site :- Agri. College Farm, B.H.U., Varanasi.**

**Type :- 'CM'.**

Object :—To study the effect of organic and inorganic fertilizers on the growth of Spinach.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Medium loam. (b) Refer soil analysis, Varanasi. (iii) 18.11.1954. (iv) (a) 1 ploughing by tractor and 5 with *desi* plough and plankings. (b) Broadcast. (c) 2 srs/ac. (d) and (e) N.A. (v) N.A. (vi) Local. (vii) Irrigated. (viii) Weedings. (ix) N.A. (x) 7.1.1955.

## 2. TREATMENTS :

Same as in expt. no. 54(223) on page 862.

These treatments were applied in 1953-1954 and the seeds from the respective treatments were sown in 1954-1955 applying manures as per treatments.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 13. (b)  $11.075' \times 148.5'$ . (iii) 3. (iv) (a) N.A. (b)  $8' \times 9.075'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of Spinach. (iv) (a) 1953—1954. (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 2856 lb./ac. (ii) 351.8 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of spinach in lb./ac.

Treatment	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	T <sub>5</sub>	T <sub>6</sub>	T <sub>7</sub>
Av. yield	1123	1333	1605	2259	1432	1605	2469
Treatment	T <sub>8</sub>	T <sub>9</sub>	T <sub>10</sub>	T <sub>11</sub>	T <sub>12</sub>	T <sub>13</sub>	
Av. yield	3456	4073	4443	3826	4443	5061	

S.E./mean = 203.1 lb./ac.

**Crop :- Spinach (Rabi).**

**Ref :- U.P. 56(194).**

**Site :- B. R. College Insttl. Res. Farm, Bichpuri.**

**Type :- 'P'.**

Object :—To study the effect of irrigation water of varying salinity on spinach crop.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) Fallow. (c) Nil. (ii) (a) Light loam. (b) Refer soil analysis, Bichpuri. (iii) 22, 23.10.1956. (iv) (a) 5 ploughings and 1 planking. (b) Broadcast. (c) 4 srs./ac. (d) and (e) N.A. (v) 100 lb./ac. of N as M.C. (vi) N.A. (vii) 6 irrigations. (viii) 3 hoeings. (ix) 4.98". (x) N.A.

## 2. TREATMENTS :

2 levels of salinity of water : I<sub>1</sub>=Saline water having salt contents of 845 ppm and I<sub>2</sub>=Saline water having salt contents of 1430 ppm.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 6. (iv) and (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Yield of spinach green leaves. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 6.03 tons/ac. (ii) N.A. (iii) Treatment difference is not significant. (iv) Av. yield of green leaves of spinach in tons/ac.

Treatment	I <sub>1</sub>	I <sub>2</sub>
Av. yield	5.52	6.54

S.E.'s = N.A.

**Crop :- Lettuce (Rabi).**

**Ref :- U.P. 58(22).**

**Site :- Botanical Gardens, Govt. Agri. College, Kanpur.**

**Type :- 'D'.**

Object :—To study the effect of starter solution and hormone on growth and yield of Lettuce.



## 1. BASAL CONDITIONS:

(i) (a) to (c) N.A. (ii) (a) Alluvial loam. (b) Refer soil analysis, Kanpur. (iii) 2.11.1958/22.11.1958. (iv) (a) N.A. (b) Transplanting. (c) N.A. (d)  $1\frac{1}{2}' \times 1\frac{1}{2}'$ . (e) N.A. (v) Nil. (vi) Co.—S. (vii) Irrigated. (viii) Weeding and hoeings. (ix) 0.6". (x) N.A.

## 2. TREATMENTS:

T<sub>0</sub>=Seedlings treated with water, T<sub>1</sub>=Ammono. phos.+Pot. nitrate in 1:1 ratio dissolved in water at the rate of 2½ lb. per 50 gallons of water, T<sub>2</sub>=Sodium nitrate at 1½ lb. dissolved in 50 gallons of water, T<sub>3</sub>=Seedling root treated with 10 ppm I.B.A. and T<sub>4</sub>=Seedling root treated with 20 ppm I.B.A

I.B.A. was dissolved into alcohol and then diluted for the desired concentration. The roots were thoroughly washed with water and then immersed in the hormone solutions of respective concentrations for 2 hours. The control plants were immersed in water for 2 hours. The plants in treatment T<sub>1</sub> and T<sub>2</sub> were also dipped in water for 2 hours.

## 3. DESIGN:

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 3. (iv) and (v) N.A. (vi) Yes.

## 4. GENERAL:

(i) N.A. (ii) Nil. (iii) No. of leaves per plant, length of leaf and yield of lettuce vegetable. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS:

(i) 3.15 tons/ac. (ii) 0.25 tons/ac. (iii) Treatment differences are highly significant. (iv) Av. yield of lettuce in tons/ac.

Treatment	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>
Av. yield	2.74	3.73	3.33	3.09	2.85

S.E./mean = 0.14 tons/ac.

**Crop :- Watermelon.**

**Ref :- U.P. 58(194).**

**Site :- B. R. College Insttl. Res. Farm, Bichpuri.**

**Type :- 'D'.**

Object :- To study the effect of plant regulators and their method of application on Parthenocarpy in Watermelon.

## 1. BASAL CONDITIONS

(i) (a) No. (b) Fallow. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Bichpuri. (iii) 9.1.1959. (iv) (a) 5 ploughings and 1 planking. (b) On the side of ridges. (c) N.A. (d)  $8' \times 3'$ . (e, 4. (v) Half basket of decomposed M.C. in pits by the side of ridge at proper distances 10 lb./ac. of N as A/S top dressed on 17.2.1959, 15 lb./ac. of N as Urea on 20.3.1959, and 10 lb./ac. of N as A/S on 7.4.1959. (vi) N.A. (vii) Irrigated. (viii) 6 weedings, 6 hoeings and thinning. (ix) Nil. (x) N.A.

## 2. TREATMENTS:

All combinations of (1) and (2) + a control

(1) 3 plant regulators: P<sub>1</sub>=Indole—3—Butyric Acid (I.B.A.), P<sub>2</sub>=Alpha—Naphthalene [Acetic Acid N.A.A.) and P<sub>3</sub>=Mixture of I.B.A.+N.A.A.

(2) 3 methods of application: M<sub>1</sub>=Injection of dry chemical, M<sub>2</sub>=Aqueous spray and M<sub>3</sub>=Lanolin paste.

## 3. DESIGN:

(i) R.B.D. (ii) (a) 10. (b)  $39' \times 56'$ . (iii) 4. (iv) (a)  $18' \times 8'$ . (b)  $12' \times 8'$ . (v) 3' on either side. (vi) Yes.

## 4. GENERAL:

(i) N.A. (ii) Severe attack of pumpkin beetles. Hand pickings and net pickings, Gammexane, tobacco decoction and D.D.T. applied. (iii) Diameters, length of front fruit set and fruit yield. (iv) (a) and (b) No. (c) Nil. (v) and (vi) Nil. (vii) Since the treatments M<sub>3</sub> P<sub>1</sub>, M<sub>3</sub> P<sub>2</sub>, M<sub>3</sub> P<sub>3</sub> (paste method) failed in all replications, only other treatments were considered for the purpose of statistical analysis.

## 5. RESULTS :

(i) 27.1 % fruit set. (ii) 1.3 % fruit set. (iii) Main effect of M and 'control vs. others' are highly significant. (iv) Av. % of fruit set.

Control = 44.3 % of fruit set.

	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	Mean
M <sub>1</sub>	45.9	30.7	31.4	36.0
M <sub>2</sub>	10.1	12.4	15.2	12.6
Mean	28.0	21.5	23.3	24.3

S.E. of P marginal mean = 0.46 % fruit set.  
 S.E. of M marginal mean = 0.37 % fruit set.  
 S.E. of body of table or control = 0.65 % fruit set.

Crop :- Arbi (*Kharif*).

Ref :- U.P. 55(390).

Site :- Govt. Veg. Res. Stn., Kalianpur.

Type :- 'D'.

Object :— To study the effect of fungicidal spray with sticker on late blight on Arbi.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kalianpur. (iii) 4.3.1955. (iv) (a) to (c) N.A. (d) 1½' × 1'. (e) N.A. (v) to (ix) N.A. (x) 20.9.1955.

## 2. TREATMENTS :

5 fungicidal treatments : F<sub>0</sub>=Control, F<sub>1</sub>=Dithane Z-78, 0.2%, F<sub>2</sub>=Cupravit 0.7%, F<sub>3</sub>=Perenox 0.3% and F<sub>4</sub>=Cupravit 0.7 % + Folidol E 605, 0.06 % mixed.

The corms were first dipped in Perenox 0.3 % solution. Sprayings on 22.7.1955, 6.8.1955, 21.8.1955 and 5.9.1955 and Albolium, linseed oil and castor oil sprayed at the rate of 3 lb./ac. per gallon.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 12' × 20'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Incidence of late blight. Control measures as per treatments. (iii) Total no. of plants, no of diseased plants (primary and secondary shoot infection, separately) and yield of arbi vegetable. (iv) (a) and (b) No. (c) Nil. (v) and (vi) Nil. (vii) In replication no. IV treatment F<sub>1</sub> and in replication no. III treatment F<sub>3</sub> have been tried twice, while treatment F<sub>3</sub> in replication no. IV and treatment F<sub>1</sub> in replication III have not been tried at all.

## 5. RESULTS :

(i) 33.13 degrees. (ii) 3.95 degrees. (iii) Treatment differences are highly significant. (iv) Mean % of diseased plants in degrees.

Treatment	F <sub>0</sub>	F <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>	F <sub>4</sub>
Mean angle	85.30	19.60	19.57	18.75	22.44

S.E./mean except F<sub>1</sub> and F<sub>3</sub> = 1.98 degrees.

S.E. of difference between F<sub>1</sub>/F<sub>3</sub> mean and any of F<sub>0</sub>, F<sub>2</sub> or F<sub>4</sub> mean = 3.11 degrees.

S.E. of difference between F<sub>1</sub> and F<sub>3</sub> mean = 3.53 degrees.

% of diseased plants 98.84 11.65 11.61 80.73 14.93

(i) 8.31 tons/ac. (ii) 1.62 tons/ac. (iii) Treatment differences are significant. (iv) Av. yield of arbi in tons/ac.

Treatment	F <sub>0</sub>	F <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>	F <sub>4</sub>
Av. yield	6.05	8.37	11.17	8.35	7.63

S.E./mean except F <sub>1</sub> and F <sub>3</sub>	= 0.81 tons/ac.
S.E. of difference between F <sub>1</sub> /F <sub>3</sub> mean and any of F <sub>0</sub> , F <sub>2</sub> or F <sub>4</sub> mean	= 1.27 tons/ac.
S.E. of difference between F <sub>1</sub> and F <sub>3</sub> means	= 1.45 tons/ac.

**Crop :- Turnip (*Rabi*).**

**Ref :- U.P. 58(226).**

**Site :- Botanical Gardens, Govt. Agri. College, Kanpur. Type :- 'C'.**

Object :—To study the effect of different depths of sowing in Turnip.

**1. BASAL CONDITIONS :**

(i) (a) No. (b) *Papaya*. (c) Nil. (ii) (a) Alluvial loam. (b) Refer soil analysis, Kanpur. (iii) 8.11.1958.  
 (iv) (a) 1 *palewa*. (b) Dibbling. (c) N.A. (d) 16" × 6". (e) 2. (v) 1 basket of cowdung/plot before sowing.  
 (vi) Local. (vii) Irrigated. (viii) Hoings and weedings. (ix) 0.6". (x) 22.1.1959.

**2. TREATMENTS :**

8 depths of sowing seeds : D<sub>1</sub>=½", D<sub>2</sub>=1", D<sub>3</sub>=1½", D<sub>4</sub>=2", D<sub>5</sub>=2½", D<sub>6</sub>=3", D<sub>7</sub>=3½" and D<sub>8</sub>=4".  
 Seeds were disinjected for any seed born disease before sowing and were soaked in water for 12 hours.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) and (b) 7' × 9'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Nil. (iii) Germination, number of leaves and yield of turnip. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 9.10 tons/ac. (ii) 0.37 tons/ac. (iii) Treatment differences are highly significant. (iv) Av. yield of turnip roots in tons/ac.

Treatment	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	D <sub>5</sub>	D <sub>6</sub>	D <sub>7</sub>	D <sub>8</sub>
Av. yield	9.16	11.13	10.15	9.13	8.94	8.35	8.06	7.90

S.E./mean = 0.19 tons/ac.

**Crop :- Turnip (*Rabi*).**

**Ref :- U.P. 58(233).**

**Site :- Botanical Gardens, Govt. Agri. College, Kanpur. Type :- 'D'.**

Object :—To study the hormonal treatment of seeds on Turnip crop.

**1. BASAL CONDITIONS :**

(i) (a) No. (b) *Papaya*. (c) N.A. (ii) (a) Alluvial loam. (b) Refer soil analysis, Kanpur. (iii) 5.11.1958.  
 (iv) (a) to (c) N.A. (d) 2' × 8". (e) N.A. (v) Nil. (vi) 'Sutton's golden ball'. (vii) Irrigated. (viii) Hoings and weedings. (ix) 0.6". (x) N.A.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 2 seed soaking durations : D<sub>1</sub>=8 and D<sub>2</sub>=12 hours.

(2) 5 hormonal treatments : H<sub>0</sub>=Distilled water, H<sub>1</sub>=0.01 % a—N.A.A., H<sub>2</sub>=0.02 % a—N.A.A., H<sub>3</sub>=0.01 % I.B.A. and H<sub>4</sub>=0.02 % I.B.A.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 10. (b) N.A. (iii) 3. (iv) (a) and (b) 4.5' × 6'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Number of leaves, diameter of root and yield of turnip. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 3.40 tons/ac. (ii) 0.16 tons/ac. (iii) Main effect of H is significant and interaction  $H \times D$  is highly significant. (iv) Av. yield of turnip in tons/ac.

	H <sub>0</sub>	H <sub>1</sub>	H <sub>2</sub>	H <sub>3</sub>	H <sub>4</sub>	Mean
D <sub>1</sub>	2.94	4.84	4.57	3.62	2.06	3.61
D <sub>2</sub>	2.98	5.32	2.78	2.84	2.05	3.19
Mean	2.96	5.08	3.68	3.23	2.05	3.40

S.E. of D marginal mean = 0.04 tons/ac.  
 S.E. of H marginal mean = 0.07 tons/ac.  
 S.E. of body of table = 0.09 tons/ac.

**Crop :- Pea (Rabi).**

**Ref :- U.P. 58(295).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'M'.**

Object :—To study the effect of green manuring on the yield of Pea.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) As per treatments. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 13.11.1958. (iv) to (ix) N.A. (x) 28.3.1959.

## 2. TREATMENTS :

5 manurial treatments : M<sub>0</sub>=Control, M<sub>1</sub>=*Dhaincha* crop, M<sub>2</sub>=Leaves and loppings from *Pongamia glabera* to supply 30 lb./ac. of N, M<sub>3</sub>=Leaves and loppings from *Cassia fistula* to supply 30 lb./ac. of N and M<sub>4</sub>=30 lb./ac. of N as A/S.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) 35' × 76.75'. (iii) 4. (iv) (a) and (b) 13.75' × 35'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of peas. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1371 lb./ac. (ii) 197.3 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of peas in lb./ac.

Treatment	M <sub>0</sub>	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	M <sub>4</sub>
Av. yield	1312	1334	1344	1437	1427

S.E./mean = 98.7 lb./ac.

**Crop :- Pea (Rabi).**

**Ref :- U.P. 57(106).**

**Site :- Reg. Res. Stn., Nawabganj.**

**Type :- 'M'.**

Object :—To find out the effect of paddy straw on Pea.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Nawabganj. (iii) 22.11.1957. (iv) (a) N.A. (b) Behind the plough in rows. (c)  $3\frac{1}{2}$  srs./ac. (d)  $1\frac{1}{2}$ ' between rows. (e) N.A. (v) Nil. (vi) to (viii) N.A. (ix) 0.44". (x) 18.3.1958.

**2. TREATMENTS :**

2 manurial treatments :  $M_0$ =Control and  $M_1$ =Paddy ploughed in and pea sown.

**3. DESIGN :**

(i) Paired plot. (ii) (a) 2. (b) N.A. (iii) 12. (iv) (a) and (b)  $12' \times 36'$ . (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Germination, yield of peas and straw. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 198 lb./ac. (ii) 81.2 lb./ac. (iii) Treatment difference is not significant. (iv) Av. yield of peas in lb./ac.

Treatment	$M_0$	$M_1$
Av. yield	203	193

S.E./mean = 23.4 lb./ac.

**Crop :- Pea (Rabi).**

**Ref :- U.P. 59(453).**

**Site :- Reg. Res. Stn., Rudrapur.**

**Type :- 'M'.**

Object :—To study the residual effect of N and P applied to Paddy crop on the succeeding Pea crop.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Paddy. (c) As per treatments. (ii) (a) Clayey loam. (b) Refer soil analysis, Rudrapur. (iii) 17.12.1959. (iv) and (v) N.A. (vi) Pea No.—163. (vii) to (ix) N.A. (x) 20 and 21.3.1960.

**2. TREATMENTS :**

10 manurial treatments :  $M_0$ =Control,  $M_1$ =40 lb./ac. of  $P_2O_5$  as Super,  $M_2$ =20 lb./ac. of N as A/S,  $M_3$ =40 lb./ac. of N as A/S,  $M_4$ =20 lb./ac. of N as A/S+40 lb./ac. of  $P_2O_5$  as Super,  $M_5$ =20 lb./ac. of N as F.Y.M.,  $M_6$ =40 lb./ac. of N as F.Y.M.,  $M_7$ =20 lb./ac. of N as F.Y.M.+40 lb./ac. of  $P_2O_5$  as Super,  $M_8$ =20 lb./ac. of N as A/S+20 lb./ac. of N as F.Y.M. and  $M_9$ =20 lb./ac. of N as A/S+20 lb./ac. of N as F.Y.M.+40 lb./ac. of  $P_2O_5$  as Super.

These treatments were applied to Paddy crop during *kharif* 1959.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 10. (b)  $36' \times 172.5'$ . (iii) 4. (iv) (a)  $36' \times 15'$ . (b)  $32' \times 13.5'$ . (v)  $1' \times 9"$ . (vi) Yes.

**4. GENERAL :**

(i) Very poor. (ii) N.A. (iii) Yield of peas. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 924 lb./ac. (ii) 305.4 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of peas in lb./ac.

Treatment	$M_0$	$M_1$	$M_2$	$M_3$	$M_4$	$M_5$	$M_6$	$M_7$	$M_8$	$M_9$
Av. yield	836	914	862	700	895	1251	810	862	959	1154

S.E./mean = 152.7 lb./ac.

**Crop :- Pea (Rabi).****Ref :- U.P. 59(86).****Site :- Reg. Res. Stn., Varanasi.****Type :- 'M'.**

Object :—To study the residual effect of N and P applied to Paddy crop on the succeeding Pea crop.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Paddy. (c) 29 lb./ac. of N as A/S+56 lb./ac. of  $P_2O_5$  as Super+16.2 lb./ac. of N as F.Y.M. (ii) (a) Clayey loam. (b) Refer soil analysis, Varanasi. (iii) 22.11.1959. (iv) (a) N.A. (b) Line sowing. (c) N.A. (d)  $1\frac{1}{2}'$  between rows. (e) N.A. (v) Nil. (vi) T-163 (medium). (vii) to (ix) N.A. (x) 21.3.1960.

**2. TREATMENTS :**

Same as in expt. no. 59(453) on page 868.  
Manure applied to *kharif* crop in 1959.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) N.A. (b)  $40' \times 15'$ . (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of peas. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 726 lb./ac. (ii) 75.3 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of peas in lb./ac.

Treatment	M <sub>0</sub>	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	M <sub>4</sub>	M <sub>5</sub>	M <sub>6</sub>	M <sub>7</sub>	M <sub>8</sub>	M <sub>9</sub>
Av. yield	686	793	663	700	718	663	653	765	728	887

S.E./mean = 37.7 lb./ac.

**Crop :- Pea (Rabi).****Ref :- U.P. 59(97).****Site :- Reg. Res. Stn., Varanasi.****Type :- 'M'.**

Object :— To study the residual effect of departmental mixture against A/S and Super applied to Paddy on the succeeding Pea crop.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Paddy. (c) 21 lb./ac. of N as A/S, 15 lb./ac. of  $P_2O_5$  as Super and departmental mixture at 26 lb./ac. (ii) (a) Clayey loam. (b) Refer soil analysis, Varanasi. (iii) 22.11.1959. (iv) (a) N.A. (b) Sown behind the plough in line. (c) N.A. (d)  $1\frac{1}{2}'$  between rows. (e) N.A. (v) Nil. (vi) T-163 (medium). (vii) to (ix) N.A. (x) 21.3.1960.

**2. TREATMENTS :**

2 manurial treatments : M<sub>1</sub>=Departmental mixture. No. 1 (16% of N and 9% of  $P_2O_5$ ) and M<sub>2</sub>=A/S +Super.

Treatments were applied to *kharif* crop of paddy.

**3. DESIGN :**

(i) Paired plot. (ii) (a) 2. (b) N.A. (iii) 12. (iv) (a) N.A. (b)  $40' \times 8'$ . (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of peas. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 633 lb./ac. (ii) 92.3 lb./ac. (iii) Treatment difference is highly significant. (iv) Av. yield of peas in lb./ac.

Treatment	M <sub>1</sub>	M <sub>2</sub>
Av. yield	537	729

S.E./mean = 26.7 lb./ac.

**Crop :- Pea (Rabi).**

**Ref :- U.P. 59(98).**

**Site :- Reg. Res. Stn., Varanasi.**

**Type :- 'M'.**

Object :- To study the effect of P on Pea.

### 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Varanasi. (iii) 19.11.1959. (iv) (a) *Palewa* on 11.11.1959 and ploughings on 16, 18.11.1959. (b) Line sowing. (c) N.A. (d) 1½' between rows. (e) N.A. (v) Nil. (vi) T-163 (medium). (vii) Irrigated. (viii) Hoeing. (ix) N.A. (x) 19.3.1960.

### 2. TREATMENTS :

8 levels of P<sub>2</sub>O<sub>5</sub> as Super : P=0, P<sub>1</sub>=10, P<sub>2</sub>=15, P<sub>3</sub>=20, P<sub>4</sub>=25, P<sub>5</sub>=30, P<sub>6</sub>=35 and P<sub>7</sub>=40 lb./ac. Super placed deep in furrows on 19.11.1959.

### 3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 40' × 4'. (v) N.A. (vi) Yes.

### 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of peas. (iv) (a) and (b) N.A. (c) Nil. (v) to (vii) Nil.

### 5. RESULTS :

(i) 1131 lb./ac. (ii) 252.3 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of peas in lb./ac.

Treatment	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	P <sub>4</sub>	P <sub>5</sub>	P <sub>6</sub>	P <sub>7</sub>
Av. yield	1347	1137	1417	927	892	1015	1190	1120

S.E./mean = 126.2 lb./ac.

**Crop :- Pea (Rabi).**

**Ref :- U.P. 58(SFT).**

**Centre :- Aligarh (c.f.).**

**Type :- 'C'.**

Object :- Type C—To compare the responses of different leguminous crops to alternative levels of phosphate.

### 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Alluvial. (iii) to (v) N.A. (vi) October—November. (vii) Unirrigated. (viii) and (ix) N.A. (x) April.

### 2. TREATMENTS :

3 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0, P<sub>1</sub>=30 and P<sub>2</sub>=60 lb./ac.

### 3. DESIGN :

(i) and (ii) The district has been divided into four agriculturally homogenous zones and one field assistant has been posted in each zone. The field assistant conducts the trials in one revenue circle or *thana* in the zone and the circle/*thana* is changed once in two years within the same zone. Each field assistant is required to conduct 31 trials in a year, 8 on a *kharif* cereal, 8 on a *rabi* cereal, 8 on cash crops, 4 on an oilseed crop and 3 on a leguminous crop. Half the number of trials conducted are of type A and the other half of type B on crops other than the legumes. Three trials on legumes are of type C. Residual effects of phosphate application are studied on type C trials in two out of the four zones in each district every year. The above experiments are laid out in randomly located fields in randomly selected villages in each of the 4 zones at the rate of one experiment per village. (iii) (a) N.A. (b) 1/80 ac. (iv) Yes.

## 4. GENERAL :

(i) Normal. (ii) N.A. (iii) Pea yield. (iv) (a) 1958—contd. (b) No. (c) N.A. (v) As per design. (vi) and (vii) N.A.

## 5. RESULTS :

Treatment	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
Av. yield of peas in lb./ac.	1382	1596	1876

G.M. = 1618 lb./ac. ; S.E./mean = 63.4 lb./ac. and no. of trials = 8.

**Crop :- Pea (Rabi).**

**Ref :- U.P. 58(SFT).**

**Centre :- Aligarh (c.f.).**

**Type :- 'M'.**

Object :—Type C—To compare the responses of different leguminous crops to alternative levels of phosphate.

## 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 58(SFT) type C on page 870 conducted in Aligarh.

## 5. RESULTS :

Treatment	F <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
Av. yield of peas in lb./ac.	1366	1621	1654

G.M. = 1547 lb./ac. ; S.E./mean = 32.0 lb./ac. and no. of trials = 12.

**Crop :- Pea (Rabi).**

**Ref :- U.P. 58(SFT).**

**Centre :- Allahabad (c. f.).**

**Type :- 'M'.**

Object :—Type C—To compare the responses of different leguminous crops to alternative levels of phosphate.

## 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 58(SFT) type C on page 870 conducted in Aligarh.

## 5. RESULTS :

Treatment	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
Av. yield of peas in lb./ac.	1522	1950	2370

G.M. = 1947 lb./ac. ; S.E./mean = 56.4 lb./ac. and no. of trials = 12.

**Crop :- Pea (Rabi).**

**Ref :- U.P. 58(SFT).**

**Centre :- Bulandshahr (c.f.).**

**Type :- 'M'.**

Object :—Type C—To compare the responses of leguminous crops to alternative levels of phosphate.

## 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 58(SFT) type C on page 870 conducted in Aligarh.

## 5. RESULTS :

Treatment	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
Av. yield of peas in lb./ac.	1473	1876	2197

G.M. = 1849 lb./ac. ; S.E./mean = 36.7 lb./ac. and no. of trials = 12.



**Crop :- Pea (Rabi).****Ref :- U.P. 59(SFT).****Centre :- Bulandshahr (c.f.).****Type :- 'M'.**

Object :—Type C—To compare the responses of different leguminous crops to alternative levels of phosphate.

**1. BASAL CONDITIONS to 4. GENERAL :**

Same as in expt. no. 58(SFT) type C on page 870 conducted in Aligarh.

**5. RESULTS :**

Treatment	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
Av. yield of peas in lb./ac.	1456	1835	1613

G.M. = 1635 lb./ac. ; S.E./mean = 20.4 lb./ac. and no. of trials = 12.

**Crop :- Pea (Rabi).****Ref :- U.P. 58(SFT).****Centre :- Deoria (c.f.).****Type :- 'M'.**

Object :—Type C—To compare the responses of different leguminous crops to alternative levels of phosphate.

**1. BASAL CONDITIONS to 4. GENERAL :**

Same as in expt. no. 58(SFT) type C on page 870 conducted in Aligarh.

**5. RESULTS :**

Treatment	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
Av. yield of peas in lb./ac.	1111	1448	1810

G.M. = 1456 lb./ac. ; S.E./mean = 27.9 lb./ac. and no. of trials = 12.

**Crop :- Pea (Rabi).****Ref :- U.P. 59(SFT).****Centre :- Deoria (c.f.).****Type :- 'M'.**

Object :—Type C—To compare the responses of leguminous crops to alternative levels of phosphate.

**1. BASAL CONDITIONS to 4. GENERAL :**

Same as in expt. no. 58(SFT) type C on page 870 conducted in Aligarh.

**5. RESULTS :**

Treatment	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
Av. yield of peas in lb./ac.	1094	1358	1374

G.M. = 1275 lb./ac. ; S.E./mean = 19.2 lb./ac. and no. of trials = 12.

**Crop :- Pea (Rabi).****Ref :- U.P. 58(SFT).****Centre :- Farrukhabad (c.f.).****Type :- 'M'.**

Object :—Type C—To compare the responses of different leguminous crops to alternative levels of phosphate.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) Alluvial. (iii) to (v) N.A. (vi) October November—1958. (vii) Unirrigated. (viii) and (ix) N.A. (x) April, 1959.

## 2. TREATMENTS :

- 0 = Control (no manure).  
 P<sub>1</sub> = 30 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.  
 P<sub>2</sub> = 60 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.  
 P<sub>1</sub>' = 30 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Dicalcium phosphate.  
 P<sub>2</sub>' = 60 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Dicalcium phosphate.

## 3. DESIGN and 4. GENERAL :

Same as in expt. no. 58(SFT) type C on page 870 conducted at Aligarh.

## 5. RESULTS :

Treatment	0	P <sub>1</sub>	P <sub>2</sub>	P <sub>1</sub> '	P <sub>2</sub> '
Av. yield of peas in lb./ac.	2263	2551	2757	2781	2962

G.M. = 2663 lb./ac. ; S.E./mean = 59.3 lb./ac. and no. of trials = 6.

**Crop :- Pea (*Rabi*).**

**Ref :- U.P. 59(SFT).**

**Centre :- Farrukhabad (c.f.).**

**Type :- 'M'.**

Object :- Type C—To compare the responses of leguminous crops to alternative levels of phosphate.

## 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 58(SFT) type C on page 870 conducted at Aligarh.

## 5. RESULTS :

Treatment	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
Av. yield of peas in lb./ac.	1958	2469	2255

G.M. = 2227 lb./ac. ; S.E./mean = 155.9 lb./ac. and no. of trials = 5.

**Crop :- Pea (*Rabi*).**

**Ref :- U.P. 58(SFT).**

**Centre :- Gorakhpur (c.f.).**

**Type :- 'M'.**

Object :- Type C—To compare the responses of leguminous crops to alternative levels of phosphate.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Tarai and sub-montane. (iii) to (v) N.A. (vi) October—November, 1958. (vii) Unirrigated. (viii) and (ix) N.A. (x) April, 1959.

## 2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 58(SFT) type C on page 870 conducted at Aligarh.

## 5. RESULTS :

Treatment	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
Av. yield of peas in lb./ac.	765	1029	1284

G.M. = 1026 lb./ac. ; S.E./mean = 32.6 lb./ac. and no. of trials = 11.

**Crop :- Pea (*Rabi*).**

**Ref :- U.P. 59(SFT).**

**Centre :- Gorakhpur (c.f.).**

**Type :- 'M'.**

Object :- Type C—To compare the responses of leguminous crops to alternative levels of phosphate.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Sub montane and tarai. (iii) to (v) N.A. (vi) October—November, 1959. (vii) Unirrigated. (viii) and (ix) N.A. (x) April, 1960.

## 2. TREATMENTS to 4. GENERAL :

Same as in expt. no. 58(SFT) Type C on page 870 conducted at Aligarh.

## 5. RESULTS :

Treatment	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
Av. yield of peas in lb./ac.	1012	1226	1349

G.M. = 1196 lb./ac. ; S.E./mean = 46.5 lb./ac. and no. of trials = 11.

**Crop :- Pea (Rabi).**

**Ref :- U.P. 58(SFT).**

**Centre :- Jaunpur (c.f.).**

**Type :- 'M'.**

Object :- Type C—To compare the responses of leguminous crops to alternative levels of phosphate.

## 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 58(SFT) type C on page 870 conducted at Aligarh.

## 5. RESULTS :

Treatment	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
Av. yield of peas in lb./ac.	1629	1967	2148

G.M. = 1915 lb./ac. ; S.E./mean = 50.6 lb./ac. and no. of trials = 12.

**Crop :- Pea (Rabi).**

**Ref :- U.P. 59(SFT).**

**Centre :- Jaunpur (c.f.).**

**Type :- 'M'.**

Object :- Type C—To compare the responses of leguminous crops to alternative levels of phosphate.

## 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 58(SFT) type C on page 870 conducted at Aligarh.

## 5. RESULTS :

Treatment	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
Av. yield of peas in lb./ac.	1234	1621	1456

G.M. = 1437 lb./ac. ; S.E./mean = 23.3 lb./ac. and no. of trials = 12.

**Crop :- Pea (Rabi).**

**Ref :- U.P. 59(SFT).**

**Centre :- Kanpur (c.f.).**

**Type :- 'M'.**

Object :- Type C—To compare the responses of leguminous crops to alternative levels of phosphate.

## 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 58(SFT) type C on page 870 conducted at Aligarh.

## 5. RESULTS :

Treatment	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
Av. yield of peas in lb./ac.	1292	1465	1679

G.M. = 1479 lb./ac. ; S.E./mean = 19.8 lb./ac. and no. of trials = 3.

**Crop :- Pea (Rabi).**

**Ref :- U.P. 58(SFT).**

**Centre :- Meerut (c.f.).**

**Type :- 'M'.**

Object :—Type C—To compare the responses of leguminous crops to alternative levels of phosphate.

## 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 58(SFT) type C on page 870 conducted at Aligarh.

## 5. RESULTS :

Treatment	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
Av. yield of peas in lb./ac.	1308	1662	2156

G.M. = 1709 lb./ac. ; S.E./mean = 23.3 lb./ac. and no. of trials = 12.

**Crop :- Pea (Rabi).**

**Ref :- U.P. 59(SFT).**

**Centre :- Meerut (c.f.).**

**Type :- 'M'.**

Object :—Type C—To compare the responses of leguminous crops to alternative levels of phosphate.

## 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 58(SFT) type C on page 870 conducted at Aligarh.

## 5. RESULTS :

Treatment	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
Av. yield of peas in lb./ac.	1144	1506	1646

G.M. = 1432 lb./ac. ; S.E./mean = 17.5 lb./ac. and no. of trials = 12.

**Crop :- Pea (Rabi).**

**Ref :- U.P. 58(SFT).**

**Centre :- Moradabad (c.f.).**

**Type :- 'M'.**

Object :—Type C—To compare the responses of leguminous crops to alternative levels of phosphate.

## 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 58(SFT) type C on page 870 conducted at Aligarh.

## 5. RESULTS :

Treatment	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
Av. yield of peas in lb./ac.	979	1234	1489

G.M. = 1234 lb./ac. ; S.E./mean = 21.5 lb./ac. and no. of trials = 9.

**Crop :- Pea (Rabi).****Ref :- U.P. 59(SFT).****Centre :- Moradabad (c.f.).****Type :- 'M'.**

Object :- Type C—To compare the responses of leguminous crops to alternative levels of phosphate.

**1. BASAL CONDITIONS to 4. GENERAL :**

Same as in expt. no. 58(SFT) type C on page 870 conducted at Aligarh.

**5. RESULTS :**

Treatment	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
Av. yield of peas in lb./ac.	1226	1399	1539

G.M. = 1388 lb./ac. ; S.E./mean = 23.9 lb./ac. and no. of trials = 3.

**Crop :- Pea (Rabi).****Ref :- U.P. 58(SFT).****Centre :- Muzaffarnagar (c.f.).****Type :- 'M'.**

Object :- Type C—To compare the responses of leguminous crops to alternative levels of phosphate.

**1. BASAL CONDITIONS to 4. GENERAL :**

Same as in expt. no. 58(SFT) type C on page 870 conducted at Aligarh.

**5. RESULTS :**

Treatment	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
Av. yield of peas in lb./ac.	1160	1382	1555

G.M. = 1366 lb./ac. ; S.E./mean = 12.8 lb./ac. and no. of trials = 6.

**Crop :- Pea (Rabi).****Ref :- U.P. 59(SFT).****Centre :- Muzaffarnagar (c.f.).****Type :- 'M'.**

Object :- Type C—To compare the responses of leguminous crops to alternative levels of phosphate.

**1. BASAL CONDITIONS to 4. GENERAL :**

Same as in expt. no. 58(SFT) type C on page 870 conducted at Aligarh.

**5. RESULTS :**

Treatment	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
Av. yield of peas in lb./ac.	1185	1580	1506

G.M. = 1424 lb./ac. ; S.E./mean = 26.8 lb./ac. and no. of trials = 9.

**Crop :- Pea (Rabi).****Ref :- U.P. 59(SFT).****Centre :- Rae-Bareilly (c.f.).****Type :- 'M'.**

Object :- Type C—To compare the responses of leguminous crops to alternative levels of phosphate

**1. BASAL CONDITIONS to 4. GENERAL :**

Same as in expt. no. 58(SFT) type C on page 870 conducted at Aligarh.

## 5. RESULTS :

Treatment	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
Av. yield of peas in lb./ac.	1045	1201	1201

G.M. = 1149 lb./ac ; S.E./mean = 9.9 lb./ac. and no. of trials = 6.

**Crop :- Pea (Rabi).**

**Ref :- U.P. 58(SFT).**

**Centre :- Varanasi (c.f.).**

**Type :- 'M'.**

Object :—Type C—To compare the responses of leguminous crops to alternative levels of phosphate

## 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 58(SFT) type C on page 870 conducted at Aligarh.

## 5. RESULTS :

Treatment	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
Av. yield of peas in lb./ac.	1588	1893	2156

G.M. = 1879 lb./ac. ; S.E./mean = 59.3 lb./ac. and no. of trials = 9.

**Crop :- Pea (Rabi).**

**Ref :- U.P. 59(SFT).**

**Centre :- Varanasi (c.f.).**

**Type :- 'M'.**

Object :—Type C—To compare the responses of leguminous crops to alternative levels of phosphate.

## 1. BASAL CONDITIONS to 4. GENERAL :

Same as in expt. no. 58(SFT) type C on page 870 conducted at Aligarh.

## 5. RESULTS :

Treatment	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
Av. yield of peas in lb./ac.	1456	1654	1728

G.M. = 1613 lb./ac. ; S.E./mean = 46.0 lb./ac. and no. of trials = 6.

**Crop :- Pea (Rabi).**

**Ref :- U.P. 56(177).**

**Site :- B.R. College Insttl. Res. Farm, Bichpuri.**

**Type :- 'MV'.**

Object :—To study the effect of increasing levels of P on growth, development and pod yield of different varieties of Pea.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) Fallow. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Bichpuri. (iii) 20.10.1956. (iv) (a) 1 ploughing with M.C. cormic cultivator, 3 ploughings by *desi* plough and 4 plankings. (b) Sown behind the plough in furrows. (c) 30 srs./ac. (d) 1½' between rows. (e) N.A. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) Thinning. (ix) 4.98". (x) 4.2.1957 to 5.3.1957.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 varieties : V<sub>1</sub>=English Abundance, V<sub>2</sub>=Early Gaint and V<sub>3</sub>=T-163.

(2) 4 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0, P<sub>1</sub>=20, P<sub>2</sub>=40 and P<sub>3</sub>=60 lb./ac.

Super applied in furrows by a bamboo spout (Nai).

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 22' × 18'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Plant height and yield of peas. (iv) (a) and (b) No. (c) Nil. (v) and (vi) Nil. (vii) Original data and two-way table are not available.

## 5. RESULTS :

(i) 5857 lb./ac. (ii) 319.9 lb./ac. (iii) Main effects of P and V are highly significant. (iv) Av. yield of peas in lb./ac.

Treatment	V <sub>1</sub>	V <sub>2</sub>	V <sub>3</sub>	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>
Av. yield	5960	6148	5462	5186	5496	6251	6494

S.E. of V marginal mean = 80.0 lb./ac.

S.E. of P marginal mean = 92.3 lb./ac.

**Crop :- Pea (Rabi)**

**Ref :- U.P. 57(327).**

**Site :- Botanical Garden, Govt. Agri. College, Kanpur. Type :- 'CM'.**

**Object :-**To study the effect of hormone, P and seed rates on the yield of Pea.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) Maize (fodder). (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Kanpur. (iii) 10.11.1957. (iv) (a) 1 ploughing with victory plough, 1 spring harrow, 2 *desi* ploughings followed by planking and 1 *palewa* (b) Seed mixed with P<sub>2</sub>O<sub>5</sub> and sown uniformly. (c) As per treatments. (d) and (e) N.A. (v) 30 lb./ac. of N as A/S just before sowing. (vi) T-163. (vii) Irrigated. (viii) 1 weeding. (ix) 1.50". (x) 20.3.1958.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 levels of 2, 4-D hormone : H<sub>0</sub>=0, H<sub>1</sub>=10 and H<sub>2</sub>=20 ppm.

(2) 3 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0, P<sub>1</sub>=25 and P<sub>2</sub>=50 lb./ac.

(3) 2 seed rates : S<sub>1</sub>=50 and S<sub>2</sub>=60 lb./ac.

Super was mixed with seed and applied.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 18. (b) N.A. (iii) 3. (iv) (a) and (b) 25' × 11.5'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Height of shoot branches and yield of peas. (iv) (a) and (b) No. (c) Nil. (v) and (vi) Nil. (vii) Results as available are furnished. Two-way tables—N.A.

## 5. RESULTS :

(i) 1097 lb./ac. (ii) 660.3 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of peas in lb./ac.

Treatment	H <sub>0</sub>	H <sub>1</sub>	H <sub>2</sub>	S <sub>1</sub>	S <sub>2</sub>	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
Av. yield	1105	1039	1147	1110	1084	1160	1070	1061

S.E. of H or P marginal mean = 155.7 lb./ac.

S.E. of S marginal mean = 127.1 lb./ac.

**Crop :- Pea (Rabi).**

**Ref :- U.P. 59(221).**

**Site :- Agri. College Farm, B.H.U., Varanasi.**

**Type :- 'CM'.**

**Object :-**To study the effect of placement of fertilizers and seed rates on growth and yield of Pea.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar* (fodder). (c) N.A. (ii) (a) Loamy soil. (b) Refer soil analysis, Varanasi. (iii) 27.10.1959. (iv) (a) 1 ploughing by *Meston*, 3 ploughings by *desi* plough and plankings. (b) By hand in furrows. (c) As per treatments. (d) and (e) N.A. (v) N.A. (vi) T—163. (vii) Irrigated. (viii) and (ix) N.A. (x) 29.2.1960.

## 2. TREATMENTS:

All combinations of (1), (2) and (3)

(1) 3 levels of  $P_2O_5$  as Super :  $P_1=30$ ,  $P_2=50$  and  $P_3=70$  lb./ac.

(2) 2 seed rates :  $S_1=40$  and  $S_2=50$  lb./ac.

(3) 2 methods of placement of fertilizers :  $M_1$ =Plough sole placement before sowing and  $M_2$ =Side banding after 18 days of sowing.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a)  $40' \times 24'$ . (b)  $36' \times 20'$ . (v)  $2' \times 2'$ . (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1934 lb./ac. (ii) 227.8 lb./ac. (iii) Main effects of S and P are significant. (iv) Av. yield of peas in lb./ac.

	$P_1$	$P_2$	$P_3$	Mean	$M_1$	$M_2$
$S_1$	1883	2057	2116	2019	1979	2059
$S_2$	1736	1854	1955	1848	1787	1910
Mean	1810	1956	2036	1934	1883	1985
$M_1$	1761	1887	2001			
$M_2$	1859	2025	2071			

S.E. of P marginal mean = 56.9 lb./ac.

S.E. of M or S marginal mean = 46.5 lb./ac.

S.E. of body of S  $\times$  M table = 65.7 lb./ac.

S.E. of body of P  $\times$  S or P  $\times$  M table = 80.5 lb./ac.

**Crop :- Pea (*Rabi*).**

**Ref :- U.P. 59(313).**

**Site :- B. R. College Insttl. Res. Farm, Bichpuri.**

**Type :- 'CMV'.**

Object :—To study the effects of different levels and methods of P application with and without N on different varieties of Pea grown for green pods.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Bajra*. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Bichpuri. (iii) N.A. (iv) (a) 1 *Palewa* and 2 ploughings with M.H. disc harrow. (b) Behind the plough in lines. (c) 30 srs./ac. (d) Lines 1.5' apart. (e) N.A. (v) N.A. (vi) As per treatments. (vii) Irrigated. (viii) 1 crest breaking. (ix) 25". (x)  $V_1$  on 7, 14 and 22.2.1960 and  $V_2$  on 23 and 24.2.1960.

## 2. TREATMENTS :

**Main-plot treatments :**

All combinations of (1) and (2)

(1) 2 varieties :  $V_1=NP-29$  and  $V_2=T-163$ .

(2) 2 methods of application of  $P_2O_5$  :  $M_1$ =Plough sole and  $M_2$ =Band placement.

**Sub-plot treatments :**

All combinations of (1) and (2)

(1) 2 levels of N as A/S :  $N_0=0$  and  $N_1=30$  lb./ac.

(2) 2 levels of  $P_2O_5$  as Super :  $P_1=40$  and  $P_2=80$  lb./ac.



## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 24' × 15'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Crop stand and yield of peas. (iv) (a) and (b) No. (c) Nil. (v) and (vi) Nil. (vii) Two-way tables—N.A.

## 5. RESULTS :

(i) 3292 lb./ac. (ii) (a) 154.7 lb./ac. (b) 114.2 lb./ac. (iii) Main effect of M, P and interaction N × P are highly significant. Interactions V × M, V × M × N, V × N × P and V × M × N × P are significant. Other effects are not significant. (iv) Av. yield of peas in lb./ac.

Treatment	V <sub>1</sub>	V <sub>2</sub>	M <sub>1</sub>	M <sub>2</sub>	N <sub>0</sub>	N <sub>1</sub>	P <sub>1</sub>	P <sub>2</sub>
Av. yield	3100	3484	3609	2975	3270	3314	3113	3471

S.E. of difference of two

1. M or V marginal means = 38.7 lb./ac.
2. N or P marginal means = 28.6 lb./ac.

**Crop :- Pea (Rabi).**

**Ref :- U.P. 56(189).**

**Site :- B.R. College Insttl. Res. Farm, Bichpuri.**

**Type :- 'I'.**

**Object :-** To study the effect of irrigation water of varying salinity on Pea.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) Cucurbits. (c) N.A. (ii) (a) Light loam. (b) Refer soil analysis, Bichpuri. (iii) 26.10.1956. (iv) (a) 3 ploughings and 1 panking (b) In lines by Nai (country plough). (c) 40 lb./ac. (d) 18" between rows. (e) N.A. (v) 150 mds./ac. of compost. (vi) T—163. (vii) As per treatments. (viii) 2 weedings. (ix) 4.98". (x) 31.3.1957.

## 2. TREATMENTS :

2 types of irrigational water : T<sub>1</sub> = Surface well water and T<sub>2</sub> = Tube well water.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 25' × 18'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of peas. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 2354 lb./ac. (ii) 375.6 lb./ac. (iii) Treatment difference is not significant. (iv) Av. yield of peas in lb./ac.

Treatment	T <sub>1</sub>	T <sub>2</sub>
Av. yield	2417	2291

S.E./mean = 187.8 lb./ac.

**Crop :- Pea (Rabi).**

**Ref :- U.P. 59(472).**

**Site :- Reg. Res. Stn., Amrukh.**

**Type :- 'D'.**

**Object :-** To study the effect of different insecticides in controlling Pea pod borer.

## 1. BASAL CONDITIONS :

(i) (a) Wheat—Fallow—Pea. (b) Fallow. (c) Nil. (ii) (a) Parwa and light kabar. (b) N.A. (iii) 16.12.1959. (iv) (a) to (c) N.A. (d) 1.5' between rows. (e) N.A. (v) Nil. (vi) T—163. (vii) to (x) N.A.

## 2. TREATMENTS :

7 insecticides :  $D_0$ =Control (two plots),  $D_1$ =Spraying with 0.065% Diazinon+0.25% D.D.T. 50 gallons/ac.,  $D_2$ =Spraying with 0.065% Parathion+Ovicide 1 : 99 at 50 gallons/ac.,  $D_3$ =Spraying with Endrin emulsion at 1.25 lb./ac. of actual Endrin/ac.,  $D_4$ =Spraying with 0.1 % Lindane emulsion at 50 gallons/ac.,  $D_5$ =Spraying with 0.1 % Malathion emulsion at 50 gallons/ac. and  $D_6$ =Dusting with 1.5 % Parathion dust+10 % D.D.T. dust both mixed in equal quantities at 30 lb./ac.

Insecticides applied on 10 and 22.3.1960.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) and (b) 29'×25'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Incidence of pod borer. Control measures as per treatments. (iii) Total number of pods and no. of damaged pods. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 37.02 degrees. (ii) 6.91 degrees. (iii) Treatment differences are not significant. (iv) Mean % of damaged pods in degrees.

Treatment	$D_0$	$D_1$	$D_2$	$D_3$	$D_4$	$D_5$	$D_6$
Mean angle	39.77	35.16	34.08	31.98	37.17	39.16	39.08
	S.E./ $D_0$ mean		= 2.44 degrees.				
	S.E./mean (except $D_0$ )		= 3.45 degrees.				
% of damaged pods	41.02	33.34	31.59	28.27	36.63	39.99	39.84

**Crop :- Pea (Rabi).**

**Ref :- U.P. 55(386).**

**Site :- Govt. Veg. Res. Stn., Kalianpur.**

**Type :- 'D'.**

Object :—To study the effect of seed dressing with fungicides in different strengths on germination, wilted plants and yield.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loamy soil. (b) Refer soil analysis, Kalianpur. (iii) 22.10.1955. (iv) (a) to (c) N.A. (d) 2'×6". (e) N.A. (v) N.A. (vi) *Delwiche commando* (medium). (vii) to (x) N.A.

## 2. TREATMENTS :

10 fungicidal treatments :  $F_0$ =Control,  $F_1$ =Hervasan 2 : 1000,  $F_2$ =Hervasan 3 : 1000,  $F_3$ =Hervasan 4 : 1000,  $F_4$ =Agrosan G.N. 2 : 1000,  $F_5$ =Agrosan G.N. 3 : 1000,  $F_6$ =Agrosan G.N. 4 : 1000,  $F_7$ =Ceresan 2 : 1000,  $F_8$ =Ceresan 3 : 1000 and  $F_9$ =Ceresan 4 : 1000.

Application done by mixing the seeds with the seed dressers in the flask and shaking it vigorously for 5 minutes. Hervasan 2 : 1000 means 2 parts of seed dresser mixed with 1000 parts of seed.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) 127'×15'. (iii) 4. (iv) (a) and (b) 10'×15'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Incidence of wilt, control measures as per treatments. (iii) No. of plants germinated, wilted and yield of peas. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1663 lb./ac. (ii) 352.6 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of peas in lb./ac.

Treatment	$F_0$	$F_1$	$F_2$	$F_3$	$F_4$	$F_5$	$F_6$	$F_7$	$F_8$	$F_9$
Av. yield	1597	1634	1742	1488	1670	1787	1905	1751	1479	1579

S.E./mean = 176.3 lb./ac.

(i) 12.33 degrees. (ii) 1.55 degrees. (iii) Treatment differences are highly significant. (iv) Mean % of wilted plants in degrees.

Treatment	F <sub>0</sub>	F <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>	F <sub>4</sub>	F <sub>5</sub>	F <sub>6</sub>	F <sub>7</sub>	F <sub>8</sub>	F <sub>9</sub>
Mean angle	18.28	9.68	11.52	11.87	11.58	10.96	10.60	12.13	13.98	12.67
S.E./mean = 0.78 degrees.										
% of wilted plants	10.24	3.30	4.45	4.69	4.49	4.07	3.85	4.87	6.27	5.26

**Crop :- Pea (Rabi).**

**Ref :- U.P. 55(388).**

**Site :- Veg. Res. Stn., Kalianpur.**

**Type :- 'D'.**

**Object :-** To study the effect of fungicidal spray at the time of sowing the seed on the yield of Pea.

### 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loamy soil. (b) Refer soil analysis, Kalianpur. (iii) 22.10.1955. (iv) (a) to (c) N.A. (d) 2' x 6". (e) N.A. (v) Nil. (vi) *Delwiche commundo* (medium). (vii) Irrigated. (viii) to (x) N.A.

### 2. TREATMENTS :

4 fungicidal treatments: F<sub>0</sub>=Control, F<sub>1</sub>=Cupravit 1 lb./ac. in 30 gallons of water sprayed in rows before sowing, F<sub>2</sub>=Perenox 1 lb./ac. in 30 gallons of water sprayed in rows before sowing and F<sub>3</sub>=Formalin 1 lb./ac. in 30 gallons of water sprayed.

Furrows sprayed with fungicides before sowing.

### 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) 23' x 69'. (iii) 5. (iv) (a) N.A. (b) 10' x 33'. (v) N.A. (vi) Yes.

### 4. GENERAL :

(i) N.A. (ii) Incidence of wilt, control measures as per treatments. (iii) No. of healthy and wilted plants on 5.11.1955, 16.12.1955 and yield of peas. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

### 5. RESULTS :

(i) 1422 lb./ac. (ii) 163.7 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of peas in lb./ac.

Treatment	F <sub>0</sub>	F <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>
Av. yield	1379	1538	1386	1386
S.E./mean = 73.2 lb./ac.				

(i) 19.27 degrees. (ii) 2.75 degrees. (iii) Treatment differences are not significant. (iv) Mean % of wilted plants in degrees.

Treatment	F <sub>0</sub>	F <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>
Mean angle	18.56	18.83	22.23	17.45
S.E./mean = 1.23 degrees.				
% of wilted plant	10.53	10.82	14.67	9.40

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 56(450).**

**Site :- Govt. Veg. Res. Stn., Kalianpur.**

**Type :- 'D'.**

**Object :-** To study the effect of seed dressers on the germination, vigour and yield of Pea.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Brinjal and *khera*. (c) N.A. (ii) (a) Loamy soil. (b) Refer soil analysis, Kalianpur. (iii) 24, 31.10.1956, 7, 12.11.1956 and 4.12.1956. (iv) (a) 3 ploughings. (b) Sown in lines. (c) N.A. (d) 2' between rows. (e) N.A. (v) N.A. (vi) T-19 (medium). (vii) to (x) N.A.

## 2. TREATMENTS :

5 insecticidal treatments :  $D_0$ =Control,  $D_1$ =Copper carbonate,  $D_2$ =Cersan,  $D_3$ =Tillex and  $D_4$ =Fernasan. Seed dressing done in the ratio of 3 : 1000 by weight of seed.

## 3. DESIGN :

(i) L. Sq. (ii) (a) 5. (b) 16' × 52'. (iii) 5. (iv) (a) and (b) 8' × 16'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) No. of plants germinated. (iv) (a) and (b) No. (c) Nil. (v) and (vi) Nil. (vii) Number of seeds sown is not available.

## 5. RESUSTS :

Date of sowing : 24.10.1956.

(i) 278 germinated plants/plot. (ii) 34.24 germinated plants/plot. (iii) Treatment differences are highly significant. (iv) Av. no. of germinated plants/plot.

Treatment	$D_0$	$D_1$	$D_2$	$D_3$	$D_4$
Av. number	302	222	304	341	219

S.E./mean = 15.31 germinated plants/plot.

Date sowing : of 31.10.1956.

(i) 290 germinated plants/plot. (ii) 45.5 germinated plants/plot. (iii) Treatment differences are not significant. (iv) Av. no. of germinated plants/plot.

Treatment	$D_0$	$D_1$	$D_2$	$D_3$	$D_4$
Av. number	303	266	280	317	285

S.E./mean = 20.4 germinated plants/plot.

(i) 2253 lb./ac. (ii) 294.8 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of peas in lb./ac.

Treatment	$D_0$	$D_1$	$D_2$	$D_3$	$D_4$
Av. yield	2527	2484	2025	2093	2135

S.E./mean = 131.8 lb./ac.

Date of sowing : 7.11.1956.

(i) 270 germinated plants/plot. (ii) 33.1 germinated plants/plot. (iii) Treatment differences are highly significant. (iv) Av. no. of germinated plants/plot.

Treatment	$D_0$	$D_1$	$D_2$	$D_3$	$D_4$
Av. number	264	228	271	331	256

S.E./mean = 14.8 germinated plants/plot.

(i) 2535 lb./ac. (ii) 307.9 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of peas in lb./ac.

Treatment	$D_0$	$D_1$	$D_2$	$D_3$	$D_4$
Av. yield	2535	2637	2569	2263	2671

S.E./mean = 137.7 lb./ac.

Date of sowing : 12.11.1956

(i) 308 germinated plants/plot. (ii) 44.1 germinated plants/plot. (iii) Treatment differences are highly significant. (iv) Av. no. of germinated plants/plot.

Treatment	$D_0$	$D_1$	$D_2$	$D_3$	$D_4$
Av. number	354	201	292	383	312

S.E./mean = 19.7 germinated plants/plot.

(i) 3587 lb./ac. (ii) 431.6 lb./ac. (iii) Treatment differences are significant. (iv) Av. yield of peas in lb./ac.

Treatment	D <sub>0</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>
Av. yield	4016	3743	3029	3335	3811

S.E./mean = 193.0 lb./ac.

Date of sowing 4.12.1956

(i) 336 germinated plants/plot. (ii) 53.8 germinated plants/plot. (iii) Treatment differences are highly significant. (iv) Av. no. of germinated plants/plot.

Treatment	D <sub>0</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>
Av. number	393	255	338	393	299

S.E./mean = 24.1 germinated plants/plot.

(i) 2423 lb./ac. (ii) 463.6 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of peas in lb./ac.

Treatment	D <sub>0</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>
Av. yield	2450	2076	2161	2859	2569

S.E./mean = 207.3 lb./ac.

**Crop :- Pea (Rabi).**

**Ref :- U.P. 56(455).**

**Site :- Govt. Veg. Res. Stn., Kalianpur.**

**Type :- 'D'.**

Object :- To study the effect of spraying fungicides in furrows before sowing on wilt disease, stand, vigour and yield of Pea.

#### 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Khera* and brinjal. (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kalianpur. (iii) 31.10.1956, 6, 12.11.1956 and 4.12.1956. (iv) (a) 3 ploughings. (b) Sown in furrows by hand. (c) 85 lb./ac. (d) 5 rows 2' apart. (e) N.A. (v) N.A. (vi) T-19 (medium). (vii) to (x) N.A.

#### 2. TREATMENTS :

5 insecticidal treatments : D<sub>0</sub>=Control, D<sub>1</sub>=Cupravit 0.7%, D<sub>2</sub>=Formalin 0.3% (1 lb./ac. in 30 gallons of water), D<sub>3</sub>=Fungi copper 0.3% and D<sub>4</sub>=Dithane Z-78, 0.2%.

#### 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) 16'×52'. (iii) 5. (iv) (a) N.A. (b) 8'×16'. (v) N.A. (vi) Yes.

#### 4. GENERAL :

(i) N.A. (ii) Incidence of wilt disease, control measures as per treatments. (iii) No. of plants germinated. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

#### 5. RESULTS :

Date of sowing : 24.10.1956

(i) 43.03 degrees. (ii) 3.564 degrees. (iii) Treatment differences are not significant. (iv) Av. % of plant germinated in degrees.

Treatment	D <sub>0</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>
Mean angle	43.49	41.32	44.29	41.82	44.22

S.E./mean = 1.594 degrees.

% of plant germinated	47.40	43.66	48.78	44.53	48.65
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Date of sowing : 31.10.1956.

(i) 49.20 degrees. (ii) 3.868 degrees. (iii) Treatment differences are not significant. (iv) Av. % of plants germinated in degrees.

Treatment	D <sub>0</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>
Mean angle	51.48	49.28	47.77	46.76	50.73

S.E./mean = 1.730 degrees.

% of plants germinated	61.10	57.37	54.78	53.04	59.83
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(i) 2389 lb./ac. (ii) 261.3 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of peas in lb./ac.

Treatment	D <sub>0</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>
Av. yield	2314	2416	2484	2263	2467

S.E./mean = 116.9 lb./ac.

Date of sowing : 6.11.1956.

(i) 48.14 degrees. (ii) 3.709 degrees. (iii) Treatment differences are not significant. (iv) Mean % of plants germinated in degrees.

Treatment	D <sub>0</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>
Mean angle	50.96	50.13	45.37	47.66	46.58

S.E./mean = 1.659 degrees.

% of plants germinated	52.72	58.81	50.59	54.58	52.72
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(i) 2290 lb./ac. (ii) 524.6 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of peas in lb./ac.

Treatment	D <sub>0</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>
Av. yield	2382	2076	2127	2518	2348

S.E./mean = 234.6 lb./ac.

Date of sowing : 12.11.1956.

(i) 52.85 degrees. (ii) 2.216 degrees. (iii) Treatment differences are not significant. (iv) Av. % of plants germinated in lb./ac.

Treatment	D <sub>0</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>
Mean angle	52.17	52.11	53.45	52.66	53.85

S.E./mean = 0.991 degrees.

% of plant germinated	62.26	62.16	64.38	63.09	65.05
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(i) 3684 lb./ac. (ii) 639.9 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of peas in lb./ac.

Treatment	D <sub>0</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>
Av. yield	3760	3539	3692	3658	3769

S.E./mean = 286.2 lb./ac.

Date of sowing : 4.12.1956.

(i) 56.70 degrees. (ii) 4.359 degrees. (iii) Treatment differences are significant. (iv) Av. % of plants germinated in degrees.

Treatment	D <sub>0</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>
Mean angle	56.09	55.84	62.18	56.69	52.70

S.E./mean = 1.949 degrees.

% of plant germinated	68.68	68.69	77.93	69.64	63.15
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(i) 2297 lb./ac. (ii) 441.3 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of peas in lb./ac.

Treatment	D <sub>0</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>
Av. yield	2042	2416	2637	2178	2212

S.E./mean = 197.3 lb./ac.

Crop :- Pea (*Rabi*).

Ref :- U.P. 57(487).

Site :- Govt. Veg. Res. Stn., Kalianpur.

Type :- 'D'.

Object :—To study the effect of insecticidal treatments before sowing Pea seed on wilt disease.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Refer soil analysis, Kalianpur. (iii) 20, 30.9.1957, 10, 20 and 30.10.1957. (iv) (a) N.A. (b) Sown in furrows by hand (c) 91 lb./ac. (d) 5 rows 2' apart. (e) N.A. (vi) T-19 (medium). (vii) to (ix) N.A. (x) Pickings from 25.1.1958 to 25.2.1958.

## 2. TREATMENTS :

5 insecticidal treatments :  $D_0$ =Control,  $D_1$ =Dithane Z-78 ; 0.2 %,  $D_2$ =Bordeaux mixture 5 : 5 : 50,  $D_3$ =Fungi copper 0.3 % and  $D_4$ =Formalin 0.3 %.

Treatments applied in furrows before sowing.

## 3. DESIGN :

(i) L. Sq. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 8'×15'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Wilt disease, control measures as per treatments. (iii) Germination counts at different intervals and data of final survival of plants. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

Date of sowing : 20.9.1957.

(i) 123 germination counts/plot. (ii) 27.71 germination counts/plot. (iii) Treatment differences are not significant. (iv) Av. germination counts/plot.

Treatment	$D_0$	$D_1$	$D_2$	$D_3$	$D_4$
Av. germination	95	129	111	130	150

S.E./mean = 12.39 germination counts/plot.

Date of sowing : 30.9.1957.

(i) 221 germinated counts/plot. (ii) 19.41 germinated counts/plot. (iii) Treatment differences are highly significant. (iv) Av. germinated counts/plot.

Treatment	$D_0$	$D_1$	$D_2$	$D_3$	$D_4$
Av. germination	181	227	222	217	259

S.E./mean = 8.68 germinated counts/plot.

Date of sowing : 10.10.1957.

(i) 302 germinated counts/plot. (ii) 36.81 germinated counts/plot. (iii) Treatment differences are significant. (iv) Av. germinated counts/plot.

Treatment	$D_0$	$D_1$	$D_2$	$D_3$	$D_4$
Av. germination	290	258	302	305	355

S.E./mean = 16.46 germinated counts/plot.

Date of sowing : 20.10.1957.

(i) 438 germinated counts/plot. (iii) Treatment differences are highly significant. (iv) Av. germinated counts/plot.

Treatment	$D_0$	$D_1$	$D_2$	$D_3$	$D_4$
Av. germination	408	434	457	431	461

S.E./mean = 7.68 germinated counts/plot.

Date of sowing : 30.10.1957.

(i) 430 germinated counts/plot. (ii) 69.65 germinated counts/plot. (iii) Treatment differences are not significant. (iv) Av. germinated counts/plot.

Treatment	D <sub>0</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>
Av. germination	389	460	430	407	462

S.E./mean = 31.15 germinated counts/plot.

**Crop :- Pea (*Rabi*).**

**Ref :- U.P. 58(440).**

**Site :- Govt. Veg. Res. Stn., Kalianpur.**

**Type :- 'D'.**

Object :—To study the effect of spraying in insecticides prior to sowing crop on wilt disease of Pea.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kalianpur. (iii) 15, 25.10.1950, 4, 14 and 24.11.1958. (iv) (a) 3 ploughings. (b) Sown in furrows. (c) N.A. (d) 5 rows 2' apart. (e) N.A. (v) N.A. (vi) T—19 (medium). (vii) to (x) N.A.

**2. TREATMENTS :**

5 insecticidal treatments : D<sub>0</sub>=Control, D<sub>1</sub>=Dithane Z—78 ; 0.2 % solution, D<sub>2</sub>=Bordeaux mixture 5 : 5 : 50, D<sub>3</sub>=Fungi copper—0.3 % and D<sub>4</sub>=Formalin 1 % (1lb. commercial formalin in 100 gallons of water).

Spraying on the same day in furrows at 1 gallon/plot before sowing.

**3. DESIGN :**

(i) L. Sq. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) and (b) 8' × 15'. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Wilt disease, control measures as per treatments. (iii) No. of plants survived. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

**Date of sowing : 15.10.1958.**

(i) 55.43%. (ii) 6.406%. (iii) Treatment differences are not significant. (iv) Av. % of plants survival.

Treatment	D <sub>0</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>
Av. % of plant survived	60.30	50.58	54.62	52.75	58.88

S.E./mean = 2.865 %.

**Date of sowing : 25.10.1958.**

(i) 46.60 %. (ii) 3.488 %. (iii) Treatment differences are not significant. (iv) Av. % of plants survived.

Treatment	D <sub>0</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>
Av. % of plant survived	47.36	48.64	43.70	44.52	48.78

S.E./mean = 1.560 %.

**Date of sowing : 4.11.1958.**

(i) 69.40 %. (ii) 5.688 %. (iii) Treatment differences are significant. (iv) Av. % of plants survived.

Treatment	D <sub>0</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>
Av. % of plant survived	68.83	63.74	61.03	69.12	77.30

S.E./mean = 2.544 %.

**Date of sowing : 14.11.1958.**

(i) 57.26 %. (ii) 6.283 %. (iii) Treatment differences are not significant. (iv) Av. % of plants survived.

Treatment	D <sub>0</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>
Av. % of plant survived	61.16	59.92	57.42	53.05	54.73

S.E./mean = 2.810 %.



Date of sowing : 24.11.1958.

(i) 63.29 %. (ii) 4.472 %. (iii) Treatment differences are not significant. (iv) Av. % of plants survived.

Treatment	D <sub>0</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>
Av. % of plant survived	62.36	65.08	62.24	63.18	63.61

S.E./mean = 2.000 %.

**Crop :- Pea (Rabi).****Ref :- U.P. 59(502).****Site :- Govt. Veg. Res. Stn., Kalianpur.****Type :- 'D'.**

Object :—To study the effect of spraying insecticides in the furrows prior to sowing pea on wilt disease of Pea.

**1. BASAL CONDITIGNS :**

(i) (a) to (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kalianpur. (iii) 13, 28.9.1959, 13, 28.10.1959, 13, and 28.11.1959. (iv) (a) N.A. (b) Line sowing by hand. (c) 20 srs./ac. (d) 5 rows 2' apart. (e) N.A. (v) Nil. (vi) T-19 (medium). (vii) to (x) N.A.

**2. TREATMENTS :**5 insecticidal treatments : D<sub>0</sub>=Control (water spray). D<sub>1</sub>=Bordeaux mixture (5 lb. copper sulphate+5 lb. quick lime+50 gallons of water). D<sub>2</sub>=Blitox-50-0.3 % (3 lb. in 100 gallons), D<sub>3</sub>=Formalin commercial-0.3 % (3 lb. in 100 gallons) and D<sub>4</sub>=Dithane Z-78, 0.2 % [65 % Zinc ethylene bisdithlocar bimate].**3. DESIGN :**

(i) L. Sq. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) and (b) 8' × 16'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Incidence of wilt disease, control measures as per treatments. (iii) No. of survived plants. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

Date of sowing : 13.9.1959.

(i) 47.33 degrees. (ii) 2.813 degrees. (iii) Treatment differences are highly significant. (iv) Mean % of plants survived in degrees.

Treatment	D <sub>0</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>
Mean angle	41.02	48.20	46.50	53.80	47.15
Av. % of plants survived	43.15	55.51	52.59	64.97	53.71

S.E./mean = 1.258 degrees.

Date of sowing : 28.9.1959.

(i) 73.91 %. (ii) 4.416 %. (iii) Treatment differences are highly significant. (iv) Av. % of plants survived.

Treatment	D <sub>0</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>
Av. % of plants survived	67.51	72.25	75.20	82.52	72.09

S.E./mean = 1.975 %.

Date of sowing : 31.10.1959.

(i) 79.13 %. (ii) 4.400 %. (iii) Treatment differences are not significant. (iv) Av. % of plants survived.

Treatment	D <sub>0</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>
Av. % of plants survived	78.46	78.31	79.48	79.42	79.99

S.E./mean = 1.968 %.

Date of sowing : 28.10.1959.

(i) 76.80 %. (ii) 5.037 %. (iii) Treatment differences are not significant. (iv) Av. % of plants survived.

Treatment	D <sub>0</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>
Av. % of plants survived	78.28	78.09	74.25	76.98	76.40

S.E./mean = 2.253 %

Date of sowing : 13.11.1959.

(i) 83.05 %. (ii) 8.630 %. (iii) Treatment differences are not significant. (iv) Av. % of plants survived.

Treatment	D <sub>0</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>
Av. % of plants survived	81.42	85.63	86.03	81.97	80.18

S.E./mean = 3.859 %.

Date of sowing : 28.11.1959.

(i) 73.37 %. (ii) 5.136 %. (iii) Treatment differences are not significant. (iv) Av. % of plants survived.

Treatment	D <sub>0</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>
Av. % of plant survived	69.66	72.62	74.12	75.20	75.23

S.E./mean = 2.297 %.

**Crop :- Pea (Kharif).**

**Ref :- U.P. 59(239).**

**Site :- Botanical Garden, Govt. Agri. College, Kanpur.**

**Type :- 'D'.**

Object :—To study the effect of Maleic Hydrazide on growth and development of Pea.

**1. BASAL CONDITIONS :**

(i) (a) No. (b) Onion. (c) N.A. (ii) (a) Alluvial loam. (b) Refer soil analysis, Kanpur. (iii) 20.11.1959. (iv) (a) N.A. (b) Dibbling. (c) N.A. (d) 2'×1'. (e) 2. (v) G.M. with *sanai*. (vi) T—19. (vii) Irrigated. (viii) Hoeing and weeding. (ix) and (x) N.A.

**2. TREATMENTS :**

5 concentrations of maleic hydrazide solution : C<sub>0</sub>=0, C<sub>1</sub>=0.01%, C<sub>2</sub>=0.02%, C<sub>3</sub>=0.04% and C<sub>4</sub>=0.08%. The plants were given a drench spray once only 40 days after sowing.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 5. (b) 64'×44'. (iii) 4. (iv) (a) and (b) 10'×8'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Nil. (iii) Height and diameter of main stem and yield of peas. (iv) (a) and (b) Nc. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 2116 lb./ac. (ii) 338.4 lb./ac. (iii) Treatment differences are highly significant. (iv) Av. yield of peas in lb./ac.

Treatment	C <sub>0</sub>	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	C <sub>4</sub>
Av. yield	3553	2642	2184	1650	551

S.E./mean = 169.2 lb./ac.

**Crop :- Pea (Rabi).**

**Ref :- U.P. 57(408).**

**Site :- Govt. Cotton Res. Farm, Raya.**

**Type :- 'D'.**

Object :—To study the effect of fungicides in controlling Pea pod borers.

**1. BASAL CONDITIONS :**

(i) to (v) N.A. (vi) T—163. (vii) to (ix) N.A. (x) 3.4.1958.

## 2. TREATMENTS :

7 fungicidal treatments :  $F_0$ =Control,  $F_1$ =Spraying with 0.05% Diazinon emulsior at 60 gallons/ac,  $F_2$ = Spraying with 0.05 % Parathion emulsion at 60 gallons/ac.,  $F_3$ =Spraying with Endrin at 1 lb./ac.,  $F_4$ =Spraying with 0.5 % D.D.T. suspension at 60 gallons/ac.,  $F_5$ =Dusting with 1.5 % Parathion dust at 25 lb./ac. and  $F_6$ =Spraying with ovicide in 1 : 99 dilution +0.5 % D.D.T. suspension at 60 gallons/ac.

Fungicides sprayed on 21.2.1958, 8 and 23.3.1958.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b)  $30' \times 290'4''$ . (iii) 5. (iv) (a) and (b)  $30' \times 36'4''$ . (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Incidence of pea pod borer. Control measures as per treatments. (iii) % of damaged plants and peas yield. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 432 lb./ac. (ii) 94.6 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of peas in lb./ac.

Treatment	$F_0$	$F_1$	$F_2$	$F_3$	$F_4$	$F_5$	$F_6$
Av. yield	382	413	485	469	432	476	365

S.E./mean = 42.3 lb./ac.

(i) 36.46 degrees. (ii) 7.015 degrees. (iii) Treatment differences are significant. (iv) Av. % of damage in degrees.

Treatment	$F_0$	$F_1$	$F_2$	$F_3$	$F_4$	$F_5$	$F_6$
Mean angle	44.22	36.28	25.80	32.97	39.30	38.76	37.91

S.E./mean = 3.137 degrees.

**Crop :- Pea (Rabi).**

**Ref :- U.P. 59(473).**

**Site :- Reg. Res. Stn., Varanasi.**

**Type :- 'D'.**

Object :--To study the effect of fungicides in controlling Pea pod borer.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Varanasi. (iii) 21.11.1959. (iv) and (v) N.A. (vi) T-163. (vii) to (ix) N.A. (x) 24.4.1960.

## 2. TREATMENTS :

7 fungicidal treatments :  $F_0$ =Control (2 plots),  $F_1$ =Spraying with 0.065 % Diazinon+0.25 % D.D.T. at 50 gallons/ac,  $F_2$ =Spraying with 0.065% Parathion+ovicide 1 : 99 at 50 gallons/ac.,  $F_3$ =Spraying with Endrin emulsion at 1.25 lb./ac.,  $F_4$ =Spraying with 0.1 % Lindane emulsion at 50 gallons/ac.,  $F_5$ =Spraying with 0.1% Melethion emulsion at 50 gallons/ac. and  $F_6$ =Dusting with 1.5% Parathion dust and 10% D.D.T. dust both mixed in equal quantities at 30 lb./ac.

Fungicides applied on 20.2.1960 and 7.3.1960.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) and (b)  $36' \times 25'$ . (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Bored plants, no. of damaged grains and yield of peas. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 15.35 degrees. (ii) 3.344 degrees. (iii) Treatment differences are not significant. (iv) Av. % of infested seeds in degrees.

Treatment	F <sub>0</sub>	F <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>	F <sub>4</sub>	F <sub>5</sub>	F <sub>6</sub>
Mean angle	14.93	14.93	15.80	14.88	16.95	15.97	14.39

S.E./mean (expect P<sub>0</sub>) = 1.672 degrees ; S.E. of F<sub>0</sub> mean = 1.182 degrees.

% of infested seed	7.07	7.07	8.79	7.02	8.92	7.99	6.62
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(i) 80 lb./ac. (ii) 74.6 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of peas in lb./ac

Treatment	F <sub>0</sub>	F <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>	F <sub>4</sub>	F <sub>5</sub>	F <sub>6</sub>
Av. yield	97.2	108.8	83.9	62.0	56.0	90.1	45.0

S.E./mean (except F<sub>0</sub>) = 37.3 lb./ac. ; S.E. of F<sub>0</sub> mean = 26.4 lb./ac.

**Crop :- Pea (Rabi).**

**Ref :- U.P. 54(351).**

**Centre :- Etawah (c.f.).**

**Type :- 'D'.**

Object :—To study the effect of fungicides against Pea pod borer.

**1. BASAL CONDITIONS :**

(i) to (v) N.A. (vi) November—December 1954. (vii) to (ix) N.A. (x) April, 1955.

**2. TREATMENTS :**

10 fungicidal treatments : F<sub>0</sub>=Control, F<sub>1</sub>=Dusting with 5 % D.D.T. dust at 15 to 20 lb./ac., F<sub>2</sub>=Spraying with 0.5 % D.D.T. suspension at 40 to 60 gallons/ac., F<sub>3</sub>=Dusting with 5 % B.H.C. dust at 15 to 20 lb./ac., F<sub>4</sub>=Spraying with 0.5 % B.H.C. suspension at 40 to 60 gallons/ac., F<sub>5</sub>=Dusting with 1 % Aldrin dust at 1 lb./ac., F<sub>6</sub>=Spraying with 40 % E.C. Aldrin at 1 lb./ac., F<sub>7</sub>=Dusting with 1.5% Dieldrin dust at 0.75 lb./ac., F<sub>8</sub>=Spraying with Dieldrin at 0.75 lb./ac. and F<sub>9</sub>=Spraying with Endrin 19.5 % at 0.5 lb./ac.

**3. DESIGN :**

(i) and (ii) R.B.D. with 5 replications. (iii) (a) and (b) 38'4"×28'×3". (iv) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Percentage of damaged pods. (iv) and (v) No. (vi) and (vii) Nil.

**5. RESULTS:**

(i) 20.88 degrees. (ii) 6.102 degrees. (iii) Treatment differences are not significant. (iv) Mean % of damaged pods in degrees.

Treatment	F <sub>0</sub>	F <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>	F <sub>4</sub>	F <sub>5</sub>	F <sub>6</sub>	F <sub>7</sub>	F <sub>8</sub>	F <sub>9</sub>
Mean angle	24.08	21.35	19.48	20.55	22.42	22.19	19.55	18.68	18.32	22.17

S.E./mean = 2.729 degrees.

% damaged pods	16.98	13.63	11.51	12.70	14.90	14.62	11.59	10.66	10.28	14.59
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**Crop :- Pea (Rabi).**

**Ref :- U.P. 57(410).**

**Centre :- Etawah (c.f.).**

**Type :- 'D'.**

Object :—To study the effect of fungicides against Pea pod borer.

**1. BASAL CONDITIONS :**

(i) to (iii) N.A. (iv) T—163. (v) N.A. (vi) Dec., 1957. (vii) to (ix) N.A. (x) 1.4.1958.

## 2. TREATMENTS :

6 fungicidal treatments :  $F_0$ =Control,  $F_1$ =Spraying with 0.05 % Diazinon at 60 gallons/ac.,  $F_2$ =Spraying with 0.05 % Parathion emulsion at 60 gallons/ac.,  $F_3$ =Spraying with Endrin at 1 lb./ac.,  $F_4$ =Spraying with 0.5 % D.D.T. suspension at 60 gallon/ac. and  $F_5$ =Ovicide 1 in 99 dilution at 60 gallons/ac.

Fungicides sprayed on 16.2.1958, 3 and 19.3.1958.

## 3. DESIGN :

(i) and (ii) R.B.D. with 5 replications. (iii) (a) and (b) 32'2" × 32'2". (iv) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Bored grain and yield of peas. (iv) and (v) No. (vi) and (vii) N.A.

## 5. RESULTS :

(i) 2.33. (ii) 0.413. (iii) Treatment differences are not significant. (iv) Mean value of bored peas [transformed by  $\sqrt{x+0.5}$  where x is the number of bored peas per 25 pods].

Treatment	$F_0$	$F_1$	$F_2$	$F_3$	$F_4$	$F_5$
Mean value	2.56	2.30	2.01	2.24	2.48	2.40

S.E./mean = 0.184

Transformed back counts	6.05	4.79	3.54	4.52	5.65	5.26
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(i) 1445 lb./ac. (ii) 322.3 lb./ac. (iii) Treatment differences are not significant. (iv) Av yield of peas in lb./ac.

Treatment	$F_0$	$F_1$	$F_2$	$F_3$	$F_4$	$F_5$
Av. yield	1329	1491	1360	1549	1415	1525

S.E./mean = 144.1 lb./ac.

**Crop :- Gram (Rabi).**

**Ref :- U.P. 55(347).**

**Site :- Instt. of Crop Physiology, Dilkusha.**

**Type :- 'M'.**

Object :- To study the effect of different forms and levels of P on the yield of Gram.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Maize. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Dilkusha. (iii) 25.10.1955. (iv) (a) 2 ploughings. (b) Seed drill. (c) 35 srs./ac. (d) and (e) N.A. (v) N.A. (vi) T-87. (vii) N.A. (viii) 2 weedings. (ix) N.A. (x) 26.3.1956.

## 2. TREATMENTS :

All combinations of (1) (2) + one control

(1) 2 levels of  $P_2O_5$  :  $P_1$ =40 and  $P_2$ =80 lb./ac.

(2) 2 sources of  $P_2O_5$  :  $F_1$ =Super and  $F_2$ =Kotka phosphate.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 29' × 20'. (b) 25' × 16'. (v) 2' around. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1075 lb./ac. (ii) 165.2 lb./ac. (iii) Main effect of P alone is significant. (iv) Av. yield of grain in lb./ac.

Control = 1061 lb./ac.

	P <sub>1</sub>	P <sub>2</sub>	Mean
F <sub>1</sub>	1141	998	1070
F <sub>2</sub>	1225	945	1085
Mean	1183	972	1078

S.E. of any marginal mean = 58.4 lb./ac.

S.E. of body of table or control mean = 82.6 lb./ac.

**Crop :- Gram (Rabi).****Ref :- U.P. 56(254).****Site :- Instt. of Crop Physiology, Dilkusha.****Type :- 'M'.**

Object :—To study the effect of different levels of P and calcium applied alone and in combinations on the yield of Gram.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Dilkusha. (iii) 26.10.1956. (iv) to (ix) N.A. (x) 3.4.1957.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 3 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0, P<sub>1</sub>=40 and P<sub>2</sub>=80 lb./ac.

(2) 3 levels of CaO as gypsum : C<sub>0</sub>=0, C<sub>1</sub>=30 and C<sub>2</sub>=60 lb./ac.

**3. DESIGN :**

(i) Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 22'×38'. (b) 18'×34'. (v) 2'×2'. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

**5. RESULTS :**

(i) 1190 lb./ac. (ii) 216.5 lb./ac. (iii) Main effect of C alone is significant. (iv) Av. yield of grain in lb./ac.

	C <sub>0</sub>	C <sub>1</sub>	C <sub>2</sub>	Mean
P <sub>0</sub>	975	1240	1336	1184
P <sub>1</sub>	1080	1126	1240	1149
P <sub>2</sub>	1039	1382	1290	1237
Mean	1031	1249	1289	1190

S.E. of P or C marginal mean = 62.5 lb./ac.

S.E. of body of table = 108.2 lb./ac.

**Crop :- Gram (Rabi).****Ref :- U.P. 56(256).****Site :- Instt. of Crop Physiology, Dilkusha.****Type :- 'M'.**

Object :— To study the effect of levels and methods of application of Ammonium molybdate on the yield of Gram.

## 1. BASAL CONDITIONS :

(i) (a) Maize—Gram. (b) Maize. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Diikusha. (iii) 27.10.1956. (iv) (a) N.A. (b) Seed drill. (c) to (e) N.A. (v) N.A. (vi) T—87. (vii) to (ix) N.A. (x) 4.4.1957.

## 2. TREATMENTS :

All combinations of (1) and (2) + a control

(1) 3 levels of Ammonium molybdate :  $A_1=3$ ,  $A_2=6$  and  $A_3=9$  lb./ac.

(2) 2 methods of application :  $M_1$ =Surface dressing and  $M_2$ =Placement.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 3. (iv) (a)  $28' \times 20'$ . (b)  $24' \times 16'$ . (v) 2' around. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1019 lb./ac. (ii) 135.2 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

Control = 865 lb./ac.

	$A_1$	$A_2$	$A_3$	Mean
$M_1$	982	1031	1040	1018
$M_2$	1021	1089	1108	1073
Mean	1002	1060	1074	1045

S.E. of A marginal mean = 55.2 lb./ac.

S.E. of M marginal mean = 45.1 lb./ac.

S.E. of body of the table = 78.1 lb./ac.

**Crop :- Gram (Rabi).**

**Ref :- U.P. 59(25).**

**Site :- Reg. Res. Stn., Meerut.**

**Type :- 'M'.**

Object :— To study the residual effect of different levels of N applied to the preceding paddy crop on the yield of Gram.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) As per treatments. (ii) (a) Clay loam. (b) Refer soil analysis, Meerut. (iii) 2.11.1959. (iv) (a) 1 ploughing by soil turning plough and 2 to 3 ploughings by *desi* plough. (b) Line sowing behind the plough. (c) 40 srs./ac. (d) Rows 9" apart. (e) Nil. (v) Nil. (vi) T—87 (early). (vii) Unirrigated. (viii) Nil. (ix) 1.01". (x) 8.4.1960.

## 2. TREATMENTS :

3 levels of N as A/S :  $N_1=40$ ,  $N_2=60$  and  $N_3=80$  lb./ac.

Treatment applied to previous paddy crop,  $\frac{1}{2}$  at sowing by broadcast and  $\frac{1}{2}$  as top dressing.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b)  $40' \times 46'$ . (iii) 8. (iv) (a)  $40' \times 14'$ . (b)  $37' \times 11'$ . (v)  $1\frac{1}{2}' \times 1\frac{1}{2}'$ . (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Slight attack of wilt in replication III. Control measures were taken. (iii) Yield of grain and straw. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 651 lb./ac. (ii) 161.8 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>
Av. yield	727	634	592

S.E./mean = 57.2 lb./ac.

**Crop :- Gram (Rabi).**

**Ref :- U.P. 57(97).**

**Site :- Reg. Res. Stn., Nawabganj.**

**Type :- 'M'.**

Object : To study the effect of inorganic manures on the yield of Gram.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Nawabganj. (iii) 8.11.1957. (iv) (a) N.A. (b) Behind the plough in lines. (c) 31.7 srs./ac. (d) Rows 9" apart. (e) N.A. (v) Nil. (vi) T-87. (vii) Irrigated. (viii) N.A. (ix) 0.59". (x) 6.4.1958.

**2. TREATMENTS :**

6 manurial treatments : M<sub>0</sub>=Control, M<sub>1</sub>=50 lb./ac. of P as Super, M<sub>2</sub>=60 lb./ac. of CaO as gypsum, M<sub>3</sub>=2 lb./ac. of M<sub>0</sub> as Ammonium molybdate, M<sub>4</sub>=5 lb./ac. of sulphur and M<sub>5</sub>=1 lb./ac. of boron as Borax.

Super applied 3" to 4" deep in furrows behind the plough while preparing the field, gypsum as surface dressing 2 to 3 days before sowing. Rest of the elements, compounds mixed with fine dry earth as surface dressing 1 to 2 days before sowing on 7.11.1957.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 27'×28'. (b) 24'×25. (v) 1½' around. (vi) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Germination and yield of grain. (iv) (a) 1957-N.A. (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 416 lb./ac. (ii) 77.9 lb./ac. (iii) Treatment differences are not significant. (iv) Av. yield of grain in lb./ac.

Treatment	M <sub>0</sub>	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	M <sub>4</sub>	M <sub>5</sub>
Av. yield	397	422	397	467	406	406

S.E./mean = 38.9 lb./ac.

**Crop :- Gram (Rabi).**

**Ref :- U.P. 54(184).**

**Site :- Govt. Res. Farm, Pura.**

**Type :- 'M'.**

Object :—To study the residual effect of different levels and sources of P applied to the preceding paddy crop on the yield of Gram.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Paddy. (c) As per treatments. (ii) (a) Sandy loam. (b) Refer soil analysis, Pura. (iii) to (ix) N.A. (x) 8, 9.4.1955.

**2. TREATMENTS :**

All combinations of (1) and (2) +2 extra treatments

(1) 2 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>1</sub>=15 and P<sub>2</sub>=30 lb./ac.

(2) 3 sources of P<sub>2</sub>O<sub>5</sub> : S<sub>1</sub>=Ammo. Phos., S<sub>2</sub>=Super and S<sub>3</sub>=Nitro. Phos.

Extra treatments are E<sub>0</sub>=Control and E<sub>1</sub>=30 lb./ac. of N.

N and P applied to previous paddy crop.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 8. (b) 38×229'4". (iii) 4. (iv) (a) and (b) 38'×28'8". (v) Nil. (vi) Yes.



## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1625 lb./ac. (ii) 249.8 lb./ac. (iii) None of the effects is significant. (iv) Av. yield of grain in lb./ac.

$$E_0 = 1580 \text{ and } E_1 = 1664 \text{ lb./ac.}$$

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean
P <sub>1</sub>	1769	1520	1505	1598
P <sub>2</sub>	1590	1689	1684	1654
Mean	1680	1604	1594	1626

S.E. of P marginal mean = 72.1 lb./ac.  
 S.E. of S marginal mean = 88.3 lb./ac.  
 S.E. of body of table or E mean = 124.9 lb./ac.

**Crop :- Gram (Rabi).**

**Ref :- U.P. 54(313).**

**Site :- Govt. Res. Farm, Pura.**

**Type :- 'M'.**

Object :—To study the residual effect of different levels of P and nitrogenous fertilizers applied to preceding paddy crop on the yield of Gram.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) As per treatments. (ii) (a) Sandy loam. (b) Refer soil analysis, Pura. (iii) to (x) N.A.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=20 and P<sub>2</sub>=40 lb./ac.

(2) 5 levels of fertilizers : F<sub>0</sub>=Control (no application), F<sub>1</sub>=20 lb./ac. of N as A/S, F<sub>2</sub>=40 lb./ac. of N as A/S, F<sub>3</sub>=20 lb./ac. of N as Urea and F<sub>4</sub>=40 lb./ac. of N as Urea.

These treatments were applied to previous paddy crop.

## 3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 15. (b) 54.5' × 314'. (iii) 3. (iv) (a) and (b) 54.5' × 20'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

## 5. RESULTS :

(i) 1048 lb./ac. (ii) 298.2 lb./ac. (iii) Main effect of P alone is significant. (iv) Av. yield of grain in lb./ac.

	F <sub>0</sub>	F <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>	F <sub>4</sub>	Mean
P <sub>0</sub>	746	653	986	1026	999	882
P <sub>1</sub>	893	1172	1385	1092	866	1082
P <sub>2</sub>	1186	986	1146	1292	1292	1180
Mean	942	937	1172	1137	1052	1048

S.E. of P marginal mean = 77.0 lb./ac.  
 S.E. of F marginal mean = 99.4 lb./ac.  
 S.E. of body of table = 172.1 lb./ac.