NATIONAL INDEX

OF

AGRICULTURAL FIELD EXPERIMENTS

VOL. 3 PART 3

BIHAR

1960—65

THE COMPENDIUM PREPARED

BY

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FOREWORD

The I. C. A. R. has adopted the 'Co-ordinated approach' to crop improvement as the strategy in agricultural research. This approach is based on the principle of giving high priority to problem solving research and for the purpose an intimate knowledge of research in progress and trends of results is very essential. To give impetus to this approach, I. C. A. R. started a scheme for collecting data of all field experiments conducted in the country. It was aimed at compilation of agronomic experiments in the country, with a view to indicate the gap in the knowledge and to avoid duplication. The scheme entitled : "National Index of Field Experiments" is running under the Institute of Agricultural Research Statistics which has rendered a very valuable service by preparing compendia of agricultural field experiments conduted in the country. Two series of the compendia containing results of about 7,200 and 12,000 experiments conducted during the periods 1948-53 and 1954-59 respectively have already been published by the Institute. The present is the third series of compendia and is expected to contain the results of about 18,000 experiments conducted during the period 1960-65.

The number and the types of experiments have been increasing at a fast rate. Further, many of the experiments were being repeated over a number of years. The conclusion drawn fro m such experiments should take into account the seasonal variations. For this purpose, it was necessary to carry out consolidated analysis of results over years. Thus, the task of compilation, analysis and interpretation of results of experiments being covered in the third series became more formidable compared to those covered in the earlier two series.

The preparation of this compendium has been possible by the whole-hearted co-operation of State Departments of Agriculture, Agricultural Universities and Central Research Institutes who ungrudgingly made the results of their experimental research available. My thanks are due to various officers of these institutions for participating in his work.

I hope that the present series will be followed by periodical publications of similar compendia for later years in order that the availability of results of scientific experiments in agriculture in India may be maintained up-to-date in a consolidated form.

B. K. SONI
Deputy Director General (AS)
Indian Council of Agricultural Research

NEW DELHI,
January 1, 1973.

PREFACE

The present set of volumes form Part III in the series of compendia of Agricultural Field Experiments being published under the project of National Index of Field Experiments. Volumes comprising in Parts I and II of the series pertaining to the periods 1948-53 and 1954-59 were published in 1962 and 1965 and contained the results of about 7,200 and 12000 experiments respectively. The present volumes include results of experiments conducted during the period 1960-65. During the last decade there has been an enormous increase in agricultural research and experimentation, so much so that for the period 1960—65 to which the present volumes refer, results of about 18,000 experiments are available.

Like the earlier series, the compendium for Part III is divided into 15 volumes, one each for (1) Andhra Pradesh, (2) North-Eastern Region (Assam, Manipur, Nagaland, Meghalaya, Tripura, Arunachal Pradesh and Mizoram), (3) Bihar, (4) Gujarat, (5) Kerala (6) Madhya Pradesh, (7) Maharashtra, (8) Mysore, (9) Orissa, (10) North-Western Region (Punjab, Haryana, Jammu & Kashmir and Himachal Pradesh), (11) Rajasthan, (12) Tamil Nadu, (13) Uttar Pradesh, (14) West Bengal and (15) All Central Institutes. A departure has, however, been made in the presentation of the material contained in each volume. Whereas the results of individual experiments were presented in the volumes of previous series, the present series contain results of pooled statistical analysis of experiments that were conducted for two or more years and concluded during the period 1960-65. In respect of those expreriments conducted only for one year and also those conducted for more than one year but were continuing beyond 1960—65, the results of individual experiments have been presented.

The work under the scheme was carried out at the Institute of Agricultural Research Statistics. As it was spread over a number of years, there were changes, in the officers responsible for the scheme. The collection of data, in successive stages, for this volume were carried out under the guidance of Shri T.P. Abraham, Assistant Statistical Adviser, now Director, National Sample Surveys Organisation, Division of Survey Design and Research and Data Processing, Calcutta, Dr. B.N. Tyagi, Senior Statistician, now Joint Director of Agriculture (Statistics), Uttar Pradesh, Shri M.G. Sardana, Senior Statistician, now Joint Director, Central Statistical Organisation, New Delhi. At the preparatory stage, the work of analysis was looked after by Shri O.P. Kathuria, Junior Statistican, now Statistician in Indian Agricultural Research Institute and Shri R.K. Khosla, Junior Statistician of this Institute. Sarvashri P.P. Rao, Mahesh Kumar and S.L. Garg, Statistical staff of the Institute carried out the work in the initial stages.

The final stage of analysis and printing was carried out under the guidance of Shri P.N. Bhargava, Associate Professor and Shri K.S. Krishnan, Senior Scientist of this Institute duely assisted by S/Shri B.L. Choudhary, M.P. Saksena and P.R. Yeri, Senior Research Assistants of the Institute. S/Shri R.K. Jain, H.C. Jain, J.K. Kapoor, G.L. Khurana, Kuldeep Singh and P.K. Azad, statistical staff of the Institute deserve special mention for their careful work in analysing the data and combining the results of similar experiments. Shri R.K. Jain and Shri N.K. Sharma have done the most painstaking job of going through the proofs of this volume. It is not out of place to mention the names of Shri B.K. Sharma and Shri Narender Kumar typists, for their labourious work in typing the part of voluminous manuscript of this compendium.

The collection of data of experiments from various research stations, was done by the regional staff of the Institute 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 Agricultural Universities who made the data of the experiments conducted under their jurisdiction readily available to the staff of the Institute. The I. A. R. S. acknowledges with thanks their willing co-peration without which the consolidation of the results would not have been

possible. The Institute is also thankful to various officers in the state Departments of Agriculture and Agricultural Universities who worked as Regional Supervisors for the project from time to time and provided guidance to the regional staff working in the scheme. The list of the names of the Regional Supervisors and Regional Staff of the project is given on the following pages.

D. SINGH
Director
Institute of Agricultural
Research Statistics (I.C.A.R.)

NEW DELHI.
October 20,1976.

Regional Supervisors and Regional Staff of the National Index of Field Experiments

Sl. No.	Region & Headquarters	Statistical staff from the Institute of Agricultural Research Statistics	Regional Supervisor
1.	Andhra Pradesh (Hyderabad)	1. Shri C. H. Rao 2. Shri G. V. S. R. Krishna 3. Shri P. R. Yeri	1. Shri P. Govinda Rao, Head of the Agri. Res. Inst 2. Shri S. Vittal Rao, H. Q. Dy. Director (Research)
2.	Assam (Shillong)	1. Shri A. Sinha 2. Shri K. D. Saha	1. Shri U. C. Borah, Research Officer (Stat.)
3.	Bihar (Sabour)	1. Shri R. K. Jain 2. Shri S. M. G. Saran	1. Shri G. P. Singh, Statistician
4.	Gujarat (Ahmedabad)	1. Shri S. P. Doshi	1. Dr. D. K. Desai, Dy. Director of Agriculture (Stat.) 2. Shri J. B. Trivedi, I/C. Dy. Director (Stat.) 3. Shri R. L. Shah, Dy. Director of Agriculture (Stat.)
5.	Kerala (Trivandrum)	—	1. Shri N. George John, Research Officer 2. Shri G. Rama Chandran Nair, Research Officer 3. Shri K. George, Research Officer
6.	Madhya Pradesh (Bhopal)	1. Shri Rama Rao Patil 2. Shri S. S. Kutaula	1. Shri A. G. Khare, Dy. Director of Agriculture (Stat.)
7.	Maharashtra (Poona)	1. Shri P. R. Yeri 2. Shri B. Ramakrishnan	1. Shri V. G. Sharma, Sr. Statistician I. Shri G. C. Shaligram, Dy. Statistician 3. Shri D. T. Sawant, Asstt. Statistician
8.	Mysore (Bangalore)	1. Shri K. A. Balakrishnan 2. Shri P. T. N. Nambiar	1. Dr. N. P. Patil, Director of Research
9.	Orissa (Bhubaneswar)	1. Shri Rama Rao Patil	1. Shri B. Mishra, Dy. Director of Agri. (Hq.) 2. Shri A. Mishra, Chief Statistician

10.	Punjab, Haryana' Himachal Pradesh, Jammu & Kashmir (Ludhiana)	1. Shri B. L. Kaistha 2. Shri U. N. Dixit 3. Shri D. L. Manocha 4. Shri M. S. Batra 5. Shri D. P. Singh	1. Shri P. S. Sahota, Director of Crop Insurance 2. Shri Darshan Singh, Asstt. Statistician 3. Shri M. S. Pannu, Statistician, Department of Agriculture 4. Dr. D. Raghavarao, Prof. & Head, Dept. of Maths. & Stat., P.A.U., Ludhiana
11.	Rajasthan (Jaipur)	1. Shri N. K. Ohri 2. Shri C. H. Rao	1. Shri H. C. Kothari, Dy. Director (Statistics), Department of Agriculture
12.	Tamil Nadu (Coimbatore)	1. Shri P. Narayanan 2. Shri M. V. George	1. Shri K. R. Nagaraja Rao, Secretary, Research Council 2. Dr. K. Ramakrishnan, Associate Dean 3. Dr. D. Daniel Sunderaraj, Principal
13.	Uttar Pradesh (Lucknow)	1. Shri S. N. Bajpai 2. Shri M. P. Saksena 3. Shri G. N. Bahuguna 4. Shri O. P. Sharma 5. Shri R. Sharma 6. Shri C. B. Tiwari 7. Shri R. S. Singh 8. Shri A. C. Srivastava	1. Dr. K. Kishen, Jt. Director of Agriculture (Statistics) 2. Shri K. P. Avasthy, Officer-on-Special Duty
14.	West Bengal (Calcutta)	1. Shri A. K. Mukherjee 2. Shri A. Sinha	1. Shri S. N. Mukherjee, Dy. Director of Agriculture (Statistics)

ABBREVIATIONS COMMON TO EXPERIMENTS ON ANNUAL AND PERENNIAL CROPS AND EXPERIMENTS ON CULTIVATOR'S FIELDS GIVEN IN EXPERIMENTAL DATA

Crop :—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 is given in brackets.

Abbreviations adopted for States are as follows :

1.	A.P.	—	Andhra Pradesh	11.	Mn.	—	Manipur
2.	As.	—	Assam	12.	Ms.	—	Mysore
3.	Bh.	—	Bihar	13.	N.L.	—	Nagaland
4.	Gj.	—	Gujarat	14.	Or.	—	Orissa
5.	H.P.	—	Himachal Pradesh	15.	Pb.	—	Punjab
6.	Hr.	—	Haryana	16.	Rj.	—	Rajasthan
7.	J.K.	—	Jammu & Kashmir	17.	T.N.	—	Tamil Nadu
8.	K.	—	Kerala	18.	Tr.	—	Tripura
9.	M.P.	—	Madhya Pradesh	19.	U.P.	—	Uttar Pradesh
10.	Mh.	—	Maharashtra	20.	W.B.	—	West Bengal

For the experiments conducted under the schemes sponsored by the Indian Council of Agricultural Research, like the All India Co-ordinated Agronomic Experiments (Model Agronomic Experiments and Simple Fertilizer Trials) scheme, no serial number has been given at the source as the data of these experiments were collected at the headquarters (New Delhi). In such cases, the abbreviation MAE or SFT is given in the bracket against the year in which the experiment is conducted.

Site & Centre :—Name of the Research Station is mentioned along with the place where it is located, *e.g.* Agri. Res. Stn., Vyara for Agricultural Research Station, Vyara.

For Central Institutes, the corresponding standard abbreviations have been adopted as given below :

C. A. Z. R. I.	—	Central Arid Zone Research Institute.
C. P. C. R. I.	—	Central Plantation Crops Research Institute.
C. P. R. I.	—	Central Potato Research Institute.
C. R. R. I.	—	Central Rice Research Institute.
C. S. S. R. I.	—	Central Soil Salinity Research Institute.
C. T. C. R. I.	—	Central Tuber Crops Research Institute.
C. T. R. I.	—	Central Tobacco Research Institute.
C. T. R. L.	—	Cotton Technological Research Laboratory.
I. A. R. I.	—	Indian Agricultural Research Institute.
I. G. F. R. I.	—	Indian Grassland & Fodder Research Institute.
I. H. R.	—	Institute of Horticultural Research.
I. I. S. R.	—	Indian Institute of Sugarcane Research.
I. L. R. I.	—	Indian Lac Research Institute.
J. A. R. I.	—	Jute Agricultural Research Institute.
J. T. R. L.	—	Jute Technological Research Laboratory.
S. B. I.	—	Sugarcane Breeding Institute.

In case of the experiments conducted on cultivator's 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. In factorial experiments, the treatments will be abbreviated as, for example, Cultural-*cum*-Manurial as CM.

Object :—A statement of the objective of the experiment is given indicating the main crop and the type of the experiment.

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 critical differences for individual effect means which are significant.

Other abbreviations used in the Experimental Data

Kg	=	Kilogram(s)	Dical. Phos.	=	Dicalcium Phosphate
Kg/ha.	=	Kilogram(s) per hectare	Zn. Sul.	=	Zinc Sulphate
N	=	Nitrogen	Cu. Sul.	=	Copper Sulphate
P	=	Phosphate	Mg. Sul.	=	Magnesium Sulphate
K	=	Potash	Mn. Sul.	=	Manganese Sulphate
Nitro. Phos.	=	Nitrogen Phosphate	Ammo. Molybdate	=	Ammonium Molybdate
Ammo. Phos.	=	Ammonium Phosphate	B.	=	Boron
A/S	=	Ammonium Sulphate	Fe. Sul.	=	Ferrous Sulphate
A/S/N	=	Ammonium Sulphate Nitrate	F. M.	=	Fish Manure
C/A/N	=	Calcium Ammonium Nitrate	G. N. C.	=	Groundnut Cake
A/N	=	Ammonium Nitrate	M. C.	=	Municipal Compost
A/C	=	Ammonium Chloride	T. C.	=	Town Compost
C/N	=	Chilean Nitrate	G. M.	=	Green Manure
Mur. Pot.	=	Muriate of Potash	G. L. M.	=	Green Leaf Manure
Pot. Sul.	=	Potassium Sulphate	F. Y. M.	=	Farm Yard Manure
Super.	=	Super Phosphate	C. M.	=	Cattle Manure

The information regarding the particulars of research stations may be obtained under the respective items as given below :

PARTICULARS OF RESEARCH STATIONS

A. General Information :

(i) District and the nearest railway station with Latitude, Longitude and Altitude, if available. General topographpy 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 fortnightly 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. (ii) 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 under experimental data as given on next page.

BASAL CONDITIONS

A. For experiments on annual crops :

(i) (a) Crop rotation followed, if any. (b) Previous crop. (c) Manuring of previous crop (State amount and kind). (ii) Soil type. (iii) Date of sowing/planting. (iv) Cultural practices : (a) Preparatory cultivation. (b) Method of sowing. (c) Seed-rate. (d) Spacing. (e) No. of seedlings per hole. (v) Basal manuring given to the whole experiment with time and method of application. (vi) Variety (indicate also early, medium or late). (vii) Irrigated or un-irrigated. (viii) Important post-sowing/planting cultural operations such as weeding, etc. (ix) Rainfall during crop season. (x) Date of harvest.

B. For experiments on perennial crops :

(i) Previous history of the experimental area (Give manuring and other operations). (ii) Soil type. (iii) Method of propagation of plants. (iv) Variety. (v) Date and method of sowing/planting (including spacing). (vi) Age of seedlings at the time of planting. (vii) Basal manuring given to the whole experimental area. (viii) Important cultural operations during the experimental year. (ix) Inter-cropping, if any. (x) Irrigated or un-irrigated (If irrigated, give the source, number, interval and intensity of irrigation). (xi) Rainfall during the experimental year. (xii) Date(s) of harvest.

C. For experiments on cultivator's fields :

(i) (a) Crop rotation followed, if any. (b) Previous crop. (c) Manuring of previous crop (State amount and kind). (ii) Soil type and soil analysis, if available. (iii) Basal manuring (Give 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) Date of sowing/planting. (vii) Irrigated or un-irrigated. (viii) Important post-sowing/planting cultural operation such as weeding etc. (ix) Rainfall during crop season. (x) Date of harvest.

DESIGN

A. For experiments on annual crops :

(i) Abbreviations for designs : C. R. D.—Completely Randomised Design ; R. B. D.—Randomised Block Design ; L. Sq.—Latin Square ; Fact.—Factorial ; Confd.—Confounded ; other designs and modifications of the above to be indicated in full. (indicate confounded effects, if any). (ii) (a) No. of plots per block (in a split-plot experiment, the number of main-plots per replication as well as the number of sub-plots per main-plot should be given). (b) Block dimensions. (iii) No. of replications. (iv) (a) Gross plot-size. (b) Net plot-size. (v) Border or guard rows kept. (vi) Whether treatments are randomised (independently 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 ; Fact.—Factorial ; Confd.—Confounded ; other designs and modifications of the above to be indicated in full. (indicate confounded effects, if any) (ii) (a) No. of plots per block (in split-plot experiments, the number of main-plots per replication as well as the number of sub-plots per main-plot should be given). (b) Block dimensions. (iii) No. of replications. (iv) (a) Net plot-size. (b) No. of trees per plot (In case of experiments on grasses give plot-size). (v) Border or guard rows kept. (vi) Whether treatments are randomised (independently in each block).

C. For experiments on cultivator's fields :

(i) Design with No. of plots/block and No. of replications (In split-plot experiments, the number of main-plots per replication as well as the number of sub-plots per main-plot should be given). (ii) Method of selection of sites with number and distribution of experiments. (iii) (a) Gross plot-size. (b) Net plot-size. (iv) Whether treatments are randomised (independently in each block).

GENERAL INFORMATION

A. For experiments on annual crops :

(i) General crop condition during growth (if lodged, state date of lodging). (ii) Incidence of pests and diseases and control measures taken, if any. (iii) Types of quantitative observations taken. (iv) (a) If the experiment has continued for more than one year, indicate year of commencement and year of termination. (b) Whether treatments assigned to the same plots every year. (c) Reference to combined analysis, if any. (v) Other centres, if any, where the same experiment has been conducted with reference numbers. (vi) Abnormal occurances such as heavy rains, frost, storm, drought, etc. (vii) Any other important information.

B. For experiments on perennial crops :

(i) General crop condition during growth. (ii) Incidence of pests and diseases and control measures taken, if any. (iii) Types of quantitative observations taken. (iv) If the experiment has continued for more than one year, indicate year of commencement and year of termination (Give reference of previous years, if any). (v) Other centres, if any, where the same experiment has been conducted with reference numbers. (vi) Reference to combined analysis, if any. (vii) Abnormal occurances suc as heavy rains, frost, storm, drought, etc. (viii) Any other important information.

C. For experiments on cultivator's fields :

(i) General crop condition during growth. (ii) Incidence of pests and diseases and control measures taken, if any. (iii) Types of quantitative observations taken. (iv) In case of repetition in successive years, (a) Year of commencement and termination. (b) Whether treatments assigned to the same plots every year. (c) Reference to combined analysis, if any. (v) In case of repetition at other places, give names with references, if any. (vi) Abnormal occurances such as heavy rains, drought, etc. (viii) Any other important information.

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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	*Oryza sativa* L.	Dhan	Dhan	Dhano	Vadlu, Biyyamu	Nel	Nellu	Bhatta	Bhat	Dangar	Dhan, Chawal	Chaul, Dhan
2	Wheat	*Triticum sativum* Lamk, *Triticum aestivum* L.	Gaum ; Ghehu	Gam	Gaham	Godumalu	Kothumai	Gothambu	Godhi	Gahu	Ghahu	Gehon	Kanak
3	Barley	*Hordeum Vulgare L.*	Ja'dhan	Joba	Joba	Barley	Baarliarisi	Barley	Barley akki	Satu ; Jav	Jav	Jav	Jaun
4	Jowar	*Andropogon Sorghum*	—	Jawar	Jura	Janna	Cholam	Cholam	Jola	Jawari Jondlila	Jawari; Juar	Jawar; Jaur	Jowar
5	Maize	*Zea mays* L.	Gom dhan	Bhutta	Macca	Makka-jonna	Makka-cholam	Cholam Makka-cholam	Musukina Jola	Makka	Makkai	Makka	Makki, Makayee
6	Marua Ragi	*Eleusine coracana Gaertn*	—	Marwa	Mandia	Ragi ; Chodi	Keppai ; Ragi Kelvargu	Muthari Ragi	Ragi	Nagli ; Nachni	Nagli ; Bavto	Ragi ; Mandika ; Marwah	Mandhuka; Mandhal
7	Gundali												
8	Gram	*Cicer arietinum* L.	Butmah	Chola	Boot	Sanagalu	Kadalai, Sundal-Kadalai	Kadala	Kadale	Harbara	Chana	Chana	Chole ; Chana
9	Red Gram	*Cajanus Cajau Milsp.*; *Cajanus indicus sprensle*	Arhar	Arahar	Harad	Kandulu	Thuvari	Thuvaran Payaru	Thogari	Tur	Tuvar	Arhar	Harhar; Arhar
10	Black Gram	*Phaseolus mungo Var. radiatus Linn*	Matimah	Maehkala	Biri	Minumulu	Vzhundu	Vzhunnu	Uddu	Udid	Adad, Vdad	Urd	Mash, Urd
11	Green Gram	*Phaseolus aureus Roxb*	Magumav	Sonamung	Mung	Pacha-pesalu	Pachai-paru Pasi-payaru	Ceru-payaru ; Payaru	Hesaru	Mug	Mag	Moong	Moong, Mug
12	Masur	*Lenos eseulenta Moench; Lens Culinaris Medic.*	Masurmah	Musuri	Masur	Chiru-senaga	Masur Paruppu	—	Masoor-bele	Masur	Masur	Masur	Massar
13	Horse gram	*Dolichos biflours Roxb.*	—	Kulthi, Kalal	—	—	Kollu, Kaanam	Muthria	Huruti	Kulthi, Hulga	Kulthi	Kultha	Kulthi
14	Peas	*Pisum sativum L.*	Motormah	Bata matar	Matar	Bataneelu	Pattani	Pattani	Batani	Matar	Vatana	Muttar	Mattar
15	Bhindi	*Hibiscus esculentus ; Abelmoschus esculentus moench*	Bhendi	Dhenrosh	Vendi	Benda	Bendai kai	Venda	Bende kayi	Bhendi	Bhida ; Bhinda	Bhindi	Bhindi ; Tori

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
16	Brinjal	*Solanum melongen L.*	Bengena	Begun	Baigan	Vankaya	Katharikai	Vazhuthana	Badane Kays	Vange	Vengan	Baingan	Bengan: Bataun
17	Potato	*Solanum tubousum* L.	Alooguti	Alu	Bilati Alu	Bangala-dumpa, Urlagadda	Urala Kizhangu	Urala kizangu	Alu gedde	Batata	Aloo, Batata	Aaloo	Alu
18	Tomato	*Lycoperfium sculentum Mill.*	Bilahi	Bilati Begun	Bilati baigen bapatbla-gaant	Tomato; Ramamu-laka Seema Vankaya	Thakkali	Thakkali	Tomato	Welwangi Tombati	Vilaiti Wagan Tameta	Tamattar Mungphali	Tamatar Mungfali
19	Sittar	*Memordiea Charantia L.*	Tita Karela	Lua	Lue	Anapa of Sorakaya	Surakai	Pavakka	Hagala Kayi	Karla	Karela	Karela	Karela
20	Toria (Indian sape)	*Brassioa Champertris Var. toria Duth*	Sariah	Tori Sarisha	—	Ava	Kadugu	—	—	Saras	Sarsau	Toria	Toria
21	Sugarcane	*Saccharum Officinarum L.*	Kuhiar	Akh	—	Cheruku	Karumbu	Karimbu	Kabbu	Oos	Sherdi	Ganna; Kamad; Naishaker	Kamad; Gauna; Eakh
22	Cotton	*Gossypium spp.*	Kapah	Karpas	Kapa	Pratti	Paruthi	Paruthi	Hatti	Kapus	Kapas	Kapas	Kapah
23	Jute	*Corchorus spp.*	Morapat	Shada pat Toshsa pat	Jhota	Janumu	Chanapai	Chanambu	Senabu	Joot	Moti	Jute	Patsan
24	Mesta	*Hibiscns Cannobinus L.*	San	Bimli	Kaunria	Gogu	Pulimanchi Puchilan	—	Holadapun-drike	Ambadi	Anbadi-Moti	Patsan	Sanukra Sankukra
25	Groundnut	*Arachis hypogaea L.*	China badam	Cheena badam	China badam	Nelasenaga; Verusenaga	Nilakadalai	Nilakkadala	Nela Kadale	Bhuimug	Bhoising Magafair	Mungphali	Mungfali
26	Sesamum	*Sesamum indicum L. Sesamum oriental L.*	Til	Til	Rasi	Nuvvutu	Ellu	Ellu	Yellu	Til, Tili	Tal	Til	Til
27	Castor	*Ricinus Communis L.*	Eri	Rehri	Jada	Amudalu	Amanakku	Avanakku	Haralu	Erandi	Diveli Erands	Rehri	Arind, Hrind, Rind
28	Linseed	*Linum Usitatissimum L.*	Tisi	Tishi	Peshi	Avi e	Alivithai	Cherucha-navithu	Agase	Javar, Alsi	Alsi	Alsi	Alsi
29	Mustard	*Brassicr Juncea Coss*	Sraiah	Rai Sasisha	Rai	Avalu	Kadugu	Kaduku	Kempu-sasive	Mohri	Rai	Rai	Rai
30	Soyabean	*Glycinn hi[illegible]pida; Glycine Maxmerr*	Garomah	Garikalai	Soyabin	Soya-chikkudu	Soya-payadu	Soyabean	Soyabean	Soyabin	Soyabin	Soyabean or Bhat	Soyabean

GLOSSARY OF VERNACULAR NAMES OF CROPS Contd.

Sl. No.	Name of Crop	Botanical Name	Asssamese	Bengali	Oriya	Telugu	Tamil	Malayalam	Kannada	Marathi	Gujrati	Hindi	Punjabi
31	Niger	*Guizotia abyssinica Cass*	Sorguja	Sarguaz	Alashi	Verrinu-vvulu	Peyellu	—	Huchellu	Karale ; Khursani	Ramtal	Tamtil	Ramtil
32	Onion	*Allium cepa* L.	Piyaz	Piaz	Peas ; Ulli	Ulli	Vengayam ; Erangayam	Ulli	Eerulli	Kanda	Dungle ; Kando	Piaz	Ganda ; Payaz
33	Grass	*Pennisetum pur purcumschum*	Nol ghah	Nipier ghas	Hatia ghasa Nepies	Nupier gaddi	Napierpul	—	Napier-hullu	Hatti gavat	—	Napier	Hatti ghah
34	Mango	*Mangitera Indica* L.	Am	Am	Amba	Mamidi	Mangai	Mawu	Movu	Amba	Keri	Aam	Amb
35	Litchi	*Litchi chinensis Sonn*	Litchu	Litchu	Litchu	Lichi	—	—	Lichi	Lichi	Llchi	Leechi	Lichee

CONTENTS

BIHAR

(Salient features of experimentation)

The general information regarding the agro-climatic regions, extent of irrigation, normal cropping pattern etc. for the state of Bihar has been furnished in the first and second series of the compendia of the Nationel Index of Agricultural field Experiments already published for the periods 1948-53 and 1954-59 respectively. Hence, this information has not been discussed in the present volume.

This volume of the compendia consists the details and results of 1570 field experiments conducted during the period 1960-65. In addition to these experiments, the results of those experiments conducted under All India Co-ordinated experiments of ICAR are also presented. The volumes of the previous two series contain results of 325 and 1192 experiments conducted during the period 1948-53 and 1954-59 respectively.

Out of 1570 experiments presented in this volume 952 are continued for more than one year and are grouped in 365 groups. Only 11 groups of experiments are continued beyond this period. The table 1 presents the distribution of these 1570 experiments according to crops and types whereas table 2 tpresets nhe distribution of 365 groups covering 952 experiments according to crops and types.

The main crops of Bihar are Paddy, Wheat, Maize,Sugarcane, Gram, Arhar, Groundnut, Jute and Til and these crops cover the 87·4% of the total croped area. From Table Ist can be seen that these corps contrlbute towards 80% of the total experiments conducted during the period 1960-65.

The salient features of experiments for different important crops are discussed below :—

1. *PADDY* :— This is the most important crop in Bihar. The area under this crop was 5309* thousand hectares, which covered the maximum area i.e. 52·9% of the total cropped area. There were 339 experiments conducted on this crop during 1960-65 making it 21·5% of the total experiments out of which 141 experiments were conducted only for one year and remaining 198 experiments were continued for more than one year, forming 76 groups. The results of individual as well as grouped experiments are presented in this compendium.

These experiments were tried for exploring the beat manurial dose, dates of sowing and harvesting, irrigation practices, insecticidal and weedicidal treatments for controlling pests and disease etc. About 26·5% of the experiments reported were of purely manurial type, 21·5% of cultural practices type, 16.3% of irrigational type, In manurial experiments, treatments tried were sources and levels of Nitrogen. Phosphoric acid, Potash, Lime, Organic manures and trace elements like Mn, Zn, Mo and Cu. The levels of Nitrogen ranged from O to 45Kg/ha. The same were the ranges for P_2O_5 and K_2O also. The Lime levels varied from 897 to 2690 Kg/ha. Principal varieties tried were CH 10,498-2A,BK-88,BK-36,BR-8, BR-34, NP-852, NP-798,NP-799,etc. The yield of Paddy varied from 8 to 42 Q/ha. Time and method of sowing and harvesting were also the important object for a good number of cultural experiments.

Nearly 70% experiments were laid out in R.B.D. and factorial R.B.D. Other designs such as split-plot design, confounded design were also applied.

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* Figures taken from Indian Agricultural Statistics, Vol. I, issued by Directorate of Economics and Statistics, Ministry of Food and Agriculture, C.D. and Co-operation for 1964—65.

TABLE 1

Number of experiments conducted during the period 1960-65
(Crop-wise and Type-wise)

Crop \ Type	M	MV	C	CV	CM	CMV	I	IV	IM	IMV	IC	ICV	ICM	D	X	Total
1. Paddy	90	3	63	44	2	11	19	—	33	—	—	—	—	74	—	339
2. Wheat	95	4	34	16	8	—	19	—	13	1	3	—	—	47	—	240
3. Barley	4	—	—	1	1	—	7	—	—	—	—	—	—	3	—	16
4. Jowar	1	—	2	—	—	—	—	—	—	—	—	—	—	—	—	3
5. Maize	102	11	47	21	—	—	—	5	4	3	—	—	—	36	—	229
6. Marua	4	—	10	—	—	—	—	—	—	—	—	—	—	1	—	15
7. Gundali	4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4
8. Gram	17	—	4	—	3	—	—	—	—	—	—	—	—	37	—	61
9. Arhar	2	—	—	—	—	—	—	—	—	—	—	—	—	4	—	6
10. Kalai	12	—	—	—	—	—	—	—	—	—	—	—	—	—	—	12
11. Moong	2	—	—	—	—	—	—	—	—	—	—	—	—	5	—	7
12. Masur	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2
13. Kulthi	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2
14. Pea	20	—	—	—	3	—	—	—	—	—	—	—	—	8	—	31
15. Bhindi	4	5	—	—	—	—	—	—	—	—	—	—	—	—	—	9
16. Brinjal	—	—	—	—	—	—	—	—	—	—	—	—	—	10	—	10
17. Potato	7	3	—	1	—	—	13	—	—	—	—	—	—	13	—	37
18. Tomato	—	—	—	—	—	—	—	—	—	—	—	—	—	4	—	4
19. Bitter Gaurd	—	—	—	—	—	—	—	—	—	—	—	—	—	7	—	7
20. Toria	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1
21. Sugarcane	104	—	42	12	9	—	2	—	13	10	—	1	4	54	—	251
22. Cotton	15	—	1	—	5	—	—	—	—	—	—	—	—	17	—	38
23. Jute	13	5	3	1	—	—	—	—	—	—	—	—	—	7	—	29
24. Mesta	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	1
25. Groundnut	20	—	2	—	8	—	—	—	1	—	—	—	—	22	—	53
26. Til	7	—	1	—	—	—	—	—	—	—	—	—	—	—	—	8
27. Caster	11	—	—	4	—	—	—	—	—	—	—	—	—	1	—	16
28. Linseed	5	—	—	—	1	—	—	—	—	—	—	—	—	—	—	6
29. Mustard	5	—	—	—	1	—	—	—	—	—	—	—	—	2	—	8
30. Soyabean	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1
31. Rai	2	—	—	—	1	—	—	—	—	—	—	—	—	—	—	3
32. Niger	1	—	—	—	1	—	—	—	—	—	—	—	—	—	—	2
33. Onion	—	—	—	—	—	—	—	—	—	—	—	—	—	5	—	5
34. Grass	9	12	28	—	—	—	—	—	—	—	—	—	—	3	—	52
35. Mango	2	—	1	—	—	—	—	—	4	—	—	—	—	16	—	23
36. Litchi	4	—	5	—	—	—	—	—	—	—	—	—	—	3	—	12
37. Mixed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	27	27
Total	568	43	243	100	43	11	60	5	68	14	3	1	4	380	27	1570

In the case of R.B.D. the plot size was usually varying from 20.2 sq-metres to 110.2 sq. metres, whereas in the case of split plot, coufounding and factorial R.B.D. it varied from 8·0 sq. metres to 20.0 sq,metres.

2. *WHEAT* : The area under this crop was 636* thousand hectares i.e. 6·3% of the total

TABLE—2

Number of groups of experiments conducted during the period 1960-65.

(Number of experimentes within group are given in perenthesis)

Crop \ Type	M	MV	C	CV	CM	CMV	I	IV	IM	IMV	IC	ICM	D	X	Total
1. Paddy	24(68)	1(3)	12(31)	11(24)	1(2)	3(8)	5(15)	—	10(25)	—	1(3)	—	9(20)	—	76(198)
2. Wheat	24(64)	—	7(20)	2(4)	1(4)	—	6(17)	—	3(11)	—	—	—	11(28)	—	55(151)
3. Barley	—	—	—	—	—	—	1(3)	—	—	—	—	—	—	—	1(3)
4. Maize	28(76)	2(4)	10(22)	7(17)	—	—	—	1(2)	1(3)	1(3)	—	—	7(17)	—	57(144)
5. Marua	1(3)	—	4(10)	—	—	—	—	—	—	—	—	—	—	—	5(13)
6. Gundali	1(3)	—	—	—	—	—	—	—	—	—	—	—	—	—	1(3)
7. Gram	3(9)	—	—	—	—	—	—	—	—	—	—	—	13(30)	—	16(39)
8. Arhar	—	—	—	—	—	—	—	—	—	—	—	—	1(2)	—	1(2)
9. Kalai	2(4)	—	—	—	—	—	—	—	—	—	—	—	—	—	2(4)
10. Moong	—	—	—	—	—	—	—	—	—	—	—	—	2(4)	—	2(4)
11. Masur	1(2)	—	—	—	—	—	—	—	—	—	—	—	—	—	1(2)
12. Kulthi	1(2)	—	—	—	—	—	—	—	—	—	—	—	—	—	1(2)
13. Pea	6(19)	—	—	—	—	—	—	—	—	—	—	—	2(4)	—	4(23)
14. Bhindi	1(2)	2(5)	—	—	—	—	—	—	—	—	—	—	—	—	3(7)
15. Brinjal	—	—	—	—	—	—	—	—	—	—	—	—	2(5)	—	2(5)
16. Potato	1(4)	1(2)	—	—	—	—	4(11)	—	—	—	—	—	4(10)	—	10(27)
17. Tomato	—	—	—	—	—	—	—	—	—	—	—	—	1(2)	—	1(2)
18. Bitter Gaurd	—	—	—	—	—	—	—	—	—	—	—	—	2(5)	—	2(5)
19. Sugarcane	19(54)	—	15(31)	2(5)	1(3)	—	—	—	5(12)	3(8)	—	2(4)	12(26)	—	59(143)
20. Cotton	5(14)	—	—	—	1(2)	—	—	—	—	—	—	—	2(6)	—	8(22)
21. Jute	3(7)	—	—	—	—	—	—	—	—	—	—	—	—	—	3(7)
22. Groundnut	5(12)	—	1(2)	—	2(5)	—	—	—	—	—	—	—	6(16)	—	14(35)
23. Til	2(6)	—	—	—	—	—	—	—	—	—	—	—	—	—	2(6)
24. Caster	3(8)	—	—	1(4)	—	—	—	—	—	—	—	—	—	—	4(12)
25. Linseed	2(4)	—	—	—	—	—	—	—	—	—	—	—	—	—	2(4)
26. Onion	—	—	—	—	—	—	—	—	—	—	—	—	1(2)	—	1(2)
27. Grass	2(6)	5(11)	5(27)	—	—	—	—	—	—	—	—	—	1(2)	—	13(46)
28. Mango	1(2)	—	—	—	—	—	—	—	1(4)	—	—	—	4(10)	—	6(16)
29. Litchi	1(4)	—	1(4)	—	—	—	—	—	—	—	—	—	—	—	2(8)
30. Mixed.	—	—	—	—	—	—	—	—	—	—	—	—	—	7(17)	7(17)
Total	136(373)	11(25)	55(147)	23(56)	6(16)	3(8)	16(46)	1(2)	20(55)	4(11)	1(3)	2(4)	80(189)	7(17)	365(952)

cropped area. 240 experiments i.e about 15·0%of total experiments of different types such as manurial, cultural, irrigational, insecticidal and weedicidal etc. were conducted during this period. Out of 240 experiments 39·5%were of manurial type, 20·2% of cultural type, 13·3% of irrigational type, and 19·6% of insecticidal and weedicidal type. There were 55

groups of 151 experiments and remainining 89 experiments were conducted for single years. Here the manurial experiments were tried with different types and levels of N, P, K, Traee elements, Green manures and micro-nutrients. Nitrogen levels were applied ranging from 22·4 to 90Kg/ha., from diffrent sources such as Urea, Cake, A/S/N,C/A/N, etc. Phosphate levels ranged from 45 to 90Kg/ha with different sources such as Single Super phos ; Dical. phos ; Rock phos ; Basic slags, etc. Potash levels ranged from 0 to 45Kg/ha.

In cultural experiments, treatments tried were mostly seed rates (ranging from 46 to 92 Kg/ha, spacing(ranging from 15cm. × 5cm. to 30cm × 15cm),methods of sowing, time of sowing and harvesting. Along with cultural treatments manurial treatments, such as application of Nitrogen, phosphate were tried. Few trials were conducted to know suitable variety along with cultural and manurial treatments. Irrigational experiments were conducted applying irrigations at 30% to 60% available soil moisture and also to 0 to 15 cm wet zone. Insecticidal experiments using different insecticides tried mostly to control white ants, wheat-rusts, termites etc. Main varieties which were tried in these experiments were No-799, NP-852,498-2A,BR -319, NP-835,NP-884 etc. The yield of wheat grain in these experiments ranged from 10 to 30 Q/ha.

Nearly 77% of the exprimcnts were laid out in R.B.D. and factorial R.B.D. ; remaining were laid in split plot, strip plot, confounded designs. For R.B.D., layout the plot sizes varied from 100 to 200 sq. meters whereas for factorial RBD, Split plot etc. the variation was from 20 to 50 sq. metres.

3. *MAIZE* : This crop covered 745* thousand hectares of area. i.e. 7% of the total cropped area and the experlments conducted were 14% of the total experiments. Out of these 229 experiments, 57 groups eonsisting of 144 experiments were conducted for more than one year, while remaining 85 experiments were conducted for single year. Manurial experimcnts were more in number than other types. 44·5% of the experiments on this crop were of manurial type, 20·5%of cultural type, 9·2% of cultural-cum-varietal type 15·7%of insecticidal type and remaining 10·1% of other types. The levels of N, P and K varied from 0 to 90 Kg/ha ; and in some eases the higher doses 134·4 Kg/ha. were also tried. Lime was tried at 1800 Kg/ha.

In cultural experiments, method of sowing, time of sowing, intensive cropping were usually tried. Irrigations were given at 40% to 70% available soil moisture and different insecticiaes were used to control field cricket, stem borer and diseases. The common varieties of Maize in Bihar were Ganga-1, Ganga-101, Jampur, Kalimpong and Tixas-26. The yield of Maize varied from 20 to 55 Q/ha.

Nearly 90% of the experiments were laid out in R.B.D. and fact. R.B.D. Variation in plot size was much, ranging from 40·47 sq. metres to 101.2 sq. metres.

4. *ARHAR* : There were only 6 experiments conducted on this crop though the area covered by this crop was 157* thousand hectares i.e.1·6% of the total cropped area. Out of 6 experiments 4 were of insecticidal type and 2 of manurial type. Tilam at 3.4 Kg/ha, Eptamat 2·2 Kg/ha, Atragim at 1·1Kg/ha, Rigone-2 pint/ha Karmex at 1·1 Kg/ha etc were used for controlling pest and disease and weed control. On this crop N, P and K at 45 Kg/ha and Lime at 4035 Kg/ha were tried for BR-183 and BR-65 varieties of Arhar, giving the yield from 7 to 28 Q/ha.

All the 6 experiments were laid out in R.B.D. in the net plot size ranged from 10·12 sq. metres to 40.47 sq. metres.

5. *GRAM* : Gram had covered 85* thousand hectares area and 61 experiments were

conducted on this crop including 16 grouped experiments. Out of 61 experiments, 60·7% were to study the control measures for pod-borer, cut worm and isease of Gram. In manurial type experiments, Nitrogen levels were applied at 11·2Kg/ha, Phosphate and Potash at 45 hg/ha and Lime was given at 4000 Kg/ha. Seed rates varied from 35 to 69 Kg/ha, whereas treatments on time of sowing tried were 15 th Oct to 15 Dec. ST-4, BR.65 and BR-17 were the common varieties producing yield in the range 9 to 30Q/ha.

All the experiments were laid out in R.B.D. except 3 in split plot. The net plot size varied form 10·12sq. metres to 50 sq. metres.

6. *GROUNDNUT* : This crop covered only 5* thousand hectares area and 53 experiments including 14 groups of experiments were conducted on this crop. 37·7% experiments were of manurial type, 41·5% were of insecticidal and weedicidal type, 15% of cultural cum manurial type and 5·7% of other types. Nitrogen levels were tried from O to 22·5Kg/ha ; Phosphate and Potash levels from O to 45Kg/ha, Lime at 400Kg/ha Gypsum at 231 Kg/ha. Different types of Phosphate were also tried. Row spacing, plant spacing, seed soaking treatments were used in cultural experiments and Bordax mixture, Dfathane spray etc. were tried for controlling the Tikka disease of the Groundnut crop in insecticidal experiments. The varieties were AK-12-24, Girak with the yield ranging from 10 to 32 Q/ha.

'All the experiments were laid out in R.B.D. except 3 in split plot and 2 in confounded designs. The net plot size varied from 20·23 to 50·58 sq. metres.

7. *TIL* : Til covered 27* thousand hectares area and 8 experiments were conducted during the period. out of 8 experiments 7 were of manurial type and only one of cultural type. N,P and K were tried at levels 0 to 45 Kg/ha. and time of sowing was observed from 25th June to 23 rd of August. The varieties that were used were M_1-2, M_3-1 and M_3-2 giving the yield from 1 to 6 Q/ha.

All the experiments were laid out in 3^3-factorial R.B.D. except one in simple R.B.D. with net plot size 10·98 sq. metres to 22.33 sq.metres.

8. *CASTOR* : This crop covered only 7* thousand hectares area and 16 experiments were conducted during the period. Out of 16 experiments 11 were of manurial type in which N and P were tried at 0 to 100 Kg/ha. Period of sowing was from last week of June to middle of November. The variety tried was EB-16A. giving the yield 6 to 20 Q/ha.

All the experiments were laid out in R.B.D. except one in split-plot with net plot size varying from 6 to 50 sq. metres.

9. *SUGARCANE* : Sugarcane covered 1·8% of the total cropped area and 16%experiments were conducted on this crop during the period under report. Of the 251 experiments reported 41·4% of the experiment were of manurial type, 16·7% of cultural type, 21·5% of insecticidal types and 20·4% of other types. BO-43,BO-34,BO-32,BO-14,BO-17,CO-419, were the varieties of sugarcane tried, giving the yield of cane 500 to 1700 Q/ha. depending upon the types of the experiments. Nitrogen was tried at 67 to 269 Kg/ha, Phosphate at 84 to 168 Kg/ha, potash at 0 to 179 Kg/ha and lime at 4035 Kg/ha, Different sources of N used were Urea, A/S, Caster cake etc. A good number of experiments on methods of application of manures were tried. Irrigational and Cultural experiments were also substantial. Time of planting ranged from Oct. to Feb. whereas harvesting time ranged from Nov. to May of the next year of the experimentation. Shoot borer and stem borer were the very common diseases in sugarcane in Bihar and good number of experiments were tried to find the measure of controlling them.

66% of the experiments were laid in R.B.D. and factorial R.B.D. There were few experiments laidin split-plot and confounded designs also. The net plot size varied from 50·5 to 101·2 sq. metres.

10. *JUTE* : 1·7% of the total cropped area was under this crop and only 2·0% experiments were conducted on this crop. Of the 29 experiments, 3 groups of experiments of different types were reported. Nitrogen levels ranged from 0 to 90 Kg/ha, Phosphate and Potash from 0 to 45 Kg/ha. As cultural practices, times of sowing (Ist March to lst May), and times of horvesting (lst July to 30th August) were tried. BHC 5%, DDT 5% etc were the common treatments for controlling stem and weevil disease in Jute crop. The yield of Jute was observed as 10 to 35 Q/ha. for the common varieties JRC-321, TRO-632, JRC-212, JRO-753 etc. R.B.D. was the common practice of laying out the plan, and a few experiments were laid out in Fact R.B.D. split-plot and confounded design. The plot size were generally adopted, ranged from 35 to 180 sq metres.

PARTICULARS OF RESEARCH STATIONS AND SOIL ANALYSIS

1. District Agricultural farm, Agwanpur (Saharsa).

A. General Information :

(i) In Saharsa taluka of Saharsa district, 12 kms from Saharsa Rly. stn. Low and up land area. (ii) It represents Koshi tract, (iii) Established in 1943. (iv) Paddy-Paddy-Wheat; Jute-Paddy-Wheat and Maize-Wheat-Barley and Gram, is the normal cropping pattern. (v) To carry out multiplication of nucleous seeds and research experiments on different crops passed on by the specialists, Bihar.

B. Normal Rainfall in cm : N.A.

C. Irrigation and Drainage Facilities :

(i) (a) and (b) Irrigation facilities are available since 1964.
(ii) Yes; proper drainage system exist.

D. Soil type and Soil analysis :

(i) Colour-Blackish; and other details—N.A.
(ii) Chemical Analysis :—N.A.
(iii) Mechanical Analysis :—N.A.

E. No. of Experiments :

Paddy=2, Wheat=1, Mixed=3, Total=6.

2. Sub Divisional Farm, Arrah.

A. General Information:

(i) In Arrah taluka of Arrah districts, 3 km. from Arrah Rly. Stn. (ii) It represents plain tract. (iii) Established in 1962. (iv) Paddy-Wheat; Maize-Wheat, Barley and Gram is the normal cropping pattern, (v) To carry out multiplication of improved seeds for the supply to the extension workers.

B. Normal Rainfall in c.m. : N.A.

C. Irrigation and Drainage Facilities :

(i) (a) and (b) Irrigation facilities are available since 1962.
(ii) Yes; proper drainage system exist.

D. Soil type and Soil analysis :

(i) Soil types-Kebal Soil; Depth, Colour & Structure—N.A.
(ii) Chemical Analysis and (iii) Mechanical Analysis—N.A.

E. No. of Experiments ;

Paddy—2, Total=2.

3. Zonal Centre, (Sugarcane Research Institute. Pusa) Bagaha.

A. General Information :

(i) District : Champaran, nearest Rly. Stn. Bagaha with Lat—27° 10′ N/Long—84° 10′ E/ Alt.—N.A. Undolating area. (ii) It represents Tarai land tract. (iii) Established in 1957. (iv) Paddy-Sugarcane is the normal cropping pattern. (v) To carry out seed multiplication & Agronomical trials.

B. Normal rainfall in cm. :

Jan		Feb.		March		April.		May		June		July	
1	2	1	2	1	2	1	2	1	2	1	2	1	2
0·3	0.6	0·1	0·0	0·1	0·2	2·3	0·6	0·6	1·3	6·0	2·3	4·5	2·5

Aug.		Sept.		Oct.		Nov.		Dec.		Total
1	2	1	2	1	2	1	2	1	2	
14·8	20·9	0·4	0·3	0·1	—	—	—	—	—	58·0

(The average is based on rainfall data for the period 1960-65)

C. Irrigation and Drainage Facilities :

(i) (a) and (b) Irrigation facilities are available since 1959.
(ii) Yes; proper drainage system exists.

D. Soil type and Soil analysis :

(i) Soil type-Clay loam; other details not available Colour-Light black.

E. No. of Experiments :

Sugarcane—1, Total=1.

4. District Agriculutral Farm, Baliapur.

A. General Information

(i) In Baliapur taluka of Dhanbad district 5 km. from Pradhan Khanta Rly. Stn. (a) Undulated Land (b) Impeded drainage (c) Sharp variation in fertility (d) Average slop of land is 4%. (ii) It represents Hilly tract. (iii) Established in 1956. (iv) Paddy-Fallow, Paddy-Wheat; Maize-Wheat; Groundnut-Linseed is the normal cropping pattern. (v) To carry out Agronomical, Botanical, Physiological, Soil Chemical etc. research experiments asper technical programme, Bihar.

B. Normal Rainfall in cm. :

Jan.		Feb.		March		April		May		June		July	
1	2	1	2	1	2	1	2	1	2	1	2	1	2
0·4	0·3	2·1	—	0·2	0·2	—	1·6	3·9	1·2	5·2	8·3	9·4	9·5

Aug.		Sept.		Oct.		Nov.		Dec.		Total
1	2	1	2	1	2	1	2	1	2	
7·8	11·3	6·2	7·9	5·3	2·3	0·2	—	0·1	—	83·4

(The average is based on rainfall data for the period 1960-65)

C. Irrigation and Drainage Facilities :

(i) (a) and (b) No Irrigation facilities are available.
(ii) No, only 3 tanks exist.

D. Soil type and Soil analysis :

(i) Soil type-Sandy loam, Clay; Depth—15cm. to 180cm; Colour—In low land; Dark brown, and in up land: Grey; and Structure—in low land, Gravel, Sandy loam, and in up land Clay. (ii) and (iii) N.A.

E. No. of Experiments :

Paddy—2, Total=2

5. Sub Divisional Agricultural Farm, Barh.

A. General Information :

(i) District : Patna, Nearest Rly. Stn. Barh Jn. Plain land. (ii) It represents light Soil tract. (iii) Established in 1968. (iv) Paddy-Wheat, Maize-Moong and Arhar. (v) To carry out multiplieation of seeds and Agronomical Research Experiments.

B. Normal Rainfall in cm. :

Jan.		Feb.		March		April		May		June	
1	2	1	2	1	2	1	2	1	2	1	2
0·1	0·2	—	—	—	—	0·4	0·1	—	0·1	0·2	0·1

July		Aug.		Sept.		Oct.		Nov.		Dec.		Total
1	2	1	2	1	2	1	2	1	2	1	2	
0·7	0·6	10·4	17·3	0·1	0·2	—	—	—	—	—	—	30·5

(The average is based on rainfall data for the period 1960-65).

C. Irrigation and Drainage Facilities :

(i) (a) and (b) Irrigation facilities are available through Canal.
(ii) Yes; Proper drainage system exists.

D. Soil type and Soil analysis :

(i) Soil type—Clayee loam; Colour—Light black; other detail. and (ii) and (iiii) N.A.

E. No. of Experiments :

Mixed—1, Total=1.

6. Sub Divisional Farm, Bhabna (Rohtash).

A. General Information :

(i) In Rohtash district. near—Sasaram Rly. Stn. Undolating land. (ii) It represents low and up land tract.. (iii) Established in 1957. (iv) Paddy-Wheat Paddy is the normal cropping pattern. (v) To carry out multiplication of seeds and a few Agronomical expts.

B. Normal Rainfall in cm :

Jan.		Feb.		March		April		May		June	
1	2	1	2	1	2	1	2	1	2	1	2
0·02	0·10	0·05	0·01	0·16	0·17	0·31	0·22	0·40	0·52	1·13	0·22

July		Aug.		Sept		Oct.		Nov.		Dec.		Total
1	2	1	2	1	2	1	2	1	2	1	2	
2·19	0·83	14·06	12·86	0·55	0·25	0·10	0·03	—	0·02	—	—	34·20

(The average is based on rainfall data for the period 1960-65).

C. Irrigation and Drainage Facilities :

(i) (a) and (b) Irrigation facilities are available through Canal and river.
(ii) Yes; proper drainage system exists.

D. Soil type and Soil analysis :

(i) Soil type-Sandy loam, Depth-N.A, Colour-Light grey, Structure—N.A.
(ii) Chemical analysis—N.A.
(iii) Mechanical analysis—N.A.

E. No. of Experiments :

Wheat—1, Total=1.

7. **Botanical Sub. Station, District Agricultural Farm, Bhangain (Bikramganj).**

A. General Information :

(i) In Rohtash district, near Bikramganj Rly. Stn., Low land. (ii) It represents plain tract. (iii) Established in 1928. (iv) Paddy-Wheat—Summer Paddy is the normal cropping pattern. (v) To carry out Agronomical Manurial and Cultural research experiments as per technical programme.

B. Normal Rainfall in cm :

Jan.		Feb.		March		April		May		June		
1	2	1	2	1	2	1	2	1	2	1	2	
0·1	0·2	—	—	—	—	0·1	0·1	—	0·2	0·2	0·1	
July		Aug.		Sept.		Oct.		Nov.		Dec.		Total
1	2	1	2	1	2	1	2	1	2	1	2	
1·7	1·1	10·4	12·5	—	0·3	0·1	—	—	—	—	—	27·1

(The average is based on rainfall data for the period 1960-65).

C. Irrigation and Drainage Facilities :

(i) (a) and (b) Irrigation facilities are available since 1928 through Canal.
(ii) Yes; proper drainge system exist.

D. Soil type and Soil analysis :

(i) Soil type-Clayee loam; Colour-Grey; other details not available.
(ii) Chemical Analysis—N.A. and (iii) Mechanical Analysis—N.A.

E. No. of Experiments :

Paddy—7, Wheat—4, Barley—2. Total=13.

8. **Irrigation Res. Station, Rice. Res. Sub. Stn., Bikramganj.**

A. General Information :

(i) In Rohtas district near Bikram ganj Rly. Stn,. with Lat.-25° 10'N/Long.—84° 50'E/ Alt.—86·9 metres above m.s.l. Plain land. (ii) Type of tract—N.A. (iii) Established in 1955. (iv) Paddy-Wheat-Maize; Paddy-Wheat-Moong is the normal cropping pattern. (v) To carry out Irrigational, Agronomical ond Manurial Research Experiments.

B. Normal Rainfall in cm :

Jan.		Feb.		March		April		May		June		
1	2	1	2	1	2	1	2	1	2	1	2	
0·1	0·2	—	—	—	—	0·1	0·1	0·1	0·2	0·2	0·2	
July		Aug.		Sept.		Oct.		Nov.		Dec.		Total
1	2	1	2	1	2	1	2	1	2	1	2	
1·7	1·1	10·5	12·9	—	0·3	0·1	—	—	—	—	—	27·7

(The average is based on rainfall data for the period 1960-65).

C. Irrigation and Drainage Facilities :

(i) (a) and (b) Irrigation facilities are available since 1955 through pumpingset.
(ii) Yes; proper drainage system exist.

D. Soil type and Soil analysis :

(i) Soil types-Sandy Loam, Silk Loam; Detph:—N.A.; Colour Grey and Structure—N.A.
(ii) Chemical Analysis—N.A. and (iii) Mechanical Analysis—N.A.

E. No. of Experiments :

Paddy—34, Wheat—16, Barley—1, Maize—8, Potato—5, Sugarcane—6, Total=70.

9. Govt. Agril. Farm, Chainbasa.

A. General Information :

(i) In Chainbasa district, near Nawada Rly. Stn. low and high land (ii) It represents hilly tract. (iii) Established in 1950. (iv) Wheat-Paddy is the normal cropping pattern, (v) To carry out agronomical research experiments as per technical programme.

B. Normal Rainfall in cm : *N.A.*

C. Irrigation and Drainage Facilities :

(i) (a) and (b) Irrigation facilities are available through tube-well,
(ii) Yes; proper drainage system exist.

D. Soil type and Soil analysis :

(i) Soil type-Clayee loam, Depth—N.A. Colour-Grey; Structure—N.A.
(ii) Chemical analysis—N.A. (iii) Mechanical analysis—N.A.

E. No. of Experiments :

Paddy—3, Total—3.

10. Sub. Divisional Farm, Chatra.

A. General Information :

(i) In hazari Bagh district, near Paras Nath Hill Rly. Stn. Dolating land. (ii) It represents low and high land tract. (iii) Established in 1952. (iv) Wheat, lineseed, Mustard is the normal cropping pattern, (v) To carty out Agronomical and manurial research experiments as per technical programme. Bihar.

B. Normal Rainfall in cm :

Jan.		Feb.		March		April		May		June		
1	2	1	2	1	2	1	2	1	2	1	2	
0·7	0·1	0·2	0·4	0·4	0·7	6·3	2·1	1·8	2·9	3·5	4·1	
July		**Aug.**		**Sept.**		**Oct.**		**Nov.**		**Dec.**		**Total**
1	2	1	2	1	2	1	2	1	2	1	2	
1·9	3·1	15·2	18·7	2·3	3·8	1·4	0·4	0·3	0·2	0·1	0·1	70·6

(The average is based on rainfall data for the period 1960-65).

C. Irrigation and Drainage Facilities:

(i) (a) & (b) Irrigation facilities are available through tube-well.
(ii) Yes ; proper drainage system exist.

D. Soil type and Soil analysis :

(i) Soil type—Clayee loam ; other details not available.

(ii) Chemical analysis :—N.A. and

(iii) Mechanical Analysis :—N-A.

E. No. of Experiments :

Til—I, Total=1.

11. **Soil Conservation Res, Demons. & Training Centre, Chatra.**

A. General Information :

(i) In Hazari Bagh district, near paras Nath Hill Rly. Stn., Dolating Land. (ii) It represents low and high land tract. (iii) Established in 1952. (iv) Wheat-lineseed, Mustard is the normal cropping pattern. (v) To carry out Agronomical and Manurial research experiments as per technical programme, Bihar.

B. Normal Rainfall in cm ;

Jan.		Feb.		March		April		May		June		
1	2	1	2	1	2	1	2	1	2	1	2	
0·6	0·1	0·2	0·4	1·8	0·7	6·3	2·1	1·8	1·9	3·5	4·1	
July		Aug.		Sept.		Oct.		Nov.		Dec.		Total
1	2	1	2	1	2	1	2	1	2	1	2	
2·0	3·1	16·5	18·7	2·3	3·9	1·4	0·4	0·3	0·2	0·1	0·1	72·5

(The average is based on rainfall data for the period 1960-65).

C. Irrigation and Drainage Facilities :

(i) (a) and (b) Irrigation facilities are available through tube-wells.

(ii) Yes; proper drainage system exist.

D. Soil type and Soil analysis :

Soil type-Clayee Loam; (ii) Chemical Analysis—N.A. (iii) Mechanical analysis—N.A.

E. No. of Experiments :

Maize—1, Toria—1, Total=2

12. **District Agricultural Farm, Chianki.**

A. General Information :

(i) In Daltonganj district, near Nawadah Rly. Stn. Dolating land. (ii) It represents hilly tract. (iii) Established in 1953. (iv) Wheat-Linseed-Mustard is the normal cropping pattern. (v) To carry out Agronomical, manurial and cultural research experiments as per technical programme, Bihar.

B. Normal Rainfall in cm :

Jan.		Feb.		March		April		May		June		
1	2	1	2	1	2	1	2	1	2	1	2	
0·5	0·4	0·2	—	1·5	0·3	1·8	1·6	0·8	0·4	1·9	1·6	
July		Aug.		Sept.		Oct.		Nov.		Dec.		Total
1	2	1	2	1	2	1	2	1	2	1	2	
5·0	4·0	16·6	17·6	1·9	·6	0·3	0·1	—	—	—	—	57·1

(The average is based on rainfall data for the period 1960-65).

C. Irrigation and Drainage Facilities :

(i) (a) and (b) Irrigation facilities are available through tube-well.

(ii) Yes; proper drainage system exist.

D. Soil type and soil analysis :

(i) Soil type-Red loam; Depth—N.A. ; Colour-Light Red; and Structure—N.A.

(ii) Chemical Analysis—N.A, (iii) Mechanical Analysis—N.A.

E. No. of Experiments :

Paddy—4, Total=4.

13. Agricultural Researeh Institute, Dholi.

A. General Information :

(i) In sakra taluka of Muzaffarpur district, 5 kms. from Dholi Railway Stn. with Lat;-26·7° N/Long,85·4° E/Alt, 52 metres abeve m.s.l. The land is generally even but on Northern & Southern side of the farm, the slope of the land varies from 0-3%. (ii) It reperesents Gangatie alluvium tract. (iii) Established in 1960. (iv) Maize-Wheat : Paddy-Paddy-wheat or Barley or Berseem ; Rahar-Maize Barley is the normal cropping pattern. (v) To carry out Agronomical, Manurial, Cultural and High yielding breeding and disease resistant varietal rasearch experiments as per technical programme, Bihar.

B. Normal Rainfall in cm :

Jan.		Feb.		March		April		May		June		
1	2	1	2	1	2	1	2	1	2	1	2	
0·2	—	0·4	—	0·7	0·2	—	0·7	2·3	2·1	3·1	5·7	
July		**Aug.**		**Sept.**		**Oct.**		**Nov.**		**Dec.**		**Total**
1	2	1	2	1	2	1	2	1	2	1	2	
14·1	14·4	9·8	9·9	8·9	15·2	13·9	1·0	0·2	—	0·1	0·2	103·3

(The average is based on rainfall data for the period 1960-65)

C. Irrigation and Drainage Facilities :

(i) (a) & (b) Irrigation facilties are available through two sets of 25 cm. tube-well and turbine pumps since 1963.

(ii) Yes; proper Kachha drainage system exists.

D. Soil type and Soil analysis :

(i) Soil types—Sandy Loam, Loam : Depth—Deep ; Colour—Whitish yellow and Structure—Granular.

(ii) Chemical Analysis :—pH—7·3, Org. Car,—0·02%, Av. P_2O_5—22·4 Kg/ha, Conductivity in mm,—0.3.

(iii) Mechanical Analysis :—Silt—33·6%, Clay—17·0% and sand—49·4%.

E. No. of Experiments :

Paddy—22, Wheat—25, Jowar—1, Maize—43, Marua—6, Gram—1, Sugarcane—I, Groundnut—5, Til—3, Castor—4, Rai—2, Mixed—5, Total=118.

14. District. Experimental Farm, Dumka.

A. General Information :

(i) In Dumka taluka of santhal paragana dist. 65 Km. from baidyanath dham Rly. Stn. with Lat.—24° 3' N/Long.—37° 2' E/ Alt.—152 metres above m. s.l. up and low land. (ii) Tract —N·A, (iii) Established in 1952. (iv) Paddy—Whcat Maize. is the normal cropping pattern. (v) To carry ont varietal and agronomical research expts. as per technical programnre, Bihar.

B. Normal Rainfall in cm. :

Jan.		Feb.		March		April		May		June		
1	2	1	2	1	2	1	2	1	2	1	2	
0·3	0·2	1·6	—	1·0	0·2	0·3	2·2	4·0	4·5	6·4	13·2	
July		**Aug.**		**Sept.**		**Oct.**		**Nov.**		**Dec.**		**Total**
1	2	1	2	1	2	1	2	1	2	1	2	
11·3	10·7	16·3	12·9	10·1	7·1	16·4	6·3	0·9	—	—	—	115·9

(The average is based on rainfall data for the period 1960-65).

C. Irrigation and Drainage Facilities :

(i) (a) &(4) Irrigation forcilities are available but not to the extention of full satisfaction (ii)Yes; drainage systim does exist but not in total area.

D. Soil type and Soil analysis :

(i) Soil type—Sandy loam; depth—15 to 20cm.; colour—LIght red brown; structure—N.A.

(ii) cheimcal analysis : p H—6·5, salinity—0·47, erg. car.—0.79%, Av. P_2O_5—32·50 Kg/ha.

(iii) Mechanical analysis : N.A.

E. No. of Epxeriments :

Wheat—1, Mixed—1, Total=2

15. Giriak Seed Multiplication Farm, Giriak.

A. General Information :

(i) In patna district, near Bihar sharif Rly. stn. plain land area. (ii) It represents plain tract. (iii) Year of Establishment—N.A. (iv) Wheat—paddy—Ma ize—Summer paddy is the normal cropping pattern. (v) To carry out multipli cation of seeds and technical research experiments as per technical programme, Bihar

B. Normal Rainfall in cm. : *N.A.*

C. Irrigation aud Drainage Facilities :

(i) (a) and (b) 4. Irrigation facilities are available through canal and pumping set since 1961 (ii) yes; proper drainage system exist.

D. Soil type and Soil analysis :

(i) Soil type—Sandy loam. (sedimentry); Depth, colour and; structure—N.A.

(ii) chemical analysis: N.A.

(iii) Mechanical analysis : N.A,

E. No. of Experiments :

Groundnut-5, Total=5.

16. **Sub Divisional Farm, Gumla.**

A. General Information:

(i) In chainbasa district near nawada Rly. Stn. Low and high land area. (ii) It represnts hilly tract. (iii) Established in 1952. (iv) Wheat-Paddy is the normal cropping pattern. (v) To carry out multiplication of seed and agronomical research experiments as per technical programme, Bihar.

B. Normal Rainfall in cm. :

Jan.		Feb.		March		April		May		June		
1	2	1	2	1	2	1	2	1	2	1	2	
0·4	0·5	0·5	0·6	3·5	1·3	1·6	1·6	0·5	0·3	0·6	0·7	
July		Aug.		Sept.		Oct.		Nov.		Dec.		Total
1	2	1	2	1	2	1	2	1	2	1	2	
7·3	3·2	19·3	15·8	0·4	0.2	0·3	0·1	—	—	—	—	58·7

(The average is based on rainfall data for the period 1960-65).

C. Irrigation and Drainage Facilities :

(i) (a) and (b) Irrigation facilities are available through tube-well.
(ii) Yes; proper drainage system exists.

D. Soil type and Soil analysis :

(i) Soil type-Clayee Loam; Colour-Grey; other details not available.
(ii) Chemical analysis—N.A.
(iii Mechanical analysis—N.A.

E. No. of Experiments :

Paddy—1, total=1.

17. **Zonal Centre (Sugarcane Research Institute, Pusa) Harinagar.**

A. General Information :

(i) In champaran district, near Samastipur Rly. Stn., With Lat—27°30′ N/Long.—84°20′ E, Alt.—98 metres. above m.s.l. Undolating land area. (ii) It represents plain tract. (iii) Established in 1948, Sugarcane-Paddy-Wheat is the normal cropping Pattern. (v) To carry out agronomical research experiments as per technical programme, Bihar.

B. Normal Rainfall data in cm. :

Jan.		Feb.		March		April		May		June		July	
1	2	1	2	1	2	1	2	1	2	1	2	1	2
0·4	—	0·2	0·4	0·2	0·7	0·2	0·4	2·2	1·7	9·6	12·9	18·0	30·3
Aug.		Sept.		Oct.		Nov.		Dec.		Total			
1	2	1	2	1	2	1	2	1	2				
11·0	28·4	16·1	4·0	5·1	0·6	1·2	—	—	—	143 6			

(The average is based on rain fall data for the period 1960—64).

C. Irrigation and Drainage Facilities :

(i) (a) and (b) Irrigation facilities are available through boring and river. (ii) Yes; proper drainage system exists.

D. Soil type and Soil analysis :

(i) Soil type-Non-Calcarions; Depth-Very deep; Colour-Greyish brown; Structure-Porous.

(ii) Chemical analysis—K_2O,—6·27%, SO_2—0·083 and Org. (Nitre)—0·092. P_2O_5—0·13 N_2O—0·798, CaO—0·25, Org carb ·699 Kg.

(iii) Mechanical analysis : Sand—54·08%, Silt—38·29%, Clay—7·53%.

E. No. of Experiments :

Sugarcane—7, Total=7;

18. District Agricultural Farm, Hazaribagh

A. General Information :

(i) In Hazaribagh sadar of Hazaribagh district 45 Km. from Ranchi Road Rly. Stn,and 65kms. from Hazaribagh Rly, Stn. with lat.—24°N/long.—85°E/alt.—635m. above m.s.l. slopy and undalating land area. (ii) It represents hilly tract. (iii) Established in 1957, (iv) paddy —Maize—Arhar in kharif; wheat—Barley—Gram—Linseed in Rabi is the normal cropping pattern. (v) To carry out Agronomical, manurial, etc. agricultural research experimentsas per technical programme, Bihar.

B. Normal Rainfall in c. m. :

Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
0·6	2·8	0·7	0·6	3·6	20·3	31·7	35·4	27·9	15·0	0·1	0·5	139·2

The average is based on rainfall data for the period 1960—64

C. Irrigation and Drainage Facilities :

(i) (a) to (b) Irrigation facilities are available through Gonda konar river and the pumping set.

(ii) Yes, proper drainage system exists.

D. Soil type and Soil analysis :

(i) Soil type—Sticky and heavy; depth—deep; Colour Brownish yellow; Strucuture—blocky,

(ii) Chemical analysis—pH-5·8 to 7·0; Salinity—0·10 to 0·45 mm at 25°C; org. car.—0·18 to 1·08; P—2·7 to 37·0Kg/ha.;K—134·5 to 538·0 Kg/ha. ; N—negligible.

(iii) Mechanical analysis—N.A.

E. No. of Experiments :

Paddy—11, Gram—1, Pea—1, Total=13.

19. Soil Conservation Research Station, Jalalgarh.

A. General Information :

(i) In Purnea district, near Purnea Rly. Stn., with Lat—26°N/Long.—87°E/Alt.—44m above m.s.l.—Undolating Land. (ii) It represents plain tract. (iii) Established in 1952. (iv) paddy-Wheat-Legume is the normal cropping Pattern. (v) To carry out Agronomical trials as per technical programme..

B. Normal Rainfall in cm :

Jan.		Feb.		March		April		May		June		
1	2	1	2	1	2	1	2	1	2	1	2	
0·6	0·4	0·0	0·1	0·2	0·2	3·8	2·9	0·3	0·5	0·3	0·1	
July		**Aug.**		**Sept.**		**Oct.**		**Nov.**		**Dec.**		**Total**
1	2	1	2	1	2	1	2	1	2	1	2	
3·7	2·7	21·5	14·6	0·3	0·4	—	—	0·1	—	—	—	52·7

(The average rain fall is based on the data for the period 1960-65).

C. Irrigation and Drainage Facilities :

(i) (a) and (b) Irrigation facilities are available since 1963. (ii) Proper drainage system exists.

D. Soil type and Soil analysis:

(i) Soil type-Sandy and Loamy Sand, Depth—0 to 45cm, Colour—White grey,

(ii) Chemical analysis . pH-6·2. Org. C-0·23 to 1·50%

(ii) Mechanical analysis—N.A.

E. No. of Experiments :

Maize—2, Groundnut—4, Total=6.

20. Sub-divisional Farm, Jamni.

A. General Information :

(i) In Jamni taluka of Monghyr district, 1/2 km. from the Malhapur Rly. Stn. Low and up land area. (ii) It represents hilhy tract. (iii) Established in 1930. (iv) Paddy-Wheat, Maize-Wheat are the normal, cropping pattern. (v) To carry out multiplication of seeds.

B. Normal Rainfall in cm. :—N,A.

C. Irrigation and Drainage Facilities :

(i) (a) and (b) Irrigational facilities are not available.

(ii) No proper drainage system exists.

D. Soil type and Soil analysis :

(i) Soil type—Red Soil; Depth—N.A. ; Colour—Reddish; Structure-Contonr.

(ii) Chemical analysis—N.A.

(iii) Mechanical analysis—N.A.

E. No. of Experiments :

Wheat—1, Total=1.

21. Agricultural Research Institute, Kanke.

A. General Information :

(i) In Ranchi district, near Ranchi Rly. Stn., with Lat 23° 17'N.Long.—85° 19'E/Alt.—625 m. above m.s.l. Undolated land area. (ii) It represents low and up land tract. (iii) Established in 1956. (iv) Maize-Potato-Sugarcane Paddy-Wheat-Barley are the normal Croppnig

pattern. (v) To carry outagronomical, manurial, cultural, insecticidual etc. research expts. as per technical programme, Bihar.

B: Normal Rainfall in cm. :

Jan.		Feb.		March		April		May		June		
1	2	1	2	1	2	1	2	1	2	1	2	
0·1	0·7	1·2	1·5	0·7	2·1	1·0	1·7	2·0	2·2	6·6	9·1	
July		Aug.		Sept.		Oct.		Nov.		Dec.		Total
1	2	1	2	1	2	1	2	1	2	1	2	
13·9	23·3	11·7	14·7	9·7	13·6	3·1	4·6	01	—	0·3	0·0	123·9

(The avarage rainfall data is based for the period 1960-65).

C. Irrigation and Drainage Facilities :

(i) (a) and (b) Irrigational facilities are available through tube-well.

(ii) Yes, proper drainage system exists.

D. Soil type and Soil analysis

(i) Soil type-Red loam, Depth—2·5cm. on up land and very deep on Low land; Colour—Redish brown, Red yellow; Structure-Massive to angular blocky.

(ii) Chemical analysis—pH—5·5 to 6·8, N—0·01, P—15 to 20 ppm, K—10 to 20 ppm.

(iii) Mechanical analysis—S—20 to 60, Silt—0 to 10, Cl—5 to 40.

E. No. of Experiments :

Paddy—77, Wheat—44, Barley—4, Jawar—1, Maize—40, Mara—5, Gundali—4, Gram—9, Arhar—3, Kalai—1, Moong—7. Masur—2, Kulthi—2, Pea—21, Bhindi—6, Potato—10, Tomato—4, Cotton—27, Groundnut—22, Linseed—2, Mustard—2, Soyabean—1, Niger—2, Grass—52, Mango—3, Litchi—1. Mixed—2, Total—354.

22. Seed Multiplication Farm, Karjania (Bagaha).

A. General Information :

(i) In champaran district, near Bagaha Rly. Stn., with Lat 27° 10′ N/Long.—84° 10′ E/Alt—N.A. Undolating land. (ii) It represents plain tract. (iii) Established in the 1952. (iv) Paddy-Wheat-Maize is the normal cropping pattern. (v) To carry out the multiplication of seeds and agronomical agricultural research expts. as per technical programme, Bihar.

B. Normal Rainfall in cm. :

Same as in Zonal Centre, Bagah.

C. Irrigation and Drainage Facilities :

(i) (a) and (b) Irrigational facilities are available through tube-well.

(ii) Yes, proper drainage system exists.

D. Soil type and Soil analysis :

(i) Soil type-Sandy loam; Colour-Light grey;

(ii) Other details not available.

E. No. of Experiments :

Wheat—1, Total—1.

23. Jute Research Substation, Katihar.

A. General Information :

(i) In Katihar taluka of Purnea district, 5 kms. form Katihar Rly. Stn. with Lat. 25° 30' N/Long. 87° 35' E/Alt. 304·8 m. above m.s.l. Undolating land. (ii) It represents plain tract. (iii) N.A. (iv) Jute-Paddy, Jute-Wheat, Earlly and oil seeds is the normal Cropping pattern. (v) To carry out the Agronomical research expts. as per technical programme, Bihar.

B. Normal Rainfall in cm. :

Jan.		Feb.		March		April		May		June		July	
1	2	1	2	1	2	1	2	1	2	1	2	1	2
0·3	—	0·5	—	1·4	0·3	0·5	2·4	4·3	7·4	5·9	7·9	17·3	18·3

Aug.		Sept.		Oct.		Nov.		Dec.		Total
1	2	1	2	1	2	1	2	1	2	
9·9	6·4	15·2	14·4	6·6	5·1	—	—	—	—	124·1

(The avarage is based on rainfall data for the period 1960-64).

C. Irrigation and Drainage Facilities :

(i) (a) and (b) Irrigation facilities are not available.

(ii) No, proper drainage system does not exist.

D. Soil type and Soil analysis :

(i) Soil type-Sandy loam, Light gray; Other details not available.

(ii) Chemical analysis : Org. carb.—0·54%.

(iii) Mechanical analysis - N.A.

E. No. of Experiments

Jute—25, Borley—2, Total=27.

24. Seed development farm, Sub. Div. farm, Khunti.

A. General Information :

(i) In Ranchi district. Hilly area. (ii) It represents plain land. (iii) Established in 1958 (iv) Paddy-Wheat, Linseed, Marua and Kutlhi is the normal cropping pattern. (v) To carry out multiplication of seeds and few research expt. as per technical programme, Bihar.

B. Normal Rainfall in cm :

Jan.		Feb.		March		April		May		June		July		Aug.	
1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2
0·3	0·3	0·4	0·2	1·9	0·5	1·8	0·7	1·7	0·4	1·8	0·3	4·3	5·8	24·1	13·9

Sept.		Oct.		Nov.		Dec.		Total.
1	2	1	2	1	2	1	2	
1·7	2·1	2·7	5·4	—	—	—	—	70·3

(The average is based on rainfall data for the period 1960-65).

C. Irrigation and Drainage Facilities :

(i) (a) to (b) Irrigation facilities are available through tubewell sincc 1958.

(ii) Yes, proper drainage system exists.

D. Soil type and Soil analysis:

(i) Soil type-Clayee loam, colour grey, other details not-available.

(ii) Chemical analysis-N.A.

(iii) Mechamical analysis-N.A.

E. No. of Experiments :

Paddy-6, Total=6.

25. **Sub-Divisional Farm, Kishanganj**

A. General Information :

(i) In Kishanganj taluka of purnea district, 5 Kms. from Kishanganj Rly. Stn. low and up land area. (ii) It represuets plain tract. (iii) Established in 1932. (iv) Paddy-Wheat; Maize Wheat Barley and gram is the normal cropping pattern. (v) To carry multiplication of seeds as per technical programme, Bihar.

B. Normal Rainfall in cm. : —N.A.

C. Irrigation and Drainage Facilities :

(i) (a) to (b) Irrigation facilities are available since 1965.

(ii) Yes, proper drainage system exists.

D. Soil type and Soil analysis :

(i) Soil type-Sandy loam, colour-blackish. other details are not available.

(ii) Chemical analysis-N.A.

(iii) Mechanical analysis : N.A.

E. No. of Experiments :

Paddy-3, Total=3.

26. **Seed multiplication Farm, Kuru.**

A. General Information :

(i) In Ranchi district. near Ranchi Rly. Stn. undolating land (ii) It represents hilly tract. (iii) N.A. (iv) Paddy-Wheat is the normal cropping pattern. (v) To carry out multiplication of seeds and few Agronomical experiments as per technical programme. Bihar.

B. Normal rainfall in cm : —N.A.

C. Irrigation and Drainage Facilities :

(i) (a) to (b) Irrigation facilities are available through boaring tube well.

(ii) Yes, proper drainage system exist.

D. Soil type and Soil analysis :

(i) Soil type-Sandy loam, colour-Red, other details-not available.

(ii) Chemical analysis-N.A.

(iii) Mechanical analysis-N.A.

E. No. of Experiments.

Paddy-6, Maize-6, total=12.

27. Irrigation Research Station Kursela

A. General Information :

(i) In Barari Anchal taluka of Purnea district, one kilometre from Kursela Rly. Stn. low and water logging area. (ii) It represents silty loam tract. (iii) Established in 1960. (iv) Maize-Wheat, Paddy-Gram, Jute-Wheat, Barley. (v) To carry out multiplication of Jute seeds and irrigational rescasch expts. as per technical programme Bihar

B. Normal Rainfall in cm. :

Jan.		Feb.		March		April		May		June		
1	2	1	2	1	2	1	2	1	2	1	2	
—	0·1	—	0·1	0·9	—	0·3	3·9	6·1	3·6	2·3	8·3	
July		**Aug.**		**Sept.**		**Oct.**		**Nov.**		**Dec.**		**Total**
1	2	1	2	1	2	1	2	1	2	1	2	
24·0	16·8	4·9	8·0	22·4	10·7	4·7	5·3	—	—	—	—	122·4

(The average is based on rainfall data for the period 1960-65)

C. Irrigation and Drainage Facilities :

(i) (a) to (b) Irrigation facilities are available since 1961.

(ii) No proper drainge system exists.

(iii) Soil type and soil analysis.

D. Soil type and Soil analysis :

(i) Soil type-Silty loam, Depth-22·5cm., colour-Whitish grey, structure-Loose granular.

(ii) Chemical analysis-N.A.

(ii) Mechanical analysis-N.A.

E. No. of Experiments :

Wheat-1, Groundnut-1, Total=2.

28. Zonal Centre Sugarcane Rescarch Institute Pusa, Lalgarh.

A. General Information :

(i) In Champaran district, near Bettiah Rly. Stn. with Lat—26°N/Long.—87° 50'E/Alti—N.A. Flat land area. (ii) It represents calcarions yonng alluvial tract. (Ii) Established in 1948. (iv) Sugarcane-Paddy-Wheat is the normal cropping pattern. (v) To carry out Agronomical research expts. as per tecenical programme. Bihar.

B. Normal Rainfall in cm :

Jan.		Feb.		March.		April		May		June		
1	2	1	2	1	2	1	2	1	2	1	2	
0·3	—	0·1	0·4	0·3	0·2	0·1	0·5	1·6	0·5	2·8	4·3	
July		**Aug.**		**Sept.**		**Oct.**		**Nov.**		**Dec.**		**Total**
1	2	1	2	1	2	1	2	1	2	1	2	
4·9	12·9	4·8	11·2	4·8	1·3	2·8	0·3	—	0·2	—	—	54·3

(The average is based on rainfall data for the period 1960-65)

C. Irrigation and Drainage Facilities :

(i) (a) to (b) Irrigation facilities are available. through boaring pumping set.

(ii) Yes, proper drainage system exits.

D. Soil type and Soil analysis :

(i) Soil type-calcarious young alluvial, Depth-very deep (more than 30·5 metres), Colour-Greyish White, Structure-Well drained porous.

(ii) Chemical analysis : SO_2(Sol.)-0·084, P_2O_5—0·08, K_2O—0·79, CaO—30·15, Fe_2O—0·32 AL_2O_3—5·03, Organic (carb.)-360 meg. Org. (nit.)-0·038 Ozs.

(iii) Mechanical analysis-Sand-50·12% Silt-36·36% and Clay-13·52%

E. No. of Experiments :

Sugarcane—4, Total=4.

29. Sub-Divisional Agricultural Farm, Latehar.

A. General Information :

(i) In Ranchi district. Hilly area. (ii) It repsesents plain tract. (iii) Established in 1958. (iv) Wheat-paddy is the normal cropping patern. (v) To carry out multiplications of seeds and a few Agronomical reseasch expts. as per technical programamme, Bihar.

B. Normal Rainfall in cm :

Jan.		Feb.		March		April		May		June		
1	2	1	2	1	2	1	2	1	2	1	2	
0·39	0·77	0·21	0·02	0·36	0·03	20·3	0·33	0·31	0·59	4·12	1·94	
July		Aug.		Sept.		Oct.		Nov.		Dec.		Total
1	2	1	2	1	2	1	2	1	2	1	2	
8·57	5·59	29·43	171·0	0·32	0·63	0·16	—	0·14	—	—	—	73·04

(The average is basod on rain fall data for the period 1960—65)

C. Irrigation and Drainage Facilities :

(i) (a) to (b) Irrigation facilities are available through tube-well since 1958.

(ii) Yes, proper drainage system exists.

D Soil type and Soil analysis :

(i)Soil, type—Clayey loam, colour-Grey, other details—N.A.

(ii) Chemical analysis—N.A.

(iii) Mechanical analysis—N.A.

E. No. af experiments :

Paddy—1, Arhar—1, Cotton—1, Til—3, Mixed—3,Total=9.

30. Multiplication Farm, Madhepura

A. General Information :

(i) In Saharsa district near Madhepura Rly. Stn., with Late 25° 50′ N/Long.—86°50′ E/ Alt—N.A. Plain land area. (ii) It represents plain tract. (iii) Established in 1950. (iv) Paddy—Wheat—Maize is the normal cropping pattern. (v) To carry out the Multiplication of seeds as per technical programme, Bihar

B. Normal Rainfall in cm. :

Jan.		Feb.		March		April		May		June		July.	
1	2	1	2	1	2	1	2	1	2	1	2	1	2
0·06	0·07	0·14	0·02	0·03	0·08	0·69	0·25	0·04	0·24	0·53	0·15	4·03	5·37

Aug.		Sept.		Oct.		Nov.		Dec.		Total
1	2	1	2	1	2	1	2	1	2	
8·61	8·99	0·13	0·17	—	0·06	—	—	—	—	29·60

(The average is based on the rain fall data for the period 1960-65)

C. Irrigation and Drainage Facilities :

(i) (a) to (b) Irrigation facilitics are available through canal since 1950.

(ii) Yes, proper drainage system exists.

D. Soil type and Soil analysis :

(i) Soil type—Sandy loam. Colour-Light grey, other details—N.A.

(ii) Chemical analysis—N.A.

(ii) Mechanical analysis—N.A.

E. No. of Experiments :

Paddy—1., Total=1.

31. Irrigation Research Station, Madhepura.

A. General Information :

(i) In Madhepura taluka of Saharsa district 5 kms. from Madhepura Rly. Stn. with Lat.-25° 54′ N/Long—86° 48′ E/Alt.—42·21m. above m.s.e. Low and up land area. (ii) It represents Kosi alhivium tract. (iii) Established in 1955. (iv) Jute-Wheat, Jute-Paddy-Wheat, Paddy-Wheat or Barley is the normal cropping pattern. (v) To carry out irrigational research exprimments as per technical programme, Bihar.

B. Normal Rainfall in cm :

Jan.		Feb.		March		April		May		June	
1	2	1	2	1	2	1	2	1	2	1	2
0·20	0·22	0·57	0·39	0·70	0·60	0·16	1·00	3·92	7·76	6·94	9·25

July		Aug.		Sept.		Oct.		Nov.		Dec.		Total
1	2	1	2	1	2	1	2	1	2	1	2	
12·70	12·03	7·12	14·77	15·22	11·44	10·43	1·06	0·64	—	—	—	117·12

(The average is based on the rain fall data for the period 1960—65.)

C. Irrigation and Drainage Facilties :

(i) (a) and (b) Irrigation facilities are available since 1957.

(ii) No, proper drainage system exists.

D. Soil type and Soil analysis :

(i) Soil type—Sandy loam to loamy sand, Depth-Deep., Colour-Grey, Structure—N.A.

(ii) Chemical analysis :—pH—6·5 to 7·7, Org. C—0·41 to 0·65% T.S.S.—0·52 to 0·81%. Org. N—0·04 to 0·09, Av. P_2O_5—40 to 46 Kg/ha.

(iii) Mechanical analysis—Coarse Sand—0·53 to 4·57%, Fine Sand—31·47 to 64·78%, Clay 10·20 to 21·25%. Silt—20·45 lo 51·25%.

E. No. of Experiments :

Paddy—18, Wheat—24, Barley—4, Maize—4, Potato—8, Sugarcane—3, G. nut—1, Total=62.

32. District Agricultural Farm, Monghyr.

A. General Information :

(i) In Monghyr Moffacil thana of Monghyr district 2 kilometers from Purabsarai Rly. Stn. with Lat. 25°20′ N/Long. 86°29′ E/Alt. 46·6 m. above m.s.l. Low and up land area. (ii) It represents hilly tract. Established in 1915. (iv) Maize-Gowar-Methe-Gram and Rahar is the normal cropping pattern. (v) To Carry out agronomical research expts. as per technical programme, Bihar.

B. Normal Rainfall in cm :

Jan.		Feb.		March		April		May		June		
1	2	1	2	1	2	1	2	1	2	1	2	
0·24	0·20	0·63	0·12	0·88	0·20	0·67	0·92	2·71	2·22	4·46	9·10	
July		**Aug.**		**Sept.**		**Oct-**		**Nov.**		**Dec.**		**Total**
1	2	1	2	1	2	1	2	1	2	1	2	
15·76	92·9	3·34	10·62	9·91	11·92	17·29	2·75	0·24	0·05	0·03	0·18	113·73

(The average is based on rainfall data for the period 1960-64).

C. Irrigation and Drainage Facilities :

(i) (a) and (b) Irrigation facilities are not available.

(ii) No, proper drainage system exists.

D. Soil type and Soil analysis :

(i) Soil type-Sandy loam, Depth, Colour and Structure—N.A.

(ii) Chemical analysis—N.A.

(iii) Mechanical analysis—N.A.

E. No. of Experiments :

Wheat—2, Total=2.

33. Regional Sugarcane Res. Sub. Stn., Motihari.

A. General Information :

(i) In Motihari disrict near motihari Rly. Stn. With Lat.—26° 40′ N/Long.—84° 50′E/Alt. —N.A. Flat land area. (ii) It repsesnets plain tract. (ii) Established in 1948. (iv) Sugarcane-Paddy—Maize—Wheat is the normal cropping pattern. (v) To carry out Agronomical, Botanical etc. research experiments. as per technical programme Bihar.

B. Normal Rainfall in cm :

Jan.		Feb.		March		April		May		June		July.		Aug.	
1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2
0·13	0·67	1·05	0·30	—	1·79	0·10	1·14	0·85	2·82	8·29	9·72	29·03	13·71	20·87	15·70
Sept,		**Oct.**		**Nov.**		**Dec.**		**Total.**							
1	2	1	2	1	2	1	2								
11·33	7·71	4·96	2·54	0·49	0·03	—	0·26	133·49							

(The average is based on the rain fall data for the period 1960-65)

C. Irrigation and Drainage Facilities :

(i) (a) and (b) Irrigation facilities available through boaring to lake.

(ii) Yes, proper drainage system exists.

D. Soil type and Soil analysis :

(i) Soil type—Calcarious. Depth—50cms,,Colour—Light blackish, Structure—plain.

(ii) Chemical analysis—SiO_2—0·089, P_2O_5—0·15, K_2O—0·43 CaO—14·00, R_2O_3—6·66. Org(Carb.)—794 mg. Org (nit.)—0·106.

(iii) Mechanical analysis—Sand—92·88%, Silt—1·88%, Clay—5·24%.

E. *No. of Experiments* :

Sugarcane—11, Total=11.

34. Motipur Sugar Factary Farm, Motipur,

A. General Information :

(i) In Muzaffarpur district near motipur Rly. Stn., with Lat.—26° 10′ N/Long.—85°20 E/Alt—N,A. Flat land area. (ii) It repsesents plain tract. (iii) Established in 1956. (iv) Sugarcane—Maize—Wheat is the normal cropping pattern. (v) To carry out Agronomical expts. as per technical programme, Bihar.

B. Normal Rainfall in cm :

Jan.		Feb.		March		April		May		June		
1	2	1	2	1	2	1	2	1	2	1	2	
0·32	0·57	0·91	—	0·67	—	0·21	0·59	1·79	0·97	4·70	7·64	
July		**Aug.**		**Sept.**		**Oct.**		**Nov.**		**Dec.**		**Total**
1	2	1	2	1	2	1	2	1	2	1	2	
12·81	11·87	17·03	14·78	10·20	3·18	11·38	—	0·27	—	—	0·42	100·31

(The average rain fall is based on the data for the period 1960-65)

C. Irrigation and Drainage Facilities :

(i) (a) to (b) Irrigation facilities are available through well, boasing and lake.

(ii) proper drainage system exists.

D. Soil type and Soil analysis :

(i) Soil type ealcasions young alluvial, Depth—Very deep (30·5 metrs), colour—Greyish white, Structure—Light—medium, well drained porous.

(ii) Chemical analysis : SiO_2(Sol.)-0·194, P_2O_5—0·73, K_2O—0·93, CaO—18·50,R_2O_3 8·76 Org.(carb) —307mg. Org. (nit.)—0·31.

(iii) Machanical analysis—Sand—45·2%, Silt—50·7%, Clay—4·10%.

E. No. of Experiments :

Sugarcane—17, Total=17.

35. Govt. experimenal Farm, Musheri.

A. General Information :

(i) In Musheri taluka of Mujaffarpur district, 9 Kms. from Mujaffarpur Rly. Stn. Flat land area. (ii) It repsesents plain tract. (iii) Established in 1938. (iv) Maize—Wheat, G.M.—Sugarcane, paddy—Wheat is the normal cropping patten. (v) To carry out research expts. on high yielding variety and of Agronomical nature as per technical programme Bihar.

B, Normal Rainfall in cm. :

Jan.		Feb.		March		April		May		June		July.	
1	2	1	2	1	2	1	2	1	2	1	2	1	2
0·24	0·42	0·33	0·09	0·15	—	0·02	0·41	2·11	3·11	3·36	6·03	15·02	18·15

Aug.		Sept.		Oct.		Nov.		Dec.		Total.
1	2	1	2	1	2	1	2	1	2	
8·90	14·99	7·73	15·60	16·53	0·72	0·20	0·01	0·15	0·56	114·72

(The average is based on rain fall data for the period 1960—65)

C. Irrigation and Drainage Facilities :

(i) (a) to (b) Irrigation facilities are not available.

(ii) No proper drainage system exists.

D. Soil type and Soil analysis :

(i) Soil type—loam, Depth, colour and structure—N.A.

(ii) Chemical analysis—N.A.

(iii) Mechanical analysis—N.A.

E. No. of Experiments :

Maize—2, Mixed—3, Total=5

36. **Zonal centre (Sugarcane Research Institute pusa) Kamta Rajpur Farm, Narkatiagunj.**

A. General Information :

(i) In Champarn district, near. Narkatiaganj Rly. Stn. with Lat-27° 10'N/Long,—84°30' E/Alti—N.A. Flat land area. (ii) It repsesents plain tract. (iii) Established in 1953. (iv) Sugarcane-Paddy-Wheat is the normal cropping pattern. (v) To carry out the agronomical research experiments as per technical programme. Bihar.

B. Normal Rainfall in cm :

Jan.		Feb.		March		April		May		June		July.	
1	2	1	2	1	2	1	2	1	2	1	2	1	2
0·74	2·58	1·74	—	0·79	0·25	—	1·80	3·33	1·80	14·51	8·57	27·30	27·94

Aug.		Sept.		Oct.		Nov.			Dec.		Total.
1	2	1	2	1	2	1	2		1	2	
22·10	20·02	13·45	13·51	3·87	0·42	0·44	—	—		0·36	170·52

(The average is based on rain fall data for the period 1960-65)

C. Irrigation and Drainage Facilities :

(i) (a) to (b) Irrigation facilites are available. through well.

(ii) Yes, proper drainage system exists.

D. Soil type and Soil analysis :

(i) Soil type-Sandy loam, Deep, Colour—Dark brownish grey, Strueture-Porous and well drained.

(ii) Chemical analysis—N.A.

(iii) Mechanical analysisN. A.

E. No. of Experiments :

Sugarcane—15, Total=15.

37. District Agricultural Farm, Nawadah.

A. General Informatian :

(i) In Nawadah tehsil of Gaya district 4 Kms. from Nawadah Rly. Stn. Flat land area. (ii) It represents intermediate zone of Chotanagpur tract. (iii) Established in 1923. (iv) Paddy-Fallow-Wheat-Cotton-Maize-Fallow is the normal cropping pattern. (v) To carry out Agril. research expts.

B. Normal Rainfall in cm.:

Jan.		Feb.		March		April		May		June		July	
1	2	1	2	1	2	1	2	1	2	1	2	1	2
0·14	0·01	0·90	0·02	0·60	0·01	0·26	1·52	1·14	0·58	3·44	6·02	18·36	5·63

Aug.		Sept.		Oct.		Nov.		Dec.		Total.
1	2	1	2	1	2	1	2	1	2	
15·61	8·50	12·99	10·81	20·98	6·52	—	0·80	—	—	115·34

(Thc average is based on rain fall data for the period 1960—65).

C. Irrigation and Drainage Facilities :

(i) Soil type-Sandy loam, Depth—15cm, calour—Light brown, structure—Granular.

(ii) Chemical analysis—N.A.

(iii) Mechnical analysis—N.A.

E. No. of Experiments :

Gram—1, Cotton—1, G.nut—4, Linsed—1, Total=7.

38. Netarhat Farm, Netarhat.

A. General Information :

(i) In Latehar subdivision of palamaue district 85 Km. from Lohardaga Rly. Stn. with Lat. 23° 29'N/Long.—84° 16' E Alt—1112 metres above m.s.l. Hilly tract. (iii) Established in 1916. (iv) Rain fed crops are grown. (v) To carry out agronomical research experiments as per techmical programme Bihar.

B. Normal Rainfall :

Jan.		Feb.		Marh		April		May		June		July	
1	2	1	2	1	2	1	2	1	2	1	2	1	2
0·75	0·39	1·91	0·79	0·93	0·91	0·36	0·11	0·47	0·55	3·75	15·02	20·61	24·14

Aug.		Sept.		Oct.		Nov.		Dec.		Total.
1	2	1	2	1	2	1	2	1	2	
21·41	21·40	11·91	14·41	6·25	5·7	0·10	0·10	0·95	0·14	153·06

(The average is based on rain fall data for the period 1960-65.)

C. Irrigation and Drainage Facilities :

(i) (a) to (b) Irrigation facilities are available through seepage.

(ii) No proper drainage system exists.

D. Soil type and Soil analysis :

(i) Soil type—Laterite, Depth —N.A., Colour—Red, Structure—High stability to blocky.

(ii) Chemical analysis—N.A.

(iii) Mechanical analysis—N.A.

E. No. of Experiments :

Paddy—1, Kalai—1. ,Potato—3, Total=10.

39. Zonal Centre (Sugarcane Research Institute Pusa), Pandaul.

A. General Information :

(i) In Madhubani district near Pandaul Rly.Stn. with Lat.—26°20'N/Long.—85°50' E/Alti —N.A. above m.s.l. Flat land area. (ii) It repsesents Plain tract. (iii) Established in 1958. (iv) Sugarcane—Paddy is the normal croppinag pattern. (v) To carry out Agronomical research experiments. as per technical programme, Bihar.

B. Normal Rainfall in cm. :

Jan.		Feb.		March		April		May		June		July	
1	2	1	2	1	2	1	2	1	2	1	2	1	2
—	0·10	0·14	0·70	—	1·01	—	0·30	0·51	5·30	1·27	6·64	17·67	18·12

Aug.		Sept.		Oct.		Nov.		Dec.		Total
1	2	1	2	1	2	1	2	1	2	
16·67	6·50	0·44	1·21	0·91	0·17	0·06	—	0·01	—	77·73

(The average is based on rain fall data for the period 1960—65.)

C. Irrigation and Drainage Facilities :

(i) (a) to (b) Irrigation facilities are available through boring and well.

(ii) Yes; proper drainage system exists.

D. Soil type and Soil analysis :

(i) Soil type Light soil, Depth—Very deep, colour—Grey structure-well drained

(ii) Chemical analysis—S_2O_3—0·19,P_2O_5—0·081, K_2O—0·715, CaO—0·224, R_2O_3—2·66, org(carb) —471mg., org(nit)—0·088.

(iii) Mechanical analysis—Sand—52·34%, Silt—32·44%Clay—14·72%

E. No. of Expriments :

Sugarcane—7, Total=7.

40. Agricultural Research Institute, Sugar cane Research Station, Patna.

A. General Information :

(i) In Patna district,near Patna Rly. Stn. plain land area. (ii) It represents plain tract, (iii) Established in 1930. (iv) Paddy—Wheat, Barley—Maize is the normal cropping pattern. (v) To carry out Agricultural research experiments on different as pects such as Agronomical, Entomological, plant pathological, etc. as per technical programme, Bihar.

B. Normal Rainfall in cm. :

Jan.		Feb.		March		April		May		June	
1	2	1	2	1	2	1	2	1	2	1	2
0·01	0·01	0·01	—	0·03	—	0·26	0·10	0·16	0·12	0·55	0·53

July		Aug.		Sept.		Oct.		Nov.		Dec.		Total
1	2	1	2	1	2	1	2	1	2	1	2	
1·10	2·16	10·81	9·82	0·31	0·20	0·02	—	—	—	—	—	26·20

(The average is based on rain fall data for the period 1960—65.)

C. Irrigation and Drainage Facilities :

(i) (a) to (b) Irrigation facilities are available through tube-well,

(ii) Yes, proper drainage system exists.

D. Soil type and Soil analysis ;

(i) Soil type -Sandy loam, Colour-Light grey, other details—N.A.

(ii) Chemical analysis—N.A.

(iii) Mechanical analysis—N.A.

E. No. of Experiment :

Paddy—55, Wheat—17, Barley—1, Maize—18, Pea—1, Bhindi—3, Potato—4, G'Nut—11, Castor—4, Linseed—2, Onion—3, Mango—2, Sugarcane—10, Mixed—2, Total=133.

41. **District Agricultural Farm, Piprakothi.**

A. General Information :

(i) In Turkonlia taluka of Champaran district with Lat.—26°30′ N/Long—85°15′ E/Alt.—67·4 meters above m.s.l. Low and up land area. (ii) It represents slopy tract. (iii) Established in 1955. (iv) Paddy-Mung, Paddy-Wheat or Barley, G.M.-Wheat-Jute, Juti-Barley-G.M. -Sugarcane are the normal Cropping pattern. (v) To carrycut agricultural research expts. as per technical programme, Bihar.

B. Normal Rainfall in cm :

Jan.		Feb.		March		April		May		June		
1	2	1	2	1	2	1	2	1	2	1	2	
0.09	1·23	0·40	0·19	1·01	0·55	—	0·99	4·20	1·90	8·74	12·41	
July		**Aug.**		**Sept.**		**Oct.**		**Nov.**		**Dec.**		**Total**
1	2	1	2	1	2	1	2	1	2	1	2	
18·22	18·88	14·07	21·50	30·72	8·23	8·59	0·05	0·31	—	0·25	0·17	142·10

(The average is based on rainfall data for the period 1960-65).

C. Irrigation and Drainage Facilities :

(i) (a) and (b) Irrigation facilities are available through tube-well.

(ii) Yes, proper drainage system exists.

D. Soil type and Soil analysis :

(i) Soil type-Sandy loam, Depth-75 cms., Colour-White, Structure weak angular blocky.

(ii) Chemical analysis—pH-7·0 to 8·5, Solv. Salt.—0·42 km/cm., Org Carb—0·14 to 0·36%.

(iii) Mechanical analysis—N.A.

E. No. of Experiments :

Paddy—2, Maize—3, Gram-1. Arhar—1, Pea—3, Jute—1, Total=11.

42. Seed Multiplication Farm. Piro.

A. General Information :

(i) In Sahabad district, near Arrah Rly. Stn. Flat Land. (ii) It represents plain tract. (iii) Established in 1955. (iv) Paddy-Wheat is the normal cropping pattern. (v) To carry out multiplication of seeds and a few research expts. as per technical programme, Bihar.

B. Normal Rainfall in cm. :- *N.A.*

C. Irrigation and Drainage Facilities :

(i) (a) and (b) Irrigation facilities are available through tube-well.
(ii) Yes, proper drainage system exists.

D. Soit type and Soil analysis :

(i) Soil type-Sandy loam, Depth—N.A., Colour-Light grey, Structure—N.A.
(ii) Chemical analysis—N.A.
(iii) Mechanical analysis—N.A.

E. No. of Experiments :

Paddy—3, Total=3.

43. Distt. Agril. Farm, Purnea Bot. Sub. Stn., Purnea.

A. General Information :

(i) In Purnea district, near Purnea Rly. Stn. Low and up land area. (ii) It represents Gangetic plain tract. (iii) Established in 1917. (iv) Paddy-Wheat-Maze, Jute-Paddy-Maize are the normal cropping pattern. (v) To carry out multiplication of seeds and research experiments as per technical programme, Bihar.

B. Normal Rainfall in cm. :

Jan.		Feb.		March		April		May		June		
1	2	1	2	1	2	1	2	1	2	1	2	
—	0·99	3·00	2·16	5·57	5·42	3·85	2·51	9·24	6·03	15·19	15·23	
July		Aug.		Sept.		Oct.		Nov.		Dec.		Total
1	2	1	2	1	2	1	2	1	2	1	2	
26·88	33·03	22·46	18·84	21·94	15·24	8·92	6·31	0·63	—	0·77	—	224·21

(The average is based on rainfall data for thepe riod 1960-64).

C. Irrigation and Drainage Facilities :

(i) (a) and (b) Irrigation facitilies are available through tube-well.
(ii) No, proper drainage system does not exist.

D. Soil type and Soil analysis :

(i) Soil type—Sand loam, Depth—22·5 cms., Colour—Light brown, Structure—Gangetic plain.
(ii) Chemical analysis—N.A,
(iii) Mechanical analysis—N.A.

E. No. of Experiments :

Gram—2, Mustard—3, Mixed—2, Total=7.

44. Sugarcane Research Institute, Pusa.

A. General Information :

(i) In Samastipur taluka of Darbhanga district 5 kms. from Pusa Road Rly. Stn. with Lat —25°29′ N/Long.—85°48′ E/Alt.—52·12 meters above m.s.l. Flat land area. (ii) It represents plain calcarious Gandak Alluvial tract. (iii) Established in 1932. (iv) Sugarcane-Paddy, Wheat, Barley, Gram is the normal cropping pettern. (v) To carry out Agricultural research expt.

B. Normal Rainfall in cm :

Jan		Feb.		March		April		May		June		July	
1	2	1	2	1	2	1	2	1	2	1	2	1	2
0·49	0·35	0·66	0·15	0·93	0·68	0·30	0·35	3·33	3·46	4·13	10·98	15·79	16·05

Aug.		Sept.		Oct.		Nov.		Dec.		Total
1	2	1	2	1	2	1	2	1	2	
9·78	23·71	10·64	18·90	15·33	0·71	0·35	0·15	—	—	136·96

(The avarge is based on the rainfall data for the period 1960-65).

C. Irrigation and Drainage Facilities :

(i) (a) and (b) Irrigation facilities are avainlable through tube-well.

(ii) No, proper drainage system does not exist.

D. Soil type and Soil analysis :

(i) Soil type—Aluvial, Colour—Whitish grey to greyish white, Structure—Single grain to medium blocky.

(ii) Chemical analysis.

Ingredial	*Sand* Bhogr-asan.	Sandy *loam* N.pang-abri.	Sandy clay *loam* phatak.	Silty *loam* B.F. No.I.	Silty *clay* B.F,Lo-am No.2	*Loam* Phatak	Clay *loam* Bhogras-an.	*Clay* B.F.2.
In sol. 102	84·67	46·58	46·90	41·16	40·83	40·62	41·16	40·04
sol. S i 02	0·08	0·19	0·22	0·29	0·19	0·24	0·28	0·33
P_2O_5	0·056	0·052	0·072	0·056	0·092	0·10	0·073	0 0·82
K_2O	0·95	0·92	0·93	0·88	0·93	0·75	1·16	0·84
CaO	8·9 6	22·4	18·09	17·39	15·43	15·50	11·65	15·68
MgO.	0·15	0·21	0·30	0·28	0·31	0·29	0·33	0·28
Fe_2O_3	1·92	2·02	3·75	4·63	3·42	3·66	4·10	4·12
Al_2O3	4·66	5·74	3·49	6·38	6·50	7·16	6 68	7·70
Org.C(mg in %)	55·4	297·4	337·6	334·6	462·0	362·0	444·0	252·0
Org. N%	0·008	0·034	0 038	0·038	0·056	0·041	0 048	0·023
C/N	6·67	8·57	9·00	8·9	8·3	8·8	8·2	10·9
Na_2O	0·07	0 03	0·016	0·037	0·011	0·011	0·14	0·62
pH	8·2	8·4	8·4	8·2	8·4	8·4	8·4	8·8
me%	1·8	3·6	8·8	8·9	10·1	10 00	11·12	12·30
Exch. Cal	1·6	3·3	7·16	7·20	8·20	8·15	8·44	9·46
Exch. Mg me	Trace	0·16	0·92	0·86	0·54	0·62	0·78	0·78
Exch. K me	Trace	0·20	0·78	0·80	1·04	1·46	1·26	1·10
Na me	Trace	Trace	0·10	0·02	0·22	0·16	0·22	0·62
T3S(mg%)	56·5	172	269	200	166·5	267·5	198·4	450
Av. P_2O_5 ,,	0·20	1·0	1·2	1·6	1·9	1·7	1·9	0·72
Moisture%	0·15	0·81	0·78	1·22	1·01	1·37	1·24	1·62
App.density	1·55	1·41	1·42	1·44	1·33	1·58	1·28	1·46
Water hold-ing eapacity	27·96	39·19	36·62	38·08	39·29	37·48	39·63	40·12
Pore space%	40·84	51·54	53·26	54·09	51·95	49·49	48·62	50·62
Specific gra.	2·48	2·67	2·72	2·68	2·73	2·83	2·66	2 54
Vol of exp.	4·74	5·62	5·77	6·99	6·73	6·88	10·12	12·26
(iii) Mechanical analysis.								
%Sand	73·75	30·26	34·36	20·25	20·63	32·87	28·89	14·50
Silt	4·00	25·05	19·85	42·25	38·12	25·05	24 25	36·00
Clay	6·30	8·35	13·90	11·75	14·76	13·25	15·76	23·00
Ca Co3	15·95	39·14	31·89	25·75	22·50	18·83	33·11	26·50

E. No. of Experiments :

Wheat—10, Maize—7, Sugarcane—93, Total=110.

45. District Agril. Farm, Putida farm, Putida.

A. General Information :

(i) In Singhbhum district, near Chainbasa Rly Stn. Terrace type land. (ii) It represents hilly tract. (iii) Established in 1950. (iv) Paddy-Maize, Wheat-Gram-Linseed is the normal cropping pattern. (v) To carry out agronomical research expts.

B. Normal Rainfall in cm. :

Jan.		Feb,		March		April		May		June		July	
1	2	1	2	1	2	1	2	1	2	1	2	1	2
0·10	0·28	2·25	0·12	0·51	0·25	0·14	1·14	2·59	1·77	5·83	10·65	9·83	10·82

Aug.		Sept.		Oct.		Nov.		Dec.		Total
1	2	1	2	1	2	1	2	1	2	
14·17	13 15	12·29	12·93	3·52	4·32	0·14	—	—	—	106·80

(The average is based on the rainfall data for the period 1960-65).

C. Irrigation and Drainage Facilities :

(i) (a) and (b) Irrigation facilities are not available,

(ii) No. proper drainage system exists.

D. Soil type and Soil analysis :

(i) Soil type—Clay, Depth, Colour and Structure—N.A.

(ii) Chemical analysis—N.A.

(iii) Mechanical analysis—N.A.

E. No of Experiments :

Paddy—12, Wheat—1, Total=13.

46. Agricultural Research Institute, Sabour.

A. General Injormaion :

(i) In Bhagalpur district, near Sabour Rly. Stn. With Lat—25°14'/Long—87°4' E/Alt.—37·2m. above m.s.l. Flat land area. (ii) It represents plain tract. (iii) Established in 1955. (iv) Maize-Wheat, Paddy-Wheat, Maize-Arhar-Maize+Kalai gram are the normal cropping pattern. (v) To carry out agricultural researeh expts.

B. Normal Rainfall in cm. :

Jan.		Feb.		March		April		May		June		July	
1	2	1	2	1	2	1	2	1	2	1	2	1	2
0·08	0·16	0·70	0·04	0·71	0·08	0·06	1·42	2·42	4·55	6·75	6·79	10·00	15·91

Aug,		Sept.		Oct.		Nov.		Dec.		Total
1	2	1	2	1	2	1	2	1	2	
11·01	9·03	15·03	14·89	9·23	2·98	—	0·02	0:08	0·05	111·99

(The average is based on the rainfall data for the period 1960-65)

C. Irrigation and Drainage Facilities :

(i) (a) and (b) Irrigation facilities are available.

(ii) Yes, proper drainage system exists.

D. Soil type and Soil analysis :

(i) Soil type—Sandy loam, Depth, Colour and Structure—N.A.

(ii) Chemieal analysis—N.A.

(iii) Mechanical analysis—N.A.

E. No of Experiments :

Paddy—48, Wheat—78, Barley—1, Jowar—1, Maize—88, Marua—4, Gram—16, Arhar—1, Kalai—10, Pea—5, Brinjal—6, Potato—1, Bittergaurd—7; Cotton—6, Mesta—7. G. nut—1, Til—1, Castor—7, Linseed—1, Mustard—2, Rai—1, Mango—10. Litchi—8, Mixed—2, Total=326.

47. Dist. and Sub. Div. Agri. Res. Farm, Saran Sub. Stn., Sepoya.

A. General Information :

(i) In Gopalganj taluka of Saran district 10 kms. from Sasamusa Rly. Stn. with lat—26°35′ N/Long.—84°26′ E/Alt.—N.A. Flat land area. (ii) It represents Diara and chaur tract. (iii) Established in 1913. (iv) Paddy—Wheat, Paddy—sugarcane, Maize—wheat, Maize—Sugarcane are the normal cropping pattern. (v) To carry high yielding varietal and agronomical research expts.

B. Normal Rainfall in cm. :

Jan.		Feb.		March		April		May		June		July	
1	2	1	2	1	2	1	2	1	2	1	2	1	2
0·50	0·46	0·53	0·50	0·70	2·01	0·01	0·82	4·76	3·37	7·60	11·05	17·73	17·76

Aug.		Sept.		Oct.		Nov.		Dec.		Total
1	2	1	2	1	2	1	2	1	2	
12·50	26·60	15·86	7·74	9·13	—	0·59	—	0·27	0·30	140·79

(The average is based on rainfall data for the period 1960—65)

C. Irrigation and Drainage Facilities :

(i) (a) and (b) Irrigation facilities are available through two tube wells.
(ii) Yes, proper drainage system exists.

D. Soil type and Soil analysis :

(ii) Soil type—Sandy loam, Depth—Shallow, Colour and structure—N.A.
(ii) Chemical analysis—N.A.
(iii) Mechanical analysis—N.A.

E No. of Experiments :

Paddy—4, Wheat—4, Barly—1, Gram—2, Sugarcane—18, Mixed—3, Total—32.

48. Sub-Div. Farm, District Agri: Farm, Siwan Farm, Siwan.

A. Normal Rainfall :

(i) In Siwam district, near Siwam Rly. Stn. land area. (ii) It represents plain tract. (iii) Year of establishment—N.A. (iv) Wheat—Maize—Paddy is normal cropping pattern. (v) To carry out multiplication of seeds and Agronomical research expts.

Normal Rainfall : N.A.

C. Irrigation and Drainage Facilities :

(i) and (ii) Irrigation and drainage facilities are not available.

D. Soil type and Soil analysis :

(i) Soil type—Sandy loam, Depth, Colour and structure—N.A.
(ii) Chemical analysis—N.A.
(iii) Mechanical analysis—N.A.

E. No. of Experiments :

Cotton—2 Wheat—1, Total=3.

49. Rice Res. Sub. Stn., Teloundha.

A. General Infomation :

(i) In Bhagalpur district, near Bhagalpur Rly, Stn. with lat.—25° N/long.—87° E/Alt.—N.A. Flat land area. (ii) It represents plain tract. (iii) Established in 1938. (iv) Paddy is grown only. (v) To carry out Agronomical and Botanical research expts.

B. Normal Rainfalli in cm. :

Jan.		Feb.		March		April		May		June		July	
1	2	1	2	1	2	1	2	1	2	1	2	1	2
0·18	0·05	0·03	0 17	0·29	0·13	0·30	0·37	0·13	0·44	0·40	0·29	3·83	1·12

Aug.		Sept.		Oct.		Nov.		Dec.		Total
1	2	1	2	1	2	1	2	1	2	
14·61	13·98	0·33	0·10	0·08	0·01	0·10	—	—	—	36·94

(The average is based on the rainfall for period 1960—65)

C. Irrigation and Drainage Facilittes :

(i) (a) and (b) Irrigation facilities are available through tube-wells.
(ii) Yes, proper drainage system exists.

D. Soil type and Soil analysis :

(i) Soil type – Sandy loam, Depth—N.A., Colour—Grey, Structure—N.A.
(ii) Chemical analysis—N.A.
(iii) Mechanical analysis—N.A,

E. No. of Experiments :

Paddy—4, Total=4.

50. Seed Multiplication Farm, Udaipur.

A. General Information :

(i) In Shahabad district, near Bikramganj Rly. Stn., Flat land area. (ii) It represents plain tract. (iii, Year of establishment—N.A. (iv) Wheat—Paddy—Maize is the normal cropping pattern. (v) To carry out seed multiplication and few research expts,

B. Normal Rainfall in cm. : N.A.

C. Irrigation and Drainage Facilities :

(i) (a) and (b) Irrigation facilities are available through tube.well.
(ii) Yes, proper drainage system exists.

D. Soil type and Soil analysis :

(i) Soil type—Clay loam, Depth, Colour and structure—N.A.
(ii) Chemical analysis—N.A.
(iii) Machanical analysis—N.A.

E. No of Expriments :

Paddy—3, Total=3.

51. Zonal Centre, (Sugarcane Research Institute., Pusa) Warsali ganj.

A. General Information :

(i) In Gaya district, near Warsaliganj Rly. Stn., with 25° N/long, 85°40′ E/Alt N.A. undolaing area. (ii) It represent plain tracts. (iii) Established in 1960. (iv) Sugar cane, Paddy is the normal cropping pattern. (v) To carry out agricultural research experiment.

B. Normal Rainfall in cm. :

Jan.		Feb.		March		April		May		June		July	
1	2	1	2	1	2	1	2	1	2	1	2	1	2
0·41	Nil	0·81	Nil	·54	·29	0·71	0·08	0·91	0·85	3·31	6·64	6·64	11·45

Aug.		Sept.		Oct.		Nov.		Dec.		Total
1	2	1	2	1	2	1	2	1	2	
20·40	5·60	9·80	3·66	0·34	Nil	0·34	Nil	·34	Nil	99·73

(The average is based on the rainfall data for period 1960—65)

C. Irrigation and Drainage Facilities :

(i) (a) and (b) Irrigation facilities are available through-wells.

(ii) Yes, some drainage facilities are available.

D. Soil type and Soil analysis :

(i) Soil type—Medium Heavy soil, Depth—very deep. Colour—Dark brownish grey Structure lightly compact.

(ii) Chemical analysis : SiO_3 (sol)=0·104, P_2O_5=0·066, K_2O=0·757, CaO=0·74, Org.C 241·8 mg. Org. N=0·04 mg.

(iii) Mechanical analysis. Sand=63·92%, Sili=27·96%clay.8·12%

E. No of Expriments :

Sugarcane—3, Total=3.

EXPERIMENTAL DATA

Crop :- Paddy (*Kharif*). **Ref :- Bh. 64(66), 65(7).**

Site :- Sub. Divisional Farm, Arrah. **Type :- 'M'.**

Object :—To study the correlation between crop response and Potash status of the soil.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Wheat ; Paddy. (c) 33·6 Kg/ha. of N as C/A/N+44·8 Kg/ha. of P_2O_5 as Super ; As per treatments. (ii) Clay loam. (iii) 10.7.64 ; 21.7.65. (iv) (a) 2 ploughings with Bihar Sr. plough at the depth of 8 cm. ; 2 ploughings by Japanese rotary power tiller. (b) Japanese method. (c) 25 Kg/ha. (d) 25 cm.× 25 cm. (e) N.A. ; 3 to 4. (v) N.A. (vi) N.A. ; BR—34. (vii) Irrigated. (viii) Weeding by Japanese weeder and by hand . (ix) 105 cm. ; 30 cm. (x) 25.11.64 ; 26.11.65.

2. TREATMENTS :

9 manurial treatments : T_0=Control; T_1=44 8 Kg/ha. of N as A/S, T_2=89·7 Kg/ha. of N as A/S, T_3=T_1+ 44·8 Kg/ha. of P_2O_5 as Super, T_4=T_2+89·7 Kg/ha. of P_2O_5 as Super, T_5=T_1+ 44·8 Kg/ha. of K_2O as Mur. Pot., T_6=T_2+89·7 Kg/ha. of K_2O as Mur. Pot., T_7=T_3+44·8 Kg/ha. of K_2O as Mur. Pot. and T_8=T_4+89·7 Kg/ha. of K_2O as Mur. Pot.

3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) and (b) 11·40 m.×8·80 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Crop was affected by Paddy leaf drying disease. No control measure taken ; Nil. (iii) Yield of grain. (iv) (a) 1964—contd. (b) N.A. (c) Nil. (v) and (vi) Nil. (vii) Since the expt. is continued beyond 1965, individual year results are presented under 5. Results.

5. RESULTS :

64(66)

(i) 1935 Kg/ha. (ii) 358·3 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	
Av. yield	2583	2387	1351	2199	1596	2071	1499	1942	1786	C.D.=522·9 Kg/ha.

65(7)

(i) 2962 Kg/ha. (ii) 249·4 Kg/ha . (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	
Av. yield	3050	3429	2632	3340	2459	3110	2803	3466	2373	C.D.=364·0 Kg/ha.

Crop :- Paddy (*Kharif*). **Ref :- Bh. 60(268).**

Site :- Dist. Agri. Farm, Baliapur. **Type :- 'M'.**

Object :—To find out the influence of different trace elements as soil application with and without lime.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super at the time of transplanting. (ii) Sandy. (iii) 21.6.60. (iv) (a) 7 ploughings by *Deshi* plough. (b) Transplanting. (c) 16 Kg/ha. (d) 23 cm.×23 cm. (e) 4. (v) Nil. (vi) Improved—BK-88. (vii) Unirrigated. (viii) Weeding and interculturing. (ix) N.A. (x) 13.12.60.

2. TREATMENTS :

Main-plot treatments:

2 levels of lime : L_0=0 and L_1=2690 Kg/ha.

Sub-plot treatments :

13 treatments of trace elements : T_0=Control, T_1=5·6 Kg/ha. of Boron, T_2=11·2 Kg/ha. of Boron, T_3=22·4 Kg/ha. of Mn., T_4=44·8 Kg/ha. of Mn., T_5=5·6 Kg/ha. of $ZnSO_4$, T_6=11·2 Kg/ha. of $ZnSO_4$, T_7=5·6 Kg/ha. of $CuSO_4$,

T_8=11·2 Kg/ha. of $CuSO_4$, T_9=1·1 Kg/ha. of Sodium Molybdate, T_{10}=2·2 Kg/ha. of Sodium Molybdate, T_{11}=22·4 Kg/ha. of $FeSO_4$ and T_{12}=44·8 Kg/ha. of $FeSO_4$.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots replication ; 13 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 4·60 m. ×3·70 m. (b) 3·70 m.×2·80 m. (v) 45 cm.×45 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1958—60. (b) Yes. (c) Nil. (v) Kanke, Putida, Chianki and Hazaribagh. (vi) and (vii) Nil.

5. RESULTS :

(i) 2112 Kg/ha. (ii) (a) 1080 Kg/ha. (b) 552·6 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9	T_{10}	T_{11}	T_{12}	Mean
L_0	1904	1570	1891	1747	1919	1979	1744	1844	2140	1891	2370	2226	2210	1957
L_1	2444	2530	1977	2119	2310	2268	2444	1963	2428	2207	2398	2093	2282	2266
Mean	2175	2050	1934	1933	2114	2123	2094	1904	2284	2049	2384	2159	2246	2112

Crop :- Paddy (*Kharif*). **Ref :- Bh. 61(292).**

Site :- Govt. Agri. Farm, Chainbasa. **Type :- 'M'.**

Object :—To find out the effect of green manure on Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy—Fallow. (b) Paddy. (c) Nil. (ii) Sandy loam. (iii) 7.7.61. (iv) (a) 3 ploughings. (b) Japanese method. (c) 17 Kg/ha. (d) 23 cm.×23 cm. (e) —. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) 498—2A. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 13 to 15.12.61.

2. TREATMENTS :

4 green manuring treatments : T_1=Paddy sown alone, T_2=Paddy sown alone and burshenned, T_3=Paddy sown with A. americana and burshenned and T_4=Paddy sown with Dhaincha and burshenned.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) 5·60 m.×12·50 m. (b) 5·30 m.×12·20 m. (v) 30 cm.× 30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1961—65 (62 and 65 expts.—N.A. and 62 onwards modified). (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1100 Kg/ha. (ii) 269·8 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4
Av. yield	975	966	1402	1059

Crop :- Paddy (*Kharif*). **Ref :- Bh. 63(291), 64(317).**

Site :- Govt. Agri. Farm, Chainbasa. **Type :- 'M'.**

Object :—To find out the effect of green manure on Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 22·5 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super ; 67·5 Kg/ha. of N as A/S+67·5 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) 8.7.63 ; 5.7.64. (iv) (a) 3 -4 ploughings. (b) Sowing in line ; Japanese method. (c) N.A. ; 17 Kg/ha. (d) 23 cm.×23 cm. (e) 1 to 3. (v) 67·5 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super for 63 ; 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super for 64. (vi) 498—2A. (vii) Irrigated.. (viii) Weeding and hoeing. (ix) N.A. (x) 20.12.63 ; 12.12.64.

2. TREATMENTS :

Same as Expts. No. 61(292) at Chainbasa on page No. 2.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 12·80 m.×5·50 m. ; 12 50 m.×9·40 m. (b) 12·20 m.×4 60 m. ; 12·50 m.×9·40 m. (v) 30 cm.×45 cm. ; Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1961—65 (62, 65 expts.—N.A. and modified in 62 onwards.) (b) Yes. (c) Results of combined analysis for 63 and 64 are presented under 5. Results. (v) Hazaribagh, Kishanganj and Sabour. (vi) Nil. (vii) Error variances are heterogeneous and Treatments×Years interaction is present.

5. RESULTS :

Pooled results

(i) 570·0 Kg/ha. (ii) 502·5 Kg/ha. (based on 3 d.f. made up of Treatments×Years interaction). (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4
Av. yield	466	433	830	549

Individual results

Treatments	T_1	T_2	T_3	T_4	Sig.	G.M.	S.E./plot
Years							
1963	654	553	1283	766	**	814	203·7
1964	279	313	377	332	NS	325	96·0
Pooled	466	433	830	549	NS	570	502·5

Crop :- Paddy (*Kharif*). **Ref :- Bh. 60(269).**

Site :- Dist. Agri. Farm, Chainki. **Type :- 'M'.**

Object :—To find out the influence of different trace elements as soil application with and without lime

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) 18.6.60. (iv) (a) 6 ploughings by *Deshi* plough. (b) Transplanting. (c) 16 Kg/ha. (d) 25 cm.×25 cm. (e) 3 to 4. (v) Nil. (vi) BK -88. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 18.12.60.

2. TREATMENTS and 3. DESIGN:

Same as Expt. No. 60(268) at Baliapur on page No. 1.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1958—60. (b) Yes. (c) Nil. (v) Kanke, Putida, Hazaribagh and Baliapur. (vi) and (vii) Nil.

5. RESULTS :

(i) 2891 Kg/ha. (ii) (a) 1059 Kg/ha. (b) 486·4 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9	T_{10}	T_{11}	T_{12}	Mean
L_0	1484	3226	3154	3110	3024	3342	3138	3010	3340	3312	3154	2833	2979	3008
L_1	2600	2644	2454	3224	3007	3107	2921	2817	2747	2468	2689	2521	2872	2774
Mean	2042	2935	2804	3167	3015	3225	3029	2913	3043	2890	2921	2827	2776	2891

Crop :- Paddy (*Kharif*). **Ref :- Bh. 62(211), 63(226), 65(176).**

Site :- Dist. Agri. Farm, Chianki. **Type :- 'M'.**

Object :- To study the effect of lime on the yield of Paddy in neutral and alkaline soil.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy ; Paddy ; Fallow. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super for 62, 63 and Nil for 65. (ii) Red loam. (iii) 16.7.62 ; 15.7.63 ; 11.8.65. (iv) (a) 2 ploughings. (b) Line sowing. (c) 23 Kg/ha. (d) 23 cm. between rows. (e) —. (v) N.A. (vi) CH—10. (vii) Irrigated. (viii) 2 weedings and one hoeing. (ix) N.A. (x) 28.11.62 ; 30.11.63 ; 19.12.65.

2. TREATMENTS :

8 manurial treatments : T_0=Control, T_1=Lime at 897 Kg/ha., T_2=Lime at 1793 Kg/ha., T_3=Lime at 2690 Kg/ha., T_4=T_1+45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot., T_5=T_2+45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot., T_6=T_3+45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. and T_7=45 Kg/ha. of N as A/S +45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 6. (iv) (a) and (b) 27·00 Sq. m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1961—65 (61, 64 Expts.—N.A.). (b) Yes. (c) Results of combined analysis are presented under 5. Results. (v) and (vi) Nil. (vii) Error variances are heterogeneous and Treatments × Years interaction is present.

5. RESULTS :

Pooled results

(i) 1587 Kg/ha. (ii) 582·1 Kg/ha. (based on 14 d.f. made up of Treatments × Years interaction). (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Av. yield	1337	1577	1505	1562	1747	1525	1662	1779

Individual results

Treatments	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	Sig.	G.M.	S.E./plot
Years											
1962	2614	3077	2677	2906	2714	2310	2694	3058	N.S.	2756	619·9
1963	426	624	800	659	873	703	721	660	**	683	171·1
1965	972	1030	1039	1122	1654	1562	1570	1620	**	1321	172·3
Pooled	1337	1577	1505	1562	1747	1525	1662	1779	N.S.	1587	582·1

Crop :- Paddy (*Kharif*). **Ref :- Bh. 61(299).**

Site :- Sub-Divisional Farm, Gumla. **Type :- 'M'.**

Object :—To test the effect of liming in acid soils on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy—Maize. (b) Maize. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (ii) Clayey loam. (iii) 5.7.61. (iv) (a) 3 to 4 ploughings. (b) Line sowing. (c) 27 Kg/ha. (d) 23 cm between rows. (e) —. (v) N.A. (vi) CH—10. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 28.9.61.

2. TREATMENTS :

6 manurial treatments : M_0=Control, M_1=45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. pot., M_2=900 Kg/ha. of lime, M_3=1800 Kg/ha. of lime, M_4=2700 Kg/ha. of lime and $M_5=M_4+M_1$.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 9·10 m.×11·00 m. (vi) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1961 only. (b) No. (c) Nil. (v) Kanke and Hazaribagh. (vi) and (vii) Nil.

5. RESULTS :

(i) 681 Kg/ha. (ii) 310·8 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of grain in Kg/ha.

Treatment	M_0	M_1	M_2	M_3	M_4	M_5	
Av. yield	512	976	433	412	810	941	C.D.=410·1 Kg/ha.

Crop :- Paddy (*Kharif*). **Ref :- Bh. 61(291), 63(290).**

Site :- Dist. Agri. Farm, Hazaribagh. **Type :- 'M'.**

Object :—To find out the effect of green manure on the yield of Paddy crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) Nil ; 22·5 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) 24.7.61 ; 25.6.63. (iv) (a) 3—4 ploughings. (b) Japanese method. (c) 17 Kg/ha. ; 40 Kg/ha. (d) 23 cm. ×23 cm. (e) Nil ; 2 to 3. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super ; 67·5 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) 498—2A. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 20.12.61 to 1.1.62 ; 11.12.63.

2. TREATMENTS :

Same as Expt. No. 61(292) at Chainbasa on Page No. 2.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 9·80 m.×12·80 m. (b) 9·10 m.×12·20 m. (v) 35 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1961—63 (Expt. for 62—N.A.) (b) Yes. (c) Nil. (v) Chainbasa, Kishanganj and Sabour. (vi) Nil. (vii) Error variances are heterogeneous and Treatments × Years interaction is absent, hence the results of individual years are presented under 5. Results.

5. RESULTS :

61(291)

(i) 855·4 Kg/ha. (ii) 256·7 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4
Av. yield	928·2	738·1	825·3	930·0

63(290)

(i) 572·3 Kg/ha. (ii) 151·7 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4
Av. yield	434·5	541·8	588·8	724·2

Crop :- Paddy (*Kharif*). **Ref :- Bh. 60(19), 61(134).**

Site :- Dist. Agri. Farm, Hazaribagh. **Type :- 'M'.**

Object :--To find out the optimum manurial dose of N, P and K for Paddy crop.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Sandy loam. (iii) 19.7.60 ; 10 and 11.7.61. (iv) (a) 4 *Deshi* ploughings. (b) In furrows behind the plough. (c) 69 Kg/ha. (d) 30 cm. between rows. (e) —. (v) N.A. (vi) *Gora*. (vii) Irrigated. (viii) Weeding by hand. (ix) N.A. (x) 23.10.60 ; 28 10.61.

2 TREATMENTS :

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

(1) 3 levels of N as A/S : N_0=0, N_1=22·4 and N_2=44·8 Kg/ha.

(2) 3 levels of P_2O_5 as Super : P_0=0. P_1=22·4 and P_2=44·8 Kg/ha.

(3) 3 levels of K_2O as Mur. Pot.: K_0=0, K_1=22·4 and K_2=44·8 Kg/ha.

3. DESIGN :

(i) 3^3 confd. ; 3^3 Fact. R.B.D. (ii) (a) 9 plots/block and 3 blocks/replication in 60 and 27 plots/block in 61. (b) Nil. (iii) 2. (iv) (a) 7·77 m.×5·28 m. ; N.A. (b) 7·77 m.×5·28 m. ; 9·14 m.×4·37 m. (v) Nil ; N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination and tiller count ; measurement of length of earhead and height of plant ; yield of grain. (iv) (a) 1960—61. (b) No. (c) Design of expt. for 60 and 61 is different, so pooled analysis is not carried out. (v) Kanke and Putida. (vi) and (vii) Nil.

5. RESULTS :

60(19)

(i) 428 Kg/ha. (ii) N.A. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	333	384	381	328	391	379	366
N_1	388	493	560	494	497	449	480
N_2	420	490	403	423	408	482	438
Mean	380	456	448	415	432	437	428
K_0	345	374	526				
K_1	439	471	386				
K_2	357	522	432				

61(134)

(i) 417 Kg/ha. (ii) 316·0 Kg/ha, (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	565	239	573	523	478	376	459
N_1	334	341	356	468	359	204	344
N_2	486	247	609	416	324	601	447
Mean	462	276	513	469	387	394	417
K_0	516	209	682				
K_1	530	252	379				
K_2	339	366	477				

Crop :- Paddy (*Kharif*). **Ref :- Bh. 61(298).**

Site :- Dist. Agri. Farm, Hazaribagh. **Type :- 'M'.**

Object :— To test the effect of liming in acid soils on the yield of Paddy.

1. BASAL CONDITIONS:

(i) (a) Paddy—Maize. (b) Maize. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (ii) Red loamy clay. (iii) 30.6.61. (iv) (a) 3 to 4 ploughings. (b) Line sowing. (c) 23 Kg/ha. (d) 23 cm. between rows. (e) —. (v) N.A. (vi) CH—10. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 23.10.61.

2. TREATMENTS:

Same as in Expt. No. 61(299) at Gumla on page No. 5.

3. DESIGN:

(i) R.B.D. (ii) 6. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 8·22 m.×11·56 m. (v) N.A. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1960—61 (Expt. for 1960—N.A.) (b) No. (c) Nil. (v) Kanke and Gumla. (vi) and (vii) Nil.

5. RESULTS:

(i) 703 Kg/ha. (ii) 309·1 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of grain in Kg/ha.

Treatment	M_0	M_1	M_2	M_3	M_4	M_5	
Av. yield	431	1072	311	675	758	972	C.D.=407·8 Kg/ha.

Crop :- Paddy (*Kharif*). **Ref :- Bh. 60(270), 61(177).**

Site :- Dist. Agri. Farm, Hazaribagh. **Typp :- 'M'.**

Object :—To find out the influence of different trace elements as soil application with and without lime.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Paddy ; Fallow. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super ; Nil. (ii) Laterite sandy. (iii) 12.7.60/26.8.60 ; 14.8.61/N.A. (iv) (a) 3 ploughings. (b) Transplanting. (c) 18 Kg/ha. ; 30 Kg/ha. (d) 25 cm.×25 cm. (e) 3 to 4. (v) N.A. (vi) BK—88. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 16 and 17.12.60 ; 7.12.61.

2. TREATMENTS :-

Same as in Expt. No. 60(268) at Baliapur on page No. 1.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 13 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 4·30 m. ×3·30 m. (b) 3·70 m.×2·70 m. (v) 60 cm.×60 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1958—61. (b) Yes. (c) Nil. (v) Kanke, Putida, Chianki and Baliapur. (vi) Nil. (vii) As the sub-plot error variances are heterogeneous, individual year results are presented under 5. Results.

5. RESULTS :

60(270)

(i) 2397 Kg/ha. (ii) (a) 377·3 Kg/ha. (b) 342·0 Kg/ha. (iii) Only the main effect of T is significant. (iv) Av. yield of grain in Kg/ha.

	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9	T_{10}	T_{11}	T_{12}	Mean
L_0	2403	2614	2556	2289	2449	2593	2149	2775	2761	2196	2514	2144	2338	2445
L_1	2440	2268	2528	2607	2775	2456	1977	2179	2575	2035	2077	2398	2224	2349
Mean	2421	2441	2542	2448	2612	2525	2063	2477	2668	2115	2296	2271	2281	2397

C.D. for T marginal means=338·6 Kg/ha.

61(177)

(i) 577·0 Kg/ha. (ii) (a) 83 3 Kg/ha. (b) 81·2 Kg/ha. (iii) Only the main effect of T is significant. (iv) Av. yield of grain in Kg/ha.

	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9	T_{10}	T_{11}	T_{12}	Mean
L_0	579	628	614	558	590	625	516	667	663	527	604	516	562	588
L_1	586	548	607	628	667	590	475	524	632	489	499	576	534	566
Mean	583	588	611	593	628	607	496	595	647	508	551	546	548	577

C.D. for T marginal means=80·4 Kg/ha.

Crop :- Paddy (*Kharif*). **Ref :- Bh. 62(255), 63(253), 64(281), 65(95).**

Site :- Dist. Agri. Farm, Hazaribagh. Type :- 'M'.

Object :—To find out the influence of different trace elements as soil application with and without lime.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow ; Paddy. (c) Nil ; 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5. (ii) Sandy loam. (iii) 17.6.62/23.7.62 ; 25 and 26.8.63/N.A. ; 16 and 17.8.64 ; 27 and 28.8.65. (iv) (a) 5 ploughings. (b) Transplanting. (c) 16 Kg/ha. (d) 25 cm.×25 cm. (e) 3 to 4. (v) Nil. (vi) BK –88 for 62 and 63 ; BR—34 for 64 and 65. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 22.12.62 ; 8.1.64 ; 10.1.65 ; 3.12.65.

2. TREATMENTS :

Main-plot treatments :

2 doses of lime : L_0=0 and L_1=2690 Kg/ha.

Sub-plot treatments :

5 treatments of trace elements : T_0=Control, T_1=22·4 Kg/ha. of $MnSO_4$, T_2=44·8 Kg/ha. of $MnSO_4$, T_3=5·6 Kg/ha. of $CuSO_4$ and T_4=11·2 Kg/ha. of $CuSO_4$.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 5 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 6·10 m.× 4·30 m. (b) 5·50 m.×3·70 m. (v) 30 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1962–65. (b) Yes. (c) Nil. (v) and (vi) Nil. (vii) As sub-plot error variances are heterogeneous, hence individual year results are presented under 5. Results.

5. RESULTS :

62(255)

(i) 3000 Kg/ha. (ii) (a) 791·0 Kg/ha. (b) 859·4 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	T_0	T_1	T_2	T_3	T_4	Mean
L_0	3124	3056	2923	3125	2701	2986
L_1	3145	3130	2725	2829	3241	3014
Mean	3135	3093	2824	2977	2971	3000

63(253)

(i) 2053 Kg/ha. (ii) (a) 419 3 Kg/ha. (b) 401 1 Kg/ha. (iii) None of the ecffets is significant. (iv) Av. yield of grain in Kg/ha.

	T_0	T_1	T_2	T_3	T_4	Mean
L_0	1901	2031	1993	2069	2138	2026
L_1	1794	1997	2254	2261	2094	2080
Mean	1847	2014	2123	2165	2116	2053

64(281)

(i) 2552 Kg/ha. (ii) (a) 493·9 Kg/ha. (b) 391·1 Kg/ha. (iii) Main effect of T alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	T_0	T_1	T_2	T_3	T_4	Mean
L_0	2360	2456	2659	2651	2733	2572
L_1	1993	2514	2617	2630	2911	2533
Mean	2176	2485	2638	2641	2822	2552

C.D. for T marginal means=322·7 Kg/ha.

65(95)

(i) 1057 Kg/ha. (ii) (a) 171·0 Kg/ha. (b) 185·9 Kg/ha. (iii) Main effect of T is highly significant and interaction T×L is significant. (iv) Av. yield of grain in Kg/ha.

	T_0	T_1	T_2	T_3	T_4	Mean
L_0	793	1282	1064	909	1121	1034
L_1	899	1165	1368	1020	947	1080
Mean	846	1224	1216	964	1034	1057

C.D. for T marginal means =153·3 Kg/ha.
C.D. for L means at the same level of T=245·3 Kg/ha.
C.D. for T means at the same level of L=216·9 Kg/ha.

Crop :- Paddy (*Kharif*). **Ref :- Bh. 60(148).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object :—To study the responses of aerial spray of fertilizers at different stages of the crop on growth, yield and protein content of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) 22.6.60/8.8.60. (iv) (a) 3 ploughings. (b) Transplanting. (c) 70 Kg/ha. (d) 25 cm.×25 cm. (e) 3. (v) N.A. (vi) BK—88. (vii) Unirrigated. (viii) Weeding, hoeing and earthing up. (ix) 81 cm. (x) 3.12.60.

2. TREATMENTS :

Main-plot treatments :

5 types of foliar spray of fertilizers : T_1=33·6 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super to soil at planting+N as A/S 4·75 % solution in 1123·36 lit. of water/ha. spray, T_2=33·6 Kg/ha. of N as urea+45 Kg/ha. of P_2O_5 as Super to soil at planting+N as urea 2·16 % solutions in 1123·36 lit. of water/ha. spray, T_3=45 Kg/ha. of N as A/S+33·6 Kg/ha. of P_2O_5 as Super to soil at planting+P_2O_5 as Super 5·5 % solution in 1123·36 lit. of water/ha. spray, T_4=45 Kg/ha. of N as A/S+33·6 Kg/ha. of P_2O_5 as Super to soil at planting+KH_2PO_4 4·31 % solution in 1123·36 lit. of water/ha. spray and T_5=45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super to soil at planting.

Sub-plot treatments :

Three stages of crop growth : S_1=Tillering, S_2=Pre-flowering and S_3=Grain filling.

3. DESIGN :

(i) Split-plot. (ii) (a) 5 main-plots/replication ; 3 sub-plot/main-plot. (b) N.A. (iii) 4. (iv) (a) 4·30 m. ×3 60 m. (b) 3·60 m.×2·70 m. (v) One row alround. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) No. of tillers and leaves, height of plant, no. of grain/plant, wt. of 1000 grain, yield of grain and straw. (iv) (a) 1960 only. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1687 Kg/ha (ii) (a) 144·2 Kg/ha. (b) 236·6 Kg/ha. (iii) Main effect of T alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	T_0	T_1	T_2	T_3	T_4	Mean
S_1	1442	1817	1492	1487	1687	1585
S_2	1531	1575	1792	1762	1960	1724
S_3	1557	1672	1734	1751	2052	1753
Mean	1510	1688	1673	1667	1900	1687

C.D. for T marginal means=128·3 Kg/ha.

———

Crop :- Paddy (*Kharif*). **Ref :- Bh. 60(150).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object :—To evaluate the effect of different trace elements as foliar spray on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) 1.8.60. (iv) (a) 3 ploughings. (b) Transplanting. (c) 70 Kg/ha. (d) 25 cm.×25 cm. (e) 3. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) BK—88. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) 63 cm. (x) 3.12.60.

2. TREATMENTS :

Main-plot treatments :

13 treatments of trace elements : T_0=Control (water spray), T_1=Boron as Borax 0·05 % solution in 1123·36 litre of water/ha., T_2=Boron as Borax 0·11 % solution in 1123·36 litre of water/ha. spray, T_3=Manganese as $MnSO_4$ 0·2 % solution spray, T_4=Manganese as $MnSO_4$ 0·4 % solution spray, T_5=Zinc as $ZnSO_4$ 0·05 % solution spray, T_6=Zinc as $ZnSO_4$ 0·1 % solution spray, T_7=Copper as $CuSO_4$ 0·05 % solution spray, T_8=Copper as $CuSO_4$ 0·1 % solution spray, T_9=Iron as $FeSO_4$ 0·2 % solution spray, T_{10}=Iron as $FeSO_4$ 0·4 % solution spray, T_{11}=Molybdate as Sodium Molybdate 0·01 % solution spray and T_{12}=Molybdate as Sodium Molybdate 0·02 % solution spray.

Sub-plot treatments :

Three stages of crop : S_1=Tillering, S_2=Pre-flowering and S_3=Grain filling.

3. DESIGN :

(i) Split-plot. (ii) (a) 13 main-plots/replication ; 3 sub-plots/main plot. (b) 118·97 m.×4·36 m. (iii) 2 (iv) (a) 4·36 m.×3·65 m. (b) 3·65 m.×2·74 m. (v) One row alround. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1960 only. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2053 Kg/ha. (ii) (a) 350·7 Kg/ha. (b) 251·0 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9	T_{10}	T_{11}	T_{12}	Mean
S_1	2109	2114	1786	1692	1704	2363	1886	1991	2269	1881	2075	1829	2145	1988
S_2	2525	1742	2287	1733	1985	2331	1916	1799	2587	2409	2005	1999	1915	2095
S_3	2349	1725	2409	2241	2082	2178	1526	1824	2170	1951	2118	2198	2202	2075
Mean	2328	1860	2161	1889	1924	2291	1776	1871	2342	2080	2066	2009	2087	2053

Crop :- Paddy (*Kharif*). **Ref :- Bh. 60(154).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object :—To find out the influence of different trace elements as soil application with and without lime.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) 4.8.60. (iv) (a) 3 ploughings. (b) Transplanting . . (c) 70 Kg/ha. (d) 25 cm.×25 cm. (e) 3. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) BK—88. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) 63 cm. (x) 8.12.60.

2. TREATMENTS :

Same as in Expt. No. 60(268) at Baliapur on Page No. 1.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 13 sub-plots/main-plot. (b) 85·34 m.×4·37 m. (iii) 4. (iv) (a) 4·37 m.×3·45 m. (b) 3·66 m.×2·74 m. (v) One row alround. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1960 only. (b) and (c) Nil. (v) (a) Putida, Chianki, Baliapur and Hazaribagh. (vi) and (vii) Nil.

5. RESULTS:

(i) 1997 Kg/ha. (ii) (a) 235·3 Kg/ha. (b) 314·7 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9	T_{10}	T_{11}	T_{12}	Mean
L_0	1988	1916	1923	1808	2004	2090	1972	2207	1816	1887	2128	1981	2353	2006
L_1	2081	1989	1971	2054	1779	1963	1905	1959	1760	2047	2096	2079	2160	1988
Mean	2034	1952	1947	1931	1892	2026	1938	2083	1788	1967	2112	2030	2256	1997

Crop :- Paddy (*Kharif*): **Ref :- Bh. 60(235).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object :—To study the effect of lime on the yield of Paddy in neutral and alkaline soil.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Paddy. (c) As per treatments. (ii) Red Loam. (iii) 14.7.60. (iv) (a) 2 ploughings. (b) Line sowing. (c) 23 Kg/ha. (d) 23 cm. between rows. (e) —. (v) N.A. (vi) C.H.—10. (vii) Irrigated. (viii) 2 weedings and hoeing. (ix) N.A. (x) 23.9.60.

2. TREATMENTS:

8 manurial treatments : T_0=Control, T_1=897 Kg/ha. of lime, T_2=1793 Kg/ha. of lime, T_3=2690 Kg/ha. of lime, T_4=T_1+45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot., T_5=T_2+45 Kg/ha. of N asA/S+45 Kg/ha. of P_2O_2 as Super + 45 Kg/ha. of K_2O as Mur. Pot., T_6=T_3+45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. and T_7=45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot.

3. DESIGN:

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 6. (iv) (a) and (b) 27·00 Sq. m. (v) Nil. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1960 only. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS:

(i) 1998 Kg/ha. (ii) 362·1 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Av. yield	1870	1747	1812	1902	2212	2223	2190	2028

Crop :- Paddy (*Kharif*). **Ref :- Bh. 60(283).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object :—To test the effect of green manuring of Paddy with the lopping of perennial crops.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Paddy. (c) Nil. (ii) Red Loam. (iii) 24.6.60. (iv) (a) 3 ploughings. (b) Japanese method. (c) 17 Kg/ha. (d) 23 cm. × 23 cm. (e) —. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) BK-36. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 17.11.61.

2. TREATMENTS:

6 manurial treatments : T_0=Control (No green manure), T_1=S. *aculeata*, T_2=*Pongania Glabra*, T_3=*Ipnomea Carnea*, T_4=*Gliricidia Maculata* and T_5=*Butea Frandosa*.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 6·10 m.×3 81 m. (b) 5·59 m.×3·30 m. (v) 25 cm×25 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) to (c) No. (v) to (vii) Nil.

5. RESULTS :

(i) 2224 Kg/ha. (ii) 806·4 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. yield	2039	2221	2355	2561	2063	2102

Crop :- Paddy (*Kharif*). **Ref :- Bh. 60(30), 61(241), 62(208), 63(302), 64(335), 65(175).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object :—To study the effect of Lime Phosphate, Molybdenum and seeds innoculation on the success of green mannring in acid soils for Paddy crop after Dhaincha.

1. BASAL CONDITIONS :

(i) (a) Dhaincha—Paddy for 60, 63, 64, 65, Dhaincna—Kalai—Paddy for 61 and 62. (b) Dhaincha for 60, 63, 64, 65 and Kalai for 61, 62. (c) N.A. (ii) Red loam. (iii) 17.8.60 ; 18.8.61 ; 11.8.62 ; 18.8.63 ; 3.8.64 ; 13.8.65. (iv) (a) 3—4 ploughings. (b) Line sowing. (c) 23 Kg/ha. (d) 23 cm. between rows. (e) —. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. for 60, 63, 64 65 and 11·2 Kg/ha. of N as A/S+lime for 61, 62. (vi) 498—2A. (vii) Irrigated. (viii) 2 weedings. (ix) N.A. (x) 7.12.60 ; 12.12.61 ; 2.1.63 ; 18.12.63 ; 27.11.64 ; 11.12.65.

2. TREATMENTS :

6 manurial treatments : T_0=Control, T_1=G.M., T_2=G.M.+4000 Kg/ha. of Lime, T_3=T_2+45 Kg/ha. of P_2O_5 as Super, T_4=T_3+1·1 Kg/ha. of Molybdate and T_5=T_4+seed innoculation.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) and (b) 20·20 sq. m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1960-65. (b) No. (c) Results of combined analysis are presented under 5. Results. (v) and (vi) Nil. (vii) Error variances are heterogeneous and Treatments × Years interaction is present.

5. RESULTS :

Pooled results :

(i) 1305 Kg/ha. (ii) 288·2 Kg/ha. (based on 25 d.f. made up of Treatments × Years interaction). (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. yield	1074	1248	1341	1365	1438	1363

C.D.=171·4 Kg/ha.

Individual results :

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	Sig.	G.M.	S.E./plot
Year 1960	1253	1297	1428	1505	1584	1671	N.S.	1456	241·1
1961	1638	1995	1973	1837	1861	1566	N.S.	1812	358·5
1962	86	166	144	173	130	122	*	137	30·1
1963	667	1001	1137	1162	1384	1347	**	1116	146·4
1964	1730	2126	2298	2311	2397	2323	**	2198	211·3
1965	1069	902	1069	1205	1273	1149	N.S.	1111	172·1
Pooled	1074	1248	1341	1365	1438	1363	**	1305	288·2

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Crop :- Paddy (*Kharif*). **Ref :- Bh. 60(306), 63(301), 64(334), 65(174).**

Site :- Agri. Res. Instt., Kanke. **Type .- 'M'.**

Object :-- To study the effect of Lime Phosphate, Molybdenum and seed innoculation on the success of *Kalai* green manuring in acid soils for Paddy crop.

1. BASAL CONDITIONS :

(i) (a) *Kalai*-Paddy. (b) *Kalai*. (c) N.A. (ii) Red loam. (iii) 18.8.60 ; 18.8.63 ; 4.8.64 ; 20.8.65. (iv) (a) 3—4 ploughings. (b) Line sowing. (c) 23 Kg/ha. (d) 23 cm. between rows. (e) —. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (vi) 498—2A (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 7.12.60 ; 18.12.63 ; 27.11.64 ; 11.12.65.

2. TREATMENTS :

6 manurial treatments : T_0=Control, T_1=G.M., T_2=T_1+4000 Kg/ha. of lime, T_3=T_2+45 Kg/ha. of P_2O_5 as Super, T_4=T_3+1·1 Kg/ha. of Mo, and T_5=T_4+seed innoculation.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 20·23 Sq. m. (v) N.A. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1960—65 (Expts. for 61 and 62—N.A.). (b) No. (c) Results of combined analysis are presented under 5. Results. (v) No. (vi) Nil. (vii) Error variances are homogeneous and the Treatments × Years interaction is absent.

5. RESULTS :

Pooled results :

(i) 1539 Kg/ha. (ii) 296·8 Kg/ha. (based on 75 d.f. made up of pooled error and Treatments × Years interaction). (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	C.D.=207·8 Kg/ha.
Av. yield	1283	1391	1464	1724	1697	1677	

Individual results :

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	Sig.	G.M.	S.E./plot
Year									
1960	1167	1412	1556	1482	1715	1476	N.S.	1468	233·2
1963	952	982	939	1279	1211	1260	N.S.	1104	231·5
1964	1841	2193	2218	2521	2280	2224	N.S.	2213	295·5
1965	1174	976	1143	1613	1582	1749	N.S.	1373	382·9
Pooled	1283	1391	1464	1724	1697	1677	**	1539	296·8

Crop :- Paddy (*Kharif*). **Ref :- Bh. 60(238), 61(312), 62(207), 63(304), 64(377).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object :—To find out how for the application of Phosphate to green matter at the time of its incorporation with soil helps in narrowing the C/N ratio of soil organic matter and better uptake of Paddy, the succeeding crop after Dhaincha.

1. BASAL CONDITIONS :

(i) (a) Dhaincha—Paddy. (b) Dhaincha. (c) N.A. (ii) Read loam. (iii) 16.8.60 ; 18.8.61 ; 21.8.62 ; 19.8.63 ; 9.8.64. (iv) (a) 2 ploughings for 60, 62 and 3-4 ploughings for other years. (b) Line sowing. (c) 23 Kg/ha. (d) 23 cm. between rows. (e) —. (v) N.A. (vi) 498-2 A for 62, 64 and BK-36 for other years. (vii) Irrigated. (viii) Weedings for 60, 2 weedings for 62 and weeding and hoeing for other years. (ix) N.A. (x) 6.12.60 ; 12.12.61 ; 29 and 30.12.62 ; 21.12.63 ; 1.12.64.

2. TREATMENTS :

6 manurial treatments : T_0=Control (No G.M.+no P), T_1=G.M., T_2=G.M.+45 Kg/ha. of P_2O_5 as Super at the time of incorporation of green matter with the soil, T_3=G.M.+22·5 Kg/ha. of P_2O_5 as Super at the time of incorporation of green matter with the soil+ 22·5 Kg/ha. of P_2O_5 as Super at the time of sowing, T_4=G.m.+45 Kg/ha. of P_2O_5 as Super at the time of sowing and T_5=No G.M.+45 Kg/ha. of P_2O_5 as Super at the time of sowing.

3. DESIGN :

(i) R.B D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) and (b) 5·50 m.×3·70 m. (v) Nil. (vi) Yes..

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1960--64. (b) Yes. (c) Results of combined analysis are presented under 5. Results. (v) and (vi) Nil. (vii) Error variances are homogeneous and Treatments ×Years interaction is absent.

5. RESULTS :

Pooled results :

(i) 1675 Kg/ha. (ii) 258·0 Kg/ha. (based on 95 d.f. made up of Pooled error and Treatments×Years interaction). (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. yield	1523	1472	1738	1862	1779	1675

C.D.=161·5 Kg/ha.

Individual results :

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	Sig.	G.M.	S.E./plot
Year									
1960	1262	1631	1488	1704	1617	1366	N.S.	1512	295·4
1961	1267	1365	1657	1852	1664	1516	**	1554	184·0
1962	1182	929	1235	1272	1329	1125	N.S.	1179	196·5
1963	1434	1087	1780	1891	1792	1693	**	1613	248·9
1964	2469	2348	2530	2591	2491	2675	N.S.	2518	296·0
Pooled	1523	1472	1738	1862	1779	1675	**	1675	258·0

Crop :- Paddy (*Kharif*). **Ref :- Bh. 61(311), 63(303), 64(336).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object :—To find out how far the application of Phosphate to green matter at the time of its incorporation with soil helps in narrowing the C/N ratio of soil organic matter and better uptake of Paddy as the succeeding crop after *Kalai*.

1. BASAL CONDITIONS :

(i) (a) Kalai—Paddy. (b) Kalai. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (ii) Red loam. (iii) 18.8.61 ; 19.8.63 ; 6.8.64. (iv) (a) 3—4 ploughings. (b) Line sowing. (c) 23 Kg/ha. (d) 23 cm. between rows. (e) —. (v) Nil. (vi) 498 —2A. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 12.12.61 ; 1.12.63 ; 3.12.64.

2. TREATMENTS :

Same as Expt. Nos. 60(238), 61(312), 62(207), 63(304), 64(337) at Kanke on page No. 14.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) —. (iii) 4. (iv) (a) N.A. (b) 20·23 Sq. m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1960-64 (Expts. for 60 and 62—N.A.). (b) No. (c) Nil. (v) No. (vi) Nil. (vii) Error variances are heterogeneous and the Treatments × Years interaction is absent. Hence the results of individual years are presented under 5. Results.

5. RESULTS :

61(311)

(i) 1831 Kg/ha. (ii) 335·1 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. yield	1838	1638	2025	1974	1862	1647

63(303)

(i) 2041 Kg/ha. (ii) 467·3 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. yield	1952	1767	1619	2472	2187	2249

64(336)

(i) 2418 Kg/ha. (ii) 231·0 Kg/ha. (iii) Treatment differences are not signicant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. yield	2627	2276	2328	2315	2420	2541

Crop :- Paddy (*Kharif*). **Ref :- Bh. 60(298), 61(301).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object :—To find out the relative value of different kinds of nitrogeneous fertilizers.

1. BASAL CONDITIONS :

(i) (a) Paddy--Maize. (b) Maize. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (ii) Red loam. (iii) 9.8.60 ; 11.8.61. (iv) (a) 3--4 ploughings. (b) Line sowings. (c) 23 Kg/ha. (d) 23 cm. between rows. (e) —. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O_5 as Mur. Pot. (vi) BK—36. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 10.12.60 ; 15.12.61.

2. TREATMENTS :

All combination of (1) and (2) in the presence of E_1+2 extra treatments.

(1) 2 levels of N : N_1=28·1 and N_2=56·2 Kg/ha.

(2) 6 sources of N and method of application : S_1=A/S, S_2=Urea, S_3=A/S/N, S_4=C/A/N, and S_5=A/C (all applied in split-doses) and S_6=Urea in single dose.

2 extra treatments : E_0=No treatment (control) and E_1=33·3 Kg/ha. of P_2O_5 as Super+33·3 Kg/ha. of K_2O as Mur. Pot.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 14. (b) —. (iii) 3. (iv) (a) N.A. (b) 45·0 Sq. m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1960-61. (b) No. (c) Results of combined analysis are presented under 5. Results. (v) Patna and Saharsa. (vi) Nil. (vii) Error variances are homogeneous and Treatments × Years interaction is absent.

5. RESULTS :

Pooled results :

(i) 1855 Kg/ha. (ii) 259·4 Kg/ha. (based on 65 d.f. made up of pooled error and Treatments × Years interaction). (iii) E_0 *vs* others (including E_1) is highly significant and N applied as split-dose *vs* as full dose is significant. (iv) Av. yield of grain in Kg/ha.

E_0=1552 Kg/ha., E_1=1858 Kg/ha.

	Split-dose						Full-dose	
	S_1	S_2	S_3	S_4	S_5	Mean	S_6	Mean
N_1	1901	1872	1949	1706	1809	1847	1737	1829
N_2	2080	1907	1869	1828	2222	1981	1680	1931
Mean	1990	1889	1909	1767	2016	1914	1708	1880

C.D. for E_0 *vs.* any other mean =298·1 Kg/ha.
C.D. for N applied as split-dose *vs* as full dose=164·1 Kg/ha.

Individual results

Treatment	Split-dose						Split-dose	Full-dose	
	S_1	S_2	S_3	S_4	S_5	Sig		S_6	Sig.
Year 1960	2067	1721	1967	1632	2136	**	1904	1652	*
1961	1914	2058	1851	1901	1895	N.S.	1923	1765	N.S.
Pooled	1990	1889	1909	1767	2016	N.S.	1914	1708	*

N_1	N_2	Sig.	E_0	Sig.	E_1	Sig.	G.M.	S.E./plot
1778	1946	*	1504	*	1859	N.S.	1836	225·6
1789	1915	N.S.	1599	N.S.	1857	N.S.	1873	267·2
1829	1931	N.S.	1552	**	1858	N.S.	1855	259·4

Crop :- Paddy (*Kharif*). **Ref :- Bh. 60(15), 61(137).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object :--To find out the optimum dose of N, P and K on Paddy crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) N.A. ; Maize. (c) N.A. ; Nil. (ii) Red loam. (iii) 20 to 22.6.60 ; 13 and 14.6.61. (iv) (a) 4 ploughings by *Deshi* plough. (b) Furrows method. (c) 69 Kg/ha. (d) 30 cm. (e) 2-3. (v) Nil. (vi) *Gora*. (vii) Unirrigated. (viii) Weeding by hand. (ix) N.A. (x) 24.9. to 6.10.60 ; 26 to 28.9.61.

2. TREATMENTS :

All combinations of (1), (2) and (3)
(1) 3 levels of N as A/S : N_0=0, N_1=22·4 and N_2=44·8 Kg/ha.
(2) 3 levels of P_2O_5 as Super : P_0=0, P_1=22·4 and P_2=44·8 Kg/ha.
(3) 3 levels of K_2O as Mur. Pot. : K_0=0, K_1=22·4 and K_2=44·8 Kg/ha.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 27. (b) N.A. (iii) 2. (iv) (a) N.A. (b) 10·97 m.×4·57 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Plots with N_2 lodged in 60 ; Good in 61. (ii) Nil. (iii) Germination, height of plants, No. of tillers/plant, yield of grain and straw. (iv) (a) 1959-61. (b) Yes. (c) Combined analysis has been presented under 5. Results. (v) Hazaribagh and Putida. (vi) Nil. (vii) Error variances are heterogeneous and Treatments × Years interaction is present. Expt. for 1959 was also considered for combined analysis.

5. RESULTS :

Pooled results

(i) 1136 Kg/ha. (ii) 438 1 Kg/ha. (based on 36 d.f. made up of Treatments × Years interaction). (iii) Main effect of N is highly significant. (iv) Av. yield of grain in Kg/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	744	812	829	777	771	836	795
N_1	1144	1334	1326	1265	1338	1201	1268
N_2	1297	1426	1316	1377	1395	1267	1346
Mean	1061	1191	1157	1140	1168	1101	1136
K_0	1042	1208	1169				
K_1	1052	1250	1202				
K_2	1090	1115	1100				

C.D. for N marginal means=190·6 Kg/ha.

Individual results

Treatmen t	N_0	N_1	N_2	Sig.	P_0	P_1	P_2	Sig.	K_0	K_1	K_2	Sig.
Year 1959	1427	1637	1490	N.S.	1521	1507	1526	N.S.	1641	1527	1386	N.S.
1960	541	961	1185	**	763	1004	920	**	857	903	927	N.S.
1961	417	1206	1364	**	900	1062	1025	*	921	1075	992	N.S.
Pooled	795	1268	1346	**	1061	1191	1157	N.S.	1140	1168	1101	N.S.

G.M.	S.E./plot
1518	441·0
889	205·7
996	187·1
1136	488·1

Crop :- Paddy (*Kharif*). **Ref :- Bh. 61(122).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object : —To study the interaction of three levels of N, P and K on Paddy and to assess the best combination of getting optimum yield.

1. BASAL CONDITIONS:

(i) (a) to (c) N.A. (ii) Red loam. (iii) 22 and 23.6.61. (iv) (a) 4 ploughings by *Deshi* plough. (b) N.A. (c) 69 Kg/ha. (d) 30 cm. between rows. (e) N.A. (v) N.A. (vi) *Gora*. (vii) Irrigated. (viii) Weeding by hand. (ix) N.A. (x) 21 to 24.9 61 and 6.10.61.

2. TREATMENTS:

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

(1) 3 levels of N as A/S: N_0=0, N_1=22·4 and N_2=44·8 Kg/ha.

(2) 3 levels of P_2O_5 as Super: P_0=0, P_1=22·4 and P_2=44·8 Kg/ha.

(3) 3 levels of K_2O as Mur. Pot.: K_0=0, K_1=22·4 and K_2=44·8 Kg/ha.

3. DESIGN:

(i) Fact. in R.B.D. (ii) (a) 27. (b) N.A. (iii) 2. (iv) (a) N.A. (b) 10·97 m.×4·57 m. (v) N.A. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1960 only. (b) and (c) No. (v) Putida and Hazaribagh. (vi) and (vii) Nil.

5. RESULTS:

(i) 729 Kg/ha. (ii) 179·0 Kg/ha. (iii) Main effects of N and P are highly significant and interaction N×P is significant. (iv) Av. yield of grain in Kg/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	287	252	171	260	237	213	237
N_1	628	1078	985	799	985	907	897
N_2	954	1179	1024	1008	985	1163	1052
Mean	623	836	727	689	736	761	729
K_0	613	768	686				
K_1	597	857	753				
K_2	659	884	741				

C.D. for N or P marginal means=122·7 Kg/ha.

C.D. for the body of N×P table=212·5 Kg/ha.

Crop :- Paddy (*Kharif*). **Ref :- Bh. 61(119).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object :—To find out the best manurial dose for Paddy.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) and (c) N.A. (ii) Red loam. (iii) 14.6.61. (iv) (a) 4 ploughings by *Deshi* plough. (b) In furrows behind the plough. (c) 46 Kg/ha. (d) Rows 30 cm. apart. (e) N.A. (v) N.A. (vi) *Gora*. (vii) Irrigated. (viii) Weeding by hand. (ix) N.A. (x) 26.9.61.

2. TREATMENTS:

6 manurial treatments: T_0=Control, T_1=22·4 Kg/ha. of N as A/S, T_2=22·4 Kg/ha. of N as A/S+22·4 Kg/ha. of P_2O_5 as Super, T_3=T_2+22·4 Kg/ha. of K_2O as Mur. Pot., T_4=44·8 Kg/ha. of P_2O_5 as Super+44·8 Kg/ha. of K_2O as Mur. Pot. and T_5=T_4+44·8 Kg/ha. of N as A/S.

3. DESIGN:

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 10·06 m.×6·71 m. (v) N.A. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Light attack of gundhi-bug skin hot, heavy attack of Caterpillers. (iii) Germination, stand count, height of plant, length of earhead, maturity and grain yield. (iv) (a) 1961—only. (b) and (c) No. (v) Latehar and Putida. (vi) and (vii) Nil.

5. RESULTS :

(i) 707 Kg/ha. (ii) 83·9 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	C.D.=126·4 Kg/ha.
Av. yield	156	372	1038	900	540	1237	

Crop :- Paddy (*Kharif*). **Ref :- Bh. 60(297), 61(300).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object :—To test the effect of liming on acid soil for Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy—Maize (b) Maize. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (ii) Red loam. (iii) 9.7.60 ; 6.7.61. (iv) (a) 3—4 ploughings. (b) Line sowing. (c) 23 Kg/ha. (d) 23 cm. between rows. (e) —. (v) Nil. (vi) BK—36 ; CH—10. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 5.10.60 ; 28.9.61.

2. TREATMENTS :

6 manurial treatments : T_0 =Control, T_1=Lime at 900 Kg/ha., T_2=Lime at 1800 Kg/ha., T_3=Lime at 2700 Kg/ha., T_4=Lime at 2700 Kg/ha.+45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O as Super+45 Kg/ha. of K_2O as Mur. Pot. and T_5=45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 5. (iv) (a) and (b) 67·40 Sq. m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1960—61. (b) No. (c) Nil (v) Nil ; Hazaribagh and Gumla (vi) Nil. (vii) Error variances are heterogeneous and Treatments × Years interaction is absent. Hence the results of individual years are presented under 5. Results.

5. RESULTS :

60(297)

(i) 1011 Kg/ha. (ii) 283·6 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	C.D.=374·1 Kg/ha.
Av. yield	768	899	1039	913	1458	991	

61(300)

(i) 1025 Kg/ha. (ii) 122·6 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. yield	870	1025	987	1072	1132	1062

Crop :- Paddy (*Kharif*). **Ref :- Bh. 60(295), 61(297), 62(124).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object :—To test the effect of different kinds of Phosphate on the yield of Paddy crop.

1. BASAL CONDITIONS :

(i) (a) Paddy—Maize for 60, 61 ; N.A. for 62. (b) Maize. (c) 45 Kg/ha. of N as A/S+45Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (ii) Red loam. (iii) 8.8.60 ; 9.8.61 ; 9.8.62. (iv) (a) 3—4 ploughings. (b) Line sowings. (c) 23 Kg/ha. (d) 23 cm between rows. (e) —. (v) Nil. (vi) BK—36. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 12.12.60 ; 16.12.61. ; 3.11.62.

2. TREATMENTS :

7 manurial treatments : T_0=Control, T_1=45 Kg/ha. of N as A/S, T_2=T_1+45 Kg/ha. of P_2O_5 as Super, T_3=T_1+45 Kg/ha. of P_2O_5 as Bone meal, T_4=T_1+45 Kg/ha. of P_2O_5 as Rock Phos., T_5=T_1+45 Kg/ha. of P_2O_5 as Basic Slag, and T_6=T_1+45 Kg/ha. of P_2O_5 as Dical. Phos.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 5. (iv) (a) and (b) 80.90 Sq.m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1960-62. (b) No. (c) Results of combined analysis are presented under 5. Results. (v) and (vi) Nil. (vii) Error variances are homogeneous and Treatments × Years interaction is absent.

5. RESULTS :

Pooled results

(i) 1591 Kg/ha. (ii) 198·4 Kg/ha. (based on 84 d.f. made up of pooled error and Treatments × years interaction). (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	1186	1537	1736	1740	1640	1622	1675

C.D.=143·5 Kg/ha.

Individual results

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	Sig.	G.M.	S.E./plot
Year 1960	1174	1647	1704	1707	1666	1686	1634	*	1603	224·0
1961	1303	1425	1876	1768	1656	1649	1783	**	1637	188·9
1962	1082	1539	1628	1744	1597	1532	1607	**	1533	189·0
Pooled	1186	1537	1736	1740	1640	1622	1675	**	1591	198·4

Crop :- Paddy (*Kharif*). **Ref :- Bh. 60(285), 63(292), 64(318).**

Site :- Agri. Farm, Kishanganj. **Type :- 'M'.**

Object :—To find out the effect of green manuring on the yield of Paddy crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) Nil ; 22·5 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super ; Nil. (ii) Sandy loam. (iii) 25.6.60 ; 10.7.63 ; 9.7.64. (iv) (a) 3-4 ploughings. (b) Japanese method in 60 and 63 ; Sowing in line in 64 ; (c) 17 Kg/ha. in 60 and 63 ; 40 Kg/ha. in 64. (d) 23 cm. × 23 cm. (e) Nil in 60 and 63 ; 2 to 3 in 64. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super for 60 and 64 ; 67·5 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super for 63. (vi) 498-2A. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N A. (x) 23 and 24.12.60 ; 23.1.64 ; 15.1.65.

2. TREATMENTS :

Same as Expt. No. 61(292) at Chainbasa on page No. 2.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii)6. (iv) (a) 13·10 m. × 12·20 m. ; 12·70 m. × 12·80 m. ; 9·40 m. × 12·50 m. (b) 12·50 m. × 11·60 m. ; 12·10 m. × 12·20 m. ; 9·40 m. × 12·50 m. (v) 30 cm. × 30 cm. in 60 and 63 ; Nil o 64. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1960—64 (Expts. for 61 and 62—N.A.). (b) Yes. (c) Nil. (v) Chainbasa and Hazaribagh. (vi) Nil. (vii) Error variances are heterogeneous and Treatments × Years interaction is absent. Hence the results of individual years are presented under 5. Results.

5. RESULTS :

60(285)

(i) 456 Kg/ha. (ii) 115·4 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4
Av. yield	403	440	517	465

63(292)

(i) 340 Kg/ha. (ii) 253·5 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treamtent	T_1	T_2	T_3	T_4
Av. yield	327	203	248	482

64(318)

(i) 101 Kg/ha. (ii) 93·7 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4
Av. yield	125	107	73	99

Crop :- Paddy (*Kharif*). **Ref :- Bh. 61(131).**

Site :- Sub. Divisional Agri. Farm, Latehar. **Type :- 'M'.**

Object :—To find out the suitable dose of fertilizer for Paddy.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) N.A. (iii) 19.7.61. (iv) (a) 4 *Deshi* ploughings. (b) N.A. (c) 69 Kg/ha. (d) 30 cm. between rows. (e) N.A. (v) N.A. (vi) *Gora*. (vii) Irrigated. (viii) Weeding by hand. (ix) N.A. (x) 27.10.61.

2. TREATMENTS :

6 manurial treatments : T_0=Control, T_1=22·4 Kg/ha. of N, T_2=22·4 Kg/ha. of N+22·4 Kg/ha. of P_2O_5, T_3=22·4 Kg/ha. of N+22·4 Kg/ha. of P_2O_5+22·4 Kg/ha. of K_2O, T_4=44·8 Kg/ha. of P_2O_5+44·8 Kg/ha. of K_2O and T_5=44·8 Kg/ha. of N+44·8 Kg/ha. of P_2O_5+44·8 Kg/ha. of K_2O.

N applied as A/S, P_2O_5 as Super and K_2O as Mur. Pot.

3. DESIGN :

(i) R.B D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 11·00 m.×6·10 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination, maturity, stand count, tiller count, length of earhead and yield of grain. (iv) (a) No. (b) and (c) Nil. (v) Kanke and Putida. (vi) and (vii) Nil.

5. RESULTS :

(i) 636 Kg/ha. (ii) 168·8 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. yield	519	549	688	730	563	770

Crop :- Paddy (*Kharif*). **Ref :- Bh. 61(22).**

Site :- Govt. Agri. Farm, Piprakothi (Motihari). **Type :- 'M'.**

Object :—To test the effect of different kinds of phosphatic fertilizers on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Loam. (iii) to (x) N.A.

2. TREATMENTS :

7 manurial treatments : M_0=Control, M_1=44·8 Kg/ha. of N as A/S, M_2=M_1+Super, M_3=M_1+B.M., M_4=M_1+Q. Phos, M_5=M_1+B. Slag and M_6=M_1+D. Phos.

P_2O_5 was applied at the rate of 44·8 Kg/ha. from different sources included in the experiment.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 5. (iv) (a) and (b) 1/99 ha. (v) Nil. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Nil. (iii) Yield of grain. (iv) (a) 1960 only. (b) and (c) N.A. (v) Kanke. (vi) and (vii) N.I.

5. RESULTS :

(i) 2020 Kg/ha. (ii) 288·4 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	M_0	M_1	M_2	M_3	M_4	M_5	M_6
Av. yield	1909	1982	2226	2056	1992	2048	1926

— ——

Crop :- Paddy (*Kharif*). **Ref :- Bh. 60(187), 61(202).**

Site :- Agri. Res. Instt., Patna. **Type :- 'M'.**

Object :—To test the effect of Gypsum on the yield of Paddy crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Gram. (c) Nil. (ii) Clay. (iii) 21, 22 and 24.8.60 ; 12, 13.8.61. (iv) (a) 3--4 *Deshi* plough. (b) Transplanting. (c) 23 Kg/ha. (d) 23 cm. (e) 2—3. (v) N.A. (vi) 4982—2A. (vii) Irrigated. (viii) Weeding. (ix) 25 cm. ; 53 cm. (x) 17 and 18.12.60 ; 18 and 20.12.61.

2. TREATMENTS :

4 manurial treatments : T_0=Control (no manure), T_1=45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super T_2=461·2 Kg/ha. of Gypsum and T_3=T_1+T_2.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) 11·00 m.×38·40 m. (iii) 5. (iv) (a) 9·70 m.×11·00 m. (b) 9·20 m.×11·00 m. (v) 23 cm. on either side. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Tiller count, height of plant and yield of grain. (iv) (a) 1960-61. (b) Yes. (c) Nil. (v) and (vi) Nil. (vii) Error variances are heterogeneous and Treatments×Years interaction is absent. Hence results of individual years are presented under 5. Results.

5. RESULTS :

60(187)

(i) 2306 Kg/ha. (ii) 163·9 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3
Av. yield	1912	2586	2106	2618

C.D.=225·9 Kg/ha.

61(202)

(i) 2180 Kg/ha. (ii) 300·2 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	C.D.=480·2 Kg/ha.
Av. yield	1794	2555	1967	2406	

Crop :- Paddy (*Kharif*). **Ref :- Bh. 60(188), 61(203).**

Site :- Agri. Res. Instt., Patna. **Type 'M'.**

Object :--To test the comparative effects of different nitrogeneous fertilizers on the yield of Paddy crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Gram. (c) Nil. (ii) Clay. (iii) 17 to 21.8.60 ; 8 to 11.8.61. (iv) (a) 3-4 *Deshi* ploughings. (b) Transplanting (c) 23 Kg/ha. (d) 25 cm. (e) 2-3. (v) N.A. (vi) 498-2A. (vii) Irrigated. (viii) Weedings (ix) 53 cm. ; 30 cm. (x) 15 to 17.12.60 ; 15 to 17.12.61.

2. TREATMENTS :

Same as Expt. No. 60(298), 61(301) at Kanke on page No. 16.

3. DESIGN :

(i) R.B.D. (ii) (a) 14. (b) 15·10 m.×93·70 m. (iii) 3. (iv) (a) 15·10 m.×7.20 m. (b) 15·10 m.×6·70 m. (v) 25 cm. on either side. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Tiller count, height of plant and yield of grain. (iv) (a) 1959-61 (Trs. modified in 1960). (b) Yes. (c) The results of combined analysis are presented under 5. Results. (v) Purnea, Saharsa, Pusa and Kanke. (vi) Nil. (vii) Error variances are homogeneous and Treatments×Years interaction is absent.

5. RESULTS:

Pooled results

(i) 2688 Kg/ha. (ii) 277·1 Kg/ha. (based on 65 d.f. made up of pooled error and Treatments×Years interaction). (iii) 'E_0 *vs.* others' is highly significant and 'E_1 *vs.* others' is significant. (iv) Av. yield of grain in Kg/ha.

E_0=2392, E_1=2454 Kg/ha.

	Split dose						Full dose	
	S_1	S_2	S_3	S_4	S_5	Mean	S_6	Mean
N_1	2804	2705	2750	2607	2654	2704	2680	2700
N_2	2734	2907	2746	2488	2861	2747	2850	2764
Mean	2769	2806	2748	2547	2757	2725	2765	2732

C.D. for E_0 *vs.* any other treatment mean (including E_1)=234·80 Kg/ha.
C.D. for E_1 *vs.* any other treatment mean =235·50 Kg/ha.

Individual results

Treatment	Split dose						Full dose	
	S_1	S_2	S_3	S_4	S_5	Sig.	Split dose	S_6	Sig.
Year									
1960	3007	3045	2738	2753	2884	N.S.	2886	2996	N.S.
1961	2530	2567	2757	2342	2630	N.S.	2565	2534	N.S.
Pooled	2769	2806	2748	2547	2757	N.S.	2725	2765	N.S.

N_1	N_2	Sig.	E_0	Sig.	E_1	Sig.	G.M.	S.E./plot
2896	2912	N.S.	2409	*	2707	N.S.	2859	291·3
2504	2616	N.S.	2315	N.S.	2200	*	2517	272·7
2700	2764	N.S.	2392	**	2454	*	2688	277·1

Crop :- Paddy (*Kharif*). **Ref :- Bh. 62(121), 63(27), 64(187).**

Site :- Dist. Agri. Farm, Putida. **Type :- 'M'.**

Object :--To study the correlation between crop response and Potash status of the soil.

1. BASAL CONDITIONS :

(i) (a) Paddy--Maize ; N.A. ; Paddy--Fallow. (b) Maize ; N.A. ; Fallow. (c) 45 Kg/ha. of N as A/S+ 45 Kg/ha. of P_2O_5 as Super ; N.A. ; Nil. (ii) Red loam. (iii) 8.8.62 ; N.A. ; 5.8.64. (iv) (a) 2-3 ploughings. (b) Line sowing. (c) 23 Kg/ha. (d) 23 cm. between rows. (e) --. (v) 45 Kg/ha. of N as A/S+ 45 Kg/ha. of P_2O_5 as Super for 62, 64 and N.A. for 63. (vi) 498—2A. (vii) Irrigated. (viii) Weedings. (ix) N.A. (x) 14 and 15.12.62 ; 7 to 9.12.63 ; 12 and 13.12.64.

2. TREATMENTS :

Same as Expt. No. 64(66), 65(7) at Arrah on page No. 1.

3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) and (b) 10·40 m.×4·90 m. for 62, 63 and 10·10 m.×5·50 m. for 64. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1961--64 (Expt. for 1961—N.A.). (b) No. (c) Nil. (v) Sahour ; Nil ; Arrah. (vi) Nil. (vii) Error variances are homogeneous and Treatments × Years interaction is absent.

5. RESULTS :

Pooled results

(i) 2203 Kg/ha. (ii) 535·8 Kg/ha. (based on 88 d.f. made up of pooled error and Treatments × Years interaction). (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Av. yield	1126	2031	1162	2587	2043	2929	2264	2505	3182

C.D.=435·3 Kg/ha.

Individual results

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	Sig.	G.M.	S.E./plot
Year												
1962	915	1998	856	2409	1790	3126	2285	2814	3289	**	2165	479·6
1963	915	1998	856	2409	1765	3126	2285	2184	3289	**	2092	387·4
1964	1548	2096	1774	2942	2575	2535	2222	2516	2969	*	2353	633·7
Pooled	1126	2031	1162	2587	2043	2929	2264	2505	3182	**	2203	535·8

Crop :- Paddy (*Kharif*). **Ref :- Bh 62(129), 63(150), 64(190), 65(151).**

Site :- Dist. Agri. Farm., Putida. **Type :- 'M'.**

Object: –To test the effect of Phosphate on Paddy crop in heavy black soil of Singhbhum.

1. BASAL CONDITIONS :

(i) (a) Paddy—Maize for 65 and Nil for others. (b) Maize. (c) 45 Kg/ha. of N as A/S+45Kg/ha. of P_2O_5 as Super. (ii) Red loam for 62, 63, 64; Clayee loam for 65. (iii) 8, 12.8.62 ; 8, 9.8.63 ; 7, 8.8.64 ; 1.8.65. (iv) (a) 2—4 ploughings. (b) Japanese method. (c) 23 Kg/ha. (d) 23 cm. between rows. (e) —. v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) 498—2A. (vii) Unirrigated. (viii) Weedings. (ix) 24 cm. for 63 and N.A. for others. (x) 12, 13.12.62. ; 5, 6.12.63 ; 3, 4.12.64 ; 22.11.65.

2. TREATMENTS :

4 manurial treatments : T_0=control, T_1=45 Kg/ha. of P_2O_5 as Super, T_2=T_1+45 Kg/ha. of N as A/S and T_3=T_2+45 Kg/ha. of K_2O as Mur. Pot.

3. DESIGN:

(i) R.B.D. (ii) (a) 4. (b) N.A (iii) 6. (iv) (a) 12·20m.×4·60m. (b) 11·60m.×4·00m. (v) 30cm×30cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of stem borer, Endrine of 20 E.C. at 0·02% of dilution were sprayed for 63 ; Nil for others. (iii) Yield of grain. (iv) (a) 1962-65. (b) Yes. (c) Results of combined analysis are presented under 5. Results. (v) and (vi) Nil. (viii) Error variances are heterogeneous and Treatments× Years interaction is present.

5. RESULTS:

Pooled results

(i) 2131 Kg/ha. (ii) 597·4 Kg/ha. (based on 9 d.f. made up of Treatments×Years interaction). (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3
Av. yield	1393	1838	2670	2622

C.D.=390 0 Kg/ha.

Individual results

Treatment	T_0	T_1	T_2	T_3	Sig.	G.M.	S.E./plot
Year							
1962	521	846	1511	1407	**	1071	462·1
1963	1732	2284	3689	3573	**	2819	286·8
1964	1504	1956	2434	2462	**	2089	236·5
1965	1817	2268	3047	3047	**	2545	502·3
Pooled	1393	1838	2670	2622	**	2131	597·4

Crop :- Paddy (*Kharif*). **Ref :- Bh. 65(164)**

Site :- Dist. Agri. Farm., Putida. **Type :- 'M'.**

Object :—To evaluate the effect of Basic Slag as a source of Phosphate on the yield of Paddy crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) 45 Kg/ha. of N as A/S, P_2O_5 as Super and K_2O as Mur. Pot. (ii) Red loam. (iii) 2.8.65. (iv) (a) 3—4 ploughings. (b) Line sowing. (c) 23 Kg/ha. (d) 23 cms. between rows. (e) — (v) 45 Kg/ha. each of N as A/S, P_2O_5 as Super and K_2O as Mur. Pot. (vi) 498—2A. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 1.12.65.

2. TREATMENTS:

7 manurial treatments : T_0=control, T_1=45 Kg/ha. of Basic Slag, T_2=45 Kg/ha of P_2O_5 Triple Super Phosphate, T_3=45 Kg/ha. of P_2O_5 as Single Super Phosphate, T_4=T_1+45 Kg/ha of N as A/S, T_5=T_2+45 Kg/ha. of N as A/S and T_6=T_3+45 Kg/ha. N as A/S.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 5·78m×4·26m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) N.A. (b) Nil. (c) N.A. (v) to (vii) Nil.

5. RESULTS :

(i) 1721 Kg/ha. (ii) 322·2 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	1381	1462	1592	1527	1844	2209	2031

C.D.=420·6 Kg/ha.

Crop :- Paddy (*Kharif*). **Ref :- Bh. 60(18).**

Site :- Govt. Agri. Farm, Putida. **Type :- 'M'.**

Object :—To find out optimum manurial dose of N, P and K for Paddy.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) N.A. (iii) 27.6.60. (iv) (a) N.A. (b) Be hind the plough. (c) 69 Kg/ha. (d) and (e) N.A. (v) Nil. (vi) 49—19. (vii) to (ix) N.A. (x) 11.10.60.

2. TREATMENTS :

Same as Expt. No. 60(19), 61(134) at Hazaribagh on page No. 6.

3. DESIGN :

(i) 3^3 confd. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 7·92 m.×4·88 m. (b) 7·32 m.×4·27 m. (v) 30 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Nil. (iii) Yield of grain. (iv) (a) 1960–61. (b) and (c) N.A. (v) Hazaribagh and Kanke (vi) Nil. (vii) Variety and Design are changed in 1961.

5. RESULTS :

(i) 1141 Kg/ha. (ii) 290·5 Kg/ha. (iii) Main effect of N alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	928	760	760	791	778	878	816
N_1	1389	1445	1246	1389	1358	1333	1360
N_2	1165	1407	1171	1252	1109	1383	1248
Mean	1161	1204	1059	1144	1082	1198	1141
K_0	1252	1071	1109				
K_1	1134	1165	946				
K_2	1097	1376	1122				

C.D. for N marginal means=199·1 Kg/ha.

Crop :- Paddy (*Kharif*). **Ref :- Bh. 61(133).**

Site :- Govt. Agri. Farm, Putida. **Type :- 'M'.**

Object :—To find out the optimum ma nurial dose for Paddy.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) N A. (iii) 29.6.61. (iv) (a) 4 *Deshi* ploughings. (b) In furrows behind the plough. (c) 69 Kg/ha. (d) 30 cm. between rows. (e) N.A. (v) N.A. (vi) *Gora.* (vii) Irrigated. (viii) Weeding by hand. (ix) N.A. (x) 11.10.61.

2. TREATMENTS :

Same as Expt. No. 60(19), 61(134) at Hazaribagh on page No. 6.

3. DESIGN :

(i) 3^3 Fact. (ii) (a) 27. (b) N.A. (iii) 2. (iv) (a) N.A. (b) 3·66 m.×3·05 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1960—61. (b) and (c) Nil. (v) Hazaribagh and Kanke. (vi) Nil. (vii) Variety and Design are changed in 1961.

5. RESULTS:

(i) 8864 Kg/ha. (ii) 2572·4 Kg/ha. (iii) None of the effects is signiticant. (iv) Av. yield of grain in Kg/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	6757	9195	8540	7523	7871	9097	8164
N_1	8916	8777	8505	8568	8115	9515	8733
N_2	9508	9125	10449	9787	9195	10100	9694
Mean	8394	9032	9165	8626	8394	9571	8864
K_0	8394	9264	8220				
K_1	8324	8568	8289				
K_2	8463	9264	10985				

Crop :- Paddy (*Kharif*). **Ref :- Bh. 60(271).**

Site :- Dist. Agri. Farm, Putida. **Type :- 'M'.**

Object :—To find out the influence of different trace elements as soil application with and without lime on Paddy crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) 8.7.60/13.7.60. (iv) (a) 3 ploughings. (b) Transplanting. (c) 16 Kg/ha. (d) 30 cm.×30 cm. (e) —. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) BK—88. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 10.1.61.

2. TREATMENTS :

Same as Expt. No. 60(268) at Baliapur on page No 1.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replications ; 13 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 4·27 m. ×3·05 m. (b) 3·66 m.×2·44 m. (v) 30 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1960. (b) Yes. (c) Nil. (v) Kanke, Chianki, Hazaribagh, Baliapur. (vi) and (vii) Nil.

5. RESULTS :

(i) 1952 Kg/ha. (ii) (a) 255 3 Kg/ha. (b) 651'5 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9	T_{10}	T_{11}	T_{12}	Mean
L_0	1418	1580	2661	1632	2366	2006	1875	2087	1841	2040	2575	1779	1666	1964
L_1	1254	1810	1664	2236	2173	2267	1875	2024	1826	1941	2055	2055	2037	1940
Msan	1336	1695	2163	1934	2270	2136	1875	2055	1833	1990	2315	1917	1852	1952

Crop :- Paddy (*Kharif*). **Ref :- Bh. 61(132).**

Site :- Dist. Agri. Farm, Putida. **Type :- 'M'.**

Object :—To find out the best manurial dose for Paddy.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) N.A. (iii) 30.6.61. (iv) (a) 4 *Deshi* ploughings. (b) Behind the plough. (c) 69 Kg/ha. (d) 30 cm. between rows. (e) N.A. (v) N.A. (vi) Black *Gora* (49—19). (vii) Irrigated. (viii) Weeding by hand. (ix) N.A. (x) 14.10.61.

2. TREATMENTS :

Same as Expt. No. 61(119) at Kanke on page No, 19.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) and (b) 10·06 m.×3·66 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) No. (b) and (c) Nil. (v) Latehar and Kanke. (vi) and (vi) Nil.

5. RESULTS :

(i) 1108 Kg/ha. (ii) 39·7 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. yield	67	138	107	111	119	121

Crop :- Paddy (*Kharif*). **Ref :- Bh. 60(287).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'M'.**

Object :—To test the effect of green manuring on Paddy crop.

1. BASAL CONDITIONS :

(i) (a) Fallow—Paddy. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) 10.6.60/28, 31.7.60. (iv) (a) 3-ploughings. (b) Sowing in line. (c) 40 Kg/ha. (d) 23 cm.×23 cm. (e) —. (v) 22·5 Kg/ha. of N as A/S and 45 Kg/ha of P_2O_5 as Super. (vi) BK—36. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 12 and 15.12.60.

2. TREATMENTS :

7 green manuring treatments : T_0=No manure, T_1=92·2 Kg/ha. of C. *Occidentals*, T_2=23·1 Kg/ha. of S. *Speciosa*, T_3=46·1 Kg/ha. of S. *acgyphia*, T_4=23·1 Kg/ha. of Saharsa *Dhaincha*, T_5=92·2 Kg/ha. of *Sunnhemp Dhaincha* and T_6=23·1 Kg/ha. of local *Dhaincha*.

3. DESIGN :

(i) R,B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 4·88 m.×9·14 m. (b) 4·42 m.×8·68 m. (v) 46 cm.× 46 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of grain. (iv) (a) 1960—61 (Expt. for 61—N.A.). (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1663 Kg/ha. (ii) 545·0 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	1516	1563	1831	1361	1698	2082	1592

Crop :- Paddy (*Kharif*). **Ref :- Bh. (0(282).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'M'.**

Object :—To test the effect of different green manures on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) N.A. (c) Nil. (ii) Sandy loam. (iii) 25.7.60. (iv) (a) 3 ploughings. (b) Japanese method. (c) 17 Kg/ha. (d) 23 cm.×23 cm. (e) N.A. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) BK—36. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 12 12.60.

2. TREATMENTS:

8 green manuring treatments : T_0=No manure, T_1=*S. Punctata*, T_2=*I. Tinetoria*,, T_3=*S. Aculeta*, T_4=*C. Procera*, T_5=*G. Maculata*, T_6=B. *B Frondosa* and T_7=*Ipomea Cornea*.

3. DESIGN :

(i) R.B D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 5 59 m.×4·05 m. (b) 5·03 m. × 3·50 m. (v) 25 cm.×25 cm. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1960-61 (Expt. for 1961—N.A.). (b) No. (c) Nil. (v) Kishanganj, Hazaribagh and Chainbasa. (vi) and (vii) Nil.

5. RESULTS :

(i) 2542 Kg/ha. (ii) 314·9 Kg/ha. (iii) Treatment differences are highly significant. (vi) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Av. yield	1549	3025	2915	2345	2526	2783	2394	2798

C.D.=462 9 Kg/ha.

Crop :- Paddy (*Kharif*). **Ref :: Bh, 61(293)**

Site :- Agri. Res. Instt., Sabour. **Type :- 'M'.**

Object :—To test the possibility of growing green manure crops after Paddy harvest in the next Kharif.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Paddy. (c) Nil (ii) Sandy loam. (iii) 4 and 6.8.61. (iv) (a) 3 ploughings. (b) Japanese method. (c) 17 Kg/ha. (d) 23 cm.×23 cm. (e) 1—2. (v) 11·2 Kg/ha. of N+22·5 Kg/ha. of P_2O_5 as Super. (vi) Bk—115. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N A. (x) 6.12.61.

2. TREATMENTS :

6 manurial treatments : T_0=Control, T_1=*Tephrosia candida*, T_2=*Cassia Occidentates*, T_3=*Aschynomene americana* T_4=*Sesbania aculeate var. Tylricume* (Morangia *Dhaincha*) and T_5=*Sesbania awleata* (Local *Dhaincha*).

3. DESIGN:

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) 3·66 m.×5·49 m. (b) 3·20 m.×5·03 m. (v) 23 cm.×23 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1961 – only. (b) and (c)—. (v) to (vii) Nil.

5. RESULTS :

(i) 709 Kg/ha. (ii) 285·2 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. yield	519	638	712	788	708	889

———

Crop :- Paddy (*Kharif*). **Ref :- Bh. 62(277), 63(293), 64(319).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'M'.**

Object :—To estimate the most effective and economic dose of green matter applied to Paddy crop.

1. BASAL CONDITIONS :

(i) (a) Nil ; Nil ; Fallow—Paddy. (b) Paddy . (c) Nil. (ii) Sandy loam. (iii) 18.6.62/30.7.62 ; 18 and 20.7.63 ; 23.8.64. (iv) (a) 3—4 ploughings. (b) Sowing in line for 62 & 63 and Japanese method for 64. (c) 40 Kg/ha. ; 40 Kg/ha. ; 17 Kg/ha. (d) 25 cm.×25 cm. (e) —. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super for 62 & 63 and Nil for 64. (vi) BK—36. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 12.12.62 ; 2 and 4.12.63 ; 10.12.64.

2. TREATMENTS :

7 doses of green matter : T_0=Control, T_1=46·1, T_2=92·2, T_3=138·3, T_4=184·5, T_5=230·6 and T_6=276·7 Q/ha. of *Spectata*.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 5·50 m.×3·70 m. (b) 5·00 m.×3·20 m. (v) 25 cm.×25 cm. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1961—64 (Expt. for 1961 – N.A.). (b) Yes. (c) Results of combined analysis is presented under 5. Results. (v) and (vi) Nil. (vii) Error variances are homogeneous and Treatments × Years interaction is absent.

5. RESULTS:

Pooled results

(i) 2017 Kg/ha. (ii) 741·6 Kg/ha. (based on 66 d.f. made up of pooled error and Treatments × Years interaction). (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	1518	1734	2077	2219	2126	2204	2242

Individual results

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	Sig.	G.M.	S.E./plot
Year										
1962	2148	2609	2735	3162	2131	2917	2718	N.S.	2632	944·8
1963	1476	1274	1616	1274	2035	1460	1413	N.S.	1506	647·6
1964	932	1320	1879	2221	2213	2237	2594	**	1914	548·3
Pooled	1518	1734	2077	2219	2126	2204	2242	N.S.	2017	741·6

Crop :- Paddy (*Kharif*). **Ref :- Bh. 62(34), 65(71).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'M'.**

Object :—To study the correlation between the crop response and the Potash status of the soil on Paddy crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy ; Fallow. (c) As per treatments ; Nil. (ii) Sandy loam. (iii) 8 to 10.8.62 ; 21.8.65. (iv) (a) 2 Punjab ploughings and 2 *Deshi* ploughings. (b) Transplanting. (c) 14 Kg/ha. (d) 30 cm. × 30 cm. (e) 2—3. (v) Nil. (vi) 498—2A. (vii) Irrigated. (viii) Weeding by Rotary hoe. (ix) 53·0 cm. ; N.A. (x) 18 to 19.12.62 ; 15.11.65.

2. TREATMENTS :

Same as Expt. No. 64(66), 65(7) at Arrah on page No. 1.

3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 3. (iv) (a) 16·20 m. × 7·20 m. ; 101·2 sq. m. (b) 15·50 m. × 6·60 m. ; 101·2 sq. m. (v) 30 cm. × 30 cm. ; Nil. (vi) Yes.

4. GENERAL:

(i) Satisfactory. (ii) Attack of Stem borer, spraying of Folidol was done ; Bulby fly (leaf insects), spraying of Endrine 0·02 % with steaker was done. (iii) Weight of straw and grain. (iv) (a) 1962—65 (63 and 64—N.A.) (b) No. (c) Results of combined analysis are presented under 5. Results. (v) Arrah and Putida. (vi) Nil. (vii) Error variances are homogeneous and Treatments × Years interaction is absent.

5. RESULTS :

Pooled results

(i) 2668 Kg/ha. (ii) 218·5 Kg/ha. (based on 40 d.f. made up of pooled error and Treatments × Years interaction). (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Av. yield	1867	2392	2613	2927	2774	2706	2588	3122	2920

C.D.=255 0 Kg/ha.

Individual results

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	Sig.	G.M.	S.E./plot
Year												
1962	2215	2657	2706	3017	2994	2883	2896	3315	3324	**	2890	187 5
1965	1519	2128	2520	2837	2553	2530	2481	2929	2517	**	2446	226 1
Pooled	1867	2392	26.3	2927	2774	2706	2688	3122	2920	**	2668	218 5

Crop :- Paddy (*Kharif*). **Ref :- Bh. 60(6), 62(127), 63(33).**

Site :- Dist. Agri. Farm, Sepaya. **Type :- 'M'.**

Object :—To reclaim usar land by using *Agrimona* and *Mexicona* for Paddy cultivation.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. ; Maize ; Fallow. (c) N.A. ; 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super ; Nil. (ii) Usar land ; Clay loam ; Alkaline. (iii) 26.6.60, 2 and 3.8.60 ; 4.8.62 ; 30.7.63. (iv) (a) 3 ploughings by Bihar plough and country plough ; 3—4 ploughings ; ploughings by Bihar plough and country plough (b) Japanese method ; Line sowing ; Line sowing. (c) 18 Kg/ha. ; 23 Kg/ha. ; N.A. (d) 25 cm.×25 cm. ; 23 cm. between rows ; 25 cm.×25 cm. (e) 3 to 4 for 63 and N.A. for others. (v) Nil ; 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super ; Nil. (vi) 498—2A. (vii) Un-irrigated. (viii) N.A. ; Weeding ; Hoeing and weeding by Japanese weeder and *khurpi*. (ix) 124 cm. ; N.A. ; N.A. (x) 22 to 24.12.60 ; 20.12.62 ; 21.12.63.

2. TREATMENTS :

4 manurial treatments : M_0=Control, M_1=184·5 Q/ha. of *Agrimona* and *Mexicona*, M_2=184·5 Q/ha. of *Dhaincha* and M_3=92·2 Q/ha. of *Agrimona* and *Mexicona*+92·2 Q/ha. of *Dhaincha*.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 11·70 m.×5·20 m. (b) 11·10 m.×4·60 m. (v) 30 cm.×30 cm. ; (vi) Yes.

4. GENERAL:

(i) N.A. ; Good ; Lodging on 4.11.63. (ii) Nil.(iii) Height of plant, No. of tillers, length of earhead, No. of grains/earhead, yield of grain and straw. (iv) (a) 1960–63 (Expt. for 1961—N.A.). (b) Yes. (c) Results of combined analysis are presented under 5. Results. (v) and (vi) Nil. (vii) Error variances are homogeneous and Treatments×Years interaction is present.

5. RESULTS :

Pooled results

(i) 2074 Kg/ha. (ii) 721·9 Kg/ha. (based on 6 d.f. made up of Treatments×Years interaction). (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	M_0	M_1	M_2	M_3
Av. yield	1606	2157	2223	2311

Individual results

Treatment	M_0	M_1	M_2	M_3	Sig.	G.M.	S.E./plot
Year							
1960	1577	1923	2173	2216	*	1972	226·0
1962	1774	2259	2636	2995	**	2416	249·1
1963	1468	2289	1860	1722	**	1835	172·5
Pooled	1606	2157	2223	2311	N.S.	2074	721·9

Crop :- Paddy (*Kharif*). **Ref :- Bh. 64(28).**

Site :- Govt. Agri. Farm, Sepaya. **Type :- 'M'.**

Object :—To reclaim 'Usar' lands by G.M. for Paddy.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Clay loam. (iii) N.A. (iv) (a) Ploughings by *Deshi* plough. (b) Line sowing. (c) to (e) N.A. (v) N.A. (vi) 498—2 A. (vii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS :

5 green manures : T_0=Control, T_1=*Dhaincha*, T_2=*Agrimona* and *Mexicona*, T_3=Dry leaves and T_4=*Gypsum*.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) N.A.. (b) 3·96 m.×2·74 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Nil. (iii) Yield of grain. (iv) (a) 1964 only. (b) to (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1331 Kg/ha. (ii) 91·9 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	
Av. yield	1019	1234	1449	1717	1234	C.D.=141·6 Kg/ha.

Crop :- Paddy (*Kharif*). **Ref :- Bh. 60(109), 61(136).**

Site :- District Agri. Farm, Saharsa. **Type :- 'M'.**

Object : —To find out the relative value of different kinds of nitrogeneous fertilizers on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) 25.6.60/2.8.60 ; 30·6·61/10·8.61. (iv) (a) 5—6· ploughings by *Deshi* and Mould Board plough. (b) Line sowing. (c) 19 to 23 Kg/ha. (d) 25 cm.×25 cm· (e) 2—3. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) 498—2A. (vii) Irrigated (viii) Weeding by Japanese method. (ix) N.A. (x) 17.12.60 ; 19.12,61.

2. TREATMENTS :

All combinations of (1) and (2) in the presence of E_1+2 extra treatments :

(1) 2 levels of N : N_1=28·1 and N_2=56·2 Kg/ha.

(2) 6 sources and methods of N application : S_1=A/S, S_2=Urea, S_3=A/S/N, S_4=C/A/N, S_5=A/C (S_1, S_2, S_3 S_4 and S_5 were given in split doses) and S_6=Urea (in single dose).

Extra treatments : E_0=Control and E_1=33·3 Kg/ha. of P_2O_5 as Super+33·3 Kg/ha. of K_2O as Mur. Pot.

3. DESIGN :

(i) R.B.D. (ii) (a) 14. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 10·06 m.×6·71 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination, flowering, tiller count, height of plants, No. of earhead, No. of grains per earhead, yield of grain. (iv) (a) 1959—61. (modified in 1960). (b) Yes. (c) Nil. (v) and (vi) Nil. (vii) Error variances are heterogeneous and Treatments×Years interaction is present.

5. RESULTS :

Pooled results

(i) 2283 Kg/ha. (ii) 417·7 Kg/ha. (based on 13 d.f. made up of Treatments×Years interaction). (iii) 'E_1 *vs.* others' is highly significant and 'E_0 *vs.* others' is significant. (iv) Av. yield of grains in Kg/ha,

E_0=1890, E_1=1739

	S_1	S_2	S_3	S_4	S_5	S_6	Mean
N_1	2490	2528	2130	2015	2173	2328	2277
N_2	2428	2519	2496	2215	2332	2669	2443
Mean	2459	2523	2313	2115	2252	2498	2360

C.D. for E_0 *vs.* any other treatment mean=382·2 Kg/ha.

C.D. for E_1 *vs.* any other treatment mean=383·4 Kg/ha.

Individual results

Treatment	S_1	S_2	S_3	S_4	S_5	S_6	Sig.	N_1	N_2	Sig.
Year										
1960	2059	2164	1905	1878	2084	2183	N.S.	1956	2135	N.S.
1961	2859	2882	2722	2352	2421	2813	**	2598	2752	**
Pooled	2459	2523	2313	2115	2252	2498	N.S.	2277	2443	N.S.

E_0	Sig.	E_1	Sig.	G.M.	S.E./plot
1821	N.S.	1127	**	1964	395·7
1960	**	2352	**	2601	49·6
1890	*	1739	**	2283	417·7

Crop :- Paddy.

Ref :- Bh. 60, 61 (SFT) for Champaran, Muzaffarpur, Purnea, Bhagalpur, Gaya, Monghyr, Patna, Shahabad, Ranchi, Santhal Pargana and Hazaribagh.

Site :- (District) Champaran, Muzaffarpur, Purnea, Bhagalpur, Gaya, Monghyr, Patna, Shahabad, Ranchi, Santhal Pargana and Hazaribagh.

Type :- 'M'.

Object :—Type A—To study the response of Paddy to different levels of N, P and K applied individually and in combination.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) As per results. (iii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments :

Control=No manure,
N=22·4 Kg/ha. of N,
P=22·4 Kg/ha. of P_2O_5,
K=22·4 Kg/ha. of K_2O,
NP=22·4 Kg/ha. of N+22·4 Kg/ha. of P_2O_5,
NK=22·4 Kg/ha. of N+22·4 Kg/ha. of K_2O,
PK=22 4 Kg/ha. of P_2O_5+22·4 Kg/ha. of K_2O and
NPK=22·4 Kg/ha. of N+22·4 Kg/ha. of P_2O_5+22·4 Kg/ha. of K_2O

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 a rabi cereal, 8 on a cash crop, 4 on an oilseed crop and 3 on a legumenous 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) 198·8 ha. (b) 1/197·7 ha. (iv) Yes.

4. GENERAL :

(i) to (vii) N.A.

5. RESULTS :

District	Year	Soil class	No. of trials	Control mean Kg/ha.	Av. response of grain in Kg/ha.								
					N	P	K	S.E.	NP	NK	PK	NPK	S.E.
Champaran	1960	Alluvial	12	1340	340	230	90	45·0	60	—70	30	110	43·0
	1961	,,	16	940	420	210	140	32·0	10	20	20	40	24·0
Muzaffarpur	1960	Alluvial	14	1140	350	270	120	28·0	—20	20	80	50	19·0
	1961	,,	20	1470	380	200	170	28·0	—	90	30	90	25·0
Purnea	1960	Alluvial	17	990	340	300	100	35·0	40	40	30	—	21·0
	1961	,,	12	700	420	320	210	31·0	140	20	—	60	24·0
Bhagalpur	1960	Alluvial	15	1700	400	290	30	41·0	70	—	20	30	24 0
	1961	,,	7	1420	430	240	70	39·0	—	—	30	—20	41·0
Gaya	1960	Alluvial	11	1540	480	280	90	43·0	60	10	—10	—	30·0
	1961	,,	12	1570	600	370	140	34·0	80	—20	10	30	24·0
Monghyr	1960	Alluvial	8	1780	320	380	50	28·0	180	—50	70	—10	37·0
	1961	,,	13	1370	340	200	60	25·0	20	—	—	30	18·0
Patna	1960	Alluvial	20	1630	430	290	150	23·0	—20	—	30	20	16·0
	1961	,,	19	1350	690	410	250	38·0	110	40	10	10	20·0
Shahabad	1960	Alluvial	11	1770	440	410	250	41·0	40	—20	60	20	24·0
	1961	,,	16	1770	570	410	290	30·0	—50	10	40	40	39·0
Ranchi	1960	Red	8	960	530	400	270	11·0	180	100	60	60	10·0
	1961	,,	8	1870	430	300	160	20·0	90	40	—	50	21·0
S-Parganas	1960	Red	14	1610	260	190	60	31·0	10	—50	—60	80	21·0
	1961	,,	16	1380	290	220	120	23·0	20	—	—20	50	13·0
Hazaribagh	1960	Red	20	900	520	560	370	39·0	170	120	110	—40	33·0
	1961	,,	15	1360	730	530	390	53·0	160	110	150	—60	35·0

Crop :- Paddy.

Ref :- Bh. 60, 61(SFT) for Muzaffarpur, Purnea ; Bhagalpur, Gaya, Monghyr, Patna, Shahabad, S-Parganas and Hazaribagh and 60(S.F.T.) for Champaran and Ranchi.

Site :- (District) Muzaffarpur, Purnea, Ranchi, Bhagalpur, Gaya, Champaran, Monghyr, Patna, Shahabad, S. Parganas and Hazaribagh.

Type :- 'M'.

Object :—Type B— To investigate the relative efficiency of different nitrogeneous fertilizers at different doses.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) As per results. (iii) to (x) N.A.

2. TREATMENTS :

9 manurial treatments :

Control = No manure,
n_1 = 22·4 Kg/ha. of N as A/S,
n_2 = 44·8 Kg/ha. of N as A/S,
n_1' = 22·4 Kg/ha. of N as Urea,
n_2' = 44·8 Kg/ha. of N as Urea,
n_1'' = 22·4 Kg/ha. of N as A/S/N,
n_2'' = 44·8 Kg/ha. of N as A/S/N,
N_1''' = 22·4 Kg/ha. of N as C/A/N and
N_2''' = 44·8 Kg/ha. of N as C/A/N

3. DESIGN :

Same as in type A on page 35.

4. GENERAL :

(i) to (vii) N.A.

5. RESULTS :

District	Year	Soil Class	No. of trials	Control mean in Kg/ha.	Av. response of grain in Kg/ha. n_1	n_1'	n_1''	n_1'''	n_2	n_2'	n_2''	n_2'''	S.E. of response
Champaran	1960	Alluvial	11	1340	410	460	300	370	520	570	640	490	95·0
Muzaffarpur	1960	Alluvial	10	1410	300	320	260	140	120	570	450	360	74·0
	1961	,,	18	1560	270	320	240	460	550	500	560	710	79·0
Purnea	1660	Alluvial	13	1120	460	350	290	280	690	660	490	500	52·0
	1960	,,	3	1220	—	390	450	350	—	560	610	690	173·0
	1961	,,	12	650	190	280	290	280	380	490	500	430	54·0
Bhagalpur	1960	Alluvial	12	1760	280	500	190	240	570	710	490	380	71·0
	1961	,,	4	1420	340	570	320	—	830	930	510	—	80·0
	1961	,,	2	1770	280	240	260	240	550	610	350	540	132·0
Gaya	1960	Alluvial	7	1420	330	440	420	340	680	830	800	630	132·0
	1960	,,	4	2450	—	10	200	270	—	180	640	110	136·0
	1961	,,	12	1720	580	500	430	520	930	930	810	900	64·0
Monghyr	1960	Alluvial	4	2030	270	370	270	—	520	620	560	—	58·0
	1960	,,	4	1780	220	450	—	480	830	660	—	740	218·0
	1961	,,	12	1320	380	410	340	210	620	640	520	470	40·0
Patna	1960	Alluvial	4	1720	—	590	650	530	—	660	850	460	135·0
	1960	,,	12	1660	420	420	470	470	690	780	870	610	68·0
	1961	,,	17	1420	450	370	320	450	1240	1040	970	1150	51·0
Shahabad	1960	Alluvial	11	1620	430	400	460	320	820	810	830	830	65·0
	1960	,,	4	2230	—	530	680	690	—	900	800	820	96·0
	1961	,,	4	2020	510	410	350	250	920	650	490	400	109·0
Ranchi	1960	Red	8	1040	310	230	240	290	480	530	580	100	73·0
S. Parganas	1960	Red	4	2080	490	810	300	—	880	1080	620	—	47·0
	1960	,,	10	1600	320	350	300	330	720	620	560	190	52·0
	1961	,,	6	420	90	90	70	170	150	100	80	160	28·0
Hazaribagh	1960	Red	19	980	390	300	260	240	970	900	820	450	59·0
	1961	,,	13	990	420	460	430	580	980	950	660	1090	81·0
	1961	,,	4	2130	440	610	920	—	1020	1300	1480	—	165·0

Crop :- Paddy (*Rabi*) **Ref :- Bh. 62(SFT) Champaran.**

Site :- (District) Champaran. **TyPe :- 'M'.**

Object :—Type A_1 : To study the response curves of important cereal, cash and oil seed crops to Nitrogen applied singly and in combination with other nutrients.

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 :

8 manurial treatments :

O=Control (no manure),
N_1=35 Kg/ha. of N,
N_2=70 Kg/ha. of N,
P_1=35 Kg/ha. of P_2O_5,
N_1P_1=35 Kg/ha. of N+35 Kg/ha. of P_2O_5,
N_2P_1=70 Kg/ha. of N+35 Kg/ha. of P_2O_5,
N_2P_2=70 Kg/ha. of N+70 Kg/ha. of P_2O_5 and
$N_2P_2K_1$=70 Kg/ha. of N+70 Kg/ha. of P_2O_5+35 Kg/ha. of K_2O

3. DESIGN :

A selected district is divided into four agriculturally homogeneous zones based on climate, soil, cropping pattern etc. In each zone one block is selected at random. A block normally consists of a group of 50—100 villages. In each block 36 experiments are conducted in a year of which 11 are of type A_1, 11 of type A_2, 11 of type A_3 and 3 are of type C. The eleven experiments under type A_1, A_2 and A_3 are distributed as 3 on a kharif cereal, 3 on a rabi cereal, 3 on a cash crop and 2 on oil seed. All the three type—C experiments are conducted on a legume crop. For the purpose of conducting the A_1, A_2 and A_3 experiments 11 villages are randomly selected in each block and in each village 3 experiments on each of type A_1, A_2 and A_3 are laid out. For conducting the three type—C trials three villages are randomly selected in each block.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1962 only. (b) and (c) Nil. (v) to (vii) Nil,

5. RESULTS :

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	542	1328	335	640	727	930	949	281·2

Control mean=1613 Kg/ha. ; No. of trials=2.

Crop :- Paddy (*Kharif*). **Ref :- Bh. 63, 64, 65(SFT) for Champaran, Gaya and Ranchi ; 62 63, 64 (SFT) for Monghyr and S. Pargans ; 62, 63, 64, 65(SFT) for Muzaffarpur, Purnea and Hazaribagh and 62, 63 (SFT) for Bhagalpur and Shahabad.**

Site :- (District) Champaran, Monghyr, Muzaffarpur, Purnea, Bhagalpur, Gaya, Shahabad, Hazaribagh, S. Parganas and Ranchi. **Type:- 'M'.**

Object :—Type A_1 : To study the response curves of important cereal, cash and oilseed crops to Nitrogen applied singly and in combination with other nutrients.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Red for Hazaribagh, S—Parganas and Ranchi and Alluvial for others. (iii) to (vi) N.A. (vii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS and 3. DESIGN :

Same as in type A_1—Unirrigated on page 38.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 63 – 66 for Champaran, 62—64 for Monghyr, 62 – 66 for Muzaffarpur, Purnea and Hazaribagh, 62—63 for Bhagalpur and Shahabad, 63—65 for Gaya and Ranchi and 62—66(65 N.A.) for S. Parganas. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS:

Champaran

63(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	225	387	137	497	422	622	837	50·8

Control mean=1404 Kg/ha. ; No. of trials=12.

64(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E
Av. response of grain in Kg/ha.	519	757	289	645	765	1148	1333	74·0

Control mean=1592 Kg/ha. ; No. of trials=11

65(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	319	633	218	519	723	921	1157	120·9

Control mean=1722 Kg/ha. ; No. of trials=10.

Monghyr

62(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	315	597	444	659	824	1063	1274	99·8

Control mean=1620 Kg/ha. ; No. of trials=8.

63(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	622	1059	406	890	1561	1895	2226	66·1

Control mean=1325 Kg/ha. ; No. of trials=5.

64(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	604	775	127	705	813	989	1043	38·0

Control mean=1519 Kg/ha. ; No. of trials=7.

Muzaffarpur

62(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	585	555	134	617	647	738	937	76·8

Control mean=1370 Kg/ha. ; No. of trials=8.

63(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	426	595	168	460	664	788	940	61·5

Control mean=1348 Kg/ha. ; No. of trials=15.

64(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	733	1209	436	870	1501	1834	2110	67·0

Control mean=1423 Kg/ha. ; No. of trials=10.

65(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	637	976	169	963	1365	1645	1940	92·7

Control mean=1586 Kg/ha. ; No. of trials=9.

Purnea

62(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	254	399	100	382	483	623	675	50·6

Control mean=1161 Kg/ha. ; No. of trials=12.

63(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	116	163	61	226	385	482	606	41·2

Control mean=1480 Kg/ha. ; No. of trials=6.

64(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	241	379	101	377	535	676	906	28·0

Control mean=1080 Kg/ha. ; No. of trials=10.

65(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	206	281	13	253	398	534	709	53·2

Control mean=1307 Kg/ha. ; No. of trials=12.

Bhagalpur

62(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	380	286	285	606	741	963	1168	323·6

Control mean=1550 Kg/ha. ; No. of trials=4.

63(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grair in Kg/ha.	274	492	339	523	695	989	1083	91·6

Control mean=1343 Kg/ha. ; No. of trials=3.

Gaya

63(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	537	910	222	665	1091	1284	1503	99·5

Control mean=1636 Kg/ha. ; No. of trials=3.

64(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	546	956	228	721	911	1275	1595	122·0

Control mean=1876 Kg/ha. ; No. of trials=9.

65(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	470	897	218	668	981	1128	1379	60·0

Control mean=1615 Kg/ha. ; No. of trials=8.

Shahabad

62(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	708	967	264	655	1233	1303	1221	224·5

Control mean=934 Kg/ha. ; No. of trials=2.

63(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	621	777	86	645	1187	1229	1337	113·1

Control mean=1279 Kg/ha. ; No. of trials=2.

Hazaribagh

62(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	269	463	172	380	573	577	696	65·6

Control mean=1128 Kg/ha. ; No. of trials=8.

63(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_1P_2K_1$	S.E.
Av. response of grain in Kg/ha.	373	506	280	534	725	855	910	74·1

Control mean=1104 Kg/ha. ; No. of trials=15

64(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	492	606	182	868	992	1099	1241	102 0

Control mean=1579 Kg/ha. ; No. of trials=12.

65(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	361	612	59	685	915	1056	1113	50·3

Control mean=1331 Kg/ha. ; No. of trials=14.

S—Parganas

62(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	326	395	300	349	493	443	866	132·4

Control mean=776 Kg/ha ; No. of trials=5.

63(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	285	469	207	516	561	548	792	66·2

Control mean=1467 Kg/ha. ; No. of trials=3.

64(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	225	375	127	300	479	685	841	43·0

Control mean=1619 Kg/ha. ; No. of trials=16.

Ranchi

63(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	50	—42	—84	60	38	104	318	31·5

Control mean=1134 Kg/ha. ; No. of trials=3.

64(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S·E.
Av. response of grain in Kg/ha.	428	542	438	689	818	957	1046	72·0

Control mean=2353 Kg/ha.; No. of trials=6.

65(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	168	311	194	508	714	763	957	53·9

Control mean=2582 Kg/ha. ; No. of trials=5.

Crop. :- Paddy (*Kharif*). **Ref. :- Bh. 62, 63, 65 (SFT) for Monghyr, Gaya and S-Parganas ; 62 (SFT) for Muzaffarpur ; 62, 63, 64, 65 (SFT) for Bhagalpur and Shahabad and 62, 63, 64 (SFT) for Patna.**

Site :- (District) : Monghyr, Muzaffarpur, Bhagalpur, Shahabad, Gaya, Patna and S-Parganas. **Type :- 'M'**

Object :—Type A_1 :—To study the response curves of important cereal, cash and oilseed crops to Nitrogen applied singly and in combination with other nutrients.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Red for S-Parganas and Alluvial for all others. (iii) to (vi) N.A. (vii) Irrigated. (viii) to. (x) NA.

2. TREATMENTS : and 3. DESIGN :

Same as in type A_1 Unirrigated on page 38.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) to (c) 62—66 (64 N.A.) for Monghyr, Gaya and S-Parganas ; 62 and 66 for Muzaffarpur ; 62-66 for Bhagalpur and Shahabad and 62—65 (65 N.A) for Patna. (v) to (vii) Nil.

5. RESULTS :

Monghyr

62(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	988	1872	610	1325	2194	3131	3696	63·8

Control mean=1483 Kg/ha. ; No. of trials=3

63(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	474	874	272	712	1372	1710	2128	268·2

Control mean=1831 Kg/ha, ; No. of trials=4

65(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	739	1021	308	840	851	1111	1163	177·8

Control mean=1772 Kg/ha. ; No. of trials=5

Muzaffarpur

62(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	548	440	241	409	409	455	763	140·3

Control mean=1588 Kg/ha. ; No. of trials=3

Bhagalpur

62(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. reeponse of grain in Kg/ha.	325	698	152	496	867	976	1121	325·3

Control mean=1438 Kg/ha. ; No. of trials=3.

63(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	438	606	107	554	728	909	1024	127·2

Control mean=1868 Kg/ha. ; No. of trials=9.

64(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	507	798	471	759	903	1027	1110	57·0

Control mean=1805 Kg/ha. ; No. of trials=5.

65(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	520	767	452	758	974	1267	1233	88·4

Control mean=1557 Kg/ha. ; No. of trials=7.

Shahabad

62(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	583	958	500	690	1132	1536	1389	281·9

Control mean=1322 Kg/ha. ; No. of trials=5.

63(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	567	941	335	724	987	1232	1388	173·3

Control mean=1654 Kg/ha. ; No. of trials=4.

64(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	579	748	294	923	974	941	1366	154·0

Control mean=1831 Kg/ha. ; No. of trials=11.

65(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	640	857	194	727	885	983	1291	101·7

Control mean=1935 Kg/ha. ; No. of trials=5.

Gaya

62(STF)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	679	1226	407	720	1259	1532	1769	59·7

Control mean=1411 Kg/ha. : No. of trials=11

63(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	311	649	119	503	779	1107	1137	48·3

Control mean=1694 Kg/ha. ; No. of trials=3

65(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	470	700	207	578	794	962	1028	51·8

Control mean=1736 Kg/ha. ; No. of trials=15

Patna

62(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	548	621	338	581	715	779	1101	93·2

Control mean=1943 Kg/ha. ; No. of trials=8

63(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	513	575	431	677	796	847	943	99·5

Control mean=1604 Kg/ha. ; No. of trials=10

64(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	564	532	296	528	637	794	1013	42·0

Control mean=1676 Kg/ha. ; No. of trials=14

S-Parganas

62(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	467	640	213	482	604	745	969	36·1

Control mean=952 Kg/ha. ; No. of trials=6

63(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	412	550	210	402	625	835	903	68·3

Control mean=1106 Kg/ha. ; No. of trials=8

65(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	238	348	130	358	532	809	843	44·5

Control mean=1720 Kg/ha. ; No. of trials=14

Crop :- Paddy (*Kharif*). **Ref :- Bh. 62, 63, 64(SFT) for Monghyr; 62, 64, 65(SFT) for Muzaffarpur ; 62, 63, 64, 65(SFT) for Purnea and Hazaribagh ; 62, 63(SFT) for Bhagalpur ; 64, 65(SFT) for Gaya ; 62(SFT) for Shahabad ; 63, 64, 65(SFT) for Champaran and Ranchi and 62, 63, 64(SFT) for S—Parganas.**

Site :- (District) : Monghyr, Muzaffarpur, Purnea, Bhagalpur, Gaya, Shahabad, Hazaribagh ; Champaran, S-Parganas and Ranchi. **Type :- 'M'.**

Object :—Type A_2 : To study the response curves of important cereal, cash and oilseed crops to phosphorus applied singly and in combination with other nutrients.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Red for Hazaribagh, S—Parganas and Ranchi and Alluvial for all others. (iii) to (vi) N.A. (vii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments :

O=Control (no manure)
N_1=35 Kg/ha. of N
P_1=35 Kg/ha. of P_2O_5
P_2=70 Kg/ha. of P_2O_5
N_1P_1=35 Kg/ha. of N+35 Kg/ha. of P_2O_5
N_1P_2=35 Kg/ha. of N+70 Kg/ha. of P_2O_5
N_2P_2=70 Kg/ha. of N+70 Kg/ha. of P_2O_5

and $N_2P_2K_2$=70 Kg/ha. of N+70 Kg/ha. of P_2O_5+70 Kg/ha. of K_2O

3. DESIGN :

Same as in type A_1 irrigated on page 43.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 62—64 for Monghyr ; 62—66 (63 N.A.) for Muzaffarpur ; 62—66 for Purnea and Hazaribagh, 1962—1963 for Bhagalpur, 1964—1965 for Gaya, 1962 for Shahabad 1963—1966 for Champaran, 62—66 (65 N.A.) for S—Parganas and 63—65 for Ranchi. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

Monghyr

62(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	484	428	524	712	793	962	1148	54·6

Control mean=1394 Kg/ha. ; No. of trials=8

63(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	495	277	574	701	1330	1744	2197	189·0

Control mean=1472 Kg/ha. ; No. of trials=6

64(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	467	71	134	578	641	887	937	35·0

Control mean=1523 Kg/ha. ; No. of trials=9

Muzaffarpur

62(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	464	187	224	450	498	596	721	55·1

Control mean=1101 Kg/ha. ; No. of trials=9

64(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	512	236	480	639	1318	1690	1837	86·0

Control mean=1366 Kg/ha. ; No. of trials=9

65(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	402	123	395	672	954	1399	1838	82·1

Control mean=1615 Kg/ha. ; No. of trials=10

Purnea

62(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	265	133	156	362	379	520	702	62·5

Control mean=1229 Kg/ha. ; No. of trials=10

63(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	144	73	145	346	266	505	692	25·6

Control mean=1491 Kg/ha. ; No. of trials=6

64(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	222	80	145	322	365	529	805	27·0

Control mean=1113 Kg/ha. ; No. of trials=10

65(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	205	87	172	323	379	618	819	36·9

Control mean=1216 Kg/ha. ; No. of trials=12

Bhagalpur

62(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	407	418	370	676	726	857	1010	127·4

Control mean=1402 Kg/ha. ; No. of trials=3

63(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	360	172	351	512	436	729	928	122·8

Control mean=1720 Kg/ha. ; No. of trials=3

Gaya

64(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	617	201	321	722	898	1216	1551	39·0

Control mean=1816 Kg/ha. ; No. of trials=10

65(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	649	181	250	814	982	482	1202	164·7

Control mean=1588 Kg/ha. ; No. of trials=9

Shahabad

62(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	655	102	483	800	933	1330	978	166·2

Control mean=969 Kg/ha. ; No. of trials=2

Hazaribagh

62(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	
Av. response of grain in Kg/ha.	348	74	148	517	573	831	992	68·0

Control mean=1131 Kg/ha. ; No. of trials=10

63(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	348	220	346	527	533	677	838	56·4

Control mean=1099 Kg/ha. ; No. of trials=13

64(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	494	144	194	746	838	1119	1366	59·0

Control mean=1680 Kg/ha. ; No. of trials=12.

65(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	505	112	301	742	876	1136	1336	62·4

Control mean=1369 Kg/ha. ; No. of trials=14

Champaran

63(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response in grain in Kg/ha.	331	182	187	526	490	771	960	78·8

Control mean=1373 Kg/ha. ; No. of trials=12

64(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	475	184	265	601	717	1078	1404	68·0

Control mean=1720 Kg/ha. ; No. of trials=9

65(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	495	212	194	625	806	1079	1211	97·3

Control mean=1662 Kg/ha. ; No. of trials=12

S—Parganas

62(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	333	376	260	343	355	552	855	42·8

Control mean=794 Kg/ha. ; No. of trials=4

63(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	394	477	569	672	542	799	877	89·0

Control mean=1321 Kg/ha. ; No. of trials=3

64(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	279	136	219	422	497	696	916	39·0

Control mean=1603 Kg/ha. ; No. of trials=16

Ranchi

63(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	56	46	42	41	103	157	370	56·5

Control mean=1084 Kg/ha. ; No. of trials=3

64(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E
Av. response of grain in Kg/ha.	511	328	580	800	955	1128	1218	94·0

Control mean=2152 Kg/ha. ; No. of trials=5

65(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	334	320	446	733	852	1018	1099	83·1

Control mean=2221 Kg/ha. ; No. of trials=4

Crop :- Paddy (*Kharif*). **Ref :- Bh. 62, 63, 65(SFT) for Monghyr and S-Parganas; 62, 63(SFT) for Muzaffarpur ; 62(SFT) for Purnea ; 62, 63, 64, 65(SFT) for Bhagalpur and Patna ; 62, 63, 64(SFT) for Shahabad & 62, 63(SFT) for Gaya.**

Site :- District : Monghyr, Muzaffarpur, Purnea, Bhagalpur, Patna, Shahabad, Gaya and S-Parganas. **Type : 'M'.**

Object :—Type A_2—To the study response curves of important cereal, cash and oilseed crops to Phosphorus applied singly and in combination with other nutrients.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Red for S-Parganas and Alluvial for others. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMETS :

Same as in type A_2—Unirrigated on page 46.

3. DESIGN :

Same as in type A_1—Unirrigated on page 38.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1962-66 (64 N.A.) for Monghyr and S-Parganas, 1962-66 (64, 65-N.A.) for Muzaffarpur and Gaya ; 62 and 66 for Purnea, 62-66 for Bhagalpu) and Patna, 62-66 (65-N.A.) for Shahabad. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

Monghyr

62(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	692	362	900	1022	2180	2847	3136	94·4

Control mean=1551 Kg/ha. ; No. of trials=3

63(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	653	237	612	897	1603	2150	2365	157·5

Control mean=1792 Kg/ha. ; No. of trials=3

65(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	630	100	144	732	804	1111	1170	30·0

Control mean=1734 Kg/ha. ; No. of trials=5

Muzaffarpur

62(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	484	162	173	437	344	300	761	137·5

Control mean=2098 Kg/ha. ; No. of trials=2.

63(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	623	107	92	676	630	1076	1260	104·3

Control mean=1321 Kg/ha. ; No. of trials=3.

Purnea

62(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	224	189	253	292	281	367	511	6·5

Control mean=923 Kg/ha. ; No. of trials=2

Bhagalpur

62(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	407	135	238	511	622	480	1193	174·1

Control mean=1365 Kg/ha. ; No. of trials=5

63(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	387	244	214	513	624	791	934	73·0

Control mean=1770 Kg/ha. ; No. of trials=7

64(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	346	309	461	613	807	955	1037	79·0

Control mean=1908 Kg/ha. ; No. of trials=6

65(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	514	249	526	699	887	1128	1243	93·5

Control mean=1563 Kg/ha. ; No. of trials=6

Patna

62(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. responge of grain in Kg/ha.	726	449	515	714	783	1048	1284	78·3

Control mean=1964 Kg/ha. ; No. of trials=8

63(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	483	163	276	539	604	753	931	81·8

Control mean=1502 Kg/ha. ; No. of trials=11

64(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	528	279	307	536	619	850	954	55·0

Control mean=1616 Kg/ha. ; No. of trials=14

65(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	477	110	182	509	552	903	1065	33·4

Control mean=1711 Kg/ha. ; No. of trials=14

Shahabad

62(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	1011	282	722	1230	916	2305	2271	250·1

Control mean=1406 Kg/ha. ; No. of trials=2

63(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	297	288	445	940	744	1263	1426	120·4

Control mean=1565 Kg/ha. ; No. of trials=5

64(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	476	265	454	721	918	1112	1357	74 0

Control mean=1834 Kg/ha. ; No. of triais=7

Gaya

62(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	685	234	311	805	903	1578	2021	29·1

Control mean=1254 Kg/ha. ; No. of trials=6

63(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	402	176	269	523	646	912	1153	42·0

Control mean=1490 Kg/ha. ; No. of trials=6

S-Parganas

62(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	557	145	338	522	643	802	870	72·0

Control mean=1092 Kg/ha. ; No. of trials=6

63(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	236	287	445	464	582	863	950	85·7

Control mean=1075 Kg/ha. ; No. of trials=8

65(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	261	123	189	406	502	703	928	39·5

Control mean=1709 Kg/ha. ; No. of trials=14

Crop :- Faddy (*Kharif*).

Ref :- Bh. 62, 63, 64(SFT) for Monghyr and Purnea ; 62, 63, 64, 65(SFT) for Muzaffarpur, Hazaribagh and S-Parganas ; 63, 65(SFT) for Bhagalpur and 63, 64, 65(SFT) for Gaya, Ranchi and Champaran.

Site :- (District) Monghyr, Muzaffarpur, Purnea, Bhagalpur, Hazaribagh, S-Parganas, Gaya, Ranchi and Champaran.

Type :- 'M'.

Object :—Type A_3 : To study the response curves of important cereal, cash and oilseed crops to Potash applied singly and in combination with other nutrients.

1. BASAL CONDITIONS:

(i) (a) to (c) N.A. (ii) Red for Hazaribagh, S—Parganas and Ranchi and Alluvial for all others. (iii) to (vi) N.A. (vii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments :

O=Control (no manure)
N_1=35 Kg/ha. of N
K_1=35 Kg/ha. of K_2O
K_2=70 Kg/ha. of K_2O
N_1K_1=35 Kg/ha. of N+35 Kg/ha. of K_2O
N_1K_2=35 Kg/ha. of N+70 Kg/ha. of K_2O
N_2K_2=70 Kg/ha. of N+70 Kg/ha. of K_2O
$N_1P_1K_1$=35 Kg/ha. of N+35 Kg/ha. of P_2O_5+35 Kg/ha. of K_2O

3. DESIGN :

Same as in type A_1—Unirrigated on page 38.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 62—64 for Monghyr ; 62—66 for Muzaffarpur, Hazaribagh and S—Parganas, 62-66 (65—N.A.) for Purnea, 63—65 (64—N.A.) for Bhagalpur ; 63—65 for Gaya and Ranchi and 63—66 for Champaran. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

Monghyr

62(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	436	343	369	544	569	802	941	54·6

Control mean=1342 Kg/ha. ; No. of trials=8

63(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	514	219	357	610	918	1573	1617	105·3

Control mean=1448 Kg/ha. ; No. of trials=5

64(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	528	40	84	664	601	848	739	36·0

Control mean=1419 Kg/ha. ; No. of trials=9.

Muzaffarpur

62(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	484	182	325	487	520	785	687	128·6

Control mean=1238 Kg/ha. ; No. of trials=9

63(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	303	109	162	338	388	563	609	42·2

Control mean=1170 Kg/ha. ; No. trials=15

64(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha	724	339	471	675	900	1301	1446	227·0

Control mean=1295 Kg/ha. ; No. of trials=9

65(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	533	67	270	693	855	1048	1080	59·4

Control mean=1443 Kg/ha. ; No. of trials=8

Purnea

62(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	245	119	191	356	397	480	495	52 0

Control mean=1093 K/ha. ; No. of trials=11

63(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	148	69	32	144	179	203	565	15·5

Control mean=1475 Kg/ha. ; No. of trials=6

64(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S E.
Av. response of grain in Kg/ha.	215	40	127	259	347	411	578	26·0

Control mean=1153 Kg/ha. ; No. of trials=10

Bhagalpur

63(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	291	98	229	410	469	641	695	57·0

Control mean=1408 Kg/ha. ; No. of trials=4

65(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	190	170	113	243	331	419	565	33·9

Control mean=1166 Kg/ha. ; No. of trials=12

Hazaribagh

62(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	358	59	14	397	432	681	909	80·3

Control mean=1016 Kg/ha. ; No. of trials=9

63(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	366	76	157	458	569	712	749	78·5

Control mean=1064 Kg/ha. ; No. of trials=14

64(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	518	—6	21	666	745	1035	964	47·0

Control mean=1775 Kg/ha. ; No. of trials=12

65(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	425	22	54	603	702	1020	876	35·0

Control mean=1288 Kg/ha ; No. of trials=13

S-Parganas

62(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	317	239	269	369	395	628	614	90·3

Control mean=819 Kg/ha. ; No. of trials=5

63(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	423	119	237	523	606	649	707	94·5

Control mean=1321 Kg/ha. : No. of trials=3

64(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	270	58	105	349	376	574	682	26·0

Control mean=1555 Kg/ha. ; No. of trials=16

65(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	283	67	116	337	398	563	578	37·1

Control mean=1545 Kg/ha. ; No. of trials=14

Gaya

63(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	361	—18	77	454	535	914	699	45·1

Control mean=1398 Kg/ha. : No. of trials=3

64(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	492	158	306	640	762	1069	994	46·0

Control mean=1760 Kg/ha. ; No. of trials=8

65(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	609	159	275	715	787	1137	1039	48·9

Control mean=1543 Kg/ha. ; No. of trials=9

Ranchi

63(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	30	—3	—77	—16	3	76	183	36·0

Control mean=1111 Kg/ha. ; No. of trials=3

64(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	311	171	235	388	441	596	833	57·0

Control mean=2238 Kg/ha. ; No. of trials=5

65(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	299	122	198	343	391	563	726	65·4

Control mean=2318 Kg/ha. ; No. of trials=4

Champaran

63(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	250	105	16	290	457	464	765	79·8

Control mean=1438 Kg/ha. ; No. of trials=12

64(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	392	66	118	412	511	953	732	73·0

Control mean=1512 Kg/ha. ; No. of trials=11

65(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	432	90	181	447	495	789	743	51·1

Control mean=1599 Kg/ha. ; No. of trials=12

Crop :- Paddy (*Kharif*).

Ref :- Bh. 62, 63, 65(SFT) for Monghyr ; 62(SFT) for Muzaffarpur ; 62,63 64, 65(SFT) for Bhagalpur ; 62, 63(SFT) for Gaya ; 62, 63, 64(SFT) for Patna and Shahabad and 62, 63, 65(SFT) for S-Parganas.

Site :- (District) Monghyr, Muzaffarpur, Bhagalpur, Gaya, Patna, Shahabad and S-Parganas.

Type :- 'M'.

Object :—Type A_2 : To study the response curves of important cereal, cash and oilseed crops to Potash applied singly and in combination with other nutrients

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Red for S—Parganas and Alluvial for all others. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

Same as in type A_2—Unirrigated on page 54.

3. DESIGN :

Same as in type A_1—Unirrigated on page 38.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 62—66(64—N.A.) for Monghyr, 62 and 66 for Muzaffarpur, 62—66 for Bhagalpur, 62, 63 and 66 for Gaya, 62—66 (65—N.A.) for Patna and Shahabad and 62—65 (64—N.A.). for S—Parganas. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

Monghyr

62(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	766	392	630	949	1468	2198	2859	217·9

Control mean=1479 Kg/ha. ; No. of trials=3

63(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	584	240	398	712	1035	1714	1525	58 0

Control mean=1726 Kg/ha. ; No. of trials=3

65(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S E.
Av. response of grain in Kg/ha.	478	108	170	637	669	918	746	77·3

Control mean=1617 Kg/ha. ; No. of trials=3

Muzaffarpur

62(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	275	138	241	460	229	275	782	126·5

Control mean=1706 Kg/ha. ; No. of trials=2

Bhagalpur

62(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	295	99	151	388	525	763	834	90·0

Control mean=1382 Kg/ha. ; No. of trials=8.

63(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	347	152	291	484	443	796	844	58·5

Control means=1432 Kg/ha. ; No. of trials=6.

64(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	337	255	324	502	612	765	927	64·0

Control mean=1979 Kg/ha. ; No. of trials=6

65(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	305	145	274	485	551	672	738	29.7

Control mean=1415 Kg/ha. ; No. of trials=6.

Gaya

62(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	573	178	94	746	861	1478	972	38.0

Control mean=1175 Kg/ha. ; No. of trials=8

63(SFT

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	479	231	426	600	676	1018	899	55·5

Control mean=1563 Kg/ha. ; No. of trials=3

Patna

62.SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	584	344	297	603	730	850	1012	64·4

Control mean=1848 Kg/ha. ; No. of trials=6

63(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	384	132	183	488	495	844	741	55·5

Control mean=1498 Kg/ha. ; No. of trials=12

64(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	414	147	203	439	587	789	675	40 0

Control mean=1624 Kg/ha. ; No. of trials=14

Shahabad

62(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	754	255	399	1027	919	1068	1054	262·2

Control mean=1320 Kg/ha. ; No. of trials=3

63(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	554	345	197	496	639	1106	755	99 6

Control mean=1660 Kg/ha. ; No. of trials=5

64(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	598	157	403	650	794	1018	1335	78 0

Control mean=1743 Kg/ha. ; No of trials=12

S—Parganas

62(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	402	33	79	451	467	667	582	20·3

Control mean=1048 Kg/ha. ; No. of trials=5

63(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1K_1P_1$	S.E.
Av. response of grain in Kg/ha.	405	121	133	467	454	761	702	76·4

Control mean=1007 Kg/ha. ; No. of trials=8.

65(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	680	95	304	741	782	1174	987	185·7

Control mean=1662 Kg/ha. ; No. of trials=5.

Crop :- Paddy (*Kharif*) **Ref. :- Bh. 62(22), 63(39), 64(151)**

Site :- Agri., Res. Instt., Patna. **Type :- 'MV'.**

Object :—To test the yielding capacity of different varieties of Paddy in low plots with different levels of manuring.

1. BASAL CONDITIONS :

(i) (a) Paddy—Paira Gram. (b) Paira Gram. (c) Nil. (ii) Clayee. (iii) 9.7.62 ; 12.7.63 ; 10.7.64. (iv) (a) One ploughing with Bihar Senior plough and one ploughing with Japanese Rotary power tiller. (b) Japanese method. (c) 22Kg/ha. (d) 25 cm.×25 cm. (e) 3—4. (v) 22·4 Kg/ha. of N as A/S for 62(22), 63(39) and 22·4 Kg/ha. of N as A/S+89·7 Kg/ha. of P_2O_5 as Super+44·8 Kg/ha. of K_2O as Mur. Pot. and top dressing with 22·4 Kg/ha. of N for 64(151). (vi) As per treatment. (vii) Unirrigated. (viii) One hand weeding and once Japanese hand weeder. (ix) 105 cm. ; 94 cm. ; 105 cm. (x) 8 and 9.12.62 ; 13.12.63 ; 16.12.64.

2. TREATMENTS :

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

(1) 2 varieties : V_1=BR—34 and V_2=BR—8

(2) 2 levels of P_2O_5 : P_1=44·8 and P_2=89·7 Kg/ha.

(3) 2 levels of K_2O : K_0=0 and K_1=44·8 Kg/ha.

3. DESIGN :

(i) 2^3 Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 6·60 m.×3·50 m. (b) 6·10 m.×3·00 m. (v) 25 cm.×25 cm. (vi) Yes.

4. GENERAL :

(i) Good but the crops lodged at the time of flowering causing much damage to the grain yield for 62(22) and Good for others. (ii) Crops were slightly affected by Paddy leaf drying disease, no control measure taken for 62(22), 64(151) and crops were badly affected by Paddy leaf drying disease dusting with Copper Oxychloride 6% @ 11 Kg/ha. and Dieldrin 50% @ 3·4 Kg/ha. were given but no effect. V_1 was more affected than V_2 for 63(39). (iii) Yield of grain. (iv) (a) 1962-64, (b) Yes. (c) Results of combined analysis are presented under 5. Results. (v) to (vi) Nil. (vii) Error variances are heterogeneous and (VP)×Years and (VK)×Years interactions are present.

5. RESULTS :

Pooled results

(i) 3515 Kg/ha. (ii) 792·5 Kg/ha. (based on 10 d.f. made up of V×Years, P×Years, K×Years, V×P×Years and V×K×Years interactions). (iii) Main effect of V alone is significant. (iv) Av. yield of grain in Kg/ha.

	P_1	P_2	K_0	K_1	Mean
V_1	3103	3124	3068	3159	3114
V_2	3918	3915	3906	3927	3916
Mean	3510	3519	3487	3543	3515
K_0	3500	3473			
K_1	3521	3566			

C.D. for V marginal means=360·4 Kg/ha.

Individual results

Treatment	V_1	V_2	Sig.	P_1	P_2	Sig.	K_0	K_1	Sig.	G.M.	S.E./plot
Year											
1962	4763	4141	**	4504	4400	N.S.	4383	4521	N.S.	4452	387·5
1963	1218	2819	**	2042	1995	**	1995	2042	**	2018	26·9
1964	3360	4790	**	3986	4164	N.S.	4083	4006	N.S.	4075	450·5
Pooled	3114	3916	**	3510	3519	N.S.	3487	3543	N.S.	3515	792·5

Crop :- Paddy (*Rabi*). **Ref. :- Bh. 62(109)**

Site :- Irrigation Res. Sub-Stn., Bikramganj **Type :- 'C'.**

Object :—To find out the economics of intensive cropping in irrigated tracts.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) and (c) N.A. (ii) Clayey. (iii) 6.6.62 to 27.4.63. (iv) (a) 2 to 5 plonghings by *Deshi* plough (b) Broadcasting for Berseem, transplanting for Paddy and Onion, line sowing for others. (c) 24 Kg/ha. for Paddy, 7 Kg/ha for Berseem and *Linseed*, 10 Kg/ha. for Onion, 12 Kg/ha for *Bhindi*, 48 Kg/ha. for Paira Gram, 70 Kg/ha. for *Dhaincha*, 92 Kg/ha. for Wheat, 20 Kg/ha for Maize and *Moong*. (d) 10 cm.×cm for Onion, 60 cm.×30 cm. for Maize, rows 25 cm. apart for Wheat and Paddy, 46 cm. for *Bhindi*, *Dhaincha* and *Moong*. (e) 1 for Onion, 2—3 for Paddy. (v) 45 Kg/ha. of N+45 Kg/ha. of P_2O_5 for Paddy and Wheat, 23 Kg/ha. of P_2O_5 for Berseem, 84 Kg/ha. of N+45 Kg/ha. of P_2O_5 for Onion, 45 Kg/ha of N+34 Kg/ha. of P_2O_5 for *Bhindi*, 112 Kg/ha. of N+90 Kg/ha of P_2O_5 for Maize. (vi) As per treatments. (vii) Irrigated (viii) Weeding and hoeing. (ix) N.A. (x) 24.8.62 to 4.7.63.

2 TREATMENTS:

7 treatments on cropping pattern : T_1=Paddy CH—10 followed by Paddy BR—34 followed by Berseem, T_2=Paddy CH—10 followed by Paddy 498—2A followed by Onion Patna Red, T_3=Paddy CH—10 followed by Paddy 498—2A followed by *Bhindi* Pusa Sawani, T_4=Paddy CH-10 followed by Paddy 498—2A followed by Paira Gram ST—4, T_5=*Dhaincha* (G.M.) followed by Paddy BR—34 followed by Wheat NP—799 followed by *Moong*, T_6=*Dhaincha* (G.M.) followed by Paddy 498-2A followed by Maize Ganga 101 and T_7=*Dhaincha* (G.M.) followed by Paddy 498—2A followed by Paira Gram P-142.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 3. (iv) (a) 11·52 m.×6·40 m. (b) 11·06 m ×6·10 m. (v) 23 cm. and 15 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination %, No. of tillers, height of plant, length of earhead, weight of 1000 grains, yield of grain and straw. (iv) (a) 1962-63 (Trs. modified in 63). (b) Nil. (c) Nil. (v) Sabour and Patna. (vi) Nil. (vii) The monetary return per plot has been analysed.

5. RESULTS :

(i) 1562 Rs/ha. (ii) 197·8 Rs/ha. (iii) Treatment differences are significant. (iv) Av. return in Rs/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7	
Av. return	2440	1308	1182	1208	2005	1985	803	C.D.=351·9 Rs/ha.

Crop :- Paddy (*Rabi*). **Ref :- Bh. 63(143).**

Site :- Irrigation Res. Sub-Stn., Bikramganj. **Type :- 'C'.**

Object :—To find out the economics of intensive cropping in irrigated tracts.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) As per treatments of expt. 62(109) on page 62. (ii) Clayey. (iii) 16.6.63 to 14.4.64. (iv) (a) 2 to 5 ploughings by *Deshi* plough. (b) Broadcasting for Berseem and Paira Gram, Transplanting for Onion and Paddy, line sowing for others. (c) 24 Kg/ha. for Paddy, 7 Kg/ha. for Berseem, 10 Kg/ha. for Onion, 12 Kg/ha. for *Bhindi*, 720 Kg/ha. for Potato, 70 Kg/ha. for *Dhaincha*, 92 Kg/ha. for Wheat, 20 Kg/ha. for Maize and *Moong*, 48 Kg/ha. for Paira Gram. (d) 10 cm. × 10 cm. for Onion, 25 cm. for Paddy, 46 cm. for *Bhindi*, Potato, *Moong* and *Dhaincha*, 30 cm. × 60 cm. for Maize. (e) 1 for Onion, 2—3 for Paddy. (v) 45 Kg/ha. of N+45 Kg/ha. of P_2O_5 for Paddy and Wheat, 23 Kg/ha. of P_2O_5 for Berseem, 84 Kg/ha. of N+45 Kg/ha. of P_2O_5 for Onion, 45 Kg/ha. of N+34 Kg/ha. of P_2O_5 for *Bhindi*, 11 Kg/ha. of N+45 Kg/ha. of P_2O_5 for *Dhaincha*, 34 Kg/ha. of P_2O_5 for *Moong*, 112 Kg/ha. of N+90 Kg/ha. of P_2O_5 for Maize. (vi) As per treatments. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 5.9.63 to 30.6.64.

2. TREATMENTS :

7 treatments on cropping pattern : T_1=Paddy CH—10 followed by Paddy BR—34 followed by Berseem, T_2=Paddy CH—10 followed by Paddy 498—2A followed by Onion Patna Red, T_3=Paddy CH—10 followed by Paddy 498—2A followed by *Bhindi* Pusa Sawani, T_4=Paddy CH—10 followed by Paddy 498—2A followed by Potato *Satna*, T_5=*Dhaincha* (G.M.) followed by Paddy BR—34 followed by Wheat NP—799 followed by *Moong*, T_6=*Dhaincha* (G.M.) followed by Paddy 498—2A followed by Maize Ganga 101 and T_7=*Dhaincha* (G.M.) followed by Paddy 498—2A followed by Paira Gram.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 3. (iv) (a) 11·52 m. × 6·40 m. (b) 11·06 m. × 6·10 m. (v) 23 cm. × 15 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination %, No. of tillers, No. of grains/earhead, length of earhead, weight of 1000 grains, yield of grain and straw. (iv) (a) 1962—63 (Trs. modified in 63). (b) Nil. (c) Nil. (v) Sabour and Patna. (vi) Nil. (vii) The monetary return per plot has been analysed.

5. RESULTS :

(i) 2694 Rs/ha. (ii) 158·6 Rs/ha. (iii) Treatment differences are highly significant. (iv) Av. return in Rs/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7	
Av. return	2587	2455	2048	2583	4691	3165	1326	C.D.=282·2 Rs/ha.

Crop :- Paddy (*Rabi*). **Ref :- Bh. 64(179).**

Site :- Irrigation Res. Sub-Stn., Bikramganj. **Type :- 'C'.**

Object :—To find out the economics of intensive cropping in irrigated tracts.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) As per treatments of expt. 63(143) noted above. (ii) Clayey. (iii) 18.12.64 to 12.4.65. (iv) (a) 2 to 5 ploughings by *Deshi* plough. (b) Broadcasting for Berseem, transplanting for Onion, line sowing for others. (c) 7 Kg/ha. for Berseem, 10 Kg/ha. for Onion, 20 Kg/ha. for *Moong* and Maize, 92 Kg/ha. for Wheat, 720 Kg/ha. for Potato, 70 Kg/ha. for Barley. (d) 10 cm. × 10 cm. for Onion, rows 25 cm. apart for Wheat and Barley, 46 cm. for *Moong* and Potato, 60 cm. × 30 cm. for Maize, Nil for others. (e) 1 for Onion. (v) 23 Kg/ha. of P_2O_5 for Berseem, 78 Kg/ha. of N+45 Kg/ha. of P_2O_5 for Onion, 45 Kg/ha. of N+45 Kg/ha. of P_2O_5 for Wheat and Barley, 84 Kg/ha. of N+45 Kg/ha. of P_2O_5+45 Kg/ha. of K_2O for Potato, 112 Kg/ha. of N+90 Kg/ha. of P_2O_5 for Maize, 34 Kg/ha. of P_2O_5 for *Moong*. (vi) As per treatments. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 5.1.65 to 28.5.65.

2. TREATMENTS :

7 treatments on cropping pattern : T_1=Berseem for fodder followed by Berseem for grain, T_2=Onion Patna Red, T_3=Wheat NP—799 followed by *Moong*, T_4=Potato *Satha* followed by *Moong*, T_5=Barley BR--22 followed by *Moong*, T_6=Maize Ganga 101 and T_7=Wheat NP—799.

3. DESIGN:

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 3. (iv) (a) 11·52 m.×6·40 m. (b) 11·06 m.×6·10 m. (v) 23 cm.× 15 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination %, No. of tillers, height of plant, length of earhead, weight of 1000 grains, yield of grain and straw. (iv) (a) 1964—only. (b) and (c) Nil. (v) Sabour and Patna. (vi) Nil. (vii) The monetary return per plot has been analysed.

5. RESULTS :

(i) 2106 Rs/ha. (ii) 395·7 Rs/ha. (iii) Treatment differences are highly significant. (iv) (a) Av. return in Rs/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7	
Av. return	291	1955	1296	4915	1842	1976	2465	C.D.=704·1 Rs/ha.

Crop :- Paddy (*Kharif*). **Ref :- Bh. 60(331)**

Site :- Agri. Res. Instt., Dholi. **Type :- 'C'.**

Object :—To study the possibility of double cropping of Paddy in irrigated area (1st set).

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) 22.8.60 to 13.11.60. (iv) (a) 3 ploughings. (b) Sowing in line. (c) 25 Kg/ha. (d) 23 cm. between rows. (e) Nil. (v) 22·5 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) As per treatments. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 21.11.60 to 12.1.61.

2. TREATMENTS :

10 treatments on cropping pattern : T_1=Paddy N—136 followed by Paddy T—90, T_2=Paddy CH—10 followed by Paddy CH – 10, T_3=Paddy CH—1039 followed by Paddy BR—34, T_4=Paddy CH – 10 followed by Paddy BR—34, T_5=Paddy CH - 10 followed by Paddy 498—2A, T_6=Paddy CH – 1039 followed by Paddy 498—2A, T_7=Paddy BR—34 followed by Paddy CH—10, T_8=Paddy TKM—6 followed by Paddy T—141, T_9=Paddy CH—10 followed by BK— 88 and T_{10}=Paddy 498—2A continued.

3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) and (b) 6·10 m.×3·05 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1960 only. (b) Nil. (c) Nil. (v) Sabour and Kanke. (vi) and (vii) T_7 to T_{10} rejected due to very poor or Nil yield.

5. RESULTS :

(i) 1537 Kg/ha. (ii) 278·4 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	
Av. yield	682	1762	1739	1502	1816	1723	C.D.=419·5 Kg/ha.

Crop :- Paddy (*Kharif*). **Ref :- Bh. 62(292).**
Site :- Agri. Res. Instt., Dholi. **Type :- 'C'.**

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

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) 31.7.62 to 2.8.62. (iv) (a) 3—4 ploughings. (b) Line sowing (Japanese Method). (c) 25Kg/ha. (d) 23 cm.×23 cm. (e) 2—3. (v) N to be applied as follows : ½ during puddling and ½ before 1st earthing or 1st use of rotary hoe. (vi) BR—34. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 9.1.63.

2. TREATMENTS :

5 earthing treatments : T_1=One earthing with Paddy earthing machine after three weeks of transplanting (spacing 51 cm.×13 cm.), T_2=One earthing with *Deshi* plough after three weeks of transplanting (spacing 15 cm.×38 cm.), T_3=Two earthing with Paddy earthing machine—one after 3 weeks of transplanting and other after 6 weeks (spacing 51 cm.×13 cm.), T_4=Two earthing with *Deshi* plough—one after 3 weeks of transplanting and other after 6 weeks (spacing 15 cm.×38 cm.) and T_5=Rotary hoe (normal operation—control ; spacing 25 cm.×25 cm.).

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 7·62 m.×6·15 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1962—65 (Expt. for 1963—N.A. ; Trs. modified in 1964 and further in 1965). (b) No. (c) Nil. (v) Patna, Kanke and Sabour. (vi) and (vii) Nil.

5. RESULTS :

(i) 2812 Kg/ha. (ii) 165·6 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5
Av. yield	2761	2988	2648	2714	2950

Crop :- Paddy (*Kharif*). **Ref :- Bh. 64(365).**
Site :- Agri. Res. Instt., Dholi. **Type :- 'C'.**

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

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) 2 and 3.8.64. (iv) (a) 3—4 ploughings. (b) Line sowing. (c) 25 Kg/ha. (d) 23 cm. between rows. (e) 2. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (vi) BR—34. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 1 and 2.12.64.

2. TREATMENTS :

6 earthing treatments : T_1=One earthing with Paddy earthing machine after three weeks of transplanting (spacing 51 cm.×13 cm.), T_2=One earthing with *Deshi* plough after 3 weeks of transplanting (spacing 15 cm.×38 cm.), T_3=Two earthing with Paddy earthing machine—one after 3 weeks of transplanting and other after 6 weeks (spacing 51 cm.×13 cm.), T_4=Two earthing with *Deshi* plough—one after 3 weeks of transplanting and other after 6 weeks (spacing 15 cm.×38 cm.), T_5=Rotary hoe (normal operation—control, spacing 25 cm.×25 cm.) and T_6=Without earthing and without rotary hoe.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 13·11 m.×7·62 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1962-65 (Expt. for 1963—N.A. ; Trs. modified in 64 and further in 65). (b) No. (c) Nil. (v) Patna, Kanke and Sabour. (vi) and (vii) Nil.

5. RESULTS :

(i) 2780 Kg/ha, (ii) 491·6 Kg/ha. (iii) Treatment differences nre not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	2628	2715	3053	2765	2715	2803

Crop :- Paddy (*Rabi*). **Ref :- Bh. 65(196).**

Site :- Agri. Res. Instt., Dholi. **Type :- 'C'.**

Object—To study the effect of earthing on the yield of Paddy.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Maize hybrid. (c) Nil. (ii) Sandy loam. (iii) 15.12.65. (iv) (a) 3 - 4 ploughings. (b) Line sowing. (c) 74 Kg/ha. (d) 23 cm. between rows. (e) 2—3. (v) 45 Kg/ha. of N as A/S+33·6 Kg/ha. of P_2O_5 as Super. (vi) NP—852. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 14 to 19.4.66.

2. TREATMENTS:

4 earthing treatments: T_1=*Deshi* plough with *Pata*, T_2=M.B. plough+disc harrow+*Pata* (twice), T_3=M.B. plough+cultivator or Pegtooth harrow and *Pata* (one ploughing followed by cultivator and *Pata* thrice), and T_4=Rota tiller (once).

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 15·10 m. × 13·40 m. (v) N.A. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1962-65. (Expt. for 63—N.A. ; Trs. modified in 64 and further in 65). (b) and (c) Nil. (v) Patna, Kanke and Sabour. (vi) No. (vii) Nil.

5. RESULTS :

(i) 1743 Kg/ha. (ii) 161·9 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield o grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4
Av. yield	1743	1782	1782	1664

Crop :- Paddy (*Kharif*). **Ref :- Bh. 63(324), 64(368).**

Site :- Agri. Res. Instt., Dholi. **Type :- 'C'.**

Object : —To find out the best time of hoeing (rotary hoe) for Paddy crop (BR—8).

1. BASAL CONDITIONS :

(i) (a) to (c) Nil. (ii) Sandy loam. (iii) 14.6.63 N.A.; 18.6.64/25.7.64. (iv) (a) 3 ploughings (b) Line sowing. (c) 25 Kg/ha. (d) 23 cm. between rows. (e) —. (v) 45 Kg/ha. of N as A/S+45 Kg/ha.of P_2O_5 as Super. (vi) BR—8. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 18 and 19.12 63 ; 14.12.64.

2. TREATMENTS :

5 cultural treatments: T_0=No weeding and no hoeing (control), T_1=Hoeing every week starting from the 1st week after transplanting, T_2=Hoeing every 2 weeks starting from the 2nd week after transplanting, T_3=Hoeing every 3 weeks starting from the 3rd week after transplanting and T_4=Hand hoeing whenever necessary.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 6·10 m.×3·10 m. for 63 and 6·15 m.×4·57 m. for 64. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1962-64 (1962 N.A.). (b) No. (c) Nil. (v) Sabour, Patna, Kanke and Teloundha. (vi) Nil. (vii) Error variances are heterogeneous and Treatments × Years interaction is absent. Hence the results of individual year are presented under 5. Results.

5. RESULTS:

63(324)

(i) 3816 Kg/ha. (ii) 348·0 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4
Av. yield	3698	3779	3799	3942	3860

64(368)

(i) 1856 Kg/ha. (ii) 252·1 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4
Av. yield	1749	1928	1778	1867	1957

Crop :- Paddy (*Kharif*). **Ref :- Bh. 63(323), 64(367), 65(197).**

Site :- Agri. Res. Instt., Dholi. **Type :- 'C'.**

Object :—To find out the best time of hoeing (rotary hoe) for Paddy crop(BR—34).

1. BASAL CONDITIONS :

(i) (a) to (c) Nil. (ii) Sandy loam. (iii) 14.6.63/27.7.63; 18.6.64/26.7.64; 24.6.65/28.7.65. (iv) (a) 3 ploughings. (b) Japanese method. (c) 25 Kg/ha. (d) 23 cm. between rows. (e) —. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) BR—34. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 11 and 12.12.63; 21.11.64; 4.12.65.

2. TREATMENTS :

Same as in expt. No. 63(324), 64(368) on page 66.

3. DESIGN:

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) 6·60 m.×3·55 m. (b) 6·10 m.×3·05 m. (v) 25 cm.×25 cm. (vi) Yes.

4. GENERAL;

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1963-65. (b) No. (c) Results of combined analysis given under 5. Results. (v) Patna, Kanke, Sabour and Teloundha. (vi) Nil. (vi) Error variances are homogeneous and Treatments × Years interaction is absent.

5. RESULTS :

Pooled results

(i) 2938 Kg/ha. (ii) 466·5 Kg/ha. (based on 68 d.f. made up of pooled error and Treatments × Years interaction). (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4
Av. yield	2815	2961	2909	3134	2870

Individual results

Treatment	T_0	T_1	T_2	T_3	T_4	Sig.	G.M.	S.E./plot
Year								
1963	3251	3464	3129	3535	3058	N.S.	3287	506·5
1964	2598	2508	2687	2822	2956	N.S.	2714	417·4
1965	2598	2911	2911	3046	2598	N.S.	2813	472·4
Pooled	2815	2961	2909	3134	2870	N.S.	2938	466·5

Crop :- Paddy (*Kharif*). **Ref :- Bh. 64(369), 65(199).**

Site :- Agri. Res. Instt., Dholi. **Type :- 'C'.**

Object :—To see the effect of acration caused by rotary hoe on the yield of late *Aman* Paddy in absence of weeds.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) 20.6.64/27.7.64 ; 24.6.65/26.6.65. (iv) (a) 3 ploughings. (b) Japanese method. (c) 23 Kg/ha. (d) 25 cm.×25 cm. (e) —. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (vi) BR—8 ; 498—2A. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 13.12.64 ; 3.12.65.

2. TREATMENTS :

3 hoeing treatments : T_0=Control, T_1=2 and T_2=3 hoeings.
Hoeings done by rotary hoe at 3 weeks interval starting from the 2nd week of transplanting.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) (N.A. (iii) 8. (iv) (a) 6·60 m.×3·50 m. (b) 6·10 m.×3·00 m. (v) 25 cm.×25 cm. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1964—65. (b) No. (c) Results of combined analysis are given under 5. results. (v) Patna, Sabour, Kanke and Teloundha. (vi) Nil. (vii) Error variances are homogeneous and Treatments×Years interaction is absent.

5. RESULTS :

Pooled results

(i) 2223 Kg/ha. (ii) 455·5 Kg/ha. (based on 30 d.f. made up of pooled error and Treatments×Years interaction). (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2
Av. yield	2184	2133	2351

Individual results

Treatment	T_0	T_1	T_2	Sig.	G.M.	S.E./plot
Year						
1964	1444	1344	1680	N.S.	1489	435·4
1965	2923	2923	3023	N.S.	2956	497·1
Pooled	2184	2133	2351	N.S.	2223	455·5

Crop :- Paddy (*Kharif*). **Ref :- Bh. 63(328).**

Site :- Agri. Res. Instt., Dholi. **Type :- 'C'.**

Object :—To find out the best cultural practices for Paddy cultivation.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Kheshari*. (c) Nil. (ii) Clay loam. (iii) 15.7.63/20 and 21.8.63. (iv) (a) 3 ploughings. (b) Japanese method. (c) 23 Kg/ha. (d) 25 cm. × 25 cm. (e) 3—4. (v) 22·5 Kg/ha. of N as Urea+45 Kg/ha. of P_2O_5 as Super. (vi) BR—8 (*Agahani*). (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 6 and 7.1.64.

2. TREATMENTS :

A. No Paira Crop Series

T_1=2 ploughings with *Deshi* plough immediately after harvesting of Paddy crop+2 ploughings with *Deshi* plough after first shower in late May or early June+ploughing with *Deshi* plough before puddling (for 10 days) with Paddy land puddler modified by Agril. Engineer (Research), T_2=As in T_1 except puddling with Paddy land puddler modified by Agril. Engineer (Research), T_3=Immediately after harvesting of Paddy crop, ploughing with soil turning plough once+ploughing with soil turning plough once with 1st shower in late May or early June+ploughing with soil turning plough once before puddling (for 7 to 10 days) with Paddy land puddler modified by Agril. Engineer (Research), T_4=As in T_3 except puddling with Paddy land puddler modified by Agril. Engineer (Research) and T_5=2 ploughings with *Deshi* plough before puddling (for 7 to 10 days) with Paddy land puddler modified by Agril. Engineer (Research)+puddling with *Deshi* plough (for 3 to 4 days) as cultivation practices.

B. Paira Crop Series

T_6=Soon after the harvesting of *Paira* crop, 2 ploughings with *Deshi* plough+2 ploughings with *Deshi* plough with 1st shower in late May or early June+2 ploughings with *Deshi* plough before puddling (7 to 10 days) with Paddy land puddler modified by Agril. Engineer (Research)+puddling with *Deshi* plough, T_7=As in T_6 except puddling with Paddy land puddler as modified by Agril. Engineer (Research), T_8=Soon after the harvesting of *Paira* crop, ploughing with soil turning plough once as in T_3, T_9=Soon after the harvesting of *Paira* crop, T_8 was applied except puddling with Paddy land puddler modified by Agril. Engineer (Research) and T_{10}=T_5 (3 to 4 times).

3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) 19·30 m. × 6·35 m. (b) 18·29 m. × 5·33 m. (v) Two rows on either side. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Tillers count, height of plants, yield of grain and straw. (iv) (a) 1963—only. (b) and (c) Nil. (v) Patna, Sabour and Kanke. (vi) Nil. (vii) Data for *Paira* crop series is not available.

5. RESULTS :

Yield data for "No *Paira* crop Series".

(i) 1775 Kg/ha. (ii) 331·8 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5
Av. yield	1487	1936	1641	2026	1782

Crop :- Paddy (*Kharif*). **Ref :- Bh. 63(263), 64(290), 65(127).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'C'.**

Object :—To find out the best time of hoeing with rotary hoe for 498—2A variety of Paddy crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 45 Kg/ha. of N+45 Kg/ha. of P_2O_5. (ii) Sandy loam. (iii) 28.6.63/N.A. ; 23.6.64/25.7.64 and 26.7.64 ; 28.6.65/1 and 2.8.65. iv) (a) 3 ploughings. (b) Japanese method. (c) 17 Kg/ha.

(d) 25 cm.×25 cm. (e) —. (v) Nil. (vi) 498—2A. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 26.12.63 ; 28 and 29.11.64 ; 8.12.65.

2. TREATMENTS :

5 cultural treatments: T_0=No weeding and no hoeing (control), T_1=Hoeing with rotary hoe every week starting from 1st week after transplanting, T_2=Hoeing with rotary hoe every two weeks starting from the 2nd week of transplanting, T_3=Hoeing with rotary hoe every three weeks starting from the third week of transplanting and T_4=Hand weeding whenever necessary.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) 6·60 m.×3·55 m. (b) 6·10 m.×3·05 m. (v) 25 cm.×25 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1962—65 (Expt. for 62—N.A.) (b) No. (c) Results of combined analysis are presented under 5. Results. (v) Patna and Sabour. (vi) Nil. (vii) Error variances are homogeneous and Treatments×Years interaction is present.

5. RESULTS :

Pooled results

(i) 2505 Kg/ha. (ii) 573·4 Kg/ha. (based on 8 d.f. made up of Treatments×Years interaction). (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	C.D.=440·7 Kg/ha.
Av. yield	1957	2786	2508	2646	2628	

Individual results

Treatment	T_0	T_1	T_2	T_3	T_4	Sig.	G.M.	S.E./plot.
Year								
1963	2334	3073	2822	3368	2741	**	2868	379·7
1964	2105	2947	2911	2884	3001	**	2770	323·6
1965	1433	2338	1792	1684	2141	**	1878	416·2
Pooled	1957	2786	2508	2646	2628	**	2505	573·4

Crop :- Paddy (*Kharif*). **Ref :- Bh. 63(262), 64(289), 65(126).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'C'.**

Object :—To find the best time of hoeing with rotary hoe for BR—34 variety of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) 28.6.63/1.8.63 ; 27.6.64/24 and 25.7.64 ; 20.6.65/25 and 26.7.65. (iv) (a) 3 ploughings. (b) Japanese method. (c) 17 Kg/ha. (d) 25 cm.×25 cm. (e) —. (v) Nil. (vi) BR—34. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 6.12.63 ; 21 and 22.11.64 ; 20 and 21.11.65.

2. TREATMENTS :

5 cultural treatments: T_0=No weeding and no hoeing (control), T_1=Hoeing by rotary hoe every week starting from 1st week after transplanting, T_2=Hoeing by rotary hoe every two weeks starting from 2nd week of transplanting, T_3=Hoeing by rotary hoe every three weeks starting from the 3rd week after transplanting and T_4=Hand weeding whenever necessary.

Weeding and hoeing were stopped before flowering.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) 6·60 m.×3·55 m. (b) 6·10 m.×3·05. (v) 25 cm.×25 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1963—65. (b) No. (c) Results of combined analysis are presented under 5. Results. (v) Patna and Sabour. (vi) Nil. (vii) Error variances are homogeneous and Treatments × Years interaction is present.

5. RESULTS :

Pooled results

(i) 2718 Kg/ha. (ii) 759·2 Kg/ha. (based on 8 d.f. made up of Treatments × Years interaction). (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4
Av. yield	2375	2883	3014	2712	2605

Individual results

Treatment	T_0	T_1	T_2	T_3	T_4	Sig.	G.M.	S.E./plot
Year								
1963	1836	2593	2652	2222	1787	*	2218	547·4
1964	3440	3323	3520	3798	3610	N.S.	3538	440·1
1965	1850	2732	2871	2118	2419	**	2398	471·6
Pooled	2375	2883	3014	2712	2605	N.S.	2718	759·2

Crop, :- Paddy (*Kharif*). **Ref :- Bh. 64(291), 65(128).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'C'.**

Object :—To see the effect of acration caused by rotary hoe on the yield for late *Aman* Paddy in absense of weeds.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) Nil. (ii) Sandy loam. (iii) 23.6.64/27 and 28.7.64 ; 28.6.65/4.8.65. (iv) (a) 3 ploughings. (b) Japanese method. (c) 17 Kg/ha. (d) 25 cm. × 25 cm. (e) Nil. (v) 45 Kg/ha. of N as A/S and 45 Kg/ha. of P_2O_5 as Super. (vi) 498—2A ; BR—8. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 30.11.64, 1.12.64 ; 10.12.65.

2. TREATMENTS :

3 hoeing treatments : T_0=Control, T_1=2 and T_2=3 hoeings.
Hoeings done with rotary hoe at the interval of 3 weeks starting from the 2nd week of transplanting.

3. DESIGN :

(i) R.B.D. (ii) (a)3. (b) N.A. (iii) 8. (iv) (a) 6·60 m. × 3·50 m. (b) 6·10 m. × 3·00 m. (v) 25 cm. × 25 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1964—contd. (b) No. (c) Nil. (v) Patna and Sabour (vi) Nil. (vii) Since the expt. is continued beyond 1965, hence the individual year results are presented under 5. Results.

5. RESULTS :

64(291)

(i) 3270 Kg/ha. (ii) 199·1 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2
Av. yield	3023	3299	3487

C.D.=213·5 Kg/ha.

65(128)

(i) 2235 Kg/ha. (ii) 244·4 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatmeet	T_0	T_1	T_2
Av. yield	2217	2204	2284

Crop :- Paddy (*Kharif*). **Ref :- Bh. 63(261), 64(288).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'C'.**

Object :—To find out the best combination of cultural practices for the preparation of Paddy land.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Fallow ; Paddy. (c) Nil ; 45 Kg/ha. of N+45 Kg/ha. of P_2O_5 as Super. (ii) Red loam (iii) 15.6.63/13 and 14.8.63 ; 15.6.64/7 to 9.8.64. (iv) (a) As per treatments. (b) Japanese method. (c) 17 Kg/ha. (d) 25 cm.×25 cm. (e) 3. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) 498—2A ; BR—8. (vii) Unirrigated. (viii) Weedidg and hoeing.(ix) N.A. (x) 21.12.63 ; 8 to 10.12.64.

2. TREATMENTS :

5 cultural treatments : T_1=Immediately after harvesting of Paddy crop, ploughing with *Deshi* plough twice after 1st shower of rain in late May or early June+ploughing with *Deshi* plough twice before puddling (7 to 10 days)+puddlings with *Deshi* plough twice, T_2=As in treatment T_1 except puddling with Paddy land puddler modified by Agricultural Engineer (Research),T_3=Immediately after the harvesting of Paddy crop ploughing with turning plough once+ploughing with soil turner once after tne 1st showar of rain in late May or early June+ploughing with soil turner plough once before puddling (7 to 10 days)+puddling with *Deshi* plough, T_4=As in treatment No. T_3 except puddling with Paddy land puddler modified by the Agricultural Engineer (Research) and T_5=Ploughing with *Deshi* plough twice before puddling (7 to 10 days) +ploughing with *Deshi* plough (3—4 times as cultivators practice).

3. DESIGN:

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) 18·80 m.×5·80 m. (b) 18·30 m.×5·30 m. (v) 25 cm. ×25 cm. (vi) Yes.

4. GENERAL :

(i) Good. (li) Nil. (iii) Yield of grain. (iv) (a) 1963—64. (b) No. (c) Nil. (v) Patna. (vi) Nil. (vii) Error variances are heterogeneous and Treatments×Years interaction is absent. Hence individual year results are presented under 5. Results.

5. RESULTS :

63(261)

(i) 2475 Kg/ha. (ii) 404·9 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_5	T_4	T_5
Av. yield	2541	2823	2461	2365	2190

64(288)

(i) 2920 Kg/ha. (ii) 249·3 Kg/ha. (iii) Treatment differences are significant, (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5
Av. yield	3182	2841	2884	3003	2688

C.D.=300·8

Crop Paddy (*Kharif*). **Ref :- Bh. 60(82).**

Site :- Agri. Res. Instt., Patna. **Type :- 'C'.**

Object :—To study the effect of puddling on the yield of Paddy crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) N.A. (iii) 19.6.60. (iv) (a) Hoeing by rotary hoe (b) Line sowing. (c) to (e) N.A. (v) 44·8 Kg/ha. of N as A/S+44·8 Kg/ha. of P_2O_5 as Super. (vi) BR—34. (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 10.11.60.

2. TREATMENTS:

2 cultural treatments: T_1=Planting on ridges and T_2=Pudded planting.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 10. (iv) (a) 9·14 m.×3·66 m. (b) 9·14 m.×3·06 m (v) 30 cm. on either side (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Flowering, maturity and yield of grain and straw. (iv) (a) to (c) No. (v) to (vii) Nil.

5. RESULTS :

(i) 3015 Kg/ha. (ii) 344·0 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2
Av. yield	3042	3029

Crop :- Paddy (*Kharif*). **Ref :- Bh. 61(108), 62(72), 63(95), 64(140).**

Site :- Agri. Res. Instt., Patna. **Type :- 'C'.**

Object :—To ascertain which among the cultural practices increases the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) N.A. (iii) 27.7 to 3.8.61 ; 9.8.62 ; 10.8.63 ; 23.6.64. (iv) (a) As per treatments. (b) Japanese method. (c) 22 Kg/ha. (d) and (e) N.A. (v) 44·8 Kg/ha. of N as Urea+44·8 Kg/ha. of P_2O_5 as Super. (vi) 498—2A. (vii) Irrigated. (viii) Weeding once. (ix) 112 cm. for 64; N.A. for others. (x) 7 and 8.1.62 ; 17 and 18.12.62 ; 9, 10 and 14.1.64 ; 3 to 8.1.65.

2. TREATMENTS :

All combinations of (1) and (2)+2 extra treatments:

(i) 4 cultural treatments : C_1=2 *Deshi* ploughings+2 *Deshi* ploughings with 1st shower of rain in late May or early June+*Deshi* ploughings 7 to 10 days before puddling+2 puddlings, C_2=Once soil turning plough+once soil turning plough with 1st shower of rain in late May or June+once soil turning plough 7 to 10 days after puddling+puddling, C_3=C_1 applied as soon as ploughing is applicable and C_4=Once soil turning plough+once soil turning plough with 1st shower of rain in late May or early June+once soil turning plough 7 to 10 days before puddling+puddling.

(2) 2 methods of puddling: M_1=Puddling with *Deshi* plough and M_2=Puddling with Paddy land puddler as modified by Agril. Engineer (Research).

Extra treatments : E_1=2 *Deshi* ploughings 7 to 10 days befor puddling+3 to 4 puddlings with *Deshi* plough and E_2=E_1 applied soon after the harvesting of *Paira* crop.

C_1, C_2 and E_1 were applied immediately after harvesting of Paddy crop while C_4 was applied soon after the harvesting of *Paira* crop.

3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) 18·30 m.×6·10 m. for 64(140); N.A. for others. (b) 18·30 m.×5·30 m. (v) 38 cm. on either side for 64(140) ; N.A. for others. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of stem borer and pipra noticed, Folidol was sprayed for 64(140) and Nil for others. (iii) Tiller counting, flowering and yield of grain. (iv) (a) 1961—64. (b) Yes. (c) Results of combined analysis are presented under 5. Results. (v) and (vi) Nil. (vii) Error variances are heterogeneous and Treatments×Years interaction is present.

5. RESULTS:

Pooled results

(i) 2336 Kg/ha. (ii) 287·3 Kg/ha. (based on 21 d.f. made up of Treatments×Years interaction). (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

E_1=2393, E_2=2827.

	C_1	C_2	C_3	C_4	Mean
M_1	2388	2139	2198	2254	2245
M_2	2254	2191	2463	2245	2288
Mean	2321	2165	2331	2249	2267

Individual results

Treatment	C_1	C_2	C_3	C_4	Sig.	M_1	M_2	Sig.	E_1	E_2	Sig.	G.M.	S.E./plot
Year													
1961	2763	2448	2822	2407	N.S.	2582	2639	N.S.	2583	2631	N.S.	2609	365·5
1962	2895	2913	2910	2940	N.S.	2887	2942	N.S.	2799	2981	N.S.	2909	149·6
1963	1912	1708	1887	1952	N.S.	1842	1888	N.S.	2341	2100	N.S.	1936	365·2
1964	1712	1589	1703	1700	N.S.	1668	1684	N.S.	1847	3596	N.S.	1700	145·7
Pooled	2321	2165	2331	2249	N.S.	2245	2288	N.S.	2393	2827	N.S.	2336	287·3

Crop :- Paddy (*Kharif*). **Ref :- Bh. 62(275).**

Site :- Agri. Res. Instt., Patna. **Type :- 'C'.**

Object : —To study the effect of earthing up on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Clayee. (iii) 20.6.62/9 to 11.8.62. (iv) (a) 3 ploughings. (b) Line sowing. (c) 40 Kg/ha. (d) 23 cm. between rows. (e) —. (v) 45 Kg/ha. of N as A/S and 45 Kg/ha. of P_2O_5 as Super. (vi) BR—34. (vii) Irrigated. (viii) Weeding weekly. (ix) N.A. (x) 24 and 25.11.62.

2. TREATMENTS :

5 cultural treatments : T_1=One earthing by Paddy earthing machine after three weeks of transplanting, T_2=One earthing by *Deshi* plough after three weeks of transplanting, T_3=Two earthings by Paddy earthing machine—one after three weeks of transplanting and 2nd earthing after six weeks, T_4=Two earthing by *Deshi* plough—one after three weeks of transplanting and 2nd after six weeks and T_5=Rotary hoe (normal operation).

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) and (b) 13·11 m.×7·62 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1962—64 (Treatments modified in 1963—onward). (b) No. (c) Nil. (v) Sabour. (vi) and (vii) Nil.

5. RESULTS :

(i) 3625 Kg/ha. (ii) 211·0 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5
Av. yield	3826	3516	3741	3609	3433

Crop :- Paddy (*Kharif*). **Ref :- Bh. 63(280), 64(301).**

Site :- Agri. Res. Instt., Patna. **Type :- 'C'.**

Object :—To study the effect of earthing up on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Clay. (iii) 26.6.63/31.7.63, 1 and 3.8.63 ; 24.6.64/26 to 28.7.64. (iv) (a) 3 ploughings. (b) Line sowing. (c) 40 Kg/ha. (d) 23 cm. between rows. (e) - -. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) BR—34. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 3, 4 and 5.12.63 ; 12, 13 and 14.11.64.

2. TREATMENTS :

6 cultural treatments : T_0=Control (No earthing, no weeding), T_1=One earthing by Paddy earthing machine after three weeks of transplanting, T_2=One earthing by *Deshi* plough after three weeks of transplanting, T_3=Two earthings by Paddy earthing machine —one after three weeks and 2nd after six weeks of transplantation, T_4=Two earthings by *Deshi* plough—one after three weeks and 2nd after six weeks of transplantation and T_5=Rotary hoe (normal operation).

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) and (b) 13·11 m.×7·60 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1962—64 (Treatments modified in 1963). (b) No. (c) Results of combined analysis for 1963 and 64 are presented under 5. Results. (v) Sabour. (vi) Nil. (vii) Error variances are homogeneous and Treatments×Years interaction is absent.

5. RESULTS :

Pooled results

(i) 3336 Kg//ha. (ii) 284·2 Kg/ha. (based on 35 d.f. made up} of pooled error and Treatments×Years interaction). (iii) Treatment differences are highly significant. (iv) Av. yieled of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. yield	3012	3450	3382	3524	3491	3156

C.D.=288·6 Kg/ha.

Individual results

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	Sig.	G.M.	S.E./plot
Year 1963	2638	3006	3153	3198	3228	2953	N.S.	3029	320·3
1964	3386	3894	3611	3849	3754	3358	*	3642	251·3
Pooled	3012	3450	3382	3524	3491	3156	**	3336	284·2

Crop :- Paddy (*Kharif*). **Ref :- Bh. 64(131).**

Site :- Agri. Res. Instt., Patna. **Type :- 'C'.**

Object :—To ascertain which among the cultural practices increases the Paddy yield.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) As per treatments. (c) Nil. (ii) Heavy clay. (iii) 23.6.64. (iv) As per treatments. (b) Japanese method. (c) 23 Kg/ha. (d) 25 cm.×25 cm. (e) 3 to 4. (v) 44·8 Kg./ha. of N as A/S+ 44·8 Kg./ha. of P_2O_5 as Super. (vi)BR—8. (vii) Irrigated. (viii) Hoeing with rotary hoe. (ix) 112 cm. (x) 6 to 8.1.65.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 *Paira* crop treatments : C_1=Without *Paira* crop and C_2=With *Paira* crop.

(2) 5 cultural treatments : T_1=Immediately after the harvesting of Paddy crop, ploughing with *Deshi* plough—Twice+ploughing with *Deshi* plough twice with 1st shower of rain in late May or early June +ploughing with *Deshi* plough before puddling (7—10 days)+ploughing with *Deshi* plough—twice, T_2=As in treatment T_1 except puddling with Paddy land puddler modified by A.E.R., T_3=Immediately after the harvesting of Paddy crop, ploughing with the soil turning plough once+ploughing with soil turning plough once with the first shower of rain in late May+ploughing with soil turning plough once before puddling (7—10 days), T_4=As in T_3 except puddling with Paddy land puddler modified by A.E.R., T_5=Ploughing with *Deshi* plough twice before puddling (7—10 days)+puddling with *Deshi* plough (3 to 4 times) as cultivators practices.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) 18·39 m.×6·10 m. (b) 18·39 m.×5·33 m. (v) 38 cm. on either side. (v) Yes.

4. GENERAL :

(i) Fair. (ii) Attack of Stem borer, sprayed with Folidol. (iii) Flowering and yield of grain. (iv) (a) 1964 only. (b) No. (c) Nil. (v) Pusa and Kanke. (vi) and (vii) Nil.

5. RESULTS:

(i) 1976 Kg/ha. (ii) 266·0 Kg./ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	T_1	T_2	T_3	T_4	T_5	Mean
C_1	2086	1994	1717	1748	2247	1958
C_2	2022	2009	1932	1971	2037	1994
Mean	2054	2002	1824	1860	2142	1976

Crop :- Paddy (*Kharif*). **Ref :- Bh. 64(130).**

Site :- Agri. Res. Instt., Patna. **Type :- 'C'.**

Object :—To find out the best times of hoeing with rotary hoe for Paddy crop (BR—8) under rainfed condition.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) Nil. (ii) Heavy clay. (iii) 8.8.64. (iv) One tractor ploughing and *Deshi* ploughing. (b) Japanese method. (c) 23 Kg/ha. (d) 25 cm.×25 cm. (e) 3 to 4. (v) 44·8 Kg/ha. of N as A/S+44·8 Kg/ha. of P_2O_5 as Super. (vi) BR—8. (vii) Unirrigated. (viii) As per treatments. (ix) 79 cm. (x) 25.12.64.

2. TREATMENTS :

5 cultural treatments : C_0=Control, C_1=Hoeing after every week starting from the 1st week of transplanting, C_2=Hoeing after every two weeks starting from the 2nd week of transplanting, C_3=Hoeing after every 3 weeks starting from the 3rd week of transplanting and C_4=Hand weeding whenever necessary.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) 6·60 m.×3·66 m. (b) 6·10 m.×3·05 m. (v) 25 cm.×25 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of hipsa and stem borer, sprayed Folidol. (iii) Flowering and yield of grain. (iv) (a) to (c) No. (v) to (vii) Nil.

5. RESULTS :

(i) 2285 Kg/ha. (ii) 188·4 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	C_0	C_1	C_2	C_3	C_4
Av. yield	2216	2323	2377	2305	2206

———

Crop :- (*Kharif*). **Ref :- Bh. 64(132).**

Site :- Agri. Res. Instt., Patna. **Type :- 'C'.**

Object :—To find out the best timing for running rotary hoe for Paddy crop (BR—34) under irrigated condition.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) N.A. (iii) 25.7.64. (iv) (a) *Deshi* ploughing. (b) Japanese method. (c) 23 Kg/ha. (d) 25 cm.×25 cm. (e) N.A. (v) 44·8 Kg/ha. of N as A/S+44·8 Kg/ha. of P_2O_5 as Super. (vi) BR—34. (vii) Irrigated. (viii) As per treatments. (ix) N.A. (x) 20.11.64.

2. TREATMENTS and 3. DESIGN :

Same as in expt. No. 64(130) noted above with hoeing done by rotary hoe.

4. GENERAL :

(i) Good. (ii) Attack of hipsa, dusted B.H.C. 5%. (iii) Germination %, flowering, maturity, yield of grain. (iv) (a) to (c) No. (v) to (vii) Nil.

5. RESULTS :

(i) 4540 Kg/ha. (ii) 286·6 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	C_0	C_1	C_2	C_3	C_4
Av. yield	4095	4418	4621	4699	4866

———

Crop :- Paddy (*Kharif*). **Ref :- Bh. 64(133).**

Site .- Agri. Res. Instt., Patna. **Type :- 'C'.**

Object :—To find out the best timing for running rotary hoe for Paddy crop (498—2A) under irrigated condition.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) N.A. (iii) 8.8.64. (iv) (a) *Deshi* ploughing. (b) Japanese method. (c) 23 Kg/ha. (d) 25 cm. × 25 cm. (e) N.A. (iv) 44·8 Kg/ha. of N as A/S+44·8 Kg/ha. of P_2O_5 as Super. (vi) 498—2A. (vii) Irrigated. (viii) As per treatments. (ix) N.A. (x) 25.12.64.

2. TREATMENTS and 3. DESIGN :

Same as in expt. No. 64(130) on page 77 with hoeing done by rotary hoe.

4. GENERAL :

(i) Good. (ii) Attack of hipsa, dusted B.H.C. 5%. (iii) Germination%, flowering, maturity and yield of grain and straw. (iv) (a) to (c) No. (v) to (vii) Nil.

5. RESULTS:

(i) 3176 Kg/ha. (ii) 301·3 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	C_0	C_1	C_2	C_3	C_4
Av. yield	3074	3232	3203	3404	2965

———

Crop :- Paddy (*Kharif*). **Ref :- Bh. 64(300).**

Site :- Agri. Res. Instt., Patna. **Type :- 'C'.**

Object :—To test the efficiency of single bullock plough against *Deshi* and Muller plough for puddling.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Maize. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Clay. (iii) 23 to 26.8.64. (iv) (a) 3 ploughings. (b) Line sowing. (c) 40 Kg/ha. (d) 23 cm. between rows. (e) 2—3. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) BR—34. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 26 to 28.11.64.

2. TREATMENTS :

3 cultural treatments : T_1 = Single bullock plough, T_2 = *Deshi* plough and T_3 = Muller plough.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 7. (iv) (a) and (b) 18·29 m. × 9·14 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1964 only. (b) No. (c) Nil. (v) Sabour. (vi) and (vii) Nil.

5. RESULTS :

(i) 2625 Kg/ha. (ii) 237·2 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3
Av. yield	2544	2717	2615

———

Crop :- Paddy (*Kharif*). **Ref :- Bh. 64(134).**

Site :- Agri. Res. Instt., Patna. **Type 'C'.**

Object :—To see the effect of acration caused by rotary hoe and the yield of late *Aman* Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) Clay. (iii) 7.8.64. (iv) (a) Ono summer tractor ploughing and 3 to 4 *Deshi* ploughings. (b) Japanese method. (c) 23 Kg/ha. (d) 25 cm.×25 cm. (e) N.A. (v) 22·4 Kg/ha. of N as A/S+44·8 Kg/ha. of P_2O_5 as Super. (vi) 498—2A. (vii) Irrigated. (viii) Weeding by *khurpi*. (ix) 79 cm (x) 23.12.64.

2. TREATMENTS :

3 hoeing treatments : T_0=Control, T_1=2 and T_2=3 hoeings.

Hoeings done by rotary hoe at the interval of 3 weeks starting from the 2nd week of transplanting.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 8. (iv) (a) 6·60 m.×3·56 m. (b) 6·10 m.×3·05 m. (v) 25 cm.×25 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of hipsa and stem borer, sprayed Folidol. (iii) Yield of grain. (iv) (a) to (c) No. (v) to (vii) Nil.

5. RESULTS :

(i) 2174 Kg/ha. (ii) 181·0 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2
Av. yield	2185	2153	2185

———

Crop :- Paddy (*Kharif*). **Ref :- Bh. 65(146).**

Site :- Agri. Res. Instt., Patna. **Type :- 'C'.**

Object :—To see the effect of acration caused by rotary hoe on the yield of late *Aman* Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5. as Super. (ii) Clayey. (iii) As per treatments. (iv) (a) As per treatments. (b) Transplanting. (c) 40 Kg/ha. (d) 23 cm. between rows. (e) —. (v) Nil. (vi) BR—8. (vii) Irrigated. (viii) Weedings. (ix) 96·5 cm. (x) 12.12.65.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 applications of rotary hoe : T_0=No rotary hoe (control), T_1=Rotary hoe twice at the interval of 3 weeks starting from the 2nd week of transplanting and T_2=Rotary hoe thrice at the interval of 3 weeks starting from the 2nd week of transplanting.

(2) 2 dates of sowing : S_1=15.6.65 and S_2=10.8.65.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 8. (iv) (a) 6·60 m.×3·55 m. (b) 6·10 m.×3·05 m. (v) 25 cm. ×25 cm. (vi) Yes.

4. GENERAL :

(i) Good. (b) No. (iii) Yield of grain. (iv) (a) 1965—onward. (b) Yes. (c) Nil. (v) Sabour, Dholi, Kanke and Teloundha. (vi) Heavy damage due to flood. The crop remained submerged under water for a week and this affected the yield. (vii) Nil.

5. RESULTS:

(i) 2699 Kg/ha. (ii) 432·9 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	T_0	T_1	T_2	Mean
S_1	2647	2909	2802	2786
S_2	2506	2640	2687	2611
Mean	2577	2775	2744	2699

———

Crop :- Paddy (*Rabi*). **Ref :- Bh. 62(108).**

Site :- Agri. Res. Instt., Patna. **Type :- 'C'.**

Object :—To find out the economics of intensive cropping in irrigated tract.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) and (c) N.A. (ii) Clayey. (iii) 30.5.62 to 16.4.63. (iv) (a) 2 to 5 ploughings by *Deshi* plough. (b) Broadcasting for Berseem, transplanting for Paddy and Onion, line sowing for others. (c) 24 Kg/ha. for Paddy, 7 Kg/ha. for Berseem and Linseed, 10 Kg/ha. for Onion, 12 Kg/ha. for *Bhindi*, 48 Kg/ha. for Pairagram, 70 Kg/ha. for *Dhaincha*, 20 Kg/ha. for Maize, 92 Kg/ha, for Wheat. (d) 10 cm.× 10 cm. for Onion, rows 25 cm. apart for Paddy and Wheat, 46 cm. apart for *Bhindi*, *Dhaincha* and *Moong*. (e) 1 for Onion, 2—3 for Paddy. (v) 45 Kg/ha. of N+45 Kg/ha. of P_2O_5 for Paddy and Wheat, 84 Kg/ha of N+45 Kg/ha. of P_2O_5 for Onion, 45 Kg/ha. of N+34 Kg/ha. of P_2O_5 for *Bhindi*, 112 Kg/ha. of N+ 90 Kg/ha. of P_2O_5 for Maize, 11 Kg/ha. of N+45 Kg/ha. of P_2O_5 for *Dhaincha*, 45 Kg/ha. of P_2O_5 for Berseem. (vi) As per treatments. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 17.8.62 to 20.6.63

2. TREATMENTS:

7 treatments on cropping pattern : T_1=Paddy CH—10 followed by Paddy BR—34 followed by Berseem for fodder, T_2=Paddy CH—10 followed by Paddy 498—2A followed by Onion, T_3=Paddy CH- 10 followed by Paddy 498—2A followed by *Bhindi*, T_4=Paddy CH—10 followed by Paddy 498—2A followed by Paira Gram, T_5=Paddy BR—34 followed by Wheat NP—799 followed by *Moong* for grain, T_6=Paddy BR—34 followed by Hyb. Maize and T_7=Paddy 498—2A followed by Linseed.

3. DESIGN:

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 3. (iv) (a) 9·45 m.×7·62 m. (b) 9·14 m.×7·32 m. (v) 15 cm.× 15 cm. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Germination %, height of plant, length of earhead, No. of grains/earhead, yield of grain and straw. (iv) (a) 1962—64 (Trs. modified in 1963 and 64). (b) No. (c) Nil. (v) Sabour and Brikramganj. (vi) Nil. (vii) The monetary return per plot has been analysed.

5. RESULTS:

(i) 2640 Rs/ha. (ii) 30·4 Rs/ha. (iii) Treatment differences are highly significant. (iv) Av. return in Rs/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7	C.D.=54·1 Rs/ha.
Av. return	2456	4782	2287	2370	2571	1997	2020	

———

Crop :- Paddy (*Rabi*). **Ref :- Bh. 63(142).**

Site :- Agri. Res. Instt., Patna. **Type :- 'C'.**

Object :—To find out the economics of intensive cropping in irrigated tracts.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) As per treatments of expt 62(108) on page 80. (ii) Clayey. (iii) 21.6.63 to 4.5.64. (iv) (a) 2 to 5 ploughings by *Deshi* plough. (b) Broadcasting for Berseem and Paira Gram, transplanting for Paddy and Onion, line sowing for others. (c) 24 Kg/ha. for Paddy, 7 Kg/ha. for Berseem, 10 Kg/ha. for Onion, 12 Kg/ha. for *Bhindi*, 48 Kg/ha for Paira Gram, 70 Kg/ha. for *Dhaincha*, 20 Kg/ha. for Maize, 92 Kg/ha. for Wheat, 720 Kg/ha. for Potato. (d) 10 cm. × 10 cm. for Onion, rows 25 cm apart for Paddy and Wheat, 46 cm. apart for *Bhindi*, *Dhaincha*, *Moong* and Potato. (e) 1 for Onion, 2—3 for Paddy. (v) 45 Kg/ha. of N+45 Kg/ha. of P_2O_5 for Paddy and Wheat, 84 Kg/ha. of N+45 Kg/ha. of P_2O_5 for Onion, 45 Kg/ha. of N+34 Kg/ha. of P_2O_5 for *Bhindi*, 112 Kg/ha. of N+90 Kg/ha. of P_2O_5 for Maize, 11 Kg/ha. of N+45 Kg/ha. of P_2O_5 for *Dhaincha*, 45 Kg/ha. of N+45 Kg/ha. of P_2O_5+45 Kg/ha. of K_2O for Potato, 34 Kg/ha. of P_2O_5 for *Moong*. (vi) As per treatments. (vii) Irrigated (viii) Weeding and hoeing. (ix) N.A. (x) 29 8.63 to 4.6.64.

2. TREATMENTS :

7 treatments on cropping pattern : T_1=Paddy CH— 0 followed by Paddy BR—34 followed by Berseem for fodder, T_2=Paddy CH—10 followed by Paddy 498—2A followed by Onion, T_3=Paddy CH—10 followed by Paddy 498—2A followed by *Bhindi*, T_4=Paddy CH—10 followed by Paddy 498—2A followed by Potato, T_5=*Dhaincha* for G.M. followed by Paddy BR—34 followed by Wheat followed by *Moong* for fodder, T_6=*Dhaincha* for G.M. followed by Paddy 498—2A followed by Hyb. Maize and T_7=*Dhaincha* for G.M. followed by Paddy 498—2A followed by Paira Gram.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 3. (iv) (a) 9·45 m × 7·62 m. (b) 9·14 m. × 7·32 m. (v) 15 cm. × 15 cm. (vi) Yes.

4 GENERAL :

(i) Good. (ii) Nil. (iii) Germination%, No. of tillers, No. of grains/earhead, length of earhead, weight of 1000 grains, yield of grain and straw. (iv) (a) 1962—64 (Trs. modified in 63 and 64) (b) No. (c) Nil. (v) Sabour and Bikramganj. (vi) Nil. (vii) The monetary return per plot has been analysed.

5. RESULTS :

(i) 3120 Rs/ha. (ii) 231·7 Rs/ha. (iii) Treatment differences are highly significant. (iv) Av. return in Rs/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Av. return	3271	3972	2243	4588	3269	2704	1791

C.D.=412 2 Rs/ha.

Crop :- Paddy (*Rabi*). **Ref :- Bh. 64(178)**

Site :- Agri. Res. Instt., Patna. **Type :- 'C'.**

Object :—To find out the economics of intensive cropping in irrigated tracts.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) As per treatments of expt. 63(142) noted above. (ii) Clayey. (iii) 11.6.64 to 30.4.65. (iv) (a) 2 to 5 ploughings by *Deshi* plough. (b) Broadcasting for Berseem, transplanting for Paddy, line sowing for others. (c) 24 Kg/ha. for Paddy, 7 Kg/ha. for Berseem, 10 Kg/ha. for Onion, 92 Kg/ha. for Wheat, 20 Kg/ha. for *Moong*, 720 Kg/ha. for Potato, 70 Kg/ha. for Barley. (d) 10 cm. × 10 cm. for Onion, rows 25 cm. apart for Paddy, Wheat and Barley, 46 cm. for Potato and *Moong*. (e) —. (v) 45 Kg/ha. of N+45 Kg/ha. of P_2O_5 for Paddy, Wheat and Barley, 45 Kg/ha. of N+23 Kg/ha. of P_2O_5+45 Kg/ha. of K_2O for Onion, 112 Kg/ha. of N+90 Kg/ha. of P_2O_5 for Maize, 23 Kg/ha. of P_2O_5 for Berseem. (vi) As per treatments. (vii) Irrigated. (viii) Weeding aud hoeing. (ix) N.A. (x) 24.8.64 to 5.6.65.

2. TREATMENTS:

7 treatments on cropping pattern : T_1=Paddy CH—10 followed by Paddy BR—34 followed by Berseem for fodder, T_2=Paddy CH—10 followed by Paddy 498—2A followed by Onion (Patna Red), T_3=Paddy CH—10 followed by Paddy BR—34 followed by Wheat NP—799 followed by *Moong* (G.M.), T_4=Paddy CH—10 followed by Paddy 498—2A followed by Potato *Satha* followed by *Moong* (G.M.), T_5=Paddy CH—10 followed by Paddy 498-2A followed by Barley BR—22 followed by *Moong* (G.M.), T_6=Paddy CH—10 followed by Paddy 498—2A followed by Maize Ganga 101 and T_7=Paddy BR—34 followed by Wheat NP—799.

3. DESIGN :

(i) R.BD. (ii) (a) 7. (b) N.A. (iii) 3. (iv) (a) 9·45 m.×7·62 m. (b) 9·14 m.×7·32 m. (v) 15 cm.×15 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination %, No. of tillers, height of plants, length of earhead, No. of grains/earhead, weight of 1000 grains, yield of grain and straw. (iv) (a) 1962-64 (Trs. modified in 63 and 64). (b) No. (c) Nil. (v) Sabour and Bikramganj. (vi) Nil. (vii) The monetary return per plot has been analysed.

5. RESULTS :

(i) 3100 Rs/ha. (ii) 621·8 Rs/ha. (iii) Treatment differences are significant. (iv) Av. return in Rs/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7	C.D.=1106 Rs/ha.
Av. return	2794	3588	2741	4487	3129	2695	2268	

Crop :- Paddy (*Rabi*). **Ref :- Bh. 62(107).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'C'.**

Object :—To find out the economics of intensive cropping in irrigated tracts.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) Loam. (iii) 1.5.62 to 30.1.63. (iv) (a) 2 to 5 ploughings by *Deshi* plough. (b) Broadcasting for Berseem, transplanting for Paddy, line sowing for others. (c) 24 Kg/ha. for Paddy, 7 Kg/ha. for Berseem, 10 Kg/ha. for Onion, 12 Kg/ha. for *Bhindi*, 48 Kg/ha for Paira Gram, 70 Kg/ha. for *Dhaincha*, 20 Kg/ha. for Maize, 92 Kg/ha. for Wheat. (d) 10 cm.×10 cm. for Onion, rows 25 cm. apart for Paddy and Wheat, 46 cm. apart for *Bhindi*, *Dhaincha* and *Moong*. (e) 1 for Onion, 2—3 for Paddy. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 for Paddy and Wheat, 84 Kg/ha. of N+45 Kg/ha. of P_2O_5 for Onion, 45 Kg/ha. of N+34 Kg/ha. of P_2O_5 for *Bhindi*, 112 Kg/ha. of N+90 Kg/ha. of P_2O_5 for Maize, 11 Kg/ha. of N+45 Kg/ha. of P_2O_5 for *Dhaincha*, 45 Kg/ha. of P_2O_5 for Berseem. (vi) As per treatments. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N A. (x) 15.8.62 to 29.5.63.

2. TREATMENTS :

7 treatments on cropping pattern : T_1=Paddy CH—10 followed by Paddy BR—34 followed by Berseem, T_2=Paddy CH—10 followed by Paddy 498—2A followed by Onion, T_3=Paddy CH-10 followed by Paddy 498—2A followed by *Bhindi*. T_4=Paddy CH—10 followed by Paddy 498—2A followed by Paira Gram. T_5=*Dhaincha* (G.M.) followed by Paddy BR—34 followed by Wheat and *Moong* (fodder), T_6=*Dhaincha* (G.M.) followed by Paddy 498 2A followed by Hyb. Maize and T_7=*Dhaincha* (G.M.) followed by Paddy 498—2A followed by Paira Linseed.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 3. (iv) (a) and (b) 9·14 m.×7·37 m. (v) Nil. (vi) Yes.

4 GENERAL :

(i) Good. (ii) Nil. (iii) Germination %, tillers count, length of earhead, No. of grains/earhead, yield of grain and straw. (iv) (a) 1962-64 (Trs modified in 63 and 64). (b) No. (c) Nil. (v) Sheikhpura and Bikramganj. (vi) Nil. (vii) The monetary return per plot has been analysed.

5. RESULTS :

(i) 2990 Rs/ha. (ii) 557·8 Rs/ha. (iii) Treatment differences are significant. (iv) Av. return in Rs/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7	C.D.=992·4 Rs/ha.
Av. return	9351	1892	2016	1382	3161	1856	1270	

Crop :- Paddy (*Rabi*). **Ref :- Bh. 63(141).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'C'.**

Object :—To find out the economics of intensive cropping in irrigated tracts.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) As per treatments of expt. 62(107) on page 82. (ii) Loam. (iii) 1.5.63 to 22.4.64. (iv) (a) 2 to 5 ploughings by *Deshi* plough. (b) Broadcasting for Berseem, transplanting for Paddy and Onion, line sowing for others. (c) 24 Kg/ha. for Paddy, 7 Kg/ha. for Berseem, 10 Kg/ha. for Onion, 12 Kg/ha. for *Bhindi*, 48 Kg/ha. for Paira Gram, 70 Kg/ha. for *Dhaincha*, 20 Kg/ha. for Maize, 92 Kg/ha. for Wheat, 720 Kg/ha. for Potato. (d) 10 cm.×10 cm. for Onion, rows 25 cm. apart for Paddy and Wheat, 46 cm. apart for *Bhindi*, *Dhaincha*, *Moong* and Potato. (e) 1 for Onion, 2—3 for Paddy. (v) 45 Kg/ha. of N+45 Kg/ha. of P_2O_5 for Paddy and Wheat, 84 Kg/ha. of N+45 Kg/ha. of P_2O_5 for Onion, 45 Kg/ha. of N+34 Kg/ha. of P_2O_5 for *Bhindi*, 112 Kg/ha. of N+90 Kg/ha. of P_2O_5 for Maize, 11 Kg/ha. of N+45 Kg/ha. of P_2O_5 for *Dhaincha*, 45 Kg/ha. of N+45 Kg/ha. of P_2O_5+45 Kg/ha. of K_2O for Potato, 112 Kg/ha. of N+45 Kg/ha. of P_2O_5 for Barley. (vi) As per treatments. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 20.8.63 to 9.6.64.

2. TREATMENTS :

7 treatments on cropping pattern : T_1=Paddy CH—10 followed by Paddy BR—34 followed by Berseem (grain and folder), T_2=Paddy CH—10 followed by Paddy 498—2A followed by Onion, T_3=Paddy CH—10 followed by Paddy 498—2A followed by *Bhindi*, T_4=Paddy CH—10 followed by Paddy 498—2A followed by *Moong* (fodder and grain) followed by Potato *Satha*, T_5=Paddy BR—34 followed by Wheat followed by *Moong* (grain); T_6=Paddy 498—2A followed by Hyb. Maize and T_7=Paddy 498—2A followed by Barley.

3 DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 3. (iv) (a) and (b) 9·14 m.×7·37 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination %, No. of tillers, height of plant, length of earhead, weight of 1000 grains, yield of grain, fodder and straw. (iv) (a) 1962—64 (Trs. modified in 63 and 64). (b) No. (c) Nil. (v) Sheikhpura and Bikramganj. (vi) Nil. (vii) The monetary return per plot has been analysed.

5. RESULTS :

(i) 3393 Rs/ha. (ii) 749·7 Rs/ha. (iii) Treatment differences are highly significant. (iv) Av. return in Rs/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7	C.D.=1334 Rs/ha.
Av. return	3590	2672	3583	5646	3304	3427	1529	

Crop :- Paddy (*Rabi*). **Ref :- Bh. 64(177).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'C'.**

Object :—To find out the economics of intensive cropping in irrigated tracts.

1. BASAL CONDITIONS:

(i)(a) Nil. (b) and (c) As per treatments of expt. 63(141) on page 83. (ii) Loam. (iii) 2.5.64 to 27.1.65. (iv) (a) 2 to 5 ploughings by *Deshi* plough. (b) Broadcasting for Berseem, transplanting for Paddy and Onion, line sowing for others. (c) 24 Kg/ha. for Paddy, 7 Kg/ha. for Berseem, 10 Kg/ha. for Onion, 70 Kg/ha. for *Dhaincha*, 20 Kg/ha. for Maize, 92 Kg/ha. for Wheat, 720 Kg/ha. for Potato. (d) 10 cm.× 10 cm. for Onion, rows 25 cm. apart for Paddy, Wheat and Barley, 46 cm. for *Dhaincha* and Potato. (e) 1 for Onion, 2—3 for Paddy. (v) 45 Kg/ha. of N+45 Kg/ha. of P_2O_5 for Paddy and Wheat, 84 Kg/ha. of N+ 45 Kg/ha. of P_2O_5 for Onion, 112 Kg/ha. of N+90 Kg/ha. of P_2O_5 for Maize, 11 Kg/ha. of N+45 Kg/ha. of P_2O_5 for *Dhaincha*, 45 Kg/ha. of N+45 Kg/ha. of P_2O_5+45 Kg/ha. of K_2O for Potato, 11·5 Kg/ha. of N+45 Kg/ha. of P_2O_5 for Barley, 45 Kg/ha. of P_2O_5 for Berseem. (vi) As per treatments. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 23.8.64 to 25.5.65.

2. TREATMENTS :

7 treatments on cropping pattern : T_1=Paddy CH—10 followed by Paddy BR—34 followed by Berseem for grain (local), T_2=Paddy CH—10 followed by Paddy 498—2A followed by Onion (Patna Red), T_3=Paddy CH—10 followed by Paddy BR—34 followed by Wheat (NP 799), T_4=Paddy CH—10 followed by Paddy 498—2A followed by Potato *Satha*, T_5=Paddy CH—10 followed by Paddy 498—2A followed by Barley BR—22, T_6=Paddy CH—10 followed by Paddy 498—2A followed by Hyb. Maize and T_7=*Dhaincha* (G.M.) followed by Paddy BR—34 followed by Wheat.

3. DESIGN :

(i) R B.D. (ii) (a) 7. (b) N.A. (iii) 3. (iv) (a) and (b) 9 14 m.×7·37 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination %, No. of tillers, height of plants, length of earhead, No. of grains/earhead, yield of grain and straw. (iv) (a) 1962—64 (Trs. modified in 63 and 64). (b) No. (c) Nil. (v) Sheikhpura and Bikramganj. (vi) Nil. (vii) The monetary return per plot has been analysed.

5. RESULTS:

(i) 3098 Rs/ha. (ii) 636·9 Rs/ha. (iii) Treatment differences are highly significant. (iv) Av. return in Rs/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7	C.D.=1133 Rs/ha.
Av. return	₹40·	2063	2905	3106	2678	6157	2335	

Crop :- Paddy (*Kharif*). **Ref :- Bh. 60(318).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'C'.**

Object :—To select the suitable improved Mould Board plough for different regions in the state.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Arhar. (c) 22·5 Kg/ha. of N as A/S+5·6 Kg/ha. of $(NH_4)_2$ SO_4+45 Kg/ha. of P_2O_5 as Super+13 Kg/ha. of Super Phosphate. (ii) Sandy loam. (iii) 8.7.60. (iv) (a) 4 ploughings. (b) Line sowing. (c) 24 Kg/ha. (d) 23 cm. between rows. (e) —. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (vi) BR—34. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 4.11.60.

2. TREATMENTS :

8 cultural treatments : T_1=Panjab plough, T_2=Wah Wah plough, T_3=A.E.R. 15 cm. plough, T_4=A E.R. 20 cm. plough, T_5=Sabash plough, T_6=Bihar Junior plough, T_7=Bihar senior plough and T_8=Japanese plough.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 10·67 m.×21·03 m. (b) 10·06 m.×20·12 m. (v) 30 cm. ×46 cm. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1960—only and (c) —. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 3263 Kg/ha. (ii) 752·8 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	C.D.=1107·4 Kg/ha.
Av. yield	4292	3485	2723	3961	3406	2286	2432	3518	

Crop :- Paddy (*Kharif*). **Ref :- Bh. 62(7).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'C'.**

Object : - To study the possibility of double cropping of Paddy in irrigated area.

1. BASAL CONDITIONS :

(i) (a) to(c) N.A. (ii) Sandy loam. (iii) 31.5.62. (iv) (a) Ploughing by *Deshi* plough. (b) Japanese method. (c) 23 Kg/ha. (d) 23 cm. between rows and between plants. (e) 2 to 3. (v) 44·8 Kg/ha. of N as A/S+44.8 Kg/ha of P_2O_5 as Super. (vi) As per treatments. (vii) Irrigated by tube-well on 29.5.62 and 15.6.62. (viii) Three weedings by Japanese weeder. (ix) and (x) N.A.

2. TREATMENTS :

10 cultural treatments : T_1=498—2A followed by CH—1039, T_2=BR—34 followed by CH--1039, T_3=BK--88 followed by CH—10, T_4=BR—34 followed by CH—10, T_5=498—2A followed by CH—10, T_6=498—2A followed by 498—2A, T_7=T—90 followed by N—136, T_8=CH—10 followed by CH—10, T_9=T—141 followed by TKM—6 and T_{10}=CH—10 followed by BR—34.

3. DESIGN:

(i) R.B.D (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) 9·44 m.×2·45 m. (b) 9·14 m.×1·85 m. (v) 15 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Nil. (ii) Attack of 'Gundhi bug', dusted with B.H.C. 5%. (iii) Time of flowering, yield of grain. (iv) (a) 1962—only. (b) and (c) —. (v) and (vi) Nil. (vii) Crop failed for varieties 9 and 10.

5. RESULTS :

(i) 2751 Kg/ha. (ii) 363·4 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	C.D.=534·4 Kg/ha.
Av. yield	4196	3714	2997	2738	2273	2151	2106	1831	

Crop :- Paddy (*Kharif*). **Ref :- Bh. 64(36).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'C'.**

Object :—To see the effect of rotary hoe on the crop of Paddy.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Gram. (c) Nil. (ii) Clay loam. (iii) N.A. (iv) (a) 2 ploughings. (b) Japanese method. (c) N.A. (d) 23 cm. between rows and between plants. (e) 2 to 3. (v) Green manuring with *Dhaincha*+ 44·8 Kg/ha. of N as A/S+44·8 Kg/ha of P_2O_5 as Single Super. (vi) N.A. (vii) Unirrigated. (viii) As per treatments. (ix) N.A. (x) 20.12.64.

2. TREATMENTS :

Same as in expt. no. 64(130) conducted at Patna on page 77.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 8. (iv) (a) 6·60 m.×3·55 m. (b) 6·10 m.×3·05 m. (v) 25 cm.×25 cm. (vi) Yes.

4 GENERAL:

(i) and (ii) Nil. (iii) Yield of grain. (iv) (a) 1964—only. (b) and (c) —. (v) to (vii) Nil.

5. RESULTS:

(i) 3005 Kg/ha. (ii) 504·5 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2
Av. yield	2851	3261	2904

Crop :- Paddy (*Kharif*). **Ref :- Bh. 62(63).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'C'.**

Object :—To stucy the effect of earthing on the yield of Paddy.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) Clayey loam. (iii) 8 and 9.7.62./10 to 12.8.62. (iv) (a) 3 to 4 *Deshi* ploughings. (b) Transplanting. (c) 60 Kg/ha. (d) 45 cm.×30 cm. (e) N.A. (v) 184·5 Kg/ha. of N as A/S+276·7 Kg/ha. of P_2O_5 as Super. (vi) 498—2A. (vii) Irrigated. (viii) Weeding and harrowing and as per treatments. (ix) N.A. (x) 13 to 15.12.62.

2. TREATMENTS:

5 cultural treatments : T_0=Control (Paddy weeder), T_1=One earthing by Paddy earthing machine after 3 weeks of transplanting, T_2=One operation by Paddy weeder after 3 weeks of transplanting and one earthing by Paddy earthing machine, T_3=Two earthings by Paddy earthing machine—one after 3 weeks and other after 6 weeks of transplanting and T_4=Without any weeding operation.

3. DESIGN:

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 11·00 m.×9·10 m. (v) N.A. (vi) Yes.

4. GENERAL:

(i) Fair. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1962-64 (Trs. modified in 1963 and again modified in 1964). (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS:

(i) 2097 Kg/ha. (ii) 402·1 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4
Av. yield	2090	2209	2121	1994	2070

Crop :- Paddy (*Kharif*). **Ref :- Bh. 63(314).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'C'.**

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

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam(iii). 1.6.63/6 and 9.8.63. (iv) (a) Ploughing and earthing. (b) N.A (c) 25 Kg/ha. (d) 23 cm. between rows. (e) N.A. (v) Nil. (vi) BR—34. (vii) Irrigated. (viii) As per treatments. (ix) N.A. (x) 8 to 1 .12.63.

2. TREATMENTS:

5 cultural treatments : T_0=Rotary hoe (normal operation), T_1=One earthing by Paddy earthing machine after 3 weeks of transplanting, T_2=One raking by hand hoe-cum-rake after three

weeks of transplanting (in place of earthing by *Deshi* plough), T_3=Two earthings by Paddy earthing machine—one after 3 weeks and other after 6 weeks of transplanting and T_4=Two rakings by hand hoe-cum-rake after 3 weeks and 6 weeks of transplanting (in place of *Deshi* plough).

3. DESIGN:

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 11·97 m.×8·84 m. (x) N.A. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1962-64 (Trs modified in 1963 and again in 1964). (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS:

(i) 3154 Kg/ha. (ii) 397·1 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4
Av. yield	2947	3368	3512	3019	2923

Crop :- Paddy (*Kharif*). **Ref :- Bh. 64(350).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'C'.**

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

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) 27 to 31.8.64. (iv) (a) 4 ploughings. (b) Line sowing. (c) 25 Kg/ha. (d) 23 cm. between rows. (e) —. (v) Nil. (vi) BR—34. (vii) Irrigated. (viii) As per treatments. (ix) N.A. (x) 2.12.64.

2. TREATMENTS:

6 cultural treatments: T_0=Control (No operation), T_1=One earthing by Paddy earthing machine after 3 weeks of transplanting, T_2=One raking by hand hoe—cum—rake after three weeks of transplanting (in place of earthing by *Deshi* plough), T_3=Two earthings by Paddy earthing machine—one after 3 weeks and other after 6 weeks of transplanting and T_4=Two rakings by hand, hoe—cum—rake after 3 weeks and 6 weeks of transplanting (in place of *Deshi* plough).

3. DESIGN:

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) and (b) 9·14 m.×7·32 m. (v) Nil. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Yield of grain, no. of tillers, height of plants. (iv) (a) 1962—64 (Trs. modified in 1963 and again in 1964). (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS:

(i) 2845 Kg/ha. (ii) 375·2 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. yield	2237	2797	2576	3729	2848	288

C.D.=565·4 Kg/ha.

Crop :- Paddy (*Kharif*). **Ref :- Bh. 62(18), 63(35), 64(2).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'C'.**

Object :—To find out the best time of hoeing and number of hoeings to be given to get the maximum yield of *Early Aman* Paddy crop.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Sandy loam. (iii) 15.6.62 ; 18.6.63 ; 17.6.64. (iv) (a) 3–4 ploughings. (b) Japanese method. (c) N.A. (d) 25 cm.×25 cm. (e) 2—3. (v) G.M. with *Dhaincha*+45 Kg/ha. of N as A/S+ 45 Kg Kg/ha. of P_2O_5 as Super. (vi) *Early Aman*. (vii) Irrigated for 64 and N.A. for others. (viii) As per treatments. (ix) 88·0 cm. for 64 and N.A. for others (x) 18 to 20.12.62 ; 2 and 3.12.63 ; 10 and 11.12.64.

2. TREATMENTS :

5 cultural treatments : T_0=Control (No hoeing). T_1=Hoeing by rotary hoe every week after transplanting, T_2=Hoeing by rotary hoe every two weeks after transplanting, T_3=Hoieng by rotary hoe every three weeks after transplanting and T_4=Hand weeding only.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) 9·30 m.×7·40 m. ; 7·60 m.×6·60 m. ; 7·40 m.×6·60 m. (b) 9·30 m.×7·40 m. ; 7·10 m.×6·10 m. ; 6·80 m.×6·10 m. (v) Nil ; 25 cm.×25 cm. ; 30 cm.×25 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1962—64. (b) No. (c) Results of combined analysis are presented under 5. Results. (v) and (vi) Nil. (vii) As the error variances are heterogeneous and Treatments×Years interaction is absent ; hence the individual year results are presented under 5. Results.

5. RESULTS :

62(18)

(i) 2828 Kg/ha, (ii) 351·4 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4
Av. yield	2707	2938	2886	2843	2764

63(35)

(i) 2562 Kg/ha. (ii) 648·4 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4
Av. yield	2483	2815	2798	2360	2352

64(2)

(i) 1610 Kg/ha. (ii) 1203 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4
Av. yield	1538	1789	1702	1535	1487

Crop :- Paddy (*Kharif*). **Ref :- Bh. 64(113).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'C'.**

Object :—To develop a suitable plough to be drawn by single animal and to test its efficiency on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) N.A. (iii) 8.9.64. (iv) (a) 4 to 5 *Deshi* ploughings. (b) Japanese method. (c) 60 Kg/ha. (d) 45 cm.×30 cm. (e) N.A. (v) N.A. (vi) BR—34. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 7 and 9 12.64.

2. TREATMENTS :

3 cultural treatments : T_1=Puddling by single bullock plough, T_2=Puddling by *Deshi* plough with a pair of bullocks and T_3=Puddling by Meher plough with a pair of bullocks.

3. DESIGN:

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 7. (iv) (a) N.A. (b) 12·20 m.×9·10 m. (v) N.A. (vi) Yes.

4. GENERAL:

(i) Fair. (ii) Nil. (iii) Yield of grain and straw, width and depth of ploughing, lodging % and weed count. (iv) (a) to (c) No. (v) to (vii) Nil.

5. RESULTS:

(i) 1621 Kg/ha. (ii) 179·9 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3
Av. yield	1441	1772	1650

C.D.=209·5 Kg/ha.

Crop :- Paddy (*Kharif*). **Ref :- Bh. 62(17), 63(36), 64(1).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'C'.**

Object :—To find out the best time of hoeing and number of hoeings to be given to get the maximum yield of *Late Aman* Paddy crop.

1. BASAL CONDITIONS:

(i) (a) to (c) N.A. (ii) Sandy loam. (iii) 17.6.62; 18.6.63; 22.6.64. (iv) (a) Ploughings by *Deshi* plough. (b) Japanese method. (c) N.A. (d) 25 cm.×25 cm. (e) 2—3. (v) G.M. with *Dhaincha*+44·8 Kg/ha. of N as A/S+44·8 Kg/ha. of P_2O_5 as Super. (vi) *Late Aman*. (vii) Irrigated. (viii) As per treatments. (ix) N.A.; N.A.; 88·0 cm. (x) 23.11.62; 21 and 22.12.63; 26 and 27.11.64.

2. TREATMENTS:

5 cultural treatments: T_0=Control (no hoeing, no weeding), T_1=Hoeing by rotary hoe in every week after transplanting, T_2=Hoeing by rotary hoe in every two weeks after transplanting, T_3=Hoeing by rotary hoe in every three weeks after transplanting and T_4=Hand weeding only.

3. DESIGN:

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) 6·10 m.×3·60 m. for 62; 7·60 m.×6·60 m. for others. (b) 6·10 m.×3·60 m. for 62; 7·10 m.×6·10 m. for others. (v) Nil for 62; 25 cm.×25 cm. for others. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1962—64. (b) No. (c) Results of combined analysis are presented under 5. Results. (v) Kanke and Pusa. (vi) Nil. (vii) Error variances are homogeneous and Treatments×Years interaction is absent.

5. RESULTS:

Pooled results

(i) 2473 Kg/ha. (ii) 607·1 Kg/ha. (based on 68 d.f. made up of pooled error and Treatments×Years interaction). (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4
Av. yield	2700	2429	2257	2477	2501

Individual results

Treatment	T_0	T_1	T_2	T_3	T_4	Sig.	G.M.	S.E./plot
Year								
1962	3711	2960	2947	3144	3626	N.S.	3278	760·0
1963	2575	2602	2006	2125	2179	N.S.	2297	514·6
1964	1814	1726	1818	2164	1699	N.S.	1844	457·5
Pooled	2700	2429	2257	2477	2501	N.S.	2473	607·1

Crop :- Paddy (*Kharif*). **Ref :- Bh. 63(30), 64(43).**

Site :- Rice Res. Sub-Stn., Teloundha. **Type :- 'C'.**

Object :—To find out the effect of hoeing and weeding at different times on the yield of Paddy.

1. BASAL CONDITIONS :.

(i) (a) N.A. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) 30.7.63 ; 24.7.64. (iv) (a) 3 to 4 ploughings (b) Japanese method. (c) N.A. (d) 30 cm. × 30 cm. (e) 2—3. (v) G.M. with *Dhaincha* + 45 Kg/ha. of N as A/S + 45 Kg/ha. of P_2O_5 as Super. (vi) BR—34. (vii) Irrigated. (viii) Weeding and hoeing as per treatments. (ix) N.A. (x) 18.12.63 ; N.A.

2. TREATMENTS :

5 cultural treatments : T_0=Control (No hoeing and no weeding), T_1=Hoeing by rotary hoe every week after transplanting, T_2=Hoeing by rotary hoe at every two weeks after transplanting, T_3=Hoeing by rotary hoe at every three weeks of transplanting and T_4=Hand weeding only.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5 ; 6. (iv) (a) 6·40 m. × 6·30 m. (b) 6·10 m. × 6·00 m. (v) 15 cm. × 15 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1963—64. (b) Yes. (c) Results for combined analysis are presented under 5. Results. (v) Sabour. (vi) Nil. (vii) Error variances are homogeneous and Treatments × Years interaction is absent.

5. RESULTS :

Pooled results

(i) 3464 Kg/ha. (ii) 347·0 Kg/ha. (based on 40 d.f. made up of pooled error and Treatments × Years interaction). (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4
Av. yield	3296	3473	3464	3522	3569

Individual results

Treatment	T_0	T_1	T_2	T_3	T_4	Sig.	G.M.	S.E./plot
year 1963	2899	2842	3042	2947	3329	N.S.	3012	416·9
1964	3627	3998	3815	4002	3770	N.S.	3842	240·7
Pooled	3296	3473	3464	3522	3569	N.S.	3464	347·0

Crop :- Paddy (*Kharif*). **Ref :- Bh. 64(44).**

Site :- Rice Res. Sub-Stn., Teloundha. **Type-: 'C'.**

Object :—To find out the best time of hoeing for Paddy (498—2A).

1. BASAL CONDITIONS :

(i) (a) N.A. (b) and (c) Nil. (ii) Sandy loam. (iii) 24.7.64. (iv) (a) 3 ploughings by *Deshi* plough. (b) Japanese method. (c) N.A (d) 25 cm. × 25 cm. (e) 2 to 3. (v) G.M. with *Dhaincha* + 44·8 Kg/ha. of N as A/S + 44·8 Kg/ha. of P_2O_5 as Super. (vi) 498—2A. (vii) Irrigated. (viii) As per treatments. (ix) and (x) N.A.

2. TREATMENTS :

Same as in expt. No. 63(30), 64(43) noted above.

Hoeings in T_1, T_2 and T_3 were started from 1st, 2nd and 3rd week of transplanting respectively.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) and (b) 6·10 m.×3·00 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Lodged. (ii) Nil. (iii) Yield of grain. (iv) (a) 1964—only. (b) and (c) Nil. (v) Pusa and Sabour (vi) and (vii) Nil.

5. RESULTS :

(i) 1856 Kg/ha. (ii) 374·4 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4
Av. yield	1783	1924	1924	1850	1799

———

Crop :- Paddy (*Kharif*). **Ref :- Bh. 64(45).**

Site :- Rice Res. Sub-Stn., Teloundha. **Type :- 'C'.**

Object :—To see the effect of rotary hoe on the yield of Paddy (*Late Aman*).

1. BASAL CONDITIONS :

(i) (a) N.A. (b) and (c) Nil. (ii) Sandy loam. (iii) 24.7.64. (iv) (a) 3 ploughings by *Deshi* plough. (b) Japanese method. (c) N.A. (d) 25 cm.×25 cm. (e) 2 to 3. (v) G.M. with *Dhaincha*+44·8 Kg/ha. of N as A/S+44·8 Kg/ha. of P_2O_5 as Super. (vi) *Late Aman.* (vii) Irrigated. (viii) As per treatments. (ix) and (x) N.A.

2. TREATMENTS :

3 cultural treatments : T_0=Control, T_1=2 and T_2=3 hoeings.
Hoeings done by rotary hoe at an interval of 3 weeks starting from the 2nd week of transplanting.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 8. (iv) (a) and (b) 6·10 m.×3·00 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Lodged. (ii) Nil. (iii) Yield of grain. (iv) (a) 1964 only. (b) and (c) N.A. (v) Sabour. (vi) and (vii) Nil.

5. RESULTS :

(i) 2916 Kg/ha. (ii) 424·3 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2
Av. yield	2919	2942	2888.

———

Crop :- Paddy (*Kharif*). **Ref :- Bh. 60(326).**

Site :- Agri. Res. Instt., Dholi. **Type :- 'CV'.**

Object :—To find out the effect of different dates of transplanting on the yield of different varieties of Paddy crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) 15.6.60/As per treatments. (iv) (a) 3 ploughings. (b) Transplanting. (c) 25 Kg/ha. (d) 23 cm. between rows. (e) 2. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) As per treatments. (vii) Irrigated (viii) Weeding and hoeing. (ix) N.A. (x) 18 and 27.11.60.

2. TREATMENTS :

Main-plot treatments :

4 dates of transplanting : D_1=15th July, D_2=1st Aug., D_3=15th Aug. and D_4=1st Sept.

Sub-plot treatments :

3 varieties : V_1=BK—115, V_2=BK—141 and V_3=220—bB.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication, 3 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 10 10 m. ×3·05 m. (b) 6·10 m.×3·05 m. (v) 2·00 m. on either side (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1959—61 (Treatments modified in 61). (b) No. (c) Nil. (v) Patna, Kanke and Sabour. (vi) and (vii) Nil.

5. RESULTS :

(i) 538 Kg/ha. (ii) (a) 221·3 Kg/ha. (b) 462·4 Kg/ha. (iii) Main effect of D alone is significant. (iv) Av. yield of grain in Kg/ha.

	D_1	D_2	D_3	D_4	Mean
V_1	569	339	427	508	461
T_2	833	102	416	589	485
V_3	894	549	975	254	668
Mean	765	330	606	450	538

C.D. for D marginal means=255·0 Kg/ha.

———

Crop :- Paddy (*Kharif*). **Ref :- Bh. 60(327).**

Site :- Agri. Res. Instt., Dholi. **Type :- 'CV'.**

Object :—To find out the effect of different dates of transplanting on the yield of Paddy varieties.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) 15.6.60/As per treatments. (iv) (a) 3 ploughings. (b) Transplanting. (c) 25 Kg/ha. (d) 23 cm. between rows. (e) 2. (v) 184·5 Q/ha. of Compost. (vi) As per treatments. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 15.12.60.

2. TREATMENTS :

Main-plot treatments :

4 dates of transplanting : D_1=15th July, D_2=1st Aug., D_3=15th Aug. and D_4=1st. Sept.

Sub-plot treatments :

2 varieties : V_1=BK—16 and V_2=BK—88.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication, 2 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 6·60 m.× 3·55 m. (b) 6·10 m.×3·05 m. (v) 25 cm.×25 cm. (vi) Yes.

4 GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1960 only. (b) and (c) Nil. (v) Patna, Bikramganj, Kanke and Sabour. (vi) and (vii) Nil.

5. RESULTS :

(i) 1506 Kg/ha. (ii) (a) 674·6 Kg/ha. (b) 748·9 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	D_1	D_2	D_3	D_4	Mean
V_1	1874	1870	2178	1249	1793
V_2	1218	1501	1332	823	1219
Mean	1546	1686	1755	1036	1506

Crop :- Paddy (*Kharif*). **Ref :- Bh. 60 328), 64(366).**

Site :- Agri. Res. Instt., Dholi: **Type :- 'CV'.**

Object :—To find out the effect of different dates of transplanting on the yield of Paddy crop.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Fallow. (c) Nil (ii) Sandy loam. (iii) 10.6.60/As per treatments ; 15.6.64/As per treatments. (iv) (a) 3 ploughings. (b) Transplanting. (c) 25 Kg/ha. ; 23 Kg/ha. (d) 23 cm.×23 cm. (e) 2–3. (v) 89·7 Kg/ha. of N as A/S+67·5 Kg/ha. of P_2O_5 as Super. (vi) As per treatments. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 16.12.60 ; 2.12.64.

2. TREATMENTS :

Main-plot treatments :

5 dates of transplanting : T_1=15th July, T_2=1st Aug., T_3=15th Aug., T_4=1st Sept. and T_5=15th Sept.

Sub-plot treatments :

3 varieties: V_1=BK—36, V_2=498—2A and V_3=818—3.

3. DESIGN :

(i) Split-plot. (ii) (a) 5 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 6·60 m. ×3·55 m. (b) 6·10 m.×3·05 m. (v) 25 cm.×25 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1960—64 (Treatments modified from 1961 to 63). (b) No. (c) Nil. (v) Patna, Bikramganj, Kanke and Sabour. (vi) Nil. (vii) As the sub-plot error variances are heterogeneous, the results of individual year are presented under 5. Results.

5. RESULTS :

60(328)

(i) 1321 Kg/ha. (ii) (a) 292·6 Kg/ha. (b) 386·8 Kg/ha. (iii) Main effect of T is highly significant and that of V is significant. (iv) Av. yield of grain in Kg/ha.

	T_1	T_2	T_3	T_4	T_5	Mean
V_1	2021	1107	1859	1472	447	1381
V_2	2133	2184	1341	1382	518	1512
V_3	1351	1616	1372	761	259	1072
Mean	1835	1635	1524	1205	408	1321

C.D for T marginal means=318·0 Kg/ha.

C.D. for V marginal means=294·7 Kg/ha.

64(366)

(i) 3259 Kg/ha. (ii) (a) 1321 Kg/ha. (b) 1021 Kg/ha. (iii) Main effect of T is significant and that of V is highly significant. (iv) Av. yield of grain in Kg/ha.

	T_1	T_2	T_3	T_4	T_5	Mean
V_1	3782	4118	4305	2693	3511	3682
V_2	5079	6184	3803	2926	2026	4004
V_3	2319	2904	2046	2257	940	2093
Mean	3726	4402	3385	2625	2159	3259

C.D. for T marginal means=1435 Kg/ha.
C.D. for V marginal means=777·8 Kg/ha.

Crop :- Paddy (*Kharif*). **Ref :- Bh. 61(330).**

Site :- Agri. Res. Instt., Dholi. **Type :- 'CV'.**

Object :—To find out the effect of different dates of transplanting on the yield of Paddy varieties.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) As per treatments. (iv) (a) 3 ploughings. (b) Japanese method. (c) 25 Kg/ha. (d) 23 cm. between rows. (e) N.A. (v) 67 Kg/ha. of N as A/S+ 45 Kg/ha. of P_2O_5 as Super. (vi) As per treatments. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 3.1.62.

2. TREATMENTS :

Main-plot treatments :

5 dates of transplanting : D_1=15th July, D_2=1st Aug., D_3=15th Aug , D_4=1st. Sept. and D_5=15th Sept.

Sub-plot treatments :

3 varieties : V_1=BK—115, V_2=BK—141 and V_3=220—bB.

3 DESIGN :

(i) Split-plot. (ii) (a) 5 main-plots/replication, 3 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 20·15 m. ×4·57 m. (b) 16·15 m ×4·57 m. (v) 200 cm. on either side. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1959—61 (Treatments modified in 1961). (b) No. (c) Nil. (v) Patna, Bikramganj , Kanke and Sabour. (vi) and (vii) Nil.

5. RESULTS :

(i) 400 Kg/ha. (ii) (a) 160·0 Kg/ha. (b) 121·1 Kg/ha. (iii) Main effect of D is significant and that of V is highly significant. (iv) Av. yield of grain in Kg/ha.

	D_1	D_2	D_3	D_4	D_5	Mean
V_1	528	430	463	330	515	453
V_2	466	248	622	358	758	491
V_3	251	115	284	289	346	257
Mean	415	265	457	326	539	400

C.D. for D marginal means=174·0 Kg/ha.
C.D. for V marginal means=92·2 Kg/ha.

Crop :- Paddy (*Kharif*). **Ref :- Bh 60(333).**

Site :- Agri. Res. Instt., Dholi. **Type :- 'CV'.**

Object :—To study the effect of growing mixed Paddy of *Aus* and *Aman* to ensure uniformity in yield for the year of *Hathia* failure.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) 14.6.60/9 and 10.7.60. (iv) (a) 3 ploughings. (b) Line sowing. (c) As per treatments. (d) Rows 23 cm. apart. (e) —. (v) 45 Kg/ha of N as A/S+45, Kg/ha of P_2O_5 as Super. (vi) As per treatments. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 21.9.60 to 6.12.60.

2. TREATMENTS :

8 cultural treatments : T_1=Sona alone at 46 Kg/ha., T_2=Sona alone at 69 Kg/ha, T_3=Sona+498—2A at 46 Kg/ha. in the ratio 1 : 1, T_4=Sona+498—2A at 69 Kg/ha. in the ratio 2 : 1, T_5=Sona+498—2A at 92 Kg/ha. in the ratio 3 : 1, T_6=Sona+498—2A at 69 Kg/ha. in the ratio 1 : 1, T_7=Sona+498—2A at 92 Kg/ha. in the ratio 1 : 1 and T_8=498—2A alone at 46 Kg/ha.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 12·70 m.×3·55 m. (b) 12·19 m.×3·05 m. (v) 25 cm. ×25 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1960—only. (b) and (c) Nil. (v) Patna, Bikramganj, Kanke and Sabour. (vi) and (vii) Nil.

5. RESULTS :

(i) 1518 Kg/ha. (ii) 418·3 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	
Av. yield	1044	1067	1860	1394	1193	1725	1712	1647	C.D.=615·3 Kg/ha.

———

Crop :- Paddy (*Kharif*). **Ref :- Bh. 62(296).**

Site :- Agri. Rcs. Instt., Dholi. **Type :- 'CV'.**

Object :—To study the effect of growing mixed Paddy of *Aus* and *Aman* to ensure uniformity in yield for the year of *Hathia* failure.

1. BASAL CONDITIONS :

(i) (a) to (c) Nil. (ii) Sandy loam. (iii) 17.6.62/18.7.62. (iv) (a) 3 ploughings. (b) Line sowing. (c) 25 Kg/ha. (d) 23 cms. between rows. (e) —. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) As per treatments. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 28 and 29.9.62 to 7.12.62.

2. TREATMENTS :

5 cultural treatments : T_1=Sona alone, T_2=Sona+498 2A in the ratio of 1 : 1, T_3=Sona+498—2A in the ratio of 2 : 1, T_4=Sona+498—2A in the ratio of 3 : 1 and T_5=498—2A alone.

Note : Seeds sown at the rate of 25 Kg/ha. in the specified ratio.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) 12·70 m.×3·55 m. (b) 12·19 m.×3·05 m. (v) 25 cm. on each side. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1962-63 (yield was very poor for 1963, so the expt. for 1963 was rejected). (b) No. (c) Nil. (v) Patna. Kanke. Bikramganj, and Sabour. (vi) and (vii) Nil.

5. RESULTS :

(i) 2072 Kg/ha. (ii) 262·4 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5
Av. yield	1950	2228	1972	2188	2022

Crop :- Paddy (*Kharif*). **Ref :- Bh. 60(273).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'CV'.**

Object :—To find out the effect of different dates of transplanting with normal sowing on the yield of Paddy (*Early Aman*).

1. BASAL CONDITIONS :

(i) (a) Paddy—Fallow—G.M.—Paddy. (b) G M. (c) Nil. (ii) Sandy loam. (iii) 15.6.60/As per treatments. (iv) (a) 3 ploughings. (b) Japanese method. (c) 16 Kg/ha. (d) 23 cm.×23 cm. (e) N.A. (v) 45 Kg/ha of N as A/S+45 Kg/ha of P_2O_5 as Super. (vi) As per treatments. (vii) N.A. (viii) Weeding and harrowing. (ix) N.A. (x) 3 to 24.12.60

2. TREATMENTS :

Main-plot treatments :

4 dates of transplanting : D_1=15th July, D_2=1st ugust, D_3=15th August and D_4=1st September.

Sub-plot treatments :

2 varieties : V_1=16—BK and V_2=88—BK.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication, 2 Sub-plots/main-plot. (b) 16·96 m.×13·82 m. (iii) 4. (iv) (a) 6·60 m.×3·55 m. (b) 6·10 m.×30·5 m. (v) 25 cm.×25 cm (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Dates of flowering, yield of grain. (iv) (a) 1960-only. (b) No. (c) Nil. (v) Patna and Kanke. (vi) and (vii) Nil.

5. RESULTS :

(i) 2708 Kg/ha. (ii) (a) 470·9 Kg/ha. (b) 245·4 Kg/ha. (iii) Main effect of D is highly significant and interaction D×V is significant. (iv) Av. yield of grain in Kg/ha.

	D	D_2	D_3	D_4	Mean
V_1	3600	3342	2834	912	2672
V_2	3334	3244	2942	1453	2744
Mean	3467	3293	2888	1182	2708

C.D. for D marginal means=532 5 Kg/ha.
C.D. for D means at the same level of V=711·8 Kg/ha.
C.D. for V means at the same level of D=378·1 Kg/ha.

Crop :- Paddy (*Kharif*). **Ref :- Bh. 60(274).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'CV'.**

Object :—To find out the effect of different dates of transplanting with normal sowing on the yield of Paddy (Late series).

1. BASAL CONDITIONS:

(i) (a) Paddy–Fallow—G.M.—Paddy. (b) G.M. (c) Nil. (ii) Sandy Loam. (iii) 15.6.60/As per treatments. (iv) (a) 3 ploughings and plankings. (b) Japanese method. (c) 16 Kg/ha. (d) 23 cm.×23 cm. (e) N.A. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) As per treatments. (vii) N.A. (viii) Weeding and hoeing. (ix) N.A. (x) 9.12.60 to17.1.61.

2. TREATMENTS:

Main plot treatments :

5 dates of transplanting: D_1=15th July ; D_2=1st August, D_3=15th August, D_4=1st September and D_5=15th September.

Sub-plot treatments :

3 varieties : V_1=36—BK ; V_2=498—2A and V_3=818—3.

3. DESIGN :

(i) Split-plot. (ii) (a) 5 main-plots/rep. ; 3 sub-plots/mian-plot. (b) 21·00 m.×16·96 m. (iii) 3. (iv) (a) 6·60 m.×3·35 m. (b) 6·10 m.×3·05 m. (v) 25 cm.×15 cm. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Heavy attack of Jassids, sprayed with Endrin. (iii) Yield of grain and straw. (iv) (a) 1960-only. (b) and (c) —. (v) to (vii) Nil.

5. RESULTS :

(i) 2158 Kg/ha. (ii) (a) 755·9 Kg/ha. (b) 447·9 Kg/ha. (iii) Main effects of D and V are highly significant. (iv) Av. yield of grain in Kg/ha.

	D_1	D_2	D_3	D_4	D_5	Mean
V_1	4022	3638	3012	1248	196	2423
V_2	3770	4184	3362	607	30	2391
V_3	2997	2549	2244	469	44	1661
Mean	3596	3457	2872	775	90	2158

C.D. for D marginal means=821·7 Kg/ha.
C.D. for V marginal means=341·2 Kg/ha.

Crop :- Paddy (*Kharif*). **Ref :- Bh. 60(272), 61(280).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'CV'.**

Object : –To find out the effect of different dates of transplanting with normal sowing on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy—Fallow—G.M.—Paddy. (b) G.M. (c) N.A. (ii) Sandy loam. (iii) 15.6.60 ; 15.6.61/As per treatments. (iv) (a) 3 ploughings. (b) Japanese method. (c) 16 Kg/ha. (d) 23 cm ×23 cm. (e) N.A. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) As per treatments. (vii) N.A. (viii) Weeding and hoeing. (ix) N.A. (x) 11.11 to 17.12.60 ; 12 and 13·12·61.

2. TREATMENTS :

Main-plot treatments :

4 dates of transplanting: D_1=15th July, D_2=1st Aug. D_3=15th Aug., and D_4=1st Sept.

Sub-plot treatments :

3 varieties : V_1=BK—115, V_2=BK—141 and V_3=BR—34.

3. DESIGN:

(i) Split-plot. (ii) (a) 4 main-plots/rep. ; 3 sub-plots/main plot. (b) 21·03 m.×16·96 m. (iii) 3. (iv) (a) 6·60 m.×3·55 m. (b) 6·10 m.×3·05 m. (v) 25 cm.×25 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Heavy attack of Jassids, Endrine sprayed as control measure. (iii) Yield of grain. (iv) (a) 1960-61. (b) No. (c) Nil. (v) Patna and Kanke. (vi) Nil. (vii) As sub-plot error variances are heterogeneous, results of individual year are presented under 5. Results.

5. RESULTS :

60(272)

(i) 2136 Kg/ha. (ii) (a) 310·1 Kg/ha. (b) 413·5 Kg/ha. (iii) Main effect of D is highly significant. (iv) Av. yield of grain in Kg/ha.

	D_1	D_2	D_3	D_4	Mean
V_1	3077	3196	2308	627	2302
V_2	3740	3002	1470	308	2130
V_3	3314	2939	1337	317	1977
Mean	3377	3046	1705	417	2136

C.D. for D marginal means=357·6 Kg/ha.

61(280)

(i) 2353 Kg/ha. (ii) (a) 154·6 Kg/ha. (b) 244·4 Kg/ha. (iii) Main effects of D and V are highly significant and the interaction D×V is significant. (ix) Av. yield of grain in Kg/ha.

	D_1	D_2	D_3	D_4	Mean
V_1	3464	3269	3048	1079	2715
V_2	2950	3331	2663	946	2472
V_3	2899	2805	1660	118	1871
Mean	3105	3135	2457	714	2353

C.D. for D marginal means=178·4 Kg/ha.

C.D. for V marginal means=211·5 Kg/ha.

C.D. for D means at the same level of V=388·1 Kg/ha

C.D. for V means at the same level of D=433·8 Kg/ha.

Crop :- Paddy (*Kharif*). **Ref :- Bh. 61(167), 63(178), 64(223).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'CV'.**

Object :—To evaluate the effect of short day photo periodic induction on the yield of Paddy.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Fallow ; Paddy ; Maize. (c) Nil ; 45 Kg/ha. of N as A/S+45 Kg/ha of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. ; Nil. (ii) Sandy loam. (iii) 10.8.61 ; 5.8.63 ; 8.8.64. (iv) (a) 3 ploughings. (b) Transplanting. (c) —. (d) 25 cm ×25 cm. (e) 3. (v) 45 Kg/ha. of N as A/S+45 Kg/ha of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (iv) As per treatments. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) 80·2 cm. ; 67·8 cm ; 64·0 cm. (x) 9.12.61 ; 7.12.63 ; 20.11.64 to 3.12.64.

2. TREATMENTS :

All combinations of (1) and (2) :

(1) 2 cultural treatments : C_0=No treatment and C_1=Photo periodic induction in 16 hours darkness and 8 hrs light.

(2) 3 varieties : V_1=BK—115, V_2=BK—88 and V_3=BK—36.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 6 ; 6 ; 4. (iv) (a) 4·57 m.×3·35 m. (b) 3·66 m.×2·74 m. (v) 46 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) No. of tillers and leaves, No. of panicles/plant, No. of grain/panicle, yield of grain and straw. (iv) (a) 1961-64. (modified in 62). (b) Yes. (c) Results of combined analysis are given under 5. results. (v) and (vi) Nil. (vii) Error variances are homogeneous and Treatments×Years interaction is present.

5. RESULTS:

Pooled results

(i) 3379 Kg/ha. (ii) 1280 Kg/ha. (based on 10 d.f. made up of Treatments×Years interaction). (iii) Main effect of V is significant. (iv) Av. yield of grain in Kg/ha.

	V_1	V_2	V_3	Mean
C_0	3337	4056	2914	3436
C_1	3419	3791	2760	3323
Mean	3378	3923	2837	3379

C.D. for V marginal means=713·0 Kg/ha.

Individual results

Treatment	V_1	V_2	V_3	Sig.	C_0	C_1	Sig.	G.M.	S.E./Plot
year									
1961	2616	3259	3056	* *	3066	2888	N.S.	2977	404.9
1963	3538	3887	1948	* *	3203	3046	N.S.	3125	392.9
1964	3979	4624	3507	* *	4038	4036	N.S.	4037	444.0
Pooled	3378	3923	2837	* *	3436	3323	N.S.	3379	1280

Crop :- Paddy (*Kharif*). **Ref :- Bh. 62(142).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'CV'.**

Object :—To evaluate the effect of short day photo periodic induction on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) 6/7.8.62. (iv) (a) 3 ploughings. (b) Transplanting. (c) —. (d) 30 cm.×30 cm. (e) 3. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (vi) As per treatments. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) 44·6 cm. (x) 29.11.62 to 19.12.62.

2. TREATMENTS :

All combinations of (1) and (2) :

(1) 2 levels of photo periodic induction : I_0=Control and I_1=16 hour darkness and 8 hour light.

(2) 3 varieties : V_1=BR—8, V_2=BK—88 and BR—4.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) 5·49 m.×24·99 m. (iii) 6. (iv) (a) 4·57 m.×3·35 m. (b) 3·66 m.×2·74 m. (v) 45 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) No. of tillers and leaves, weight of panicles/plant, No. of grains/plant, weight of 1000 grains, yield of grain and straw. (iv) (a) 1962—only. (b) and (c) Nil. (v) to (vii) Nil.

5. RESULTS:

(i) 1312 Kg/ha. (ii) 299·8 Kg/ha. (iii) Main effect of V and interaction I×V are highly significant. (iv) Av. yield of grain in Kg/ha.

	I_0	I_1	Mean
V_1	1243	912	1077
V_2	1830	1538	1684
V_3	1092	1260	1176
Mean	1388	1237	1312

C.D. for V marginal means=252·1. Kg/ha.
C.D. for the body of I×V table=356·6 Kg/ha.

Crop :- Paddy (*Kharif*). **Ref :- Bh. 61(284), 63(259).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'CV'.**

Object :—To grow mixed Paddy of early and late maturity to ensure uniformity in yield in the year of *Hathia* failure.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) 3.6.61/12.7.61 ; 17.6 63/20.7.63. (iv) (a) 3 ploughings. (b) Japanese method. (c) 23 Kg/ha. (d) 25 cm.×25 cm. (e) 2—3. (v) 68 Kg/ha. of N as A/S+ 45 Kg/ha. of P_2O_5 as Super. (vi) As per treatments. (vii) N.A. (viii) Weeding and hoeing. (ix) N.A. (x) 18.12.61 ; 14.12.63.

2. TREATMENTS :

5 cultural treatments : T_1=Sona alone, T_2=Mixture of Sona and 493–2A in the ratio of 1 : 1, T_3=Mixture of Sona and 498 -2A in the ratio of 2: 1, T_4=Mixture of Sona and 498–2A in the ratio of 3: 1 and T_5=498—2A alone.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) 3·55 m.×12·69 m. (b) 3·05 m.×12·19 m. (v) 25 cm.× 25 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1960–63 (Treatments modified in 1961 and expt. for 1963—N.A.) (b) No. (c) Results of combined analysis are presented under 5. Results. (v) Patna and Sabour. (vi) Nil. (vii) Error variances are homogeneous and Treatments×Years interaction is present.

5. RESULTS :

Pooled results

(i) 2933 Kg/ha. (ii) 1526 Kg/ha. (based on 4 d.f. made up of Treatments×Years interaction). (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5
Av. yield	2520	3175	3066	2926	2976

Individual results

Treatment	T_1	T_2	T_3	T_4	T_5	Sig.	G.M.	S.E.plot
Year 1961	1987	3512	3281	2927	3625	**	3066	387·0
1963	3053	2838	2851	2925	2326	*	2798	373·0
Pooled	2520	3175	3066	2926	2976	N.S.	2933	1526

Crop :- Paddy (*Kharif*). **Ref :- Bh. 61(285), 63(260).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'CV'.**

Object :—To grow mixed Paddy of early and late maturity to ensure uniformity in yield in the year of *Hathia* failure.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) 7.6.61/N.A. ; 17.6.63/26.7.63. (iv) (a) 3 ploughings. (b) Japanese method. (c) 23 Kg/ha. (d) 25 cm.×25 cm. (e) 3. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) As per treatments. (vii) N.A. (viii) Weeding and hoeing. (ix) N.A. (x) 12.12.61,; 17.12.63.

2. TREATMENTS :

5 cultural treatments: T_1=CH—10 alone, T_2=Mixture of CH—10 and 498—2A in the ratio 1 : 1, T_3=Mixture of CH—10 and 498—2A in the ratio 2 : 1, T_4=Mixture of CH—10 and 498—2A. in the ratio of 3 : 1 and T_5=498—2A alone.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) 11·17 m.×4·31 m. (b) 10·67 m.×3·81 m. (v) 25 cm.× 25 cm. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1960—63 (Expts. for 60 and 62—N.A.). (b) No. (c) Results of combined analysis are presented under 5. Results. (v) Sabour and Patna. (vi) Nil. (vii) Error variances are heterogeneous and Treatments×Years interaction is present.

5. RESULTS :

Pooled results

(i) 2441 Kg/ha. (ii) 1006 Kg/ha. (based on 4 d.f. made up of Treatments×Years interaction). (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5
Av. yield	2277	2567	3123	2195	2045

Individual results

Treament	T_1	T_2	T_3	T_4	T_5	Sig.	G.M.	S.E./plot
Year 1961	2159	2726	2785	2250	2200	**	2624	700·9
1963	2394	2409	2462	2140	1890	**	2259	223·4
Pooled	2277	2567	3123	2195	2045	N.S.	2441	1006

Crop :- Paddy (*Kharif*). **Ref :- Bh. 60(279).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'CV'.**

Object :—To grow mixed *Aus* and *Aman* Paddy to ensure uniformity in yield in the year of *Hathia* failure.

1. BASAL CONDITIONS :

(i) (a) Paddy—Paddy. (b) Paddy. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Clay loam. (iii) 24.6.60/28 to 30.7.60. (iv) (a) Puddling and ploughing. (b) N.A. (c) As per treatments. (d) 23 cm.× 23 cm. (e) N.A. (v) 22·5 Kg/ha. of N as A/S+45·0 Kg/ha. of P_2O_5 as Super. (vi) As per treatments. (vii) Unirrigated. (viii) Hand weeding followed by rotary hoe. (ix) N.A. (x) 22.12.60.

2. TREATMENTS:

8 ratios of seed rate : T_1=CH – 10 alone at the rate of 49 Kg/ha., T_2=CH—10 alone at the rate of 74 Kg/ha., T_3=Mixture of CH –10 and 498—2A at the rate of 49 Kg/ha. in the ratio of 1 : 1, T_4=Mixture of CH—10 and 498—2A at the rate of 74 Kg/ha. in the ratio of 2 : 1, T_5=Mixture of CH—10 and 498—2A at the rate of 99 Kg/ha. in the ratio of 3 : 1, T_6=Mixture of CH—10 and 498—2A at the rate of 74 Kg/ha. in the ratio of 1 : 1, T_7=Mixture of CH—10 and 498—2A at the rate of 99 Kg/ha. in the ratio of 1 : 1 and T_8=498—2A alone at the rate of 49 Kg/h.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 11·17 m.×4·77 m. (b) 10·67 m.×3·81 m. (v) One row on either side and 48 cm. at each end. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1960—only. (b) and (c) Nil. (v) Sabour and Patna. (vi) and (vii) Nil.

2. RESULTS :

(i) 2699 Kg/ha. (ii) 336·6 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	
Av. yield	2317	2345	2821	2598	2495	2820	2813	3382	C.D.=495·1 Kg/ha.

Crop :- Paddy (*Kharif*). **Ref :- Bh. 60(278).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'CV'.**

Object :—To grow mixed *Aus* and *Aman* Paddy to ensure uniformity in yield in the year of *Hathia* failure.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Clay loam. (iii) 22.6.60/2 and 22.7.60. (iv) (a) 3 ploughings. (b) Sowing of seed. (c) As per treatments. (d) N.A. (e) —. (v) 22·5 Kg/ha. of N as A/S+45·0 Kg/ha. of P_2O_5 as Super. (vi) As per treatments. (vii) Unirrigated. (viii) Hand weeding. (ix) N.A. (x) 17.10. to 6.12.60.

2. TREATMENTS :

8 ratios of seed rate : T_1=Sona alone at the rate of 49 Kg/ha., T_2=Sona alone at the rate of 74 Kg/ha., T_3=Mixture of Sona and 498—2A at the rate of 49 Kg/ha. in the ratio of 1 : 1, T_4=Mixture of Sona and 498—2A at the rate of 74 Kg/ha. in the ratio of 2 : 1, T_5=Mixture of Sona and 498—2A at the rate of 99 Kg/ha. in the ratio of 3 : 1, T_6=Mixture of Sona and 498—2A at the rate of 74 Kg/ha. in the ratio of 1 : 1, T_7=Mixture of Sona and 498—2A at the rate of 99 Kg/ha in the ratio of 1 : 1 and T_8=498—2A alone at the rate of 49 Kg/ha.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 12·70 m.×3·81 m. (b) 12·19 m.×3·30 m. (v) 25 cm.× 25 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Gundhi bug was observed in *Aus* Paddy Sona at the time of flowering which was controlled by dusting of B.H.C.—5%. (iii) Yield of grain. (iv) (a) 1960—63 (Treatments modified in 1961 and onward and expt. for 1962—N.A.) (b) No. (c) Nil. (v) Sabour and Patna. (vi) and (vii) Nil.

5. RESULTS :

(i) 2887 Kg/ha. (ii) 311·6 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	C.D.=458·3 Kg/ha.
Av. yield	1616	1739	3132	3365	2893	3447	3188	3716	

Crop :- Paddy (*Kharif*). **Ref :- Bh. 60(183).**

Site :- Agri. Res. Instt., Patna. **Type :- 'CV'.**

Object :—To grow mixed *Aus* and *Aman* Paddy to ensure uniformity in yield in the year of *Hathia* failure.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) (a) Clay. (iii) 14.6.60/21.7.60. (iv) (a) 1 ploughing with tractor, 2 ploughings with *Deshi* plough. (b) Transplanting. (c) As per treatments. (d) 23 cm. between rows. (e) 3 to 4. (v) 45 Kg/na. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) As per treatments. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 27.9.60 and 2.10.60.

2. TREATMENTS :

8 ratios of seed rate : T_1=CH—10 alone at 46 Kg/ha., T_2=CH—10 alone at 69 Kg/ha., T_3=Mixture of CH—10 and 498—2A at 46 Kg/ha. in the ratio of 1 : 1, T_4=Mixture of CH—10 and 498—2A at 69 Kg/ha. in the ratio of 2 : 1, T_5=Mixture of CH—10 and 498—2A at 92 Kg/ha. in the ratio of 3 : 1, T_6=Mixture of CH—10 and 498—2A at 69 Kg/ha. in the ratio of 1 : 1 T_7=Mixture of CH—10 and 498—2A at 92 Kg/ha. in the ratio of 1 : 1 and T_8=498—2A alone at 46 Kg/ha.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) 12·74 m.×35·05 m. (iii) 4. (iv) (a) 12·74 m.×3·59 m. (b) 12·19 m.×3·04 m. (v) 27 cm.×27 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of bettle and gundhi bug, dusting of Aldrex and B.H.C.-5 % as control measure. (iii) Germination and flowering, maturity count and yield of grain. (iv) (a) 1960—only. (b) and (c) Nil. (v) Sabour, Pusa, Kanke and Bikramganj. (vi) and (vii) Nil.

5. RESULTS :

(i) 3291 Kg/ha. (ii) 401·7 Kg/ha. (iii) Treatment differences are highly significant. (iv) (a) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	C.D.=590·9 Kg/ha.
Av yield	1756	1740	3748	3681	3354	3916	4190	3944	

Crop :- Paddy (*Kharif*). **Ref :- Bh. 60(98).**

Site :- Agri. Res. Instt., Patna. **Type :- 'CV'.**

Object :—To see the effect of different dates of transplanting on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) N.A. (iii) 15.6.60/As per treatments. (iv) (a) N.A. (b) Japanese method. (c) 22 Kg/ha. (d) and (e) N.A. (v) 44·8 Kg/ha. of N as A/S+44·8 Kg/ha. of P_2O_5 as Super (vi) As per treatments. (vii) Irrigated. (viii) Weeding. (ix) N.A. (x) 10.11.60.

2. TREATMENTS:

Main-plot treatments :

4 dates of transplanting : D_1=15.7.60, D_2=1.8.60, D_3=16.8.60 and D_4=1.9.60.

Sub-plot treatments :

3 varieties : V_1=BK—115, V_2=BK—141 and V_3=BR—34.

3. DESIGN :

(i) (a) Split-plot. (ii) (a) 4 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 6·60 m. ×3·56 m. (b) 6·10 m.×3·05 m. (b) 25 cm.×25 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1960—only. (b) and (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2698 Kg/ha. (ii) (a) 268·4 Kg/ha. (b) 242·1 Kg/ha. (iii) None of the effects is significant. (iv) (a) Av. yield of grain in Kg/ha.

	D_1	D_2	D_3	D_4	Mean
V_1	2736	2991	2502	2298	2632
V_2	3072	2624	2476	1984	2539
V_3	3489	3042	2919	2248	2924
Mean	3099	2886	2632	2177	2698

Crop :Paddy (*Kharif*). **Ref :- Bh. 60(99).**

Site :- Agri. Res. Instt., Patna. **Type :- 'CV'.**

Object :—To study the effect of different dates of transplanting on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) N.A. (iii) 15.6.60/As per treatments. (iv) (a) N.A. (b) Japanese method. (c) 22 Kg/ha. (d) and (e) N.A. (v) 44·8 Kg/ha. of N as A/S+44·8 Kg/ha. of P_2O_5 as Super. (vi) As per treatments. (vii) Irrigated. (viii) One weeding. (ix) N.A. (x) 10.11.60.

2. TREATMENTS :

Main-plot treatments :

4 dates of transplanting : D_1=15.7.60, D_2=1.8.60, D_3=16.8.60 and D_4=1.9.60.

Sub-plot treatments :

2 varieties : V_1=BK—16 and V_2=BK—88.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 2 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 6·60 m. ×3·56 m. (b) 6·10 m.×3·05 m. (v) 25 cm.×25 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Tillers count, flowering and yield of grain. (iv) (a) 1960—only. (b) and (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2948 Kg/ha. (ii) (a) 179·8 Kg/ha. (b) 350·5 Kg/ha. (iii) Main effect of D is highly significant. (iv) Av. yield of grain in Kg/ha.

	D_1	D_2	D_3	D_4	Mean
V_1	3357	3417	3295	2106	3044
V_2	3395	3136	3044	1838	2853
Mean	3376	3276	3169	1972	2948

C.D. for D marginal means=203·4 Kg/ha.

Crop :- Paddy (*Kharif*). **Ref :- Bh. 60(182).**

Site :- Agri. Res. Instt., Patna. **Type :- 'CV'.**

Object :—To grow mixed *Aus* and *Aman* Paddy to ensure uniformity in yield for the year of *Hathia* failure.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Clay. (iii) 14.6.60/19.7.60. (iv) (a) 1 ploughing with tractor and 2 with *Deshi* plough. (b) Transplanting. (c) As per treatments. (d) 23 cm. between rows. (e) 3 to 4. (v) 67 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) As per treatments. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 18.12.60.

2. TREATMENTS :

8 ratios of seed rate : T_1=Sona alone at 46 Kg/ha., T_2=Sona alone at 69 Kg/ha., T_3=Mixture of Sona and 498—2A at 46 Kg/ha. in the ratio of 1 : 1, T_4=Mixture of Sona and 498—2A at 69 Kg/ha. in the ratio of 2 : 1, T_5=Mixture of Sona and 498—2A at 92 Kg/ha. in the ratio of 3 : 1, T_6=Mixture of Sona and 498—2A at 69 Kg/ha. in the ratio of 1 : 1, T_7=Mixture of Sona and 498—2A at 92 Kg/ha. in the ratio of 1 : 1 and T_8=498—2A alone at 46 Kg/ha.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) 12·74 m.×35·05 m. (iii) 4. (iv) (a) 12·74 m.×3·59 m. (b) 12·19 m.×3·04 m. (v) 27 cm.×27 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of bettles and gundhi bug, dusting of Endrin and B.H.C. as control measure. (iii) Germination, flowering, maturity count and yield of grain. (iv) (a) 1960—63 (Treatments modified from 1961). (b) Yes. (c) Nil. (v) Bikramganj, Sabour, Pusa and Kanke. (vi) and (vii) Nil.

5. RESULTS :

(i) 3066 Kg/ha. (ii) 462 0 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	C.D.=679·6 Kg/ha.
Av. yield	1293	1476	3974	3590	3161	3756	3645	3630	

Crop :- Paddy (*Kharif*). **Ref :- Bh. 62(64), 63(79).**

Site :- Agri. Res. Instt., Patna. **Type :- 'CV'.**

Object :—To find out the best time of hoeing with rotary hoe for two varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) N.A. (iii) 3.8.62 ; N.A. (iv) (a) Ploughings by *Deshi* plough. (b) Japanese method. (c) 23 Kg/ha. (d) 25 cm.×25 cm. (e) N.A. (v) N.A. (vi) As per treatments. (vii) Irrigated. (viii) As per treatments. (ix) N.A. (x) 10.1.63 ; N.A.

2. TREATMENTS:

All combinations of (1) and (2)

(1) 2 varieties : V_1=BR—34 and V_2=498—2A.

(2) 5 cultural treatments : T_0=Control, T_1=Hoeing every week starting from 1st week after transplanting, T_2=Hoeing after every two weeks starting from 2nd week after transplanting, T_3=Hoeing after every 3 weeks starting from 2nd week after transplanting and T_4=Hand weeding whenever necessary.

3. DESIGN:

(i) Fact in R.B.D. (ii) (a) 10. (b) N.A. (iii) 6. (iv) (a) 6·60 m.×5·08 m. (b) 6·10 m.×4·57 m. (iv) 25 cm.×25 cm. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Germination, flowering, maturity and yield of grain and straw. (iv) (a) 1962—63 (b) Yes. (c) Nil. (v) and (vi) Nil. (vii) As V_2—crop failed in 1963, results of individual years are presented under 5. Results.

5. RESULTS:

62(64)

(i) 5557 Kg/ha. (ii) 764·6 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	T_0	T_1	T_2	T_3	T_4	Mean
V_1	6219	6638	6632	6548	7146	6637
V_2	4221	4574	4592	5024	3973	4477
Mean	5220	5606	5612	5786	5559	5557

63(79)

(i) 3127 Kg/ha. (ii) 553·6 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain of V_1—variety in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4
Av. yield	3077	3055	3087	3442	3442

Crop :- Paddy (*Kharif*). **Ref :- Bh. 60(97), 61(106),**

Site :- Agri. Res. Instt., Patna. **Type :- 'CV'.**

Object :—To find out the effect of the different dates of transplanting on the yield of Paddy.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) and (c) N.A. (ii) N.A. (iii) 15.6.60/As per treatments ; 15.6.61/As per treatments. (iv) (a) 3 ploughings. (b) Japanese method. (c) 22 Kg/ha. (d) and (e) N.A. (v) 44·8 Kg/ha. of N as A'S+44·8 Kg/ha. of P_2O_5 as Super. (vi) As per treatments. (vii) Irrigated. (viii) One weeding. (ix) N.A. (x) 5.12.60 ; 13.12.61.

2. TREATMENTS:

All combinations of (1) and (2)

(1) 3 varieties : V_1=BK—36 ; V_2=498—2A and V_3=818—3.

(2) 5 dates of transplanting : D_1=15th July, D_2=1st August, D_3=16th August, D_4=1st September and D_5=16th September.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 15. (b) N.A. (iii) 3. (iv) (a) 6·60 m.×3·55 m. (b) 6·10 m.×3·05 m. (v) 25 cm×25 cm. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Tillers count, flowering and yield of grain. (iv) (a) 1960—61. (b) Yes. (c) Results of combined analysis are presented under 5. Results. (v) and (vi) Nil. (vii) Error variances are homogeneous and Treatments × Years interaction is present.

5. RESULTS :

Pooled results

(i) 2358 Kg/ha. (ii) 767·2 Kg/ha. (based on 14 d.f. made up of Treatments × Years interaction). (iii) Main effects of D and V are highly significant. (iv) Av. yield of grain in Kg/ha.

	D_1	D_2	D_3	D_4	D_5	Mean
V_1	2773	3394	2559	2050	1206	2396
V_2	3638	3134	3206	2392	1374	2749
V_3	2768	2422	2101	1506	818	1923
Mean	3060	2983	2622	1983	1133	2358

C.D. for D marginal means=548·7 Kg/ha.
C.D. for V marginal means=425·1 Kg/ha.

Individual results

Treatmet	D_1	D_2	D_3	D_4	D_5	Sig.	V_1	V_2	V_3	Sig.	G.M.	S.E./plot
Year 1960	3102	2637	2159	2176	872	**	2222	2631	1715	**	2189	366·2
1961	3017	3329	3085	1790	1393	**	2571	2866	2131	**	2523	339·3
Pooled	3060	2983	2622	1983	1133	**	2396	2749	1923	**	2358	767·2

Crop :- Paddy (*Kharif*). **Ref :- Bh. 61(197), 62(163), 63(202).**

Site :- Agri. Res. Instt., Patna. **Type :- 'CV'.**

Object :—To grow mixed *Aus* and *Aman* Paddy to ensure uniformity in yield for the year of *Hathia* failure.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) 45 Kg/ha. of N as A/S+45 Kg/ha of P_2O_5 as Super. (ii) Clay. (iii) 17.6.61/17 to 19.7.61 ; 13.6.62/12 and 13.7.62 ; 14.6.63/17.7.63. (iv) (a) 1 ploughing with tractor and 2 ploughings with *Deshi* plough. (b) Transplanting. (c) 11·2 Kg/ha. (d) 23 cm. between rows. (e) 3 to 4. (v) 67 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) As per treatments. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 25.9 to 26.12.61 ; 24.9 to 28.12.62 ; 25.9 to 23.12.63.

2. TREATMENTS:

5 ratios of seed rate : T_1=Sona alone, T_2=Sona+498—2A in the ratio of 1 : 1, T_3=Sona+498—2A in the ratio of 2: 1, T_4=Sona+498—2A in the ratio of 3 : 1, and T_5=498—2A alone.

3. DESIGN:

(i) R.B.D. (ii) (a) 5. (b) 12·74 m. × 20·21 m. (iii) 6. (iv) (a) 12·74 m. × 3·59 m. (b) 12·19 m. × 3·04 m. (v) 27 cm. × 27 cm. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Attack of rice hoper, case worm and gundhi bug, dusting with BHC 5% dust and spraying with Folidol for 61; Attack of stem borer and Endrin sprayed for 62; Nil for 63. (iii) Yield of grain, (iv) (a) 1960–63 (Treatments modified in 60). (b) Yes. (c) Results of combined analysis have been presented under 5. Results. (v) Bikramganj, Patna, Pusa andKanke. (vi) Nil. (vii) Error variances are heterogeneous and Treatments × Years interaction is present.

5. RESULTS:

Pooled results

(i) 4016 Kg/ha. (ii) 1634 Kg/ha. (based on 8 d.f. made up of Treatments × Years interaction). (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5
Av. yield	2075	4185	4541	4576	4705

C.D.=1256 Kg/ha.

Individual results

Treatment	T_1	T_2	T_3	T_4	T_5	Sig.	G.M.	S.E/plot
Year 1961	3442	6238	6867	7250	7020	**	6163	625·3
1962	1758	2364	2925	3567	3134	**	2750	212·3
1963	1025	3953	3831	2909	3962	**	3136	531·9
Pooled	2075	4185	4541	4576	4705	**	4016	1634

Crop :- Paddy (*Kharif*). **Ref :- Bh. 61(198), 62(164),**

Site :- Agri. Res. Instt., Patna. **Type :- 'CV'.**

Object:—To grow mixed *Aus* and *Aman* Paddy to ensure uniformity in yield for the year of *Hathia* failure.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Maize. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Clay. (iii) 11.6.61/14 and 15.7.61; 13.6 62/10 and 11.7.62. (iv) (a) One ploughing with tractor and 2 ploughings with *Deshi* plough. (b) Transplanting. (c) 11·2 Kg/ha. (d) 23 cm. between rows. (e) 3 to 4. (v) 22·5 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) As per treatments. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 19.9.61 to 24.12.61 ; 15.9.62 to 24.12.62

2. TREATMENTS:

5 ratios of seed rate: T_1=CH–10 alone, T_2=CH–10 and 498–2A in the ratio of 1 : 1, T_3=CH–10 and 498–2A in the ratio of 2 : 1, T_4=CH–10 and 498–2 A in the ratio of 3 : 1 and T_5=498–2A alone.

3. DESIGN:

(i) R.B.D. (ii) (a) 5. (b) 12·74 m. × 20·21 m. (iii) 6. (iv) (a) 12·74 m. × 3·59 m. (b) 12·19 m. × 3·04 m. (v) 27 cm. × 27 cm. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Attack of rice hispa, case worm, gundhi-bug Bhakhina disease—Endrin was sprayed. (iii) Germination and maturity count, tillers count, height of plant and yield of grain. (iv) 1960 –63 (Expts. for 60 and 63—N.A.). (b) Yes. (c) Results of combined analysis have been presented under 5. results. (v) Bikramganj, Kanke, Pusa and Sabour. (vi) Nil. (vii) Error variances are homogeneous and Treatments × Years interaction is present.

5. RESULTS :

Pooled results

(i) 3662 Kg/ha. (ii) 711·9 Kg/ha. (based on 4 d.f. made up of Treatments × Years interaction). (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5
Av. yield	1908	3679	4110	4677	3937

C.D. = 807·0 Kg/ha.

Individual results

Treatment	T_1	T_2	T_3	T_4	T_5	Sig.	G.M.	S.E./plot
Year 1961	1969	3452	3756	4184	3636	**	3399	189·8
1962	1847	3906	4464	5170	4238	**	3925	253·0
Pooled	1908	3679	4110	4677	3937	**	3662	711·9

Crop :- Paddy (*Kharif*). **Ref :- Bh. 63(203).**

Site :- Agri. Res. Instt., Patna. **Type :- 'CV'.**

Object :—To grow mixed *Aus* and *Aman* Paddy to ensure uniformity in yield for the year of *Hathia* failure.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Single Super. (ii) Clay. (iii) 20.6.63/13.7.63. (iv) (a) One ploughing with tractor and 2 ploughings with *Deshi* plough. (b) Transplanting. (c) 23 Kg/ha. (d) Rows 23 cm. apart. (e) 3 to 4. (v) 68 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Single Super. (vi) As per treatments. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 23 and 24.9.63 and 22.12.63.

2. TREATMENTS :

5 ratios of seed rate : T_1=CH—10 alone, T_2=CH—10 and 498—2A in the ratio of 1 : 1, T_3=CH—10 and 498—2A in the ratio of 2 : 1, T_4=CH—10 and 498—2A in the ratio of 3 : 1 and T_5=498—2A alone.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) 12·74 m. × 20·21 m. (iii) 6. (iv) (a) 12·74 m. × 3·59 m. (b) 12·19 m. × 3·04 m. (v) 27·5 cm. around the plot. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination %, flowering, maturity, tillers count, height of plants and yield of grain. (iv) (a) 1963 – only. (b) and (c) Nil. (v) Sabour, Pusa and Kanke. (vi) and (vii) Nil.

5. RESULTS :

(i) 3141 Kg/ha. (ii) 406·3 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5
Av. yield	2220	3077	3272	3360	3774

C.D. = 489·1 Kg/ha.

Crop :- Paddy (*Kharif*). **Ref :- Bh. 60(266).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'CV'.**

Object :—To compare the yield of mixed *Aus* and *Aman* to ensure one crop of Paddy in the event of failure of *Hathia* rains.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam (light). (iii) 17.6.60/23 and 24.7.60. (iv) (a) 3 ploughings and 4 puddlings. (b) Japanese method. (c) As per treatments. (d) 25 cm. between rows. (e) 2—3. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) As per treatments. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 5.10.60 to 20.12.60.

2. TREATMENTS :

8 ratios of seed rate : T_1=Sona alone at 46 Kg/ha., T_2=Sona alone at 69 Kg/ha., T_3=Mixture of Sona and 498—2A at 46 Kg/ha. in the ratio of 1 : 1, T_4=Mixture of Sona and 498—2A at 69 Kg/ha. in the ratio of 2 : 1, T_5=Mixture of Sona and 498—2A at 92 Kg/ha in the ratio of 3: 1, T_6=Mixture of Sona and 498 –2A at 69 Kg/ha. in the ratio of 1 : 1, T_7=Mixture of Sona and 498—2A at 92 Kg/ha. in the ratio of 1 : 1 and T_8=498—2A alone at 46 Kg/ha.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 12·70 m.×3·55 m. (b) 12·20 m.×3·05 m. (v) 25 cm.× 25 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Tillers count, height of plants and yield of grain and straw. (iv) (a) 1960—63 (Treatments modified in 1961). (b) Yes. (c) Nil. (v) Bikramganj, Patna, Pusa and Kanke. (vi) and (vii) Nil.

5. RESULTS :

(i) 1642 Kg/ha. (ii) 244·1 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	C.D.=359·1 Kg/ha.
Av. yield	781	1220	1891	1331	1482	1992	2185	2255	

———

Crop :- Paddy (*Kharif*). **Ref :- Bh. 60(267).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'CV'.**

Object :—To compare the yield of mixed *Aus* and *Aman* to ensure one crop of Paddy in the event of failure of *Hathia* rains.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam (light). (iii) 20.6.60/24.7.60. (iv) (a) 3 ploughings. (b) Japanese method. (c) As per treatments. (d) 25 cm. between rows. (e) 2—3. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) As per treatments. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 3.10.60. to 12.12.60.

2. TREATMENTS :

8 ratios of seed rate : T_1=CH—10 alone at 46 Kg/ha., T_2=CH—10 alone at 69 Kg/ha., T_3=Mixture of CH—10 and 498—2A at 46 Kg/ha. in the ratio of 1 : 1, T_4=Mixture of CH—10 and 498—2A at 69 Kg/ha. in the ratio of 2 : 1, T_5=Mixture of CH—10 and 498—2A at 92 Kg/ha. in the ratio of 3 : 1, T_6=Mixture of CH—10 and 498—2A at 69 Kg/ha. in the ratio of 1 : 1, T_7=Mixture of CH—10 and 498—2A at 92 Kg/ha. in the ratio of 1 : 1 and T_8=498—2A alone at 46 Kg/ha.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 12·70 m.×3·55 m. (b) 12·20 m.×3·05 m. (v) 25 cm.× 25 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Tillers count, height of plants and yield of grain and straw. (iv) (a) 1960—63. (Treatments modified in 1961). (b) Yes. (c) Nil. (v) Patna, Pusa and Kanke. (vi) and (vii) Nil.

5. RESULTS :

(i) 1202 Kg/ha. (ii) 428·9 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Av. yield	808	1324	1613	1074	1043	1169	1184	1402

Crop :- Paddy (*Kharif*)· **Ref :- Bh. 61(77).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'CV'·**

Object : —To find out the effect of different dates of transplanting on the yield of late Paddy varieties.

1. BASAL CONDITIONS :

(i) (a) Paddy—Gram. (b) Gram. (c) Nil. (ii) Sandy loam. (iii) 15.6.60/As per treatments. (iv) (a) 6 *Deshi* ploughings. (b) Japanese method. (c) 16 to 23 Kg/ha. (d) 25 cm. (e) 2 to 3. (v) 44·8 Kg/ha. of N as A/S+44·8 Kg/ha. of P_2O_5 as Super. (vi) As per treatments. (vii) Irrigated. (viii) 2 weedings. (ix) 112 cm. (x) 14 to 16, 21.12.61, 5.1.62.

2. TREATMENTS :

Main-plot treatments :

5 dates of transplanting : D_1=15.7.61, D_2=1.8.61, D_3=15.8.61, D_3=1.9.61 and D_5=15.9.61.

Sub-plot treatments :

3 varieties : V_1=BK—36, V_2=498—2A and V_3=818—3.

3. DESIGN :

(i) Split-plot. (ii) (a) 5 main-plots/replication, 3 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 7·87 m.× 3·05 m. (b) 7·37 m.×2·49 m. (v) 25 cm.×28 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Flowering, height, of plants, tillers count and yield of grain. (iv) (a) 1958—61 (Expt. for 1960—N.A.) (b) Yes. (c) Nil. (v) Patna, Bikramganj, Pusa and Kanke. (vi) and (vii) Nil.

5. RESULTS :

(i) 1216 Kg/ha. (ii) (a) 225·7 Kg/ha. (b) 230·3 Kg/ha. (iii) Main effects of D and V are highly significant. (iv) Av. yield of grain in Kg/ha.

	D_1	D_2	D_3	D_4	D_5	Mean
V_1	1967	1550	1563	1347	69	1299
V_2	2074	1706	1681	1385	79	1385
V_3	1506	1658	1086	556	15	964
Mean	1849	1638	1443	1096	54	1216

C.D. for D marginal means=245·3 Kg/ha.
C.D. for V marginal means=175·4 Kg/h.

Crop :- Paddy (*Kharif*). **Ref :- Bh. 61(276), 62(253), 63(251).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'CV'.**

Object :—To compare the yield of mixed *Aus* and *Aman* to ensure one crop of Paddy in the event of failure of *Hathia* rains.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam (light). (iii) 17.6.61/27.7.61 ; 13.6.62/23.7.62 ; 15.6.63/19 and 20.7.63. (iv) (a) 3 ploughings and puddlings. (b) Japanese method. (c) 23 Kg/ha. (d) 25 cm. between rows. (e) 2—3. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) As per treatments. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 13.10.61. to 19.12.61 ; 6.10.62. to 9.12.62 ; 3.10.63. to17.12.63.

2. TREATMENTS :

5 ratios of seed rate : T_1=Sona alone, T_2=Sona and 498—2A in the ratio of 1 : 1, T_3=Sona and 498—2A in the ratio of 2 : 1, T_4=Sona and 498—2A in the ratio of 3 : 1 and T_5=498—2A alone.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) 12·44 m.×3·80 m. (b) 11·94 m.×3·30 m. (v) 25 cm.×25 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Tillers count, height of plants, yield of grain and straw. (iv) (a) 1960—63 (modified in 1961). (b) Yes. (c) Results of combined analysis are given under 5. Results. (v) Bikramganj, Patna, Pusa and Kanke. (vi) Nil. (vii) Error variances are heterogeneous and Treatments×Years interaction is present.

5. RESULTS :

Pooled results

(i) 2627 Kg/ha. (ii) 765·5 Kg/ha. (based on 8 d.f. made up of Treatments×Years interaction). (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5
Av. yield	1524	2878	2701	2388	3644

C.D.=588·5 Kg/ha.

Individual results

Treatment	T_1	T_2	T_3	T_4	T_5	Sig.	G.M.	S.E./plot
Year 1961	1899	3496	2870	2624	4029	**	2984	269·2
1962	1581	2554	2274	2058	3732	**	2440	298·6
1963	1091	2584	2961	2483	3172	**	2458	469·2
Pooled	1524	2878	2701	2388	3644	**	2627	765·5

Crop :- Paddy (*Kharif*). **Ref :- Bh. 61(277), 62(254), 63(252).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'CV'.**

Object :—To compare the yield of mixed *Aus* and *Aman* to ensure one crop of Paddy in the event of failure of *Hathia* rains.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam (light). (iii) 17.6.61/7 and 8.8.61 ; 13.6.62/21.7.62 ; 15.6.63/17 and 18.7.63. (iv) (a) 3 ploughings. (b) Japanese method. (c) 23 Kg/ha. (d) 25 cm. between rows. (e) 2—3. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) As per treatments. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 16.10.61. to 17.12.61 ; 1.10.62. to 10.12.62; 29.9.63. to 19.12.63.

2. TREATMENTS :

5 ratios of seed rate : T_1=CH–10 alone, T_2=CH—10 and 498—2A in the ratio of 1 : 1, T_3=CH—10 and 498—2A in the ratio of 2 : 1, T_4=CH–10 and 498—2A in the ratio of 3 : 1 and T_5=498—2A alone.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) 9·90 m.×4·57 m. (b) 9·40 m.×4·07 m. (v) 25 cm.× 25 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Tillers count, height of plants, yield of grain and straw. (iv) (a) 1960—63 (Treatments modified in 1961). (b) Yes. (c) Results of combined analysis are given under 5. Results. (v) Kanke, Patna and Pusa. (vi) Nil. (vii) Error variances are homogeneous and Treatments × Years interaction is present.

5. RESULTS :

Pooled results

(i) 2628 Kg/ha. (ii) 751·6 Kg/ha. (based on 8 d.f. made up of Treatments × Years interaction). (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5
Av. yield	1562	2788	2603	2400	3788

C.D.=577·7 Kg/ha.

Individual results

Treatment	T_1	T_2	T_3	T_4	T_5	Sig.	G.M.	S.E./plot
Year 1961	1416	2727	2523	2144	4188	**	2600	405·8
1962	2474	3249	2985	3197	3952	**	3172	334·8
1963	797	2387	2300	1860	3224	**	2114	352·8
Pooled	1562	2788	2603	2400	3788	**	2628	751·6

Crop :- Paddy (*Kharif*). **Ref :- Bh. 60(153), 61(176),**

Site :- Agri. Res. Instt., Kanke. **Type :- 'CM'.**

Object :—To study the effectiveness of soaking seeds in nutrient solution on the growth, vigour and grain yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) 25.6.60/28.7.60 ; 2.8.61. (iv) (a) 3 ploughings. (b) Transplanting. (c) 70 Kg/ha. (d) 25 cm.×25 cm. (e) 3. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) BR—34. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) 105·0 cm. ; 80·0 cm. (x) 10.12.60 ; 20.11.61.

2. TREATMENTS :

Main-plot treatments :

2 doses of manures : M_0=No manure and M_1=45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super.

Sub-plot treatments :

9 soaking treatments : T_0=Control, T_1=A/S, T_2=Urea. T_3=KNO_3, T_4=KH_2PO_4, T_5=K_2HPO_4, T_6=K_3PO_4, T_7=K_2SO_4 and T_8=Honey lands solution.

One soaking duration—24 hrs. ; One concentration—Half molar.

3. DESIGN:

(i) Split-plot. (ii) (a) 2 main-plots/replication, 9 sub-plots/main-plot. (b) 48·80 m.×4·60 m. (iii) 4. (iv) (a) 4·88 m.×2·74 m. (b) 4·27 m.×2·13 m. (v) 30 cm.×30 cm. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1959—61. (b) Yes. (c) Nil. (v) and (vi) Nil. (vii) As sub-plot error variances are heterogeneous individual years results are presented under 5. Results. Expt. of 1959 was also considered for combined analysis.

5. RESULTS:

60(153)

(i) 2183 Kg/ha. (ii) (a) 229·1 Kg/ha. (b) 894·1 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	Mean
M_0	1850	2017	2123	2141	1647	1942	1883	2001	2096	1961
M_1	2366	2312	2652	2304	2383	2361	2298	2463	2515	2406
Msan	2108	2164	2388	2222	2015	2152	2090	2232	2280	2183

61(176)

(i) 1447 Kg/ha. (ii) (a) 714·0 Kg/ha. (b) 343·7 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	Mean
M_0	1391	1466	900	1637	1293	1049	1200	1403	1216	1284
M_1	1465	1478	1685	1877	1939	1652	1563	1608	1231	1611
Mean	1428	1472	1292	1757	1616	1350	1382	1506	1224	1447

Crop :- Paddy (*Kharif*). **Ref :- Bh. 63(326).**

Site :- Agri. Res. Instt., Dholi. **Type :- 'CMV'.**

Object :—To find out the best combination of date of transplanting and manurial schedule for late *Aman* Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) 15th Aug., 1963/As per treatments. (iv) (a) 3 ploughings. (b) Transplanting. (c) 25 Kg/ha. (d) 23 cm. between rows. (e) N.A. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 4.1.64.

2. TREATMENTS :

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

(1) 3 dates of transplanting : D_1=25th Aug., D_2=10th Sept. and D_3=25th Sept.

(2) 3 varieties: V_1=BK—36, V_2=498—2A and V_3=818—3.

(3) 3 manurial doses : M_0=Control, M_1=33·6 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super and M_2=67·2 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super.

3. DESIGN :

(i) 3^3—confd. (ii) (a) 9. (b) N.A. (iii) 2. (iv) (a) 6·60 m.×3·65 m. (b) 6·10 m.×3·05 m. (v) 25 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1963—only. (b) and (c) Nil. (v) Patna, Sabour and Kanke. (vi) and (vii) Nil.

5. RESULTS :

(i) 1453 Kg/ha. (ii) 362·2 Kg/ha. (iii) Main effects of D and V are highly significant. (iv) Av. yield of grain in Kg/ha.

	M_0	M_1	M_2	V_1	V_2	V_3	Mean
D_1	1926	1657	1612	1926	1881	1388	1732
D_2	1926	1612	1433	1478	1926	1568	1657
D_3	985	896	1030	1030	1344	537	970
Mean	1612	1388	1359	1478	1717	1164	1453
V_1	1612	1523	1299				
V_2	1702	1792	1657				
V_3	1523	851	1120				

C.D. for D or V marginal means=250·4 Kg/ha.

Crop :- Paddy (*Kharif*). **Ref :- BH. 61(281), 63(257).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'CMV'.**

Object :—To find out the effect of different manurial doses, and dates of transplanting on the yield of different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy—Fallow. (b) Fallow. (c) Nil. (ii) Light loam. (iii) As per treatments. (iv) (a) 3 ploughings. (b) Japanese method. (c) 16 Kg/ha. (d) 25 cm.×25 cm. (e) — (v) 101 Kg/ha. of N as A/S+90 Kg/ha. of P_2O_5 as Super. (vi) As per treatments. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 12.11.61 ; 11 to 30.11.63.

2. TREATMENTS :

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

(1) 3 doses of manures : M_0=Control (no manure), M_1=33·6 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super and M_2=67·2 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super.

(2) 3 varieties : V_1=BK—36, V_2=498—2A and V_3=818—3.

(3) 3 dates of transplanting : D_1=25th July, D_2=15th Aug. and D_3=5th Sept.

3. DESIGN :

(i) 3^3—confounded. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) 10·06 m.×99·06 m. (iii) 2. (iv) (a) 9·65 m.×2·64 m. (b) 9·14 m.×2·03 m. (v) 25 cm.×25 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1961—63 (Expt. for 62—N.A.). (b) No. (c) Results of combined analysis are presented under 5. Results. (v) Patna and Sabour. (vi) Nil. (vii) Error variances are heterogeneous and MD×Years and DV×Years interactions are present.

5. RESULTS :

Pooled results

(i) 1581 Kg/ha. (ii) 836.0 Kg/ha. (based on 14 d.f. made up of Years×M, Years×V, Years×D, Years×M×D and Years×D×V interactions). (iii) Main effects of M and V are significant and that of D is highly significant. (iv) Av. yield of grain in Kg/ha.

	V_1	V_2	V_3	M_0	M_1	M_2	Mean
D_1	2913	3094	1632	1888	2435	3315	2546
D_2	1791	2016	1289	1236	1728	2132	1699
D_3	557	753	186	329	459	708	499
Mean	1754	1954	1036	1151	1514	2052	1581

C.D. for M, V or D marginal means=422·7 Kg/ha.

Individual results

Treatment	M_0	M_1	M_2	Sig.	V_1	V_2	V_3	Sig.	D_1	D_2	D_3
Year											
1961	1331	1804	2088	**	1992	2120	1111	**	2991	2090	141
1963	972	1278	2015	**	1515	1789	961	**	2102	1307	856
Pooled	1151	1541	2052	*	1754	1954	1036	*	2546	1699	499

Sig.	G.M.	S.E./plot
**	1741	278·8
**	1422	615·7
**	1581	836·0

Crop :- Paddy (*Kharif*). **Ref :- Bh. 60(100).**

Site :- Agri. Res. Instt., Patna. **Type :- 'CMV'.**

Object :—To find out the best combination of date of transplanting, fertility level for late *Aman* Paddy varieties.

1. BASAL CONDITIONS :

(i) and (ii) N A. (iii) As per treatments. (iv) (a) N.A. (b) Japanese method. (c) 16 Kg/ha. (d) and (e) N.A. (v) N.A. (vi) As per treatments. (vii) Irrigated. (viii) Weeding. (ix) N.A. (x) 21.12.60 to 18.1.61.

2. TREATMENTS :

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

(1) 3 varieties : V_1=BK—86 (BR—7), V_2=498—2A (BR—8) and V_3=818—3 (BR—9).

(2) 3 dates of transplanting : D_1=25.8.60, D_2=10.9.60 and D_3=25.9.60.

(3) 3 levels of fertilizers : M_0=Control, M_1=33·6 Kg/ha. of N as A/S+44·8 Kg/ha. of P_2O_5 as Super and M_2=67·2 Kg/ha. of N as A/S+44·8 Kg/ha. of P_2O_5 as Super.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 27. (b) N.A. (iii) 2. (iv) (a) 6·60 m.×3·55 m. (b) 6·10 m.×3·05 m. (v) 25 cm. alround the plot. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Tillers count, flowering and yield of grain. (iv) (a) 1960—63 (modified in 61—63). (b) Yes. (c) Nil. (v) No. (vi) and (vii) Nil.

5. RESULTS :

(i) 2354 Kg/ha. (ii) 157·4 Kg/ha. (iii) Main effects of V, D and M and the interaction V×D are highly significant. (iv) (a) Av. yield of grain in Kg/ha.

	D_1	D_2	D_3	M_1	M_2	M_3	Mean
V_1	3507	2973	1108	2257	2552	2779	2529
V_2	3679	2825	621	2203	2451	2470	2375
V_3	2834	2288	1348	1760	2201	2509	2157
Mean	3340	2695	1026	2073	2402	2586	2354
M_1	2928	2487	804				
M_2	3406	2829	970				
M_3	3685	2770	1303				

C.D. for V, D or M marginal means=107·9 Kg/ha.
C.D. for the body of V×D table =186·9 Kg/ha.

Crop :- Paddy (*Kharif*). **Ref :- Bh. 61(107), 62(75), 63(97).**

Site :- Agri. Res. Instt., Patna. **Type :- 'CMV'.**

Object :—To find out the best combination of dates of transplanting and manurial schedule for late sown Paddy.

1. BASAL CONDITIONS :

(i) (a) to (c) Nil. (ii) N.A. (iii) As per treatments. (iv) (a) 3 ploughings. (b) Japanese method. (c) 22 Kg/ha. (d) and (e) N.A. (v) N.A. (vi) As per treatments. (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 5.1.62 ; 4.1.63 ; 3.1.64.

2. TREATMENTS:

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

(1) 3 dates of transplanting : D_1=25th July, D_2=15th Aug. and D_3=5th Sept.

(2) 3 levels of fertilisers : F_0=Control, F_1=33·6 Kg/ha. of N as A/S+44·8 Kg/ha. of P_2O_5 as Super and F_2=67·2 Kg/ha. of N as A/S+44·8 Kg/ha. of P_2O_5 as Super.

(3) 3 varieties : V_1=BK−36 (BR−7), V_2=498−2A (BR−8) and V_3=818−3 (BR−9).

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 27. (b) N.A. (iii) 2. (iv) (a) 6·61 m.× 3·56 m. (b) 6·10 m.×3·05 m. (v) 25 cm. alround the plot. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Attack of leaf roller was noticed, spraying with Folidol. (iii) Yield of grain. (iv) (a) 1960 – 63 (modified in 60). (b) Yes. (c) Results of combined analysis have been presented under 5. Results. (v) and (vi) Nil. (vii) Error variances are homogeneous and Treatments × Years interaction is present.

5. RESULTS:

Pooled results :

(i) 2302 Kg/ha. (ii) 640·9 Kg/ha. (based on 36 d.f. made up of Treatments × Years interaction). (iii) Main effects of D, F and V are highly significant. (iv) (a) Av. yield of grain in Kg/ha.

	D_1	D_2	D_3	F_0	F_1	F_2	Mean
V_1	2735	2844	1918	2179	2650	2668	2499
V_2	2862	2836	2081	2376	2727	2675	2593
V_3	2144	2080	1215	1573	1874	1992	1813
Mean	2580	2587	1738	2043	2417	2445	2302
F_0	2383	2249	1496				
F_1	2699	2690	1863				
F_2	2659	2821	1556				

C.D. for V, D or M marginal means=250·3 Kg/ha.

Individual results :

Treatment	V_1	V_2	V_3	Sig.	D_1	D_2	D_3	Sig.	F_0	F_1	F_2
Year											
1961	2113	2180	1980	N.S.	2242	2218	1813	**	1609	2213	2451
1962	2719	2851	1800	**	2803	2814	1754	**	2293	2474	2603
1963	2665	2747	1659	**	2696	2728	1647	**	2226	2564	2281
Pooled	2499	2593	1813	**	2580	2587	1738	**	2043	2417	2445

Sig.	G.M.	S.E./plot
**	2091	329·0
N.S.	2457	336·6
N.S.	2357	496·3
**	2302	640·9

Crop :- Paddy. (*Kharif*). **Ref :- Bh. 60(262).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'CMV'.**

Object :—To find out the best combination of date of transplanting and doses of manures for different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam (light). (iii) 25.7.60, 10.8.60 and 25.8.60/As per treatment. (iv) (a) Ploughing and puddling with *Deshi* plough. (b) Japanese method. (c) 23 Kg/ha. (d) 25 cm. between rows. (e) 2—3. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) Hand weeding and intercultural operation with rotary hoe. (ix) N.A. (x) 29.12.60 and 18.1.61.

2. TREATMENTS :

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

(1) 3 dates of transplanting : D_1=25.8.60, D_2=10.9.60 and D_3=25.9.60.

(2) 3 doses of manures : M_0=No manure, M_1=33·6 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super and M_2=67·2 Kg/ha. of N+45 Kg/ha. of P_2O_5 as Super.

(3) 3 varieties : V_1= BK—36, V_2=498—2A and V_3=818—3.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 27. (b) N.A. (iii) 2. (iv) (a) 6·60 m.×3·55 m. (b) 6·10 m.×3·05 m. (v) 25 cm.×25 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) There was an attack of stem borer, spraying of Endrin 0·04 % was done as Control measure. (iii) Height measurement, tillers count (no. of tillers per plant taking 10 plants at random), yield of grain and straw. (iv) (a) 1960—64 (expts. for 1962—64 modified and rejected for 61). (b) No. (c) Nil. (v) Patna, Pusa and Kanke. (vi) and (vii) Nill.

5. RESULTS :

(i) 903 Kg/ha. (ii) 236·2 Kg/ha. (iii) Main effects of D and V and the interaction D×V are highly significant. Interactions M×V and M×D are significant. (iv) Av. yield of grain in Kg/ha.

	V_1	V_2	V_3	M_0	M_1	M_2	Mean
D_1	1863	2189	581	1445	1675	1513	1544
D_2	1321	1676	442	1430	990	1018	1146
D_3	29	23	7	17	22	20	20
Mean	1071	1296	343	964	896	850	903
M_0	1089	1486	316				
M_1	972	1175	540				
M_2	1152	1226	174				

C.D. for D or V marginal means=78·7 Kg/ha.
C.D. for the body of any two way table=136·4 Kg/ha.

———

Crop :- Paddy (*Kharif*). **Ref :- Bh. 62(47), 63(66), 64(96).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'CMV'.**

Object :—To find out the best combination of date of transplanting and manurial dose for different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy—Gram. (b) Gram. (c) Nil. (ii) Sandy loam. (iii) As per treatments. (iv) (a) 6 ploughings with *deshi* plough. (b) Japanese method. (c) 16 to 23 Kg/ha. (d) 25 cm. between rows. (e) 2 to 3. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) 2 weedings and hoeings. (ix) 53·0 cm. ; 51·0 cm ; 39·0 cm. (x) 17.12.62 ; 27.12.63 ; 16.12.64.

2. TREATMENTS :

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

(1) 3 dates of transplanting : D_1=25th July, D_2=15th Aug. and D_3=5th Sept.

(2) 3 doses of manures : M_0=No manure, M_1=34 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super and M_2=68 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super.

(3) 3 varieties : V_1=BK—36, V_2=498—2A and V_3=818—3.

3. DESIGN :

(i) 3^3—partially contd. (ii) (a) 3 blocks/replication ; 9 plots/block. (b) N.A. (iii) 2. (iv) (a) 6·60 m.× 3·56 m. (b) 6·10 m.×3·05 m. (v) 25 cm.×25 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Height measurement, tillers count, yield of grain and straw. (iv) (a) 1960—64 (expt. modified in 60 and rejected in 61). (b) Yes. (c) Results of combined analysis are presented under 5. Results. (v) Patna, Pusa and Kanke. (vi) Nil. (vii) Error variances are homogeneous and Treatments×Years interaction is absent.

5. RESULTS :

Pooled results :

(i) 2541 Kg/ha. (ii) 483·1 Kg/ha. (based on 102 d.f. made up of pooled error and Treatments × Years interaction). (iii) Main effects of D and V are highly significant. (iv) Av. yield of grain in Kg/ha.

	M_0	M_1	M_2	V_1	V_2	V_3	Mean
D_1	3142	2943	2746	3049	3506	2276	2944
D_2	2691	2499	2643	3122	3009	1703	2611
D_3	2195	1927	2081	2427	2723	1052	2068
Mean	2676	2456	2480	2866	3079	1677	2541
V_1	3022	2675	2900				
V_2	3349	2952	2938				
V_3	1657	1742	1633				

C.D. for D or V marginal means=184·1 Kg/ha.

Individual results :

Treatment	D_1	D_2	D_3	Sig.	M_0	M_1	M_2	Sig.	V_1	V_2	V_3	Sig.	G.M.	S.E./plot
Year 1962	2773	2420	1767	**	2533	2176	2251	N.S.	2661	2947	1352	**	2320	457·5
1763	2554	2625	2214	N.S.	2630	2359	2403	N.S.	2777	2880	1736	**	2464	607·0
1964	3504	2789	2221	**	2864	2834	2816	N.S.	3160	3411	1943	**	2838	376·3
Pooled	2944	2611	2068	**	2676	2456	2490	N.S.	2866	3079	1677	**	2541	483·1

Crop :- Paddy (*Kharif*). **Ref :- Bh. 65(4).**

Site :- Irrigation Res. Stn., Bikramganj. **Type :- 'I'.**

Object :—To study the effect of the different levels of irrigation on the growth of seedlings and yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) N.A. (ii) Clayee loam (iii) 4.6.65. (iv) (a) 3 *Deshi* ploughings. (b) Behind the plough. (c) 35 Kg/ha. (d) 25 cm. × 25 cm. (e) N.A. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) CH—10. (vii) As per treatments. (viii) 1 hand weeding. (ix) N.A. (x) 16 and 17.9.65.

2. TREATMENTS :

4 irrgational treatments : I_0=No irrigation (*Palewa* only), I_1=One irrigation of 3·8 cm., I_2=Two irrigations of 3·8 cm. each and I_3=Three irrigations of 3·8 cm. each.

I_1 I_2, and I_3 at seven days interval from the date of sowing depending upon rains.

3. DESIGN:

(i) R.B.D. (ii) (a) 4. (b) N.A.. (iii) 6. (iv) (a) 20·70 m.×3·00 m. (b) 19·70 m.×2·00 m. (v) 45 cm.× 45 cm. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Flowering, milk stage, ripening stage and yield of grain. (iv) (a) to (c) N.A. (v) to (vii) Nil

5. RESULTS :

(i) 4568 Kg/ha. (ii) 441·9 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	I_0	I_1	I_2	I_3
Av. yield	4328	4557	4537	4849

Crop :- Paddy (*Kharif*). **Ref :- Bh. 62(20).**

Site :- Irrigation Res. Stn., Bikramganj. **Type 'I'.**

Object :—To study the effect of different levels of irrigation on the growth of seedlings and the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Potato. (c) N.A. (ii) Light clayee. (iii) 2.5.62. (iv) 2 ploughings with *Sabash* plough followed by beaming. (b) Ridge and furrow method. (c) 23 Kg/ha. (d) 25 cm.×25 cm. (e) N.A. (v) 50 Kg/ha. of N as A/S+65 Kg/ha. of P_2O_5 as Super. (vi) CH--10. (vii) As per treatments. (viii) Nil. (ix) N.A. (x) 7.9.62.

2. TREATMENTS :

4 irrigational treatments : I_0=No irrigation (*Palewa* only), I_1=1, I_2=2 and I_3=3 irrigations.
Irrigations, each of intensity 1·5 acre inches, were given at 7 days interval from the date of sowing seed depending upon rains.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 14·94 m.×4·27 m. (b) 14·48 m.×3·66 m. (v) 23 cm.× 30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination, flowering and yield of grain. (iv) (a) 1962—only. (b) and (c)—. (v) to (vi) No. (vii) Very poor germination in control plot (I_0), so not included while analysiing.

5. RESULTS :

(i) 990·2 Kg/ha. (ii) 165·3 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	I_1	I_2	I_3
Av. yield	743	1157	1071

C.D.=213·2 Kg/aa.

Crop :- Paddy (*Kharif*). **Ref :- Bh. 63(38), 64(62), 65(6).**

Site :- Irrigation Res. Stn., Bikramganj. **Type :- 'I'.**

Object :—To study the effect of different levels of irrigations on the growth of seedlings and the yield of Paddy.

4. BASAL CONDITIONS :

(i) (a) Potato—Wheat—Wheat. (b) Potato ; Wheat ; Wheat. (c) N.A. (ii) Light clayee. (iii) 1.5.63 ; 1.5.64 ; 2.5.65. (iv) (a) One shabhagh plough and one *Deshi* plough for 63 and 64 and two *Shabhagh* plough followed by beaming. (b) Line sowing ; N.A. ; line sowing. (c) 18 Kg/ha. (d) 25 cm. × 25 cm. (e) 2 to 3. (v) 44·8 Kg/ha. of N+44·8 Kg/ha. of P_2O_5. (vi) CH—10. (vii) As per treatments. (viii) Two hand weedings. (ix) N.A. (x) 26, 27.8.63 ; 29, 30.8.64 ; 14.8.65.

2. TREATMENTS :

Same as in expt. No. 62(20) on Page 121.

3. DESIGN :

(i) R.B.D. (ii) (a) 4, (b) N.A. (iii) 6. (iv) (a) 10·70 m. × 3·70 m. (b) 9.60 m. × 2·50 m. (v) 55 cm. × 40 cm. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Germination, flowering and yield of grain. (iv) (a) 1963—65. (b) Yes. (c) Nil. (v) No. (vi) Nil. (vii) Error variances are heterogeneous and the Treatments × Years interaction is absent. Hence the results of individual years are presented under 5. Results.

5. RESULTS :

·63(38)

(i) 2549 Kg/ha. (ii) 579·2 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	I_0	I_1	I_2	I_3
Av. yield	2352	2593	2427	2825

·64(62)

(i) 4137 Kg/ha. (ii) 291·5 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	I_0	I_1	I_2	I_3
Av. yield	4242	4183	3970	4154.

·65(6)

(i) 3110 Kg/ha. (ii) 395 7 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	I_0	I_1	I_2	I_3
Av. yield	2889	3161	3297	3093

Crop :- Paddy (*Kharif*). **Ref :- Bh. 60(338), 61(337), 64(144), 65(207).**

Site :- Irrigation Res. Stn., Bikramganj. **Type :- 'I'.**

Object :—To study the effect of different irrigation on the growth of seedling and the yield of Paddy after Wheat crop.

1. BASAL CONDITIONS :

(i) (a) Wheat—Wheat. (b) Wheat. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super for 64 ; Nil for others. (ii) Sandy loam. (iii) 16.6.60/14.7.60 ; 1.6.61/30.6.61 and 1.7.61 ; 2.6.64/N.A. ; 16.6.65/19 and 20.6.65. (iv) (a) 1—3 ploughings. (b) Transplanting for 60, 61 and 65 and Japanese method for 64. (c) 20 Kg/ha. for 64 and 25 Kg/ha. for others. (d) 25 cm. × 25 cm. for 64 and 23 cm. between rows for others. (e) 2—3. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super for 64 and 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. for others. (vi) CH—10. (vii) As per treatments. (viii) Weeding and hoeing. (ix) 101 cm. for 64 and 134 cm. for others. (x) 6 and 7.10.60 ; 12 and 13.9.61 ; 24 and 25.9.64 ; 4.9.65.

2. TREATMENTS :

Same as in Expt. no. 62(20) on Page 121.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 20·70 m.×3·00 m. for 64 and 21·30 m.×4·30 m. for others. (b) 19·70 m.×2·00 m. for 64 and 20·70 m.×3·00 m. for others. (v) 51 cm.×51 cm. for 64 and 30 cm.×65 cm. for others. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1960—65 (Expts. for 1962, 63—N.A.) (b) No. (c) Nil. (v) and (vi) Nil. (vii) Error variances are heterogeneous and Treatments×Years interaction is absent. Hence the results of individual years are presented under 5. Results.

5. RESULTS :

60(338)

(i) 1394 Kg/ha. (ii) 219·4 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4
Av. yield	1352	1333	1385	1505

61(337)

(i) 2032 Kg/ha. (ii) 199·0 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4
Av. yield	1980	2038	2029	2082

64(144)

(i) 3563 Kg/ha. (ii) 496·9 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4
Av. yield	3371	3537	3454	3891

65(207)

(i) 1336 Kg/ha. (ii) 155·2 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4
Av. yield	1298	1305	1292	1450

Crop :- Paddy (*Kharif*). **Ref :- Bh. 62 (27), 63(45), 64(73), 65(9).**

Site :- Irrigation Res. Stn., Bikramganj. **Type :- 'I'.**

Object :—To study the effect of the different levels of irrigation on the growth of seedling and the yield of Paddy after Potato crop.

1. BASAL CONDITIONS :

(i) (a) Potato-Wheat. (b) Potato. (c) N.A. (ii) Light Clayee. (iii) 15.5.62 ; 15.5.63 ; 15.5.64 ; 16.5.65. (iv) One *Deshi* ploughing and one *Shabhagh* ploughing for 64 and 3 *Deshi* ploughings for others. (b) Japanese method. (c) 23 Kg/ha. for 62 and 63 ; 35 Kg/ha. for 64 and 65. (d) 25 cm.×25 cm. (e) N.A. (v) 45 kg/ha. of N+45 Kg/ha. of P_2O_5. (vi) CH-10. (vii) As per treatments (viii) Nil. (ix) N.A. ; 70 cm. ; 58 cm. ; N.A. (x) 9, 10.9.62 ; 30, 31.8.63 ; 5, 6.9.64 ; 4, 5.9.65.

2. TREATMENTS :

Same as in expt. no. 62 (20) on page 121.

3. DESIGN

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6 (iv) (a) 10·80 m.×4·30 m. for 62 and 10·70 m.×3.70 m. for others. (b) 10·40 m.×3·70 m. for 62 and 9.60 m.×2·50 m. for others. (v) 20 cm.×30 cm. for 62 and 55 cm.×60 cm. for others. (vi) Yes.

4. GENERAL INFORMATION

(i) Good. (ii) Nil. (iii) Germinatoin, flowering and yield of grain. (iv) (a) 1962-65. Yes. (c) Results of combined analysis are given under 5. Results. (v) No. (vi) Nil. (vii) Error variances are homogeneous and the Treatments × Years intraction is present.

5. RESULTS :

Pooled Results

(i) 2764 Kg/ha. (ii) 592·3 Kg/ha. (based on 9 d.f. made up of Treatments × Years interaction). (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3
Av. yield	2738	2694	2868	2757

Individual results :

Treatment	T_0	T_1	T_2	T_3	Sig.	G.M.	S.E./plot
Year							
1962	987	1257	1376	778	*	1100	235.7
1963	2876	2719	3127	2617	N.S.	2835	416·1
1964	3739	3433	3640	3895	N.S.	3677	387·5
1965	3348	3365	3331	3739	N.S.	3446	399·7
	2738	2694	2868	2757	N.S.	2764	592·3

Crop :- Paddy (*Kharif*) **Ref :- Bh. 64(64), 65(5).**

Site :- Irrigation Res. Stn., Bikramganj. **Type :- 'I'.**

Obect :-To study the effect of varying depths of pre-transplanting irrigation on the grain yield of Paddy on clay loam soil.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Wheat. (c) 45 Kg/ha. of N+45 Kg/ha. of P_2O_5. (ii) Clay loam. (iii) 3.5.64 ; 2.5.65. (iv) (a) 3 *Shabhagh* and *Deshi* ploughings. (b) Japanese method. (c) 23 kg/ha. (d) 25 cm.×25 cm. (e) N.A. (v) 45 Kg/ha. of N+45 Kg/ha. of P_2O_5 (vi) N.A. (vii) As per treatments. (viii) 1 hand weeding. (ix) N.A. (x) 1 and 2.9.64 ; 6 and 7.9.65.

2. TREATMENTS :

4 levels of irrigation : I_1=15, I_2=23, I_3=30 and I_4=38 cm.

Irrigation treatments to be applied prior to transplanting in one dose of 15 cm. depth and two doses in the rest. Irrigation subsequent to transplanting would be applied simultaneously to all treatments @ 6.4 cm. weekly depending upon rain fall.

3. DESIGN

(i) (a) R.B.D. (ii) (a) 4. (b) N.A. (iii) 5. (iv) (a) 21·90 m.×4.60 m. (b) 20.90 m.×3.60 m. (v) 50 cm.× 50 cm. (vi) Yes.

4. GENERAL

(i) good. (ii) Nil ; Treated plots were badly affected by Mealy Bugs and became patchy. (ii) Flowering, height of plants and yield of grain. (iv) (a) 1964-1965. (b) Yes. (c) Results of combined analysis are given under 5. Results. (v) and (vi) Nil. (vii) Error variances are homogeneous and the Treatments × Years interaction are absent.

5. RESULTS

Pooled results

(i) 3004 Kg/ha. (ii) 485·7 (based on 27 d.f. made up of pooled error and Treatments × Years interaction). (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	I_1	I_2	I_3	I_4
Av. yield	3030	2926	3106	2956

Individual results

Treatment	T_1	T_2	T_3	T_4	Sig.	G.M.	S.E./plot
Years							
1964	2915	2848	3150	3103	N.S.	3004	381·6
1965	3144	3093	3063	2808	N.S.	3004	591·2
Pooled	3030	2926	3106	2956	N.S.	3004	485·7

Crop :- Paddy (*Kharif*). **Ref :- Bh. 64(376), 65(210).**

Site :- Irrigation Res. Stn., Bikramganj. **Type :- 'I'.**

Object :—To study the effect of varying depth of pre-transplanting irrigation on the yield of *Aus* Paddy on sandy loam soil.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) 11.4.64 ; 7.5.65. (iv) (a) 3 ploughings. (b) Transplanting. (c) 25 Kg/ha. (d) 25 cm. × 25 cm. (e) 2—3. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (vi) CH—10. (vii) As per treatments. (viii) Weeding and hoeing. (ix) N.A. (x) 1 and 2.9.64 ; 29.9.65.

2. TREATMENTS:

4 levels of irrigation : I_1=15, I_2=23, I_3=30 and I_4=38 cm.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 5. (iv) (a) 21·95 m. × 4·57 m. (b) 20·88 m. × 3·50 m. (v) 53 cm. × 53 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) (a) Yield of grain. (iv) (a) 1963 – 65 (Expt. for 63—N.A.). (b) No. (c) Results for combined analysis are presented under 5. Results. (v) No. (vi) Nil. (vii) Error variances are homogeneous and Treatments × Years interaction is absent.

5. RESULTS :

Pooled results

(i) 3062 Kg/ha. (ii) 509·8 Kg/ha. (based on 24 d.f. made up of pooled error). (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	I_1	I_2	I_3	I_4
Av. yield	3086	2980	3164	3017

Individual results

Treatment	I_1	I_2	I_3	I_4	Sig.	G.M.	S.E/plot
Year							
1964	2969	2901	3209	3161	N.S.	3060	388·3
1965	3202	3058	3120	2873	N.S.	3063	607·4
Pooled	3086	2980	3164	3017	N.S.	3062	509·8

Crop :- Paddy (*Kharif*). **Ref :- Bh. 65(206).**

Site :- Irrigation Res. Stn., Bikramganj. **Type :- 'I'.**

Object :—To study the effect of different levels of irrigation on the growth of seedling and the yield of Paddy when seedling was raised in the beginning of May.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Wheat (NP—799). (c) Nil. (ii) Sandy loam. (iii) 2.5.65/2 and 3.6.65. (iv) (a) 3 ploughings. (b) Transplanting. (c) 25 Kg/ha. (d) 23 cm. between rows. (e) 2—3. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) CH—10. (vii) As per treatments. (viii) Weeding and hoeing. (ix) N.A. (x) 14.8.65.

2. TREATMENTS:

4 irrigational treatments : T_0=No irrigation (with *Palewa* only), T_1=One irrigation of 3·8 cm., T_2=Two irrigations of 3·8 cm. each and T_3=Three irrigations of 3·8 cm. each.

T_1, T_2 and T_3 at 7 days interval from the date of sowing depending upon rains.

3. DESIGN:

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) Yes. (iv) (a) 10·67 m.×3·66 m. (b) 9·60 m.×2·51 m. (v) 53 cm. ×57 cm. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1965—only. (b) No. (c) Nil. (v) No. (vi) and (vii) Nil.

5. RESULTS:

(i) 3164 Kg/ha. (ii) 402·7 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3
Av. yield	2940	3216	3355	3147

Crop :- Paddy (*Kharif*). **Ref :- Bh. 65(208).**

Site :- Irrigation Res. Stn., Bikramganj. **Type :- 'I'.**

Object :—To study the effect of different irrigation on the growth of seedling and yield of Paddy when seedling was raised in the beginning of June.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Wheat. (c) Nil. (ii) Sandy loam. (iii) 4.6.65/4 and 5.7.65. (iv) (a) 3—4 ploughings. (b) Transplanting. (c) 25 Kg/ha. (d) 23 cm. between rows. (e) 2—3 of 29 days old. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (vi) CH—10. (vii) As per treatments. (viii) Weeding and hoeing. (ix) N.A. (x) 16 and 17.9.65.

2. TREATMENTS:

4 irrigational treatments : T_0=No irrigation (with *Palewa* only), T_1=One irrigation of 3·8 cm., T_2=Two irrigations of 3·8 cm. each and T_3=Three irrigations of 3·8 cm. each.

T_1, T_2 and T_3 at 7 days interval from the date of sowing depending upon time.

3. DESIGN:

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 21·34 m.×4·29 m. (b) 20·73 m.×3·05 m. (v) 30 cm.× 62 cm. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1965—only. (b) No. (c) Nil. (v) to (vii) No.

5. RESULTS :

(i) 2893 Kg/ha. (ii) 280·4 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3
Av. yield	2741	2886	2873	3071

Crop :- Paddy (*Kharif*). **Bh. 61(335), 62(299), 64(143).**

Site : Irrigation Res. Stn., Bikramganj. **Type 'IM'.**

Object :- To study the effect of irrigation on the yield of Paddy in accordance with supply of moisture in spells of drought upto flowering stage.

1. BASAL CONDITIONS :

(i) Paddy-Wheat for 64 ; Nil for others. (b) Fallow for 61 ; Wheat for others. (c) Nil for 61 ; 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. for 62 and 64. (ii) Sandy loam. (iii) 28.6.61/8 and 9.8.61 ; 2.7.62/7 and 8.8.62 ; 25.6.64/N.A. (iv) (a) 3-4 ploughings. (b) Transplanting. (c) 25 Kg/ha. (d) 23 cm. between rows. (e) N.A. (v) Nil. (vi) 498-2A. (vii) As per treatments. (viii) Weeding and hoeing. (ix) N.A. for 61 and 62 ; 81·0 cm. for 64. (x) 29 and 30.12.61 ; 22 and 23.12.62 ; 9.12.64.

2. TREATMENTS :

Main-plot treatments :

2 manurial treatments : M_1=28·0 Kg/ha. of N as A/S+22·4 Kg/ha. of P_2O_2 as Super and M_2=56·0 Kg/ha. of N as A/S+44·8 Kg/ha. of P_2O_5 as Super.

Sub-plot treatments :

4 irrigational treatments : I_0=Control, I_1=Irrigation at 7 days interval at the rate of 5·1 cm., I_2=Irrigation at 10 days interval at the rate of 6·4 cm. and I_3=Irrigation at 13 days interval at the rate of 7·6 cm.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication, 4 sub-plots/main-plot (b) NA. (iii) 4 (iv) 23·47 m.×3·96 m. for 61 and 62 ; 23·32 m.×4.06 for 64. (b) 21·64 m.×2·13 m. for 61 and 62 ; 22·30 m.×3·05 m. for 64. (v) 91 cm. alround the plot for 61 and 62 ; 50 cm. alround the plot for 64. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1960-64 (Expt. for 63—NA). (b) No. (c) Nil. (v) Madhepura. (vi) Nil. (vii) As the main-plot as well as sub-plot error variances are heterogeneous, the results of individual years are presented under 5. Results.

5. RESULTS:

61(335)

(i) 3494 Kg/ha. (ii) (a) 886·3 Kg/ha. (b) 265·4 Kg/ha. (iii) None of the effects is significant (iv) Av. yield of grain in Kg/ha.

	I_0	I_1	I_2	I_3	Mean
M_1	3561	3492	3448	3865	3591
M_2	3410	3448	3308	3422	3397
Mean	3485	3470	3378	3644	3494

62(299)

(i) 4061 Kg/ha. (ii) (a) 366·6 Kg/ha (b) 328·8 Kg/ha. (iii) None of the effects is significant (iv) Av. yield of grain in Kg/ha.

	I_0	I_1	I_2	I_3	Mean
M_1	3960	4162	4102	3802	4006
M_2	4210	3824	4087	4343	4116
Mean	4085	3993	4095	4072	4061

64(143)

(i) 1768 Kg/ha. (ii) (a) 26·9 Kg/ha. (b) 12·8 Kg/ha. (iii) Main effect of M is significant. (iv) Av. yield of grain in Kg/ha.

	I_0	I_1	I_2	I_3	Mean
M_1	1905	2102	2042	1982	2008
M_2	1493	1692	1498	1433	1529
Mean	1699	1897	1770	1707	1768

C. D. for M marginal means=30·2 Kg/ha.

Crop :- Paddy (*Kharif*). **Ref :- Bh. 60(337), 61(336).**

Site :- Irrigation Res. Stn., Bikramganj. **Type :- 'IM'.**

Object :—To study the effect of Niger on the yield of Paddy with respect to various doses of manures and irrigations.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Maize. (c) Nil. (ii) Sandy loam. (iii) 5.7.60/17 to 19.8.60 ; 27.6.61/24 and 25.7.61. (iv) (a) 3 ploughings. (b) Transplanting. (c) 25 Kg/ha. (d) 23 cm. between rows. (e) N.A. (v) Nil. (vi) 498—2A. (vii) As per treatments. (viii) Weeding and hoeing. (ix) 26 cm. ; 26 cm. (x) 18 to 22.12.60 ; 11.11.61.

2. TREATMENTS :

Main-plot treatments :

2 manurial treatments : M_1=22·5 Kg/ha. of N as A/S+22·5 Kg/ha. of P_2O_5 as Super and M_2=45 Kg/ha of N as A/S+45 Kg/ha. of P_2O_5 as Super.

Sub-plot treatments :

6 irrigational treatments : I_0=Control without Niger, I_1=Wet soil, I_2=15 cm. constant submergence with Niger, I_3=15 cm. submergence with Niger between 10 to 17 September, I_4=15 cm. submergence with Niger between 15 to 22 September and I_5=15 cm. submergence with Niger between 20 to 27 September.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 6 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 22·60 m. ×5·20 m. (b) 21·30 m.×4·60 m. (v) 65 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1960—65 (Trs. modified in 1962 onward). (b) No. (c) Results of combined analysis are given under 5. Results. (v) No. (vi) Nil. (vii) Main-plot and sub-plot error variances are homogeneous and also main-plot Treatments × Years and sub-plot Treatments × Years interactions are absent.

5. RESULTS :

Pooled results :

(i) 2242 Kg/ha. (ii) (a) 470·5 Kg/ha. (based on 7 d.f. made up of pooled error and Treatments × Years interaction). (b) 212·9 Kg/ha. (based on 70 d.f. made up of pooled error and Treatments × Years interaction). (iii) Main effect of M alone is significant. (iv) Av. yield of grain in Kg/ha.

	I_0	I_1	I_2	I_3	I_4	I_5	Mean
M_1	2395	2238	2295	2567	2446	2358	2383
M_2	2209	2029	2090	2122	2104	2055	2102
Mean	2302	2133	2193	2344	2275	2207	2242

C.D. for M marginal means = 227·1 Kg/ha.

Individual results

Treatment	M_1	M_2	Sig.	I_0	I_1	I_2	I_3	I_4	I_5	Sig.
Years 1960	2491	2248	N.S.	2407	2214	2275	2416	2488	2387	N.S.
1961	2276	1955	N.S.	2198	2023	2110	2273	2062	2027	N.S.
Pooled	2383	2102	*	2302	2133	2193	2344	2275	2207	N.S.

G.M.	S.E./plot Main-plot	Sub-plot
2369	431·9	198·5
2116	563·7	232·9
2242	470·5	212·9

Crop :- Paddy (*Kharif*). **Ref :- Bh. 62(300), 64(374).**

Site :- Irrigation Res. Stn., Bikramganj. **Type :- 'IM'.**

Object :—To study the effect of Niger on the yield of Paddy with respect to various doses of manures and irrigations.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sugarcane ; Wheat. (c) Nil ; 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) 16.7.62/22 and 23.8.62 ; 4.7.64/6 to 8.8.64. (iv) (a) 3—4 ploughings. (b) Transplanting. (c) 25 Kg/ha. ; N.A. (d) 23 cm between rows. (e) N.A. (v) Nil. (vi) 498—2A. (vii) As per treatments. (viii) Weeding and hoeing. (ix) N.A. ; 46 cm. (x) 16 to 18.12.62 ; 21 to 23.12.64.

2. TREATMENTS :

Main-plot treatments :

2 manurial treatments : M_1=22·5 Kg/ha. of N as A/S+22·5 Kg/ha. of P_2O_5 as Super and M_2=45 Kg/ha, of N as A/S+45 Kg/ha. of P_2O_5 as Super.

Sub-plot treatments :

5 irrigational treatments : I_0=Control (without Niger), I_1=15 cm. constant submergence without Niger, I_2=15 cm. constant submergence with Niger between 10 to 17 September, I_3=15 cm. constant submergence witn Niger between 15 to 22 September and I_4=15 cm. constant submergence with Niger between 20 to 27 September.

3. DESIGN:

(i) Split-plot. (ii) 2 main-plots/replication ; 5 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 22·80 m.× 6·10 m. (b) 21·00 m.×4·60 m. (v) 90 cm.×75 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield ef grain. (iv) (a) 1960—65 (Trs. modified in 1960 and 61 ; and further in 1963 and 65.) (b) No. (c) Nil. (v) No. (vi) Nil. (vii) As sub-plot error variances are heterogeneous, individual year results are presented under 5. Results.

5. RESULTS :

62(300)

(i) 3773 Kg/ha. (ii) (a) 807·3 Kg/ha. (b) 484·0 Kg/ha. (iii) None of the effects is significant. (iv) Av yield of grain in Kg/ha.

	I_0	I_1	I_2	I_3	I_4	Mean
M_1	3279	3774	3817	3879	3926	3735
M_2	3614	3637	3918	4127	3761	3811
Mean	3446	3706	3867	4003	3844	3773

64(374)

(i) 2950 Kg/ha. (ii) (a) 214·7 Kg/ha. (b) 199·0 Kg/ha. (iii) Main effect of M alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	I_0	I_1	I_2	I_3	I_4	Mean
M_1	3135	2952	3439	3317	3174	3203
M_2	2900	2692	2770	2575	2549	2698
Mean	3017	2822	3105	2946	2861	2950

C.D. for M marginal means=216 1 Kg/ha.

Crop :- Paddy (*Kharif*). **Ref :- Bh. 63(333).**

Site :- Irrigation Res. Stn., Bikramganj. **Type :- 'IM'.**

Object :—To study the effect of Niger on the yield of Paddy with respect to various doses of manures and irrigations.

1 BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) 22·5 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (ii) Sandy loam. (iii) 25.6.63/17 and 18.9.63. (iv) (a) 3–4 ploughings. (b) Transplanting. (c) 25 Kg/ha. (d) 23 cm. between rows. (e) N.A. (v) Nil. (vi) 498—2A. (vii) As per treatments. (viii) Weeding aud hoeing (ix) N A. (x) 17 and 18 12 63.

2. **TREATMENTS :**

All combinations of (1) and (2)

2 manurial doses : M_1=67·5 Kg/ha. of N as A/S+67·5 Kg/ha. of P_2O_5 as Super and M_2=224·2 Kg/ha. of N as A/S+228·2 Kg/ha. of P_2O_5 as Super.

(2) 4 Stages of irrigation : T_1=No irrigation (control), T_2=Pre-sowing irrigation, T_3=T_2+one irrigation after one month of sowing, T_4=T_3+Pre-flowering irrigation and T_5=T_4 + Post-flowering irrigation.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a)22·50 Kg/ha.×6·10 m. (b) 21·00 m.×4 60 m. (v) 75 cm..×75 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain , germination, flowering, no. of tillers and height of plants, no. of earheads. (iv) (a) 1960—65 (Trs. different in 1960, 61, 62, 64 and 65). (b) No. (c) Nil. (v) Madhepura. (vi) and (vii) Nil.

5. RESULTS :

(i) 3117 Kg/ha. (ii) 230·1 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	T_1	T_2	T_3	T_4	T_5	Mean
M_1	3174	3133	3228	3319	3111	3193
M_2	3062	3020	3200	3042	2881	3041
Mean	3118	3077	3214	3181	2996	3117

Crop :- Paddy (*Kharif*). **Ref :- Bh. 65(205).**

Site :- Irrigation Res. Stn., Bikramganj. **Type :- 'IM'.**

Object :—To study the effect of Niger on the yield of Paddy with respect to varying doses of manures and irrigations.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) Nil. (ii) Sandy loam. (iii) 16.7.65/21 and 22.8.65. (iv) (a)3 —4 ploughings. (b) Transplanting. (c) N.A. (d) 23 cm. between rows. (e) 2–3. (v) Nil. (vi) 498 2A. (vii) Irrigated. (viii) 1 weeding and hoeing. (ix) 54 cm. (x) 14.12.65.

2. TREATMENTS :

Main-plot treatments :

Two doses of fertilizers : M_1=22·5 Kg/ha. of N as A/S+22·5 Kg/ha. of P_2O_5 as Super and M_2=45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super.

Sub-plot treatments :

5 stages of irrigation : T_1=No irrigation (control), T_2=Pre-sowing irrigation, T_3=T_2+One irrigation after one month of sowing, T_4=T_3+Pre-flowering irrigation and T_5=T_4+Post flowering irrigation.

3. DESIGN :

(i) Split-plot. (ii) 2 main plots/replication ; 5 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 22·50 m.× 6·10 m. (b) 21·00 m.×4·60 m. (v) 75 cm.×75 cm. (vi) Yes.

GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1960—65 (Trs. different in 1960, 61, 62, 63 and 64). (b) No. (c) Nil. (v) Madhepura. (vi) and (vii) No.

5. RESULTS :

(i) 3344 Kg/ha. (ii) (a) 160·3 Kg/ha. (b) 382·9 Kg/ha. (iii) Main effect of M alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	T_1	T_2	T_3	T_4	T_5	Mean
M_1	3304	3694	3577	3434	3278	3457
M_2	3291	3134	3369	3160	3200	3231
Mean	3297	3414	3473	3297	3239	3344

C.D. for M marginal means = 161·3 Kg/ha.

Crop :- Paddy (*Kharif*). **Ref :- Bh. 60(340), 63(336), 64(377), 65(217).**

Site :- District Agri. Farm, Dhangain (Bikramganj). **Type :- 'IM'.**

Object :—To study the effect of irrigation on the yield of Paddy in accordance with supply of moisture in spells of drought upto following stage.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat for 64 and Fallow for others. (c) 45 Kg ha. of N as A/S + 45 Kg/ha of P_2O_5 as Super for 64 and Nil for others. (ii) Sandy loam. (iii) 22.6.60/27.7.60 ; 23.6.63/24 and 25.7.63 ; 25.6.64/1 and 2.8.64 ; 27.6.65/26 and 27.8.65. (iv) (a) 3 ploughings (b) Line sowing for 60, 63 and 65 and Japanese method for 64. (c) 25 Kg/ha. (d) 23 cm. between rows (e) N.A. (v) Nil. (vi) 498—2A. (vii) As per treatments. (viii) Weeding and hoeing (ix) 52 cm. for 60 and Nil for others. (x) 26.12.60 ; 3.12.63 ; N.A. ; 13 to 17.12.65.

2. TREATMENTS :

Main-plot treatments :

2 manurial treatments : M_1 = 28·0 Kg/ha. of N as A/S + 22·4 Kg/ha. of P_2O_5 as Super and M_2 = 56·0 Kg/ha. of N as A/S + 44·8 Kg/ha. of P_2O_5 as Super.

Sub-plot treatments :

4 irrigational treatments : I_0 = Control, I_1 = Irrigation at 7 days interval at the rate of 5·1 cm., I_2 = Irrigation at 10 days interval at the rate of 7·8 cm. and I_3 = Irrigation at 12 days interval at the rate of 7·6 cm.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 4 sub-plots/mair-plot. (b) N.A. (iii) 4. (iv) (a) 23·30 m. × 4·10 m. for 64 and 21·60 m. × 2·10 m. for others. (b) 22·60 m × 3·00 m. for 64 and 21·60 m. × 2·10 m. for others. (v) 35 cm. × 55 cm. for 64. Nil for others. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1960—65 (Expts. for 1961, 62—N.A.) (b) No. (c) Results of combined analysis are given under 5. Results. (v) Madhepura. (vi) No. (vii) Main-plot and sub-plot error variances are homogeneous and main-plot Treatments × Years interaction is absent where as sub-plot Treatments × Years interaction is present.

5. RESULTS :

Pooled results

(i) 3073 Kg/ha. (ii) (a) 418·3 Kg/ha (based on 15 d.f. made up of pooled error and Treatments × Years interaction). (b) 427·8 Kg/ha. (based on 18 d.f. made up of Treatments × Years interaction). (iii) Main effect of M alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	I_0	I_1	I_2	I_3	Mean
M_1	3131	3272	3304	3229	3234
M_2	2759	2993	2894	3005	2913
Mean	2945	3133	3099	3117	3073

C.D. for M marginal means=157·6 Kg/ha.

Individual results

Treatment	M_1	M_2	Sig.	I_0	I_1	I_2	I_3	Sig.
Years								
1960	3297	2817	N.S.	3160	3142	2994	2932	N.S.
1963	3743	3599	N.S.	3547	3678	3658	3802	N.S.
1964	1967	1497	*	1664	1857	1733	1673	N.S.
1965	3930	3737	N.S.	3410	3853	4011	4061	**
Pooled	3234	2913	**	2945	3133	3099	3117	N.S.

G.M.	S.E./plot	
	Main-plot	Sub-plot
3057	500·6	425.9
3671	254·3	299·4
1732	371·6	176.7
3834	410·5	260·5
3073	418·3	427·8

Crop :- Paddy (*Kharif*). **Ref :- Bh. 60(47), 61(52).**

Site :- Botanical Sub-Stn., Dhangain (Bikramganj). Type :- 'IM'.

Object :—To study the effect of irrigation on the yield of Paddy in accordance with the supply of moisture in the spells of drought.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Wheat. (c) 45 Kg/ha. of N+45 Kg/ha. of P_2O_5. (ii) Clay loam. (iii) 22.6.60 ; 16.6.61. (iv) (a) 5 ploughings by *deshi* plough and puddling. (b) Line sowing. (c) 18 Kg/ha. (d) 25 cm.×30 cm. (e) 2—3. (v) Nil. (vi) CH 10. (vii) As per treatments. (viii) One hand weeding. (ix) N.A. (x) 9 to 12.10.60 ; 10.10.61.

2. TREATMENTS :

Main-plot treatments :

2 manurial treatments : M_1=28·0 Kg/ha. of N+22·4 Kg/ha. of P_2O_5 and M_2=56·0 Kg/ha. of N+44·8 Kg/ha. of P_2O_5.

Sub-plot treatments :

2 irrigational treatments : I_0=Control (no irrigation) and I_1=Light irrigation not more than 2·5 cm. at a time after 10 days of spells of drought upto 15 days after flowering.

3. DESIGN :

(i) Split-plot. (ii) 2 main-plots/replication ; 2 sub-plots/main-plot. (b) N.A. (iii) 8. (iv) (a) 30·50 m.× 4·10 m. (b) 29·90 m.×3·50 m. (v) 30 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Good (ii) Attack of gundhi bug controlled by dusting of B H.C. 5 %. (iii) Flowering and yield of grain. (iv) (a) 1960—61. (b) Yes. (c) Results of combined analysis are given under 5. results. (v) No. (vi) Nil. (vii) Main-plot as well as sub-plot error variances are homogeneous and main-plot Treatments × Years interaction is present where as sub-plot Treatments × Years interaction is absent.

5. RESULTS:

Pooled results

(i) 1612 Kg/ha. (ii) (a) 622·0 Kg/ha. (based on 1 d.f. made up of Treatments × Years interaction). (b) 81·2 Kg/ha. (based on 30 d f. made up of pooled error and Treatments × Years interaction). (iii) Main effect of I alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	I_0	I_1	Mean
M_1	1542	1391	1467
M_2	1842	1674	1758
Mean	1692	1533	1612

C.D. for I marginal means=41·5 Kg/ha.

Individual results

Treatmet	M_1	M_2	Sig.	I_0	I_1	Sig.	G.M.	S.E./plot Main	S.E./plot Sub-plot
Years 1960	1464	1600	*	1633	1431	**	1532	139·3	79·4
1961	1469	1916	**	1751	1634	**	1692	124·2	72·8
Pooled	1467	1758	N.S.	1692	1533	**	1612	622 0	81·2

Crop :- Paddy (*Kharif*). **Ref :- Bh. 64(4).**

Site :- Irrigation Res. Stn., Madhepura **Type :- 'IM'.**

Object: --To study the effect of levels of irrigation and different forms of manures on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Sandy loam. (iii) 14 6 64. (iv) (a) to (c) N.A. (v) Nil. (vi) *Aus*. (vii) As per treatments. (viii) and (ix) N.A. (x) 7.9.64.

2. TREATMENTS :

Main-plot treatments :

2 irrigational treatments : I_0=Control (no irrigation) and I_1=Light irrigation (5·1 cm. at a time after 10 days spells of drought up to 15 days after general flowering).

***Sub-plot treatments* :**

2 sources of N at 33·6 Kg/ha. : S_1=A/S and S_2=Organic manure.

44·8 Kg/ha of P_2O_5 as Super was applied to all the sub-plots.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 2 sub-plots/main-plot. (b) N A. (iii) 5. (iv) (a) 30 50 m. × 3·40 m. (b) 29 60 m × 2·70 m. (v) 45 cm. × 35 cm. (vi) Yes.

4. GENERAL :

(i) Normals. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) to (c) N.A. (v) No. (vi) and (vii) Nil.

5. RESULTS:

(i) 1938 Kg/ha. (ii) (a) 1505 Kg/ha (b) 1013 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	I_0	I_1	Mean
S_1	2258	2187	2222
S_2	1608	1701	1654
Mean	1933	1944	1938

Crop :- Paddy (*Kharif*). **Ref :- Bh. 60(106), 61(114).**

Site :- Irrigation Res. Stn., Madhepura. **Type :- 'IM'.**

Object :—To study the effect of irrigation on the yield of Paddy in accordance with the supply of moisture in the spells of drought using two different forms of manure.

1. BASAL CONDITIONS :

(i) (a) Wheat—Paddy. (b) Wheat. (c) N.A. (ii) Sandy loam. (iii) 13.760. ; 11.6.61/12.7.61. (iv) (a) 4 to 5 Bihar Junior ploughings. (b) Japanese method, line sowing. (c) 18 Kg/ha. (d) 25 cm. between rows ; 25 cm. × 20 cm. (e) 2 ; 3. (v) N.A. (vi) CH—1007. (vii) As per treatments. (viii) Weeding and hoeing by Japanese weeder and hand. (ix) N.A. (x) 10.10.60 ; 21.9.61.

2 TREATMENTS :

All combinations of (1) and (2)

(1) 2 manurial treatments : M_1=28·0 Kg/ha. of N as A/S+22·4 Kg/ha. of P_2O_5 as Super and M_2=33·6 Kg/ha. of N as A/S+44·8 Kg/ha. of P_2O_5 as Super.

(2) 2 irrigational treatments : I_0=Control (no irrigation) and I_1=5·1 cm. irrigation after 10 days spell of drought and upto 15 days after general flowering.

3. DESIGN:

(i) Fact. in R.B.D. (ii) (a) 4. (b) N.A. (iii) 5. (iv) (a) 30·50 m. × 3·40 m. (b) 29·60 m. × 2·70 m. (v) 45 cm. × 35 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination, flowering, height of plants and yield of grain. (iv) (a) 1960—64 (Treatments modified in 62, and then design changed in 63 and 64). (b) N.A. (c) Results of combined analysis are given under 5. Results. (v) No. (vi) Nil. (vii) Error variances are heterogeneous and Treatments × Years interaction is present.

5. RESULTS:

Pooled results

(i) 324·4 Kg/ha. (ii) 200·4 Kg/ha. (based on 3 d.f. made up of Treatments × Years interaction). (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	M_1	M_2	Mean
I_0	269	277	273
I_1	342	410	376
Mean	306	343	324

Individual results

Treatment	M_1	M_2	Sig	I_0	I_1	Sig.	G.M.	S E./plot
Year 1960	203	207	N.S.	206	204	N.S.	205	57·5
1961	408	479	N.S.	339	548	**	443	131·2
Pooled	306	343	N.S.	273	376	N.S.	324	200·4

Crop :- Paddy (*Kharif*). **Ref :- Bh. 63(107), 64(165)**

Site :- Irrigation Res. Stn., Madhepura. **Type :- 'IM'.**

Object :—To study the effect of irrigation on the yield of Paddy in accordance with the supply of moisture in spells of drought using two different forms of manure.

BASAL CONDITIONS :

(i) (a) Wheat—Paddy (b) Wheat. (c) N.A. (ii) (a) Clay loam. (iii) 14.7.63 ; 14.6.64/9.7.64. (iv) (a) 4 to 5 Bihar Junior ploughings. (b) Japanese method. (c) 18 Kg/ha. (d) 25 cm. between rows ; 15 cm × 15 cm. (e) 2 ; 2 to 3. (v) N.A. (vi) CH—100. (vii) As per treatments. (viii) Weeding and hoeing by Japanese weeder and hand. (ix) N.A. (x) 24.9 63. ; 24.9 64.

2. TREATMENTS and 3. DESIGN :

Same as in Expt. no. 63(106), 61(114) on page 135.

4 GENERAL :

(i) Good. (ii) Spray of Endrin against Stem borer (iii) Germination, flowering, height of plants, maturity and yield of grain. (iv) (a) 1960—64 (1960 62 design is different). (b) N.A (c) Nil. (v) No. (vi) Nil. (vii) Main-plot error variances are heterogeneous and their interaction with years is absent. Hence results of individual years have been presented under 5. Results.

5. RESULTS :

63(107)

(i) 1943 Kg/ha. (ii) (a) 461·2 Kg/ha. (b) 457·5 Kg/ha. (iii) Main effect of M alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	M_1	M_2	Mean
I_0	2367	1627	1997
I_1	2478	1299	1889
Mean	2422	1463	1943

C.D. for M marginal means=471·8 Kg/ha.

64(165)

(i) 2450 Kg/ha. (ii) (a) 105·1 Kg/ha. (b) 252·7 Kg/ha. (iii) Main effect of M alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	M_1	M_2	Mean
I_0	2749	2263	2506
I_1	2593	2194	2393
Mean	2671	2229	2450

C.D. for M marginal means=260·6 Kg/ha.

Crop :- Paddy (*Kharif*). **Ref :- Bh. 63(108), 64(166).**

Site :- Irrigation Res. Stn., Madhepura. **Type 'IM'.**

Object :—To study the effect of irrigation on the yield of Paddy in accordance with the supply of moisture in spells of drought using two different forms of manure.

1. BASAL CONDITIONS :

(i) (a) Wheat—Paddy (b) Wheat. (c) N.A. (ii) Sandy loam. (iii) 14.6.63/N.A. ; 12.6.64/18.7.64. (iv) (a) 4 to 5 Bihar Junior ploughings. (b) Japanese method. (c) 18 Kg/ha. (d) 25 cm. between rows ; 25 cm × 15 cm. (e) 2. (v) N.A. (vi) CH—1007. (vii) As per treatments. (viii) Weeding and hoeing by Japanese weeder and hand. (ix) N.A. (x) 15.9.63 ; 26 and 27.9.64.

2. TREATMENTS and 3. DESIGN :

Same as in Expt. no. 63(106), 61(114) on page 135.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination, flowering, height of plants, maturity and yield of grain. (iv) (a) 1960—64 (1960—62 design is different). (b) N.A. (c) Results of combined analysis are given under 5. Results. (v) No. (vi) Nil. (vii) Main-plot as well as sub-plot error variances are homogeneous and main-plot Treatments × Years interaction is present where as sub-plot Treatments × Years interaction is absent.

5. RESULTS :

Pooled results

(i) 1566 Kg/ha. (ii) (a) 959·7 Kg/ha. (based on 1 d.f. made up of Treatments × Years interaction). (b) 413·3 Kg/ha. (based on 18 d.f. made up pooled error and Treatments × Years interaction). (iii) None of the effects is significant (iv) Av. yield of grain in Kg/ha.

	M_1	M_2	Mean
I_0	1690	1452	1571
I_1	1489	1636	1562
Mean	1589	1544	1566

Individual results

Treatment	I_0	I_1	Sig.	M_1	M_2	Sig.	G.M.	S.E./plot Main-plot	S.E./plot Sub-plot
Year									
1963	836	1132	N.S.	990	978	N.S.	982	292·4	421 5
1964	2305	1993	N.S.	2188	2110	N.S.	2149	312·7	361·5
Pooled	1571	1562	N.S.	1589	1544	N.S.	1566	959 7	433·3

Crop :- Paddy (*Kharif*). **Ref :- Bh. 63(109), 64(164).**

Site :- Irrigation Res. Stn., Madhepura. **Type :- 'IM'.**

Object :—To study the effect of irrigation on the yield of Paddy in accordance with the supply of moisture in spells of drought using two different forms of manure.

1. BASAL CONDITIONS :

(i) (a) Wheat—Paddy. (b) Wheat. (c) N.A. (ii) Light clayee. (iii) 22.6.63 ; 12 6.64. (iv) (a) 4 to 5 Bihar Junior ploughings. (b) Direct sowing. (c) 18 Kg/ha (d) 15 cm. between rows ; 25 cm. × 15 cm. (e) 2. (v) N.A. (vi) CH—1007. (vii) As per treatments. (viii) Weeding and hoeing by hand and Japanese weeder. (ix) N.A. (x) 21.9.63 ; 19.9 64.

TREATMENTS :

Main-plot treatments :

2 irrigational treatments : I_0 = Control and I_1 = Light irrigation (5·1 cm. at a time after 10 days spell of drought upto 15 days after general flowering).

Sub-plot treatments :

2 sources of N at 33·6 Kg/ha. : S_1 = A/S and S_2 = Compost.
44·8 Kg/ha. of P_2O_5 as Super was applied to all the plots.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 2 sub-plots/main-plot. (b) N.A. (iii) 5. (iv) (a) 30·50 m. × 3·40 m. (b) 29·60 m. × 2·70 m. (v) 45 cm. × 35 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil ; dusting of B.H.C. (iii) Germination, flowering, height of plants, maturity and yield of grain. (iv) (a) 1960—64 (1960—62 Design diff rent). (b) N.A. (c) Nil. (v) No. (vi) Nil. (vii) Main-plot as well as sub-plot error variances are homogeneous and also the main-plot Treatments × Years interaction as well as sub-plot Treatments × Years interaction are absent.

2. RESULTS

Pooled results

(i) 1457 Kg/ha. (ii) (a) 172·7 Kg/ha. (based on 9 d.f. made up of pooled error and Treatments × Years interaction). (b) 148·2 Kg/ha. (based on 18 d.f. made up of pooled error and Treatments × Years interaction). (iii) The main effect of S alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	S_1	S_2	Mean
I_0	1646	1306	1476
I_1	1564	1313	1438
Mean	1605	1309	1457

C.D. for S marginal means = 98·5 Kg/ha.

Individual results

Treatment	I_0	I_1	Sig.	S_1	S_2	Sig.	G.M.	S.E./plot Main-plot	S.E./plot Sub-plot
Year									
1963	1368	1312	N.S.	1516	1165	**	1340	192·8	107·0
1964	1584	1564	N.S.	1694	1454	*	1574	170·6	182·6
Pooled	1476	1438	N.S.	1605	1309	**	1457	172·7	148·2

Crop :- Paddy (*Kharif*). **Ref :- Bh. 61(113), 62(81), 63(24), 64(161),**

Site :- Irrigation Res. Stn., Madhepura. **Type :- 'IM'.**

Object :—To study the effect of irrigation on the yield of Paddy in accordance with the supply of moisture in spell of drought upto flowering stage.

1. BASAL CONDITIONS :

(i) (a) Paddy—Wheat for 61, 62 and 64 and N.A. for 63. (b) Maize for 63 and Wheat for others. (c) N.A. (ii) Loam. (iii) 28.6.61/9 and 10 8 61 ; 6.7.62/17.8.62 ; N.A./11 and 12.8.63 ; 10 7.64/16.8.64. (iv) (a) 5 ploughings by *deshi* plough for 63 and for others 4 to 5 Bihar Junior ploughings. (b) Japanese method. (c) 14 Kg/ha. (d) 30 cm. × 30 cm. (e) 3 to 4. (v) N.A. (vi) 498—2A (late). (vii) As per treatments. (viii) Weeding by hand and Japanese weeder. (ix) N.A. (x) 22.12.61 ; 15.12.62 ; 29 and 30.12.63 ; 29.12.64.

2. TREATMENTS :

Main-plot treatments :

2 manurial treatments : M_1=28·0 Kg/ha. of N as A/S+22·4 Kg/ha. of P_2O_5 as Super and M_2=56·0 Kg/ha. of N as A/S+44·8 Kg/ha. of P_2O_5 as Super.

Sub-plot treatments :

4 irrigational treatments : I_0=Control (no irrigation), I_1=5·1 cm. irrigation at 6 days interval, I_2=6·3 cm. irrigation at 9 days interval and I_3=7·6 cm. irrigation at 12 days interval.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 27·40 m. × 3·70 m. for 61 and 28·00 m × 4·00 m. for others. (b) 26·80 m. × 3·00 m. for 62 and 27·40 m. × 4·00 m. for others. (v) 30 cm. × 30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Endrin sprayed as a preventive measure. (iii) Germination, flowering, height of plants and yield of grain and straw. (iv) (a) 1961—contd. (Expt. for 1965—N.A.) (b) N.A. (c) Nil. (v) Bikramganj for 63 and Nil for others. (vi) Nil. (vii) As sub-plot error variances are heterogeneous, individual yea- results are presented under 5. Results.

5. RESULTS :

61(113)

(i) 1591 Kg/ha. (ii) (a) 128·7 Kg/ha. (b) 131·4 Kg/ha. (iii) The main effect of I alone is significant. (iv) Av. yield of grain in Kg/ha.

	I_0	I_1	I_2	I_3	Mean
M_1	1338	1522	1718	1440	1504
M_2	1517	1863	1744	1588	1678
Mean	1428	1692	1731	1514	1591

C.D. for I marginal means=138·1 Kg/ha.

62(81)

(i) 2217 Kg/ha. (ii) (a) 393·8 Kg/ha. (b) 378·1 Kg/ha. (iii) The main effect of I alone is significant. (iv) Av. yield of grain in Kg/ha.

	I_0	I_1	I_2	I_3	Mean
M_1	1834	2232	2369	2317	2188
M_2	1892	2594	2186	2314	2246
Mean	1863	2413	2277	2315	2217

C.D. for I marginal means=458·6 Kg/ha

63(24)

(i) 2462 Kg/ha. (ii) (a) 63·6 Kg/ha. (b) 466·7 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	I_0	I_1	I_2	I_3	Mean
M_1	2585	2463	2297	2548	2473
M_2	2381	2719	2337	2366	2451
Mean	2483	2591	2317	2457	2462

64(161)

(i) 3035 Kg/ha. (ii) (a) 328·0 Kg/ha. (b) 348·6 Kg/ha. (iii) None of the effects is significant. (iv) (a) Av. yield of grain in Kg/ha.

	I_0	I_1	I_2	I_3	Mean
M_1	2819	3225	2875	3302	3055
M_2	2794	3191	2947	3131	3016
Mean	2806	3208	2911	3216	3035

Crop :- Paddy (*Kharif*). **Ref :- Bh. 63(106).**

Site :- Irrigation Res. Stn., Madhepura. **Type :- 'IM'.**

Object :—To study the effect of irrigation on the yield of Paddy in accordance with the supply of moisture in spells of drought using two different forms of manure.

1. BASAL CONDITIONS :

(i) (a) Wheat—Paddy. (b) Wheat. (c) N.A. (ii) Loamy sand. (iii) 22.6.63/19.7.63. (iv) (a) 4 to 5 Bihar Junior ploughings. (b) Japanese method. (c) 18 Kg/ha. (d) 15 cm between rows. (e) 2. (v) N.A. (vi) CH 1007. (vii) As per treatments (viii) Weeding and hoeing by Japanese weeder and hand. (ix) N A. (x) 4.10.63

2. TREATMENTS :

Main-plot treatments :

2 irrigational treatments : I_0=Control and I_1=Light irrigation (5·1 cm. at a time after 10 days spell of drought upto 15 days after general flowering).

Sub-plot treatments :

2 sources of N at 33·6 Kg/ha. : S_1=A/S and S_2=Compost.
44·8 Kg/ha. of P_2O_5 as Super was applied to all the plots.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 2 sub-plots/main-plot. (b) N.A. (iii) 5. (iv) (a) 30·48 m. × 3·35 m. (b) 29·57 m. × 2·74 m. (v) 46 cm. × 30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination, flowering, height of plants, maturity and yield of grain. (iv) (a) 1960–64 (1960–62 design varies and expt. for 1964—N.A.) (c) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1094 Kg/ha. (ii) (a) 228·7 Kg/ha. (b) 212·1 Kg/ha. (iii) Only the interaction I×S is significant. (iv) Av. yield of grain in Kg/ha.

	S_1	S_2	Mean
I_0	1454	986	1220
I_1	912	1023	967
Mean	1183	1004	1094

C.D. for I means at the same level of S=357 0 Kg/ha.
C.D. for S means at the same level of I=309 6 Kg/ha.

Crop :- Paddy (*Kharif*). **Ref :- Bh. 62(85).**

Site :- Irrigation Res. Stn., Madhepura. **Type :- 'IM'.**

Object :—To study the effect of irrigation on the yield of Paddy in accordance with the supply of moisture in spells of dronght using two different forms of mannre in loamy sand soil.

1. BASAL CONDITIONS :

(i) (a) Wheat—Paddy. (b) Wheat. (c) N.A. (ii) Loamy sand. (iii) 20.7.62. (iv) (a) 4 to 5 Bihar Junior ploughings. (b) Japanese method. (c) 18 Kg/ha. (d) 25 cm. between rows. (e) 2. (v) N.A. (vi) CH—1007 (vii) As per treatments. (viii) Weeding and hoeing by Japanese weeder and hand. (ix) N.A. (x) 22.9.62.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 sources of N at 33·6 Kg/ha. : S_1=A/S and S_2=Compost.

(2) 2 irrigational treatments : I_0=Control (no irrigation) and I_1=5·1 cm. irrigation after 10 days spell of drought upto 15 days after general flowering.

44 8 Kg/ha. of P_2O_5 as Super was applied to all the plots.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 4. (b) N.A. (iii) 5, (iv) (a) 30·48 m.×3 35 m. (b) 29·57 m.×2 74 m. (v) 46 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination, flowering, height of plants, maturity and yield of grain. (iv) (a) 1960—64 (Trs. modified in 1960 and 61, Design varies in 1963 and 64). (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1180 Kg/ha. (ii) 290·5 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	I_0	I_1	Mean
S_1	1235	1245	1240
S_2	1287	954	1120
Mean	1261	1099	1180

Crop :- Paddy (*Kharif*). **Ref :- Bh. 62(86).**

Site :- Irrigation Res. Stn., Madhepura. **Type :- 'IM'.**

Object :—To study the effect of irrigation on the yield of Paddy in accordance with the supply of moisture in spells of drought using two different forms of manure in sandy loam soil.

1. BASAL CONDITIONS :

(i) (a) Wheat—Paddy. (b) Wheat. (c) N A. (ii) Sandy loam. (iii) 16.7.62. (iv) (a) 4 to 5 Bihar Junior ploughings. (b) Japanese method. (c) 18 Kg/ha. (d) 25 cm.×25 cm. (e) 2. (v) N.A. (vi) CH - 1007. (vii) As per treatments. (viii) Weeding and hoeing by Japanese weeder and hand. (ix) N.A. (x) 8.10.62.

2. TREATMENTS to 4. GENERAL :

Same as in Expt. no. 62(85) on page 141.

5. RESULTS :

(i) 839 Kg/ha. (ii) 137·4 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	I_0	I_1	Mean
S_1	964	876	920
S_2	770	746	758
Mean	867	811	839

Crop :- Paddy (*Kharif*). **Ref :- Bh. 62(87).**

Site :- Irrigation Res. Stn., Madhepura. **Type :- 'IM'.**

Object :—To study the effect of irrigation on the yield of Paddy in accordance with the supply of moisture in spells of drought using two different forms of manure.

1. BASAL CONDITIONS :

(i) (a) Wheat—Paddy. (b) Wheat. (c) N.A. (ii) Light clayee. (iii) 7.7.62. (iv) (a) 4 to 5 Bihar Junior ploughings. (b) Japanese method. (c) 18 Kg/ha. (d) 25 cm. between rows. (e) 2. (v) N.A. (vi) CH—1007. (vii) As per treatments. (viii) Weeding and hoeing by Japanese weeder and hand (ix) N.A. (x) 19.9.62.

2. TREATMENTS :

Same as in Expt. no. 62(85) on page 141.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 4. (b) N.A. (iii) 5. (iv) (a) 30·48 m.×3·35 m. (b) 29 87 m.×2·74 m. (v) 30 cm.×30 cm. (vi) Yes.

4. GENERAL :

Same as In Expt. no. 62(85) on page 141.

5. RESULTS :

(i) 826 Kg/ha. (ii) 141·0 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	I_0	I_1	911
S_1	912	910	911
S_2	821	660	740
Mean	866	785	826

Crop :- Paddy (*Kharif*). **Ref :- Bh. 62(88).**

Site :- Irrigation Res., Stn., Madhepura. **Type :- 'IM'.**

Object :—To study the effect of irrigation on the yield of Paddy in accordance with the supply of moisture in spells of drought using two different forms of manure.

1. BASAL CONDITIONS :

(i) (a) Wheat—Paddy. (b) Wheat. (c) N.A. (ii) Clay loam. (iii) 4.7.62. (iv) (a) 4 to 5 Bihar Junior ploughings. (b) Japanese method. (c) 18 Kg/ha. (d) 25 cm. between rows. (e) 2. (v) N.A. (vi) CH—1007. (vii) As per treatments. (viii) Weeding and hoeing by Japanese weeder and hand. (ix) N. A. (x) 29.9.62.

2. TREATMENTS :

Same as in expt. no. 62(85) on page 141.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 4. (b) N.A. (iii) 5. (iv) (a) 30·48 m.×3·35 m. (b) 29.87 m.×2·74 m. (v) 30 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination, flowreing, height of plants, maturity and yield of grain. (ii) (a) 1960—64. (b) N. A. (c) Nil. (v) No. (vi) and (vii) Nil.

5. RESULTS :

(i) 675·8 Kg/ha. (ii) 214·0 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	I_0	I_1	Mean
S_1	803	612	708
S_2	727	562	644
Mean	765	587	676

Crop :- Paddy (*Kharif*). **Ref :- Bh. 64(283).**

Site :- Distt. Agri. Farm, Baliapur (Dhanbad). **Type :- 'D'.**

Object :—To see the effect of Stem F—34 weedicide on Paddy in up-land.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy laterite. (iii) 25.7.64. (iv) (a) 4 ploughings. (b) Transplanting (c) 40 Kg/ha. (d) 25 cm. between rows. (e) N.A. (v) 22 5 Kg/ha. of N as Urea and P_2O_5 as Super each. (vi) CH—1007. (vii) Un-irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 27.10.64.

2. TREATMENTS;

4 weedicidal treatments : T_0=Control, T_1=One spray of Stem F—34 at 15 lit. in 250 to 300 lit. of water/ha. 15 to 20 days after sowing, T_2=Two spray of Stem F—34 at 15 lit. in 250 to 300 lit. of water/ha. first 15 to 20 days after sowing and second 30 days after sowing and T_3=Hand weeding.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 5. (iv) (a) 10·31 m.×10·06 m. (b) 10·06 m.×10·06 m. (v) Only one row discarded. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) No. (b) and (c) Nil. (v) Hazaribagh. (vi) and (vii) Nil.

5. RESULTS :

(i) 494·0 Kg/ha. (ii) 151·3 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg./ha.

Treatment	T_0	T_1	T_2	T_3	
Av. yield	233	602	662	672	C.D.=208·5 Kg/ha.

Crop :- Paddy (*Kharif*). **Ref :- Bh. 64(305).**

Site :- Rice Res. Sub-Stn., Bikramganj. **Type :- 'D'.**

Object : To find out the effect of seed and soil treatments on the incidence of disease in Paddy (BR—8).

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Clay. (iii) 17.6.64. (iv) (a) 3 ploughings. (b) Line sowing. (c) 40 Kg/ha. (d) 23 cm.×23 cm. (e) —. (v) 45 Kg/ha. of N as A/S, P_2O_5 as Super and K_2O as Mur. Pot. each. (vi) BR—8. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 8.12.64.

2. TREATMENTS :

4 seed treatments : T_0=Control, T_1=Seed dressing with Agrosan 'GN' at 1 gm. for 500 grams of seeds, T_2=Soil drenching with Cereson at 1·12 Kg. in 1123 lit. of water/ha and T_3=T_1+T_2.

3 DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N A. (iii) 3. (iv) (a) N.A. (b) 6·10 m.×1·52 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1964—only. (b) No. (c) Nil. (v) Piro and Udaipur. (vi) and (vii) Nil.

5. RESULTS :

(i) 794 Kg/ha. (ii) 124·5 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3
Av. yield	809	830	773	766

Crop :- Paddy (*Kharif*). **Ref :- Bh. 64(308).**

Site :- Riee Res. Sub-Stn., Bikramganj. **Type :- 'D'.**

Object : To find out the effect of seed and soil treatments on the incidence of disease in Paddy (BR—34).

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Clay. (iii) 17.6.64. (iv) (a) 3 ploughings. (b) Line sowing. (c) 40 Kg/ha. (d) 23 cm. × 23 cm. (e) —. (v) 45 Kg/ha. of N as A/S, P_2O_5 as Super and K_2O as Mur. Pot. each. (vi) BR—34. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 16.11.64.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no 64(305) at Bikramganj on page 144.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1964—only. (b) No. (c) Nil. (v) Piro and Udaipur. (vi) and (vii) Nil.

5. RESULTS :

(i) 764 Kg/ha. (ii) 70.1 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3
Av. yield	719	755	809	773

Crop :- Paddy (*Kharif*). **Ref :- 64(303).**

Site :- Rice Res. Sub-Stn., Bikramganj. **Type :- 'D'.**

Object : To see the effect of seed-treatment and spraying with different fungicides on the control of disease.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Clay. (iii) 21.7.64. (iv) (a) 3 ploughings. (b) Line sowing. (c) 40 Kg/ha. (d) 23 cm. between rows. (e) —. (v) 45 Kg/ha. of N as A/S+33·6 Kg/ha. of P_2O_5 as Super +22·5 Kg/ha. of K_2O as Mur. Pot. (vi) BR—34. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 21.11.64.

2. TREATMENTS :

Main-plot treatments :

6 fungicidal treatments : T_0=Control, T_1=Seed soaking in 0·1% Cereson wet before sowing, T_2= Spraying of 0·35% Copper fungicides at 1123 lit./ha.—1st spraying 15 days after transplanting and subsequent sprayings at 15 days interval till flowering stage, T_3=Spraying of 0·1% Cereson wet at 1123 lit /ha. as in treatment T_3, $T_4=T_1+T_2$ and $T_5=T_1+T_3$.

Sub-plot treatments :

2 types of seed : S_1=Healthy and S_2=Disease.

3. DISIGN :

(i) Split-plot. (ii) (a) 6 main-plots/replication, 2 sub-plots/main-plot. (b) 13·87 m.×9·14 m. (iii) 4. (iv) (a) 6·60 m.×0·50 m. (b) 6·10 m×0.50 m. (v) 25 cm. either side. (vi) Yes.

4. GENERAL :

(i) Good. (ii) N.A. (iii) Intensity %, yield of grain. (iv) (a) 1964—only. (b) No. (c) Nil. (v) Udaipur (Shahabad). (vi) and (vii) Nil.

5. RESULTS :

(i) 2971 Kg/ha. (ii) (a) 725·6 Kg/ha. (b) 576·7 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	T_0	T_1		T_3	4	5	M
S_1	2869	2582	2787	3115	2541	2951	2807
S_2	3279	2992	3361	3238	3566	2377	3135
Mean	3074	2787	3074	3176	3053	2664	2971

Crop :- Paddy (*Kharif*). **Ref :- Bh. 61(162).**

Site :- Goradih, P.S. Rajaun (Bhagalpur c.f.). **Type :- 'D'.**

Object :—To study the comparative efficacy of insecticides against gundhi bug on Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Loam. (iii) Nil. (iv) BK—141. (v) (a) 2—3 ploughings. (b) Transplanting by Japanese method. (c) 14·0 Kg/ha. (d) 23 cm.×21 cm. (e) 2—3. (vi) 22.7.61. (vii) Unirrigated. (viii) Weeding. (ix) N.A. (x) 28.11.61.

2. TREATMENTS :

4 insecticidal treatments : T_0=Control, T_1=Aldrin 5% dust at 22·42 Kg/ha., T_2=BHC 5% dust at 22·42 Kg/ha. and T_3=Dieldrex 1·5% dust at 22·42 Kg/ha.

3. DESIGN :

(i) R.B.D., 4 plots/block and 9 replications. (ii) N.A. (iii) (a) and (b) 101·17 sq. metre. (iv) Yes.

4. GENERAL :

(i) Good. (ii) Rice gundhi bug. (iii) Yield of grain. (iv) (a) 1961—only. (b) No. (c) Nil. (v) Patna. (vi) and (vii) Nil.

5. RESULTS :

(i) 1330 Kg/ha. (ii) 217·66 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3
Av. yield	1011	1457	1446	1405

Crop :- Paddy (*Kharif*). **Ref :- Bh. 65(102).**

Site :- Botanical Sub-Stn., Dhangain (Bikramganj). **Type :- 'D'.**

Object :—To evaluate the effect of various treatments in moderating leaf drying.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 45 Kg/ha. of N as A/S and P_2O_5 as Super each. (ii) Sandy clay. (iii) 25 and 26.8.65. (iv) (a) 4 ploughings. (b) Transplanting. (c) 16 Kg/ha. (d) 25 cm.×25 cm (e) 3 to 4. (v) 45 Kg/ha of N as A/S and P_2O_5 as Super each. (vi) BR—34. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 17.11.65.

2. TREATMENTS :

7 treatments : T_0=Control, T_1=Application of $KMNO_4$ 11·25 @ Kg/ha, T_2=Application of KNO_3 @ 11·25 Kg/ha., T_3=Application of lime @ 9·22 Q/ha., T_4=Application of Gypsum @ 4·6 Q/ha., T_5=Algae innoculation 20 days before transplanting and T_6=Stirring of surface soil by Paddy-weeder every 10 days.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 7·93 m.×4·98 m. (b) 7·32 m.×4·37 m. (v) 61 cm.×61 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1964—contd. (Expt. for 1964 –N.A.). (b) Yes. (c) Nil. (v) No. (vi) and (vii) Nil.

5. RESULTS :

(i) 3064 Kg/ha. (ii) 328·9 Kg/ha (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	3007	3315	2772	3122	3330	2751	3151

Crop :- Paddy (*Kharif*). **Ref :- Bh. 64(352).**

Site :- Agri. Res. Instt., Dholi. **Type :- 'D'.**

Object :—To control the stem borer of Paddy crop (BR—34).

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) 18.6.64. (iv) (a) 3—4 ploughings. (b) Transplanting by Japanese method. (c) 14 Kg/ha. (d) 23 cm.×21 cm. (e) 2—3. (v) 100 Kg/ha. of N as A/S +70 Kg/ha. of P_2O_5 as Super. (vi) BR—34. (vii) Irrigated. (viii) Weedings. (ix) N.A. (x) 7.10.64.

2. TREATMENTS :

8 insecticidal treatments : T_0=Control, T_1=0·04% Folidol, T_2=0·02 % Folidol, T_3=0·04% Endrin, T_4=0·02% Endrin, T_5=0·01% Gamma BHC, T_6=0·05% Gamma BHC and T_7=0·6% Dimecron.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 9·14 m.×9·14 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of rice gundhi bug and Stem borer. (iii) Yield of grain. (iv) (a) 1964-65. (Trs. modified in 1965). (b) No. (c) Nil. (v) Patna and Sabour. (vi) No. (vii) Nil.

5. RESULTS :

(i) 1654 Kg/ha. (ii) 235·9 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Av. yield	1802	1637	1697	1706	1694	1655	1529	1517

Crop :- Paddy (*Kharif*). **Ref :- Bh. 65(186).**

Site :- Agri. Res. Instt., Dholi. **Type :- 'D'.**

Object :—To control the stem borer of Paddy crop (BR—9).

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (i) Sandy Loam. (ii) 3.7.65. (iv) (a) 3—4 ploughings. (b) Transplanting by Japanese method. (c) 14 Kg/ha. (d) 23 cm. × 23 cm. (e) 2—3. (v) 100 Kg/ha. of N as A/S+ 70 Kg/ha. of P_2O_5 as Super. (vi) BR—9. (vii) Irrigated. (viii) Weeding. (ix) N.A. (x) 11.11.65.

TREATMENTS :

10 insecticidal treatments: T_0=Control, T_1=0·04% Folidol, T_2=0·02% Folidol, T_3=0·04% Endrin, T_4=0·02% Endrin, T_5=0·1% Gamma BHC, T_6=0·05% Gamma BHC, T_7=0·06% Dimecron, T_8=0.04% Telodrin and T_9=0·02% Telodrin.

3. DESIGN :

(i) R.B D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) N A. (b) 92·02 sq. m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of gundhi bug and stem borer. (iii) Yield of grain. (iv) (a) 1964-65, (modified in 1964). (b) No. (c) Nil. (v) Patna and Sabour. (vi) and (vii) No.

5. RESULTS :

(i) 300 Kg/ha. (ii) 59·8 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9
Av. yield.	284	353	303	342	292	313	272	258	294	288

Crop :- Paddy (*Kharif*). **Ref :- Bh. 60(151).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'D'.**

Object : -To study the effect of different group of hormones as seed soaking treatments on growth, physiology and yield of Paddy.

1. BASAL CONDITIONS ;

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) 18.6.60/10.8.60. (iv) (a) 3 ploughings. (b) Transplanting. (c) 70 Kg/ha. (d) 25 cm. × 25 cm. (e) 3. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) BK—88. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) 105 cm. (x) 2.12.60.

2. TREATMENTS :

Main-plot treatments :

2 durations of soaking : S_1=4 hours and S_2=12 hours.

Sub-plot treatments :

All combinations of (1) and (2)+a control

(1) 3 hormones : H_1=IAA, H_2=2—4 - D and H_3=N.A.A
(2) 2 concentrations : D_1=10 PPM and D_2=25 PPM.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replic ion ; 7 sub-plots/main-plot. (b) 45·78 m. × 4·27 m. (iii) 4. (iv) (a) 4·27 m × 3·35 m. (b) 3·66 m. × 2·74 m. (v) 30 cm. × 30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) No. of tillers and leaves, height of plants, no. of grains per panicle, weight of 1000 grains and yield of grain and straw. (iv) (a) 1960—62 (Treatments modified in 1961 and expt. for 1962—N.A.) (b) No. (c) Nil. (v) No. (vi) and (vii) Nil.

5. RESULTS :

(i) 1682 Kg/ha. (ii) (a) 351·1 Kg/ha. (b) 278·5 Kg/ha. (iii) Main effect of H alone is significant. (iv) Av. yield of grain in Kg/ha.

Control=1514.

	H_1	H_2	H_3	D_1	D_2	Mean
S_1	1778	1538	1637	1609	1692	1651
S_2	1893	1595	1817	1737	1800	1768
Mean	1836	1566	1727	1673	1746	1710
D_1	1845	1480	1695			
D_2	1826	1653	1759			

C.D. for H marginal means=199·9 Kg/ha.

Crop :- Paddy (*Kharif*). **Ref :- Bh. 60(146).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'D'.**

Object :—To study the effect of different groups of hormones as aerial spray at different growth stages of Paddy crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) 22.6.60/29.7.60. (iv) (a) 3 ploughings. (b) Transplanting. (c) 25 Kg/ha. (d) 25 cm.×25 cm. (e) 3. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) BK—88. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) 105 cm. (x) 2.12.60.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2)+a control

(1) 3 types of hormones : H_1=IAA, H_2=NAA and H_3=2—4—D.

(2) 2 concentrations : D_1=25 PPM and D_2=100 PPM.

Sub-plot treatments :

Three stages of crop : S_1=Tillering, S_2=Pre-flowering and S_3=Grain filling.

3. DESIGN :

(i) Split-plot. (ii) (a) 7 main-plots/replication ; 3 sub-plots/main-plot. (b) 69·80 m.×3·96 m. (iii) 3. (iv) (a) 4·26 m.×3·35 m. (b) 3·65 m.×2 74 m. (v) 30 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) No. of tillers and leaves, height and length of plants. no. of grains/panicle, weight of 1000 grains and yield of grain and straw. (iv) (a) 1960—only. (b) Yes. (c) Nil. (v) N0. (vi) and (vii) Nil.

5. RESULTS :

(i) 2444 Kg/ha. (ii) (a) 451·9 Kg/ha. (b) 472·9 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

Control=2419

	H_1	H_2	H_3	D_1	D_2	Mean
S_1	2450	2421	2255	2567	2184	2375
S_2	2530	2106	2634	2495	2352	2423
S_3	2317	2642	2677	2611	2479	2545
Mean	2432	2390	2522	2558	2338	2448
D_1	2616	2378	2680			
D_2	2248	2402	2364			

———

Crop :- Paddy (*Kharif*). **Ref :- Bh. 60(143), 61(171), 62(146), 63(181).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'D'.**

Object :—To find out the effect of seed dressing with Agroson GN alone and in combination with Bordeaux mixture spraying.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (ii) Red loam. (iii) 11 and 12.8.60 ; 14.6.61/5 and 6.8.61 ; 19.6.62 ; 17.6.63. (iv) (a) 3—4 ploughings. (b) Transplanting by Japanese method. (c) 20 Kg/ha. (d) 25 cm.×25 cm. (e) 2—3. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (vi) BK 36. (vii) Unirrigated. (viii) Weeding and hoeing by hand rotary hoe. (ix) 63 cm. ; 142 cm. ; 79 cm. ; 116 cm. (x) 22.12.60 : 20 to 26.12.61 ; 11 to 13.12.62 ; 25.12.63.

2. TREATMENTS :

4 fungicidal treatments : T_0=Control, T_1=Seed dressing with Agroson 'GN'. T_2=Seed dressing with Agroson 'GN'+one spraying of Bordeaux mixture at disease appearance, and T_3=Seed dressing with Agroson 'GN'+two sprayings of Bordeaux mixture at an interval of 15 days.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) 21·00 m.×9·10 m. (iii) 6. (iv) (a) 10·40 m.×4·40 m (b) 8·40 m.×4·40 m. (v) 4 rows on either side. (vi) Yes.

4 GENERAL :

(i) Good. (ii) N.A (iii) Disease percantages and yield of grain. (iv) (a) 1960—63. (b) Yes. (c) Results of combined analysis are given under 5. Results. (v) No. (vi) Nil. (vii) Error variances are homogeneous and Treatments × Years interaction is present.

5. RESULTS:

Pooled results

(i) 3514 Kg/ha. (ii) 547·6 Kg/ha. (based on 9 d.f. made up of Treatments × Years interaction). (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3
Av. yield	3582	3589	3530	3356

Individual results

Treatment	T_0	T_1	T_2	T_3	Sig.	G.M.	S.E./plot.
Year							
1960	1073	1234	1454	1415	N.S.	1294	144·4
1961	5164	4878	4776	4653	*	4868	200·5
1962	3375	3357	3501	3172	N.S.	3351	307·8
1963	4715	4888	4388	4184	**	4544	250·4
Pooled	3582	3589	3530	3356	N.S.	3514	547·6

Crop :- Paddy (*Kharif*). **Ref :- Bh. 64(22/).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'D'.**

Object :—To test the efficacy of common fungicides in controlling blast disease.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Paddy. (c) 134·6 Kg/ha. of N as A/S+358·9 Kg/ha. of P_2O_5 as Super+89·7 Kg/ha. of K_2O as Mur. Pot.+2 C.L. of Compost/whole plot. (ii) Sandy loam. (iii) 25.6.64/14.8.64. (iv) (a) 2—3 ploughings. (b) Line sowing by Japanese method. (c) 20 Kg/ha. (d) 25 cm.×25 cm. (e) 2 to 3. (v) 45 Kg/ha. of N as A/S. (vi) BR—9. (vii) Unirrigated. (viii) Weeding and hoeing by rotary hoe. (ix) 109 cm. (x) 18.12.64.

2. TREATMENTS :

7 fungicidal treatments : T_0=Control (no spray), T_1=Control (water spray), T_2=4 sprayings of Bordeaux mixture (5 : 5 : 50), T_3=4 sprayings of Blitane at 1·36 Kg. in 1123·36 lit. of water/ha., T_4=4 sprayings of Fytolan at 1·58 Kg. in 1123·36 lit. of water/ha., T_5=4 sprayings of Dythane Z—78 at 0·68 Kg. in 1123·36 lit. of water/ha. and T_6=4 sprayings of Cereson wet at 3·40 Kg. in 1123·36 lit. of water/ha.

Date of sprayings : 4.9.64, 6.10.64, 24.10.64 and 7.11.64.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) 29·41 m.×10·82 m. (iii) 4. (iv) (a) 10·36 m.×4·88 m. (b) 10·36 m.×3·81 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Blast disease of Paddy, (iii) Disease intensity in percentage, yield of grain. (iv) (a) 1964-65 (treatments modified in 65). (b) Yes. (c) Nil. (v) Netarhat (vi) and (vii) Nil.

5. RESULTS:

A. **Yield of Paddy grain**

(i) 2827 Kg/ha. (ii) 260·8 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	
Av. yield	2432	2711	2818	2888	2780	2952	3211	C.D.=387·5 Kg/ha.

B. **Incidence of disease on Paddy neck**

(i) 12·17 degree. (ii) 0·84 degree. (iii) Treatment differences are highly significant. (iv) Av. incidence of disease on Paddy neck in degree.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	
Mean incidence	12·24	17·35	8·09	10·13	10·32	12·45	9·63	C.D.=1·25 degree.

Crop :- Paddy (*Kharif*). **Ref :- Bh. 65(140).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'D'.**

Object :—To test the efficacy of common fungicides in controlling blast disease of Paddy.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Red loam. (iii) 24.6.65/17 and 18.8.65. (iv) (a) 4 ploughings. (b) Transplanting in line. (c) 40 Kg/ha. (d) 25 cm. between rows. (e) N.A. (v) 45 Kg/ha. of N as A/S. (vi) BR—9. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 17 and 18.12.65.

2. TREATMENTS :

8 fungicidal treatments : T_0=Control, T_1=4 sprayings of Bordeaux mixture (5: 5: 50), T_2=4 sprayings of Blitane at 3·92 Kg/ha. in 456 litres of water/ha., T_3=4 sprayings of Fytolan at 3·92 Kg. in 456 litres of water/ha., T_4=4 sprayings of Dythane Z—78 at 1·68 Kg. in 456 litres of water/ha., T_5=4 sprayings of Cereson wet at 1·12 Kg. in 456 litres of water/ha., T_6=4 dusting of Cereson lime dust at 28·02 Kg/ha. and T_7=4 sprayings of Cuman at 1·12 Kg. in 456 litres of water/ha.

Date of sprayings : 30 and 31.7.65, 31 8.65, 7 and 22.10.65.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 3. (iv) (a) 6·60 m.×3·20 m. (b) 6·10 m.×3·20 m. (v) 25 cm. on either side. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Blast disease, control measure as per treatments. (iii) No. of tillers/clump, No. of clumps, No. of diseased tillers, disease intensity percentage and yield of grain. (iv) (a) 1964—65 (Treatments modified in 1965). (b) No. (c) Nil. (v) Netarhat. (vi) No. (vii) Nil.

5. RESULTS :

1 Yield data

(i) 3371 Kg/ha. (ii) 206·8 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Av. yield	3159	3359	3280	3176	3509	3629	3518	3338

2. Infestation data

(i) 12·32 degree. (ii) 1·37 degree. (iii) Treatment differences are highly significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Mean infestation	18·44	10·93	12·38	12·56	13·85	8·95	9·46	12·01

C.D.=2·40 degree

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Crop :- Paddy (*Kharif*). **Ref :- Bh. 63(175).**

Site :- Agri. Res. Instt. Kanke. **Type :- 'D'.**

Object :—To assess the effect of weedicides as pre-emergence spray in *Gora* Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) 45 Kg/ha. of N as A/S and P_2O_5 as Super each. (ii) Sandy. (iii) 10.6.63. (iv) (a) 2 ploughings. (b) Line sowing. (c) 69 Kg/ha. (d) 25 cm. between rows. (e) —. (v) 22·4 Kg/ha. of of N as A/S+22·4 Kg/ha. of P_2O_5 as Super+22·4 Kg/ha. of K_2O as Mur. Pot. (vi) Brown *Gora* 23—19 (vii) Unirrigated. (viii) Weeding and hoeing. (ix) 116 cm. (x) 5.12.63.

2. TREATMENTS :

9 weedicidal treatments : T_0=Control, T_1=Karmex W at 1·12 Kg., T_2=Karmex W at 0·56 Kg., T_3=Karmex DW at 1·12 Kg., T_4=Karmex DW at 0·56 Kg., T_5=Simazine at 1·12 Kg. T_6=Simazine at 0·56 Kg., T_7=Crag Herbicide at 1·12 Kg. and T_8=Crag Herbicide at 0·56 Kg/ha.

3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) 29·60 m.×4·27 m. (iii) 3. (iv) (a) and (b) 4·88 m.×1·83 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) No. of tillers and leaves, height of plants, yield of grain and straw. (iv) (a) No. (b) and (c) —. (v) No. (vi) and (vii) Nil.

5. RESULTS :

(i) 882 Kg/ha. (ii) 264·4 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Av. yield	830	946	941	1019	1087	681	1062	623	750

Crop :- Paddy (*Kharif*). **Ref :- Bh. 63(167).**

Site :- Agri. Res. Instt., Kanke. **TyPe :- 'D'.**

Object :—To find out the responses of Tofapon and Simazine as weedicide on *Gora* Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) 11.6.63. (iv) (a) 3 ploughings. (b) Line sowing. (c) 69 Kg/ha. (d) 25 cm. between rows. (e) Nil. (v) 22·4 Kg/ha. of N as A/S+22·4 Kg/ha. of P_2O_5 as Super+22·4 Kg/ha. of K_2O as Mur. Pot. (vi) Brown *Gora* 23—19. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) 116 cm. (x) 8.12.63.

2. TREATMENTS :

4 weedicidal treatments : T_0=Control. T_1=Pre-emergence application of Simazine at 1·12 Kg. actual/ha. T_2=Pre-emergence application of Tofapon at 1·12 Kg. actual/ha. and $T_3=T_1+T_2$.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) 10·36 m.×4·27 m. (iii) 6. (iv) (a) 4·27 m.×2·74 m. (b) 3·66 m.×1·83 m. (v) 30 cm. ×46 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) No. of tillers and leaves, yield of grain and straw. (iv) (a) to (c) No. (v) to (vii) Nil.

1. RESULTS :

(i) 916 Kg/ha. (ii) 170·2 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3
Av. yield	905	827	939	994

Crop :- Paddy (*Kharif*). **Ref :- Bh. 65(98).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'D'.**

Object : —To evaluate the effect of weedicides on weed population and the yield of *Gora* Paddy.

I. BASAL CONDITIONS :

(i) (a) Nil. (b) *Gora* Paddy. (c) As per treatments. (ii) Red loam. (iii) 19.6.65. (iv) (a) 3 ploughings. (b) Line sowing. (c) 70 Kg/ha. (d) 25 cm. between rows. (e) —. (v) 22·5 Kg/ha. of N as A/S, P_2O_5 as Super and K_2O as Mur. Pot. each (vi) Brown *Gora*. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 18.11.65.

2. TREATMENTS :

12 weedicidal treatments : T_0=Control, T_1=1·1 Kg/ha. of Simazine in 898·4 lit. of water/ha. (pre-emergence application), T_2=7 Kg/ha. of Tok—E—25 in 224·6 lit. of water/ha. (pre-emergence), T_3=3 pints of Gramexone in 898·4 lit. of water/ha. (pre-emergence), T_4=1·1 Kg. of Simazine+2·2 Kg. of Tofapon in 898·4 lit. of water/ha. (post emergence), T_5=7 Kg. of Tok - E--25 (pre-emergence)+2·2 Kg. of Tofapon in 898·4 lit. of water/ha. (post emergence), T_6=2 pints of Reglone in in 336·8 lit. of water/ha. (pre-emergence), T_7=Karmex W in 898·4 lit. of water/ha. (pre-emergence), T_8=1·1 Kg. of Karmex DW in 898·4 lit. of water/ha. (pre-emergence), T_9=6 lit. of Stam F—34 in 100 lit. of water after 15 days from sowing (post emergence), T_{10}=6 lit. of Stam F—34 in 100 lit. of water after 15 days and 30 days from sowing (post emergence) and T_{11}=Hand weeding.

3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 3. (iv) (a) 5·18 m.×3·05 m. (b) 4·57 m.×3·05 m. (v) 30 cm. on either side. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Height of plants, weed population, no. of leaves, yield of grain and straw. (iv) (a) 1965—only. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1090 Kg/ha. (ii) 306·1 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

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	516	397	1401	242	452	923	885	258	1095	2205	2494	2212

C.D.=518·3 Kg/ha.

Crop :- Paddy (*Kharif*). **Ref :- Bh. 64(207).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'D'.**

Object :— To evaluate the effect of weed popn. on the yield of *Gora* Paddy.

1. BASAL CONDITION :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) 17.6.64. (iv) (a)3 ploughings. (b) Line sowing. (c) 69 Kg/ha. (d) 25 cm. between rows. (e) Nil. (v) 22·4 Kg/ha. of N as A/S, P_2O_5 as Super and K_2O as Mur Pot. each (vi) Brown *Gora* 23—19. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) 108 cm. (x) 5.12.64.

2. TREATMENTS :

12 weedicidal treatments : T_0=Control, T_1=1·1 Kg. of Simazine in 363·7 lit. of water/ha. (pre-emergence), T_2=14·8 lit. of Tok—E—25 in 363·7 lit. of water/ha. (pre-emergence), T_3=7·4 pints of Gramexone in 363·7 lit. of water/ha. (pre-emergence), T_4= 1·1 Kg. of Simazine (pre-emergence)+22 Kg. of Tofapon in 363·7 lit. of water/ha. (post emergence), T_5=14·8 lit. of Tok--E--25 in 363·7 lit of water/ha. (pre-emergence) +2·2Kg. of Tofapon in 363·7 lit. of water/ha. (post emergence), T_6=4·9 pints of Reglone in 136·4 lit. of water/ha. T_7=1·1 Kg. of Karmex 'W' in 363·7 lit. of water/ha. (pre-emergence), T_8=1·1 Kg. of Karmex 'DW' in 363·7 lit. of water/ha. (pre-emergance), T_9=14·8 lit. of Stam F—34 in 363·7 lit. of water/ha. (post emergence) after 15 days, T_{10}=14·8 lit. of Stam F—34 in 363·7 lit. of water/ha. (post emergence) after 15 and 30 days and T_{11}=Hand weeding.

3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) 42·82 m.×5·03 m. (iii) 3. (iv) (a) and (b) 4·57 m.×3·05 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) No. of tillers and leaves, height of plants no. of seeds/panicle, wt. of seeds/panicle wt. of 100 grains, wt. of grain and straw. (iv) (a) No. (b) and (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1710 Kg/ha. (ii) 348·0 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

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	1141	1141	1549	983	1428	1887	896	1420	1794	2535	3100	2648

C.D.=589·3 Kg/ha.

Crop :- Paddy (*Kharif*). **Ref :- Bh. 64(212).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'D'.**

Object :—To find out the effect of Tok granular as weedicide on low land Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) 13.8.64. (iv) (a) 3 ploughings. (b) N.A. (c) 70 Kg/ha. (d) 25 cm.×25 cm. (e) 8. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) 818-3. (vii) Unirrigated. (viii) Weeding, hoeing and earthing. (ix) 64 cm. (x) 15.12.64.

2. TREATMENTS :

5. weedicidal treatments : T_0=Control, T_1=Tok granular @ 24·7 Kh/ha. applied 4 to 8 days after transplanting, T_2=Tok granular @ 37·0 Kg/ha. applied 4 to 8 days after transplanting, T_3=Tok granular @ 49.4 Kg/ha. applied 4 to 8 days after transplanting and T_4=Hand weeding.

3. DESIGN :

(i) R.B D. (ii) (a) 5. (b) 16·28 m.×4 06 m. (iii) 4. (iv) (a) and (b) 3·66 m.×2·74 m. (v) Nil. (vi) Yes.

4. GENERAL ;

(i) Good. (ii) Nil. (iii) No. of tillers and leaves, wt. of 1000 grains, wt. of grain/plant, yield of grain and straw. (iv) (a) No. (b) and (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1840 Kg/ha. (ii) 447·0 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4
Av. yield	1714	1643	1883	1898	2063

Crop .- Paddy (*Kharif*). **Ref :- Bh. 64(211).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'D'.**

Object :—To find out the effect of Stam F—34 as weedicide on Paddy.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Paddy. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam (iii) 12.8.64. (iv) (a) 3 ploughings. (b) Line sowing. (c) 70 Kg/ha. (d) 25 cm.×25 cm. (e) 3. (v) 45 kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) 818—3. (vii) Unirrigated (viii) Weeding and hoeing. (ix) 64 cm. (x) 9.12.64.

2. TREATMENTS :

4 weedicidal treatments : T_0=Control, T_1=One spraying of Stam F—34 @ 14·83 lit/ha. applied 12 days after transplanting, T_2=Two sprayings of Stam F—34 @ 14 83 lit/ha. applied 12 and 15 days after transplanting and T_3=Hand weeding.

The application of the chemical should be done after removing water from the plot.

3. DESIGN :

(i) R.B D. (ii) (a) 4. (b) 12·80 m.×3.96 m. (iii) 6. (iv) (a) and (b) 3·66 m.×2·74 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) No. of tillers and leaves, yield of grain and straw. (iv) (a) No. (b) and (c) Nil. (v) to (vii) Nil.

5. RESULTS:

(i) 1788 Kg/ha. (ii) 323 0 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3
Av. yield	1624	1749	1981	1796

Crop :- Paddy (*Kharif*). **Ref :- Bh. 65(114).**

S te :- Agri. Res. Instt., Kanke. **Type :- 'D'.**

Object :—To evaluate the effect of weedicides on *Gora* Paddy in up-land.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) Nil (ii) Red loan. (iii) 21.6.65. (iv) (a) 3 ploughings. (b) Line sowing. (c) 70 Kg/ha. (d) 25 cm. between rows. (e) —. (v) 22·5 Kg/ha. of N as A/S, P_2O_5 as Super and K_2O as Mur. Pot. each. (vi) Brown *Gora* 23—19. (vii) Irrigated. (viii) Weeding and hoeing (ix) N.A. (x) 20.12.65.

2. TREATMENTS :

6 weedicidal treatments : T_0=Control (no weeding), T_1=One spraying of Stam F—34 at 15 lit./ha., T_2= Two sprayings of Stam F—34 at 15 lit./ha. each, T_3=CP 31393 a 4·5 Kg/ha., T_4=2, 4—D at 1·2 Kg.a.i/ha. and T_5=Hand weeding.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 5. (iv) (a) 5·18 m.×2·44 m. (b) 4 57 m.×2·44 m. (v) 30 cm. on either side. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain and straw, No. of tillers, weed population. (iv) (a) to (c) No. (v) to (vii) Nil.

5. RESULTS :

(i) 1884 Kg/ha (ii) 292·0 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. yield	1544	2644	2737	1420	741	2219

C.D.=385·3 Kg/ha

Crop :- Paddy (*Kharif*). **Ref :- Bh. 63(307).**

Sita :- Seed Demonstration Farm, Khunti. **Type :- 'D'**

Object :—To see the effect of different insecticides to control Paddy gall-fly.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (ii) Red loam. (iii) 9.8.1963. (iv) (a) 3—4 ploughings. (b) Line sowing (transplaning) (c) 23 Kg/ha. (d) 23 cm. between rows. (e) —. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (vi) BR—34.(vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 15.12.63.

2. TREATMENTS:

All combinatoins of (1) and (2)+Control

(1) Three stages of spraying : S_1=One spraying just after infestation, S_2=Two sprayings at 15 days interval and S_3=Three sprayings at 15 days interval.

(2) Four types of insceticides : T_1=0·04% Endrin, T_2=0·04%Folidol, and T_3=DDT+0·125% Pyro and T_4=0·04% Telodrin.

3. DESIGN :

(i) R.B.D. (ii) (a) 13. (b) N.A. (iii) 3. (iv) (a) and (b) 50·58 sq. m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Under study. (iii) P. C. of infestation. (iv) (a) 1963—only. (b) and (c) —. (v) Kuru (vi) Nil. (vii) Yield data—N.A.

5. RESULTS :

Infestation data :

(i) 20·67 degrees. (iii) None of the effects is significant. (iv) Mean infestation in degree.

Control=23·63.

	T_1	T_2	T_3	T_4	Mean
S_1	21·64	19·01	22·18	19·35	20·54
S_2	22·15	18·63	22·05	19·36	20·55
S_3	22·28	17·09	20·66	20·66	20·18
Mean	22·03	18·24	21·63	19·79	20·42

Crop :- Paddy (*Kharif*). **Ref :- Bh. 63(309).**

Site :- Sub-divisional Farm, Khunti. **Type :- 'D'.**

Object :—To see the effect of different insecticides to control Paddy gall-fly.

1. BASAL CONDITIONS :

(i) Nil. (b) Paddy. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (iii) 9 and 10.8.63. (iv) (a) 3—4 ploughings. (b) Line sowing. (c) 23 Kg/ha. (d) 23 cm. between rows. (e) —. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (vi) BK—36. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 15.12.63.

2. TREATMENTS :

10 insecticidal treatments : T_0=Control (no spraying), T_1=Soil application of GammaB HC at 56 Kg/ha. at the time of puddling, T_2=Spraying of 0·04% Folidol once at seedling stage and twice at 20 days interval after transplanting, T_3=Spraying of 0·04% Endrin once at seedling stage and twice at 20 days interval after transplanting, T_4=Spraying of DDT+0·125% Pyrocolloid once at seedling stage and twice at 20 days interval after transplanting, T_5=Spraying of Telodrine once at seedling stage and twice at 20 days interval after transplanting, T_6=Spraying of 0·04%

Folidol thrice at 20 days interval after transplanting, T_7=Spraying of 0·04% thrice at 20 days interval after transplanting, T_8=Spraying of DDT+ 0·125% Pyrocolloid thrice at 20 days interval after transplanting and T_9= Spraying of Telodrine thrice at 20 days interval of transplanting.

Date of sprayings : 17.7.63, 30.8.63, 20.9.63 and 9.10.63.

3. DESIGN :

(i) R B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) N.A (b) 10·04 m.×5·02 m. (v) N.A. (v) Yes.

1. GENERAL :

(i) Good. (ii) Attack of gall-fly, control measure as per treatments. (iii) Percentage of incidence, yield of grain. (iv) (a) 1963—only. (b) No. (c) N.A. (v) Kuru. (vi) and (vii) Nil.

5. RESULTS :

1. Yield data

(i) 1063 Kg/ha. (ii) 175 1 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9
Av. yield	1040	925	1043	1063	925	1156	1156	1017	1248	1063

2. Infestation data

(i) 20·84 degree. (ii) 2·53 degree. (iii) Treatment differences are not significant. (iv) Mean infestation in degree.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9
Mean Infestation	23·72	23·26	19 92	17·68	19 43	20 21	22·05	20 32	21·62	20·23

Crop :- Paddy (*Kharif*). **Ref :- Bh. 64(341), 65(178).**

Site :- Seed Demonstration Farm, Khunti. **Type :- 'D'.**

Object :—To see the effect of insecticides to control gall-fly on Paddy (BR—34).

1. BASAL CONDITIONS ;

(i) (a) Nil. (b) Paddy. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (ii) Red Loam. (iii) 6.8.64. ; 13.8.65. (iv) (a) 3—4 ploughings. (b) Line sowing (Transplanting). (c) 23 Kg/ha. (d) 23 cm. between rows. (e) —. (v) 54 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super +45 Kg/ha. of K_2O as Mur. Pot. (vi) BR—34 (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 3 to 9.12.64 : 19.12.65.

2. TREATMENTS :

10 insecticidal treatments : T_0=Control, T_1=0·04% Folidol, T_2=0·04% Endrin, T_3=28 gm. DDT+ 0·125% Pyro, T_4=0·05% Dimecron, T_5=0·05% Imidan; T_6=0·10% Diptrex, T_7=0 04% Telodrin, T_8=0 05% Gamma B.H.C., and T_9=0·25% Malathion.

Note : The treatments were applied in the form of spray.

3 DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 6·40 m.×4 87 m. ; 5·03 m.×10·05 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1964–65. (b) No. (c) Results of combined analysis are presented under 5. Results. (v) and (vi) Nil. (vii) Error variances are heterogeneous and Treatments × Years interaction is present.

5. RESULTS:

Pooled results

(i) 1940 Kg/ha. (ii) 529·4 Kg/ha. (based on 9 d.f. made up of Treatments × Years interaction). (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9
Av. yield	1529	2316	2426	1813	1809	1807	1798	1794	2011	2095

Individual results

Treatmen	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9	Sig.	G.M.	S.E./plot
Year													
1964	1213	2571	2668	1504	1649	1552	1504	1649	1746	2037	**	1809	165·4
1965	1846	2061	2184	2123	1969	2061	2092	1938	2276	2153	N.S.	2070	418·3
Pooled	1529	2316	2426	1813	1809	1807	1798	1794	2011	2095	N.S.	1940	529·4

Infestation data

64(341)

(i) 16·07 degree. (ii) 0·96 degree. (iii) Treatment differences are highly significant. (iv) Mean infestation in degree.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9
Mean infestation	22·21	12·47	12·60	17·35	14·46	14·88	16·68	18·26	18·04	13·75

C.D.=1·63 degree.

65(178)

(i) 8·15 degree. (ii) 0·76 degree. (iii) Treatment differences are highly significant. (iv) Mean infestation in degree.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9
Mean infestation	13·22	7·48	7·75	7·87	7·60	7·59	7·48	7·83	7·39	7·29

C.D.=1·31 degree.

Crop :- Paddy (*Kharif*). **Ref :- Bh. 64(343), 65(179).**

Site :- Seed Demonstration Farm, Khunti. **Type :- 'D'.**

Object :—To see the effect of insecticides to control gall-fly on Paddy (BK—36).

1. BASAL CONDITION :

(i) (a) Nil. (b) Paddy. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (ii) Red loam. (iii) 26.8.64 ; 5.7.65/7.8.65. (iv) (a) 3—4 ploughings. (b) Line sowing (c) 23 Kg/ha. (d) 23 cm. between rows. (e) —. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super +45 Kg/ha. of K_2O as Mur. Pot. (vi) BK—36. (vii) Irrigated. (viii) Weeding, hoeing and harrowing. (ix) N.A. (x) 25.12.64 ; 11.12.65.

2. TREATMENTS :

10 insecticidal treatments : T_0=Control, T_1=0·04% Folidol ; T_2=0·04% Endrin, T_3=28 gm. DDT +0·125% Pyro, T_4=0·05% Dimecron, T_5=0·05% Imidan, T_6= 0·10% Diptrex, T_7=0·04% Telodrin. T_8=0·05% Gamma BHC and T_9=0·25% Malathion.

Note : Treatments were applied in the form of spray.

Date of sprayings :—8.8.64, 19.9.65, 10.10.64 ; 27.8.65, 3.10.65.

3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4 ; 3. (iv) (a) N.A. (b) 6·40 m.×4·87 m. ; 10·05 m.×5·02 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of gall-fly, control measure as pre treatments. (iii) % of infestation, yield of grain (iv) (a) 1963—65 (Expt. for 63—N.A.). (b) No. (c) Results of combined analysis are given under 5. Results. (v) and (vi) Nil. (vii) Error variances are heterogeneous and Treatments×Years interaction is present.

5. RESULTS :

Yield data

Pooled results :

(i) 1521 Kg/ha. (ii) 232·2 Kg/ha. (based on 9 d.f. made up of Treatments×Years interaction). (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9
Av. yield	1184	1675	1831	1493	1592	1388	1495	1442	1588	1526

Individual results :

Treatments	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9	Sig.	G.M.	S.E./plot
Years													
1964	800	1382	1564	1018	1236	1018	1091	1091	1091	1236	**	1153	91·4
1965	1695	2065	2188	2127	2065	1880	2034	1911	2250	1911	N.S.	2013	191·5
Pooled	1184	1675	1831	1493	1592	1388	1495	1442	1588	1526	N.	1521	232·2

Infestation data :

64(343)

(i) 16·48 degree. (ii) 1·71 degree. (iii) Treatment differences are highly significant. (iv) Mean infestation in degree.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9
Mean infestation	24·11	12·89	12·03	16·99	15·77	16·44	18·38	15·90	18·03	14·25

C.D.=2·47 degree.

65(179)

(i) 9·51 degree. (ii) 0·96 degree. (iii) Treatment differences are highly significant. (iv) Mean infestation in degree.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9
Mean infestation	14·22	8·95	8·08	8·16	9·09	9·81	9·97	9·30	7·98	9·59

C.D.=1·63 degree.

Crop :- Paddy (*Kharif*). **Ref :- Bh. 63(306).**

Site :- Seed Multiplication Farm, Kuru. **Type :- 'D'.**

Object :—To see the effect of different insecticides to control gall-fly on Paddy (BR—34).

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 45 Kg/ha. of N as A/S+45 Kg/ha of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (ii) Red loam. (iii) 5.8.63. (iv) (a) 3—4 ploughings. (b) Line sowing. (c) 23 Kg/ha. (d) 23 cm. between rows. (e)—. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (vi) BR—34. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 8.12.63.

2. TREATMENTS :

All combinations of (1) and (2)+one control

(1) 3 stages of spray : S_1=One spraying just after infestation, S_2=Two sprayings at 15 days interval and S_3=Three sprayings at 15 days interval.

(2) 4 types of insecticides : I_1=0·04% Endrin, I_2= 0·04% Folidol, I_3=D.D.T.+0·125% Pyro. and I_4=0·04% Telodrin.

Date of spraying : 30.8.63, 13.9.63, 18.10.63.

3. DESIGN :

(i) R.B.D. (ii) (a) 13. (b) N.A. (iii) 3. (iv) 50·6 sq. m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of gall-fly, control measure as per treatments. (iii) % of infestation, yield of grain. (iv) (a) 1963—only. (b) No. (c) Nil. (v) Khunti. (vi) and (vii) Nil.

5. RESULTS :

Yield data

(i) 920 Kg/ha. (ii) 210·4 Kg/ha. (iii) The main effect of S alone is significant. (iv) Av. yield of grain in Kg/ha.

Control=738 Kg/ha.

	I_1	I_2	I_3	I_4	Mean
S_1	895	861	776	737	817
S_2	969	853	911	991	931
S_3	1276	941	1084	922	1056
Mean	1047	885	923	883	935

C.D. for S marginal means=177·3 Kg/ha.

Infestation data

(i) 32·23 degree. (ii) 3·17 degree. (iii) Main effect of S is significant and 'control *vs.* others' is highly significant. (iv) Mean infestation in degree.

Control=44·07.

	I_1	I_2	I_3	I_4	Mean
S_1	30·49	36·70	31·95	33·24	33·10
S_2	31·57	31·74	30·29	31·31	31·23
S_3	28·68	30·47	27·99	30·51	29·41
Mean	30·25	32·97	30·08	31·69	31·25

C.D. for S marginal means=2·68 degree.
C.D. for 'control *vs.* others'=5·36 degree.

Crop :- Paddy (*Kharif*). **Ref :- Bh. 64(340).**

Site :- Seed Multiplication Farm, Kuru. **Type :- 'D'.**

Object :—To see the effect of different insecticides to control gall-fly on Paddy (BR—34).

1. BASAL CONDITION :

(i) (a) Nil. (b) Paddy. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (ii) Red loam. (iii) 7.8.64. (iv) (a) 3—4 ploughings. (b) Line sowing. (c) 23 Kg/ha. (d) 23 cm. between rows. (e) —. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (vi) BR—34. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 12.12.64.

2. TREATMENTS :

10 insecticidal treatments : T_0=Control, T_1=Folidol at 0·04%, T_2=Endrin at 0·04%, T_3=D.D.T.+Pyro. at 0·25%, T_4=Dimecron at 0·05%, T_5=Imidam at 0·05%, T_6=Optrex at 0·10%, T_7=Telodrin at 0·04% and T_8=Gamma B.H.C. at 0·05%, T_9=Malathion at 0·25%.

Date of spray=12.9.64 and 2.10.64.

3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 6·40 m.×4·87 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of gall-fly, control measure as per treatments. (iii) % of infestation, yield of grain. (iv) (a) 1963—65. (Expt. for 1963—N.A. and T_6 failed in 1965). (b) No. (c) Nil. (v) Khunti. (vi) and (vii) Nil.

5. RESULTS :

Yield data :

(i) 1064 Kg/ha. (ii) 315·9 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9
Av. yield	631	1208	1529	1305	1144	1048	695	1069	1134	877

Infestation data :

(i) 31·51 degree. (ii) 2·98 degree. (iii) Treatment differences are highly significant. (iv) Mean infestation in degree.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9
Mean infestation	46·11	30·00	23·09	35·09	22·57	31·16	33·47	34·36	34·66	24·59

C.D.=5·11 degree.

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Crop :- Paddy (*Kharif*). **Ref :- Bh. 65(177)**

Site :- Seed Multiplication Farm, Kuru. **Type :- 'D'.**

Object :—To see the effect of insecticides to control gall-fly on Paddy (BR—34).

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (ii) Red loam. (iii) 10.8.65. (iv) (a) 3—4 ploughings. (b) Line sowing. (c) 23 Kg/ha. (d) 23 cm. between rows. (e) —. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (vi) BR—34. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 13.12.65.

2. TREATMENTS :

10 insecticidal treatments : T_0=Control, T_1=Folidol at 0·04%, T_2=Endrin at 0·04%, T_3=D.D.T. 28 gm.+ Pyro. at 0·25%, T_4=Dimecron at 0·05%, T_5=Imidam at 0·05%, T_6=Diptrex at 0·10%, T_7=Telodrin at 0·04%, T_8=Gamma B.H.C. at 0·05% and T_9= Melathion at 0·25%.

Date of spary : 26.9.65.

3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 6·40 m.×4·87 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of gall-fly, control measure as per treatments. (iii) Gall-fly population, yield of grain. (iv) (a) 1963–65 (Expt. for 1963—N.A. and T_6 failed in 1965). (b) No. (c) Nil. (v) Khunti. (vi) Nil. (vii) T_6 failed in 1965.

5. RESULTS :

Yield data

(i) 2913 Kg/ha. (ii) 234·4 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_7	T_8	T_9
Mean yield	1708	3192	3864	2754	2861	3480	2498	2818	3042

C.D.=405·6 Kg/ha.

Infestation data

(i) 18·02 degree. (ii) 7·51 degree. (iii) Treatment differences are not significant. (iv) Mean infestation in degree.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_7	T_8	T_9
Mean infestation	21 86	15·43	27·43	16·92	17·09	15·24	17·24	17·23	13·76

Crop :- Paddy (*Kharif*). **Ref :- Bh. 63(310).**

Site :- Seed Multiplication Farm, Kuru. **Type :- 'D'.**

Object :—To see the effect of different insecticides to control gall-fly on Paddy (BK—36).

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (ii) Red loam. (iii) 5.8 63. (iv) (a) 3—4 ploughings. (b) Line sowing. (c) 23 Kg/ha. (d) 23 cm. between rows. (e) —. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha of K_2O as Mur. Pot. (vi) BK –36. (vii) Irrigated. (viii) Weeding and harrowing (ix) N.A. (x) 10.12.63.

2. TREATMENTS :

10 insecticidal treatments : T_0=Control, T_1=Soil application of Gamma B.H.C. at 0·56 Kg/ha. at the time of puddling, T_2=One spray of 0·04% Folidol in the seedling age and two sprayings of 0·04% Folidol after transplanting at 20 days interval, T_3=One spray of 0·04% Endrin in the seedling age and two sprayings of 0·04% Endrin after transplanting at 20 days interval, T_4=One spray of D.D.T.+0·125% Pyrocolloid in the seedling age and two sprayings of D.D.T.+0·125% Pyrocolloid after transplanting at 20 days interval, T_5=One spary of Telodrin in the seedling age and two sprayings of Telodrin after transplanting at 20 days interval, T_6=Three sprayings of 0·04% Folidol after transplanting at 20 days interval, T_7=Three sprayings of 0·04% Endrin after transplanting at 20 days interval, T_8=Three sprayings of D.D.T +0·125% Pyro. after transplanting at 20 days interval and T_9=Three sprayings of Telodrin after transplanting at 20 days interval.

Date of spray : 30.8.63.

3. RESULTS :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 4·87 m.×6·40 m. (v) N.A. (iv) Yes.

4. GENERAL :

(i) Good. (ii) Attack of gall-fly, control measure as per treatments. (iii) % of incidence, yield of grain. (iv) (a) 1963—only. (b) No. (c) Nil. (v) Khunti. (vi) and (vii) Nil.

5. RESULTS :

1. Yield data

(i) 1613 Kg/ha. (ii) 295 6 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9
Av. yield	1198	1394	2077	1693	1675	1674	1581	1385	1534	1918

C.D.=428·9 Kg/ha.

2. Infestation data

(i) 27 79 degree. (ii) 4·39 degree. (iii) Treatment differences are not significant. (iv) Mean infestation in degree.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9
Mean Infestation	32·82	26·06	30·75	26·10	27·59	29·11	24·99	23·98	30·91	25·62

Crop :- Paddy (*Kharif*). **R6f :- Bh. 64(344), 65(180).**

Site :- Seed Multiplication Farm, Kuru. **Type :- 'D'.**

Object :—To see the effect of insecticides to control gall-fly on Paddy (BK—36).

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (ii) Red loam. (iii) 1.8.64 ; 4.7.65/11.8.65. (iv) (a) 3—4 ploughings. (b) Line sowing. (c) 23 Kg/ha. (d) 23 cm. between rows. (e) —. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super +45 Kg/ha. of K_2O as Mur. Pot. (vi) BK—36. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 10.12.64 ; 12.12.65.

2. TREATMENTS :

10 insecticidal treatments : T_0=Control, T_1=Folidol at 0·04%, T_2=Endrin at 0·04 %, T_3=D.D.T. 28 gm.+ Pyro. at 0·25 %, T_4=Dimecron at 0·05 %, T_5=Imidam at 0·05 %, T_6=Diptrex at 0·10 %, T_7=Telodrin at 0·04 %, T_8=Gamma B.H.C. 0·05 % and T_9=Malathion 0·25 %.

Date of spray : 17 and 31.8.64, 15.9.64, 1.10.64 ; 27.8.65, 2.10.65.

3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4 ; 3. (iv) (a) and (b) 6·40 m.×4·87 m. ; 10·05 m.×5·02 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of gall-fly, control measure as per treatments. (iii) % of infestation, yield of grain. (iv) (a) 1964—65. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Error variances are heterogeneous and Treatments×Years interaction is present.

5. RESULTS :

Yield data

Pooled results

(i) 1716 Kg/ha. (ii) 566·3 Kg/ha. (based on 9 d.f. made up of Treatments×Years interaction). (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9
Av. yield	968	1808	2205	1713	1912	1625	1718	1651	1602	1959

Individual results

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9	Sig.	G.M.	S.E./plot
Years 1964	793	1881	2402	1521	1785	1401	1481	1313	1441	2146	**	1616	355·2
1965	1202	1711	1942	1969	2081	1923	2035	2101	1817	1711	**	1849	205·3
Pooled	968	1808	2205	1713	1912	1625	1718	1651	1602	1959	N.S.	1716	566·3

Infestation data

64(344)

(i) 21·88 degree. (ii) 1·38 degree. (iii) Treatment differences are highly significant. (iv) Mean infestation in degree.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9
Mean infestation	36·08	20·04	15·41	21·97	22·50	21·82	20·06	23·35	23·03	14·56

C.D.=2·00 degree

65(180)

(i) 9·63 degree. (ii) 1·48 degree. (iii) Treatment differences are highly significant. (iv) Mean infestation in degree.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9
Mean infestation	15·62	8·44	7·62	9·27	8·32	9·63	8·29	8·84	10·34	9·92

C.D.=2·53 degree.

Crop :- Paddy (*Kharif*). **Ref :- Bh. 64(228).**

Site :- Netarhat Farm, Netarhat. **Type :- 'D'.**

Object :—To test the efficacy of common fungicides in controlling blast disease.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 134·6 Kg/ha. of N as A/S+358·9 Kg/ha. of P_2O_5 as Super+89·7 Kg/ha. of K_2O as Mur. Pot.+2 C.L. of Compost/whole plot. (ii) Sandy loam. (iii) 23.6.64/26.7.64. (iv) (a) 2—3 ploughings. (b) Line sowing by Jap. method. (c) 20 Kg/ha. (d) 25 cm.×25 cm. (e) 2—3. (v) 45 Kg/ha. of N as A/S. (vi) BR—9. (vii) Unirrigated. (viii) Weeding and hoeing by rotary hoe. (ix) 108 cm. (x) 25.12.64.

2. TREATMENTS :

7 fungicidal treatments : T_0=Control (no spray), T_1=Control (water spray), T_2=4 sprayings of Bordeaux mixture (5 : 5 : 50), T_3=4 sprayings of Blitane at 1·36 Kg. in 1123 lit. of water/ha., T_4=4 sprayings of Fytolan at 1·58 Kg. in 1123 lit. of water/ha., T_5=4 sprayings of Dithane Z—78 at 0·6803 Kg. in 1123 lit. of water/ha. and T_6=4 sprayings of Cereson wet at 3·40 Kg. in 1123 lit. of water/ha.

Date of spray : 4.9.64, 6.10.64, 24.10.64 and 7.11.64.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) 29·41 m.×10·82 m. (iii) 4. (iv) (a) 10·36 m.×4·88 m. (b) 10·36 m.×3·81 m. (v) 53 cm. on either side. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Blast disease on Paddy, control measure as per treatments. (iii) Disease intensity percentage on Paddy neck and yield of grain. (iv) (a) 1964-66 (Expt- for 1965—N.A.) (b) Yes. (c) Nil. (v) Kanke. (vi) and (vii) Nil.

4. RESULTS :

A. Yield data

(i) 529·0 Kg/ha. (ii) 67·28 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	557	386	456	643	640	472	551

B. Incidence of disease on Paddy neck

(i) 14·03 degree. (ii) 1·80 degree. (iii) Treatment differences are highly significant. (iv) Av. disease intensity on Paddy neck in degree.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6
Av. incidence	18·67	18·41	10·73	11·70	12·52	14·51	11·67

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Crop :- Paddy (*Kharif*). **Ref :- Bh. 62(171).**

Site :- Agri. Res. Instt., Patna. **Type :- 'D'.**

Object :—To find out the effect of insecticides in controlling the stem borer on Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 45 Kg/ha. of N as A/S + 45 Kg/ha. of P_2O_5 os Super. (ii) Clay. (iii) 21.7.62. (iv) (a) One ploughing with tractor and 2 with *deshi* plough. (b) Line sowing by transplanting method. (c) 25 Kg/ha. (d) 23 cm. between rows. (e) 2. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) BR—3. (vii) Irrigated. (viii) Weeding. (ix) N.A. (x) 15.12.62.

2. TREATMENTS :

7 insecticidal treatments: T_0=Control, T_1=Folidol at 0·04 %, T_2=Folidol at 0·02 %, T_3=Endrin at 0·04 %, T_4=Endrin at 0·02 %, T_5=Gamma B.H.C. at 0·05 % and T_6=Gamma B.H.C. at 0·1 %.

Date of spray : 11.8.62, 26.8.62, 11.9.62, 27.9.62.

3. DESIGN :

3. R.B.D. (ii) (a) 7. (b) 734·65 Sq. meter. (iii) 4. (iv) (a) 104·95 Sq. meter. (b) 101·17 Sq. meter. (v) 3·78 Sq. meter. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of stem borer, control measure as per treatments. (iii) No. of tillers, No. of dead heart and yield of grain. (iv) (a) 1962—63 (T_0—germination failed in 1962). (b) Yes. (c) Nil. (v) Sabour. (vi) Nil (vii) Germination failed in control plot.

5. RESULTS :

Yield data

(i) 1612·7 Kg/ha. (ii) 342·5 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	1601	1559	1816	1863	1470	1366

Infestation data

(i) 8·63 degree. (ii) 1·08 degree. (iii) Treatment differences are highly significant. (iv) Av. infestation in degree.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6
Mean infestation	6·50	7·69	5·93	7·14	10·47	14·07

C.D.=1.63 degree.

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Crop :- Paddy (*Kharif*). **Ref :- Bh. 63(209).**

Site :- Agri. Res. Instt., Patna. **Type :- 'D'.**

Object :—To find out the effect of insecticides in controlling the stem borer on Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Clay. (iii) 15.7.63. (iv) (a) One ploughing with tractor and 2 with *deshi* plough. (b) Line sowing by transplanting method. (c) 25 Kg/ha. (d) 23 cm. between rows. (e) 2. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super (vi) BR—36. (vii) Irrigated. (viii) Weeding. (ix) N.A. (x) 5.12.63.

2. TREATMENTS :

7 insecticidal treatments : T_0=Control, T_1=Folidol at 0·04 %, T_2=Folidol at 0·02 %, T_3=Endrin at 0.04 %, T_4=Endrin at 0·02%, T_5=Gamma B.H.C. at 0·05 % and T_6=Gamma B.H.C. at 0·1 %.

Date of spray : 20.7.63, 4.8.63, 19.8.63, 4.9.63.

3. DESIGN :

(i) R.B.D. (ii) 7. (b) 12·90 m.×57·65 m. (iii) 4. (vi) (a) 12·80 m.×8·23 m. (b) 12·31 m.×8·23 m. (v) 25 cm. on either side (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of stem borer, control measure taken as per treatments. (iii) No. of tillers, no. of dead hearts and yield of grain. (iv) (a) 1962—63 (T_0—germination failed in 1962). (b) Yes. (c) Nil. (v) Sabour. (vi) and (vii) Nil.

5. RESULTS :

(i) 1583 Kg/ha. (ii) 140·0 Kg/ha: (iii) Treatment differences are significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	1377	1641	1555	1782	1676	1490	1564

C.D.=208 0 Kg/ha.

Crop :- Paddy (*Kharif*). **Ref :- Bh. 60(80), 61(207).**

Site :- Agri. Res. Instt., Patna. **Type :- 'D'.**

Object :—To assess the efficacy of various insecticides in controlling stem borer on Paddy.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Clay. (iii) 29.8.60 and 13.9.60 ; 25.7.61. (iv) (a) 3 ploughings by *Deshi* plough (b) Line sowing. (c) 23 Kg/ha. (d) 25 cm.×25 cm. (e) N.A. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) BR—34. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 15 and 17.11.60 ; 10.12.61.

2. TREATMENTS :

All combinations of (1) and (2) +one control

(1) 2 insecticides : I_0=0·04% Folidol and I_2=0·04% Endrin.

(2) 2 numbers of sprayings : S_1=One and S_2=Two sprayings.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 10·16 m.×10·16. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Stem borer, control measure as per treatments. (iii) Yield of grain and straw. (iv) (a) 1960—61. (b) No. (c) Results of combined analysis are presented under 5. Results. (v) Sabour. (vi) Nil. (vii) Error variances are homogeneous and Treatments × Years interaction is present.

5. RESULTS :

Pooled results

(i) 3141 Kg/ha. (ii) 646·4 Kg/ha. (based on 4 d.f. made up of Treatments × Years interaction). (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

Control=2736 Kg/ha.

	I_1	I_2	Mean
S_1	3278	2824	3051
S_2	3333	3533	3433
Mean	3305	3179	3242

Individual results

Treatment	I_1	I_2	Sig.	S_1	S_2	Sig.	Control	Sig.	G.M.	S.E./plot
Year										
1960	3357	3394	N.S.	3265	3486	N.S.	3228	N.S.	3346	309·0
1961	3254	2963	N.S.	2836	3380	N.S.	2244	N.S.	2935	396·3
Pooled	3305	3179	N.S.	3051	3433	N.S.	2736	N.S.	3141	646·4

Crop :- Paddy (*Kharif*). **Ref :- Bh. 60(81).**

Site :- Agri. Res. Instt., Patna. **Type :- 'D'.**

Object :—To determine the efficacy of various insecticides in controlling the pest incidence on Paddy crop.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) N.A. (iii) 7.9.60. (iv) (a) 3 *Deshi* ploughings. (b) Line sowing. (c) 23 Kg/ha. (d) 25 cm. × 25 cm. (e) N.A. (v) N.A. (vi) BR –34. (vii) Irrigated. (viii) Weeding. (ix) N.A. (x) 7 to 19.10.60.

2. TREATMENTS :

4 insecticidal treatments : I_0=Control, I_1=22·4 Kg/ha. of 5% Aldrine dust, I_2=22·4 Kg/ha. of 5% B.H.C. dust and I_3=22·4 Kg/ha. of 1·5 % Dilthrane dust.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 7. (iv) (a) N.A. (b) 10·06 m. × 10·06 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Insecticides applied as per treatments. (iii) Insects and yield of grain. (iv) (a) 1960—61 (Trs. modified in 1961). (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS:

(i) 1986 Kg/ha. (ii) 292·4 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	I_0	I_1	I_2	I_3
Av. yield	1778	2029	2042	2095

Crop :- Paddy (*Kharif*). **Ref :- Bh. 61(289).**

Site :- Agri. Res. Instt., Patna. **Type :- 'D'.**

Object:—To find out the effect of insecticides in controlling the pest incidence on the yield of Paddy.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Clay. (iii) 31.6.61. (iv) (a) 3 ploughings. (b) Transplanting. (c) 40 Kg/ha. (d) 23 cm. between rows. (e) —. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super +45 Kg/ha. of K_2O as Mur. Pot. (vi) CH—10. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 14 and 15.10.61.

2. TREATMENTS:

4 insecticidal treatments: T_0=Control, T_1=22·5 Kg/ha. of 5% of Aldrin dust, T_2=22·5 Kg/ha. of 5% of B.H.C. dust and T_3=22·5 Kg/ha. of 1·5% of Dieldrin dust.

3. DESIGN:

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 7. (iv) (a) N.A. (b) 101·17 sq. m. (v) N.A.. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Rice gundhi bug, control measure as per treatments. (iii) Population of gundhi bug before treatments and after treatments, yield of grain. (iv) (a) 1960—61. (Trs. modified in 1961), (b) No. (c) Nil. (v) Sabour. (vi) and (vii) Nil.

5. RESULTS:

Yield data

(i) 1941 Kg/ha. (ii) 301·6 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3
Av. yield	1568	2108	2028	2062

C.D.=338·7 Kg/ha.

Infestation data

(i) 26·14 degree. (ii) 29·03 degree. (iii) Treatment differences are not significant. (iv) Mean infestation in drgree.

Treatment	T_0	T_1	T_2	T_3
Mean infestation	41·36	14·75	23·19	25·27

Crop :- Paddy (*Kharif*). **Ref :- Bh. 63(201).**

Site :- Agri. Res. Instt., Patna. **Type :- 'D'.**

Object :—To assess the efficacy of various insecticides in controlling the Paddy beetle.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Clay. (iii) 11.6.63/12.7.63. (iv) (a) One ploughing with tractor, 2 *Deshi* ploughings. (b) Transplanting. (c) 25 Kg/ha. (d) 23 cm. × 23 cm. (e) 3 to 4. (v) 67·5 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) CH—10. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 17.12.63.

2. TREATMENTS :

6 insecticidal treatments : T_0=Control, T_1=B.H.C. 5% dust at 22·5 Kg/hh., T_2=Aldrin 5% dust at 22 5 Kg/ha. T_3=Dieldrin 1·5% dust at 22·5 Kg/ha., T_4=Endrin 0 04% spray at 11·25 Kg/ha. and T_5=Folidol 0·04 % spray at 11·25 Kg/ha.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) 204·4 sq. m. (iii) 4. (iv) (a) and (b) 33·72 sq. m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of Paddy beetles, control measures taken as per treatment. (iii) Germination and maturity count, no. of infestation after 48 hours and 72 hours of treatment spray. (iv) (a) 1963—only (b) and (c) —. (v) Sabour. (b) Nil. (vi) Nil. (vii) Yield data—N.A.

5. RESULTS :

Infestation data

(i) 8·2 degree. (ii) 3·3 degree. (iii) Treatment differences are highly significant. (iv) Av. infestation after 72 hours in degree.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	
Mean infestation	15·2	8·0	3·5	8·0	7·2	7·7	C.D.=4·8 degree.

Crop :- Paddy (*Kharif*). **Ref :- Bh. 64(119).**

Site :- Agri. Res. Instt., Patna. **Type :- 'D'.**

Object :—To find out the effect of seed and soil treatment on the control of stem rot of Paddy (498—2A).

1. BASAL CONDITIONS :

(i) (a) to (c) Nil. (ii) Clay. (iii) 20.6.64. (iv) (a) One *Deshi* ploughing. (b) Dibbling in line. (c) 23 Kg/ha. (d) 25 cm. × 25 cm. (e) 2. (v) 44·8 Kg/ha. of N as A/S +44·8 Kg/ha. of P_2O_5 as Super. (vi) 498—2A. (vii) Irrigated. (viii) One weeding by *khurpi*. (ix) N.A. (x) 16.11.64 and 10.12.64.

2. TREATMENTS :

4 fungicidal treatments : F_0=Control, F_1=Seed dressing with 1 gm. of Agrosan G.N. for 500 gms. of seed, F_2=Soil drenching with Cereson wet at 1·1 Kg. in 1123 lit. of water/ha. and F_3=F_1+F_2.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 3. (iv) (a) and (b) 6·10 m. × 0·51 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Incidence of pests and yield of grain. (iv) (a) 1964—only. (b) and (c) —. (v) Bikramganj. (vi) and (vii) Nil.

5. RESULTS :

(i) 2200 Kg/ha. (ii) 225·0 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	F_0	F_1	F_2	F_3
Av. yield	2353	1934	2482	2031

Crop :- Paddy (*Kharif*). **Ref :- Bh. 64(122).**

Site :- Agri. Res. Instt., Patna. **Type :- 'D'.**

Object :—To find out the effect of seed and soil treatment on the control of stem rot of Paddy (BR—34).

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Clay. (iii) 27.7.64. (iv) (a) One *deshi* ploughing. (b) Dibbling in line. (c) 23 Kg/ha. (d) 25 cm. × 25 cm. (e) 3. (v) 44·8 Kg/ha. of N as A/S+44·8 Kg/ha. of P_2O_5 as Super. (vi) BR—34. (vii) Irrigated. (viii) Weeding by *khurpi*. (ix) N.A. (x) 24.11.64 and 12.12.64.

2. TREATMENTS to 4. GENERAL :

Same as in Expt. No. 64(119) on page 170.

5. RESULTS :

(i) 2304 Kg/ha. (ii) 322·0 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	F_0	F_1	F_2	F_3
Av. yield	2031	2353	2256	2578

———

Crop :- Paddy (*Kharif*). **Ref :- Bh. 64(148).**

Site :- Agri. Res. Instt., Patna. **Type :- 'D'.**

Object :—To study the effect of seed treatment and spraying with different fungicides on the control of bacterial leaf blight in Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Clay. (iii) 17.6.64. (iv) (a) One *deshi* ploughing. (b) Dibbling in line. (c) 23 Kg/ha. (d) 25 cm. × 25 cm. (e) N.A. (v) 44·8 Kg/ha. of N as A/S+44·8 Kg/ha. of P_2O_5 as Super. (vi) BR – 34. (vii) Irrigated. (viii) Weeding by *khurpi*. (ix) N.A. (x) 21.11.64.

2. TREATMENTS :

Main-plot treatments :

6 fungicidal treatments : T_0=Control, T_1=Seed soaking in 0·1% Cereson wet before sowing, T_2= Spraying with 0·35% Copper fungicide in 1123 litres/ha. (1st spraying 15 days after transplanting and subsequently spraying at 15 days interval till flowering stage), T_3=Spraying with 0·1% Cereson wet in 1123 litres/ha. (sprayings as in T_2), $T_4=T_1+T_2$ and $T_5=T_1+T_3$.

Sub-plot treatments :

2 sources of seed : S_1=Seed from healthy plants and S_2=Seed from diseased plants.

3. DESIGN :

(i) Split-plot. (ii) (a) 6 main-plots/replication, 2 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) and (b) 6·10 m. × 0·50 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) % incidence and yield of grain. (iv) (a) 1964—only. (b) and (c) —. (v) Sabour (vi) and (vii) Nil.

5. RESULTS :

(i) 2937 Kg/ha. (ii) (a) 716·9 Kg/ha. (b) 603·9 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	T_0	T_1	T_2	T_3	T_4	T_5	Mean
S_1	2826	2543	2704	3068	2503	2907	2758
S_2	3229	2947	3310	3189	3512	2503	3115
Mean	3027	2745	3007	3128	3008	2705	2937

Crop :- Paddy (*Kharif*). **Ref :- Bh. 64(124).**

Site :- Agri. Res. Instt., Patna. **Type :- 'D'.**

Object :—To assess the comparative efficacy of different insecticides in controlling stem borer on Paddy (498—2A).

1. BASAL CONDITIONS :

(i) (a) to (c) Nil. (ii) Clay. (iii) 21.8.64. (iv) (a) 2 ploughings and planking with *deshi* plough. (b) Japanese method. (c) 25 Kg/ha. (d) 25 cm. × 25 cm. (e) 2 to 3. (v) 44·8 Kg/ha. of N as A/S+ 44·8 Kg/ha. of P_2O_5 as Super. (vi) 498—2A. (vii) Unirrigated. (viii) Hand hoeing. (ix) 70 cm. (x) 15 and 16.12.64.

2. TREATMENTS :

11 insecticidal treatments : T_0=Control, T_1=0·02% Folidol, T_2=0·04% Folidol, T_3=0·02% Endrin, T_4= 0·04% Endrin, T_5=0·05% Gamma B.H.C., T_6=0·1% Gamma B.H.C., T_7= 0·02% Telodrin, T_8=0·04% Telodrin, T_9=0·06% Dimecron and T_{10}=0·05% Imidan.

3. DESIGN :

(i) R.B.D. (ii) (a) 11. (b) N.A. (iii) 4. (iv) (a) 7·67 m. × 7·36 m. (b) 7·32 m. × 7·01 m. (v) 17 cm. × 17 cm. (vi) Yes.

4. GENERAL ;

(i) Satisfactory. (ii) Nil. (iii) Tillers counting and yield of grain. (iv) (a) 1964—65 (variety changed in 65). (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 3652 Kg/ha. (ii) 484·0 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

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	3159	3525	4178	3710	4227	3471	3705	3607	3588	3529	3476

Crop Paddy (*Kharif*). **Ref :- Bh. 65(144).**

Site :- Agri. Res. Instt., Patna. **Type :- 'D'.**

Object :—To see the effect of insecticides to control stem borer on Paddy (BR—9).

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Clay. (iii) 17.6.65/9 and 10.8.65. (iv) (a) 3 ploughings. (b) Transplanting. (c) 40 Kg/ha. (d) 23 cm. between rows. (e) —. (v) 45 Kg/ha. of N as A/S+33·8 Kg/ha. of P_2O_5 as Super+22·5 Kg/ha. of K_2O as Mur. Pot. (vi) BR—9. (vii) Irrigated. (viii) Weeding and hoeing. (ix) 96 cm. (x) 21 and 22.12.65.

2. TREATMENTS :

Same as in Expt. No. 64(124) at Patna on page 172.

3. DESIGN :

(i) R B.D. (ii) (a) 11. (b) N.A. (iii) 3. (iv) (a) 7·60 m.×7·30 m. (b) 7·30 m.×7·00 m. (v) 15 cm.× 15 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Stem borer, control measure as per treatments. (iii) Total no. of tillers examined, no. of dead hearts, yield of grain. (iv) (a) 1964–65 (variety changed in 1965). (b) No. (c) Nil. (v) Sabour. (vi) and (vii) Nil.

5. RESULTS :

(i) 1715 Kg/ha. (ii) 110·9 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

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	1489	1970	1845	2135	1845	1575	1746	1522	1720	1463	1555

C.D.=188·5 Kg/ha.

Crop :- Paddy (*Kharif*). **Ref :- Bh. 63(285), 64(307).**

Site :- Seed Multiplication Farm, Piro (Shahabad). Type :- 'D'.

Object :—To find out the effect of seed and soil treatment on the incidence of disease on Paddy (BR—34) under irrigated condition.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Clay. (iii) 11.7.63 ; 18.6.64. (iv) (a) 3 ploughings. (b) Line sowing. (c) 40 Kg/ha., (d) 23 cm.×23 cm. (e) 2 to 3. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (vi) BR—34. (vii) Irrigated. (vii) Weeding and hoeing. (ix) N.A. (x) 26.11.63 ; 24.11.64.

2. TREATMENTS :

4 fungicidal treatments: T_0=Control, T_1=Seed dressing with Agroson 'GN' 1 gram/50 gm. of seeds+soil drenching with Cereson at 1·12 Kg. in 1123 liters of water/ha., T_2=Soil drenching with Cereson at 1·12 Kg. in 1123 liters of water/ha. and T_3=Soil dressing with Agroson 'GN' 1 gram/500 gm. of seeds.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 6·10 m.×1·38 m. ; 6·10 m.×1·52 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1963–64. (b) No. (c) Results of combined analysis are given under 5. Results. (v) Bikramganj, Koni, Kharari and Udaipur. (vi) Nil. (vii) Error variances are homogeneous and Treatments×Years interaction is absent.

5. RESULTS :

Pooled results

(i) 2247 Kg/ha. (ii) 388·5 Kg/ha. (based on 15 d.f. made up of pooled error and Treatments×Years interaction). (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3
Av. yield	2156	2382	2117	2336

Individual results

Treatment	T_0	T_1	T_2	T_3	Sig.	G.M.	S.E./plot
Year 1963	3287	3415	3244	3629	N.S.	3394	402·1
1964	1024	1348	989	1042	N.S.	1101	425·2
Pooled	2156	2382	2117	2336	N.S.	2247	388·5

Crop :- Paddy (*Kharif*). **Ref :- Bh. 65(141).**

Type :- Seed Multiplication Farm, Piro, Distt. Shahabad. **Type :- 'D'.**

Object :—To test the effect of seed treatment and spraying with different fungicides on the control of disease on Paddy (BR—34) under rain fed condition.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Mixed clay. (iii) 5.7.65/11 and 12.8.65. (iv) (a) 3 ploughings. (b) Line sowing. (c) 40 Kg/ha. (d) 23 cm. between rows. (e) —. (v) 45 Kg/ha. of N as A/S+33·8 Kg/ha. of P_2O_5 as Super+22·5 Kg/ha. of K_2O as Mur. Pot. (vi) BR—34. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 4 and 5 12.65.

2. TREATMENTS :

4 fungicidal treatments : T_1=Treated seeds grown in the field after removing stubbles of the previous Paddy crop mechanically, T_2=Treated seeds grown in the field after removing stubbles of the previous crop , T_3=Treated seeds grown in the field without removing stubbles and T_4=Untreated seeds grown in the field with stubbles

Treated seeds : seed soaking in 0·1 % Cereson wet.

3. DESIGN :

(i) R B D. (ii) (a) 4. (b) N.A. (iii) 2. (iv) (a) N.A. (b) 28.92 m.×34·92 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1965—only. (b) and. (c) —. (v) Bikramganj. (vi) and (vii) Nill.

5. RESULTS :

(i) 2816 Kg/ha. (ii) 376·4 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4
Av. yield	2827	2589	3144	2703

Crop :- Paddy (*Kharif*). **Ref :- Bh. 64(109).**

Site :- Agri. Res. Instt. Sabour. **Type :- 'D'.**

Object :—To study the effect of seed treatment and spraying with different fungicides on the control of bacterial leaf blight for Paddy.

1. BASAL CONDITIONS :

(i) (a) to (c) Nil. (ii) N.A. (iii) 4.7.64/10 to 14.8.64. (iv) (a) 2 *deshi* ploughings. (b) Transplanting. (c) 20 Kg/ha. (d) 25 cm.×25 cm. (e) N.A. (v) 44·8 Kg/ha. of N as A/S+44·8 Kg/ha. of P_2O_5 as Super and after one month 22·4 Kg/ha. of N as A/S. (vi) BR—34. (vii) Irrigated. (viii) Weeding by *khurpi* and hoeing with rake. (ix) N.A. (x) 24.11.64.

2. TREATMENTS :

Same as in Expt. No. 64(148) conducted at Patna on page 171.

3. DESIGN :

(i) Split-plot. (ii) (a) 6 main-plots/replication ; 2 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 6·10 m.×1·52 m. (v) N.A. (iv) Yes.

4. GENERAL :

(i) Fair. (ii) Bacterial leaf blight, spraying done. (iii) Flowering, yield of grain and spraying records. (iv) (a)No. (b) and (c) –. (v) Patna. (vi) Heavy rain for 2 hrs. on 18.9.64. (vii) Nil.

5. RESULTS:

(i) 1911 Kg/ha. (ii) (a) 738·4 Kg/ha. (b) 340·2 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	T_0	T_1	T_2	T_3	T_4	T_5	Mean
S_1	2051	1806	2096	2301	1528	1951	1955
S_2	1639	1927	2102	2118	1574	1843	1867
Mean	1845	1866	2099	2209	1551	1897	1911

Crop :- Paddy (*Kharif*). **Ref :- Bh. 62(38).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'D'.**

Object :—To test the effect of *Algae* on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Wheat—Paddy. (b) Wheat. (c) 45 Kg/ha of N as A/S+45 Kg/ha of P_2O_5 as Super. (ii) Sandy loam. (iii) 12.8.62. (iv) (a) 3 spadings before sowing. (b) Line sowing. (c) 70 Kg/ha. (d) 30 cm.×75 cm. (e) 2 to 3. (v) Nil. (vi) 498-2A. (vii) Irrigated. (viii) Weeding by rotary hoe. (ix) 43 cm. (x) 1 12.62.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 levels of P_2O_5 as Super : P_0=0 and P_1=44·8 Kg/ha.
(2) 2 innoculation treatments : T_0=Control and T_1=Innoculation.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) 4·27 m.×3·35 m. (b) 3·66 m.×2·74 m. (v) 30 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) to (c) No. (v) to (vii) Nil.

5. RESULTS :

(i) 2666 Kg/ha. (ii) 142·5 Kg/ha. (iii) Main effect of T alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	P_0	P_1	Mean
T_0	2193	2267	2230
T_1	3015	3189	3102
Mean	2604	2728	2666

C.D. for T marginal means=161·2 Kg/ha

Crop :- Paddy (*Kharif*). **Ref :- Bh. 60(135), 61(161).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'D'.**

Object :—To study the comparative efficacy of different insecticides on stem borer.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) 1.7.60 ; 2.7.61. (iv) (a) 3-4 ploughings. (b) Transplanting by Japanese method. (c) 14 Kg/ha. (d) 23 cm.×21 cm. (e) 2-3. (v) 100 Kg/ha of N as A/S+70 Kg/ha of P_2O_5 as Super. (vi) BK—36. (vii) Irrigated. (viii) Weeding. (ix) N.A. ; 95·4 cm. (v) 22.12.60; 23.12.61.

2. TREATMENTS :

All combinations of (1) & (2)+one control.

(1) 2 insecticides : I_1=Folidol at 0·04% and I_2=Endrin at 0·04%.

(2) 2 numbers of spraying: S_1=1 and S_2=2 sprayings.

3. DESIGN :

(i) R.B D. (ii) (a) 5. (b) N.A. (ii) 5. (iv) (a) and (b) 101·2 sq. m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good (ii) Paddy stem borer, control measure as per treatments. (ii) Percentage of dead-hearts and yield of grain. (iv) (a) 1960-61. (b) Yes. (c) Results of combined analysis have been given under 5. Results. (v) Patna. (vi) Nil. (vii) Error variances are homogeneous and Treatments×Years interaction is present.

5 RESULTS :

Pooled results

(i) 1457 Kg/ha. (ii) 266·1 Kg/ha. (based on 4 d.f made-up of Treatments×Years interaction). (iii) 'Control *vs.* others' is significant. (iv) Av. yield of grain in Kg/ha.

Control=1231 Kg/ha.

	S_1	S_2	Mean
I_1	1461	1592	1527
I_2	1363	1639	1501
Mean	1412	1615	1514

C.D. for 'control *vs.* others'=261·2 Kg/ha.

Individual results

Treatment	I_1	I_2	Sig.	S_1	S_2	N.S.	Control	Sig.	G.M.	S.E./plot
Year 1960	1838	1778	N.S.	1679	1937	**	1383	**	1723	147·6
1661	1215	1223	N.S.	1145	1293	N.S.	1079	**	1191	108·3
Pooled	1527	1501	N.S.	1412	1615	N.S.	1231	*	1457	266·1

Crop :- Paddy (*Kharif*). **Ref :- Bh. 63(236).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'D'.**

Object :—To study the comparative efficacy of insecticidal spray as a check against the Paddy stem borer.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) 17.6.63. (iv) (a) 3—4 ploughings. (b) Transplanting in line. (c) 15 Kg/ha. (d) 23 cm. between rows. (e) 14 Kg/ha. (v) 45 Kg/ha. of N as A/S and P_2O_5 as Super each. (vi) 498—2A. (vii) Irrigated. (viii) Weeding (ix) N.A. (x) 13/14.12.63.

2. TREATMENTS :

9 insecticidal treatments : T_0=Control, T_1=Folidol at 0·04%, T_2=Folidol at 0·02%, T_3=Endrin at 0·04% T_4=Endrin at 0·02%, T_5=Gamma B.H.C. at 0·05%, T_6=Gamma B.H.C. at 0·1%, T_7=Telodrin at 0·02% and T_8=Telodrin at 0·04%.

3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) and (b) 10·06 m.×5·03 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of Paddy stem borer. (ii) Percentage of dead hearts and yield of grain. (iv) (a) 1963—65 (Trs. modified in 64 and expt. for 1965—N.A.). (b) Yes. (c) Nil. (v) Patna. (vi) and (vii) Nil.

5. RESULTS :

Yield data

(i) 3356 Kg/ha. (ii) 551·5 Kg/ha. (iii) Treatment differences are not significant. (vi) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Av. yield	3290	3243	3417	3265	3606	3307	3637	3327	3107

Percentage of dead hearts in degree

(i) 9·19 degree. (ii) 2·37 degree. (iii) Treatment differences are highly significant. (iv) Mean percentage of dead hearts in degree.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Mean infestation	17·20	10·07	11·72	4·25	5·18	12·63	9·50	6·61	5·55

C.D.=3·46 degree.

Crop :- Paddy (*Kharif*). **Ref :- Bh. 64(259), 65(40).**

Site :- Agri Res. Instt., Sabour. **Type :- 'D'.**

Object :—To study the comparative efficiency of different insecticides in controlling stem borer

1. BASAL CONDITIONS :

(i) (a) Nii. (b) Maize. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) 17/18.7.64 ; 26.8.65. (iv) (a) 3—4 ploughings. (b) Transplanting. (c) 14 Kg/ha. ; 45 Kg/ha. (d) Rows 23 cm. apart. (e) 2—3. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) 498—2A ; BR—9 and BR -10. (vii) Irrigated.(viii) Weeding. (ix) N.A. (x) 14/15.12.64 ; 11/12.12.65.

2. TREATMENTS :

9 insecticidal treatments : T_0=Control, T_1=Folidol at 0·04%, T_2=Folidol at 0·02%, T_3=Endrin at 0·04% T_4=Endrin 0·02%, T_5=Gamma B.H.C. at 0·05%, T_6=Gamma B.H.C. at 0·11%, T_7=Dimecron at 0·06%, T_8=Imidan at 0·05%, T_9=Telodrin at 0·04% and T_{10}=Telodrin at 0·02%.

3. DESIGN :

(i) R.B.D. (ii) (a) 11. (b) N.A (iii) 3. (iv) (a) and (b) 10·06 m.×5·03 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Paddy stem borer, control measures taken as per treatments. (iii) % of dead hearts and yield of grain. (iv) (a) 1963—65 (modified in 63). (b) Yes. (c) Nil. (v) and (vi) Nil. (vii) Yield data for 64—N.A.

5. RESULTS :

Infestation data

64(259)

(i) 4·4 degree. (ii) 1·6 degree. (iii) Treatment differences are not significant. (iv) Av. percentage of dead hearts in degree.

Treatments	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9	T_{10}
Av. % of dead hearts	4·8	4·5	4·8	3·8	3·7	3·8	4·0	4·5	7·2	3·6	4·1

Yield data

65(40)

(i) 1351 Kg/ha. (ii) 255·0 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of grain in Kg/ha.

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	850	1634	1238	1660	1219	1416	1232	1423	1331	1574	1285	C.D.=434·2 Kg/ha.

Infestation data

65(40)

(i) 18·0 degree. (ii) 2·2 degree. (iii) Treatment differences are highly significant. (vi) Av. % of dead hearts in degree.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9	T_{10}	
Av. % of dead hearts	29·9	13·6	19·0	13·2	20·7	16·4	20·7	15·4	16·4	14·2	18·5	C.D.=3·5 degrees.

Crop :- Paddy (*Kharif*). **Ref :- Bh. 62(227).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'D'.**

Object :—To study the comparative efficacy of insecticidal sprays as a check against the pest.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (ii) 24.6.62/11.8.62. (iv) (a) 3—4 ploughings. (b) Line sowing. (c) 45 Kg/ha. (d) 23 cm. between rows. (e) —. (v) 45 Kg/ha. of N as A/S+22·4 Kg/ha. of P_2O_5 as Super. (vi) BK—36. (vii) Irrigated. (viii) Weeding. (ix) N.A. (x) 19.11.62.

2. TREATMENTS :

7 insecticidal treatments : T_0=Control, T_1=Folidol at 0·04 %, T_2=Folidol at 0·02 %, T_3=Endrin at 0·04 %, T_4=Endrin at 0·02 %, T_5=Gamma BHC at 0·05 % and T_6=Gamma BHC at 0·1 %.

Time of application : 3.8.62, 27.8.62, 11.9.62 and 26.9.62.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) and (b) 10·06 m.×5·03 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Paddy stem borer, control measure as per treatments. (iii) Yield of grain. (iv) (a) 1962—only. (b) and (c) —. (v) Patna. (vi) and (vii) Nil.

5. RESULTS:

(i) 1438 Kg/ha. (ii) 184·8 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	1273	1576	1357	1768	1564	1149	1380

C.D.=274·6 Kg/ha.

Crop :- Paddy (*Kharif*). **Ref :- Bh. 63(22).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'D'.**

Object :—To find out suitable weedicides for the control of weeds of Paddy crop.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Loam. (iii) N.A./15.7.63. (iv) (a) Ploughings by *deshi* plough. (b) Japanese method. (c) N.A. (d) 25 cm.×25 cm. (e) N.A. (v) 44·8 Kg/ha. of N as A/S+44·8 Kg/ha. of P_2O_5 as Super behind the plough. (vi) N.A. (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 28.11.63.

2. TREATMENTS :

6 weedicidal treatments : W_0=Control (no weeding), W_1=Hand weeding, W_2=1·1 Kg/ha. of Agronoxone, W_3=2·2 Kg/ha. of Agronoxone, W_4=1·1 Kg/ha. of Feronoxone and W_5=2·2 Kg/ha. of Feronoxone.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 5. (iv) (a) and (b) 6·86 m.×4·11 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) to (c) N.A. (v) to (vii) Nil.

5. RESULTS:

(i) 2052 Kg/ha. (ii) 309·6 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	W_0	W_1	W_2	W_3	W_4	W_5
Av. yield	1729	2317	2118	2055	1964	2129

Crop :- Paddy (*Kharif*). **Ref :- Bh. 62(228).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'D'.**

Object :—To find out the comparative efficacy of insecticides as a check against the pest.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) 1.5.62/12.6.62. (iv) (a) 3—4 ploughings. (b) Line sowing. (c) 45 Kg/ha. (d) 23 cm. between rows. (e) —. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) CH—10. (vii) Irrigated. (viii) Weeding. (ix) N.A. (x) 24.8.62.

2. TREATMENTS :

7 insecticidal treatments : T_0=Control, T_1=BHC 5% dust at 22·4 Kg/ha., T_2=Aldrin 5% dust at 22·4 Kg/ha., T_3=Dieldrin 1·5 % dust at 22·4 Kg/ha., T_4=D.D.T. 5% at 22·4 Kg/ha. T_5=Spraying of Endrin at 0·04% in 1123·36 litres of water/ha. and T_6=spraying of Folidol at 0·04 % in 1123·36 litres of water/ha.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) and (b) 33·72 Sq. meter. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Paddy beetles, control measure as per treatments. (iii) Yield of grain. (iv) (a) 1962—only. (b) and (c) —. (v) to (vii) Nil.

5. RESULTS :

1. Infestation data

(i) 40·62 degree. (ii) 7·61 degree. (iii) Treatment differences are highly significant. (iv) Av. infestation in degree.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	
Mean infestation	1·86	51·94	65·85	49·42	59·08	17·72	38·50	C.D.=11·30 degree.

2. Yield data

(i) 3485 Kg/ha. (ii) 327·7 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	
Av. yield	3286	3839	3972	3467	3182	3207	3441	C.D.=486·8 Kg/ha.

Crop :- Paddy (*Kharif*). **Ref :- Bh. 63(240).**

Site .- Agri. Res. Instt., Sabour. **Type :- 'D'.**

Object :—To study the comparative efficacy of the insecticides as a check against the pest on Paddy.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) 12.5.63. (iv) (a) 3—4 ploughings. (b) Transplanting by Japanese method. (c) 14 Kg/ha. (d) 23 cm. between rows. (e) 2—3. (v) 100 Kg/ha. of N as A/S+70 Kg/ha. of P_2O_5 as Super. (vi) CH—10 *Aus*. (vii) Irrigated. (viii) Weedings. (ix) Nil. (x) 1.10.63.

2. TREATMENTS:

6 insecticidal treatments : T_0=Control, T_1=B.H.C. 5 % dust at 22·5 Kg/ha., T_2=Aldrin 5 % dust at 22·5 Kg/ha., T_3=Dieldrin 1·5 % dust at 22·5 Kg/ha., T_4=spraying of Dieldrin at 0·04 % in 1123 lit. of water/ha. and T_5=Spraying of Folidol at 0·04 % in 1123 lit. of water/ha.

Date of spray : 5·9.63.

3. DESIGN:

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) and (b) 10·06 m.×5·03 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of Paddy beetle. (iii) Percentage of reduction in pest popn. over the initial infestation of 191 liters per 100 clumps and yield of grain. (iv) (a) 1962—64 (expt. for 62—N.A.) (b) Yes. (c) Nil. (v) Patna. (vi) Nil. (vii) Yield of grain data were N.A. for 1964.

5. RESULTS :

1 Yield data

(i) 2688 Kg/ha. (ii) 94·2 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. yield	2722	2683	2662	2665	2708	2691

2 Infestation data

(i) 55·98 degree. (ii) 4·03 degree. (iii) Treatment differences are highly significant. (iv) Av. infestation in degree.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Mean infestation	28·45	77·24	67·08	66·38	48·97	47·74

C.D.=6·06 degree.

Crop :- Paddy (*Kharif*). **Ref :- Bh. 64(262).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'D'.**

Object :—To know the comparative efficacy of different insecticides as a check against the pest on Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) 2.5.64. (iv) (a) 3—4 ploughings. (b) Transplanting by Japanese method. (c) 14 Kg/ha. (d) 23 cm. between rows. (e) 2—3. (v) 100 Kg/ha. of N as A/S+70 Kg/ha. of P_2O_5 as Super. (vi) CH—10 *Aus*. (vii) Irrigated. (viii) Weeding. (ix) N.A. (x) 23.8.64.

2. TREATMENTS :

Same as in expt. no. 63(240) on page no. 180.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) 50·54 sq. m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Paddy beetle. (iii) Precentage of reduction in pest and yield of grain. (iv) (a) 1962 - 64 (Expt. for 62—N.A.). (b) Yes. (c) Nil. (v) Patna. (vi) Nil. (vii) Yield of grain data were N.A. for 1964.

5. RESULTS :

Infestation data

(i) 50·27 degree. (ii) 5·68 degree. (iii) Treatment differences are highly significant. (iv) Av. infestation in degree.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Mean infestation	36·71	54·01	51·92	59·57	51·57	47·81

C.D.=8·56 degree

Crop :- Paddy (*Kharif*). **Ref :- Bh. 64(79), 65(80).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'D'.**

Object :—To test the effect of soil innoculation with N fixing *Algae* on the yield of crop and soil fertility.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy. (c) As per treatments. (ii) Sandy loam. (iii) 22.8.64 ; 26.8.65. (iv) (a) 3 ploughings and puddlings. (b) Transplanting. (c) 23 Kg/ha. (d) 30 cm.×30 cm. (e) 2—3. (v) Nil. (vi) 498—2A. (vii) Irrigated. (viii) Weeding by *Khurpi*. (ix) N.A. (x) 3.12.64 ; 18.11.65.

2. TREATMENT :

All combinations of (1) and (2)+one extra treatment

(1) 2 levels of P_2O_5 as Super: P_0=0 and P_1=44·8 Kg/ha.

(2) 3 cultural treatments: T_0=Control (no manure), T_1=Control (rouging weekly) and T_2=*Algae* innoculation 20 days before transplanting.

Extra treatment E=44·8 Kg/ha. of N as A/S+44·8 Kg/ha. of P_2O_5 as Super.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 4·27 m.×3·35 m.; 6·10 m.×2·44 m. (b) 3·66 m.× 2·74 m. ; 5·49 m.×1·83 m. (v) One row on either side. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Heavy attack of stem borer controlled by spraying of Endrin in 64. (iii) Yield of grain and straw. (iv) (a) 1962—65 (Expt. for 63—N.A., Expt. modified in 64 onward). (b) No. (c) Results for combined analysis are presented under 5. Results. (v) No. (vi) Nil. (vii) Error variances are homogeneous and Treatments×Years interaction is present.

5. RESULTS:

Pooled results

(i) 2131 Kg/ha. (ii) 649·3 Kg/ha. (based on 6 d.f. made up of Treatments×Years interaction). (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

E=2489 Kg/ha.

	T_0	T_1	T_2	Mean
P_0	2003	2003	2290	2049
P_1	1841	1954	2339	2045
Mean	1922	1978	2314	2072

Individual results

Treatment	P_0	P_1	Sig.	T_0	T_1	T_2	Sig.	Control	Sig.	G.M.	S.E./Plot
year											
1964	963	905	N.S.	946	972	884	N.S.	1445	*	1007	340·9
1965	3235	3185	N.S.	2898	2986	3745	*	3533	N.S.	3256	381·9
Pooled	2099	2045	N.S.	1922	1978	2314	N.S.	2489	N.S.	2131	649·3

Crop :- Paddy (*Kharif*). **Ref :- Bh. 60(138).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'D'.**

Object :—To study the comparative efficacy of insecticides as a curative trial against rice gundhi bug on Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) 18.6.60. (iv) (a) 3—4 ploughings. (b) Transplanting by Japanese method. (c) 14 Kg/ha. (d) 23 cm. × 21 cm. (e) 2—3. (v) 100 Kg/ha. of N as A/S+70 Kg/ha. of P_2O_5 as Super. (vi) CH—10 *Aus*. (vii) Irrigated by pumping set. (viii) Weeding. (ix) N.A. (x) 7.10.60.

2. TREATMENTS :

4 insecticidal treatments : T_0=Control, T_1=Aldrin 5% dust at 22·42 Kg/ha., T_2=BHC 5% dust at 22·42 Kg/ha. and T_3=Dieldrex 1·5% dust at 22·42 Kg/ha.

Time of application—20.9.60.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 9. (iv) (a) 91·97 sq. metre. (b) 91·91 sq. metre. (v) One row on either side. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Rice gundhi bug, control measure as per treatments. (iii) Yield of grain. (iv) (a) 1960—61. (b) No. (c) Nil. (v) Patna and Ranchi. (vi) and (vii) Nil.

5. RESULTS .

(i) 721 Kg/ha. (ii) 201·1 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	
Av. yield	538	835	685	827	C.D.=189·6.

———

Crop :- Paddy (*Kharif*). **Ref :- Bh. 64(311).**

Site :- Bikramganj (Shahabad c.f.). **Type. 'D'.**

Object :— To find out the comparative efficacy of the different insecticides in controlling the pest root weevil grub.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Clayee. (iii) Nil (iv) NP 498—2A. (v) (a) 3 Ploughings. (b) Transplanting. (c) 40 Kg/ha. (d) 23 cm. between rows. (e) —. (vi) R_1—16.7.64 (Misraulia) R_2—22.7.64 (Raghunathpur), R_3—7.8.64 (Jigni). (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 13.12.64.

2. TREATMENTS :

8 insecticidal treatments : T_0=Control, T_1=Folidol at 0·04%, T_2=Folidol at 0·08%, T_3=Endrin at 0·04%, T_4=Endrin at 0·08%, T_5=Aldrin EC at 0·18%, T_6=Telodrin at 0·04% and T_7=Malathion at 0·04%,

(Method : Mortality of adult weevils was recorded after 72 hrs. of treatments. The percentage of ent plants was noted after one month of transplanting by taking hundred random clumps. Population of grubs was recorded in five samples of affected clumps.

Date of treatments : R_1=15.7.64 (Misraulia), R_2=21.7.64 (Raghunathpur), R_3=6.8.64 (Gigni).

3. DESIGN :

(i) R.B.D., 8, 3. (ii) N.A. (iii) (a) and (b) 404·68 sq. metres. (iv) Yes.

4. GENERAL :

(i) Good. (ii) Paddy root weevil, control measure as per treatments. (iii) Mortality of adult root weevil, no. of clumps examined, population of grubs. (iv) (a) 1964—only. (b) and (c) —. (v) to (vii) Nil.

5. RESULTS:

Percentage of Mortality of adult weevils in degree

(i) 66·00 degree. (ii) 10·50 degree. (iii) Treatment differences are highly significant. (iv) Av. percentage of mortality of adult weevils in degree.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Av. mortality	22·59	69 56	85·91	71·60	79·01	67·79	57·63	73·93

C.D.=18·38 degree.

Crop :- Paddy (*Kharif*). **Ref. :- Bh 64(312).**

Site :- Bikramganj (Shahabad c.f.). **Type :- 'D'.**

Object :—To assess the comparative efficacy of different insecticides in controlling the pest (root weevil grub).

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Clayee. (iii) N.A. (iv) NP 498—2A. (v) (a) 3 ploughings. (b) Transplanting. (c) 40 Kg/ha. (d) 23 cm. between rows. (e) 2—3. (vi) R_1—16.7.64 (misraulia), R_2—26.7.64. (Misraulia), R_3—16.7.64. (Udaipur), R_4—21.7.64. (Mohania). (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 5.12.64.

2. TREATMENTS :

5 insecticidal treatments : T_0=Control, T_1=Aldrin at 5% dust at 28·02 Kg/ha., T_2=Telodrin at 1% dust at 33·75 Kg/ha., T_3=Heptachlor at 3% dust at 33·75 Kg/ha. and T_4=BHC at 10% dust at 33·75 Kg/ha.

Method :—Insecticides were applied in the soil after 1st shower of monsoon. Number of healthy and affected clumps was recorded by taking 3 samples of 1·52 m.×1·52 m. unit area in each plot after transplanting at 15 days interval. Population of grubs was noted in 5 random samples of affected clumps.

Date of Treatments : R_1=6 7.64. (Misraulia), R_2=24.7.64. (Misraulia), R_3—15.7.64. (Udaipur) and R_4=19.7.64. (Mohania).

3. DESIGN :

(i) R.B.D., 5, 4 (each replication at different sites). (ii) N.A. (iii) (a) and (b) 404·68 sq. m. (iv) Yes.

4. GENERAL :

(i) Good. (ii) Paddy root weevil, control measure as per treatments. (iii) Healthy and affected clumps, population of grubs. (iv) (a) 1964 contd. (Expt. for 1965—N.A.). (b) and (c) Nil. (v) No. (vi) and (vii) Nil.

5. RESULTS :

Infestation data

(i) 16·25 degree. (ii) 4·57 degree. (iii) Treatment differences are not significant. (iv) Mean infestation in degree.

Treatment	T_0	T_1	T_2	T_3	T_4
Mean infestation	21·14	14·67	14·40	14·41	16·64

Crop :- Paddy (*Kharif*). **Ref :- Bh. 63(282).**

Site :- Kharai (Shahabad c.f.). **Type :- 'D'.**

Object :—To find out the effect of seed and soil treatments on the incidence of disease on Paddy (BR—8).

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Clay. (iii) Nil. (iv) BR—8. (v) (a) 3 ploughings. (c) 40 Kg/ha. (d) 23 cm. between rows and between plants. (e) 2—3. (vi) 4.8.63. (vii) Irrigated. (viii) Weeding and hoeing (ix) N.A. (x) 29/30.11.63.

2. TREATMENTS :

4 insecticidal treatments : T_0=Control, T_1=Seed dressing with Agroson 'GN' 1 gm./500 gm. of seeds+soil drenching with Cereson wet at 1·12 Kg. in 1123 litres of water/ha., T_2= Soil drenching with Cereson wet at 1·12 Kg. in 1123 litres of water/ha. and T_3= Seed dressing with Agroson 'GN' 1 gm./500 gm. of seeds.

3. DESIGN :

(i) R.B.D., 4, 3. (ii) N.A. (iii) (a) and (b) 6·10 m.×1·28 m. (iv) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) No. (b) and (c) Nil. (v) Koni and Kharari (Shahabad). (vi) and (vii) Nil.

5. RESULTS :

(i) 2162 Kg/ha. (ii) 491·2 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3
Av. yield	2130	2514	1366	2638

Crop :- Paddy (*Kharif*). **Ref :- Bh. 63(286).**

Site :- Kharari (Shahabad c.f.). **Type :- 'D'.**

Object :—To find out the effect of seed and soil treatments on the incidence of disease on Paddy (BR—34).

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Clay. (iii) Nil. (iv) BR—34. (v) (a) 3 ploughings. (b) Line sowing. (c) 40 Kg/ha. (d) 23 cm.×23 cm. (e) 2—3. (vi) 4.8.63. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 29/30.11.63.

2. TREATMENTS :

4 insecticidal treatments : T_0=Control, T_1=Seed dressing with Agroson 'GN' 1 gm./500 gm. of seeds+ soil drenching with Cereson wet at 1·12 Kg. in 1123 litres of water/ha., T_2=Soil drenching with Cereson wet 1·12 Kg. in 1123 litres of water/ha., T_3=Seed dressing with Agroson 'GN' 1 gm./500 gm. of seeds.

3. DESIGN :

(i) R.B.D., 4, 3. (ii) N.A. (iii) (a) and (b) 6·10 m×1·38 m. (iv) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1963—only. (b) and (c) —. (v) Koni and Kharari (Shahabad). (vi) and (vii) Nil.

5. RESULTS :

(i) 1912 Kg/ha. (ii) 294·1 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3
Av. yield	1942	1866	1968	1870

Crop :- Paddy (*Kharif*). **Ref :- Bh. 63(283).**

Site :- Piro (Shahabad c.f.). **Type :- 'D'.**

Object :—**To** find out the effect of seed and soil treatment on the incidence of disease on Paddy (BR—8) under irrigated condition.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Clay. (iii) Nil. (iv) BR—8. (v) (a) 3 ploughings. (b) Line sowing. (c) 40 Kg/ha. (d) 23 cm. × 23 cm. (e) 2—3. (vi) 12.7.63. (vii) Irrigated. (viii) Weeding and hoeing. (ix) —. (x) 26.11.63.

2. TREATMENTS :

4 insecticidal treatments : T_0=Control, T_1=Soil drenching with Cereson wet. at 1·12 Kg. in 1123 litres of water/ha.+seed dressing with Agroson 'GN' 1 gm./500 gm. of seeds, T_2=Soil drenching with Cereson wet at 1·12 Kg. in 1123 litres of water/ha. and T_3=Seed dressing with Agroson 'GN' 1 gm/500 gm. of seeds.

3. DESIGN :

(i) R.B.D., 4, 3. (ii) N.A. (iii) (a) and (b) 6·10 m. × 1·38 m. (iv) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1963—only. (b) and (c) Nil. (v) Koni and Kharari (Shahabad). (vi) and (vii) Nil.

5. RESULTS :

(i) 2759 Kg/ha. (ii) 434·4 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3
Av. yield	2818	2668	2604	2946

Crop :- Paddy (*Kharif*). **Ref :- Bh. 63 (284).**

Site :- Koni (Shahabad c.f.) **Type. 'D'.**

Object :—**To find** out the effect of seed and soil treatments on the ineidence of disease on Paddy BK—34 under irrigated condition .

1. BASAL CONDITIONS.

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Clay. (iii) Nil. (iv) BK—34. (v) (a) 3 ploughings. (b) Line sowing. (c) 40 Kg/ha. (d) 23 cm. × 23 cm. (e) 2—3. (vi) 13.7.63. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 28.11.63.

2. TREATMENTS.

4 insecticidal treatments : T_0=Control, T_1=Seed dressing with Agroson 'GN' 1 gm./500 gm. of seeds+soil drenching with Cereson wet at 1.12 Kg. in 1123 litres of water/ha., T_2=Soil drenching with Cereson wet at 1.12 Kg. in 1123 litres of water/ha. and T_3=Seed dressing with Agroson 'GN,. 1 gm./500 gm. of seeds.

3. DESIGN :

(i) R.B.D. 4, 3. (ii) N.A. (iii) (a) and (b) 6.10 m. × 1.38 m. (iv) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) No. (b) and (c) Nil. (v) Koni and Kharari (Shahabad) (vi) and (vii) Nil.

5. RESULTS :

(i) 3036 Kg/ha. (ii) 162.7 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3
Av. yield	3010	3385	2937	2813

C.D.=325·1 Kg/ha.

Crop :- Paddy (*Kharif*). **Ref :- Bh. 64(309).**

Site :- Seed Multiplication Farm, Udaipur (Shahabad). **Type :- 'D'.**

Object: —To find out the effect of seed and soil treatments on the incidence of disease on Paddy (BR—34).

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (ii) Clay. (iii) 20.6.64. (iv) (a) 3 ploughings. (b) Line sowing. (c) 43 Kg/ha. (d) 23 cm.×23 cm. (e)—. (v) 45 Kg/ha. of N as A/S, P_2O_5 as Super and K_2O as Mur. Pot., each. (vi) BR—34. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 16.11.64.

2. TREATMENTS to 4. GENERAL:

Same as in expt. no. 63(285), 64(307) on page 173.

5. RESULTS :

(l) 737 Kg/ha. (ii) 78.8 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3
Av. yield	791	647	827	683

Crop :- Paddy (*Kharif*). **Ref :- Bh. 64(302).**

Site :- Seed Mul. Farm, Udaipur (Shahabad). **Type :- 'D'.**

Object :—To see the effect of seed treatments and spraying with different fungicides on the control of disease.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Clay. (iii) 22.7.64. (iv) (a) 3 ploughings. (b) Line sowing. (c) 40 Kg/ha. (d) 23 cm. between rows. (e) —. (v) 45 Kg/ha. of N as A/S+33·8 Kg/ha. of P_2O_5 as Super+22·5 Kg/ha. of K_2O as Mur. Pot. (vi) BR—34. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 18.11.64.

2. TREATMENTS :

Main-plot treatments :

6 fungicidal treatments : T_0=Control, T_1=Seed soaking at 0·1% Cereson wet. before sowing, T_2=Spraying with 0·35% Copper fungicides at 1123 litres/ha. (1st spraying 15 days after transplanting and subsequent spraying at 15 days interval till flowering stage), T_3=Spraying with 0·1% Cerseon wet. at 1123 litres/ha. (sprayings as in T_2), T_4=Seed soaking+spraying with the Copper fungicides (Treatments T_1+T_2) and T_5=Seed soaking+spraying with Cereson wet. (Treatments T_1+T_3).

Sub-plot treatments :

2 types of seeds : S_1=Healthy and S_2=Disease.

3. DESIGN :

(i) Split-plot. (ii) (a) 6 main-plots/replication ; 2 sub-plots/main-plot. (b) 13·87 m.×9·14 m. (iii) 4. iv) (a) 6·60 m.×0·50 m. (b) 6·10 m.×0·50 m. (v) 25 c.m. on either side. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Intensity %, yield of grain. (iv) (a) 1964–65 (Expt. for 1965—N.A.). (b) No. (c) Nil. (v) Bikramganj. (vi) and (vii) Nil.

5 RESULTS :

(i) 2664 Kg/ha. (ii) (a) 544·8 Kg/ha. (b) 489·5 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	T_0	T_1	T_2	T_3	T_4	T_5	Mean
S_1	2172	2869	2664	2377	2582	2746	2568
S_2	2787	2746	2541	3033	2541	2910	2760
Mean	2480	2807	2602	2705	2561	2828	2664

Crop :- Paddy (*Kharif*). **Ref :- Bh. 64(306).**

Site :- Seed Multiplication Farm, Udaipur (Shahabad). **Type :- 'D'.**

Object : –To find out the effect of seed and soil treatments on the incidence of disease on Paddy (BR–8).

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Clay. (iii) 20.6.64. (iv) (a) 3 ploughings. (b) Line sowing. (c) 40 Kg/ha. (d) 23 cm.×23 cm. (e) —. (v) 45 Kg/ha. of N as A/S, P_2O_5 as Super and K_2O as Mur. Pot. each. (vi) BR—8. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 10.12.64.

2. TREATMENTS:

4 fungicidal treatments : T_0=Control, T_1=Seed dressing with Agroson 'GN' 1 gm./500 gm. of seeds, T_2=Soil drenching with Cereson at 1·12 Kg. in 1123 litres of water/ha. and T_3=Seed dressing+soil drenching (T_1+T_2).

3. DESIGN:

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 6·10 m.×1·52 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1964—only. (b) No. (c) Nil. (v) Piro and Bikramganj. (vi) and (vii) Nil.

5. RESULTS :

(i) 732 Kg/ha. (ii) 121·5 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3
Av. yield	809	755	719	647

Crop :- Wheat (*Rabi*). **Ref :- Bh. 62(260).**

Site :- Sub-Divisional Farm, Bhabua (Shahabad). **Type :- 'M'.**

Object :—To assess the effectiveness of foliar spray of nutrients at different growth stages on growth, vigour and yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy clay. (iii) 3.12.62. (iv) (a) 3—4 ploughings. (b) Line sowing. (c) 92 Kg/ha. (d) 23 cm. between rows. (e) —. (v) Nil. (vi) NP—798 (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 7.4.63.

2. TREATMENTS :

5 manurial treatments : T_0=Control, T_1=33·7 Kg/ha. of N as Urea+45 Kg/ha. of P_2O_5 as Super applied to soil, T_2=11·2 Kg/ha. of N as Urea+33·7 Kg/ha. of P_2O_5 as Super applied to soil and 2·16 % solution of N as Urea sprayed at tillering and boot stages, T_3=33·7 Kg/ha. of N as Urea+33·7 Kg/ha. of KH_2PO_4 applied to soil, T_4=33·7 Kg/ha. of N as Urea+16·7 Kg/ha. of KH_2PO_4 applied to soil at sowing and 3·23 % solution of KH_2PO_4 sprayed at tillering and boot stages.

3. DESIGN:

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) 7·31 m.×5·48 m. (b) 3·66 m.×3·05 m. (v) 182 cm.×120 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1962—only. (b) and (c) —. (v) Jamui and Pusa. (vi) and (vii) Nil.

5. RESULTS:

(i) 956 Kg/ha. (ii) 148·3 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	
Av. yield	583	1054	1080	1158	906	C.D.=178·6 Kg/ha.

Crop :- Wheat (*Rabi*). **Ref :- Bh. 62(115), 63(147).**

Site :- Agri. Res. Instt., Dholi. **TyPe :- 'M'.**

Object :—To test the effect of trace elements on the yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Loam. (iii) 8/9.11.62 ; 7.11.63. (iv) (a) 3—4 ploughings. (b) Behind the plough. (c) 90 Kg/ha. (d) 25 cm. between rows. (e) —. (v) N.A. (vi) NP—798. (vii) Irrigated. (viii) Weedings. (ix) N.A. (x) 22.3.63 ; 18.3.64.

2. TREATMENTS :

14 trace-elements : T_0=Control, T_1=45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot., T_2=T_1+11·2 Kg/ha. of Manganese Sul., T_3=T_1+22·4 Kg/ha. of Manganese Sul., T_4=T_1+11·2 Kg/ha. of Zinc Sul., T_5=T_1+22·4 Kg/ha. of Zinc Sul., T_6=T_1+11·2 Kg/ha. of Boran, T_7=T_1+22·4 Kg/ha. of Boran, T_8=T_1+11·2 Kg/ha. of Copper Sul, T_9=T_1+22·4 Kg/ha. of Copper Sul., T_{10}=T_1+11·2 Kg/ha. of Ferrous Sul., T_{11}=T_1+22·4 Kg/ha. of Ferrous Sul., T_{12}=T_1+1·1 Kg/ha. of Ammo. Molybdate and T_{13}=T_1+2·2 Kg/ha. of Ammo. Molybdate.

3. DESIGN :

(i) R.B.D. (ii) (a) 14. (b) N.A. (iii) 4. (iv) (a) and (b) 8·20 m.×6·10 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1962—63. (b) Yes. (c) Nil. (v) Madhepura. (vi) Nil. (vii) As error variances are heterogeneous and Treatments × Years interaction is absent, the results of individual years have been presented under 5. Results.

5. RESULTS :

62(115)

(i) 1099 Kg/ha. (ii) 270·2 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	735	995	972	1277	1170	1207	1069
Treatment	T_7	T_8	T_9	T_{10}	T_{11}	T_{12}	T_{13}
Av. yield	969	1201	1004	1192	1227	1255	1114

63(147)

(i) 647 Kg/ha. (ii) 177·1 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	294	621	712	700	554	700	565
Treatment	T_7	T_8	T_9	T_{10}	T_{11}	T_{12}	T_{13}
Av. yield	779	757	723	565	632	621	836

C.D.=256·2 Kg/ha.

Crop :- Wheat (*Rabi*). **Ref :- Bh. 64(21).**

Site :- Agri. Res. Instt., Dholi **Type :- 'M'.**

Object :—To see the effect of trace elements on the yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) N.A. (iii) 22/23.11.64. (iv) (a) N.A. (b) Behind the plough. (c) and (d) N.A. (e) —. (v) N.A. (vi) NP –799 (vii) Irrigated. (viii) Nil. (ix) N.A (x) — 5.4.65.

2. TREATMENTS

16 trace-element treatments: T_0=Control, T_1=44·8 Kg/ha. of N as A/S+44·8 Kg/ha. of P_2O_5 as Super +44·8 Kg/ha. of K_2O as Mur. Pot., $T_2=T_1$+Manganese Sul. at 11·2 Kg/ha. $T_3=T_1$+Mangenese Sul. at 22·4 Kg/ha., $T_4=T_1$+Zinc Sul. at 11·2 Kg/na., $T_5=T_1$+Zinc Sul. at 22·4 Kg/ha., $T_6=T_1$+Borax at 11·2 Kg/ha., $T_7=T_1$+ Borax at 22·4 Kg/ha., $T_8=T_1$+Copper Sul. at 22·4 Kg/ha., $T_9=T_1$+Copper Sul. at 22·4 Kg/ha., $T_{10}=T_1$+Ferrous Sul. at 11·2 Kg/ha., $T_{11}=T_1$+Ferrous Sul. at 22·4 Kg/ha., $T_{12}=T_1$+Ammo. Molybdate at 1·1 Kg/ha., $T_{13}=T_1$+Ammo Molybdate at 2·2 Kg/ha., $T_{14}=T_1$+11·2 Kg/ha. of each of all five trace elements+1·1 Kg/ha. of Ammo. Molybdate and $T_{15}=T_1$+ 22·4 Kg/ha. of each of all five trace elements+2·2 Kg/ha. of Ammo. Molybdate.

3. DESIGN :

(i) R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 7·90 m.×6·40 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Nil. (ii) Rats attack in some plot for which irrigation was applied as control measure. (iii) Yield of grain. (iv) (a) 1964—contd (Expt. for 1965—N.A.) (b) Yes. (c) N.A. (v) to (vii) Nil.

5. RESULTS:

(i) 1561 Kg/ha. (ii) 318·0 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Av. yield	889	1656	1408	1704	1680	1557	1557	1878
Treatment	T_8	T_9	T_{10}	T_{11}	T_{12}	T_{13}	T_{14}	T_{15}
Av. yield	1680	1606	1310	1358	1631	1557	1903	1606

C.D.=453·2 Kg/ha.

Crop :- Wheat (*Rabi*). **Ref :- Bh. 62(259).**

Site :- Sub-Divisional Farm, Jamui. **Type :- 'M'.**

Object :—To assess the effectiveness of foliar spray of nutrients at different growth stages on growth, vigour and yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) 3.11.62. (iv) (a) 3 ploughings. (b) Line sowing. (c) 92 Kg/ha. (d) 23 cm. between rows. (e) —. (v) N.A. (vi) NP—798. (vii) Un-irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 1.4.63.

TREATMENTS:

5 manurial treatments : T_0=Control (no manure but water spray), T_1=33·7 Kg/ha. of N as Urea+45 Kg/ha. of P_2O_5 as Super applied to soil, T_2=11·2 Kg/ha. of N as Urea+33·7 Kg/ha. of P_2O_5 as Super applied to soil and 2·16 % solution of N as Urea sprayed at tillering and boot stages, T_3=33·7 Kg/ha. of N as Urea+33·7 Kg/ha. of KH_2PO_4 applied to soil and T_4=33·7 Kg/ha. of N as Urea+16·7 Kg/ha. of KH_2PO_4 applied to soil at sowing and 3·23 % solution of KH_2PO_4 sprayed at tillering and boot stages.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) 7·31 m.×5·48 m. (b) 3·66 m.×3·05 m. (v) 183 cm.× 121 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1962—only. (b) and (c) —. (v) Bhabua and Dholi. (vi) and (vii) Nil.

5. RESULTS:

(i) 721 Kg/ha. (ii) 106·4 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4
Av. yield	662	653	949	731	610

C.D.=128·1 Kg/ha.

Crop :- Wheat (*Rabi*). **Ref :- Bh. 60(290), 61(294).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object :—To find out the relative value of different kinds of nitrogeneous fertilizers on the yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (ii) Red loam. (iii) 30.11.60; 25.11. 61. (iv) (a) 3 –4 ploughings. (b) Line sowing. (c) 70 Kg/ha. (d) 23 cm. between rows. (e) —. (v) N.A. (vi) BR—319. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 6.4.61 ; 11.4.62.

2. TREATMENTS :

All combinations of (1) and (2) in the presence of T_1+2 extra treatments :

(1) 2 levels of N : N_1=28·1 and N_2=56·2 Kg/ha.

(2) 5 sources of N : N_1=A/S, S_2=Urea, S_3=A/S/N, S_4=C/A/N and S_5=A/C.

2 extra treatments : T_0=Control and T_1=33·4 Kg/ha. of P_2O_5 as Super+33·4 Kg/ha. of K_2O as Mur. Pot.

3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 20·23 sq. m. ; 6·40 m.×2·43 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1960—61. (b) No. (c) The results of combined analysis have been presented under 5. Results. (v) Sabour. (vi) Nil. (vii) Error variances are homogeneous and Treatments × Years interaction is absent.

5. RESULTS :

Pooled results

(i) 1518 Kg/ha. (ii) 437·8 Kg/ha. (based on 55 d.f. made up of pooled error and Treatments × Years interaction). (iii) Interaction N×S is significant. 'Extra *vs.* other treatments' is highly significant. (iv) Av. yield of grain in Kg/ha.

T_0=698 and T_1=1182 Kg/ha.

	S_1	S_2	S_3	S_4	S_5	Mean
N_1	1598	1315	1270	2053	1584	1564
N_2	1780	1694	1859	1543	1639	1703
Mean	1689	1504	1565	1798	1612	1634

C.D. for the body of N×S table =716·7 Kg/ha.
C.D. for 'Extra *vs.* other treatments'=277·6 Kg/ha.

Individual results :

Treatment	N_1	N_2	Sig.	S_1	S_2	S_3	S_4	S_5	Sig.
Year									
1960	1626	1706	N.S	1672	1571	1566	1846	1674	N.S.
1961	1502	1700	N.S.	1705	1437	1563	1750	1549	N.S.
Pooled	1564	1703	N S.	1689	1504	1565	1798	1612	N.S.

T_0	T_1	Sig.	G.M.	S.E./plot
835	1201	*	1558	549·9
562	1164	**	1478	396·3
698	1182	**	1518	437·8

Crop : Wheat (*Rabi*). **Ref :- Bh. 64(321).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object :—To find out how far the application of P during incorporation of green matter helps the up-take of P by Wheat crop.

1. BASAL CONDITIONS :

(i) (a) *Kalai*—Wheat. (b) *Kalai* as per treatments. (c) Nil. (ii) Red loam. (iii) 20.10.64. (iv) (a) 3 to 4 ploughings. (b) Line sowing. (c) 70 Kg/ha. (d) 23 cm. between rows. (e) —. (v) N.A. (vi) NP—798. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 6.4.65.

2. TREATMENTS :

6 manurial treatments : T_0=Control, T_1=Green manuring with *Kalai*, T_2=G.M.+45 Kg/ha. of P_2O_5 as Super during incorporation of *Kalai*, T_3=G.M.+22·5 Kg/ha. of P_2O_5 as Super during incorporation of *Kalai*+22·5 Kg/ha. of P_2O_5 as Super at the time of sowing Wheat, T_4=G.M.+45 Kg/ha. of P_2O_5 as Super at the time of sowing Wheat and T_5=45 Kg/ha. of P_2O_5 as Super at the time of sowing Wheat.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) and (b) 33·72 sq. m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1964 only. (b) and (c) —. (v) to (vii) Nil.

5. RESULTS :

(i) 1822 Kg/ha. (ii) 325·3 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	
Av. yield	1509	1609	2105	1590	2065	2054	C.D.=490·2 Kg/ha.

Crop :- Wheat (*Rabi*). **Ref :- Bh. 60(219), 61(305), 62(197), 63(217), 64(320).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object :—To find out how far the application of P during incorporation of green matter helps the up-take of P by Wheat crop.

1. BASAL CONDITIONS :

(i) (a) *Shakhwa* leaves/*Kalai*—Wheat. (b) *Shakhwa* leaves/*Kalai*. (c) As per treatments. (ii) Red loam. (iii) 23.11.60 ; 6.11.61 ; 1.11.62 ; 8.10.63 ; 21.11.64. (iv) (a) 3—4 ploughings. (b) Line sowing. (c) 70 Kg/ha. (d) 23—25 cm. between rows. (e) —. (v) N.A. (vi) NP—798 for 61 and 64 and BR—319 for others. (vii) Irrigated. (viii) Weedings and hoeings. (ix) N.A. (x) 2.4.61 ; 30.3.62 ; 22.3.63 ; 24.3.64 ; 6.4.65.

2. TREATMENTS :

6 manurial treatments : T_0=Control (no manure), T_1=Green manuring with green leaves/*Kalai*, T_2=G.M. +45 Kg/ha. of P_2O_5 as Super during incorporation of green leaves/*Kalai*, T_3= G.M.+22·5 Kg/ha. of P_2O_5 as Super during incorporation of green leaves/*Kalai* +22·5 Kg/ha. of P_2O_5 as Super at the time of sowing Wheat, T_4=G.M.+45 Kg/ha. of P_2O_5 as Super at the time of sowing Wheat and T_5=45 Kg/ha. of P_2O_5 as Super at the time of sowing Wheat.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) and (b) 33·72 sq. m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1960—64. (b) Yes. (c) The results of combined analysis have been presented under 5. Results. (v) No. (vi) Nil. (vii) Error variances are heterogeneous and Treatments × Years interaction is present.

5. RESULTS :

Pooled results :

(i) 1471 Kg/ha. (ii) 394·8 Kg/ha. (based on 20 d.f. made up of Treatments × Years interaction). (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. yield	1471	1231	1328	1310	1466	2019

C.D.=260 4 Kg/ha.

Individual results :

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	Sig.	G.M.	S.E./plot
Year									
1960	2534	2093	1807	2322	2326	3135	**	2369	231·8
1961	1332	1293	1652	1559	1682	2432	**	1658	191·9
1962	1266	950	937	940	1237	1459	N.S.	1132	430·6
1963	912	823	1231	897	979	1386	N.S.	1038	369.8
1964	1312	997	1014	834	1107	1683	*	1158	313·7
Pooled	1471	1231	1328	1310	1466	2019	**	1471	394·8

Crop :- Wheat (*Rabi*). **Ref :- Bh. 60(299), 61(302).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object :—To find out the proper frequency of lime application in acidic soils.

1. BASAL CONDITIONS :

(i) (a) Maize—Wheat. (b) Maize. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (ii) Red loam. (iii) 5.11.60 ; 8.11.61. (iv) (a) 3—4 ploughings. (b) Line sowing. (c) 70 Kg/ha. (d) 23 cm. between rows. (e) —. (v) N.A. (vi) BR—319. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 20.3.61 ; 28.3.62.

2. TREATMENTS :

8 manurial treatments : T_0=Control, T_1=675 Kg/ha. of lime every season, T_2=1350 Kg/ha. of lime every year, T_3=2700 Kg/ha. of lime once in 2 years, T_4=45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot., $T_5=T_1+T_4$, $T_6=T_2+T_4$ and $T_7=T_3+T_4$.

3. DESIGN :

(i) R.B D. (ii) (a) 8. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 5·48 m.×3·66 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1956—61. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

60(299)

(i) 701 Kg/ha. (ii) 68 8 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Av. yield	329	405	365	364	950	1017	1134	1042

C.D.=81·1 Kg/ha.

61(302)

(i) 656·5 Kg/ha. (ii) 101·1 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Av. yield	334·1	461·3	342·7	404·7	918·0	884·7	930·4	976·2

C.D.=119·2 Kg/ha.

Crop :- Wheat (*Rabi*). **Ref :- Bh. 62(200), 63(218).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object :—To find out the best schedule of replishment of lime for the loss in soil due to leaching and utilization by Wheat plants.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Red loam. (iii) 3.11.62 ; 3.12.63. (iv) (a) 3 ploughings. (b) Line sowing. (c) 70 Kg/ha. (d) 25 cm. between rows. (e) Nil. (v) N.A. (vi) BR—319. (vii) Irrigated. (viii) Weedings. (ix) N.A. (x) 1.4.63 ; 3.4.64.

2. TREATMENTS :

8 manurial treatments : T_0=Control, T_1=45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot., T_2=T_1+replishment of lime every year, T_3=T_1+replishment of lime every 2 years, T_4=T_1+replishment of lime every 3 years, T_5=T_1+replishment of lime every 4 years, T_6=T_1+replishment of lime every 5 years and T_7=T_1+replishment of lime every 6 years.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 6. (iv) (a) and (b) 3·66 m.×2·74 m. (v) Nil. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1962—63. (b) Yes. (c) Nil. (v) No. (vi) Nil. (vii) In 1962 treatments—T_2 to T_7 are identical and in 1963 treatments—T_3 to T_7 are identical.

5. RESULTS :

62(200)

(i) 1727 Kg/ha. (ii) 212·6 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2
Av. yield	450	1783	1930

C.D. for comparing T_0 and T_1 means=248·1 Kg/ha.

C.D. for comparing T_2 mean with either T_0 or T_1 mean=189·5 Kg/ha.

63(218)

(i) 1647 Kg/ha. (ii) 173·0 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3
Av. yield	548	1770	1595	1853

C.D. for comparing T_0, T_1 and T_2 means=202·0 Kg/ha.

C.D. for comparing T_3 with any other mean=156·5 Kg/ha.

Crop :- Wheat (*Rabi*). **Ref :- Bh. 64(325), 65(152).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object :—To find out the best schedule of replishment of lime for the loss in soil due to leaching and utilization by Wheat plants.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Red loam. (iii) 14.11.64 ; 3.11.65. (iv) (a) 3—4 ploughings. (b) Line sowing. (c) 70 Kg/ha. (d) 23 cm. between rows. (e) —. (v) Nil. (vi) BR—319. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 30.3.65 ; 18.3.66.

2. TREATMENTS:

9 manurial treatments: T_0=Control, T_1=45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot., T_2=T_1+replishment of lime every year, T_3=T_1+replishment of lime every 2 years, T_4=T_1+replishment of lime every 3 years, T_5=T_1+replishment of lime every 4 years, T_6=T_1+replishment of lime every 5 years, T_7=T_1 +replishment of lime every 6 years and T_8=Lime only.

No other details available.

3. DESIGN :

(i) R.B.D. (ii) (a) 9 (b) N.A. (iii) 5. (iv) (a) N.A. (b) 10·12 sq. m. ; 3·66 m.×2·74 m. (v) N.A. (vi) Yes.

4 GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain (iv) (a) 1964—65. (b) No. (c) Nil. (v) No. (vi) Nil. (vii) In 1964 treatments T_2 to T_7 are identical and in 1965 treatments T_3 to T_7 are identical.

5. RESULTS :

64(325)

(i) 2174 Kg/ha. (ii) 177·9 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_8
Av yield	779	2391	2531	1207

C.D. for comparing treatment means except T_2 mean=228·2 Kg/ha.

C.D for comparing any treatment mean with T_2 mean=174·3 Kg/ha.

65(152)

(i) 1675 Kg/ha. (ii) 314·5 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_8
Av. yield	548	1875	1954	1887	1266

C D. for comparing treatment means except T_2 mean=403·6 Kg/ha.

C.D. for comparing any treatment mean with T_2 mean=312·6 Kg/ha.

Crop :- Wheat (*Rabi*). **Ref :- Bh. 60(220).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object : —To study the effect of Lime, Phosphate, Molybdenum and seed-innoculation on the success of green manuring in acidic soils.

1. BASAL CONDITIONS :

(i) (a) *Sanai*—Wheat. (b) *Sanai*. (c) Nil. (ii) Red loam. (iii) 25.11.60. (iv) (a) 3 ploughings (b) Line sowing. (c) 70 Kg/ha. (d) 25 cm. between rows. (e) —. (v) Nil. (vi) BR—319. (vii) Irrigated. (viii) Weeding. (ix) N.A. (x) 3.4.61.

2. TREATMENTS :

6 manurial treatments : T_0=Control, T_1=G.M. with *Sanai*, T_2=Lime at 4035 Kg/ha., $T_3=T_2+45$ Kg/ha. of P_2O_5 as Super, $T_4=T_3+1{\cdot}12$ Kg/ha. of Molybdenum and $T_5=T_4$+seed innoculation.

Details of seed-innoculation—N.A.

3. DESIGN :

(i) R.B.D. (ii) (a) 6 (b) N.A. (iii) 4. (iv) (a) and (b) 33·72 sq. m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1960—nly. (b) and (c) —. (v) to (vii) Nil.

5. RESULTS :

(i) 1095 Kg/ha. (ii) 346·2 Kg/ha. (iii) Treatment differenes are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	
Mean yield	342	318	1116	1755	1358	1682	C.D.=521·6 Kg/ha

Crop :- Wheat (*Rabi*). **Ref :- Bh. 61(306), 62(198), 63(294), 64(322).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object :- To study the effect of lime, Phosphate, Molybdenum and seed innoculation on the success of green manuring in acid soils.

1. BASAL CONDITIONS :

(i) (a) *Sanai*—Wheat. (b) *Sanai*. (c) Nil. (ii) Red loam. (iii) 7.11.61 ; 30.10.62 ; 4.11.63 ; 30.10.64. (iv) (a) 3—4 ploughings. (b) Line sowing. (c) 70 Kg/ha. (d) 23 cm. between rows. (e) Nil. (v) Nil. (vi) BR–319. (vii) Irrigated for 62 ; unirrigated for others. (viii) Weeding and hoeing. (ix) N.A. (x) 31.3.62 ; 20.3.63 ; 23.3.64 ; 11.3.65.

2. TREATMENTS :

6 manurial treatments : T_0=Control, T_1=Green manure with *Sanai*, $T_2=T_1$+Lime at 4000 Kg/ha., $T_3=T_2+$ 45 Kg/ha. of P_2O_5 as Super, $T_4=T_3+1{\cdot}12$ Kg/ha. of Molybdenum and $T_5=T_4+$ seed-innoculation.

Details of seed innoculation—N.A.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) and (b) 33·72 Sq. m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1961—64. (b) No. (c) Results of combined analysis have been presented under 5. Results. (v) and (vi) Nil. (vii) Error variances are heterogeneous and Treatments × Years interaction is present.

5. RESULTS :

Pooled results

(i) 930 Kg/ha. (ii) 223·5 Kg/ha. (based on 15 d.f. made up of Treatments × Years interaction). (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	
Mean yield	494	652	832	1264	1138	1200	C.D.=168·4 Kg/ha.

Individual results

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	Sig.	G.M.	S.E./plot
Year 1961	417	484	830	1412	1269	1786	**	950	130·0
1962	632	690	995	1464	1297	1359	**	1073	254·4
1963	311	586	586	1038	897	956	**	729	139·0
1964	615	850	916	1142	1090	1197	**	968	152·4
Pooled	494	652	832	1264	1138	1200	**	930	223·5

Crop :- Wheat (*Rabi*). **Ref :- Bh. 63(164).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object :—To find out the effect of foliar spray of urea on Wheat crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Groundnut. (c) 22·4 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (ii) Sandy loam. (iii) 25.11.63. (iv) (a) 3 ploughings. (b) Line sowing. (c) 92 Kg/ha. (d) 23 cm. between lines. (e) —. (v) 45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (vi) NP—798. (vii) Irrigated. (viii) Weeding and hoeing. (ix) 8 cm. (x) 5.4.64.

2. TREATMENTS :

6 foliar spraying treatments of Urea at 2·16 % solution : T_0=Control (No spraying), T_1=One spray to 25 days old crop, T_2=One spray to 50 days old crop, T_3=One spray to 75 days old crop, $T_4=T_1+T_2$ and $T_5=T_1+T_2+T_3$.

3. DESIGN :

(i) R.B D. (ii) (a) 6. (b) 19·52 m × 3·96 m. (iii) 4. (iv) (a) and (b) 3·66 m. × 2·74 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1963—only. (b) and (c) —. (v) to (vii) Nil.

5. RESULTS :

(i) 2504 Kg/ha. (ii) 226·9 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. yield	2482	2370	2467	2504	2725	2474

Crop :- Wheat (*Rabi*). **Ref :- Bh. 65(116).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object :—To assess the effectiveness of foliar spray of nutrients at different stages on growth, vig ur and yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Red loam. (iii) 8.11.65. (iv) (a) 3 ploughings. (b) Line sowing. (c) 92 Kg/ha. (d) 23 cm. between rows. (e) —. (v) N.A. (vi) NP—798. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 11.4.66.

2. TREATMENTS :

4 manurial treatments : T_0=Control (no manure), T_1=45 Kg/ha. of N as Urea+45 Kg/ha. of P_2O_5 as Super to soil at sowing, T_2=11·2 Kg/ha. of N as Urea at sowing+2 sprayings at weekly interval, 14 days after sowing and one after tiller-emergence @ 2·16% solution of N as Urea and T_3=16·8 Kg/ha. of P_2O_5 as Super+15 5 Kg/ha. of N as Urea at sowing+3 sprayings at weekly intervals, 14 days after sowing, @ 3·90% solution of P_2O_5 as Super.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 5. (iv) (a) 4·57 m.×2·74 m. (b) 3·66 m.×2·74 m, (v) 2 rows on either side. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1965—only. (b) and (c) —. (v) to (vii) Nil.

5. RESULTS :

(i) 2718 Kg/ha. (ii) 421·0 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	
Mean yield	2125	2881	2808	3057	C.D.=580·1 Kg/ha.

Crop :- Wheat (*Rabi*). **Ref :- Bh 60(140), 61(164), 62(1381), 63(161).**

Site :- Agri. Res. Instt., Kanke. Type :- 'M'.

Object :—To assess the effectiveness of foliar spray of nutrients at different growth stages on vigour, growth and yield.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Potato for 63 and Maize for others. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super for 60 and 62 ; 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. for 61 ; 112 Kg/ha. of N as A/S+67·2 Kg/ha. of P_2O_5 as Super+67·2 Kg/ha. of K_2O as Mur. Pot. for 63. (ii) Sandy loam. (iii) 19.10.60 ; 26.10.61 ; 2.11.62 ; 14.11.63. (iv) (a) 3 ploughings. (b) Line sowing. (c) 92 Kg/ha. (d) 23—25 cm. between rows. (e) —. (v) N.A. (vi) NP—798. (vii) Irrigated. (viii) Weeding and hoeing. (ix) 12·0 cm. ; 25·0 cm. ; 5·7 cm ; 8·0 cm. (x) 6.3.61 ; 29.3.62 ; 29.3.63 ; 5.4.64.

2. TREATMENTS :

5 manurial treatments : T_0=Control, T_1=33·6 Kg/ha. of N as Urea+45 Kg/ha. of P_2O_5 as Super, T_2= 2·16% solution of N as Urea sprayed at tillering, pre-flowering and grain-filling stages+45 Kg/ha. of P_2O_5 as Super, T_3=33·6 Kg/ha. of KH_2PO_4+45 Kg/ha. of N as Urea and T_4=3·23% solution of KH_2PO_4 sprayed at tillering, boot, flowering and grain filling stages+45 Kg/ha. of N. as Urea.

3. DESIGN:

(i) R.B.D. (ii) (a) 5. (b) 23·77 m.×3·96 m. (iii) 5. (iv) (a) 4·27 m.×3·35 m. (b) 3·66 m.×2·74 m. (v) 30 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Tillers count, height of plant, no of leaves/plant, no. of grains/ear, no. of ears/plant, weight of grain per ear, yield of grain and straw. (iv) (a) 1960—64 (Expt. for 1964—N.A.). (b) Yes. (c) The results of combined analysis have been presented under 5. Results. (v) and (vi) Nil. (vii) Error variances are homogeneous and Treatments×Years interaction is present.

5. RESULTS :

Pooled results :

(i) 1902 Kg/ha. (ii) 355·5 Kg/ha. (based on 12 d.f. made up of Treatments × Years interaction). (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	
Av. yield	1436	2079	1998	2009	1986	C.D.=245·0 Kg/ha.

Individual results :

Treatment	T_0	T_1	T_2	T_3	T_4	Sig.	G.M.	S.E./plot
Year								
1960	703	1067	1136	1163	1190	*	1052	228·7
1961	1586	2039	1903	2000	2192	**	1944	200·1
1962	1521	2582	2539	2302	2311	**	2251	232·3
1963	1932	2626	2415	2570	2249	**	2358	296·0
Pooled	1436	2079	1998	2009	1986	**	1902	355·5

Crop :- Wheat (*Rabi*). **Ref :- Bh. 64(327), 65(156).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object :—To evaluate basic slag as a source of Phosphate.

1. BASAL CONDITIONS :

(i) (a) Maize—Wheat. (b) Maize. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (ii) Red loam. (iii) 17.11.64; 9.11.65. (iv) (a) 3—4 ploughings. (b) Line sowing. (c) 70 Kg/ha. (d) 23 cm. between rows. (e) —. (v) N.A. (vi) NP—798. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 30.3.65 ; 26.3.66.

2. TREATMENTS :

All combinations of (1) and (2) in the presence of lime+a control

(1) 2 levels of N : N_0=0 and N_1=45 Kg/ha.

(2) 3 sources of P_2O_5 at 45 Kg/ha. : S_1=Basic slag, S_2=Super and S_3=Rock. Phos.

Dose of lime—N.A.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 5 (iv) (a) and (b) 3·66 m. × 2·74 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1964—65. (b) No. (c) Results of combined analysis have been presented under 5. Results. (v) and (vi) Nil. (vii) Error variances are homogeneous and Treatments × Years interaction is absent.

5 RESULTS :

Pooled results·

(i) 1979 Kg/ha. (ii) 262·6 Kg/ha. (based on 54 d.f made up of pooled error and Treatments × Years interaction) (iii) Main effect of N and 'control vs. others' are highly significant. (iv) Av yield of grain in Kg/ha.

Control=1476 Kg/ha.

	S_1	S_2	S_3	Mean
N_1	1624	1570	1504	1566
N_2	2526	2582	2570	2559
Mean	2075	2076	2037	2063

C.D. for N marginal means=136·4 Kg/ha.

C.D. for control *vs.* others=179·9 Kg/ha.

Individual results

Treatment	S_1	S_2	S_3	Sig.	N_1	N_2	Sig.
Year							
1964	2197	2223	2274	N.S.	1632	2830	**
1965	1953	1929	1800	N.S.	1499	2289	**
Pooled	2075	2076	2037	N.S.	1566	2559	**

Control	Sig.	G.M.	S.E./plot
1697	**	2155	245·1
1256	**	1803	246·2
1476	**	1979	262·6

Crop :- Wheat (*Rabi*). **Ref :- Bh. 64(326), 65(154).**

Site :- Agri. Res. Instt, Kanke. **Type :- 'M'.**

Object :—To evaluate basic slag as a source of Phosphate.

1. BASAL CONDITIONS :

(i) (a) Maize—Wheat. (b) Maize. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (ii) Red loam. (iii) 8.11.64 ; 17.11.65. (iv) (a) 3—4 ploughings. (b) Line sowing. (c) 70 Kg/ha. (d) 23 cm. between rows. (e) —. (v) N.A. (vi) N.P.—798. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 15.3.65 ; 27.3.65.

2. TREATMENTS :

II combinations of (1) and (2)+a control (no manure)

(1) 3 sources of P_2O_5 at 45 Kg/ha. : S_1=Basic slag, S_2=Super and S_3=Rock. Phos.

(2) 2 levels of N as A/S : N_0=0 and N_1=45 Kg/ha.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 3·66 m.×2·74 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1964—65. (b) No. (c) Results of combined analysis have been presented uuder 5. Results. (v) and (vi) Nil. (vii) Error variances are homogeneous and Treatments×Years interaction is absent.

5. RESULTS :

Pooled results :

(i) 1602 Kg/ha. (ii) 207·2 Kg/ha. (based on 54 d.f. made up of pooled error and Treatments×Years interaction). (iii) Main effect of N, 'control *vs.* others' and N×S interaction are highly significant. Main effect of S is significant. (iv) Av. yield of grain in Kg/ha.

Control=830 Kg/ha.

	S_1	S_2	S_3	Mean
N_0	1254	1044	1054	1117
N_1	2324	2534	2177	2345
Mean	1789	1789	1616	1731

C.D. for N marginal means =107·3 Kg/ha.

C.D. for S marginal means =131·4 Kg/ha.

C.D. for the body of N×S table=185·9 Kg/ha.

C.D. for 'control *vs.* others' =142·0 Kg/ha.

Individual results :

Treatment	S_1	S_2	S_3	Sig.	N_0	N_1	Sig.	Control
Year								
1964	1843	1922	1735	N.S.	1227	2440	**	1021
1965	1735	1655	1496	N.S.	1008	2250	*	638
Pooled	1789	1789	1616	*	1117	2345	**	830

Sig.	G.M.	S.E./plot
**	1717	212·2
**	1487	196·2
**	1602	207·2

Crop :- Wheat (*Rabi*). **Ref. :- Bh. 64(328), 65(159).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object :—To study the comparison of basic slag and other steel slags for their effect on the yield of Wheat crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Red loam. (iii) 3·12.64 ; 19.11.65. (iv) (a) 3—4 ploughings. (b) Line sowing. (c) 60 Kg/ha. (d) Rows 23 cm. apart. (e) N.A. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (vi) BR—319 ; NP—798. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 17.4.65 ; 31.3.66.

2. TREATMENTS :

7 manurial treatments : T_0=Control, T_1=Dolomite, T_2=Bhilai blast furnace slag, T_3=Low soft furnace slag, T_4=Rourkela open hearth slag, T_5=Rourkela L.D. slag and T_6=Bhilai open hearth slag.

No other details are available.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 3·66 m.×2·74 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1964—65. (b) No. (c) The results of the combined analysis have been presened under 5. Results. (v) No. (vi) Nil. (vii) Error variances are homogenous and Treatments × Years interaction is present.

5. RESULTS :

Pooled results :

(i) 1734 Kg/ha. (ii) 388·9 Kg/ha. (based on 6 d.f. made up of Treatment × Years interaction). (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	1530	1672	1935	1542	1974	1926	1559

Individual results :

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	Sig.	G.M.	S.E./plot
Year										
1964	1881	1745	2210	1735	2401	2280	1739	**	1999	242·7
1965	1179	1599	1661	1348	1548	1572	1378	*	1469	229·7
Pooled	1530	1672	1935	1542	1974	1926	1559	N.S.	1734	388·9

Crop :- Wheat (*Rabi*). **Ref :- Bh. 64(326).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object :—To evaluate basic slag as a source of phosphate.

1. BASAL CONDITIONS :

(i) (a) Maize—Wheat. (b) Maize. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (ii) Red loam. (iii) 8.11.64. (iv) (a) 3—4 ploughings. (b) Line sowing. (c) 70 Kg/ha. (d) 23 cm. between rows (e) —. (v) N A. (vi) NP—798. (vii) Unirrigated. (viii) Weeding and hoeing (ix) N A. (x) 15.3 65.

2. TREATMENTS :

7 manurial treatments : T_0=Control, T_1=45 Kg/ha. of P_2O_5 as basic slag, T_2=45 Kg/ha. of P_2O_5 as Super., T_3=45 Kg/ha. of P_2O_5 as Rock. Phos., T_4=45 Kg/ha. of P_2O_5 as basic slag +45 Kg/ha. of N as A/S, T_5=45 Kg/ha. of P_2O_5 as Super.+45 Kg/ha. of N as A/S and T_6=45 Kg/ha. of P_2O_5 as Rock. Phos.+45 Kg/ha. of N as A/S.

3. DESIGN :

(i) R.B D. (ii) (a) 7. (b) N.A. (iii) 5. (iv) (a) N.A. (a) 3·66 m. × 2·74 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1964—only. (b) and (c) —. (v) to (vi) Nil.

5 RESULTS :

(i) 1717 Kg/ha. (ii) 212·2 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6
Av yield	1021	1242	1208	1230	2443	2636	2240

C.D.=277·0 Kg/ha.

Crop :- Wheat (*Rabi*)— **Ref :- Bh· 64(47).**

Site :- Chandani Farm, Karjania, Bagaha. **Type :- 'M'.**

Object :—To assess the causes of unsatisfactory seed setting of improved variety of Wheat in North Bihar.

1. BASAL CONDITIONS

(i) to (ii) N A. (iii) 1.12 64. (iv) to (ix) N.A. (x) 24.4.65.

2. TREATMENTS:

All combinations of (1) and (2)

(1) 3 manurial doses : M_0=Control (no manure), M_1=67·2 Kg/ha. of P_2O_5+67·2 Kg/ha. of K_2O and $M_2=2M_1$.

(2) 7 micro-nutrients : T_0=Control, T_1=44·8 Kg/ha. of Ferrous Sul., $T_2=T_1+22·4$ Kg/ha. of Zinc Sul., $T_3=T_2+22·4$ Kg/ha. of Borax, $T_4=T_3+22·4$ Kg/ha. of Copper Sul., $T_5=T_4+1·1$ Kg/ha. of Ammo. Molybdate and $T_6=T_5+22·4$ Kg/ha. of Manganese Sul.

P_2O_5 and K_2O were applied in the form of Super and Mur. Pot. respectively.

3. DESIGN:

(i) Fact. in R.B.D. (ii) (a) 21. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 1/539 ha. (v) N.A. (vi) Yes.

4. GENERAL :

(i) and (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1964—only. (b) and (c) —. (v) Madhepura. (vi) Nil. (vii) Some of the very poor yields suggests some unusual happening.

5. RESULTS :

(i) 497 Kg/ha. (ii) 311·7 Kg/ha. (iii) Main effect of T alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	T_0	T_1	T_2	T_3	T_4	T_5	T_6	Mean
S_1	27	202	32	473	1050	646	1003	490
S_2	70	47	311	978	476	881	794	508
S_3	19	48	26	881	871	884	710	491
Mean	39	99	123	777	799	804	836	497

C.D. for T marginal means=296·9 Kg/ha.

Crop :- Wheat (*Rabi*). **Ref :- Bh. 64(48).**

Site :- Seed Multiplication Farm, Madhepura. **Type :- 'M'.**

Object :—To assess the causes of unsatisfactory seed setting of improved variety of Wheat in North Bihar.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Maize. (c) N.A. (ii) N.A. (iii) 9.12.64. (iv) (a) to (e) N.A. (v) 33·6 Kg/ha. of N as A/S. (vi) NP—799. (vii) Irrigated. (viii) and (ix) N.A. (x) 8.4.65.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of manures : M_0=Control (no manure), M_1=67·2 Kg/ha. of P_2O_5 as Super+67·2 Kg/ha. of K_2O as Mur. Pot. and $M_2=2M_1$.

(2) 7 micro-nutrients : T_0=Control, T_1=44·8 Kg/ha. of Ferrous Sul.; $T_2=T_1$+22·4 Kg/ha. of Zinc Sul., $T_3=T_2$+22·4 Kg/ha. of Borax, $T_4=T_3$+22·4 Kg/ha. of Copper Sul., $T_5=T_4$+1·1 Kg/ha. of Ammo. Molybdate and $T_6=T_5$+22·4Kg/ha. of Manganese Sul.

3. DESIGN :

(i) R.B.D. (ii) (a) 21. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 8·75 m.×2·13 m. (v) 61 cm. alround.

4. GENERAL :

(i) and (ii) Nil. (iii) Yield of grain. (iv) (a) to (c) No. (v) Karjania. (vi) and (vii) Nil.

5. RESULTS :

(i) 1049 Kg/ha. (ii) 233·3 Kg/ha. (iii) Main effects of M and T are highly significant. (iv) Av. yield of grain in Kg/ha.

	T_0	T_1	T_2	T_3	T_4	T_5	T_6	Mean
M_0	768	1053	1179	910	679	625	517	819
M_1	1160	1215	1160	1322	1089	982	1179	1158
M_2	1357	1286	1339	1215	910	857	1232	1171
Mean	1095	1185	1226	1149	893	821	976	1049

C.D. for M marginal means=145·5 Kg/ha.

C.D. for T marginal means=222·3 Kg/ha.

Crop :- Wheat (*Rabi*). **Ref :- Bh. 62(116), 63(104).**

Site :- Irrigation Res. Stn., Madhepura. **Type :- 'M'.**

Object :—To test the effect of trace-elements on the yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize ; Paddy. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. ; N.A. (ii) Sandy loam. (iii) 12.11.62 ; 2 to 25.12.62. (iv) (a) 3—5 ploughings. (b) Line sowing. (c) 92 Kg/ha. (d) 25 cm. between rows. (e) One. (v) N.A. (vi) NP—798 ; NP—761. (vii) Irrigated (viii) Weeding and hoeing. (ix) N.A. (x) 2.4.63 ; 13.4.64.

2. TREATMENTS :

14 trace-element treatments : T_0=Control, T_1=44·8 Kg/ha. of N as A/S+44·8 Kg/ha. of P_2O_5 as Super+44·8 Kg/ha. of K_2O as Mur. Pot., $T_2=T_1$+11·2 Kg/ha. of Manganese Sul., $T_3=T_1$+22·4 Kg/ha. of Manganese Sul., $T_4=T_1$+11·2 Kg/ha. of Zinc Sul., $T_5=T_1$+22·4 Kg/ha. of Zinc Sul., $T_6=T_1$+11·2 Kg/ha. of Borax., $T_7=T_1$+

22·4 Kg/ha. of Borax., $T_8=T_1+11·2$ Kg/ha. of Copper Sul., $T_9=T_1+22·4$ Kg/ha. of Copper Sul., $T_{10}=T_1+11·2$ Kg/ha. of Ferrous Sul., $T_{11}=T_1+22·4$ Kg/ha. of Ferrous Sul, $T_{12}=T_1+1·1$ Kg/ha. of Ammo. Molybdate and $T_{13}=T_1+2·2$ Kg/ha. of Ammo Molybdate.

3. DESIGN :

(i) R.B D. (ii) (a) 14. (b) N.A. (iii) 4. (iv) (a) and (b) 10·06 m. × 5·03 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1962—63, (b) Yes. (c) Results of combined analysis have been presented under 5. Results. (v) Dholi. (vi) Nil. (vii) Error variances are heterogeneous and Treatments × Years interaction is present.

5. RESULTS :

Pooled results :

(i) 833 Kg/ha. (ii) 350·2 Kg/ha. (based on 13 d.f. made up of Treatments × Years interaction). (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6
Mean yield	317	872	790	935	866	960	910
	T_7	T_8	T_9	T_{10}	T_{11}	T_{12}	T_{13}
	884	830	862	824	928	971	710

Individual results :

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}	T_{12}	T_{13}
Year														
1962	184	302	300	358	328	398	372	404	374	420	358	404	366	398
1963	450	1443	1280	1512	1403	1522	1448	1364	1285	1305	1290	1453	1576	1023
Pooled	317	872	790	935	866	960	910	884	830	862	824	928	971	710

Sig.	G.M.	S.E./plot
**	355	42·4
**	1311	268·9
N.S.	833	350·2

Crop :- Wheat (*Rabi*). **Ref :- Bh. 64(159).**

Site :- Irrigation Res. Stn., Madhepura. **Type :- 'M'.**

Object :—To investigate the response of Gypsum on the yield of Wheat.

1 BASAL CONDITIONS :

(i) (a) Wheat—Paddy. (b) Paddy. (c) N.A. (ii) (a) and (b) Sandy loam. (iii) 18.12.64. (iv) (a) 4—5 ploughings by Bihar Junior plough. (b) Line sowing. (c) 74 Kg/ha. (d) 25 cm. between rows. (e) —. (v) N.A. (vi) NP—799. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N A. (x) 8.4.65.

2. TREATMENT :

3 levels of *Gypsum* : $G_0=0$ (control), $G_1=18·4$ and $G_2=36·9$ Q/ha.

3. DESIGN:

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 7. (iv) (a) and (b) 7·62 m.×4·88 m. (v) Nil. (iv) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1964—only. (b) and (c) —. (v) to (vii) Nil.

5. RESULTS:

(i) 858 Kg/ha. (ii) 53·5 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	G_0	G_1	G_2	
Av. yield	788	860	926	C.D.=62·20 Kg/ha.

Crop :- Wheat (*Rabi*). **Ref :- Bh. 64(183).**

Site :- Irrigation Res. Stn., Madhepura. **Type :- 'M'.**

Object :—To study the correlation between crop response and the Potash status of the soil.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Maize. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super, (ii) Sandy loam. (iii) 1/2.12.64. (iv) (a) 3-4 ploughings. (b) Line sowing. (c) 92 Kg/ha. (d) 25 cm. between rows. (e) —. (v) N.A, (vi) NP—799. (vii) Irrigated. (viii) Hand weeding by *khurpi*. (ix) N.A. (x) 6.4.65.

2. TREATMENTS:

9 manurial treatments: T_0=Control, T_1=45 Kg/ha. of N as A/S, T_2=90 Kg/ha. of N as A/S, $T_3=T_1+$ 45 Kg/ha. of P_2O_5 as Super, $T_4=T_2+90$ Kg/ha. of P_2O_5 as Super, $T_5=T_1+$ 45 Kg/ha. of K_2O as Mur. Pot., $T_6=T_3+90$ Kg/ha. of K_2O as Mur. Pot., $T_7=T_3$ +45 Kg/ha. of K_2O as Mur. Pot. and $T_8=T_4+90$ Kg/ha. of K_2O as Mur. Pot.

3. DESIGN:

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) and (b) 9·22 m.×7·32 m. (v) Nil. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Wt. of grain and straw. (iv) (a) 1964—only. (b) and (c) —. (v) Sabour. (vi) and (vii) Nil.

5. RESULTS:

(i) 1910 Kg/ha. (ii) 178·0 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	
Av. yield	1168	1693	2027	2056	2131	1693	2009	2149	2261	C.D.=259 7 Kg/ha.

Crop :- Wheat (*Rabi*). **Ref :- Bh. 60(185), 61(199).**

Site :- Agri. Res. Instt., Patna. **Type :- 'M'.**

Object :—To test the effect of trace-elements on the yield of Wheat.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Paddy ; Maize. (c) 67 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super ; 33·8 Kg/ha. of N as A/S+33·8 Kg/ha, of P_2O_5 as Super. (ii) Clay. (iii) 14/15.12.60 ; 28.11.61. (iv) (a) 3—4 *deshi* ploughings. (b) Behind the plough. (c) 60 Kg/ha. (d) 23—28 cm. between rows. (e) —. (v) N.A. (vi) NP—799. (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 12, 13.4.61 ; 6, 7 and 8.4.62.

2. TREATMENTS :

14 trace-elements : T_0=Control, T_1=45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot., T_2=T_1+11·25 Kg/ha. of Manganese Sul., T_3=T_1+22 5 Kg/ a of Manganese Sul. T_4=T_1+11·25 Kg/ha. of Zinc Sul., T_5=T_1+22 50 Kg/ha. of Zinc Sul., T_6=T_1+11·25 Kg/ha. of Borax, T_7=T_1+22·50 Kg/ha. of Borax, T_8=T_1+ 11·25 Kg/ha. of Copper Sul., T_9=T_1+22·50 Kg/ha. of Copper Sul., T_{10}=T_1+11·25 Kg/ha. of Ferrous Sul., T_{11}=T_1+22·50 Kg/ha. of Ferrous Sul., T_{12}=T_1+1·12 Kg/ha. of Sod. Molybdate and T_{13}=T_1+2·24 Kg/ha of Sod. Molybdate.

3. DESIGN:

(i) R.B.D. (ii) (a) 14. (b) 10·97 m.×76·85 m. ; 10·06 m.×76·85 m. (iii) 4. (iv) (a) 10·97 m.×5 49 m. ; 10 06 m.×5·49 m. (b) 10·97 m.×4·57 m. ; 10·06 m.×4·93 m. (v) 2 rows on either side ; one row on either side. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination, maturity, tillers count, height of plants and yield of grain (iv) (a) 1959 –61. (b) No. (c) The results of the combined analysis have been presented under 5 Results. (v) Sabour. (vi) Nil. (vii) Expt. No. 59(96) has also been considered for combining the results. As error variances are heterogeneous and Treatments × Years interaction is absent, results of individual years are presented under 5. Results.

5. RESULTS :

60(185)

(i) 937 Kg/ha. (ii) 160·2 Kg/ha. (iii) Treatment differences are highl y significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	
Av. yield	588	837	1018	1289	1040	950	1063	
	T_7	T_8	T_9	T_{10}	T_{11}	T_{12}	T_{13}	C.D.=229 2 Kg/ha.
	973	1131	769	905	837	905	814	

61(199)

(i) 734·5 Kg/ha. (ii) 104·2 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	
Av. yield	337·7	756·1	826·6	796·4	887·1	776·2	700·6	
	T_7	T_8	T_9	T_{10}	T_{11}	T_{12}	T_{13}	C.D.=149·1 Kg/ha.
	650·2	766·1	720·8	650·2	796·4	841·8	776·2	

Crop :- Wheat (*Rabi*). **Ref :- Bh. 60(184).**

Site :- Agri. Res. Instt., Patna. **Type :- 'M'.**

Object :—To test the effect of trace-elements on the yield of Wheat crop (conducted at Mithapur Farm).

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Clay. (iii) 9 to 12.11.60. (iv) (a) 3—4 ploughings. (b) Behind the plough. (c) 60 Kg ha. (d) 23 cm. between rows. (e) —. (v) N.A. (vi) NP – 799. (vii) Irrigated. (viii) Nil. (ix) 3 cm. (x) 30 3. 61 to 1 4.61.

2 TREATMENTS :

14 trace-elements ; T_0=Control, T_1=45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot., T_2=T_1+11 2 Kg/ha. of Manganese Sul., T_3=T_1+22·4 Kg/ha. of Manganese Sul., T_4=T_1+11·2 Kg/ha. of Zinc Sul., T_5=T_1+22 4 Kg/ha. of Zinc Sul., T_6=T_1+11·2 Kg/ha. of Borax, T_7=T_1+22·4 Kg/ha. of Borax, T_8=T_1+11·2 Kg/ha. of Copper Sul., T_9=T_1+22·4 Kg/ha. of Copper Sul., T_{10}=T_1+11·2 Kg/ha. of Ferrous Sul., T_{11}=T_1+22·4 Kg/ha. of Ferrous Sul., T_{12}=T_1+1·12 Kg/ha. of Sod. Molybdate and T_{13}=T_1+2·24 Kg/ha. of Sod Molybdate.

3. DESIGN :

(i) R.B.D. (ii) (a) 14. (b) 10·06 m.×76·85 m. (iii) 4, (iv) (a) 10·06 m.×5·49 m. (b) 10·06 m.×4·93 m. (v) One row on either side. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination, maturity count, height of plant and yield of grain. (iv) (a) 1959-61 (Expt. for 1961—N.A.). (b) No. (c) Nil. (v) Sabour. (vi) and (vii) Nil.

5. RESULTS :

(i) 1328 Kg/ha. (ii) 363·1 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	827	988	1421	1482	1124	1613	1689
	T_7	T_8	T_9	T_{10}	T_{11}	T_{12}	T_{13}
	1548	1406	1275	1114	1431	1310	1371

Crop :- Wheat (*Rabi*). **Ref :- 60(186).**

Site :- Agri. Res. Instt., Patna. **Type :- 'M'.**

Object :- To find out the relative value of different kinds of fertilizers for Wheat crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Clay. (iii) 8, 9.12.60. (iv) 3-4 *Deshi* ploughings. (b) Behind the plough. (c) 60 Kg/ha. (d) 23 cm. between rows. (e) —. (v) N.A. (vi) NP—799. (vii) Irrigated. (viii) Weedings. (ix) 3 cm. (x) 11, 12.4.61.

2. TREATMENTS :

5 manurial treatments : T_0=Control (no manure), T_1=45 Kg/ha. of N as A/S, $T_2=T_1+45$ Kg/ha. of P_2O_5 as Super., $T_3=T_1+45$ Kg/ha. of K_2O as Mur. Pot. and $T_4=T_1+45$ Kg/ha. of P_2O_5 as Super.+45 Kg/ha. of K_2O as Mur. Pot.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 102·6 sq. m. (b) 101·2 sq. m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination and tillers count, height of plant and yield of grain. (iv) (a) 1958—1960. (b) No. (c) Nil. (v) Sepaya and Sabour. (vi) and (vii) Nil.

5. RESULTS :

(i) 1170 Kg/ha. (ii) 93.2 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4
Av. yield	594	1233	1300	1345	1379

C.D.=143·6 Kg/ha.

Crop :- Wheat (*Rabi*). **Ref :: Bh. 61(200), 62(70).**

Site :- Agri. Res. Instt., Patna. **Type :- 'M'.**

Object :—To find out the relative value of different kinds of fertilisers for Wheat crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) 33·6 Kg/ha. of N as A/S+33·6 Kg/ha. of P_2O_5 as Super. (ii) Clay. (iii) 21.11.61 ; 10, 16.11.62. (iv) (a) 3—4 *deshi* ploughings. (b) Behind the plough. (c) 60 Kg/ha. ; 70 Kg/ha. (d) 25 cm. ; 30 cm. (e) —. (v) Nil. (vi) NP—799. (vii) Irrigated. (viii) One weeding. (ix) 5 cm. ; 2 cm. (x) 4, 5 4.62 ; 23 to 25.3.63.

2. TREATMENTS :

9 manurial treatments ; T_0=Control (no manure), T_1= 45 Kg/ha. of N, T_2=90 Kg/ha. of N, $T_3=T_1+$ 45 Kg/ha. of P_2O_5, $T_4=T_2+90$ Kg/ha. of P_2O_5, $T_5=T_1+45$ Kg/ha. of K_2O, $T_6=T_2+90$ Kg/ha. of K_2O, $T_7=T_3+45$ Kg/ha. of K_2O and $T_8=T_4+90$ Kg/ha. of K_2O.

N applied as A/S, P_2O_5 as Super and K_2O as Mur. Pot.

3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 51·98 sq. m ; N.A. (b) 50·58 sq. m ; 10·97 m.×4·61 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1961—62. (b) No. (c) Results of combined analysis have been presented under 5. Results. (v) Sepaya and Sabour. (vi) Nil. (vii) Error variances are homogeneous and Treatments × Years interaction is present.

5. RESULTS :

Pooled results :

(i) 1659 Kg/ha. (ii) 477·2 Kg/ha. (based on 8 d.f. made up of Treatments × Years interaction). (ii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Av. yield	806	1278	1908	1738	2126	1446	1592	1594	2447

C.D.=550·2 Kg/ha.

Individual results

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	Sig.	G.M.	S.E./plot
year 1961	623	1270	1839	1745	1878	1389	1552	1557	1928	**	1531	184·3
1962	989	1285	1977	1730	2373	1503	1631	1631	2966	**	1787	132·0
Pooled	806	1278	1908	1738	2126	1446	1592	1594	2447	**	1659	477·2

Crop :- Wheat (*Rabi*). **Ref :- Bh. 64(24).**

Site :- Govt. Agri. Farm, Piprakothi. **Type :- 'M'.**

Object :—To study the correlation between crop responses and Potash status of the soil.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 24.11.64. (iv) to (vi) N.A. (vii).Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

Same as in expts. no. 61(200) and 62(70) conducted at Patna and reported on page no. 209.

3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) 13·21 m.×8·94 m. (b) 12·29 m.×8·23 m. (v) 46 cm.× 35 cm. (vi) Yes.

4. GENERAL :

(i) and (ii) Nil. (iii) Height of plant, No. of tillers, No. plants/plot, yield of grain and straw. (iv) (a) 1964 only. (b) and (c) —. (v) Patna and Sabour. (vi) and (vii) Nil.

5. RESULTS :

(i) 1886 Kg/ha. (ii) 558·9 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Av. yield	995	1622	2343	1881	2333	2181	1816	1992	1809

Crop :- Wheat (*Rabi*). **Ref :- Bh. 62(261), 63(255)**

Site :- Sugarcane Res. Instt., Pusa. **Type :- 'M'.**

Object :—To assess the effectiveness of foliar spray of nutrients at different growth stages on growth, vigour and yield of Wheat crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize ; Fallow (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. ; Nil. (ii) Clayey loam. (iii) 18.11.62 ; 13.12.63. (iv) (a) 3—4 ploughings. (b) Lime sowing. (c) 92 Kg/ha. (d) 23 cm. between rows. (e)—. (v) N.A. (vi) NP—798. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 12.4.63 ; 7.4.64.

2. TREATMENTS :

5 manurial treatments : T_0=Control, T_1=33·7 Kg/ha. of N as Urea+45 Kg/ha. of P_2O_5 as Super applied to soil, T_2=11·2 Kg/ha. of N as Urea+33·7 Kg/ha. of P_2O_5 as Super applied to soil and 2·16% solution of N as Urea sprayed at tillering and boot stages, T_3=33·7 Kg/ha. of N as Urea+33·7 Kg/ha. of KH_2PO_4 applied to soil, T_4=33·7 Kg/ha. of N as Urea+16·7 Kg/ha. of KH_2PO_4 applied to soil at sowing and 3·23% solution of KH_2PO_4 sprayed at tillering and boot stages.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6 ; 4. (iv) (a) 7·31 m.×5·48 m. (b) 3·66 m.×3·05 m. (v) 183 cm.×121 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1962—65 (expts. for 1964 and 1965—N.A.). (b) No. (c) Nil. (v) Jamui and Bhabua. (vi) Nil. (vii) As error variances are heterogeneous and Treatments × Years interaction is absent, the results of individual years have been presented under 5. Results.

62(261)

(i) 3237 Kg/ha. (ii) 830·6 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_3	T_2	T_4
Av. yield	2643	4024	3123	3360	3043

63(255)

(i) 2089 Kg/ha. (ii) 350·7 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4
Av. yield	1944	2189	2357	2215	1742

Corp :- Wheat (*Rabi*). **Ref :- Bh. 63(53), 64(82), 65(86).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'M'.**

Object· To determine the effect of heavy phosphatic manuring of *Kharif* legume on the succeeding Wheat crop.

1. BASAL CONDITIONS :

(i) (a) *Kalai*—Wheat. (ii) *Kalai.* (c) As per treatments. (ii) Sandy loam. (iii) 20.11 63 ; 17.11.64 ; 7.11 65. (iv) (a) 2—3 ploughings. (b) Line sowing. (c) 70 92 Kg/ha. (d) 25—30 cm. between rows. (e) —. (v) Nil. (vi) N.A. ; NP—799 ; NP—799 (Improved late). (vii) Irrigated. (viii) Weeding. (ix) N.A. (x) 3.4.64 ; 25.3.65 ; 19.3.66.

2. TREATMENTS:

4 manurial treatments : T_0=Control, T_1=11·2 Kg/ha. of N as A/S, T_2=T_1+56 0 Kg/ha. of P_2O_5 as Super. and T_3=T_1+112·0 Kg/ha. of P_2O_5 as Super.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 4·27 m.×3·35 m. (b) 3·66 m.×2·74 m. (v) 30 cm.× 30 cm. (vi) Yes.

4. GENERAL :

(i) Fair (ii) Nil ; Nil ; lodged due to rains. (iii) Yield of grain. (iv) (a) 1963 –65. (b) Yes. (c) Nil. (v) No. (vi) Nil. (vii) As error variances are heterogeneous and Treatments × Years interaction is absent, results of individual years have been presented under 5. Results.

5. RESULS :

63(53)

(i) 1960 Kg/ha. (ii) 219·3 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	
Av. yield	1478	1993	2176	2193	C.D.=269·7 Kg/ha.

64(82)

(i) 1391 Kg/ha. (ii) 103·6 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	
Av yield	1113	1429	1528	1495	C.D.=127·4 Kg/ha.

65(86)

(i) 1537 Kg/ha. (ii) 211·5 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	
Av. yield	1180	1463	1678	1828	C.D.=260·0 Kg/ha.

———

Crop :- Wheat (*Rabi*). **Ref :- Bh. 60(69).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'M'.**

Object :—To study the effect of different kinds of nitrogeneous fertilizers on the yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) Maize-Wheat. (b) Maize. (c) N.A. (ii) N.A. (iii) 17.11.60. (iv) One ploughing and one cross ploughing. (b) Sown behind the plough. (c) 81 Kg/ha. (d) 30 cm. between rows. (e) —. (v) .NA. (vi) NP—799. (vii) Irrigated. (viii) and (ix) N.A. (x) 1.4.61.

2. TREATMENTS :

All combinations of (1) and (2) in the presence of E_1+2 extra treatments

(1) 2 levels of N : N_1=28 and N_2=56 Kg/ha.

(2) 5 sources of N : S_1=A/S, S_2=Urea, S_3=A/S/N, S_4=C/A/N and S_5=A/C.

2 extra treatments . E_0=Control (no manure), and E_1=33·6 Kg/ha. of P_2O_5 as Super and 33·6 Kg/ha. of K_2O as Mur. Pot.

3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 3. (iv) (a) 12·80 m.×4·72 m. (b) 12·19 m.×4·11 m. (v) 30 cm.× 30 cm. (v) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1960—only. (b) and (c) —. (v) Kanke. (vi) and (vii) Nil.

5. RESULTS :

(i) 519 Kg/ha. (ii) 116·3 Kg/ha. (iii) Main effect of N and 'E *vs.* others' are highly significant. (iv) Av. yield of grain in Kg/ha.

E_0=349 Kg/ha. and E_1=395 Kg/ha.

	S_1	S_2	S_3	S_4	S_5	Mean
N_1	418	481	476	523	496	479
N_2	771	600	570	539	612	618
Mean	594	540	523	531	554	548

C.D. for N marginal means=88·1 Kg/ha.
C.D. for 'E *vs.* others' =107·9 Kg/ha.

Crop :- Wheat (*Rabi*). **Ref :- Bh. 61(67).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'M'.**

Object :—To find out the relative value of different kinds of nitrogeneous fertilizers on the yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) Maize—Wheat. (b) Maize. (c) N.A. (ii) N.A. (iii) 17.11.61. (iv) (a) One ploughing and one cross ploughing. (b) Sown behind the plough. (c) 81 Kg/ha. (d) 30 cm. between rows. (e) —. (v) N.A. (vi) NP—799. (vii) Irrigated. (viii) Weeding. (ix) N.A. (x) 1.4.62.

2. TREATMENTS ;

All combinations of (i) and (ii) in the presence of E_1+2 extra treatments :

(i) 2 levels of N : N_1=28 and N_2=56 Kg/ha.

(2) 6 sources of N with their methods of application : S_1=A/S in split doses, S_2=Urea in split doses, S_3=A/S/N in split doses, S_4=C/A/N in split doses, S_5=A/C in split doses and S_6=Urea in full dose.

2 extra treatments : E_0=Control and E_1=33·6 Kg/ha. of P_2O_5 as Super+33·6 Kg/ha. of K_2O as Mur. Pot.

3. DESIGN :

(i) R.B.D. (ii) (a) 14. (b) N.A. (iii) 3. (iv) (a) 13·87 m.×8·23 m. (b) 13·26 m.×7·62 m. (v) 30 cm.× 30 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of grain. (iv) (a) 1961—only. (b) and (c) —. (v) to (vii) Nil.

5. RESULTS :

(i) 811 Kg/ha. (ii) 237 5 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

E_0=524 Kg/ha. and E_1=614 Kg/ha.

	S_1	S_2	S_3	S_4	S_5	S_6	Mean
N_1	868	838	763	898	748	509	771
N_2	1018	973	943	1063	958	629	931
Mean	943	906	853	980	853	569	851

Corp :- Wheat (*Rabi*). **Ref :- Bh. 60(66), 61(70), 62(119).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'M'.**

Object : -To find out the effect of placement of organic and inorganic manures on the yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) Maize—Wheat. (b) Maize. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Loam. (iii) 19.11.60 ; 21.11.61 ; 21.11.62. (iv) (a) 3—4 ploughings. (b) Sown behind the plough. (c) 81 Kg/ha. (d) Rows 30 cm. apart. (e) —. (v) N.A. (vi) NP—799. (vii) Irrigated. (viii) Weedings. (ix) N.A. (x) 2.4.61 ; 4.4.62 ; 20.4.63.

2. TREATMENTS :

All combinations of (1) and (2)+ a control

(1) 3 sources of N at 45 Kg/ha. : S_1=F.Y.M., S_2=Compost and S_3=A/S.

(2) 2 methods and application of N : M_1=at surface and M_2=at plough depth of 6 cm.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 11·28 m.×10·12 m. for 60 and 61 ; 101·17 sq. m. for 62. (b) 10·67 m.×9·51 m. for 60 and 61 and 101·17 sq. m. for 62. (v) 30 cm.×30 cm. for 60 and 61 ; Nil for 62. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1960—62. (b) No. (c) Nil. (v) No. (vi) Nil. (vii) As error variances are heterogeneous and Teatments×Years interaction is absent, results of individual years have been presented under 5. Results.

5. RESULTS :

60(66)

(i) 873 Kg/ha. (ii) 197.8 Kg/ha. (iii) Main effect of S and 'control *vs.* others' are significant. (vi) Av. yield of grain in Kg/ha.

Control=635 Kg/ha.

	S_1	S_2	S_3	Mean
M_1	858	949	962	923
M_2	693	873	1144	903
Mean	776	911	1053	913

C.D. for S marginal means=207·8 Kg/ha.

C.D. for 'control *vs.* others'=249·9 Kg/ha.

61(70)

(i) 1244 Kg/ha. (ii) 106·5 Kg/ha. (iii) Main effect of M is significant and that of S and 'control *vs.* others' are highly significant. (iv) Av. yield of grain in Kg/ha.

Control=973 Kg/ha.

	S_1	S_2	S_3	Mean
M_1	1133	1210	1693	1345
M_2	1072	1148	1478	1232
Mean	1102	1179	1586	1289

C.D. for M marginal means=91·2 Kg/ha.
C.D. for S marginal means=112·3 Kg/ha.
C.D. for 'control *vs.* others'=120·8 Kg/ha.

62(119)

(i) 1365 Kg/ha. (ii) 90·4 Kg/ha. (iii) Main effect of S and 'control *vs.* others' are highly significant (iv) Av. yield of grain in Kg/ha.

Control=1020 Kg/ha.

	S_1	S_2	S_3	Mean
M_1	1265	1326	1784	1458
M_2	1240	1238	1685	1388
Mean	1252	1282	1735	1423

C.D. for S marginal means=95·0 Kg/ha.
C.D. for 'control *vs.* others'=102·6 Kg/ha.

Crop :- Wheat (*Rabi*). **Ref :- 60(65), 61(71), 62(120).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'M'.**

Object :—To find out the effect of placement of organic and inorganic manures on the yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) Wheat—Maize. (b) Maize. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Loam. 19.11 60 ; 19.11.61 ; 20.11.62. (iv) (a) One ploughing and one cross ploughing. (b) Line sowing. (c) 81 Kg/ha. (d) Rows 30 cm. aparts. (e) —. (v) N.A. (vi) NP—799. (vii) Irrigated. (viii) Weedings. (ix) N.A. (x) 30.3.61 ; 3.4.62 ; 2.4.63.

2. TREATMENTS :

5 manurial treatments : T_0=Control (no manure), T_1=44·8 Kg/ha. of N as A/S+44·8 Kg/ha. of P_2O_5 as Super, T_2=44·8 Kg/ha. of N as Compost followed by 44 8 Kg/ha. of P_2O_5 as Super at plough depth, T_3=44·8 Kg/ha. of N as Compost+44·8 Kg/ha. of P_2O_5 Super at surface and T_4=44·8 Kg/ha. of N as Compost+44·8 Kg/ha. of P_2O_5 as Super mixed and placed at plough depth.

3. DESIGN :

(i) R B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 13·87 m.×8·23 m ; 11·38 m.×10·12 m ; 101·17 sq. m. (b) 13·26 m.×7·62 m. ; 10·67 m.×9·51 m ; 101·17 sq. m. (v) 30 cm.×30 cm ; 30 cm.×30 cm ; Nil. (vi) Yes.

4. GENERAL ;

(i) Fair. (ii) Nil. (iii) Yield of grain. (iv) (a) 1960–62. (b) No. (c) Results for combined analysis have been presented under 5. Results (v) No. (vi) Nil. (vii) Error variances are homogeneous and Treatments × Years interaction is present.

5. RESULTS:

Pooled results :

(i) 917 9 Kg/ha. (ii) 328·5 Kg/ha. (based on 8 d.f. made up of Treatments × Years interaction) (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4
Av. yield	651	1385	813	844	898

C.D.=309·2 Kg/ha.

Individual results

Treatment	T_0	T_1	T_2	T_3	T_4	Sig.	G.M.	S.E/plot
Year 1960	422	713	499	519	486	**	528	88·2
1961	482	1301	584	611	623	**	720	132·1
1962	1048	2142	1357	1401	1586	**	1507	168·8
Pooled	651	1385	813	844	898	**	918	328·5

Crop :- Wheat (*Rabi*). **Ref :- Bh. 63(58), 64(92), 65(91).**

Site :- Agri. Res. Instt., Sabour. **Type 'M'.**

Object :—To find out the effect of heavy doses of N in different forms, applied as basal and dressing, on the aerial growth of crop and yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) Wheat—Maize. (b) Maize. (c) N.A. (ii) Sandy loam. (iii) 21.11.63 : 15.11.64 ; 10.11.65. (iv) (a) 3—4 *Deshi* ploughings. (b) Behind *Deshi* plough. (c) 23 Kg/ha. ; 73 Kg/ha. ; 92 Kg/ha. (d) 30 cm. between rows for 63 and 65 ; 25 cm. between rows for 64. (e) —. (v) N.A. (vi) NP—799. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 26.3.64 ; 28.3.65 ; 24.3.66.

2. TREATMENTS :

14 manurial treatments : T_0=Control (on manure), T_1=45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot., T_2=T_1+45 Kg/ha. of N as A/S top dressed, T_3=T_1+90 Kg/ha. of N as A/S top dressed, T_4=T_1+135 Kg/ha. of N as A/S top dressed, T_5=T_1+45 Kg/ha. of N as A/S basal dressed, T_6=T_1+90 Kg/ha. of N as A/S basal dressed, T_7=T_1+135 Kg/ha. of N as A/S basal dressed, T_8=T_1+45 Kg/ha. of N as Urea top dressed, T_9=T_1+90 Kg/ha. of N as Urea top dressed, T_{10}=T_1+135 Kg/ha. of N as Urea top dressed, T_{11}=T_1+45 Kg/ha. of N as Urea basal dressed, T_{12}=T_1+90 Kg/ha. of N as Urea basal dressed and T_{13}=T_1+135 Kg/ha. of N as Urea basal dressed.

3. DESIGN :

(i) R.B.D. (ii) (a) 14. (b) N.A. (iii) 4. (iv) (a) 4·27 m.×3·35 m. (b) 3·66 m.×2·74 m. (v) 30 cm.× 40 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of grain. (iv) (a) 1963—65. (b) Yes. (c) The results of combined analysis have been presented under 5. Results. (v) No. (vi) Nil. (vii) Error variances are heterogeneous and Treatments × Years interaction is present.

5. RESULTS :

Pooled results

(i) 1955 Kg/ha. (ii) 517·4 Kg/ha. (based on 26 d.f. made up of Treatments × Years interaction) (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	1187	1354	1936	2176	2168	2102	2152
	T_7	T_8	T_9	T_{10}	T_{11}	T_{12}	T_{13}
	2292	1860	1952	2043	2010	2027	2110

C.D.=434·3 Kg/ha.

Individual results

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}	T_{12}	T_{13}
Year														
1963	1569	1993	2542	3090	3090	3189	3140	3488	2467	2766	2965	2841	2691	2965
1964	996	971	1171	1122	1171	1122	1122	1096	1096	1096	1146	1096	1196	1221
1365	997	1097	2094	2318	2244	1994	2194	2293	2019	1994	2019	2094	2194	2144
Pooled	1187	1354	1936	2176	2168	2102	2152	2292	1860	1952	2043	2010	2027	2110

Sig,	G.M.	S E /plot
**	2771	422·6
N.S.	1116	141·0
**	1978	221·9
**	1955	517·4

Crop :- Wheat (*Rabi*). **Ref :- Bh, 63(59), 64(93), 65(90).**

Site :- Agri. Res. Instt. Sabour. **Type :- 'M'.**

Object :—To find out the effect of heavy doses of N in different forms applied as basal top dressing, on the aerial growth of the crop and yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) Wheat—Maize. (b) Maize. (c) N.A. (ii) Sandy loam. (iii) 21.11.63 ; 15.11.64 ; 10.11.65. (iv) (a) 3—4 ploughings. (b) Line sowing. (c) 73—92 Kg/ha. (d) 30 cm. ; 25 cm. ; 30 cm. between rows. (e) —. (v) N.A. (vi) NP—799. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 25.3.64 ; 27.3.65 ; 24.3.66.

2. TREATMENTS :

13 manurial treatments : T_0=Control (no manure), T_1=45 Kg/ha. of N as A/S top dressed, T_2=90 Kg/ha. of N as A/S top dressed, T_3=135 Kg/ha. of N as A/S top dressed, T_4=45 Kg/ha. of N as A/S basal dressed, T_5=90 Kg/ha. of N as A/S basal dressed. T_6=135 Kg/ha. of N as A/S basal dressed, T_7=45 Kg/ha. N as Urea top dressed, T_8=90 Kg/ha. of N as Urea top dressed, T_9=135 Kg/ha. of N as Urea top dressed, T_{10}=45 Kg/ha. of N as Urea basal dressed, T_{11}=90 Kg/ha. of N as Urea basal dressed and T_{12}=135 Kg/ha. of N as Urea basal dressed.

3. DESIGN :

(i) R.B.D. (ii) (a) 13. (b) N.A. (iii) 4. (iv) (a) 4·27 m.×3·35 m. (b) 3·66 m.×2·74 m. (v) 30 cm.× 30 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of grain. (iv) (a) 1963—1965. (b) Yes. (c) The results of combined analysis have been presented under 5. Results. (v) N.A. (vi) Nil. (vii) Error variances are heterogeneous and Treatments×Years interaction is present.

5. RESULTS :

Pooled results

(i) 1807 Kg/ha. (ii) 409·8 Kg/ha. (based on 24 d.f. made up of Treatments×Years interaction). (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	1204	1828	2019	1827	1736	1894	1986

T_7	T_8	T_9	T_{10}	T_{11}	T_{12}
1853	1853	2043	1695	1695	1861

C.D.=34·61 Kg/ha.

Individual results

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}	T_{12}
Year													
1963	1744	2417	2940	2292	2442	2691	2816	2766	2766	3015	2566	2492	2716
1964	947	1072	1046	1147	1072	1072	1122	1097	1022	1171	1022	1196	1122
1965	922	1994	2069	2044	1695	1919	2019	1695	1770	1944	1496	1396	1745
Pooled	1204	1828	2019	1827	1736	1894	1986	1853	1853	2043	1695	1695	1861

Sig.	G.M.	S.E./plot
**	2589	358·8
N.S.	1085	165·0
**	1747	131·9
**	1807	409·8

— — —

Crop :- Wheat (*Rabi*). **Ref ;- Bh. 60(64), 61(68).**

Site :- Agri. Res. Instt., Sabour. **Type 'M'.**

1. BASAL CONDITIONS :

(i) (a) Maize—Wheat. (b) Maize. (c) N.A. (ii) Sandy loam. (iii) 18.11.60 ; 18.11.61. (iv) (a) One ploughing and one cross ploughing. (b) Sown behind the plough. (c) 81 Kg/ha. (d) Rows 30 cm. apart. (e) —. (v) N.A. (vi) NP—799. (vii) Irrigated. (viii) Weeding. (ix) N.A. (x) 3.4.61 ; 2.4.62.

2. TREATMENTS :

14 trace-element treatments: T_0=Control, T_1=45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot., T_2=T_1+11·2 Kg/ha. of Manganese Sul., T_3=T_1+22·4 Kg/ha. of Manganese Sul., T_4=T_1+11·2 Kg/ha. of Zinc Sul., T_5=T_1+22·4 Kg/ha. of Zinc Sul., T_6=T_1+11·2 Kg/ha. of Borax, T_7=T_1+22·4 Kg/ha. of Borax, T_8=T_1+11·2 Kg/ha. of Copper Sul., T_9=T_1+22·4 Kg/ha. of Copper Sul., T_{10}=T_1+11·2 Kg/ha. of Ferrous Sul., T_{11}=T_1+22·4 Kg/ha. of Ferrous Sul., T_{12}=T_1+1·12 Kg/ha. of Ammonium Molybdate and T_{13}=T_1+2·25 Kg/ha. of Ammonium Molybdate.

3. DESIGN:

(i) R.B.D. (ii) (a) 14. (b) N.A. (iii) 4 ; 3. (iv) (a) 17·07 m.×1·66 m. (b) 16·46 m.×3·05 m. (v) One row on either side and 30 cm. at each end. (vi) Yes.

4. GENERAL:

(i) Fair. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1959—61. (b) No. (c) Nil. (v) Patna (vi) Nil. (vii) As error variances are heterogeneous and Treatments × Years interaction is absent, results of individual years have been presented under 5. Results.

5. RESULTS:

60(64)

(i) 792 Kg/ha. (ii) 201·0 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	511	700	831	820	861	791	700
	T_7	T_8	T_9	T_{10}	T_{11}	T_{12}	T_{13}
	793	883	872	802	723	817	991

61(68)

(i) 1220 Kg/ha. (ii) 150·4 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6
Av yeild	568	1254	1287	1220	1437	1337	1287
	T_7	T_8	T_9	T_{10}	T_{11}	T_{12}	T_{13}
	1170	1203	1287	1304	1287	1304	1137

C.D.=252·5 Kg/ha.

Crop :- Wheat (*Rabi*). **Ref :- Bh. 60(56).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'M'.**

Object:—To test the effect of trace-elements on the yield of Wheat.

1. BASAL CONDITIONS:

(i) (a) Maize—Wheat. (b) Maize. (c) N.A. (ii) N.A. (iii) 5.11.60. (iv) Ploughings and 3 spadings. (b) Line sowing by spade. (c) 92 Kg/ha. (d) 23 cm. between rows. (e) —. (v) N.A. (vi) NP—799. (vii) Irrigated. (viii) Weeding by *khurpi*. (ix) N.A. (x) 27.3.61.

2. TREATMENTS;

14 manurial treatments: T_0=Control, T_1=11·2 Kg/ha. of N as A/S+44·8 Kg/ha. of P_2O_5 as Super+44·8 Kg/ha. of K_2O as Mur. Pot., T_2=T_1+11·2 Kg/ha. of Manganese Sul., T_3=T_1+22·4 Kg/ha. of Manganese Sul., T_4=T_1+11·2 Kg/ha. of Zinc Sul., T_5=T_1+22·4 Kg/ha. of Zinc Sul., T_6=T_1+11·2 Kg/ha. of Borax, T_7=T_1+22·4 Kg/ha. of Borax, T_8=T_1+11·2 Kg/ha. of Copper Sul., T_9=T_1+22·4 Kg/ha. of Copper Sul., T_{10}=11·2 Kg/ha. of Ferrous Sul., T_{11}=T_1+22·4 Kg/ha. of Ferrous Sul., T_{12}=T_1+1·1 Kg/ha. of Ammonium Molybdate and T_{13}=T_1+2·2 Kg/ha. of Ammonium Molybdate.

3. DESIGN:

(i) R.B.D. (ii) (a) 14. (b) N.A. (iii) 4. (iv) (a) 4·27 m.×3·35 m. (b) 3·66 m.×2·74 m. (v) 30 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Attack of rats. (iii) Yield of grain. (iv) (a) 1957-60. (b) and (c) Nil. (v) Patna. (vi) and (vii) Nil.

5. RESULTS :

(i) 1067 Kg/ha. (ii) 201·8 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	
Av. yield	726	1060	1074	1177	986	1163	1091	
	T_7	T_8	T_9	T_{10}	T_{11}	T_{12}	T_{13}	C.D.=288·1 Kg/ha.
	1205	1205	1005	930	1307	044	960	

Crop :- Wheat (*Rabi*). **Ref :- Bh. 61(66), 62(43), 63(57). 64(13), 65(83).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'M'.**

Object :—To study the correlation between crop response and Potash status of the soil.

1. BASAL CONDITIONS :

(i) (a) Maize - Wheat for 61, 63 and 65 ; Nil for others. (b) Maize. (c) N.A. (ii) Sandy Loam. (iii) 18.11.61 ; 17.11.62 ; 19.11 63 ; 12.11.64 ; 11.11.65. (iv) (a) 1—4 ploughings. (b) Line sowing by *dcshi* plough. (c) 81 Kg/ha. ; 70 Kg/ha. ; N.A. ; N.A. ; 92 Kg/ha. (d) Rows 30 cm. apart. (e) —. (v) N.A. (vi) NP—799. (vii) Irrigated. (viii) Hoeing. (ix) N.A. (x) 31.3.62 ; 29.3.63 ; 27.3.64 ; 31.3.65 ; 22.3.66.

2. TREATMENTS :

9. manurial treatment : T_0=Control (no manure), T_1=45 Kg/ha. of N, T_2=90 Kg/ha. of N, T_3=T_1+45 Kg/ha. of P_2O_5, T_4=T_2+90 Kg/ha. of P_2O_5, T_5=T_1+45 Kg/ha. of K_2O, T_6=T_2+90 Kg/ha. of K_2O, T_7=T_3+45 Kg/ha. of K_2O and T_8=T_4+90 Kg/ha. of K_2O.

N applied as A/S, P_2O_5 as Super and K_2O as Mur. Pot.

3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 3. (iv) (a) 13·87 m.×8·23 m. for 61 ; 16·15 m.×7·16 m. for others. (b) 13·26 m.×7·62 m. for 61 ; 15·54 m.×6.55 m. for others. (v) 30 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Yield of grain. (iv) (a) 1961-65. (b) Yes except for 61. (c) The results of combined analysis have been presented under 5. Results. (v) Madhepura. (vi) Nil. (vii) Error variances are heterogeneous and Treatments×Years interaction is present.

5. RESULTS :

Pooled results

(i) 1502 Kg/ha. (ii) 245·9 Kg/ha. (based on 32 d.f. made up of Treatments×Years interaction). (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Av. yield	640	1329	1512	1578	1770	1623	1529	1622	1917

C.D.=183·0 Kg/ha.

Individ ual results

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	Sig.	G.M.	S.E./plot
Year												
1961	734	1347	1572	1392	1722	1707	1452	1467	1856	**	1472	221·8
1962	802	1688	1731	1921	2176	2107	1862	2241	2362	**	1877	202·0
1963	517	1191	1584	1662	1999	1512	1351	1760	2114	**	1521	166·9
1964	537	1149	1291	1333	1336	1313	1382	1113	1582	**	1226	206·0
1965	608	1268	1383	1580	1619	1478	1600	1531	1669	**	1415	99·9
Pooled	640	1329	1512	1578	1770	1623	1529	1622	1917	**	1502	245·9

Crop :- Wheat (*Rabi*). **Ref :- Bh. 63(93).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'M'.**

Object :—To test the effect of Potash on the yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Lady fingure. (c) 269 Kg/ha. of A/S+713·3 Kg/ha. of Super+156·9 Kg/ha of Pot. Sul. (ii) N.A. (iii) 17.11.63. (iv) 3 *Deshi* ploughings. (b) Behind the plough. (c) 70 Kg/ha. (d) Rows 30 cm. apart. (e) —. (v) N.A. (vi) NP—799. (vii) Irrigated. (viii) One weeding. (iv) 2 cm. (x) 30.3.64 to 2.4.64.

2. TREATMENTS :

Same as in Expts. No. 61(66), 62(43), 63(57), 64(13), 65(83) on page No. 220.

3. RESULTS :

(i) R B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 8·29 m.×6·10 m. (v) N.A, (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1963—only. (b) and (c) —. (v) and (vii) Nil.

5. RESULTS :

(i) 2042 Kg/ha. (a) 258·2 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Av. yield	1048	1945	2352	2214	2392	2105	2312	1897	2115

C.D.=376·8 Kg/ha.

Crop :- Wheat (*Rabi*). **Ref :- Bh. 63(55), 64(81), 65(87).**

Site :- Agri. Res. Instt, Sabour. **Type :- 'M'.**

Object :—To find out the suitability of different kinds of Phosphate fertilizers on the yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) *Kalai*—Wheat. (b) *Kalai*. (c) N.A. (ii) Sandy loam. (iii) 15.11.63 ; 3.11.64 ; 9.11.65. (iv) (a) 2—3 ploughings. (b) Line sowing. (c) N.A. ; 70 Kg/na. ; 92 Kg/ha. (c) 30 cm. between rows. (e) —. (v) N.A. (vi) NP—799. (vii) Irrigated. (viii) Weeding by *Khurpi*. (ix) N.A. (x) 11.3.64 ; 15.3.65 ; 18.3.66.

2. TREATMENTS :

All combinations of (1) and (2) in the peresence of E_1+2 extra treatments

(1) 3 levels of P_2O_5 : P_1=44·8, P_2=67·2 and P_3=89·7 Kg/ha.

(2) 2 sources of P_2O_5 : S_1=Super and S_2=Dical. Phos.

2 Extra treatments : E_0=Control (No manure) and E_1=44·8 Kg/ha. of N as A/S.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 4·27 m.×3·35 m. (b) 3·66 m.×2·74 m. (v) 30 cm.× 30 cm. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Yield of grain. (iv)(a) 1962–65 (Expt. for 1962–N.A.). (b) Yes. (c) Nil (v) No. (vi) Nil. (vii) As error variances are heterogeneous and Treatments × Years interaction is absent, the results of individual years have been presented under 5. Results.

5. RESULTS :

63(55)

(i) 1644 Kg/ha. (ii) 264·1 Kg/ha. (iii) 'E_0 *Vs.* E_1' alone is highly significant. (iv) Av. yield of grain in Kg/ha.

E_0=797 Kg/ha. and E_1=1694 Kg/ha.

	P_1	P_2	P_3	Mean
S_1	1769	1769	1794	1777
S_2	1894	1669	1769	1777
Mean	1831	1719	1782	1777

C.D. for E means=388·2 Kg/ha.

64(81)

(i) 1258 Kg/ha. (ii) 211·3 Kg/ha. (iii) 'E_1 *vs.* E_0' is significant and 'Extra treatments *vs.* others' is highly significant. (iv) Av. yield of grain in Kg/ha.

E_0=847 Kg/ha. and E_1=1246 Kg/ha.

	P_1	P_2	P_3	Mean
S_1	1246	1420	1271	1312
S_2	1271	1321	1445	1346
Mean	1258	1370	1358	1329

C.D. for E means=310·6 Kg/ha.

C.D. for 'Extra treatments *vs.* others'=179·4 Kg/ha.

65(87)

(i) 1477 Kg/ha. (ii) 149·7 Kg/ha. (iii) 'Extra treatments *vs.* others' and 'E_0 *vs.* E_1' are highly significant. (iv) Av. yield of grain in Kg/ha.

E_0=748 Kg/ha., E_1=1492 Kg/ha.

	P_1	P_2	P_3	Mean
S_1	1620	1571	1546	1579
S_2	1546	1621	1670	1612
Mean	1583	1596	1608	1596

C.D. for E means=220·2 Kg/ha.

C.D. for 'Extra treatments *vs.* others'=127·1 Kg/ha.

Crop :- Wheat (*Rabi*). **Ref :- Bh. 60(58).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'M'.**

Object :—To study the correlation between crop response and Potash status of the soil under unirrigated conditions.

1. BASAL CONDITIONS :

(i) (a) Maize—Wheat. (b) Maize. (c) N.A. (ii) N.A. (ii) 2.11.60. (iv) (a) 3 spadings before sowing. (b) Line sowing. (c) 82 Kg/ha. (d) 30 cm. between rows. (e) —. (v) N.A. (vi) NP—799. (vii) Un-irrigated. (viii) Weeding by *khurpi*. (ix) N.A. (x) 28.3.61.

2. TREATMENTS ;

5 manurial treatments : M_0=Control (no manure), M_1=44·8 Kg/ha. of N as A/S., M_2=M_1+44·8 Kg/ha. of P_2O_5 as Super, M_3=M_1+44·8 Kg/ha. of K_2O as Mur. Pot. and M_4=M_2+44·8 Kg/ha. of K_2O Mur. Pot.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 3. (iv) (a) 4·27 m.×3·35 m. (b) 3·66 m.×2·74 m. (v) 30 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Attack of rats, Cymag gas used but no effect. (iii) Yield of grain. (iv) (a) 1960 - only. (b) and (c) —. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 975 Kg/ha. (ii) 161·2 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	M_0	M_1	M_2	M_3	M_4
Av. yield	574	1133	1163	1054	951

C.D.=303·5 Kg/ha.

Crop :- Wheat (*Rabi*). **Ref :- Bh. 60(63).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'M'.**

Object :—To study the correlation between crop response and Potash status of the soil under irrigated conditions.

1. BASAL CONDITIONS :

(i) (a) Maize-Wheat. (b) Maize. (c) N.A. (ii) N.A. (iii) 17.11.60. (iv) (a) One Punjab ploughing and *deshi* cross ploughing. (b) Sown behind the plough. (c) 81 Kg/ha. (d) 30 cm. between rows. (e) —. (v) N.A. (vi) NP—799. (vii) Irrigated. (viii) Weeding. (ix) N.A. (x) 5.4.61.

2. TREATMENTS;

Same as in expt. no. 60(58) on page 223.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 13·88 m.×8·23 m. (b) 13·26 m.×7·62 m. (v) 30 cm.× 30 cm. (v) Yes.

4. GENERAL :

(i) Fair. (ii) Attack of rats, Cymag gas used but no effect. (iii) Yield of grain. (iv) (a) 1959-60. (b) and (c) N.A. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 837 Kg/ha. (ii) 144·1 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	M_0	M_1	M_2	M_3	M_4
Av. yield	629	846	895	897	917

Crop :- Wheat (*Rabi*). **Ref :- Bh. 60(57).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'M'.**

Object :—To study the correlation between crop response and Potash status of soil.

1. BASAL CONDITIONS :

(i) (a) Maize—Wheat. (b) Maize. (c) N.A. (ii) N.A. (iii) 6.11.60. (iv) (a) 3 spadings before sowing. (b) Line sowing. (c) 92 Kg/ha. (d) Rows 23 cm. apart (e) . (v) N.A. (vi) NP—799. (vii) Irrigated. (viii) Weeding by *khurpi*. (ix) N.A. (x) 27.3.61.

2. TREATMENTS :

5 manurial treatments : M_0=Control (no manure), M_1=89·6 Kg/ha. of N as A/S, $M_2=M_1+89·6$ Kg/ha. of P_2O_5 as Super, $M_3=M_1+44·8$ Kg/ha. of K_2O as Mur. Pot. and $M_4=M_2+44·8$ Kg/ha. of K_2O as Mur. Pot.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 4·27 m.×3·35 m. (b) 3·66 m.×2·74 m. (v) 30 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Attack of rats, Cymag gas used but no effect. (iii) Yield of grain and straw. (iv) (a) 1960—only. (b) and (c) —. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1205 Kg/ha. (ii) 246·2 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	M_0	M_1	M_2	M_3	M_4
Av. yield	712	1256	1444	1468	1147

C.D.=379·3 Kg/ha.

Crop :- Wheat (*Rabi*). **Ref :- Bh. 60(68).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'M'.**

Object :—To find out comparative effect of solvent extracted oilcakes on soil fertility and yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) Maize—Wheat. (b) Maize. (c) N.A. (ii) N.A. (iii) 21.11.60. (iv) (a) One ploughing and one cross ploughing. (b) Sown by plough. (c) 81 Kg/ha. (d) Rows 30 cm. apart. (e) —. (v) N.A. (vi) NP—799. (vii) Irrigated. (viii) One operation of spike tooth harrow. (ix) N.A. (x) 2.4.61.

2. TREATMENTS:

8 manurial treatments: M_0=Control, M_1=22·4 Kg/ha. of N as A/S, M_2=44·8 Kg/ha. of N as A/S, M_3=44·8 Kg/ha. of P_2O_5 as Super+45·8 Kg/ha. of K_2O as Mur. Pot., M_4=M_3+22·4 Kg/ha. of N as *Mahua* cake (Solvent extracted), M_5=M_3+22·4 Kg/ha. of N as *Mahua* cake (pressed), M_6=M_3+44·8 Kg/ha. of N as *Mahua* cake (solvent extracted) and M_7=M_3+44·8 Kg/ha. of N as *Mahua* cake (preseed).

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 11·28 m.×10·12 m. (b) 10·67 m.×9·51 m. (v) 30 cm.× 30 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) to (c) No. (v) to (vii) Nil.

5. RESULTS :

(i) 615 Kg/ha. (ii) 100 3 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	M_0	M_1	M_2	M_3	M_4	M_5	M_6	M_7
Av. yield	529	618	753	556	594	641	598	628

———

Crop :- Wheat (*Rabi*). **Ref :- Bh. 60(67).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'M'.**

Object :—To find out the comparative effect of solvent extracted oil cakes on soil fertility and yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) Maize –Wheat. (b) Maize. (c) N.A. (ii) (a) and (b) N.A. (iii) 19.11.60. (iv) (0) One ploughing and one cross ploughing. (b) Sown by plough. (c) 81 Kg/ha. (d) Rows 30 cm. apart. (e) —. (v) N.A. (vi) NP 799. (vii) Irrigated. (viii) Weeding. (ix) N.A. (x) 3.4.61.

2. TREATMENTS

All combinations of (1) and (2) +a control (no manure)

(1) 2 levels of N : N_1=22·4 and N_2=44·8 Kg/ha.

(2) 3 sources of N : S_1=A/S, S_2=*Mahua* cake (solvent extracted) and S_3=*Mahua* cake (pressed).

3. RESULTS

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 11·28 m.×10·12 m. (b) 10·67 m.×9·51 m. (v) 30 cm.× 30 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1960—only. (b) and (c) —. (v) to (vii) Nil.

5. RESULTS :

(i) 779 Kg/ha. (ii) 113·2 Kg/ha. (iii) Main effect of S and 'control *vs.* others' are significant. (iv) Av. yield of grain in Kg/ha.

Control=650 Kg/ha.

	S_1	S_2	S_3	Mean
N_1	788	723	750	754
N_2	995	745	799	846
Mean	892	734	774	800

C.D. for S marginal means =118·9 Kg/ha.

C.D. for 'control *vs.* others'=128·4 Kg/ha.

Crop : Wheat (*Rabi*). **Ref :- Bh. 61(69).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'M'.**

Object :—To find out the comparative effect of solvent extracted oil cakes on soil fertility and yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) Maize—Wheat. (b) Maize. (c) N.A. (ii) N.A. (iii) 19.11.61. (iv) (a) One ploughing and one cross ploughing. (b) Sown by plough (c) 81 Kg/ha. (d) 30 cm. between rows. (e) —. (v) N.A. (vi) NP—799. (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 5.4.62.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 manurial treatments: M_0=Control (no manure) and M_1=44·8 Kg/ha. of K_2O as Mur. Pot.+ 44·8 Kg/ha. of P_2O_5 as Super.

(2) 5 nitrogeneous treatments : N_0=Control (no. N), N_1=22·4 Kg/ha. of N as *Mahua* cake (solvent extracted), N_2=22·4 Kg/ha. of N as *Mahua* cake (pressed), N_3=44·8 Kg/ha. of N as *Mahua* cake (solvent extracted) and N_4=44·8 Kg/ha. of N as *Mahua* cake (pressed).

3. DESIGN:

(i) Fact. in R.B.D. (ii) (a) 10. (b) N.A. (iii) 3. (iv) (a) 11·28 m.×10·12 m. (b) 10·67 m.×9·51 m. (v) 30 cm ×30 cm. (vi) Yes.

4. GENERAL:

(i) Fair. (ii) Nil. (iii) Yield of grain. (iv) (a) 1959—60. (b) and (c) N.A. (v) to (vii) Nil.

5. RESULTS :

(i) 1065 Kg/ha. (ii) 108 4 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	N_0	N_1	N_2	N_3	N_4	Mean
M_0	1012	1114	1071	1052	1045	1059
M_1	1009	1104	1019	1104	1117	1071
Mean	1010	1109	1045	1078	1081	1065

Crop :- Wheat (*Rabi*). **Ref :- Bh. 62(40), 63(62).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'M'.**

Object :—To find out the comparative effect of solvent extracted oil cake and pressed oil cake on soil fertility and yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) N.A. (ii) N.A. (iii) 18.11.62 ; 24.11.63. (iv) (a) 2 ploughings and one angle ploughing. (b) Line sowing. (c) 70 Kg/ha. ; N.A. (d) 22 cm. and 30 cm. between rows. (e) —. (v) N.A. (vi) NP—799. (vii) Irrigated. (viii) 2 hoeings ; weeding by *khurpi*. (ix) N.A. (x) 31.3.63 ; 30.3.64.

2. TREATMENTS:

All combinations of (1) and (2)+2 extra treatments

(1) 2 doses of fertilizers: F_0 = Control (no manure) and F_1 = 44·8 Kg/ha. of P_2O_5 as Super + 44·8 Kg/ha. of K_2O as Mur. Pot.

(2) 5 Nitrogenous treatments : N_0 = Control (no Nitrogen), N_1 = 22·4 Kg/ha. of N as *Mahua* cake (solvent extracted), N_2 = 22·4 Kg/ha. of N as *Mahua* cake (pressed), N_3 = 44·8 Kg/ha. of N as *Mahua* cake (solvent extracted) and N_4 = 44·8 Kg/ha. of N as *Mahua* cake (pressed).

2 extra treatments : E_1 = 22·4 Kg/ha. of N as A/S and E_2 = 44·8 Kg/ha. of N as A/S.

3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) N.A. ; 16·15 m. × 7·16 m. (b) 10·58 m. × 4·88 m ; 15·54 m. × 6·55 m. (v) N.A. ; 30 cm. × 30 cm. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1962—63. (b) No. (e) Results of combined analysis have been presented under 5. results. (v) and (vi) Nil. (vii) Error variances are heterogeneous and Treatments × Years interaction is present.

5. RESULTS :

Pooled results

(i) 1051 Kg/ha. (ii) 281·9 Kg/ha. (based on 11 d.f. made up of Treatments × Years interaction). (iii) 'Extra treatments *vs.* others' is highly significant (iv) Av. yield of grain in Kg/ha.

E_1 = 1326 and E_2 = 1411 Kg/ha.

	N_0	N_1	N_2	N_3	N_4	Mean
F_0	710	1014	944	1054	946	933
F_1	972	1094	1020	1000	1130	1043
Mean	841	1054	982	1027	1038	988

C D. for 'Extra treatments *vs.* others' = 169·9 Kg/ha.

Individual results

Treatment	N_0	N_1	N_2	N_3	N_4	Sig.	F_0	F_1	Sig.
Years									
1962	1291	1632	1466	1554	1553	N.S.	1398	1600	*
1963	390	476	497	500	523	**	469	486	N.S.
Pooled	841	1054	982	1027	1038	N.S.	933	1043	N.S.

E_1	E_2	Sig.	G.M.	S.E./plot
1974	2129	**	1591	252·8
677	794	*	512	66·8
1326	1411	**	1051	281·9

Crop :- Wheat (*Rabi*). **Ref :- Bh. 60(281).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'M'.**

Object :—To test the effect of green manures on the yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) As per treatments. (c) N.A. (ii) Sandy loam. (iii) 19.11.60. (iv) (a) 3 ploughings. (b) Sowing in lines. (c) 70 Kg/ha. (d) 23 cm. between rows. (e) —. (v) Nil. (vi) NP—798. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 27.3.61.

2. TREATMENTS :

14 G.M. treatments : T_0=Control (no manure), T_1=C. *Procera*, T_2=*S. punctata*, T_3=*I cinetonia*, T_4=*C. oecadentales*, T_5=*G. maculata*, T_6=*T. candida*, T_7=*S. aluleate* (*Dhaincha*), T_8=C. *tore*, T_9=*C. striate*, T_{10}=*B. frondose*, T_{11}=*Sunnhemp*, T_{12}=*S. specisa* and T_{13}=168 Kg ha. of A/S.

3. DESIGN :

(i) R.B.D. (ii) (a) 14. (b) N.A. (iii) 4. (iv) (a) 4·57 m.×7·92 m. (b) 4·27 m.×7·62 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1960—only. (b) and (c) —. (v) No. (vi) and (vii) Nil.

5. RESULTS :

(i) 3509 Kg/ha. (ii) 506·4 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	2500	3734	4094	3717	3580	3346	3331
	T_7	T_8	T_9	T_{10}	T_{11}	T_{12}	T_{13}
	2944	3192	3239	3362	4063	3237	4781

C.D.=724·3 Kg/ha.

Crap :- Wheat (*Rabi*). **Ref :- Bh. 63(289).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'M'.**

Object :—To test the effect of green manures on the yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) As per treatments. (c) N.A. (ii) Sandy loam. (iii) 29.11.63. (iv) (a) 3 to 4 ploughings. (b) Sown in lines. (c) 70 Kg/ha. (d) 23 cm. between rows. (e) —. (v) 11·2 Kg/ha. of N as A/S+11·2 Kg/ha. of P_2O_5 as Super. (vi) NP—798. (vii) Un-irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 28.3.64.

2. TREATMENTS :

6 G. M. crops: T_0=No manure, T_1=*Sunnhemp*, T_2=*Dhaincha*, T_3=A. *amerieana*, T_4=C. *orthoconpeum* and T_5= I. *herenta*.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 2. (iv) (a) 12·19 m.×3·05 m. (b) 11·58 m.×2·44 m. (v) 30 cm.× 30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1963—only. (b) and (c) —. (v) to (vii) Nil.

5. RESULTS :

(i) 1239 Kg/ha. (ii) 257·9 Kg/ha. (iii) Treatment differences are not significent. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. yield	938	1610	1186	1681	1079	938

———

Crop :- Wheat (*Rabi*). **Ref :- Bh. 64(314).**

Site Agri. Res. Instt., Sabour. **Type 'M'.**

Object :—To study the effect of different green manures on the yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) As per treatments. (c) N.A. (ii) Sandy loam. (iii) 23.11.64. (iv) (a) 3 ploughings. (b) Sown in lines. (c) 70 Kg/ha. (d) 23 cm. between rows. (e) —. (v) 11·2 Kg/ha. of N as A/S+11·2 Kg/ha. of P_2O_5 as Super. (vi) NP—798. (vii) Un-irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 9.2.65.

2. TREATMENTS :

7 G. M. crops: T_0=No. manure, T_1=*C. orthocanpeum*, T_2=*Indigofera*, T_3=*Sunnhemp*, T_4=*Dhaincha*, T_5=*A. americana* and T_6=*Kalai*.

3. R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 7·62 m.×4.57 m. (b) 7·01 m.×3·96 m. (v) 30 cm.× 30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1964—only. (b) and (c) —. (v) to (vii) Nil.

5. RESULTS :

(i) 1463 Kg/ha. (ii) 334·1 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	1072	1198	1150	1342	1954	1369	1855

C.D.=496·3 Kg/ha.

———

Crop :- Wheat (*Rabi*). **Ref :- Bh. 60(3).**

Site :- Govt. Farm, Sepaya. **Type :- 'M'.**

Object :—To study the effect of different sources of P on the yield of Wheat.

1. BASAL CONDITIONS:

(i) (a) N.A. (b) Maize. (c) N.A. (ii) Sandy loam. (iii) 10.11.60. (iv) (a) 4 ploughings, 1 with Bihar plough, 2 with country plough and 1 with cultivator. (c) Behind the plough. (c) 69 Kg/ha. (d) 30 cm. between rows. (e) —. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) One weeding. (ix) 4 cm. (x) 11/12.4.61.

2. TREATMENTS:

5 sources of P_2O_5 at 44·8 Kg/ha.: S_0=Control (no manure), S_1=Super, S_2=Bone meal, S_3=Rock Phosphate and S_4=Dicalcium Phosphate.

3. DESIGN:

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 11·00 m.×10·67 m. (b) 10·05 m.×10·1 m. (v) 48 cm.×30 cm. (vi) Yes.

4. GENERAL:

(i) Normal. (ii) No. (iii) Yield of grain. (iv) 1960—only. (b) and (c) —. (v) to (vii) Nil.

5. RESULTS:

(i) 301 Kg/aa. (ii) 139·5 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	S_0	S_1	S_2	S_3	S_4
Av. yield	202	490	233	346	236

———

Crop :- Wheat (*Rabi*). **Ref :- Bh. 60(5).**

Site :- Govt. Farm, Sepaya. **Type :- 'M'.**

Object :—To study the correlation between crop response and Potash status of the soil.

1. BASAL CONDITIONS:

(i) (a) N.A. (b) Paddy. (c) 44·8 Kg/ha. of N as A/S+44·8 Kg/ha. of P_2O_5 as Super. (ii) Clay loam. (iii) 12.11.60. (iv) (a) 4 ploughings, 1 by Bihar plough, 2 by country plough and 1 by cultivator plough. (b) Behind the plough. (c) 92 Kg/ha. (d) 25 cm. between rows. (e) N.A. (v) and (vi) N.A. (vii) Unirrigated. (viii) Nil. (ix) 4 cm. (x) 4/5.4 61.

2. TREATMENTS:

All combinations of (1) and (2) in the presence of 44·8 Kg/ha. of N+a control

(1) 2 levels of P_2O_5 as Super: P_0=0 and P_1=44·8 Kg/ha.

(2) 2 levels of K_2O: K_0=0 and K_1=44·8 Kg/ha.

3. DESIGN:

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 11·28 m.×10·97 m. (b) 10·06 m.×10·06 m. (v) 61 cm.×46 cm. (vi) Yes.

4. GENERAL:

(i) and (ii) Nil. (iii) Height of plant, no. of tillers, yield of grain and straw, no. of pods/plant and no. of grains/pod. (iv) (a) 1960—only. (b) and (c) —. (v) Patna. (vi) and (vii) Nil.

5. RESULTS:

(i) 906 Kg/ha. (ii) 88·0 Kg/ha. (iii) Main effects of P, K and 'control *vs.* others' are highly significant. (iv) Av. yield of grain in Kg/ha.

Control=541 Kg/ha.

	K_0	K_1	Mean
P_0	758	1055	906
P_1	933	1241	1087
Mean	846	1148	997

C.D. for P or K marginal means=95·8 Kg/ha.
'C.D. for control *vs.* others' =107·2 Kg/ha.

Crop :- Wheat (*Rabi*). **Ref :- Bh. 62(113).**

Site :- Govt. Farm, Sepaya. **Type :- 'M'.**

Object :—To study the correlation between crop response and the Potash status of the soil.

1. BASAL CONDITIONS :

(i) (a) Wheat - Fallow—Wheat. (b) Fallow. (c) Nil. (ii) Clay loam. (iii) 7.11.62. (iv) Two *deshi* ploughings. (b) Behind the plough. (c) 92 Kg/ha. (d) 25 cm. between rows. (e) —. (v) N.A. (vi) NP—799. (vii) Unirrigated. (viii) Nil. (ix) 4 cm. (x) 10/11.4.63.

2. TREATMENTS :

9 manurial treatments : T_0=Control, T_1=45 Kg/ha. of N, T_2=90 Kg/ha. of N, $T_3=T_1+45$ Kg/ha. of P_2O_5, $T_4=T_2+90$ Kg/ha. of P_2O_5, $T_5=T_1+45$ Kg/ha. of K_2O, $T_6=T_2+90$ Kg/ha. of K_2O, $T_7=T_3+45$ Kg/ha. of K_2O and $T_8=T_4+90$ Kg/ha. of K_2O.

N applied as A/S, P_2O_5 as Super and K_2O as Mur. Pot.

3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 11·10 m.×10·10 m. (b) 11·10 m.×9·10 m. (v) 2 rows on either side. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1962—only. (b) and (c) —. (v) Sabour and Patna. (vi) and (vii) Nil.

5. RESULTS:

(i) 750 Kg/ha. (ii) 59·9 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Av. yield	412	510	579	827	989	651	759	902	1097

C.D.=87·4 Kg/ha.

Crop :- Wheat. **Ref :- Bh. 61, 63(M.A.E.).**

Site :- M.A.E. Centre, Chakia. **Type :- 'M'.**

Object :—Type IV : To study the effect of phosphatic manuring of legumes on the succeeding Wheat crop.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Alluvial. (iii) to (x) N.A.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2)+a control.

(1) 2 previous legumes : L_1=*Urd* and L_2=*Moth.*

(2) 3 levels of P_2O_5 : P_0=0, P_1=44·8 and P_2=89·6 Kg/ha.

Sub-plot treatments :

3 levels of N as A/S : N_0=0, N_1=16 8 and N_2=33·6 Kg/ha.

3. DESIGN :

(i) Split-plot. (ii) (a) 7 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) and (b) N.A. (v) N A. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1961—63 (expt. for 62 -N.A.). (b) N.A. (c) Results of combined analysis are presented under 5. Results. (v) to (vii) Nil.

5. RESULTS :

(i) 254 Kg/ha. (ii) (a) 162·0 Kg/ha. (b) 32·4 Kg/ha. (iii) N.A. (iv) Av. yield of grain in Kg/ha.

	L_0P_0	L_1P_0	L_1P_1	L_1P_2	L_2P_0	L_2P_1	L_2P_2	Mean
N_0	145	234	274	321	172	258	227	232
N_1	160	220	311	320	180	339	318	264
N_2	161	220	275	348	189	293	383	267
Mean	157	223	287	330	179	293	310	254

C.D. for LP marginal means=107 Kg/ha.

C.D. for N marginal means =36 Kg/ha.

Crop :- Wheat. **Ref :- Bh. 62(M.A.E.)**

Site :- M.A.E. Centre, Chakia. **Type :- 'M'.**

Object :—Type VIII : To study the effect of seed-rate, date of sowing, in presence of N and P on the yield of Wheat crop.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Sandy loam. (iv) (a) to (x) N.A.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2)

(1) 3 seed-rates :- R_1=56·0, R_2=78·4 and R_3=100·8 Kg/ha.

(2) 3 dates of sowing : D_1=26.11.62, D_2=11.12.62 and D_3=26.12.62.

Sub-plot treatments :

All combinations of (1) and (2)

(1) 3 levels of N as A/S: N_0=0, N_1=22·4 and N_2=44·8 Kg/ha.

(2) 3 levels of P_2O_5 as Super : P_0=0, P_1=22·4 and P_2=44·8 Kg/ha.

3. DESIGN :

(i) Split-plot. (ii) (a) 9 main-plots/replication ; 9 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a) 1/200 ha. (b) 1/250 ha. (v) N.A.. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1962—only. (b) and (c) Nil. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 66 Kg/ha. (ii) (a) 72·7 Kg/ha. (b) 36·4 Kg/ha. (iii) Main effects of D and N are significant. (iv) Av. yield of grain in Kg/ha.

Treatment	R_1	R_2	R_3	D_1	D_2	D_3	N_0	N_1	N_2
Meen yield	54	64	81	104	52	43	53	66	79

C.D.=32 Kg/ha. C.D.=14 Kg/ha.

Treatment	P_0	P_1	P_2
Mean yield	56	66	78

———

Crop :- Wheat. **Ref :- Bh. 65(M.A.E.)**

Site :- M.A.E. Centre, Narauli. **Type :- 'M'.**

Object :—Type X : To study the effect of G.M. on the yield of Wheat.

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 :

All combinations of (1), (2) and (3)+an extra treatment in each block.

(1) 3 G.M. treatments : G_0=0, G_1=G.M. raised in *situ* without P_2O_5 and G_2=G.M. raised in *situ* with 33·6 Kg/ha. of P_2O_5.

(2) 3 levels of N : N_0=0, N_1=16·8 and N_2=33·6 Kg/ha.

(3) 3 levels of P_2O_5 : P_0=0, P_1=33·6 and P_2=67·2 Kg/ha.

Extra treatments : T=NPK equivalent to those obtained from G.M.

3. DESIGN :

(i) 3^3 confd. (ii) (a) 10 plots/block and 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) and (b) N.A. (v) and (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1965—66. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 320 Kg/ha. (ii) 96 Kg/ha. (iii) Main effects of P and G are significant. (iv) Av. yield of grain in Kg/ha.

T=332 Kg/ha.

Treatmeut	N_0	N_1	N_2	P_0	P_1	P_2
Mean yield	298	318	345	143	355	462

C.D.=66 Kg/ha.

Treatment	G_0	G_1	G_2
Mean yield	283	279	399

C.D.=66 Kg/ha.

———

Crop :- Wheat. **Ref :- Bh. 65(M.A.E.)**

Site :- M.A.E. Centre, Narauli. **Type :- 'M'.**

Object :—Type : XI : To study the effect of micronutrients on Wheat.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Sandy loam. (iii) to (v) N.A. (vii) Irrigated. (viii) to (x) N.A.

2 TREATMENTS:

15 micronutrient treatments : T_0=Control (no fertilizer), T_1=35 Kg/ha. of N+35 Kg/ha. of P_2O_5+35Kg/ha. of K_2O, T_2=T_1+Spartin at 395 Kg/ha. by soil application, T_3=T_1+Manganese as Manganese Sul. at 60 Kg/ha., T_4=T_1+Zn as Zinc Sul. at 30 Kg/ha. T_5=T_1+Cu as Copper Sul. at 30 Kg/ha., T_6=T_1+Boron as Borax at 17·5 Kg/ha., T_7=T_1+Molybdenum as Sodium Molybdate at 1·25 Kg/ha. T_8=T_1+Mn+Zn+Cu+Bo+Mo, T_9=T_1+Manganese as Manganese Sul. at 17·5 Kg/ha., T_{10}=T_1+Zn as Zinc Sul. at 12·5 Kg/ha., T_{12}=T_1+Boron as Borax at 6·2 Kg/ha, T_{13}=T_1+Molybdenum as Sodium Molybdate at 0·62 Kg/ha. and T_{14}=T_1+Mn+Zn+Cu+Bo+Mo.

Treatments T_2 to T_8 applied by soil application and T_9 to T_{14} by foliar spray.

3. DESIGN:

(i) R.B.D. (ii) (a) 15. (b) N.A. (iii) 4. (iv) (a) and (b) N.A. (v) and (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1965—only. (b) and (c) —. (v) to (vii) Nil.

5. RESULTS :

(i) 508 Kg/ha. (ii) 168·3 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Mean yield	425	530	622	553	405	463	360	543	564
Treatment	T_9	T_{10}	T_{11}	T_{12}	T_{13}	T_{14}			
Mean yield	527	530	621	445	533	502			

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Crop : Wheat **Ref : 63(M.A.E.).**

Stte :- - M.A.E. Centre, Narauli. **Tyye :- 'M'.**

Object :—Type XII :—To study the efficiency of foliar spray of fertilisers compared to soil application on Wheat.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Alluvial. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

Main-plot treatments :

4 fertilizer treatments : F_1=44·8 Kg/ha. of N as A/S, F_2=22·5 Kg/ha. of of P_2O_5 as Super, F_3=44·8 Kg/ha. of N+22·4 Kg/ha. of P_2O_5 and F_4=44·8 Kg/ha. of N+22·4 Kg/ha. of P_2O_5+22·5 Kg/ha of K_2O.

Sub-plot treatments :

All combinations of (1) and (2)+2 extra treatments

(1) 3 methods of application : M_1=Soil application, M_2=Foliar application and M_3=Soil application and foliar application.

(2) 2 levels of application : L_1=1/2 dose and L_2=Full dose.

2 extra treatments : C_1=Water spray and C_2=Absolute control.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 8 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) and (b) N.A. (v) N.A. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) to (c) No. (v) Nil. (vi) N.A. (vii) Nil.

5. RESULTS :

(i) 76 Kg/ha. (ii) (a) N.A. (b) N.A. (iii) N.A. (iv) Av. yield of grain in Kg/ha.

C_0=78 and C_1=61 Kg/ha.

	L_1M_1	L_2M_1	L_1M_2	L_2M_2	L_1M_3	L_2M_3	Mean
F_1	98	76	77	108	80	83	87
F_2	76	88	52	180	55	55	68
F_3	73	108	66	83	76	66	79
F_4	87	111	87	66	48	83	80
Mean	83	96	70	84	65	72	78

C.D. for F marginal means=34 Kg/ha.
C.D. for L M marginal means=20 Kg/ha.

Crop :- Wheat. **Ref :- Bh. 65(M.A.E.).**

Site :- M.A.E. Centre, Narauli. **Type :- 'M'.**

Object :—Type Va :—To study the effect of different methods of placement of N on the yield of Wheat.

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 :

Same as in expt. Va 62(M.A.E.) on page 232.

3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) and (b) N.A. (v) and (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1965—1966. (b) N.A. (c) Nil. (v) Chakia. (vi) N.A. (vii) Nil.

5. RESULTS :

(i) 222 Kg/ha. (ii) 51·4 Kg/ha. (iii) Main effect of N is significant. (iv) Av. yield of grain in Kg/ha.

Control=226 Kg/ha.

Treatment	M_1	M_2	M_3	N_1	N_2	N_3
Av. yield	238	225	201	258	203	204

C.D.=43 Kg/ha.

Crop :- Wheat.

Ref :- Bh. 60, 61(SFT) for Muzaffarpur, Champaran, Purnea, Bhagalpur, Monghyr, Ranchi and S-Parganas.

Site :- (District) : Muzaffarpur, Champaran, Purnea, Bhagalpur, Monghyr, Ranchi and S-Parganas.

Type :- 'M'.

Object :—Type A :—To study the response of Wheat to different levels of N, P_2O_5 and K_2O applied individually and in combination.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) As under results. (iii) to (vi) N.A. (vii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments :

Control=No. manure,
N=22·4 Kg/ha. of N,
P=22·4 Kg/ha. of P_2O_5,
K=22·4 Kg/ha. of K_2O,
NP=22·4 Kg/ha. of N+22·4 Kg/ha. P_2O_5,
NK=22·4 Kg/ha. of N+22·4 Kg/ha. of K_2O,
PK=22·4 Kg/ha. of P_2O_5+22·4 Kg/ha. of K_2O,
NPK=22·4 Kg/ha. of N+22·4 Kg/ha. of P_2O_5+22·4 Kg/ha. of K_2O,

3. DESIGN :

(i) and (ii) The district has been divided into four agriculturally homogeneous zones and one field assistant posted in each zones. 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 a rabi cereal, 8 on cash crop, 4 on an oilseed crop and 3 on a legumenous 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) 1/98·8 ha. (b) 1/197·7 ha. (iv) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1960—1961. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

District	Year	Soil class	No. of trials	Control mean Kg/ha.	Average response of grain in Kg/ha. N	P	K	S.E.	NP	NK	PK	NPK	S.E.
Muzaffarpur	1960	Alluvial	8	1 30	340	—230	350	33·0	—300	—50	—30	250	40·0
	1961	,,	14	1280	200	120	70	18·0	30	—	40	60	13·0
Champaran	1960	,,	12	630	320	120	50	24·0	—50	—30	10	80	22·0
	1961	,,	21	830	320	170	90	29 0	—10	20	—10	—10	17·0
Purnea	1960	,,	12	1010	300	180	110	18·0	60	10	20	10	14·0
	1961	,,	11	950	300	200	40	20 0	80	—10	50	30	22·0
Bhagalpur	1960	,,	10	1010	370	200	—10	43·0	50	20	—30	50	27·0
	1961	,,	3	660	300	60	70	22·0	—40	—60	—	50	17·0

Monghyr	1960	Alluvial	15	1070	340	180	80	10·0	30	—10	10	30	6·0
	1961	,,	5	1260	400	200	70	17·0	—50	—50	20	10	35·0
Ranchi	1960	Red	4	580	440	240	150	25·0	100	50	20	20	11·0
	1961	,,	4	540	250	130	110	10·0	30	30	—	—	9·0
S-Parganas	1960	,,	13	1060	240	120	60	18·0	—10	—20	—	30	16·0
	1961	,,	9	910	250	120	80	18·0	—	—40	20	10	15·0

Crop :- Wheat. **Ref :- Bh. 60, 61(SFT) for Muzaffarpur, Bhagalpur, Gaya, Monghyr, Shahabad, Patna, S-parganas, Ranchi and Hazaribagh.**

Site :- (District) : Muzaffarpur, Bhagalpur, Gaya, Monghyr, Shahabad, Patna, S-parganas, Ranchi and Hazaribagh. **Type :- 'M'.**

Object :—Type A : To study the response of Wheat to different levels of N, P_2O_5 and K_2O applied individually and in combination.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) As per results. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS and 3. DESIGN :

Same as in type A—Unirrigated on page 236.

4. GENERAL :

(i) to (vii) N.A.

5. RESULTS :

District	Year	Soil class	No. of trials	Control mean Kg/ha.	Av. response of grain in Kg/ha. N	P	K	S.E.	NP	NK	PK	NPK	S.E.
Muzaffarpur	1960	Alluvial	6	1200	410	250	70	57·0	50	90	150	30	37·0
	1961												
Bhagalpur	1960	,,	4	1350	480	290	—60	79 0	90	30	—110	100	64·0
	1961	,,	6	840	140	20	20	18·0	30	10	—	—10	13·0
Gaya	1960	,,	10	930	440	250	70	22·0	40	—	50	50	14·0
	1961	,.	10	1120	440	260	110	20·0	—	—40	20	—	16·0
Monghyr	1960	,,	7	780	310	160	30	35·0	60	—10	10	—	10·0
	1961	,,	14	1130	300	170	80	15·0	—10	10	10	40	10·0
Shahabad	1960	,,	20	1080	410	300	210	19·0	70	10	50	10	14·0
	1961	,,	19	1020	480	390	220	22·0	100	10	50	—30	16·0

Patna	1960	Alluvial	7	9·0	460	160	90	17·0	—30	—60	—20	60	13·0
	1961	,,	15	11·0	490	150	110	29·0	10	—70	30	40	23·0
S-Parganas	1960	Red	5	18·0	410	220	130	20·0	—40	—40	—10	20	28·0
	1961	,,	4	17·0	500	300	200	20·0	—40	—50	—	160	52·0
Ranchi	1961	,,	14	7·0	200	90	50	15·0	50	30	50	10	13·0
Hazaribagh	1961	,,	2	13·0	820	770	670	45·0	80	40	90	—390	21·0

Crop :- Wheat.

Ref :- Bh. 60, 61(SFT) for Champaran, Bhagalpur, Gaya, Monghyr, Patna and S-Parganas and 61(SFT) for Hazaribagh and Ranchi.

Site :- District : Champaran, Bhagalpur, Gaya, Monghyr, Patna, S-Parganas, Hazaribagh and Ranchi.

Type :- 'M'.

Object :—Type B : To investigate the relative efficiency of different nitrogeneous fertilizers at different doses.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) As under results. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

Control=no manure,
n_1=22·4 Kg/ha. of N as A/S,
n_2=44·8 Kg/ha. of N as A/S,
n_1'=22·4 Kg/ha. of N as Urea,
n_2'=44·8 Kg/ha. of N as Urea,
n_1''=22·4 Kg/ha. of N as A/S/N,
n_2''=44·8 Kg/ha. of N as A/S/N,
n_1'''=22·4 Kg/ha. of N as C/A/N,
n_2'''=44·8 Kg/ha of N as C/A/N.

3. DESIGN :

Same as in type A—Unirrigated on page 236.

4. GENERAL :

(i) to (vii) N.A.

5. RESULTS :

District	Year	Soil class	No. of trials	Control mean in Kg/ha.	Average response of grain in Kg/ha. n_1	n_1'	n_1''	n_1'''	n_2	n_2'	n_2''	n_2'''	S.E. of response
Champaran	1960	Alluvial	2	6·0	480	—	180	200	610	—	420	270	79·0
Bhagalpur	1960	,,	4	11·0	240	430	310	400	590	830	380	740	187·0
	1961	,,	6	11·0	130	140	140	40	280	220	170	160	42·0

Gaya	19 0	,,	6	970	490	370	210	250	1000	810	770	540	152·0
	1961	,,	11	1100	370	420	310	330	840	820	650	690	34·0
Monghyr	1960	,,	8	850	120	260	180	160	420	400	280	450	144·0
	1961	,,	6	1150	320	410	260	180	560	520	290	310	72·0
	1961	,,	4	770	110	200	130	—	250	350	280	—	24·0
Patna	1960	,,	5	930	610	510	480	570	690	620	600	750	37·0
	1960	,,	4	2200	260	310	210	—	270	430	270	—	32·0
	1961	,,	14	970	550	560	530	540	740	90	580	820	40·0
S-Parganas	1960	Red	3	630	—	160	180	180	—	160	260	60	49·0
	1960	,,	9	1410	300	400	420	290	490	510	610	480	32·0
	1961	,,	4	1730	540	660	640	620	1300	1410	1120	1280	95·0
Hazaribagh	1961	,,	2	1590	220	250	80	—	990	1030	930	—	52·0
Ranchi	1961	,,	10	1640	120	—	110	140	220	—	220	300	24·0
	1961	,,	2	700	240	200	270	300	380	460	500	490	32·0

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Crop :- Wheat.

Ref :- Bh. 60, 61(SFT) for Muzaffarpur. Purnea, Bhagalpur, Monghyr, Ranchi and S-Parganas.

Site :- (District) : Muzaffarpur, Purnea, Bhagalpur, Monghyr, Ranchi and S-Parganas.

Type :- 'M'.

Object :—Type B : To investigate the relative efficiency of different nitrogeneous fertilizers at different doses.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) As under results. (iii) to (vi) N.A. (vii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS:

Control=No manure,
n_1=22·4 Kg/ha. of N as A/S,
n_2=44·8 Kg/ha. of N as A/S,
n_1'=22·4 Kg/ha. of N as Urea,
n_2'=44 8 Kg/ha. of N as Urea,
n_1''=22·4 Kg/ha. of N as A/S/N,
n_2''=44·8 Kg/ha. of N as A/S/N,
n_1'''=22·4 Kg/ha. of N as C/A/N,
n_2'''=44 8 Kg/ha. of N as C/A/N.

3. DESIGN :

Same as in type A—Unirrigated on page 236.

4. GENERAL :

(i) to (vii) N.A.

5. RESULTS :

District	Year	Soil class	No. of trials	Control mean in Kg ha.	Average response of grain in Kg/ha. n_1	n_1'	n_1''	n_1'''	n_2	n_2'	n_2''	n_2'''	S.E. of response
Muz ffarpur	1960	Alluvial	10	1390	240	350	260	600	660	770	720	1190	148·0
	1961	,,	4	540	110	240	—	430	250	390	—	490	29·0
	1961	,,	6	2480	—	280	370	410	—	350	400	570	77·0
	1961	,,	4	770	310	320	300	200	430	490	340	270	124·0
Purnea	1960	Alluvial	12	930	290	300	270	190	530	530	370	340	41 0
	1961	,,	5	1170	320	440	200	200	670	650	470	450	51·0
	1961	,,	4	350	160	190	—	60	230	250	—	140	40·0
Bhagalpur	1960	Alluvial	10	900	180	220	160	270	380	630	340	530	101·0
	1961	,,	3	610	330	380	300	440	380	430	350	500	29·0
Monghyr	1960	Alluvial	9	800	320	—210	280	190	520	420	360	330	45·0
	1960	,,	5	1240	—	330	410	530	—	470	560	650	44·0
	1961	,,	4	990	70	170	—	70	60	360	—	240	36 0
	1961	,,	5	1450	560	370	—	190	710	460	450	540	31 0
Ranchi	1960	Red	4	630	300	770	250	180	660	550	600	490	58 0
	1961	,,	4	580	280	220	230	340	430	460	450	540	31·0
	1961	,,	1	530	140	—	110	90	280	—	230	210	—
S-Parganas	1960	Red	7	990	260	290	290	300	350	350	500	340	73·0
	1961	,,	10	1060	170	310	190	250	340	310	330	370	34·0

Crop :- Paddy (*Kharif*).

Ref :- Bh. 62, 63, 64, 65(SFT) for Champaran ; 62, 64(SFT) for Monghyr ; 62, 63, 65(SFT) for Muzaffarpur ; 62, 63, 64, 65(SFT) for Purnea ; 62, 63(SFT) for Bhagalpur and 62, 65(SFT) for Hazaribagh.

Site :- (District) : Champaran, Monghyr, Muzaffarpur, Purnea, Bhagalpur and Hazaribagh.

Type :- 'M'.

Object :—Type A_1 : To study the response curves of important cereal, cash and oilseed crops to Nitrogen applied singly and in combination with other nutrients.

1. BASAL CONDITIONS:

(i) (a) to (c) N.A. (ii) Red for Hazaribagh and alluvial for all others. (iii) to (vi) N.A. (vii) Unirrigated. (viii) to (x) N.A.

2 TREATMENTS·

8 manurial treatments :

O=Control (no manure)
N_1=35 Kg/ha. of N,
N_2=70 Kg.ha. of N
P_1=35 Kg/ha. of P_2O_5.
N_1P_1=35 Kg/ha. of N+35 Kg/ha. of P_2O_5,
N_2P_1=70 Kg/ha. of N+35 Kg/ha. of P_2O_5.
N_2P_2=70 Kg/ha. of N+70 Kg/ha. of P_2O_5,
$N_2P_2K_1$=70 Kg/ha of N+70 Kg/ha. of P_2O_5+35 Kg/ha. of K_2O,

N applied as AS, P_2O_5 as Super and K_2O as Mur. Pot.

3. DESIGN :

(i) A selected district is divided into four agriculturally homogeneous zones based on climate, soil, cropping pattern etc. In each zone one block is selected at random. A block normally consists of a group of 50-100 villages. In each block 36 experiments are conducted in a year of which 11 are of type A_1, 11 of type A_2, 11 of type A_3 and 3 are of type C. The eleven experiments under type A_1, A_2 and A_3 are distributed as 3 on a kharif cereal, 3 on a rabi cereal, 3 on a cash crop and 2 on oil seed. All the three type-C experiments are conducted on a legume crop. For the purpose of conducting the A_1, A_2 and A_3 experiments 11 villages are randomly selected in each block and in each village 3 experiments one each of type A_1,A_2 and A_3 are laid out. For conducting the three type-C trials three villages are randomly selected in each block.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1962-66 for Champaran, 1962-64 (63—N.A.) for Monghyr, 1962-66 (64—N.A.) for Muzaffarpur, 1962-66 for Purnea, 1962-66 (64, 65—N.A.) for Bhagalpur and 1962-65 (63, 64 N.A.) for Hazaribagh. (b) N.A. (c) Nil. (v) to (vii) Nil.

Champaran

62(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	295	374	280	558	625	689	774	81·1

Control mean=981 Kg/ha. ; No. of trials=5

63(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	685	229	4	221	332	372	630	57·9

Control mean=1031 Kg/ha. ; No. of trials=13

64(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E
Av. response of grain in Kg/ha.	1144	1576	702	1362	1598	1625	676	575·0

Control mean=1040 Kg/ha. ; No. of trials=15

65(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	193	243	112	245	333	412	486	24·0

Control mean=808 Kg/ha. ; No. of trials=16

Monghyr

62(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	277	440	424	503	608	728	1082	80·7

Control mean=823 Kg/ha. ; No. of trials=3

64(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	285	517	117	450	728	853	966	18 0

Control mean=826 Kg/ha. ; No. of trials=17

Muzaffarpur

62(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2N_2	$N_2P_2K_1$	S E.
Av. response of grain in Kg/ha.	488	468	219	528	654	677	787	64·1

Control mean=877 Kg/ha. ; No. of trials=10

63(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_1P_2K_1$	S.E.
Av. response of grain in Kg/ha.	176	315	90	239	325	401	500	26·8

Control mean=656 Kg/ha. ; No. of trials=16

65(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	213	312	16	330	414	467	523	58·6

Control mean=1380 Kg/ha. ; No. of trials=9

Purnea

62(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	353	433	46	406	482	537	567	19·9

Control mean=1022 Kg/ha. ; No. of trials=3

63(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	73	152	50	191	229	248	342	28·4

Control mean=925 Kg/ha. ; No. of trials=8

64(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	232	337	99	282	388	455	555	22·0

Control mean=739 Kg/ha. ; No. of trials=9

65(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	202	305	54	326	469	502	656	59·8

Control mean=798 Kg/ha. ; No. of trials=8

Bhagalpur

62(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	411	528	83	436	462	561	634	21 7

Control mean=946 Kg/ha. ; No. of trials=5

63(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	341	502	166	368	517	550	621	25·0

Control mean=904 Kg/ha. ; No. of trials=5

Hazaribagh

62(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	333	144	224	558	588	577	970	90·8

Control mean=917 Kg/ha. ; No. of trials=2

65(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	122	306	74	372	485	667	869	67·6

Control mean=1088 Kg/ha. ; No. of trials=7

Crop :- Wheat.

Ref :- Bh. 62, 63(SFT) for Champaran ; 62, 63, 65(SFT) for Monghyr ; 64(SFT) for Muzaffarpur ; 62(SFT) for Purnea ; 62, 63, 64, 65(SFT) for Bhagalpur, Gaya, Patna, Shahabad and S-Parganas and 62, 63, 64(SFT) for Hazaribagh.

Site :- (District) : Champaran, Monghyr, Muzaffarpur, Purnea, Bhagalpur, Gaya. Patna, Shahabad, Hazaribagh and S-Parganas.

Type :- 'M'

Object :— Type A_1 : To study the response curves of important cereal, cash and oilseed crops to Nitrogen applied singly and in combination with other nutrients.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Red for S-Parganas and Hazaribagh and alluvial for all others. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS and 3. DESIGN :

Same as in Type A_1—Unirrigated on page 240.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1962-66 (64, 65—N. A.) for Champaran, 1962-66 (64—N.A.) for Monghyr, 1964-66 (65—N.A.) for Muzaffarpur, 1962 and 66 for Purnea, 1962—66 for Bhagalpur, Gaya, Patna, Shahabad and S-Parganas and 1962.66 (65—N.A.) for Hazaribagh. (b) N.A. (c) Nil. (v) to (vi) Nil.

5. RESULTS :

Champaran

62(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	323	443	168	380	501	633	656	56·0

Control mean=766 Kg/ha. ; No. of trials=2.

63(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	160	226	84	361	465	542	603	62·6

Control mean=1298 Kg/ha. ; No. of trials=3.

Monghyr

62(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	562	1063	307	852	1665	1825	2243	205·4

Control mean=1022 Kg/ha. ; No. of trials=4.

63(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	365	681	254	535	770	978	1131	29·9

Control=mean=911 Kg/ha. ; No. of trials=16.

65(SFT)

Treatment	N_1	N_2	P	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	320	514	155	474	696	814	932	32·6

Control mean=902 Kg/ha. ; No. of trials=16.

Muzaffarpur

64(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	165	257	114	241	289	345	428	25·0

Control mean=909 Kg/ha. ; No. of trials=15.

Purnea

62(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. respone of grain in Kg/ha.	38	53	133	56	110	113	210	39·7

Control mean=651 Kg/ha. ; No. of trials=3.

Bhagalpur

62(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	241	362	147	393	495	521	597	57·5

Contro mean=905 Kg/ha. ; No. of trials=8.

63(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	175	230	126	306	321	384	474	50·4

Control mean=937 Kg/ha. ; No. of trials=6

64(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	279	394	172	403	514	602	709	18 0

Control mean=798 Kg/ha. ; No. of trials=11.

65(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	250	394	112	409	483	543	638	19·1

Control mean=776 Kg/ha. ; No. of trials=16.

Gaya

62(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S E.
Av. response of grain in Kg/ha.	329	920	109	422	834	922	1098	107 8

Control mean=971 Kg/ha. ; No. of trials=6.

63(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	319	602	96	429	751	921	1038	31·0

Control mean=996 Kg/ha. ; No. of trials=9.

64(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	337	506	58	518	670	893	1113	37 0

Control mean=996 Kg/ha. ; No. of trials=18.

65(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	370	500	83	508	695	834	969	47·4

Control mean=944 Kg/ha. ; No. of trials=18.

Patna

62(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	271	382	164	380	521	604	765	43·3

Control mean=955 Kg/ha. ; No. of trials=14.

63(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	253	383	91	331	443	616	693	38·5

Control mean=1044 Kg/ha. ; No. of trials=23.

64(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	341	472	95	402	467	561	616	35·0

Control mean=942 Kg/ha. ; No. of trials=13.

65(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	270	407	93	292	437	538	575	41·1

Control mean=970 Kg/ha. ; No. of trials=10.

Shahabad

62(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	572	781	184	637	975	1131	1298	56·7

Control mean=939 Kg/ha. ; No. of trials=10.

63(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	435	672	190	656	857	960	1086	61·8

Cantrol mean=806 Kg/ha. ; No of trials=9.

64(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	333	460	210	522	567	652	801	43·0

Control mean=957 Kg/ha. ; No. of trials=16.

65(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	167	312	57	254	377	482	561	23·7

Control mean=1024 Kg/ha. ; No. of trials=17.

Hazaribagh

62(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	288	474	275	438	574	708	804	58·8

Control mean=924 Kg/ha. ; No. of trials=6.

63(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	259	400	251	437	553	691	780	32·4

Control mean=847 Kg/ha. ; No. of trials=9.

64(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	328	423	48	409	507	604	628	26 0

Control mean=814 Kg/ha. ; No. of trials=9.

S-Parganas

62(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	318	399	126	366	476	529	572	36 9

Control mean=928 Kg/ha. ; No. of trials=6.

63(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	246	361	103	367	468	595	689	40·6

Control mean=703 Kg/ha. ; No. of trials=6.

64(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	140	262	88	256	348	475	516	21·0

Control mean=794 Kg/ha. ; No. of trials=14.

65(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha	148	296	98	253	421	564	761	32·8

Control mean=941 Kg/ha. ; No. of trials=11.

Crop :- Wheat.

Ref :- Bh. 62, 63, 64, 65(SFT) for Champaran ; 62, 64(SFT) for Monghyr ; 62, 63, 65 (SFT) for Muzaffarpur ; 62, 63. 64, 65 (SFT) for Purnea ; 62, 63(SFT) for Bhagalpur and 62, 65(SFT) for Hazaribagh.

Site :- (District) : Champaran, Monghyr, Muzaffarpur, Purnea, Bhagalpur and Hazaribagh.

Type :- 'M'.

Object : —Type A_2 : To study the response curves of mportant cereal, cash and oilseed crops to Phosphorus applied singly and in combination with other nutrients.

1. BASAL CONDITIONS:

(i) (a) to (c) N.A. (ii) Red for Hazaribagh and alluvial for all others. (iii) to (vi) N.A. (vii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS:

8 manurial treatments

O=Control (no manure)

N_1=35 Kg/ha. of N,

P_1=35 Kg/ha. of P_2O_5,

P_2=70 Kg/ha. of P_2O_5,

N_1P_1=35 Kg/ha. of N+35 Kg/ha. of P_2O_5,

N_1P_2=35 Kg/ha. of N+70 Kg/ha. of P_2O_5,

N_2P_2=70 Kg/ha. of N+70 Kg/ha. of P_2O_5 and

$N_2P_2K_2$=70 Kg/ha. of N+70 Kg/ha. of P_2O_5+70 Kg/ha. of K_2O.

N applied as A/S, P_2O_5 as Super and K_2O as Mur. Pot.

3. DESIGN:

Same as in type A_1—Unirrigated on page 241.

4. GENERAL:

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1962-66 for Champaran, 1962-64 (63—N.A.) for Monghyr, 1962-66 (64—N.A.) for Muzaffarpur, 1962-66 for Purnea, 1962-66 (64, 65—N.A.) for Bhagalpur and 1962-65 (63, 64—N.A.) for Hazaribagh. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

Champaran

62(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	257	162	243	476	440	639	773	58·8

Control mean=899 Kg/ha. ; No. of trials=6

63(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	155	45	109	279	315	459	598	36·0

Control mean=1014 Kg/ha. ; No. of trials=13

64(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	218	63	113	274	320	484	663	59·0

Control mean=892 Kg/ha. ; No of trials=15

65(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	166	94	126	228	272	413	500	21·8

Control mean=762 Kg/ha. ; No. of trials=14

Monghyr

62(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	251	296	353	326	760	979	1383	104·7

Control mean=850 Kg/ha. ; No. of trials=6

64(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	299	95	224	481	588	792	951	28·0

Control mean=792 Kg/ha. ; No. of trials=17

Muzaffarpur

62(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	520	145	237	544	589	765	877	57·1

Control mean=772 Kg/ha. ; No. of trials=9

63(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	188	52	69	222	285	382	456	26·4

Control mean=649 Kg/ha. ; No. of trials=16

65(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	202	154	215	335	394	437	623	80·8

Control mean=1227 Kg/ha. ; No. of trials=9

Purnea

62(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	121	77	102	139	193	177	327	18·5

Control mean=918 Kg/ha. ; No. of trials=7

63(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	39	134	99	192	250	345	382	51·5

Control mean=918 Kg/ha. ; No. of trials=7

64(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	164	91	121	235	307	418	562	36·0

Control mean=705 Kg/ha. ; No. of trials=8

65(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	184	35	153	338	335	526	643	106·2

Control mean=851 Kg/ha. ; No. of trials=8

Bhagalpur

52(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	401	182	304	476	494	545	665	18·6

Control mean=883 Kg/ha. ; No. of trials=5

63(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	417	180	270	453	449	554	621	24·8

Contro mean=874 Kg/ha. ; No. of trials=5

Hazaribagh

62(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	39	156	182	265	331	420	699	74·3

Control mean=864 Kg/ha. ; No. of trials=2

65(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. regponse of grain in Kg/ha.	148	43	219	290	462	685	872	56·7

Control mean=1075 Kg/ha. ; No. of trials=8

Crop :- Wheat .

Ref :- Bh. 62, 63(SFT) for Champaran ; 62, 63, 65(SFT) for Monghyr ; 62, 64(SFT) for Muzaffarpur ; 62, 63, 64, 65(SFT) for Bhagalpur, Gaya, Patna, Shahabad and S-Parganas and 62, 63, 64(SFT) for Hazaribagh.

Site :- (District) : Champaran, Monghyr, Muzaffarpur, Bhagalpur, Gaya, Patna, Shahabad, Hazaribagh and S—Parganas.

Type :- 'M'.

Object :—Type A_1 : To study he response curves of important cereal, cash and oilseed crops to Phophorus applied singly and n combination with other nutrients.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Red for Hazaribagh and S–Parganas and alluvial for all others. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS:

Same as in type A_2 Unirrigated on Page 248.

3. DESIGN:

Same as in type A_1 Unirrigated on Page 247.

4. GENERAL:

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1962-66 (64, 65–N.A.) for Champaran, 1962-66 (64–N.A.) for Monghyr, 1962-66(63, 65–N.A.) for Muzaffarpur, 1962-66 for Bhagalpur, Gaya, Patna, Shahabad and S–Parganas and 1962-66 (65–N.A.) for Hazaribagh. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS:

Champaran

62(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	393	196	231	583	629	611	681	80·5

Control mean=696 Kg/ha. ; No. of trials=2.

63(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	57	15	42	168	318	458	584	46·5

Control mean=1241 Kg/ha, ; No. of trials=3.

Monghyr

62(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	641	259	739	901	1091	1353	2086	257·0

Control mean=813 Kg/ha. ; No. of trials=5.

63(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	347	192	416	496	612	802	1254	50·5

Control mean=869 Kg/ha. ; No. of trials=16.

65(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	252	87	203	435	552	796	940	24·9

Control mean=847 Kg/ha. ; No. of trials=16.

Muzaffarpur

62(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	226	81	97	226	178	294	478	78·1

Control mean=743 Kg/ha. : No. of trials=2.

64(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	137	75	122	224	240	320	435	26·0

Control mean=924 Kg/ha. : No. of trials=14

Bhagalpur

62(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	191	9[illegible]	146	381	343	537	547	64·2

Control mean=831 Kg/ha. ; No. of trials=7.

63(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	146	123	172	279	312	428	540	45·7

Control mean=874 Kg/ha. ; No. of trials=6

64(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	219	126	198	335	384	483	619	21·0

Control mean=823 Kg/ha. ; No. of trials=11

65(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	206	81	146	358	386	542	623	20·4

Control mean=721 Kg/ha. ; No. of trials=16

Gaya

62(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	253	54	165	320	372	772	983	44·9

Control mean=856 Kg/ha. ; No. of trials=3.

63(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	261	330	180	358	496	828	971	100·7

Control mean=935 Kg/ha. ; No. of trials=10

64(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	409	57	149	512	582	829	1020	52·0

Control mean=959 Kg/ha. ; No. of trials=18

65(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	347	76	199	512	646	862	1001	42·1

Control mean=928 Kg/ha. : No. of trials=18

Patna

62(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S E.
Av. response of grain in Kg/ha.	342	219	254	510	595	684	816	32·5

Control m ean=990 Kg/ha. ; No. of trials=3.

63(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	337	129	209	412	493	618	722	28·8

Control mean=1010 Kg/ha. ; No. of trials=21

64(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	267	71	119	442	436	556	670	43·0

Control mean=969 Kg/ha. ; No. of trials=12.

65(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	311	124	197	390	363	510	562	43·2

Control mean=967 Kg/ha. ; No. of trials=10

Shahabad

62(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	574	176	370	591	701	1123	1315	58·9

Control mean=923 Kg/ha. No. of trials=11

63(SFT)

Trcatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	378	110	236	535	595	858	962	75·5

Control mean=820 Kg/ha. ; No. of trials=10

64(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	284	82	281	592	590	740	957	43·0

Control mean=938 Kg/ha. ; No. of trials=14

65(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	257	94	156	330	377	486	602	17·0

Control mean=1029 Kg/ha.; No. of trials=17

Hazaribagh

62(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	239	247	425	535	635	733	911	71·6

Control mean=947 Kg/ha.; No. of trials=6

63(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	226	205	357	408	505	637	786	22·9

Control mean=884 Kg/ha.; No. of trials=10

64(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	365	56	109	413	505	580	649	41·0

Control mean=815 Kg/ha.; No. of trials=9.

S-Parganas

62(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	354	237	304	525	554	662	759	45 1

Control mean=801 Kg/ha.; No. of trials=6.

63(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	255	58	176	354	369	638	667	45·6

Control mean=641 Kg/ha.; No. of trials=6.

64(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	174	232	218	275	333	417	515	52 0

Control mean=729 Kg/ha.; No. of trials=13

65(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	200	92	170	278	327	493	616	23 8

Control mean=890 Kg/ha.; No. of trials=11.

Crop :- Wheat. **Ref :- Bh. 62, 63, 64, 65(SFT) for Champaran ; 62, 64, 65(SFT) for Monghyr ; 62, 63, 65(SFT) for Muzaffarpur ; 62, 63, 64, 65(SFT) for Purnea ; 62, 63(SFT) for Bhagalpur and 62(SFT) for Hazaribagh.**

Site :- (District) : Champaran, Monghyr, Muzaffarpur, Purnea, Bhagalpur and Hazaribagh. **Type :- 'M'.**

Object :—Type A_3 : To study the response curves of important cereal, cash and oilseed crops to Potash applied singly and in combination with other nutrients.

1. BASAL CONDITIONS:

(i) (a) to (c) N.A. (ii) Red for Hazaribagh and alluvial for all others. (iii) to (vi) N.A. (vii) Unirrigated (viii) to (x) N.A.

2. TREATMENTS:

8 manurial treatments :

O=Control (no manure)

N_1=35 Kg/ha. of N

K_1=35 Kg/ha. of K_2O

K_2=70 Kg/ha. of K_2O

N_1K_1=35 Kg/ha. of N+35 Kg/ha. of K_2O

N_1K_2=35 Kg/ha. of N+70 Kg/ha. of K_2O

N_2K_2=70 Kg/ha. of N+70 Kg/ha. of K_2O and

$N_1P_1K_1$=35 Kg/ha. of N+35 Kg/ha. of P_2O_5+35 Kg/ha. of K_2O

N applied as A/S, P_2O_5 as Super and K_2O as Mur. Pot.

3. DESIGN

Same as in type A_1—Unirrigated on page 241.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1962-66 for Champaran, 1962-66(63—N.A.) for Monghyr, 1962-66(64—N.A.) for Muzaffarpur, 1962-66 for Purnea, 1962-66 (64, 65—N.A.) for Bhagalpur and 1962 only for Hazaribagh. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

Champaran

62(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	503	240	326	90	588	762	791	64·6

Control mean=837 Kg/ha. ; No. of trials=6.

63(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	126	45	47	213	288	396	445	32·2

Control mean=924 Kg/ha. ; No. of trials=13

64(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_1K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	144	17	123	266	246	514	419	28·0

Control mean=881 Kg/ha. ; No. of trials=16.

65(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	120	24	59	183	206	312	312	28·0

Control mean=771 Kg/ha. ; No. of trials=14

Monghyr

62(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	120	182	270	366	513	707	954	94 0

Control mean=811 Kg/ha. ; No. of trials=5

64(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	270	53	120	309	419	770	593	18·0

Control mean=781 Kg/ha. ; No. of trials=16

65(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	292	75	145	365	475	822	597	17·2

Control mean=867 Kg/ha. ; No. of trials=15

Muzaffarpur

62(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	488	215	286	561	537	736	761	49·4

Control mean=770 Kg/ha. ; No. of trials=8

63(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha	186	7	65	215	254	353	338	25·5

Control mean=632 Kg/ha. ; No. of trials=16

65(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha	266	54	184	243	330	368	355	61·1

Control mean=1100 Kg/ha. ; No. of trials=9

Purnea

62(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	101	37	58	59	109	141	187	21·8

Control mean=827 Kg/ha. ; No. of trials=6.

63(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	133	22	41	212	257	285	324	28·3

Control mean=861 Kg/ha. ; No. of trials=8.

64(SFT)

Treatmemt	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	172	11	54	237	276	466	380	23·0

Control mean=629 Kg/ha. ; No. of trials=9.

65(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	197	46	69	240	322	401	568	64·3

Control mean=830 Kg/ha. ; No. of trials=8.

Bhagalpur

62(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	323	215	362	334	558	560	643	21·6

Control mean=827 Kg/ha. ; No. of trials=5.

63(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	325	233	345	350	490	475	610	31 0

Control mean=878 Kg/ha. ; No. of trials=5.

Hazaribagh

62(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	39	—168	—119	327	449	—101	327	317·4

Control mean=1102 Kg/ha. ; No. of trials=2.

Crop :- Wheat.

Ref :- Bh. 62, 63(SFT) for Monghyr ; 62, 64(SFT) for Muzaffarpur ; 62, 63(SFT) for Champaran, 62 63, 64, 65(SFT) for Bhagalpur ; Gaya, Patna, Shahabad, Hazaribagh and S—Parganas.

Site :- District : Monghyr, Muzaffarpur, Champaran, Bhagalpur, Gaya, Patna, Shahabad, Hazaribagh and S—Parganas.

Type :- 'M'.

Object :—Type A_s : To study the response curves of important cereal, cash and oilseed crops to Potash applied singly and in combination with other nutrients.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Red for Hazaribagh and S—Parganas and alluvial for all others. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

Same as in type A_s unirrigated on page 255.

3. DESIGN :

Same as in type A_1 unirrigated on page 243.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1962–66 (64, 65 N.A.) for Monghyr, 1962—66 (63, 65 N.A.) for Muzaffarpur, 1962—66 (64, 65 N.A.) for Champaran, 1962—66 for Bhagalpur, Gaya, Patna, Shahabad, Hazaribagh and S—Parganas. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

Monghyr

62(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	532	129	252	711	799	1201	951	46·5

Control mean=753 Kg/ha. ; No. of trials=4.

63(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	345	104	241	422	532	803	669	25·5

Control mean=794 Kg/ha. ; No. of trials=16.

Muzaffarpur

62(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	307	91	173	231	138	312	437	65·1

Control mean=714 Kg/ha. ; No. of trials=3.

64(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	182	86	108	219	249	317	306	23·0

Control mean=856 Kg/ha. ; No. of trials=15.

Champaran

62(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	456	236	253	472	513	669	645	98·0

Control mean=657 Kg/ha. ; No. of trials=2.

63(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	80	—	27	157	294	409	595	58·6

Control mean=1019 Kg/ha. ; No. of trials=3.

Bhagalpur

62(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	278	63	72	301	257	394	381	59·5

Control mean=726 Kg/ha. ; No. of trials=5.

63(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	213	87	152	264	291	394	555	43·3

Contral mean=841 Kg/ha. ; No. of trials=6.

64(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	212	91	157	320	352	459	594	19·0

Control mean=781 Kg/ha. ; No. of trials=11.

65(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	211	120	133	240	282	465	456	39·9

Control mean=718 Kg/ha. ; No. of trials=16.

Gaya

62(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	482	63	75	507	540	985	605	72·8

Control mean=783 Kg/ha. ; No. of trials=6.

63(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	322	67	169	414	530	871	747	22·3

Control mean=874 Kg/ha. ; No. of trials=10.

64(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	347	49	153	461	562	843	898	32·0

Control mean=957 Kg/ha. ; No. of trials=18.

65(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	223	−78	36	324	432	659	704	38·7

Control mean=1074 Kg/ha. ; No. of trials=18.

Patna

62(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	349	144	191	452	522	629	717	36·3

Control mean=992 Kg/ha. ; No. of trials=15.

63(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	271	77	175	306	372	557	505	32·7

Control mean=1010 Kg/ha. ; No. of trials=22.

64(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of n in Kg/ha.	294	41	89	318	364	456	443	37·0

Contro mean=955 Kg/ha. ; No. of trials=13.

65(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	206	24	47	237	270	404	332	34·1

Control mean=898 Kg/ha. ; No. of trials=10.

Shahabad

62(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	544	178	216	627	717	988	1051	65·8

Control mean =859 Kg/ha. ; No. of trials=10.

63(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	417	98	143	469	593	769	772	72·6

Control mean=781 Kg/ha. ; No. of trials=10.

64(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	385	118	149	423	508	649	751	30·0

Control mean=910 Kg/ha. ; No. of trials=16.

65(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	212	25	58	265	296	431	431	16·6

Control mean=957 Kg/ha. ; No. of trials=17.

Hazaribagh

62(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	415	271	397	555	574	693	776	59·5

Control mean=878 Kg/ha. ; No. of trials=6.

63(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	311	177	265	387	450	592	608	28·3

Control means=867 Kg/ha. ; No. of trials =10.

64(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	372	12	—26	381	452	547	558	25·0

Control mean=779 Kg/ha. ; No. of trials=9.

65(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	149	17	51	427	499	774	771	39.3

Control mean=1014 Kg/ha. ; No. of trials=8.

S-Parganas

62(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	330	186	180	346	412	458	554	41·7

Control mean=874 Kg/ha. ; No. of trials=6.

63(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	237	—	—5	233	274	503	434	33·4

Control mean=580 Kg/ha. ; No. of trials=6.

64(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	204	32	57	226	225	395	413	23 0

Control mean= 710 Kg/ha. ; No. of trials=14.

65(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	221	64	75	231	260	437	454	36·3

Control mean= 847 Kg/ha. ; No. of trials=11.

Crop :- Wheat (*Rabi*). **Ref :- Bh. 62(244).**

Site :- Agri. Res. Instt., Sabour **Type :- 'MV'.**

Object :—To find out the varietal response to heavy doses of fertilizers.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Dhaincha*. (c) Nil. (ii) Sandy loam. (iii) 23—25.11.62. (iv) One Punjab ploughing and 3 *deshi* ploughings. (b) Line sowing. (c) 60 Kg/ha. (d) 23 cm. between rows. (e) — (v) 45 Kg/ha. of N as A/S+45 Kg ha. of P_2O_5 as Super. (vi) As per treatments. (vii) Irrigated. (viii) Hoeing by *sharma* hoe. (ix) 1·3 cm. (x) 14/15.4.63.

2. TREATMENTS:

Strips in one direct on :

2 levels of fertilizers: F_0=0 and F_1 =45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super.

Strips in perpendicular direction :

10 varieties: V_1=NP—798, V_2=NP—824, V_3=NP—835, V_4=Teinstrin, V_5=NP—825, V_6=NP—831, V_7=NP—761, V_8=NO—259, V_9=A. 187 and V_{10}=NP—406.

3. DESIGN :

(i) Strip-plot. (ii) (a) 2 strips in one direction and 10 strips in orthogonal direction. (b) N.A. (iii) 4. (iv) (a) 11·43 m.×2·28 m. (b) 10·97 m.×1·83 m. (v) 23 cm.×23 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Rust attack. (iii) yield of grain. (iv) (a) 1962—only. (b) and (c) —. (v) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 2116 Kg/ha. (ii) (a) 721·6 Kg/ha. (b) 365 7 Kg/ha (c) 442 0 Kg/ha. (iii) Main effect of V is highly significant. (iv) Av. yield of grain in Kg/ha.

	V_1	V_2		V_4	V_5	V_6	V_7	V_8	V_9	V_{10}	Mean
F_0	2100	1860	2342	1924	1833	2177	2209	2103	2367	1584	2050
F_1	2113	1585	2646	2803	2096	2372	2075	2549	2006	1574	2182
Mean	2107	1723	2494	2364	1965	2275	2142	2326	2187	1579	2116

C.D. for V marginal means=375·2 Kg/ha.

Crop :- Wheat (*Rabi*). **Ref :- Bh. 63(243).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'MV'.**

Object :—To find out the varietal response to heavy doses of fertilizers.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Dhaincha.* (c) Nil. (ii) Sandy loam. (iii) 19.11.63. (iv) One Punjab ploughing and 3 *deshi* ploughings. (b) Behind the plough. (c) 60 Kg/ha. (d) 23 cm. between rows. (e) —. (v) 45 Kg/ha. of as A/S+45 Kg/ha. of P_2O_5 as Super+22·5 Kg/ha. of K_2O as Mur. Pot. (vi) As per treatments. (vii) Irrigated. (viii) Weedings. (ix) N.A. (x) 4/5.4.64.

2. TREATMENTS :

Strips in one direction :

2 levels of fertilizers : F_0=0 and and F_1=45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super.

Strips in perpendicular direction :

10 varieties : V_1=NP 198, V_2=NP 824, V_3=NP 835, V_4=NP 852, V_5=NP 884, V_6=A 774, V_7=A 829, V_8=A 507, V_9=Hyb. 65 and V_{10}=Trinstin.

3. DESIGN :

(i) Strip-plot. (ii) (a) 2 strips in one direction and 10 strips in orthogonal direction. (b) N.A. (iii) 4. (iv) (a) 11·58 m.×2·28 m. (b) 10·97 m.×1·83 m. (v) 30 cm.×22 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Rust appeared. (iii) Yield of grain. (iv) (a) 1963—only. (b) and (c) —. (v) to (vii) Nil.

5. RESULTS :

(i) 2329 Kg/ha. (ii) (a) 301·1 Kg/ha. (b) 297·3 Kg/ha. (c) 224·6 Kg/ha. (iii) Main effect of F is highly significant and that of V is significant. (iv) Av. yield of grain in Kg/ha.

	V_1	V_2	V_3	V_4	V_5	V_6	V_7	V_8	V_9	V_{10}	Mean
F_1	2173	1912	1831	1912	2154	2142	2017	2080	2279	1955	2046
F_2	2215	2584	2522	2266	2814	3014	2590	2603	2914	2590	2611
Mean	2294	2248	2177	2089	2484	2578	2304	2342	2597	2272	2329

C.D. for F marginal means=214·2 Kg/ha.
C.D. for V marginal mean=305·0 Kg/ha.

———

Crop :- Wheat (*Rabi*). **Ref :- Bh. 64(98).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'MV'.**

Object :—To find out the varietal response to heavy doses of fertilizer.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar+kalai* for fodder. (c) Nil. (ii) N.A. (iii) 16/17.11.64. (iv) (a) One Punjab ploughing and 3 *deshi* ploughings. (b) Behind the plough. (c) 60 Kg/ha. (d) 25 cm. between rows. (e) —. (v) 44·8 Kg ha. of P_2O_5 as Super+22·4 Kg/ha. of K_2O as Mur. Pot. (vi) As per treatments. (vii) Irrigated. (viii) 2 weedings. (ix) 4 cm. (x) 28, 30.3.65 and 7.4.65.

2. TREATMENTS :

Main-plot treatments :

2 levels of N as A/S : N_1=44·8 and N_2=89·6 Kg/ha.

Sub-plot treatments :

16 varieties : V_1=NP 839, V_2=Sonara 64, V_3=RS 31—1, V_4=NP 872, V_5=C 303, V_6=K—68, V_7=Hyb. 65, V_8=Sonara 63, V_9=NP—887, V_{10}=Lerma Rajo, V_{11}=NP 852, V_{12}=NP 876, V_{13}=C. 306, V_{14}=NP 862, V_{15}=NP 884 and V_{16}=Local (N.P. 835).

3. DESIGN :

(i) Split-plot. (ii) 2 main-plots/replication, 16 sub-plots/main-plpt. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 8·00 m. × 1·83 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Flowering, tillers count, height and yield of grain. (iv) (a) 1964—only. (b) and (c) —. (v) to (vii) Nil.

5. RESULTS:

(i) 2067 Kg/ha. (ii) (a) 386·6 Kg/ha. (b) 246·3 Kg/ha. (iii) All the effects are highly significant. (iv) Av. yield of grain in Kg/ha.

	V_1	V_2	V_3	V_4	V_5	V_6	V_7	V_8
N_1	1776	1657	2007	1999	1879	1691	1776	1828
N_2	2516	2016	2802	2357	2528	2537	2119	2674
Mean	2146	1836	2404	2178	2203	2114	1948	2251

V_9	V_{10}	V_{11}	V_{12}	V_{13}	V_{14}	V_{15}	V_{16}	Mean
1623	1726	1393	1648	1810	1537	2153	1751	1766
1794	87	2463	2229	2571	1999	2930	2169	2368
1708	1956	1930	1939	2190	1763	2541	1960	2067

C.D. for N marginal means =217·4 Kg/ha.
C.D. for V marginal means =235·2 Kg/ha.
C.D. for N means at the same level of V=332·7 Kg/ha.
C.D. for V means at the same level of N=380·1 Kg/ha.

Crop :- Wheat (*Rabi*). **Ref :- Bh. 64(97).**

Site :- Agri. Res. Instt. Sabour. **Type :- 'MV'.**

Object :—To find out the varietal response to heavy doses of fertilizers.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Kalai*. (c) Nil. (ii) Sandy loam. (iii) 24/25.11.64. (iv) (a) One Punjab ploughing and 3 *deshi* ploughings. (b) Behind the plough. (c) 60 Kg/ha. (d) 25 cm. between rows. (e) —. (v) 67·2 Kg/ha. of P_2O_5 as Super+44 8 Kg/ha. of K_2O as Mur. Pot. (vi) As per treatments. (vii) Irrigated. (viii) 2 weedings and hoeing. (ix) 4 cm. (x) 31.3.65 and 1.4 65

2. TREATMENTS :

Main-plot treatments :

4 levels of N as A/S : N_0=0, N_1=44·8, N_2=89·7 and N_3=134·5 Kg/ha.

Sub-plot treatments :

6 varieties : V_1=Lerma Rajo—64, V_2=C—306, V_3=NP 876, V_4=Sonara 64, V_5=Sonara 63 and V_6=NP—887.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication, 6 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) N A. (b) 8 99 m. × 4 06 m. (v) N.A. (vi) Yes.

(i) Fair. (ii) Nil. (iii) Tillers count, height, flowering and yield of grain. (iv) (a) 1964—only. (b) and (c) —. (v) to (vii) Nil.

5. RESULTS:

(i) 2668 Kg/ha. (ii) (a) 424·4 Kg/ha. (b) 536·4 Kg/ha. (iii) Main effect of N alone is significant. (iv) Av. yield of grain in Kg/ha.

	V_1	V_2	V_3	V_4	V_5	V_6	Mean
N_0	2966	2966	3507	2689	3442	2962	3089
N_1	3486	2760	3342	3000	3839	3113	3257
N	2364	2654	2251	2580	2832	2662	2557
N_2	1595	1775	2001	1571	1731	1943	1769
Mean	2603	2539	2775	2460	2961	2670	2668

C.D. for N marginal means=277·1 Kg/ha.

Crop :- Wheat (*Rabi*). **Ref :- Bh. 61(325).**

Site :- Agri. Res. Instt., Dholi. **Type :- 'C'.**

Object :—To determine the most suitable combinatien of improved implements for cultivation of Wheat.

1. BASAL CONDITIONS:

(i) (a) *Rahar*—Wheat. (b) *Rahar*. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (ii) Sandy loam. (iii) 2.10.61. (iv) (a) As per treatments. (b) Line sowing. (d) 74 Kg/ha. (d) 23 cm. between rows. (e)—. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (vi) N.P.—852. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 10.2.62.

2. TREATMENTS:

5 cultural treatments: T_1=Indegeneous local implements, T_2=M.B. plough+cultivation+seed-drill, T_3=M.B. plough+disc harrow+seed-drill+cultivation, T_4=Disc plough+disc harrow+seed-drill+cultivation and T_5=*Bakhar*+M.B. plough+cultivation+seed-drill.

No other details are available.

3. DESIGN:

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) and (b) 41·15 m.×10·97 m. (v) Nil. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1961—only. (b) and (c) —. (v) Nil. (vi) No. (vii) Nil.

5. RESULTS:

(i) 1245 Kg/ha. (ii) 180·7 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T
Av. yield	1189	1307	1216	1344	1167

Crop :- Wheat (*Rabi*). **Ref :- Bh. 61(326)**

Site :- Agri. Res. Instt., Dholi. **Type :- 'C'.**

Object :—To see the effect of improved yoke on the yield of Wheat crop.

1. BASAL CONDITIONS :

(i) (a) Nil (a) Maize. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (ii) Sandy loam (iii) 14.11.61. (iv) (a) As per treatments. (b) Dibbling. (c) 23 Kg/ha. (d) 61 cm.× 61 cm. (e) 2—3. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (vi) NP—852. (vii) Unirrigated. (vii.) Weeding and hoeing. (ix) N.A. (x) 20.3.62.

2. TREATMENTS :

6 cultural treatments : T_1=*Deshi* yoke×A.E.R. 20cm. plough, T_2=Improved yoke ×A.E.R. 20 cm. plough, T_3=*Deshi* yoke×A.E.R. 15 cm. plough, T_4=Improved yoke×A.E.R. 15 cm. plough, T_5=*Deshi* yoke×wah wah plough and T_6=Improved yoke×wah wah plough.

No. other details are available.

3 DESIGN :

(i) R B.D. (ii) (a) 6. (b) N.A. (iii) 4. (v) (a) N.A. (b) 10·06 m.×10 06 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. iv) (a) 1961—only. (b) and (c) —. (v) to (vii) Nil.

5. RESULTS :

(i) 440 Kg/ha. (ii) 79·5 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	431	493	431	409	443	431

———

Crop :- Wheat (*Rabi*)- **Ref :- Bh. 65(194).**

Site :- Agri. Res. Instt., Dholi. **Type :- 'C'.**

Object :—To determine the effect of improved implements on the yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) Maize—Wheat. (b) Maize. (c) Nil. (ii) Sandy loam. (iii) 22.11.65. (iv) (a) and (b) As per treatments. (c) 74 Kg/ha. (d) 23 cm between rows. (b) —. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (vi) NP—884. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 13.3.65.

2. TREATMENTS :

2 cultural treatments : T_1=Indigeneous local implements and T_2=M.B. plough+disc harrow+seed-drill+ cultivator.

No other details are available.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 2. (iv) (a) and (b) 45·11 m.×21·64 m. (v) No. (vi) Yes.

4. GENERAL :

(i) Good (ii) Nil. (iii) Yield of grain (iv) (a) 1965—only. (b) and (c) —. (v) to (vii) Nil.

5. RESULTS :

(i) 1488 Kg/ha. (ii) 56·3 Kg/ha. (iii) Treatment differences are not significant. (iv) (a) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2
Av. yield	1491	1485

Crop :- Wheat (*Rabi*). **Ref :- Bh. 60(116).**

Site :- Agri. Res. Instt., Dholi. **Type :- 'C'.**

Object :—To find out a suitable legume for maize to be followed by Wheat.

1. BASAL CONDITIONS :

(i) (a) Legume+Maize—Wheat. (b) Legume+Maize. (c) Nil. (ii) Loam. (iii) 25/26.11.60. (iv) (a) 4 *deshi* ploughings and planking. (b) Behind the plough. (c) 90 Kg/ha. (d) 25 cm. between rows. (e) Nil. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) NP—798. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 22.4.61.

2. TREATMENTS :

6 previous crops : T_1=Maize+Groundnut, T_2=Maize+Cowpea, T_3=Maize+*Kalai*, T_4=Maize+*Moong*, T_5=Maize+*Dhaincha* and T_6=Maize alone.

3. DESIGN :

(i) R.B.D. (ii) (a)6. (b) N.A. (iii) 4. (iv) (a) 10·06 m.×6·71. m. (b) 9·75 m.×6·71 m. (v) 15 cm. at each end. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1958—60. (b) Yes. (c) Nil. (v) Sabour, Kanke and Putida. (vi) and (vii) Nil.

5. RESULTS :

(i) 701 Kg/ha. (ii) 114·4 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	433	672	572	424	1389	718

Crop :- Wheat (*Rabi*). **Ref :- Bh. 60(122), 61(143), 62(101).**

Site :- Agri. Res. Instt., Dholi. **Type :- 'C'.**

Object :—To find out a suitable green manure in Maize—Wheat rotation.

1. BASAL CONDITIONS :

(i) (a) Maize+G.M.—Wheat. (b) Maize+Green manure. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Sanpy loam. (iii) 24.11.60 ; 20.11.61 ; 9.11.62. (iv) (a) 3—6 ploughings. (b) Behind the plough. (c) 75 Kg/ha. ; 92 Kg/ha. ; 92 Kg/ha. (d) Rows 25 cm. apart. (e) —. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) NP—798 ; NP—799 ; NP—799. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 18.4.61 ; 1.4.62 ; 22.3.63.

2. TREATMENTS :

5 previous crops : T_1=Maize alone, T_2=Maize+*Moong* (G.M.), T_3=Maize+*Kalai* (G.M.), T_4=*Moong* (G.M.) and T_5=*Kalai* (G.M.).

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) and (b) 9·22 m.×7·32 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Stand count, effective no. of tillers, height of plant, length of earheads, no. of grains per earhead, weight of 1000 grains and yield of grains. (iv) (a) 1960—62. (b) Yes. (c) Nil. (v) Sabour and Kanke. (vi) Nil. (vii) As error variances are heterogeneous and Treatments×Years interaction is absent, results of individual years have been presented under 5. Results.

5. RESULTS :

60(122)

(i) 688·6 Kg/ha. (ii) 178·9 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5
Av. yield	766·4	712·9	631·8	659·4	672·4

61(143)

(i) 661·3 Kg/ha. (ii) 118·9 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	
						C.D.=159·3 Kg/ha.
Av. yield	534·9	599·5	567·2	848·5	756·3	

62(101)

(i) 677·9 Kg/ha. (ii) 59·8 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	
						C.D.=80·1 Kg/ha.
Av. yield	578·3	595·2	612·0	813·7	790·2	

Crop :- Wheat (*Rabi*). **Ref :- 60(117).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'C'.**

Object :- To find out a suitable legume mixture for Maize to be followed by Wheat.

1. BASAL CONDITIONS :

(i) (a) Legume+Maize—Wheat. (b) Legume+Maize. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Red laterite. (iii) 19/20.11.60. (iv) (a) 3—4 ploughings with Bihar plough and country plough. (b) Behind the plough. (c) 92 Kg/ha. (d) 25 cm. between rows. (e) Nil. (v) 22·5 Kg/ha. of N as A/S+22·5 Kg/ha. of P_2O_5 as Super. (vi) NP 798. (vii) Irrigated. (viii) Weeding and hoing. (ix) N.A. (x) 8/9.4.61

2. TREATMENTS :

6 previous crops : T_1=Maize+Groundnut, T_2=Maize+Cowpea, T_3=Maize+*Kalai*, T_4=Maize+*Moong*, T_5=Maize+*Dhaincha* and T_6=Maize alone.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) and (b) 13·41 m.×7·62 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1958—60. (b) Yes. (c) Nil. (v) Sabour, Dholi and Putida. (vi) and (vii) Nil.

5. RESULTS :

(i) 1506 Kg/ha. (ii) 345·9 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	1541	1465	1327	1684	1430	1591

Crop :- Wheat (*Rabi*). **Ref :- Bh. 61(139).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'C'.**

Object :—To find out the suitable green manure in Maize—Wheat rotation.

1. BASAL CONDITIONS :

(i) (a) Maize—G.M.—Wheat. (b) Maize and G.M. (c) 44·8 Kg/ha. of N as A/S+44·8 Kg/ha. of P_2O_5 as Super. (ii) Clay loam. (iii) 6/7.11.61. (iv)(a) 4—6 *deshi* ploughing. (b) Behind the plough. (c) 92 Kg/ha. (d) 25 cm. between rows. (e) —. (v) 22·4 Kg/ha. of N+22·4 Kg/ha. of P_2O_5 as Super. (vi) NP—798. (vii) Irrigated. (viii) 3 hoeings. (ix) N.A. (x) 28.3.62 and 1.4.62.

2. TREATMENTS :

5 previous crops : Maize alone, T_2=Maize+*Moong* (G.M.), T_3=Maize+*Kalai* (G.M.), T_4= *Moong* alone and T_5=*Kalai* alone.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) and (b) 12·19 m.×5·49 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1961—only. (b) and (c) —. (v) Sabour and Dholi. (vi) and (vii) Nil.

5. RESULTS :

(i) 1613 Kg/ha. (ii) 235·8 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	C.D.=316·2 Kg/ha.
Av. yield	1304	1332	1723	1450	2256	

Crop :- Wheat (*Rabi*). **Ref :- Bh. 62(273), 63(278).**

Site :- Agri. Res. Instt., Patna. **Type :- 'C'.**

Object :—To determine the most suitable combination of improved agricultural implements for cultivation of Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (iii) Clayey loam ; clayey. (iii) 8.12.62 ; 17.11.63. (iv) (a) and (b) As per treatments. (c) 70 Kg/ha. (d) 60 cm. between rows. (e) —. (v) 45 Kg/ha. of N A/S+45 Kg/ha. of P_2O_5 as Super. (vi) NP—799. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 25.3.63 ; 29.3.64.

2. TREATMENTS :

6 cultural treatments : T_1=Indigeneous local implements, local sowing and interculture methods, T_2=M.B. plough+cultivator with seedling, T_3=M.B. plough+disc harrow+cultivator with seedling, T_4=Disc plough+disc harrow+cultivator with seedling, T_5=M.B. plough +*Bakhar*+cultivator with seedling and T_6=M.B. plough+cultivation with seedling +peg-tooth harrow.

No other details are available.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) and (b) 18·29 m.×9·14 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1962—63. (b) No. (c) Results of combined analysis have been presented under 5. Results. (v) Sabour and Pusa. (vi) Nil. (vii) Error variances are homogeneous and Treatments × Years interaction is absent.

5. RESULTS :

Pooled results

(i) 1157 Kg/ha. (ii) 257·4 Kg/ha. (based on 35 d.f. made up of pooled error and Treatments × Years interaction). (iii) Treatment differences are significant (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	
Av. yield	935	1186	1224	1261	973	1362	C.D.=261·4 Kg/ha.

Individual results

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	Sig.	G.M.	S.E./plot
Year 1962	1113	1467	1430	1484	1044	1816	*	1392	277·4
1963	757	905	1017	1038	902	909	N.S.	921	185·7
Pooled	935	1186	224	1261	973	1362	*	1157	257·4

———

Grop :- Wheat (*Rabi*). **Ref :- Bh. 60(335).**

Site :- Agri. Res. Insti., Patna. **Type :- 'C'.**

Object :—To determine the optimum seed-rate and suitable method of seedling for quick seed multiplication of Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) 17/18.11.60. (iv) (a) 3 ploughings. (b) and (c) As per treatments. (d) 23 cm. between rows. (e) — (v) 138 Kg/ha. of A/S+276 Kg/ha. of Super. (vi) NP-799. (vii) Irrigated. (viii) Hoeings. (ix) 4 cm. (x) 5/6.4.61.

2. TREATMENTS :

All combinations (1) and (2)

(1) 3 seed-rates : R_1=92·2, R_2=69·2 and R_3=46·1 Kg/ha.
(2) 2 methods of sowing : M_1=With 'tanra' attached to country plough and M_2=By seed-drill.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 19·20 m.×6·40 m. (b) 18·29 m.×5·49 m. (v) 46 cm.×46 cm. (vi) Yes.

4. GENERAL :

(i) Good (ii) Nil. (iii) Yield of grain. (iv) (a) 1960—only. (b) and (c) —. (v) to (vii) Nil

5. RESULTS :

(i) 1216 Kg/ha. (ii) 258·3 Kg/ha. (iii) Main effect of R is highly significant. (iv) Av. yield of grain in Kg/ha.

	R_1	R_2	R_3	Mean
M_1	1596	996	829	1140
M_2	1524	1392	958	1291
Mean	1560	1194	894	1216

C.D. for R marginal means=275·2 Kg/ha.

Crop :- Wheat (*Rabi*). **Ref :- Bh. 62(294).**

Site :- Sugarcane Res. Instt., Pusa. **Type :- 'C'.**

Object :—To study the effect of improved seed-drills against the conventional sowing method.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) 18/19.11.62. (iv) (a) and (b) As per treatments. (c) 69 Kg/ha. (d) 23 cm. between rows. (e) —. (v) 138 Kg/ha. of A/S+92·2 Kg/ha. of K_2O as Mur. Pot. (vi) NP—852 (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 1 to 3.4.63.

2. TREATMENTS :

6 cultural treatments : T_1=Sowing behind *deshi* plough, T_2=Cossul seed-drill, T_3=Peepul seed-drill, T_4=Bihar type one cultivator with seedling attachment, T_5=Bihar type two cultivator with seedling attachment and T_6=Bihar type three cultivator with seedling attachment.

No other details are available.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) and (b) 20·01 m.×10·06 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1962—only. (b) and (c) —. (v) to (vii) Nil.

5. RESULTS :

(i) 912 Kg/ha. (ii) 108·2 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	
Av. yield	956	931	1006	813	787	979	C.D.=163·0 Kg/ha.

Crop :- Wheat (*Rabi*). **Ref :- Bh. 62(295), 63(325), 64(363).**

Site :- Sugarcane Res. Instt., Pusa. **Type :- 'C'.**

Object :—To determine the most suitable combination of improved implements for cultivation of Wheat crop.

1. BASAL CONDITIONS :

(i) (a) Nil ; Maize—Wheat ; *Kalai*—Wheat. (c) Fallow ; Maize ; *Kalai*. (c) N.A. (ii) Sandy loam. (iii) 8/9.11.62 ; 15.11.63 ; 14.11.64. (iv) (a) and (b) As per treatments. (c) N.A. (d) 23 cm. between rows. (e) —. (v) 276·7 Kg/ha. of A/S+92·2 Kg/ha. of Super ; 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super ; 67 Kg/ha. of N as A/S+67 Kg/ha. of P_2O_5 as Super. (vi) NP—835 for 64 ; NP-799 for others. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 30.3.63 to 1.4.63 ; 6—9.4.64 ; 4—11.4.65.

2. TREATMENTS :

6 cultural treatments : T_1=Indigeneous local implements, T_2=M.B. plough+cultivator+seed-drill, T_3=M.B. plough+disc harrow+seed-drill+cultivator, T_4=Disc plough+disc harrow+seed-drill+cultivator, T_5=*Bakhar*+M.B. plough+cultivator+seed-drill and T_6=M.B. plough+cultivator+seed-drill+peg-tooth harrow.

No other details are available.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 20.02 m.×10·06 m. for 62(295) ; 41·15 m.×10·97 m. for others. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1962—64. (b) No. (c) Nil. (v) Patna and Sabour. (vi) Nil. (vii) As error variances are heterogeneous and Treatments×Years interaction is absent, the results of individual years have been presented under 5. Results.

5. RESULTS:

62(295)

(i) 780 Kg/ha. (ii) 170·3 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	848	860	826	787	698	664

63(325)

(i) 225 Kg/ha. (ii) 21·7 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	231	223	241	224	244	188

C.D.=32·7 Kg/ha.

64(363)

(i) 814 Kg/ha. (ii) 110·8 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	864	886	789	847	742	753

Crop :- Wheat (*Rabi*). **Ref :- Bh. 60(322).**

Site :- Sugarcane Res. Instt., Pusa. **Type :- 'C'.**

Object :—To determine the optimum seed-rate and suitable method of sowing for quick seed multiplication.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) 15.11.60. (iv) (a) 3—4 ploughings. (b) to (d) As per treatments. (e) N.A. (v) 276 Kg/ha. of A/S+138·3 Kg/ha. of Super+92 Kg/ha. of Mur. Pot. (vi) NP—798. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 16/17.4.61.

2. TREATMENTS :

7 cultural treatments : T_1=Sown by country plough at 92·2 Kg/ha., T_2=Sown by country plough at 69·2 Kg/ha., T_3=Sown by country plough at 46·1 Kg/ha., T_4=Sown by country plough at 34·6 Kg/ha., T_5=Sown by dibbler at 13·8 Kg/ha. with spacing 23 cm.×10 cm., T_6=Sown by hand hoe at 13·8 Kg/ha. with spacing 23 cm.×10 cm. and T_7=Sown by country plough at 13·8 Kg/ha. in rows 23 cm. apart.

Row spacing for treatments T_1 to T_4=23 cm. (No other details are available).

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) 97·85 m.×39·32 m. (iii) 4. (iv) (a) 19·10 m.×6·40 m. (b) 18·29 m.×5·49 m. (v) 2 rows on either side and 40 cm. at each end. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1960—only. (b) and (c) —. (v) Sabour. (vi) and (vii) Nil.

5. RESULTS:

(i) 2084 Kg/ha. (ii) 178·4 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Av. yield	2016	2140	2225	2112	1908	2270	1914

Crop .- Wheat (*Rabi*). **Ref :- Bh. 60(118).**

Site :- Putida Farm, Putida. **Type :- 'C'.**

Object :—To find out a suitable legume mixture for Maize to be followed by Wheat.

1. BASAL CONDITIONS :

(i) (a) Legume+Maize—Wheat. (b) Legume+Maize. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Clayee (laterite soil). (iii) 2.12.60. (iv) (a) 3—4 *deshi* ploughings and planking. (b) Behind the plough. (c) 75 Kg/ha. (d) 25 cm. between rows. (e) Nil. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) NP—798. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 2.3.61.

2. TREATMENTS :

6 previous crops : T_1=Maize+Groundnut, T_2=Maize+Cowpea, T_3=Maize+*Kalai*, T_4=Maize+*Moong*, T_5=Maize+*Dhaincha* and T_6=Maize alone.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 13·11 m.×3·66 m. (b) 12·50 m.×3·05 m. (v) 30 cm.× 30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1958—60. (b) Yes. (c) Nil. (v) Sabour, Dholi and Kanke. (vi) and (vii) Nil.

5. RESULTS:

(i) 1226 Kg/ha. (ii) 155·3 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	1225	1175	1236	1236	1255	1228

Crop :- Wheat (*Rabi*). **Ref :- Bh. 60(10).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'C'.**

Object :—To find out suitable legume mixture with Maize to be followed by Wheat.

1. BASAL CONDITIONS :

(i) (a) Maize—Wheat. (b) Maize+legume. (c) N.A. (ii) N.A. (iii) 12.12.60. (iv) (a) N.A. (b) Sown behind the plough. (c) 92·28 Kg/ha. (d) Rows 30 cm. apart. (e) —. (v) 22·4 Kg/ha of P_2O_5 as Super+ 44·8 Kg/ha. of N as A/S at the time of sowing and 22·4 Kg/ha of P_2O_5 at the time of earthing up. (vi) NP—98. (vii) Irrigated. (viii) Weeding and hand hoeing. (ix) N.A. (x) 3.4.61.

2. TREATMENTS :

6 previous crops : T_1=Maize+Groundnut, T_2=Maize+Cowpea, T_3=Maize+*Kalai*, T_4=Maize+*Moong*, T_5=Maize+*Dhaincha* and T_6=Maize alone.

3. DESIGN:

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) and (b) ·0067 ha. (v) Nil. (vi) Yes.

4. GENERAL :

(i) and (ii) Nil. (iii) No. of plants, height of plants, no. of tillers. no. of earheads. no. of grains/earhead, yield of grain and straw. (iv) (a) to (c) N.A. (v) Kanke and Putida. (vi) and (vii) Nil.

5. RESULTS :

(i) 1126 Kg/ha. (ii) 244·4 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	
Av. yield	959	1046	1476	1154	1377	744	C.D.=368·3 Kg/ha.

———

Crop :- Wheat (*Rabi*). **Ref :- Bh. 60(11), 61(12), 62(97).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'C'.**

Object :—To find out suitable green manure crop in Maize—Wheat rotation.

1. BASAL CONDITIONS :

(i) (a) Maize—Wheat. (b) As per treatments. (c) N.A. (ii) Sandy loam. (iii) 9.11.60 ; 17.11.61. ; 14.11.62. (iv) (a) 4—6 *deshi* ploughings. (b) Behind the plough. (c) 90 Kg/ha. (d) 25 cm. between rows. (e) —. (v) Nil ; 22·4 Kg/ha. of N as A/S+22·4 Kg/ha. of P_2O_5 as Super ; 47 Kg/ha. of N as A/S+58 Kg/ha. of P_2O_5 as Super. (vi) NP—799. (vii) Irrigated. (viii) Hand weeding and hoeing. (ix) N.A. (x) 5 4.61 ; 1.4.62 ; 23.3.63.

2. TREATMENTS :

5 previous crops : C_1=Maize, C_2=Maize+*Moong* (G.M.), C_3=Maize+*Kalai* (G.M.), C_4=*Moong* (G.M.) and C_5=*Kalai* (G.M.)

3. DESIGN:

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 10·67 m.×7·32 m. for 60 ; 14·43 m.+5·49 m. for others. (b) 10·06 m.×6·71 m. for 60 ; 13 82 m.×4·88 m. for others. (v) 30 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Height of plants, no. of tillers, length of earheads and yield of grain and straw. (iv) (a) 1960—62. (b) No. (c) The results of combined analysis have been presented under 5. Results. (v) Kanke and Dholi. (vi) Nil. (vii) Error variances are homogeneous and Treatments×Years interaction is absent.

5. RESULTS:

Pooled results

(i) 1322 Kg/ha. (ii) 202·4 (based on 56 d f. made up of pooled error and Treatments×Years interaction). (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	C_1	C_2	C_3	C_4	C_5	
Av. yield	1139	1271	1333	1474	1394	C.D.=148·2 Kg/ha.

Individual results

Treatment	C_1	C_2	C_3	C_4	C_5	Sig.	G.M.	S.E./plot
Year 1960	768	780	962	1257	1057	*	965	178·0
1961	1430	1692	1702	1929	1807	*	1712	214·0
1962	1218	1342	1336	1236	1319	N.S.	1290	166·0
Pooled	1139	1271	1333	1474	1394	**	1322	202·4

Crop :- Wheat (*Rabi*)) **Ref :- Bh. 60(72).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'C'.**

Object :—To determine the optimum seed-rate and suitable method of sowing for quick seed multiplication of Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanai.* (c) Nil. (ii) Sandy loam. (iii) 26.10.60. (iv) (a) One ploughing by Punjab plough and 3 ploughings by *deshi* plough. (b) and (c) As per treatments. (d) Rows 23 cm. apart. (e) . (v) 69·2 Kg/ha. of N as A/S+138·3 Kg/ha. of P_2O_5 as Super. (vi) NP—798. (vii) Irrigated. (viii) 1 hoeing and 4 weedings. (ix) 4 cm. (x) 2/3.4.61.

2. TREATMENTS :

7 methods of sowing : T_1=By country plough at 92 Kg/ha., T_2=By country plough at 69 Kg/ha. , T_3=By country plough at 46 Kg/ha., T_4=By country plough at 35 Kg/ha., T_5=By dibbler at 14 Kg/ha. with 23 cm.×10 cm. spacing, T_6=By hand hoe at 14 Kg/ha. with 23 cm.×10 cm. spacing and T_7=By country plough at 14 Kg/ha. in rows 23 cm. apart.

In T_2 to T_4 row spacing was 23 cm. No other details are available.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 19·20 m.×6·40 m. (b) 18·29 m.×5·49 m. (v) 46 cm.× 46 cm. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Incidence of orange rust. (iii) Yield of grain. (iv) (a) 1958—60. (b) Yes. (c) Nil. (v) Pusa. (vi) and (vii) Nil.

5. RESULTS :

(i) 1510 Kg/ha. (ii) 333·0 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7	
Av. yield	1750	1803	1917	1334	1205	1076	1485	C.D.=497·7 Kg/ha.

Crop :- Wheat (*Rabi*). **Ref :- Bh. 60(284), 61(290), 62(276).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'C'.**

Object :—To grow different G.M. crops with and without Maize and incorporate them after Maize harvest to test their comparative effects on the yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) As per treatments. (c) 11·2 Kg/ha. of N as A/S+11·2 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) N.A. ; N.A. ; 22.11.62. (iv) (a) 3—4 ploughings. (b) Sown in lines. (c) N.A. (d) Rows 23 cm. apart. (e) —. (v) Nil. (vi) to (ix) N.A. (x) N.A. ; N.A. ; 30.3.63.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 previous crops : C_0=Nil (*no Maize*) and C_1=Maize.

(2) 5 G.M. crops : G_0=Nil, G_1=*Kalc i*, G_2=*Moong*, G_3=S. *Punctata* and G_4=*A. americana*.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 10. (b) N.A (iii) 4. (iv) (a) 5·49 m.×6·10 m. ; 12·19 m.×3·05 m. ; 15·24 m. ×3·05 m. (b) 4·88 m.×4·88 m. ; 11·58 m.×1·83 m. ; 14·63 m.×1·83 m. (v) 30 cm.×61 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain (iv) (a) 1960—62. (b) No. (c) Nil. (v) and (vi) Nil. (vii) As error variances are heterogeneous and Treatments × Years interaction is absent, results of individual years have been presented under 5. Results.

5. RESULTS:

60(284)

(i) 930 Kg/ha. (ii) 168·0 Kg/ha. (iii) Main effect of C is highly significant and that of G is significant. (iv) Av. yield of grain in Kg/ha.

	G_0	G_1	G_2	G_3	G_4	Mean
C_0	665	965	773	834	1040	856
C_1	881	1041	1003	1051	1046	1004
Mean	773	1003	888	943	1043	930

C.D. for C marginal means=109·0 Kg/ha.

C.D. for G marginal means=172·4 Kg/ha.

61(290)

(ii) 2157 Kg/ha. (ii) 223·3 Kg/ha. (iii) Main effect of G is highly significant. (iv) Av. yield of grain in Kg/ha.

	G_0	G_1	G_2	G_3	G_4	Mean
C_0	1623	2779	2394	1706	2229	2146
C_1	1871	2642	2477	1899	1954	2168
Mean	1747	2710	2435	1802	2091	2157

C.D. for G marginal means=229·1 Kg/ha.

62(276)

(i) 2627 Kg/ha. (ii) 345·7 Kg/ha. (iii) Main effect of G is highly significant and interaction C×G is significant. (iv) Av. yield of grain in Kg/ha.

	G_0	G_1	G_2	G_3	G_4	Mean.
C_0	1910	3263	3131	2600	2715	2724
C_1	2202	2750	2591	2069	3042	2531
Mean	2056	3006	2861	2334	2878	2627

C.D. for G marginal means =354·7 Kg/ha.
C.D. for the body of the table=501·6 Kg/ha.

Crop :- Wheat (*Rabi*). **Ref :- Bh. 61(85), 62(60), 63(34), 64(35).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'C'.**

Object :—To select a suitable combination of improved implements for Wheat cultivation.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) N.A. (ii) Clayey loam. (iii) 5.11.61 ; 14 and 15.11.62 ; 26.11.63 ; 16.11.64. (iv) (a) and (b) As per treatments. (c) 70 Kg/ha. (d) 25 cm. between rows. (e) —. (v) 138 Kg/ha. of A/S +138 Kg/ha. of Super+46 Kg/ha. of Mur. Pot. (vi) 498—2A for 62 ; N A. for others. (vii) Irrigated. (viii) Weeding and harrowing. (ix) N.A. (x) 15.5.62 ; 5.5.63 ; N.A. ; 12.4.65.

2. TREATMENTS :

6 cultural treatments : T_1=Local indigenous implements+local methods of sowing and interculturing, T_2=M.B. plough+cultivator, T_3=M.B. plough+disc harrow, T_4=Disc plough+disc harrow, T_5=*Bakhar*+M.B. plough and T_6=M.B. plough+cultivator+peg tooth-harrow.

Bihar cultivator with 3 rows sowing attachment was used for sowing in treatments T_2 to T_5 and Bihar cultivator 5 tyred was applied to treatments T_2 to T_5.

No other details are available.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) N.A. for 61 and 62 ; 19·20 m.×10·06 m. ; 20·73 m.×10 67 m. (b) 33·53 m.×10 06 m. ; 1/24·7 ha. ; 18·29 m.×9·14 m. ; 20·12 m.×10 06 m. (v) N.A. for 61 and 62 ; 46 cm.×46 cm. ; 30 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil for 61 and 63. Mild attack of white-ants, irrigation as control measure for 62, Stem borer attacked and Endrine sprayed for 64. (iii) Yield of grain and straw. (iv) (a) 1961—64. (b) No. (c) Nil. (v) Patna and Pusa. (vi) Nil. (vii) As error variances are heterogeneous and Treatments×Years interaction is absent, results of individual years have been presented under 5. Results.

5. RESULTS :

61(85)

(i) 945 Kg/ha. (ii) 115·4 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	848	944	1066	984	899	930

62(60)

(i) 837 Kg/ha. (ii) 131·0 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	946	810	809	778	834	845

63(34)

(i) 884 Kg/ha. (ii) 372·8 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	979	884	882	786	906	868

64(35)

(i) 926 Kg/ha. (ii) 347·9 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	824	986	936	1091	818	902

Crop :- Wheat (R*abi*). **Ref :- Bh. 65(185).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'C'.**

Object :—To study the effect of different implements on the yield of Wheat.

1. BASAL CONDITIONS:

(i) (a) Wheat—Maize. (b) Maize. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (ii) Clayey loam with alkaline patches. (iii) 17.11 65. (iv) (a) As per treatments. (b) Sown in lines by seed drill. (c) 70 Kg/ha. (d) 20 cm between rows. (e) —. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super.+45 Kg/ha. of K_2O as Mur. Pot. (vi) NP—798 (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 1.4.66.

2. TREATMENTS :

4 cultural treatments : T_1=*Deshi* ploughing with *Patta*, T_2=One ploughing by M.B. plough followed by disc harrow and *Patta*, T_3=One ploughing by M.B. plough followed by cultivator and *Patta* thrice and T_4=Rotto Tiller applied once.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 9·14 m.×18·29 m. (v) N.A. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) 1965—only. (b) and (c) —. (v) to (vi) Nil.

5. RESULTS:

(i) 1154 Kg/ha. (ii) 102·4 Kg ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	
Av. yield	967	1191	1003	1456	C.D.=125·9 Kg/ha.

Crop :- Wheat (R*abi*). **Ref :- Bh, 60(319).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'C'.**

Object :—Selection and improvement of seed-drills for Wheat.

1. BASAL CONDITIONS :

(i) (a) Maize—Wheat. (b) Maize. (c) 184 Kg/ha. of A/S+184 Kg/ha. of Super. (ii) Sandy loam. (i) 9.11.60. (iv) (a) 4 ploughings. (b) As per treatments. (c) N.A. (d) 23 cm. between rows. (e) —. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (vi) BR—319. (viii) Irrigated. (viii) Weeding and hoeing. (iv) N.A. (x) 5.4.61.

2. TREATMENTS :

7 seed-drilling implements : T_1=Behind *deshi* plough, T_2=*Deshi* Tara, T_3=Behar 3 type cultivator with seedling attachment, T_4=Wah wah cultivator with seedling attachment, T_5=P.S.G. seed-drill T_6=Naini seed-drill and T_7=Sabour seed-drill.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 19·12 m.×6·71 m. (b) 18·29 m.×6·10 m. (v) 40 cm.× 30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1960—only. (b) and (c) —. (v) to (vii) Nil.

5. RESULTS :

(i) 1286 Kg/ha. (ii) 318·9 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7	
Av. yield	1471	963	1054	1202	1311	1788	1210	C.D.=473·8 Kg/ha.

Crop :- Wheat (*Rabi*). **Ref :- Bh. 61(323), 62(1).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'C'.**

Object :—Selection and improvement of seed-drill for Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jwar* ; *Jwar*+Napier. (c) N.A. (ii) Sandy loam. (iii) 2.11.61 ; 17—19.11.62. (iv) (a) 4 ploughings. (b) As per treatments. (c) N.A. (d) Rows 23 cm. apart. (e) —. (v) 134·1 Kg/ha. of A/S+ 134·1 Kg/ha. of Super+46·1 Kg/ha. of Mur. Pot. ; N.A. (vi) NP—798 ; N.A. (vii) Unirrigated ; Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 8.4.62 ; N.A.

2. TREATMENTS :

6 seed-drilling implements : T_1=Behind *deshi* plough, T_2=Bihar five tyred cultivator with three row sowing attachment, T_3=P.S.G. seed-drill, T_4=Naini seed-drill, T_5=Sabour seed-drill and T_6=*Deshi* Tara.

N.B. : In 1962, instead of Sabour seed-drill, A.E.R. seed and fertilizer drill was tried in T_5.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 10·06 m.×21·15 m. ; 1/24·7 ha. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Yield of grain. (iv) (a) 1961—62. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

61(323)

(i) 745 Kg/ha. (ii) 168·2 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	767	746	922	812	559	666

62(1)

(i) 838 Kg/ha. (ii) 179·8 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	830	684	975	957	800	784

Crop :- Wheat (*Rabi*). **Ref :- Bh. 60(8).**

Site :- District Agri. Farm, Agwarpur (Saharsa). **Type :- 'CV'.**

Object :—To find out the suitable Wheat variety and proper time of sowing.

1. BASAL CONDITIONS :

(i) (a) Wheat—Maize. (b) Maize. (c) 134·5 Kg/ha. of N as Urea and 67·2 Kg/ha of P_2O_5 as Super. (ii) N.A. (iii) As per treatments (iv) (a) N.A. (b) Behind the plough. (c) to (e) N.A. (v) 44·8 Kg/ha. of N as Urea and 44·8 Kg/ha of P_2O_5 as Super at the time of sowing. (vi) As per treatments. (vii) Irrigated. (viii) Weeding and hoeing. (ix) 8 cm. (x 10, 15, 17 and 19.4.61.

2. TREATMENTS :

Main-plot treatments:

6 sowing dates : D_1=15.10.60, D_2=1.11.60, D_3=15.11.60, D_4=1.12.60, D_5=15.12.60 and D_6=1.1.61.

Sub-plot treatments :

6 varieties : V_1=NP—798, V_2=NP—799, V_3=BR—319, V_4=NP—761, V_5=NP—710 and V_6=NP—52.

3. DESIGN :

(i) Split-plot. (ii) (a) 6 main-plots/replication ; 6 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 10·06 m.×5·03 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) No. of grains, length of earheads, no. of tillers and yield of grain (iv) (a) 1960—only. (b) and (c) —. (v) Sepaya, Dholi, Sabour and Siwan. (vi) and (vii) Nil.

5. RESULTS :

(i) 1188 Kg/ha. (ii) (a) 411·4 Kg/ha. (b) 266·6 Kg/ha. (iii) Main effect of D is highly significant. (iv) Av. yield of grain in Kg/ha.

	V_1	V_2	V_3	V_4	V_5	V_6	Mean
D_1	915	477	507	923	600	1169	765
D_2	1631	1092	1508	1831	2046	1631	1623
D_3	1538	1353	1292	1416	1646	1416	1444
D_4	1538	1692	1615	1661	1615	1430	1592
D_5	892	954	884	785	954	831	883
D_6	954	877	539	831	831	892	821
Mean	1245	1074	1058	1241	1282	1228	1188

C.D. for D marginal means=305·5 Kg/ha.

Crop :- Wheat (*Rabi*). **Ref :- Bh. 61(339).**

Site :- Irrigation Res. Stn., Bikramganj. **Type :- 'CV'.**

Object :— To determine the possibility of growing transplanted Wheat after late *Aman* Paddy in low lying plots in the areas where water receeds very late.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) As per treatments. (iv) (a) 3—4 ploughings. (b) As per treatments. (c) 25 Kg/ha. (d) 23 cm. between rows. (e) N.A. (v) 45 Kg/ha of N as A/S+ 45 Kg/ha. of P_2O_5 as Super. (vi) As per treatments. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 21—25.4.62.

2. TREATMENTS :

Treatments in one direction :

5 dates of transplanting : D_1=Seedling raised on 10.11.60, D_2=Seedling raised on 20.11.60, D_3=Seedling raised on 30.11.60, D_4=Seedling raised on 10.12.60 and D_5=Direct sowing of seeds in field on 30.12.60.

Treatments in orthogonal to the first direction :

4 varieties : V_1=NP—798, V_2=NP—761, V_3=NP—824 and V_4=NP—835.

3. DESIGN :

(i) Strip-plot. (ii) (a) 5 strips in one direction and 4 strips in orthogonal direction. (b) N.A. (iii) 4. (iv) (a) 7·01 m.×3·66 m. (b) 6·40 m.×3·20 m. (v) 61 cm.×46 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1960—61 (Expt. for 1960—N.A.) (b) No. (c) Nil. (v) Madhepura and Pusa. (vi) and (vii) No.

5. RESULTS :

(i) 1236 Kg/ha. (ii) (a) 115·9 Kg/ha. (b) 207·9 Kg/ha. (c) 136·5 Kg/ha. (iii) Main effect of D and V are highly significant. (iv) Av. yield of grain in Kg/ha.

	D_1	D_2	D_3	D_4	D_5	Mean
V_1	927	927	1065	1107	1440	1093
V_2	852	976	969	997	1405	1040
V_3	1032	1107	1190	1294	1440	1212
V_4	1270	1600	1481	1723	1931	1601
Mean	1020	1152	1176	1280	1554	1236

C.D. for D marginal means=89·3 Kg/ha.
C.D. for V marginal means=148·8 Kg/ha.

Crop :- Wheat (*Rabi*). **Ref :- Bh. 60(112).**

Site :- Agri. Res. Instt., Dholi. **Type :- 'CV'.**

Object :—To find out the effect of different dates of sowing on the yield of different varieties of Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Loam. (iii) As per treatments. (iv) (a) 3—4 *deshi* ploughings followed by *henga*. (b) Behind the plough. (c) 90 Kg/ha. (d) 25 cm. between rows. (e) —. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) As per treatments. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 7–25.4.61.

2. TREATMENTS :

Main-plot treatments :

6 dates of sowing ; D_1=15.10.60, D_2=1.11.60, D_3=15.11.60, D_4=1.12.60, D_5=15.12.60 and D_6=1.1.61.

Sub-plot treatments :

6 varieties : V_1=NP—798, V_2=NP—709, V_3=BR—319, V_4=NP—761 V_5=NP—710 and V_6=NP—52.

3. DESIGN :

(i) Split-plot. (ii) (a) 6 main-plots/replication ; 6 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) and (b) 13·72 m.×3·68 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1958—60. (b) Yes. (c) Nil. (v) Agwanpur, Sabour, Dumka, Siwan, Sepaya and Kanke. (vi) Nil. (vii) Treatment—D_1 was not sown.

5. RESULTS:

(i) 829 Kg/ha. (ii) (a) 147·3 Kg/ha. (b) 154·5 Kg/ha. (iii) Main effect of D is highly significant and that of V is significant. (iv) Av. yield of grain in Kg/ha.

	V_1	V_2	V_3	V_4	V_5	V_6	Mean
D_2	749	1168	1018	1093	1026	1138	1032
D_3	1235	1303	1108	1243	1071	1198	1193
D_4	1138	1385	1018	1138	1175	1168	1170
D_5	554	666	532	629	502	569	575
D_6	180	240	180	165	120	150	173
Mean	771	952	771	854	779	845	829

C.D. for D marginal means=113·2 Kg/ha.
C.D. for V marginal means=113·4 Kg/ha.

Crop :- Wheat (*Rabi*). **Ref :- Bh. 65(35).**

Site :- Agri. Res. Instt., Dholi. **Type :- 'CV'.**

Object :—To determine the seed-rate and row-spacing for dwarf maxican Wheat varieties under high fertilizer conditions.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Loam. (iii) 23—26.11.65. (iv) (a) 3—4 ploughings. (b) Behind the hand plough. (c) and (d) As per treatments. (e) — (v) 90 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (vi) As per treatments. (vii) Irrigated. (viii) Weedings. (ix) N.A. (x) 15—18.4.66.

2. TREATMENTS :

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

(1) 3 row spacings : R_1=15, R_2=33, and R_3=30 cm.

(2) 3 seed-rates : S_1=46·1, S_2=69·2 and S_3=92·2 Kg/ha.

(3) 3 varieties: V_1=L. Rojo, V_2=Sonara—63 and V_3=NP—884.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 27. (b) N.A. (iii) 4. (iv) (a) and (b) 10·97 m.×3·66 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination, flowering, tillering, height of plant and yield of grain. (iv) (a) 1965-only. (b) and (c) —. (v) Sabour and Patna. (vi) and (vii) Nil.

5. RESULTS :

(i) 864 Kg/ha. (ii) 231·2 Kg/ha. (iii) Main effect of S is highly significant and that of V is significant. (iv) Av. yield of grain in Kg/ha.

	R_1	R_2	R_3	S_1	S_2	S_3	Mean
V_1	919	878	851	714	1005	930	883
V_2	851	758	737	697	764	886	782
V_3	934	888	961	745	1013	1025	928
Mean	902	842	850	719	927	947	864
S_1	731	718	708				
S_2	897	1009	876				
S_3	1077	799	965				

C.D. for V or S marginal means=108·6 Kg/ha.

Crop :- Wheat (*Rabi*). **Ref :- Bh. 60(18).**

Site :- Naya Dumka Farm, Dumka. **Type :- 'CV'.**

ObjEct :—To find out the effect of different dates of sowing on the yield of different varieties of Wheat.

1. BASAL CONDITIONS ;

(i) and (ii) N.A. (iii) As per treatments. (iv) (a) to (e) N.A. (v) 44·8 Kg/ha. of N as A/S and 44·8 Kg/ha. of P_2O_5 as Super. (vi) As per treatments. (vii) Irrigated. (viii) Weeding. (ix) N.A. (x) 14.3.61 to 9.4.61.

2. TREATMENTS :

Main-plot treatments :

6 sowing dates: D_1=15.10.60. D_2=1.11.60, D_3=15.11.60, D_4=1.12.60, D_5=15.12.60 and D_6=1.1.61.

Sub-plot treatments :

6 varieties: V_1=NP –798, V_2=NP—799, V_3=BR—319, V_4=NP 761, V_5=NP—710 and V_6=NP—52.

3. DESIGN :

(i) Split-plot. (ii) (a) 6 main-plots/replication ; 6 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) and (b) 6·10 m.×3·66 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Attack of yellow nests. (iii) No. of tillers, height of plant, length of earhead, no. of grains per earhead and yield of grain. (iv) (a) 1960—only. (b) and (c) —. (v) Agwanpur, Siwan, Kanke, Sepaya Dholi and Sabour. (vi) Nil. (vii) Treatment –D_6 failed.

5. RESULTS :

(i) 1619 Kg/ha. (ii) (a) 280·4 Kg/ha. (b) 93·2 Kg/ha. (iii) All the effects are highly significant. (iv) Av. yield of grain in Kg/ha.

	V_1	V_2	V_3	V_4	V_5	V_6	Mean
D_1	2144	1960	1927	1586	1997	1883	1916
D_2	2694	2424	1927	2119	2267	2572	2334
D_3	1570	1404	1430	1796	1674	1780	1609
D_4	1613	1447	1255	1412	1561	1474	1460
D_5	532	436	750	846	1063	1020	774
Mean	1711	1534	1458	1552	1712	1746	1619

C.D. for D marginal means =215·5 Kg/ha.

C.D. for V marginal means =68·3 Kg/ha.

C.D. for V means at the same level of D=152·9 Kg/ha.

C D. for D means at the same level of V=256·3 Kg/ha.

Crop :- Wheat (*Rabi*). **Ref :- Bh. 60(110).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'CV'.**

Object :—Te find out the effect of different dates of sowing on the yield of different varieties of Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Potato. (c) Nil. (ii)Red laterite. (iii) As per treatments. (iv) (a) 3—4 *deshi* ploughings followed by *Henga*. (b) Behind the plough. (c) 90 Kg/ha (d) 25 cm. between rows. (e) —. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) As per treatments. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N A. (x) 17.3.61 to 15.4.61.

2 TREATMENTS :

Main-plot treatments :

6 dates of sowing : D_1=15.10.60, D_2=1.11.60, D_3=15.11.60, D_4=1.12.60, D_5=15.12.60 and D_6=1.1.61.

Sub-plot treatments :

6 varieties : V_1=NP—798, V_2=NP—799, V_3=BR—319, V_4=NP—761, V_5=NP—710 and V_6=NP—52.

3. DESIGN :

(i) Split-plot. (ii) (a) 6 main-plots/replication ; 6 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) and (b) 6·10 m.×4·88 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1958—60. (b) Yes. (c) Nil. (v) Agwanpur, Sabour, Dumka, Siwan, Dholi and Sepaya. (vi) and (vii) Nil.

5. RESULTS :

(i) 1288 Kg/ha. (ii) (a) 137·9 Kg/ha. (b) 141·1 Kg/ha. (iii) Main effects of D and V and the interaction D×V are all highly significant. (iv) Av. yield of grain in Kg/ha.

	V_1	V_2	V_3	V_4	V_5	V_6	Mean
D_1	1318	1265	992	978	1109	1279	1157
D_2	1489	1175	1058	1058	1305	1319	1234
D_3	1606	1488	1449	1253	1712	1619	1521
D_4	1678	1527	1448	1357	1566	1757	1555
D_5	1148	1084	1273	1182	1319	1265	1212
D_6	1058	1012	1122	1279	939	901	1052
Mean	1383	1258	1224	1184	1325	1357	1288

C.D. for D marginal means =102·4 Kg/ha.
C.D. for V marginal means =94·1 Kg/ha.
C.D. for D means at the same level of V=233·7 Kg/ha.
C.D. for V means at the same level of D=230·4 Kg/ha.

Crop :- Wheat (*Rabi*). **Ref :- Bh. 60(101), 61(112).**

Site :- Irrigation Res. Stn., Madhepura. **Type :- 'CV'.**

Object :—To study the possibility of growing transplanted Wheat after late Paddy.

1. BASAL CONDITIONS :

(i) (a) Wheat—Paddy. (b) Paddy. (c) N.A. (ii) N.A. (iii) As per treatments. (iv) (a) 3 ploughings with tractor and 1 by Punjab plough. (b) Line sowing. (c) 69 Kg/ha. (d) 23 cm. between rows. (e) —. (v) N.A. (vi) As per treatments. (vii) Irrigated. (viii) Weeding by hand. (ix) N.A. (x) 14.4.61 ; 14.4.62.

2. TREATMENTS :

Treatments in one direction :

5 dates for raising seedlings: D_1=13th Nov., D_2=20th Nov. D_3=30th Nov., D_4=10th Dec. and D_5=Direct sowing of seeds in field on 30th Dec.

Treatments in orthogonal direction :

4 varieties: V_1=NP—798, V_2=NP—761, V_3=NP—824 and V_4=NP—835.

3. DESIGN :

(i) Split-plot. (ii) (a) 5 strips in one direction and 4 strips in orthogonal direction. (b) N.A. (iii) 2. (iv) (a) 6·40 m.×3·20 m. ; 7·01 m.×3·66 m. (b) 6·10 m.×3·05 m. ; 6·40 m.×3·20 m. (v) N.A. ; 30 cm.× 23 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1960—61. (c) Results of combined analysis have been presented under 5. Results. (v) Bikramganj and Pusa. (vi) Nil. (vii) All the error variances are homogeneous and all the Treatments×Years interaction are absent.

5. RESULTS :

Pooled results :

(i) 478 Kg/ha. (ii) (a) 267·1 Kg/ha. (based on 12 d.f. made up of pooled error and Treatments×years interaction). (b) 313·4 Kg/ha. (based on 19 d.f. made up of pooled error and V×years interaction). (c) 146·2 Kg/ha. (based on 36 d.f. made up of pooled error and D×V×years interaction). (iii) Main effect of D alone is significant. (iv) Av. yield of grain in Kg/ha.

	V_1	V_2	V_3	V_4	Mean
D_1	452	358	544	521	469
D_2	576	462	558	756	588
D_3	375	448	530	634	497
D_4	438	472	645	707	566
D_5	290	317	64	406	269
Mean	426	411	468	605	478

C.D. for D marginal means=205·7 Kg/ha.

Individual results

Treatment	D_1	D_2	D_3	D_4	D_5	Sig.	V_1	V_2	V_3	V_4	Sig.
Year 1960	553	792	726	851	403	N.S.	583	521	658	897	N.S.
1961	384	384	268	280	134	N.S.	269	302	278	312	N.S.
Pooled	469	588	497	566	269	*	426	412	468	605	N.S.

G.M.	S.E./plot (a)	(b)	(c)
665	261·2	401·8	173 8
290	182·6	112·3	106·4
478	267·1	313·4	146·2

Crop :- Wheat (*Rabi*). **Ref :- Bh. 62(80).**

Site :- Irrigation Res. Stn., Madhepura. **Type :- 'CV'.**

Object :—To determine the cause of low seed setting on different Wheat varieties.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Maize. (c) 70 Kg/ha. of N as A/S+80 Kg/ha. of P_2O_5 as Super+40 Kg/ha. of K_2O as Mur. Pot. (ii) Sandy loam. (iii) As per treatments. (iv) (a) 3 *deshi* ploughings. (b) N.A. (c) 69 Kg/ha. (d) 60 cm.×45 cm. (e) N.A. (v) N.A. (vi) As per treatments. (vii) Irrigated. (viii) Weeding. (ix) N.A. (x) 3.4.63.

2. TREATMENTS :

Main-plot treatments :

4 dates of sowing : D_1=15.11.62, D_2=30.11.62; D_3=15.12.62 and D_4=30.12.62.

Sub-plot treatments :

3 varieties : V_1=NP—798, V_2=NP—761 and V_3=Local.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication, ; 3 sub-plots/main-plot. (b) 3·02 m.×9·60 m. (iii) 4. (iv) (a) 6·86 m.×3·20 m. (b) 6·40 m.×2·74 m. (v) 23 cm,×23 cm. (vi) Yes.

4. GENERAL :

(i) Poor. (ii) N.A. (iii) Height, tiller, germination and yield of grain. (iv) (a) 1962—only. (b) and (c) —. (v) to (vii) Nil.

5. RESULTS :

(i) 666 Kg/ha. (ii) (a) 451 Kg/ha. (b) 203·4 Kg/ha. (iii) Main effecf of D alone is significant. (iv) Av. yield of grain in Kg/ha.

	D_1	D_2	D_3	D_4	Mean
V_1	869	916	679	95	640
V_2	979	758	600	348	671
V_3	774	1026	632	316	687
Mean	874	900	637	253	666

C.D. for D marginal means = 416·6 Kg/ha.

Crop :- Wheat (*Rabi*). **Ref :- Bh. 65(31).**

Site :- Agri. Res. Instt., Patna. **Type :- 'CV'.**

Object :—To determine the seed-rate and row-spacing for dwarf maxican Wheat varieties under high fertility conditions.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Maize (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Clayey. (iii) 29/30.11.65. (iv) (a) 3—4 ploughings. (b) Behind the plough. (c) and (d) As per treatments. (e) —. (v) 90 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (vi) As per treatments. (vii) Irrigated. (viii) Weedings. (ix) N.A. (x) 29-30.4.66.

2. TREATMENTS :

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

(1) 3 row-spacings : R_1=15, R_2=23 and R_3=30 cm.

(2) 3 seed-rates : S_1=46·1, S_2=69·2 and S_3=92·2 Kg/ha.

(3) 3 varieties : V_1=L. Rajo, V_2=Sonara-63 and V_3=NP—884.

DESIGN :

(i) Fact. in R.B.D. (ii) (a) 27. (b) N.A. (iii) 4. (iv) (a) and (b) 7·32 m.×3·66 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1965—only. (b) and (c) —. (v) Sabour and Dholi. (vi) and (vii) Nil.

5. RESULTS :

(i) 2269 Kg/ha. (ii) 240·8 Kg/ha. (iii) Main effects of R, S and V and interactions R×S, R×V are highly significant. (iv) Av. yield of grain in Kg/ha.

	S_1	S_2	S_3	V_1	V_2	V_3	Mean
R_1	1894	1652	1266	1400	2121	1291	1604
R_2	2694	3689	3054	2488	4370	2578	3146
R_3	2342	2081	1748	1555	2970	1645	2057
Mean	2310	2474	2073	1814	3154	1838	2269
V_1	1810	2103	1530				
V_2	3216	3322	2924				
V_3	1904	1997	1614				

C.D. for R, S or V marginal means=113·2 Kg/ha.

C.D. for the means in the body of R×S or R×V table=196·1 Kg/ha.

Crop :- Wheat (*Rabi*). **Ref :- Bh. 61(328), 69(293).**

Site :- Sugarcane Res. Instt., Pusa. **Type :- 'CV'.**

Object :—To study the possibility of growing transplanted Wheat after late *Aman* Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) Sandy loam. (iii) As per treatments. (iv) (a) 3—4 ploughings. (b) As per treatments. (c) 25 Kg/ha. (d) 23 cm. between rows. (e) N.A. (v) 45 Kg/ha. of N as A/S+ 45 Kg/ha. of P_2O_5 as Super. (vi) As per treatments. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 30.4.61 ; 8.4.62.

2 TREATMENTS :

Treatments in one direction

5 dates of raising seedlings : D_1=10th Nov., D_2=20th Nov., D_3=30th Nov., D_4=10th Dec. and D_5= Direct sowing of seeds in field on 30th Dec.

Treatments in orthogonal direction

4 varieties : V_1=NP—798, V_2=NP—761, V_3—NP–824 and V_4=NP—835.

3. DESIGN :

(i) Strip-plot. (ii) (a) 5 strips in one direction and 4 strips in orthogonal direction. (b) N.A. (iii) 4 ; 6. (iv) (a) 7·01 m.×3-66 m. (b) 6·40 m.×3·20 m. (v) 30 cm.×23 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1951—62. (b) No. (c) Results of combined analysis have been presented under 5. Results. (v) Madhepura and Bikramganj. (vi) N.A. (vii) All the error variances are homogeneous and D×years interaction is absent. V×years and D×V×years interactions are present.

5. RESULTS :

Pooled results

(i) 309 Kg/ha. (ii) (a) 207·8 Kg/ha. (based on 36 d.f. made up of pooled error and D×years interaction). (b) 413·8 Kg/ha. (based on 3 d f. made up of V×years interaction). (c) 179·7 Kg/ha. (based on 12 d.f. made up of D×V×years interaction). (iii) Main effect of D is highly significant. Interaction D×V is significant. (iv) Av. yield of grain in Kg/ha.

	V_1	V_2	V_3	V_4	Mean
D_1	53	22	57	120	63
D_2	108	53	77	218	114
D_3	113	89	230	432	216
D_4	338	282	560	852	508
D_5	387	600	675	924	647
Mean	200	209	320	509	309

C.D. for D marginal means=94·3 Kg/ha.

C.D. for D means at the same level of V=178·3 Kg/ha.

C.D. for V means at the same level of D=301·4 Kg/ha.

Individual results

Treatmet	D_1	D_2	D_3	D_4	D_5	Sig.	V_1	V_2	V_3	V_4	Sig.
Years											
1961	96	121	248	649	666	**	187	235	345	656	**
1962	41	110	195	409	634	**	208	192	303	408	**
Pooled	63	114	216	508	647	**	200	209	320	509	N.S.

G.M.	S.E./plot (a)	(b)	(c)
356	171·5	113·5	91·8
278	207·1	157·7	87·0
309	207·8	413·8	179·7

Crop :- Wheat (*Rabi*). **Ref :- Bh. 65(21),**

Site :- Agri. Res. Instt., Sabour. **Type 'CV'.**

Object :—To determine the seed-rate and row-spacing for dwarf maxican Wheat varieties under high fertility conditions.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) 25-28.11.65. (iv) (a) 3—4 ploughings. (b) Behind the plough. (c) and (d) As per treatments. (e) —. (v) 90 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (vi) As per treatments. (vii) Irrigated. (viii) Weedings and hoeings. (ix) N.A. (x) 31.3.66 to 4.4.66.

2. TREATMENTS :

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

(1) 3 row-spacing : R_1=15, R_2=23 and R_3=30 cm.

(2) 3 seed-rates : S_1=46·1, S_2=69·1 and S_3=92·2 Kg/ha.

(3) 3 varieties : V_1=Larma Rajo, V_2=Sonara—63 and V_3=NP—884.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 27. (b) N.A. (iii) 4. (iv) (a) and (b) 5·49 m.×3·66 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination and yield of grain. (iv) (a) 1965—only. (b) and (c) —. (v) Patna and Dholi. (vi) and (vii) Nil.

5. RESULTS:

(i) 2282 Kg/ha. (ii) 374·7 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	R_1	R_2	R_3	S_1	S_2	S_3	Mean
V_1	2186	2244	2210	2128	2259	2253	2213
V_2	2326	2375	2302	2283	2393	2327	2334
V_3	2283	2364	2252	2277	2316	2306	2300
Mean	2265	2328	2255	2229	2323	2295	2282
S_1	2307	2166	2215				
S_2	2166	2486	2316				
S_3	2322	2331	2233				

Crop :- Wheat (*Rabi*). **Ref :- Bh. 60(113).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'C'.**

Object :—To find out the effect of different dates of sowing on the yield of different varieties of Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Loam. (iii) As per treatments. (iv) (a) 3—4 *deshi* ploughings followed by *Henga*. (b) Behind the plough. (c) 92 Kg/ha. (d) 25 cm. between rows. (e) —. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) As per treatments. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 26.3.61 to 10.4.61.

2. TREATMENTS :

Main-plot treatments :

6 dates of sowing : D_1=15.10.60, D_2=1.11.60, D_3=15.11.60, D_4=1.12.60, D_5=15.12.60 and D_6=1.1.61.

Sub-plot treatments :

6 varieties : V_1=NP—798, V_2=NP—799, V_3=BR—319, V_4=NP—761, V_5=NP—710 and V_6=NP—52.

3. DESIGN :

(i) Split-plot. (ii) (a) 6 main-plots/replication ; 6 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) and (b) 6·10 m.×8·23 m. (v) Nil. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1958—60. (b) Yes. (c) Nil. (v) Agwanpur, Dumka, Siwan, Dholi, Sepay and Kanke. (vi) and (vii) Nil.

5. RESULTS :

(i) 808 Kg/ha. (ii) (a) 444·3 Kg/ha. (b) 782·6 Kg/ha. (iii) Main effect of D alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	V_1	V_2	V_3	V_4	V_5	V_6	Mean
D_1	255	248	216	309	271	309	268
D_2	801	713	651	735	813	821	756
D_3	1185	1379	1014	1161	1096	1146	1163
D_4	1084	1131	960	844	1185	952	1026
D_5	983	937	875	771	902	797	877
D_6	701	751	720	747	856	775	758
Mean	835	860	739	761	854	800	808

C.D. for D marginal means=330·0 Kg/ha.

Crop :- Wheat (*Rabi*). **Ref :- Bh. 60(7).**

Site :- Govt. Farm, Sepaya. **Type :- 'CV'.**

Object :—To find out the effect of different dates of sowing on the yield of different varieties of Wheat.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Maize. (c) 33·6 Kg/ha. of N as A/S+33·6 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) As per treatments. (iv) (a) 4 ploughings with country plough. (b) Behind the plough. (c) 92 Kg/ha. (d) 25 cm. between rows. (e) —. (v) 44·8 Kg/ha. of N as A/S+44·8 Kg/ha. of P_2O_5 as Super. (vi) As per treatments. (vii) Unirrigated. (viii) 6 weedings by *khurpi*. (ix) 4 cm. (x) 21/22.4.61.

2. TREATMENTS :

Main-plot treatments :

6 dates of sowing : D_1=15.10.60, D_2=1.11.60, D_3=15.11.60, D_4=1.12.60, D_5=15.12.60 and D_6=1.1.61.

Sub-plot treatments:

V_1=NP—798, V_2=NP—799, V_3=BR—319, V_4=NP—761, V_5=NP—710 and V_6=NP—52.

2. TREATMENTS :

(i) Split-plot. (iii) 6 main-plots/replication ; 6 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 11·89 m.× 5·18 m. (b) 11·13 m.×4·57 m. (v) 38 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Nil. (iii) Height of plant, no. of tillers/plant and yield af grain and straw. (iv) (a) 1960—only. (b) and (c) —. (v) Agwanpur, Dumka, Kanke, Sabour, Dholi and Siwan. (vi) and (vii) Nil.

5. RESULTS :

(i) 522 Kg/ha. (ii) (a) 113·4 Kg/ha. (b) 69·7 Kg/ha. (iii) All the effects are highly significant. (iv) Av. yield of grain in Kg/ha.

	V_1	V_2	V_3	V_4	V_5	V_6	
D_1	292	408	346	369	415	415	375
D_2	553	661	396	431	362	484	481
D_3	1022	1187	592	922	780	742	874
D_4	830	930	561	669	592	576	693
D_5	346	422	392	445	392	369	394
D_6	184	408	369	300	284	330	313
Mean	538	669	443	523	471	486	522

C.D. for D marginal means =84·2 Kg/ha.

C.D. for V marginal means =46·5 Kg/ha.

C.D. for D means at the same level of V=133·5 Kg/ha.

C.D. forV means at the same level of D=113·8 Kg/ha.

Crop :- Wheat (*Rabi*). **Ref :- Bh. 60(111).**

Site :- Sub-Divisional Farm, Siwan. **Type :- 'CV'.**

Object :—To find out the effect of different dates of sowing on the yield of different varieties of Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) As per treatments. (iv) (a) 3—4 *deshi* ploughings followed by *Henga*. (b) Behind the plough. (c) 75 Kg/ha. (d) 25 cm. between rows. (e) Nil. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) As per treatments. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 30.3.61 to 14.5.61.

2. TREATMENTS :

Main-plot treatments :

6 dates of sowing : D_1=15.10.60, D_2=1.11.60, D_3=15.11.60, D_4=1.12.60, D_5=15.12.60 and D_6=1.1.61.

Sub-plot treatments :

6 varieties : V_1=NP—798, V_2=NP—799, V_3=BR—319, V_4=NP—761, V_5=NP—710 and V_6=NP—52.

3. DESIGN :

(i) Split-plot. (ii) (a) 6 main-plots/replication ; 6 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 8·23 m. ×6·10 m. (b) 7·75 m.×5·49 m. (v) 23 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1958—60. (b) Yes. (c) Nil. (v) Sabour, Dumka, Agwanpur, Saharsa, Dholi, Sepaya and Kanke. (vi) Nil. (vii) Treatment—D_1 was not sown.

5. RESULTS :

(i) 1418 Kg/ha. (iii) (a) 205·7 Kg/ha. (b) 136·4 Kg/ha. (iii) Main effects of D and V and interaction D×V are highly significant. (iv) Av. yield of grain in Kg/ha,

	V_1	V_2	V_3	V_4	V_5	V_6	Mean
D_2	1958	2364	2220	2111	2400	2580	2272
D_3	2310	1985	1841	2111	1588	1768	1934
D_4	1127	1408	1083	1127	1286	1534	1261
D_5	834	1051	794	938	974	1047	940
D_6	640	658	595	658	694	866	685
Mean	1374	1493	1307	1389	1388	1559	1418

C.D. for D marginal means =158·1 Kg/ha.
C.D. for V marginal means =100·1 Kg/ha.
C.D. for D means at the same level of V=258·7 Kg/ha.
C,D. for V means at the same level of D=223·9 Kg/ha.

Crop :- Wheat (*Rabi*). **Ref :- Bh. 60(141), 61(165), 62(139), 63(162).**

Site :- Agri. Res. Instt., Dholi. **Type :- 'CM'.**

Object :—To study the effect of spacing, seed-rate and time of application of Potash on leaf area expansion and duration as influencing yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize for 60 and 62 ; Cotton for 61 and 63. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) 22.10.60 ; 16.11.61 ; 8.11.62 ; 19-21.11.63. (iv) (a) 3 ploughings. (b) As per treatments. (c) N.A. (d) As per treatments. (e) 3. (v) Nil. (vi) NP—798. (vii) Irrigated. (viii) Weeding and hoeing. (ix) 12·0 cm. ; 8·6 cm ; 5·6 cm. ; 7·9 cm. (x) 11.3.61 ; 31.3.62 ; 30.3.63 ; 5.4.64.

2. TREATMENTS :

6 manurial-cum-cultural treatments : T_1=Dibbling 15 cm. apart in rows 25 cm. apart with 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot., T_2=Dibbling 10 cm. apart in rows 15 cm. apart with 90 Kg/ha. of N as A/S+90 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot., T_3=T_2+45 Kg/ha. of K_2O as Mur.Pot. at boot stage, T_4=Dibbling 5 cm. apart in rows 15 cm. apart with 90 Kg/ha. of N as A/S+90 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot., T_5=T_4+45 Kg/ha. of K_2O as Mur Pot. at boot stage and T_6=Normal cultivation in rows 25 cm. apart with 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha of K_2O as Mur. Pot.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) 28·65 m.×4·88 m. for 60, 18·29 m.×5.33 m. for 63 and 17·37 m.×4·72 m. for others. (iii) 5. (iv) (a) 4·27 m.×4·27 m. for 60, 4·88 m.×2·74 m. for others. (b) 3·66 m.×2·74 m. for 60 : 4·88 m.×2·74 for 63 ; 4·27 m.×2·13 m. for others. (v) 30 cm.×76 cm. for 60 ; Nil for 63 ; 30 cm.×30 cm. for others. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) No. of leaves, length and breath of the plant, wt. of leaves and stem, no. of tillers, height of plant, no. of grains/ear and yield of grain and straw. (iv) (a) 1960—63. (b) No. (c) The results of the combined analysis have been presented under 5. Results. (v) No. (vi) Nil. (vii) Error variances are homogeneous and Treatments×Years interaction is present.

5. RESULTS :

Pooled results

(i) 2701 Kg/ha. (ii) 890·1 Kg/ha. (based on 15 d.f. made up of Treatments × Years interaction). (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	2243	2733	3047	2777	2998	2412

Individual results

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	Sig.	G.M.	S.E./plot
Year									
1960	2421	3711	3334	3730	3498	3109	**	3300	443·6
1961	2390	2869	3031	2920	2976	2271	**	2743	285·0
1962	2200	2378	3263	1679	2736	1644	**	2317	289·2
1963	1960	1973	2559	2779	2781	2622	**	2446	255·6
Pooled	2243	2733	3047	2777	2998	2412	N.S.	2701	890·1

Crop :- Wheat (*Rabi*). **Ref :- Bh. 63(14).**

Site -- Irrigation Res. Stn., Madhepura. **Type :- 'CM'.**

Object :—To determine the spacing and seed-rate of Wheat undet differential fertility conditions.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Marua*. (c) N.A. (ii) Loamy sand. (iii) 15 to 24.12.63. (iv) 8 ploughings and 8 plankings. (b) Dibbling. (c) N.A. (d) As per treatments. (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) 2 intercultures by hand hoe and one weeding. (ix) N.A. (x) 14.4.64.

2. TREATMENTS :

Main-plot treatments

3 manurial treatments: M_1=22·4 Kg/ha. of N as A/S+22·4 Kg/ha. of P_2O_5 as Super, M_2=2 times of M_1 and M_3=3 times of M_1

Sub-plot treatments

All combinations of (1) and (2)

(1) 3 spacings between rows : R_1=15 cm., R_2=23 cm. and R_3=30 cm.

(2) 3 spacings between plants : S_1=5 cm., S_2=10 cm. and S_3=15 cm.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication, 9 sub-plots/main-plot (b) N.A. (iii) 4. (iv) (a) 17·68 m. × 3·05 m. (b) 17·06 m. × 2·74 m. (v) 30 cm. × 15 cm. (vi) Yes.

4. GENERAL :

(i) Nil. (ii) Incidence of yellow rust. (iii) Height of plant, no. of tillers per stool, length of spikelets, no. of grains per spikelet, root length, w. of 1000 grains, yield of grain and straw. (iv) (a) 1963—only. (b) and (c) —. (v) Nil, (vi) Nil. (vii) Sowing was delayed due to late rains in Nov., 63 and therefore sowing was completed by 24.22.63.

5. RESULTS :

(i) 752 Kg/ha. (ii) (a) 365·2 Kg/ha. (b) 158·6 Kg/ha. (iii) All the main effects and two factor interactions are significant. (iv) Av. yield of grain Kg/ha.

	R_1	R_2	R_3	S_1	S_2	S_3	Mean
M_1	422	365	299	422	312	352	362
M_2	767	776	653	918	666	612	732
M_3	1174	1173	1137	1331	1166	986	1161
Mean	788	771	696	890	715	650	752
S_1	970	891	810				
S_2	793	689	662				
S_3	600	733	617				

C.D. for M marginal means=210·7 Kg/ha.
C.D. for R or S marginal means=74·6 Kg/ha.
C.D. for the body of R×S table=129·3 Kg/ha.
C.D. for R or S means at the same level of M=129·3 Kg/ha.
C.D. for M means at the same level of R or S=234·3 Kg/ha.

Crop :- Wheat (*Rabi*). **Ref :- Bh. 60(336).**

Site :- Agri. Res. Instt., Patna. **Type :- 'CM'.**

Object :—To study the effect of different levels of fertilisers, seed-rates and seed-dressing on the yield of Wheat (conducted at Mithapur farm).

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Dhaincha* G.M. (c) Nil. (ii) Heavy clay. (iii) 22-24.11.60. (iv) 3—4 ploughings. (b) to (d) As per treatments. (e) —. (v) Nil. (vi) NP—799. (vii) Irrigated. (viii) Weeding and hoeing. (ix) 3 cm. (x) 7-9.4.61.

2. TREATMENTS :

All combinations of (1), (2), (3) and (4)

(1) 2 levels of fertilizers : F_0=Nil and F_1=270 Kg/ha. of N as A/S+138 Kg/ha. of P_2O_5 as Super+92 Kg/ha. of K_2O as Mur. Pot.

(2) 2 seed-rates : S_1=12·2 and S_2=46·8 Kg/ha.
(3) 3 methods of sowing : M_1=Broadcast and M_2=Line sowing by hand-hoe in rows 23 cm. apart.
(4) 2 seed-dressings : D_0=No seed dressing and D_1=Seeds dressed with Agrosan G.N.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) 119·80 m.×57·61 m. (iii) 3. (iv) (a) 19·20 m.×6·40 m. (b) 18·29 m.× 5·49 m. (v) 46 cm.×46 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil, (iii) Yield of grain. (iv) (a) 1960—only. (b) and (c) —. (v) Pusa. (vi) to (vii) Nil.

5. RESULTS :

(i) 1154 Kg/ha. (ii) 172·8 Kg/ha. (iii) Main effects of M, F, S and D are highly significant. (iv) Av, yield of grain in Kg/ha.

	S_1	S_2	M_1	M_2	D_0	D_1	Mean
F_0	1035	771	971	835	834	972	903
F_1	1581	1230	1496	1315	1313	1499	1405
Mean	1308	1001	1234	1075	1073	1236	1154
D_0	1217	929	1196	951			
D_1	1399	1072	1271	1200			
M_1	1364	1103					
M_2	1252	898					

C.D. for M or S or F or D marginal means=103·3 Kg/ha.

Crop :- Wheat (*Rabi*). **Ref :- Bh. 61(333).**

Site :- Agri. Res. Instt., Patna. **Type :- 'CM'.**

Object :—To study the effect of different levels of fertilizers, seed-rates and seed-dressing on the yield of Wheat (conducted at Sheikhpura farm).

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) 5-9.12.61. (iv) (a) 3—4 ploughings. (b) to (d) As per treatments. (e) —. (v) Nil. (vi) NP—799. (vii) Irrigated. (viii) Hoeing. (ix) N.A. (x) 11 and 14.4.62.

2. TREATMENTS :

All combinations of (1), (2), (3) and 4)

(1) 2 levels of fertilizers : F_0=Nil and F_1=270 Kg/ha. of N as A/S+138 Kg/ha. of P_2O_5 as Super+92 Kg/ha. of K_2O as Mur. Pot.

(2) 2 seed-rates : S_1=92·2 and S_2=46·1 Kg/ha.

(3) 2 methods of sowing : M_1=Broadcast and M_2=Line sowing by hand hoe in rows 23 cm. apart.

(4) 2 seed-dressings : D_0=No seed dressing and D_1=Seeds dressed with Agrosan G.N.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) 101·51 m.×67·37 m. (iii) 3. (iv) 16·15 m.×7·62 m. (b) 15·24 m.×6·71 m. (v) 46 cm.×46 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1961—only. (b) and (c) —. (v) to (vii) Nil.

5. RESULTS :

(i) 963·3 Kg/ha. (ii) 132·6 Kg/ha. (iii) Main effects of M and F are highly significant. (iv) Av. yield of grain in Kg/ha.

	S_1	S_2	M_1	M_2	D_0	D_1	Mean
F_0	384	415	346	452	410	389	400
F_1	1490	1564	1408	1646	1524	1530	1527
Mean	937	989	877	1049	967	960	963
D_0	937	997	873	1060			
D_1	938	982	881	1038			
M_1	867	888					
M_2	1008	1091					

C.D. for M or F marginal means=78·0 Kg/ha.

Crop :- Wheat (*Rabi*). **Ref :- Bh. 60(323).**

Site :- Sugarcane Res. Instt., Pusa, **Type :- 'CM'.**

Object :—To study the effect of different levels of fertilizers seed-rates and seed-dressing on the yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) 17—19.11.60. (iv) (a) 3—4 ploughings. (b) to (d) As per treatments. (e) —. (v) Nil. (vi) NP—799. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 18—20.4.61.

2. TREATMENTS :

All combinations of (1), (2), (3) and (4)

(1) 2 levels of fertilizers : F_0=Nil and F_1=270 Kg/ha. of N as A/S+138 Kg/ha. of P_2O_5 as Super+92 Kg/ha. of K_2O as Mur Pot.

(2) 2 seed-rates : S_1=92·2 and S_2=46·1 Kg/ha.

(2) 3 methods of sowing :- M_1=Broadcast and M_2=Line sowing by hand-hoe in rows 23 cm. apart.

(4) 2 seed-dressings : D_0=No seed dressing and D_1=Seed dressed with Agrosan G.N.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) 119·80 m.×57·61 m. (iii) 3. (iv) (a) 19·20 cm.×6·40 m. (b) 18·29 m.×5·49 m. (v) 46 cm.×46 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1960—only. (b) and (c) —. (v) Patna. (vi) and (vii) Nil.

5. RESULTS :

(i) 1854 Kn/ha. (ii) 418·6 Kg/ha. (iii) Main effect of F is highly significant and that of S is significant. (iv) Av. yield of grain in Kg/ha.

	S_1	S_2	M_1	M_2	D_0	D_1	Mean
F_0	1682	1432	1489	1625	1567	1547	1557
F_1	2292	2010	2210	2093	2134	2168	2151
Mean	1987	1721	1849	1859	1851	1858	1854
D_0	1930	1771	1940	1761			
D_1	2044	1671	1758	1958			
M_1	2001	1698					
M_2	1974	1745					

C.D. for F or S marginal means=246·9 Kg/ha.

Crop :- Wheat (*Rabi*). **Ref :- Bh. 60(45), 61(48), 62(19), 63(37).**

Site :- Irrigation Res. Stn, Bikramganj. **Type .- 'I'.**

Object :—To find out the critical stages of moisture of Wheat crop for its maximum yield.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 44·8 Kg/ha. of N+44·8 Kg/ha. of P_2O_5. (ii) Clayee loam. (iii) 11.11.60 ; 22/23.11.61 ; 11/12.11.62 : 6/7.11.63. (iv) (a) Three ploughings by *deshi* plough. (b) Behind the plough. (c) 69 Kg/ha. (d) 30 cm. between rows. (e) —. (v) 134·5 Kg/ha. of A/S+179·3 Kg/ha. of Super. (vi) NP—799. (vii) As per treatments. (viii) Nil. (ix) N.A. (x) 27/28.3.61 ; 30/31.3.62 ; 20—25.3.63 ; 18/19.3.64.

2. TREATMENTS :

5 irrigational treatments : I_0=Control (1st irrigation after one month of sowing and 2nd at pre-flowering stage, I_1=Irrigation at 30 % of available moister, I_2=Irrigation at 40 % of available moisture, I_3=Irrigation at 50 % of available moisture and I_4=Irrigation at 60 % of available moisture.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 8. (iv) (a) 20·73 m.×3·05 m. (b) 19·51 m.×1·83 m. (v) 61 cm.× 61 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination, height and tiller observation and yield of grain. (iv) (a) 1960—63. (b) Yes. (c) Nil. (v) No. (vi) Nil. (vii) As error variances are heterogeneous and Treatments × Years interaction is absent, results of individual years have been presented under 5. Results.

5. RESULTS :

60(45)

(i) 2617 Kg/ha. (ii) 241·8 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	I_0	I_1	I_2	I_3	I_4
Av. yield	2534	2437	2701	2703	2658

61(48)

(i) (a) 2506 Kg/ha. (ii) 208·8 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	I_0	I_1	I_2	I_3	I_4
Av. yield	2455	2415	2534	2638	2487

62(19)

(i) 2350 Kg/ha. (ii) 280·3 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	I_0	I_1	I_2	I_3	I_4
Av. yield	2262	2216	2327	2525	2420

63(37)

(i) 2037 Kg/ha. (ii) 446·3 Kg/ha. (iii) Treatment differences are significant. (iv) Av, yield of grain in Kg/ha.

Treatment	I_0	I_1	I_2	I_3	I_4
					C.D.=457·0 Kg/ha.
Av. yield	2002	1668	1970	2129	2415

Crop :- Wheat (*Rabi*). **Ref :- Bh. 64(63), 65(215).**

Site :- Irrigation Res. Stn., Bikramganj. **Type :- 'I'.**

Object:—To determine the effective root-zone in irrigating Wheat crop for maximum grain yield.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy ; Fallow. ((c) 44·8 Kg/ha. of N+44·8 Kg/ha. of P_2O_5 ; Nil. (ii) Light clayee ; Sandy loam. (iii) 8/9.11.64 ; 10.11.65. (iv) (a) 3 ploughings. (b) Behind the plough. (c) 92 Kg/ha. ; 72 Kg/ha. (d) 30 cm. between rows, 23 cm. between rows. (e) —. (v) 44·8 Kg/ha. of N+44·8 Kg/ha. of P_2O_5. (vi) NP—799. (vii) As per treatments. (viii) Weeding and hoeing. (ix) N.A. (x) 20.3.65 ; 26.3.66.

2. TREATMENTS :

5 irrigational treatments : I_0=Control (two irrigations—1st one month after sowing and 2nd at pre-flowering stages), I_1=Irrigation to wet 0—15 cm. zone, I_2=Irrigation to wet 0—30 cm. zone, I_3=Irrigation to wet 0—46 cm. zone and I_4=Irrigation to wet 0—61 cm. zone.

3. DESIGN :

(i) R.B.D. (ii) 5. (b) N.A. (iii) 4. (iv) (a) 10·97 m.×6·10 m. (b) 9·75 m.×4·88 m. (v) 61 cm.×61 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1964—65. (b) Yes. (c) The results of the combined analysis have been presented under 5. Results. (v) No. (vi) Nil. (vii) Error variances are homogeneous and Treatments×Years interaction is absent.

5. RESULTS :

Pooled results

(i) 2310 Kg/ha. (ii) 226·9 Kg/ha. (based on 28 d.f. made up of pooled error and Treatments×Years interaction). (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	I_0	I_1	I_2	I_3	I_4
Av. yield	2095	2338	2411	2332	2371

Individual results

Treatment	I_0	I_1	I_2	I_3	I_4	Sig.	G.M.	S.E./plot
Year								
1964	2470	2654	2746	2694	2720	N.S.	2657	260·7
1965	1721	2023	2075	1970	2023	N.S.	1962	225·2
Pooled	2095	2338	2411	2332	2371	N.S.	2310	226·9

Crop :- Wheat. (*Rabi*). **Ref :- Bh. 60(104).**

Site :- Irrigation Res. Stn., Madhepura. **Type :- 'I'.**

Object :—To determine the supply-factor which would provide the best maintenance of soil productivity and highest economic yield.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) N.A. (iii) 16.11.60. (iv) (a) 4 to 5 ploughings by Bihar junior plough. (b) Line sowing. (c) 74 Kg/ha. (d) 25 cm. between rows. (e) —. (v) 67·2 Kg/ha. of N as A/S+ 67·2 Kg/ha. of P_2O_5 as Super. (vi) NP—761. (vii) As per treatments. (viii) 3 hoeings. (ix) N.A. (x) 17.3.61.

2. TREATMENTS :

4 irrigational treatments : I_0=Control, I_1=One irrigation after 30 days of sowing, I_2=I_1+pre-flowering irrigation and I_3=I_2+post-flowering irrigation after 15 days of flowering.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 5. (iv) (a) 30·48 m.×3·35 m. (b) 29·87 m.×3·05 m. (v) 30 cm.× 15 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination, height of plant, no. of tillers, root-study and yield of grain and straw. (iv) (a) 1960—only. (b) and (c) --. (v) to (vii) Nil.

5. RESULTS :

(i) 1696 Kg/ha. (ii) 240·9 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	I_0	I_1	I_2	I_3
Av. yield	1681	1696	1645	1763

Crop :- Wheat (*Rabi*). **Ref :- Bh. 60(107).**

Site :- Irrigation Res. Stn., Madhepura. **Type :- 'I'.**

Object :—To determine the supply-factor which would provide the best maintenance of soil productivity and the highest economic yield

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) 15.11.60. (iv) (a) 4—5 ploughings by Bihar junior plough. (b) Behind the plough. (c) 74 Kg/ha. (d) 25 cm. between rows. (e) —. (v) 44·8 Kg/ha. of N as A/S+ 44·8 Kg/ha. of P_2O_5 as Super. (vi) NP—751. (vii) As per treatments. (viii) Hand weeding. (ix) N.A. (x) 4.2.61 and 16.3.61.

2. TREATMENTS :

5 irrigational treatments : I_0=No irrigation (control), I_1=Pre-sowing irrigation, I_2=I_1+irrigation after one month of sowing, I_3=I_2+pre-flowering irrigation and I_4=I_3+post-flowering irrigation.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 30·48 m.×3·35 m. (b) 29·87 m.×3·05 m. (v) 30 cm.× 15 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination and yield of grain. (iv) (a) 1960—64. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2002 Kg/ha. (ii) 78·1 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	I_0	I_1	I_2	I_3	I_4	
Av. yield	1897	1989	1999	2124	2001	C.D.=124·9 Kg/ha.

———

Crop :- Wheat (*Rabi*). **Ref :- Bh. 61(115), 61(116).**

Site :- Irrigation Res. Stn., Madhepura. **Type :- 'I'.**

Object :—To determine the supply-factor which would provide the best maintenance of soil productivity and the highest economic yield.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) 1.12.61 ; 30.11.61. (iv) (a) 4—5 ploughings by Bihar junior plough. (b) Behind the plough. (c) 81 Kg/ha. (d) 25 cm. between rows. (e) —. (v) 67·2 Kg/ha. of N as A/S+ 67·2 Kg/ha. of P_2O_5 as Super ; 224·2 Kg/ha. of A/S+280·2 Kg/ha. of Super. (vi) NP—761. (xii) As per treatments. (viii) Hand weeding. (ix) N.A. (x) 7.4.62 ; 8.4.62.

2. TREATMENTS

5 irrigational treatments : I_0=No irrigation (control), I_1=Pre-sowing irrigation, I_2=I_1+irrigation after one month of sowing, I_3=I_2+Pre-flowering irrigation and I_4=I_3+post-flowering irrigation.

3. DESIGN:

(i) R.B D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 30·48 m.×3·35 m. (b) 29·87 m.×2·74 m. (v) 30 cm.× 30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination and yield of grain. (iv) (a) 1960-64. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

61(115)

(i) 1651 Kg/ha. (ii) 202·0 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of grain in Kg/ha.

Treatment	I_0	I_1	I_2	I_3	I_4	
Av. yield	1480	1419	1648	1831	1876	C.D.=311·2 Kg/ha.

61(116)

(i) 1518 Kg/ha. (ii) 183·1 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	I_0	I_1	I_2	I_3	I_4
Av. yield	1617	1510	1434	1571	1458

Crop :- Wheat (*Rabi*). **Ref :- Bh. 62(10), 62(89), 62(91).**

Site :- Irrigational Res. Stn., Madhepura. **Type :- 'I'.**

Object :—To determine the supply-factor which would provide the best maintenance of soil productivity and highest economic yield.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 33·6 Kg/ha. of N as A/S+44·8 Kg/ha. of P_2O_5 as Super for 62(10) ; N.A. for others. (ii) Sandy loam. for 62(10) ; N A. for others. (iii) 21.11.62 ; 27.11.62 ; 18.11.62. (iv) (a) Ploughings by M.B. plough and *Deshi* plough and harrowing by peg-tooth harrow for 62(10) ; 4—5 ploughings by Bihar-junior plough for others. (b) Furrow method ; Behind the plough ; Line sowing. (c) 81 Kg/ha. (d) 23—25 cm. between rows. (e) —. (v) 44·8 Kg/ha. of N as A/S+44·8 Kg/ha. of P_2O_5 as Super in furrows on 21.11.62 and 6.1.63 ; 67·2 Kg/ha. of N as A/S+67·2 Kg/ha. of P_2O_5 as Super for others. (vi) NP—761. (vii) As per treatments. (viii) 3 hoeing by *khurpi* and hand-hoe ; Hand weeding ; weeding and hoeing. (ix) N.A. (x) 6.4.63 ; 9.4.63 : 29.3.63.

2. TREATMENTS :

5 irrigational treatments : I_0=No irrigation (control), T_1=Pre-sowing irrigation, $T_2=I_1$+irrigation after one month of sowing, $I_3=I_2$+pre-flowering irrigation and $T_4=I_3$+post-flowering irrigation.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) 30·48 m.×3·35 m. (b) 29·57 m.×2.74 m, for 62(10), 62(91) ; 29·87 m.×2·74 m. for 62(89). (v) 46 cm.×30 cm. for 62(10), 62(91) ; 30 m.×30 cm. for 62(89). (vi) Yes.

4. GENERAL :

(i) Good. (ii) Incidence of yellow rust and damage both at the time of sowing and at maturity by brids for 62(10) ; Nil for others. (ii) Germination, no. of tillers, height of plants and yield of grain. (iv) (a) 1960—64. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

62(10)

(i) 1284 Kg/ha. (ii) 161·4 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	I_0	I_1	I_2	I_3	I_4
Av. yield	678	749	1584	1648	1760

C.D.=248·7 Kg/ha.

62(89)

(i) 1488 Kg/ha. (ii) 311·0 Kg/ha (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	I_0	I_1	I_2	I_3	I_4
Av, yield	1211	1315	1641	1708	1565

62(91)

(i) 1342 Kg/ha. (ii) 137·6 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	I_0	I_1	I_2	I_3	I_4	C.D.=212·0 Kg/ha.
Av. yield	675	789	1563	1895	1790	

Crop :- Wheat (*Rabi*). **Ref :- Bh. 63(4), 63(5), 63(6).**

Site :- Irrigation Res. Stn., Madhepura. **Type :- 'I'.**

Object :—To determine the supply-factor which would provide the best maintenance of soil productivity and highest economic yield.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy. (c) N.A. (ii) Sandy loam. (iii) 10.12.63 ; 7.12.63 ; 1.12.63. (iv) (a) One ploughing by soil turning plough and 6—7 cross ploughings. (b) N.A. ; In furrows opened by *Sharma* hand hoe ; N.A. (c) N.A. (d) 25 cm. between rows. (e) —. (v) 67·2 Kg/ha. of N as A/S+67·2 Kg/ha. of P_2O_5 as Super for 63(4) and 63(6) ; 44·8 Kg/ha. of N as A/S+44·8 Kg/ha of P_2O_5 as Super for 63(5). (vi) N.A.—761. (vii) As per treatments (viii) Weeding by *khurpi* for 63(4) and 63(5) ; 1 weeding and 3 hoeing by *Sharma* hand hoe. (ix) N.A. (x) 7.4.64 ; 6.4.64 ; 30.3.64.

2. TREATMENTS :

5 irrigational treatments : I_0=No irrigation (control), I_1=Pre-sowing irrigation, I_2=I_1+irrigation after one moth of sowing, I_3=I_2+pre-flowering irrigation and I_4=I_3+post-flowering irrigation.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 30·48 m.×3·35 m. (b) 29·56 m.×2·74 m. (v) 46 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil ; N.A. ; N.A. (iii) Height of plants, no. of tillers and yield of grain. (iv) (a) 1960—64. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS:

63(4)

(i) 3853 Kg/ha. (ii) 400·3 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of grain in Kg/ha.

Treatment	I_0	I_1	I_2	I_3	I_4	C.D.=616·8 Kg/ha.
Av. yield	2343	3175	4160	5270	4315	

62(5)

(i) 1476 Kg/ha. (ii) 157·7 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	I_0	I_1	I_2	I_3	I_4	C.D.=243·0 Kg/ha.
Av. yield	956	1248	1572	1973	1633	

63(6)

(i) 1447 Kg/ha. (ii) 133·7 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	I_0	I_1	I_2	I_3	I_4	C.D.=206·0 Kg/ha.
Av. yield	1008	863	1772	1772	1819	

Crop :- Wheat (*Rabi*). **Ref :- Bh. 64(167), 64(168), 64(169).**

Site :- Irrigation Res. Stn., Madhepura. **Type :- 'I'.**

Object :—To determine the suppy-factor which would provide the best maintenance of soil productivity and the highest economic yield.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy (c) N.A. (ii) N.A. (iii) 18.11.64 ; 10.11.64 ; 13/14.11.64. (iv) (a) 4—5 ploughings by Bihar junior plough. (b) Behind the plough. (c) 81 Kg/ha. (d) 25 cm. between rows. (e) —. (v) 67·2 Kg/ha. of N as A/S+67·2 Kg/ha. of P_2O_5 as Super for 64(167) and 64(162) ; 224·2 Kg/ha. of A/S+280·2 Kg/ha. of Super for 64 (168). (vi) NP—761. (vii) As per treatments. (viii) Hand weeding for 64(167) and 64(168) ; N.A. for 64(169) (ix) N.A. (x) 14.3.65 ;13.3.65 ;16.3.65.

1. TREATMENTS :

5 irrigational treatments : I_0=No irrigation (control), I_1=Pre-sowing irrigation, I_2=I_1+irrigation after one month of sowing, I_3=I_2+pre-flowering irrigation, I_4=I_3+post-flowering irrigation.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 30·48 m.×3·35 m. (b) 29.56 m.×2·74 m. for 64(167), 64(169) ; 29·87 m.×2·74 m. for 64(168). (v) 46 cm.×30 cm. for 64(167), 64(169 ; 30 cm.×30 cm. for 64(168). (vi) Yes.

4. GENERAL :

(i) Good ; Good but lodging due to western wind in I_4 on 15.2.65 ; Good. (ii) Nil. (iii) Germination, height of plants, no. of tillers and yield of grain. (iv) (a) 1960—64. (b) N.A. (v) to (vii) Nil.

5. RESULTS :

64(167)

(i) 1963 Kg/ha. (ii) 175·2 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	I_0	I_1	I_2	I_3	I_4	
Av. yield	1257	1323	1991	2614	2629	C.D.=269·9 Kg/ha.

64 168)

(i) 1442 Kg/ha. (ii) 171·6 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	I_0	I_1	I_2	I_3	I_4	
Av. yield	999	1070	1537	1799	1806	C.D.=264·4 Kg/ha.

64(169)

(i) 1792 Kg/ha. (ii) 136·5 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	I_0	I_1	I_2	I_3	I_4	
Av. yield	1399	1652	1785	2034	2090	C.D.=210·3 Kg/ha.

Crop :- Wheat. **Ref :- Bh. 61(51), 62(25), 63(40), 64(67), 65(211).**

Site :- Irrigation Res. Stn., Bikramganj. **Type :- 'IM'.**

Object : —To determine the effect of organic and inorganic manures and the economic use of water on Wheat.

1. BASAL CONDITIONS:

(i) (a) N.A. (b) Paddy. (c) N.A. (ii) Sandy loam for 65 ; light clayee for others. (iii) 2/3.11.61 ; 8/9.11.62 ; 9/10.11.63 ; 2/3.11.64 ; 24/25.11.65. (iv) (a) 3—4 ploughings. (b) Behind the plough. (c) 85 Kg/ha. for 61 to 63 ; 74 Kg/ha. ; N.A. (d) 30 cm. between rows. (e) —. (v) 44·8 Kg/ha. of P_2O_5 as Super. (vi) NP—799. (vii) As per treatments. (viii) Weeding and hoeing. (ix) N.A. (x) 29.3.62 ; 22/23.3.63 ; 20.3.64 ; 15.3.65 ; 23/24.3.66.

2. TREATMENTS:

Main-plot treatments:

3 sources of N at 44·8 Kg/ha : S_1=A/S, $S_2=\frac{1}{2}$ dose of N as A/S+$\frac{1}{2}$ dose of N as Compost and S_3=Compost.

Sub-plot treatments :

3 levels of irrigation : I_1=Irrigation at 25 % available moisture, I_2=Irrigation at 40 % available moisture and I_3=Irrigation at 55 % available moisture.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 3 sub-plots/main plot. (b) N.A. (iii) 4. (iv) (a) 14·33 m.× 3·66 m. (b) 13 11 m.×2 44 m. (v) 61 cm.×61 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1961—65. (b) Yes. (c) Results of combined analysis have been presented under 5. Results. (v) and (vi) Nil. (vii) Main-plot as well as sub-plot error variances are homogeneous and in both the cases Treatments×Years interactions are absent.

2. RESULTS:

Pooled results

(i) 1989 Kg/ha. (ii) (a) 530·7 Kg/ha. (based on 38 d.f. made up of pooled error and S×Years interaction). (b) 341·3 Kg/ha. (based on 114 d.f. made up of pooled error and I×Years and (IS)×Years interactions). (iii) Main effect of S is highiy significant and that of I is significant. (iv) Av. yield of grain in Kg/ha.

	S_1	S_2	S_3	Mean
I_1	2273	1985	1544	1934
I_2	2202	2123	1495	1940
I_3	2368	2187	1728	2094
Mean	2281	2098	1589	1989

C.D for S marginal means=196·2 Kg/ha.
C.D. for I marginal means=123·5 Kg/ha.

Individual results

Treatment	S_1	S_2	S_3	Sig.	I_1	I_2	I_3	Sig.	G.M.	S.E./plot (a)	S.E./plot (b)
Year											
1961	2359	1987	1674	*	2017	1969	2034	N.S.	2007	247·0	424·4
1962	2609	2184	1864	*	2284	2074	2298	N.S.	2219	422·4	281·6
1963	1963	1916	1597	N.S.	1573	1857	2046	*	1825	662·9	313·7
1964	2377	2354	1644	**	2011	2153	2212	N.S.	2125	414·5	340·7
1965	2097	2052	1166	*	1785	1648	1882	N.S.	1771	722·4	302·0
Pooled	2281	2098	1589	**	1934	1940	2094	*	1989	530·7	341·3

Crop :- Wheat (*Rabi*). **Ref Bh. 61(53), 62(26), 63(43), 64(69).**

Site :- Botanical Sub-Stn., Dhangain (Bikramganj). **Type :- 'IM'.**

Object :—To determine the influence of irrigation according to the critical stages of plant—growth with respect to varying doses of fertilisers.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy. (c) 45 Kg/ha. of N+45 Kg/ha. of P_2O_5. (ii) Clayee loam. (iii) 28/29.10.61 ; 17/18.11.62 ; 12/13.11.63 ; 30.10.64 and 1.11.64. (iv) (a) 4 ploughings with *deshi* plough. (b) Line sowing behind the plough. (c) 69 Kg/ha. for 63 ; 92 Kg/ha. for others. (d) Rows 25 cm. apart. (e) —. (v) N.A. (vi) NP—799. (vii) As per treatments. (viii) One weeding by hand. (ix) N.A. (x) 27/28.3.62 ; 25/26.3.63 20 and 24.3.64 ; 24/25.3.65.

2. TREATMENTS :

Main-plot treatments :

2 levels of fertilizers : M_1=33·6 Kg/ha. of N+33·6 Kg/ha. of P_2O_5 and M_3=2 times M_1.

Sub-plot treatments

5 irrigational treatments : I_0= Control, I_1=Irrigation 30 days after sowing, I_2=I_1+Pre-flowering irrigation, I_3=I_1+post-flowering irrigation and I_4=Pre-flowering irrigation.

3. DESIGN :

(i) Split-plot. (b) 2 main-plots/replication ; 5 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 29 87 m.× 3 66 m. (b) 28·65 m.×2·44 m. (v) 61 cm.×61 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination, height of plant, no. of tillers and yield of grain. (iv) (a) 1961—64. (b) Yes. (c) Nil. (v) Madhepura. (vi) Nil. (vii) As sub-plot error variances are heterogeneous, results of individual years have been presented under 5. Results.

5. RESULTS :

61(53)

(i) 1442 Kg/ha. (ii) (a) 393·8 Kg/ha. (b) 301·0 Kg/ha. (iii) Main effect of I is highly significant. (iv) Av. yield of grain in Kg/ha.

	I_0	I_1	I_2	I_3	I_4	Mean
M_1	1194	1194	1594	1402	1394	1356
M_2	1181	1135	1874	1582	1870	1528
Mean	1188	1164	1734	1492	1632	1442

C.D. for I marginal means=310·6 Kg/ha.

62(26)

(i) 1206 Kg/ha. (i) (a) 248·8 Kg/ha. (b) 185·1 Kg/ha. (iii) Main effect of I is highly significant. (iv) Av. yield of grain in Kg/ha.

	I_0	I_1	I_2	I_3	I_4	Mean
M_1	602	1287	1338	1225	1187	1128
M_2	848	1396	1488	1411	1279	1284
Mean	725	1341	1413	1318	1233	1206

C.D. for I marginal means=191·1 Kg/ha.

63(43)

(i) 1486 Kg/ha. (ii) (a) 54·8 Kg/ha. (b) 113·8 Kg/ha. (iii) Main effect of M and I are highly significant. (iv) Av. yield of grain in Kg/ha.

	I_0	I_1	I_2	I_3	I_4	Mean
M_1	845	1536	1573	1482	1106	1308
M_2	1041	1882	2045	1920	1428	1663
Main	943	1709	1809	1701	1267	1486

C.D. for M marginal means=55·0 Kg/ha.
C.D. for I marginal means=117·5 Kg/ha.

64(69)

(i) 1575 Kg/ha. (ii) (a) 91·9 Kg/ha. (b) 112·8 Kg/ha. (iii) Main effects of M and I and interaction I×M are highly significant. (iv) Av. yield of grain in Kg/ha.

	I_0	I_1	I_2	I_3	I_4	Mean
M_1	1237	1480	1597	1413	1237	1393
M_2	1450	1714	2320	1898	1404	1757
Mean	1343	1597	1958	1655	1320	1575

C.D. for M marginal means =92·7 Kg/ha.
C.D. for I marginal means =116·4 Kg/ha.
C.D. for 1 means at the same level of M=164·6 Kg/ha.
C.D. for M means at the same level of I=171·3 Kg/ha.

Crop :- Wheat (*Rabi*) **Ref :- Bh. 63(32).**

Site :- Irrigation Res. Stn., Kursella (Purnea). **Type :- 'IM'.**

Object :—To determine the influence of irrigation according to critical stages of plant-growth with respect to varying doses of fertilizer.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 27.11.63. (iv) (a) to (e) N.A. (v) Nil. (vi) NP—799. (vii) As per treatments. (viii) and (ix) N.A. (x) 30.3.64

2. TREATMENTS :

Main-plot treatments :

2 levels of fertilizers : M_1=33·6 Kg/ha. of N as A/S+33·6 Kg/ha. of P_2O_5 as Super and M_2=2 times M_1.

Sub-plot treatments :

5 irrigational treatments : I_0=Control, I_1=One irrigation 30 days after sowing, I_2=I_1+pre-flowering irrigation, I_3=I_1+pre-flowering irrigation and I_4=I_1+two pre-flowering irrigations.

2. DESIGN :

(i) Split-plot. (ii) (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) Good. (ii) Nil. (iii) Yield of grain. (v) (a) 1963—only. (b) ann (c) —. (v) to (vii) Nil.

5. RESULTS:

(i) 3057 Kg/ha. (ii) (a) 160·5 Kg/ha. (b) 108·8 Kg/ha. (iii) Main effect of I is highly significant and that of M is significant. (iv) Av. yield of grain in Kg/ha.

	I_0	I_1	I_2	I_3	I_4	Mean
M_1	2333	2868	3034	2831	2656	2744
M_2	2352	3874	3735	3588	3302	3370
Mean	2342	3371	3385	3210	2979	3057

C.D. for M marginal means=161·5 Kg/ha.
C.D. for I marginal means=112·3 Kg/ha.

Crop :- Wheat (*Rabi*). **Ref :- Bh. 62(9).**

Site :- Irrigation Res. Stn., Madhepura. **Type :- 'IM'.**

Object :—To determine the influence of irrigation according to the critical stages of plant-growth with respect of varying doses of fertilizers.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy. (c) 44·8 Kg/ha. of N as A/S+44·8 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) 25.11.62. (iv) (a) 6 ploughings by soil turning plough and *deshi* plough, harrowing by peg-tooth harrow. (b) Behind the plough. (c) N.A. (d) 25 cm. between rows. (e) —. (v) Nil. (vi) NP 799. (vii) As per treatments. (viii) 2 weedings by *khurpi*, hand hoeing by local hand hoe and 2 intercultures. (ix) N.A. (x) 10.4.63.

2. TREATMENTS:

Main-plot treatments :

2 levels of fertilizers: M_1=40·8 Kg/ha. of N as A/S+44·8 Kg/ha. of P_2O_5 as Super and M_2=67·2 Kg/ha of N as A/S+67·2 Kg/ha. of P_2O_5 as Super.

Sub-plot treatments :

5 irrigational treatments: I_0=Control, I_1=Pre-sowing irrigation depending on soil moisture, I_2=I_1+ irrigation one month after sowing, I_3=I_2+pre-flowering irrigation and I_4=I_3+pre-flowering irrigation.

3. DESIGN:

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 5 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 30·48 m. ×3·35 m. (b) 29·57 m.×2·74 m. (v) 46 cm.×30 cm. (vi) Yes.

4. GENERAL:

(i) Satisfactory. (ii) Nil. (iii) Height of plants, no. of tillers, no. of grains per earhead, weight of 1000 grains and yield of grain. (iv) (a) 1962—64 (modified in 1963). (b) No. (c) Nil. (v) and to (vii) Nil.

5. RESULTS :

(i) 1174 Kg/ha. (ii) (a) 96·1 Kg/ha. (b) 94·0 Kg/ha. (iii) Main effect of I is highly significant. (iv) Av. yield of grain in Kg/ha.

	I_0	I_1	I_2	I_3	I_4	Mean
M_1	825	1199	1351	1250	1070	1139
M_2	892	1261	1466	1325	1099	1209
Mean	859	1230	1409	1288	1085	1174

C.D. for I marginal means=97 0 Kg/ha.

Crop :-Wheat (*Rabi*). **Ref :- Bh. 63(10), 64(158).**

Site :- Irrigation Res. Stn., Madhepura. **Type :- 'IM'.**

Object :—To determine the influence of irrigation according to the critical stages of plant-growth with respect to the varying doses of fertilizers.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy. (c) 44·8 Kg/ha. of N as A/S+44·8 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) 11.12.63 ; 4.12.64. (iv) (a) 4 to 5 ploughings. (b) Behind the plough. (c) 81 Kg/ha. (d) 25 cm. between rows. (e) —. (v) Nil. (vi) NP—799. (vii) As per treatments. (viii) Weedings and hoeing. (ix) N.A. (x) 9.4.64 ; 6/7.4.65.

2. TREATMENTS :

Main-plot treatments :

2 levels of fertilizers : M_1=33·6 Kg/ha. of N as A/S+33·6 Kg/ha. of P_2O_5 as Super and M_2=2 times M_1

Sub-plot treatments :

5 irrigational treatments: I_0=Control (No irrigation), I_1=Irrigation one month after sowing, I_2=I_1+pre-flowering irrigation, I_3=I_1+post-flowering irrigation and I_4=Pre-flowering irrigation.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication, 5 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 30·48 m.× 3·35 m. (b) 29·57 m.×2·74 m. (v) 46 cm.×30 cm. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Height of plants, no. of tillers, no. of grains per earhead and yield of grain. (iv) (a) 1962—64 (with modified treatments in 1962). (b) No. (c) Nil. (v) Dhangain (Bikramganj). (vi) Nil. (vii) As sub-plot error variances are heterogeneous, results of individual years have been presented under 5. Results

5. RESULTS :

63(10)

(i) 1322 Kg/ha. (ii) (a) 79·3 Kg/ha. (b) 178·3 Kg/ha. (iii) Main effects of M and I are significant. (iv) Av. yield of grain in Kg/ha.

	I_0	I_1	I_2	I_3	I_4	Mean
M_1	921	1110	1411	1248	967	1131
M_2	1224	1516	1787	1661	1371	1512
Mean	1073	1313	1599	1455	1369	1322

C.D. for M marginal means=79·8 Kg/ha.

C D. for I marginal means=184·0 Kg/ha.

64(158)

(i) 885 Kg/ha. (ii) (a) 14·8 Kg/ha. (b) 13·8 Kg/ha. (iii) Main effects of M and I are highly significant and the interaction M × I is significant. (iv) Av. yield of grain in Kg/ha.

	I_0	I_1	I_2	I_3	I_4	Mean
M_1	592	845	974	832	721	793
M_2	727	882	1399	929	946	977
Mean	660	864	1187	881	834	885

C.D. for M marginal means =14·9 Kg/ha.
C.D. for I marginal means =14·2 Kg/ha.
C.D. for I means at the same level of M=20·1 Kg/ha.
C.D. for M means at the same level of I=36·2 Kg/ha.

Crop :- Wheat (*Rabi*). **Ref :- Bh. 65(216).**

Site :- Irrigation Res. Stn,. Bikramganj. **Type :- 'IMV'.**

Object :—To determine the irr gational requirement of dwarf Maxican varieties under high fertility conditions.

1. BASAL CONDITIONS :

(i) (a) to (c) Nil. (ii) Sandy loam. (iii) 8/9.11.65. (iv) (a) 3 ploughings. (b) Line sowing behind the plough. (c) 92 Kg/ha. (d) 23 cm. between rows. (e) —. (v) 45 Kg/ha. of K_2O as Mur. Pot. (vi) and (vii) As per treatments. (viii) Weeding. (ix) N A. (x) 27/28.3 66.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2)

(1) 3 varieties : V_1=Sonara 63, V_2=Lorma Rajo 64 and V_3=NP—884.

(2) 3 levels of irrigation : I_1=Three irrigations—one month after sowing, Pre-flowering stage (60 days after sowing) and at milk stage (90 days after sowing), I_2=Four irrigations—1st after one month of sowing and subsequent at 25 days interval and I_3=Five irrigations—1st after one month at sowing and subsequent at 20 days interval.

Sub-plot treatments :

2 doses of manures : M_1=67.5 Kg./ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super and M_2=2 times M_1

3. DESIGN :

(i) Split-plot. (ii) (a) 9 main-plots/replication ; 2 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 10 06 m. × 3·05 m. (b) 9·45 m. × 2·44 m. (v) 30 cm. × 30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1965 –only. (b) and (c) —. (v) to (vii) Nil.

5 RESULTS :

(i) 4542 Kg/ha. (ii) (a) 312·1 Kg/ha. (iii) Main effect of V is significant and that of M is highly significant (iv) Av. yield of grain in Kg/ha.

	I_1	I_2	I_3	M_1	M_2	Mean
V_1	4716	4536	4572	4180	5036	4608
V_2	4861	4409	4662	4120	5168	4644
V_3	4265	4499	4355	3903	4843	4373
Mean	4614	4481	4530	4068	5016	4542
M_1	4180	3927	4096			
M_2	5048	5035	4963			

C.D. for V marginal means=220·6 Kg/ha.
C.D. for M marginal means=171·7 Kg/ha.

Crop :- Wheat (*Rabi*). **Ref :- Bh. 63(42), 64(70), 65(213).**
Site :- Irrigation Res. Stn., Bikramganj. **Type :- 'IC'.**

Object :—To study the effect of different dates of sowing and varying frequencies of irrigation on the yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil for 65 ; N.A. for others. (b) N.A. for 65 ; Paddy for others. (c) N.A. (ii) Light clayee. (iii) As per treatments. (iv) (a) 3 ploughings for 65 ; N.A. for others. (b) Behind *deshi* plough (c) 69 Kg/ha. for 63 ; 92 Kg/ha. for others. (d) 30 cm. between rows. (e) —. (v) 45 Kg/ha. of N+45 Kg/ha. of P_2O_5. (vi) NP—798 Kg/ha. for 65 : NP—835 for others. (vii) As per treatments. (viii) Weeding and hoeing for 65 ; Nil for others. (ix) N.A. (x) 30/31.3.64 and 10, 11, 17.4.64 ; 16, 20.4.65 ; 6/7.4.66 and 12.4.66.

2. TREATMENTS:

Main-plot treatments :

3 dates of sowing : D_1=1st December, D_2=15th December and D_3=30th December.

Sub-plot treatments :

3 Irr gational treatments : I_0=Control (2 irrigations—1st after 30 days of sowing and 2nd at pre-flowering), I_1=Irrigation at wilting (12% soil moisture) and I_2=Irrigation at 25% available moisture.

3. DESIGN:

(i) Split-plot. (ii) (a) 3 main-plots/replication, 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 14·33 m.× 4·57 m. (b) 13·11 m.×3·35 m. (v) 61 cm.×61 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1963—65. (b) Yes. (c) Results of combined analysis have been presented under 5. Results. (v) and (vi) Nil. (vii) M in-plot error variances are homogeneous and D×Years interaction is present. Sub-plot error variances are homogeneous and (D I)×Years and I× Years interactions are absent.

5. RESULTS:

Pooled results

(i) 1376 Kg/ha. (ii) (a) 285·5 Kg/ha. (based on 4 d.f. made up of Treatments×Years interaction). (b) 251·5 Kg/ha. (based on 66 d.f. made up of pooled error and I×Years and (DI)×Years interactions). (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	D_1	D_2	D_3	Mean
I_0	1509	1348	1185	1347
I_1	1542	1383	1035	1320
I_2	1596	1563	1224	1461
Mean	1549	1431	1148	1376

Individual results

Treatment	D_1	D_2	D_3	Sig.	I_0	I_1	I_2	Sig.
Year								
1963	1669	1615	1168	**	1567	1419	1467	N.S.
1964	1446	1441	1360	N.S.	1266	1379	1602	*
1965	1532	1238	916	**	1210	1162	1314	N.S.
Pooled	1549	1431	1148	N.S.	1347	1320	1461	N.S.

G.M.	S.E./plot (a)	(b)
1484	285·9	239·5
1416	275·4	249·1
1229	295·0	271·7
1376	285·5	251·5

Crop :- Wheat (*Rabi*). **Ref :- Bh. 62(133), 63(153).**

Site :- Pirpanti (Bhagalpur c.f.). **Type :- 'D'.**

Object :—To see the effect of insecticides in contrclling white ants (Termites).

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) Nil. (ii) Clay loam. (iii) Nil. (iv) Local. (v) (a) 3—4 ploughings. (b) Behind the plough. (c) N.A. (d) 25 cm. between rows. (e) —. (vi) 25.10.62 ; 11.11.63. (vii) Unirrigated. (viii) Weeding. (ix) 1·0 cm ; 0·5 m. (x) 29.3.63 ; 2.4.64.

2. TREATMENTS :

7 insecticidal treatments : T_0=Control, T_1=5% BHC dust at 22·42 Kg/ha., T_2=5% BHC dust at 44·83 Kg/ha., T_3=5% Aldrin dust at 11·21 Kg/ha., T_4=5% Aldrin dust at 22·42 Kg/ha., T_5=6% Heptachlore dust at 11·21 Kg/ha., T_6=6% dust at 22·42 Kg/ha.

3. DESIGN :

(i) R.B.D., 7 plots/block, 4 replications. (ii) N.A. (iii) (a) and (b) 50·58 sq. m. (iv) Yes.

4. GENERAL :

(i) Poor. (ii) Under study. (iii) Total no. of plants, no. of cut plants and yield of grain for 63 only. (iv) (a) 1962—63. (b) Yes. (c) Nil. (v) Monghyr and Semiri block (Shahabad). (vi) and (vii) Nil.

5. RESULTS :

Yield data

63(153)

(i) 344·8 Kg/ha. (ii) 92·2 Kg/ha. (iii)Treatment differences are significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	
Av. yield	219·5	268·4	343·1	357·9	357·9	423·3	443·6	C.D.=136·9 Kg/ha.

Infestation data

62(133)

(i) 10·58 degrees. (ii) 1·62 degrees. (iii) Treatment differences are highly significant. (iv) Av. percentage of cut-plants in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	
Av. infestation	27·49	10·66	10·86	6·35	5·26	7·18	6·28	C.D.=2·41 degrees.

63(153)

(i) 11·74 degrees. (ii) 2·74 degrees. (iii) Treatment differences are highly significant. (iv) Av. percentage of cut-plants in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	
Av infestation	41·80	11·06	7·08	6·01	5·28	6·63	4·35	C.D.=4·07 degrees.

Crop :- Wheat (*Rabi*). **Ref :- Bh. 64(192).**

Site :- Pirpanti (Bhagalpur c.f.). **Type :- 'D'.**

Object :—To find out the efficacies of different insecticides in controlling white ants.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) Nil. (ii) Clayee loam. (iii) Nil. (iv) Local. (v) (a) 3—4 ploughings (b) Behind the plough. (c) N.A. (d) 23 cm. between rows. (e) —. (vi) 6.11.64. (vii) Unirrigated. (viii) Nil. (ix) N.A. (x) 3.4.65.

2. TREATMENTS :

8 insecticidal treatments : T_0=Control, T_1=5% BHC dust at 22·4 Kg/ha., T_2=5% BHC dust at 44·8 Kg/ha., T_3=5% Aldrin dust at 11·2 Kg/ha., T_4=5% Aldrin dust at 22·4 Kg/ha., T_5=5% Heptachlore dust at 11·2 Kg/ha. T_6=5% Heptachlore dust at 22·4 Kg/ha. and T_7=1% Telodrin dust at 33·6 Kg/ha.

Insecticides applied at sowing.

3. DESIGN :

(i) R.B.D. ; 8 plots/block ; 4 replications. (ii) N.A. (iii) (a) and (b) 50·58 sq. m. (iv) Yes.

4. GENERAL :

(i) Poor. (ii) Under study. (iii) No. of plants, no. of cut plants and yield of grain. (iv) (a) 1964—only. (b) and (c) —. (v) Monghyr. (vi) and (vii) Nil.

5. RESULTS :

Infestation data

(i) 20·19 drgrees. (ii) 5·04 drgrees. (iii) Treatment differences are highly significant. (iv) Av. percentage of cut-plants in drgrees.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Av. infestation	57·30	22·91	22·88	12·74	10·26	12·48	10·20	12·74

C.D.=7·41 degrees.

Yield data

(i) 580 Kg/ha. (ii) 44·0 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Av. yield	200	359	369	718	807	692	764	735

C.D.=64·7 Kg/ha.

Crop :- Wheat (*Rabi*). **Ref : Bh. 61(144), 62(103), 63(136).**

Site :- Agri. Res. Instt., Dholi. **Type :- 'D'.**

Object :—To find out the effective measures to control weeds in Wheat crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) 10/11.11.61 ; 10.11.62 ; 22.11.63. (iv) (a) 4—6 *deshi* ploughings. (b) Behind the plough. (c) 90 Kg/ha. (d) 25 cm. between rows. (e) Nil. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) NP—799. (vii) Irrigated. (viii) As per treatments. (ix) N.A. (x) 30/31.3.62 ; 24/25.3.63 ; 12/13.4.64.

2. TREATMENTS :

10 weedicidal treatments : T_0=Control (no weeding), T_1=80% Ferroxone (Sodium salt) at 1·12 Kg. acid equivalent/ha., T_2=Spontox (Ester of 2, 4—D and 2, 4, 5—T) at 1·12 Kg. acid equivalent/ha., T_3=Trixone (2, 4, 5—T) at 1·12 Kg. acid equivalent/ha., T_4=T_1+hand hoeing, T_5=T_2+hand hoeing, T_6=T_3+hand hoeing, T_7=Hand hoeing alone, T_8=Hand weeding+hand hoeing and T_9=Hand weeding alone.

3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) and (b) 10·33 m.×4·83 m. for 63 ; 8.16 m.×6·05 m. for others. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Population count, effective no. of tillers, height of plant, length of earhead and yield of grain and straw. (iv) (a) 1961—63. (b) Yes for 61 and 62. (c) The results of combined analysis have been presented under 5. Results. (v) Sabour, Kanke and Patna. (vi) Nil. (vii) Error variances are homogeneous and Treatments×Years interaction is absent.

5. RESULTS:

Pooled results

(i) 1126 Kg/ha. (ii) 154·0 Kg/ha. (based on 99 d.f. made up of pooled error and Treatments×Years interaction). (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9
Av. yield	971	1031	1155	1175	1140	1100	1164	1189	1109	1222

C.D.=124 9 Kg/ha.

Individual results

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9	Sig.	G.M.	S.E./plot
Year													
1961	1081	1177	1397	1199	1273	1358	1426	1324	1159	1318	*	1271	137·4
1962	916	1074	994	1164	1187	949	1090	1175	1130	1215	N.S.	1089	157·7
1963	916	843	1073	1162	961	994	975	1067	1038	1132	N.S	1016	147·6
Pooled	971	1031	1155	1175	1140	1100	1164	1189	1109	1222	**	1126	154·0

Crop :- Wheat (*Rabi*). **Ref :- Bh. 64(185), 65(34).**

Site :- Agri. Res. Instt., Dholi. **Type :- 'D'.**

Object :—To find out the effective measures to control weeds in Wheat crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Loam. (iii) 17.11.64 ; 19.11.65. (iv) (a) 3—4 ploughings. (b) Behind the plough. (c) 90 Kg/ha. ; 72 Kg/ha. (d) 25 cm. between rows. (e) —. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) NP—798 ; NP—884. (vii) Irrigated. (viii) As per treatments. (ix) N.A. (x) 8.4.65 ; 14.4.66.

2. TREATMENTS :

6 weedicidal treatments : T_0=Control (No weedicide), T_1=Bladex C, T_2=Bladex G, T_3=Tafacide 80, T_4=Spon ox and T_5=Hand weeding.

No other details are available.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 8·53 m.×6·40 m. for 64 ; 8·23 m.×6·10 m. for 65. (b) 8·23 m.×6·10 m. (v) 15 cm.×15 cm. ; Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination, stand of the crop, length of earhead, no. of grains/earhead, height of plant and yield of grain and straw. (iv) (a) 1964—65. (b) No. (c) Nil. (v) Patna, Sabour and Kanke. (vi) Nil. (vii) As error variances are heterogeneous and Treatments×Years interaction is absent, the results of individual years have been presented under 5. Results.

5. RESULTS :

64(185)

(i) 1150 Kg/ha. (ii) 248·10 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. yield	1160	1230	1095	990	1160	1265

65(34)

(i) 1220 Kg/ha, (ii) 165·2 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. yield	1056	1364	1643	1036	1056	1165

C.D.=248·8

Crop :- Wheat (*Rabi*). **Ref :- Bh. 64(361).**

Site :- Agri. Res. Instt., Dholi. **Type :- 'D'.**

Object :—To study the control of Wheat rusts by Urea and Hexathane singly and in combination.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) 26.11.64. (iv) (a) 3 ploughings. (b) Line sowing. (c) 99 Kg/ha. (d) 23 cm. between rows. (e) —. (v) 67 Kg/ha. of N as A/S applied 3 times. (vi) As per treatments. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 19/20.4.65.

2. TREATMENTS:

Main-plot-treatments :

3 varieties : V_1=NP—798, V_2=NP—835 and V_3=Agra local.

Sub-plot treatments :

5 spraying treatments: M_0=Control (no spraying), M_1=Spray with water, M_2=Urea at 3·7 Kg. in 281 lit. of water/ha., M_3= Hexathane at 700 gm. in 281 lit. of water/ha. and $M_4=M_2+M_3$.

3. DESIGN:

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 5 sub-plots/main-plot. (b) N.A. (iii) 4. (v) (a) N.A. (b) 9·14 m.×3 66 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Under study. (iii) Yield of grain. (iv) (a) 1962—64 (Expts. for 1962 and 63—N.A.). (b) No. (c) Nil. (v) Sabour. (vi) and (vii) Nil.

5. RESULTS :

(i) 894 Kg/ha. (ii) (a) 248·8 Kg/ha. (b) 155·4 Kg/ha. (iii) Main effect of V is highly significant. (iv) Av. yield of grain in Kg/ha.

	M_0	M_1	M_2	M_3	M_4	Mean
V_1	712	778	682	644	690	701
V_2	1322	1288	1334	1169	1072	1237
V_3	627	712	797	724	864	745
Mean	887	926	938	846	875	894

C.D. for V marginal means=192·5 Kg/ha

Crop :- Wheat (*Rabi*). **Ref :- Bh. 62(289).**

Site :- Agri. Res. Instt., Dholi. **Type :- D'.**

Object :—To assess the effectiveness of fungicides against Wheat rusts.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) 14.11.62. (iv) (a) 3 ploughings. (b) Line sowing (c) 99 Kg/ha. (d) 23 cm. between rows. (e) —. (v) 67 Kg/ha. of N as A/S applied two times. (vi) Agra local. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 3/4.4.63.

2. TREATMENTS :

8 fungicidal treatments : T_1=Control (no spraying), T_1=Spraying with water, T_2=3 sprayings of Colloidal Sulphur at 5·6 Kg. in 1123 lit. of water/ha., T_3=4 sprayings of Colloidal Sulphur at 5·6 Kg. in 1123 lit. of water/ha., T_4=3 sprayings of Dithane Z 78 at 1·7 Kg. in 1123 lit. of water/ha., T_5=4 sprayings of Dithane Z—78 at 1·7 Kg. 1123 lit. of water/ha., T_6=3 dustings of Sulphur dust at 22·4 Kg/ha. and T_7=4 dustings of Sulphur dust at 22·4 Kg/ha.

The fungicides were sprayed at an interval of 10 days.

3. DESIGN:

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 5. (iv) (a) and (b) 10·36 m.×4·88 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Under study. (iii) Yield of grain. (iv) (a) 1962—only. (b) and (c) —. (v) Sabour. (vi) and (vii) Nil.

5 RESULTS :

(i) 2082 Kg/ha. (ii) 2245 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Av. yield	2180	2494	785	879	1045	2916	3118	3239

Crop :- Wheat (*Rabi*). **Ref :- Bh. 63(319).**

Site :- Agri. Res. Instt., Dholi. **Type :- 'D'.**

Object :—To assess the effectiveness of fungicides against Wheat rusts.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) 20.11.63. (iv) (a) 3 ploughings. (b) Line sowing. (c) 92 Kg/ha. (d) 23 cm. between rows. (e) —. (v) 67 Kg/ha. of N as A/S applied two times. (vi) As per treatments. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 8/9.4.64.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 varieties : V_1=Agra local and V_2=NP—835.

(2) 8 fungicidal treatments: T_0=Control (no spraying), T_1=spraying with water, T_2=3 sprayings of Colloidal Sulphur at 5·6 Kg/ha. in 1123 lit. of water/ha, T_3=4 sprayings of Colloidal Sulphur at 5·6 Kg/ha. in 1123 lit. of water/ha., T_4=3 sprayings of Dithane Z—78 at 1·7 Kg/ha. in 1123 lit. of water/ha., T_5=4 sprayings of Dithane Z—78 at 1·7 Kg/ha. in 1123 lit. of water/ha., T_6=3 dustings of Sulphur dust at 22·4 Kg/ha. and T_7=4 dustings of Sulphur dust at 22·4 Kg/ha.

The fungicides were sprayed at an interval of 10 days.

3. DESIGN:

(i) Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 10·36 m.×4·88 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Under study. (iii) Yield of grain. (iv) (a) 1963—64 (Design changed in 1964). (b) No. (c) Nil. (v) Sabour. (vi) and (vii) Nil.

5. RESULTS :

(i) 851 Kg/ha. (ii) 263·0 Kg/ha. (iii) Main effect of V is significant. (iv) Av. yield of grain in Kg/ha.

	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	Mean
V_1	942	1047	1032	867	927	912	867	909	938
V_2	822	718	778	772	781	778	688	778	764
Mean	882	882	905	819	854	845	778	843	851

C D. for V marginal means=154·9 Kg/ha.

Crop :- Wheat (*Rabi*). **Ref :- Bh. 64(359).**

Site :- Agri. Res. Instt., Dholi. **Type :- 'D'.**

Object :—To assess the effectiveness of fungicides against Wheat rusts.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) 25.11.64. (iv) (a) 3 ploughings. (b) Line sowing (c) 92 Kg/ha. (d) 23 cm. between rows. (e) —. (v) 67 Kg/ha. of N as A/S applied two times, (vi) As per treatments. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 18/19.4.65.

2. TREATMENTS :

Main-plot treatments

2 varieties : V_1=Agra local and V_2=NP—835.

Sub-plot treatments

8 fungicidal treatments : T_0=Control (No spraying), T_1=Spraying with water, T_2=3 sprayings of Colloidal Sulphur at 5·6 Kg. in 1123 lit. of water/ha., T_3=4 sprayings of Colloidal Sulphur at 5·6 Kg. in 1123 lit. of water/ha., T_4=3 sprayings of Dithane Z—78 at 1·7 Kg. in 1123 lit. of water/ha., T_5=4 sprayings of Dithane Z—78 at 1·7 Kg. in 1123 lit. of water/ha., T_6=3 dustings of Sulphur dust at 22·4 Kg/ha. and T_7=4 dusting of Sulphur dust at 22·4 Kg/ha.

Note : The fungicides were sprayed at an interval of 10 days.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 8 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 7·62 m.×4·57 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Under study. (iii) Yield of grain. (iv) (a) 1963-64 (with modified design in 1963). (b) No. (c) Nil. ((v) Sabour. (vi) and (vii) Nil.

5. RESULTS :

(i) 1027 Kg/ha. (ii) (a) 90·5 Kg/ha. (b) 147·2 Kg/ha. (iii) Main effect of V is highly significant. (iv) Av. yield of grain in Kg/ha.

	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	Mean
V_1	934	738	852	885	999	934	782	868	874
V_2	1237	1064	1188	1303	1205	1216	1227	999	1180
Mean	1085	901	1020	1094	1102	1075	1004	934	1027

C.D. for V marginal means=112·4 Kg/ha.

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Crop :- Wheat (*Rabi*). **Ref :- Bh. 61(141), 62(99), 63(133).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'D'.**

Object :—To find out the effective measures to control weeds in Wheat crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) 45 Kg/ha. as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Clayee. (iii) 24/25 11.61 ; 14.11.62 ; 26/27.11.63. (iv) (a) 4—6 *deshi* ploughings. (b) Behind the plough. (c) 90 Kg/ha. (d) 25 cm between rows. (e) —. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) NP—798. (vii) Irrigated. (viii) As per treatments. (ix) N.A. (x) 19.4.62 ; 5.4.63 ; 6 to 10.4.64.

2. TREATMENTS :

10 weedicidal treatments: T_0=Control (no weeding), T_1=80% Fernoxone (sodium salt) at 1·12 Kg. acid equivalent/ha., T_2=Spontox (Ester of 2, 4—D and 2, 4, 5 - T) at 1·12 Kg. acid equivalent/ha., T_3=Trixone (2, 4, 5—T) at 1·12 Kg. acid equivalent/ha., T_4=T_1+hand hoeing, T_5=T_2+hand hoeing, T_6=T_3+hand hoeing, T_7=Hand hoeing alone, T_8=Hand weeding+hand hoeing and T_9=Hand weeding alone.

3. DESIGN :

(i) R.B.D. (iv) (a) 10. (b) N.A. (iii) 4. (iv) (a) and (b) 13·41 m. × 3·66 m. ; 12·80 m. × 3·96 m ; 8·23 m. × 6·10 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Weed population before and after treatment application, effective no. of tillers, height of plants, length of earhead and yield of grain and straw. (iv) (a) 1961—63. (b) No. (c) The results of combined analysis have been presented under 5. results. (v) Sabour, Patna and Dholi. (vi) Nil. (vii) Error variances are heterogeneous and Treatments × Years interaction is present.

5. RESULTS :

Pooled results

(i) 1946 Kg/ha. (ii) 299·9 Kg/ha. (based on 18 d.f. made up of Treatments × Years interaction). (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9
Av. yield	1695	1845	1971	2032	2023	1985	2070	1940	2058	1843

Individual results

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9	Sig.	G.M.	S.E./plot
Year 1961	2372	2490	2497	2854	2711	2782	2770	2521	2758	2473	N.S.	2623	258·2
1962	1144	1292	1399	1525	1455	1547	1225	1448	1594	1396	**	1452	21·3
1963	1568	1752	2018	1718	1903	1626	2214	1851	1822	1660	N.S.	1814	300·1
Pooled	1695	1845	1971	2032	2023	1985	2070	1940	2058	1843	N.S.	1946	299·9

— — —

Corp :- Wheat (*Rabi*). **Ref :- Bh. 64(186), 65(36).**

Site :- Agri Res. Instt, Kanke. **Type :- 'D'.**

Object :—To find out the effective measures to control weeds in Wheat crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize ; Paddy. (c) 45 Kg/ha. of N as A/S+45+Kg/ha of P_2O_5 as Super. (ii) Red loam. (iii) 17.11.64 ; 27.10.65. (iv) (a) 3—4 ploughings. (b) Behind the plough. (c) 92 Kg/ha. (d) 25 cm. between rows. (e)—. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) NP—798. (vii) Irrigated. (viii) As per treatments. (ix) N.A. (x) 6,7.4.65 ; 19.3.66.

2. TREATMENTS :

6 weedicidal treatments: T_0=control (no weeding), T_1=Hand weeding, T_2=Bladex C, T_3=Bladex G, T_4=Tafacide 80 and T_5=Spontox;

No other details are available.

3. DESIGN ;

(i) R.B.D. (ii) (a) 6. (b) Nil. (iii) 4. (iv) (a) and (b) 50.58.sq.m. (v) Nil. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Germination, tillering, height of plant and yield of grain. (iv) (a) 1964–65. (b) Yes. (c) Results of combined analysis have been peresnted under 5. Results. (v) Dholi, Patna and Sabour. (vi) Nil. (vii) Error variances are homogeneous and Treatments × Years interaction is absent.

5. RESULTS:

Pooled results

(i) 1703 Kg/ha. (ii) 226·8 Kg/ha. (based on 35 d.f made up of pooled error and Treatments × Years interaction). (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. yield	1562	1660	1834	1708	1715	1740

Individual results

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	Sig.	G.M.	S.E./plot
Year									
1964	1073	1324	1389	1438	1438	1383	N.S.	1341	199 2
1965	2051	1997	2278	1977	1992	2098	N.S.	2066	243·6
Pooled	1562	1660	1834	1708	1715	1740	N.S.	1703	226·8

Crop :- Wheat (*Rabi*) **Ref :- Bh. 64(217).**

Site :- Agri, Res. Instt., Kanke. **Type :- 'D'.**

Object :—To evaluate the effectiveness of weedicides with and without Urea as an spary in Wheat crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar*. (c) Nil. (ii) Sandy loam. (iii) 30.10.64. (iv) (a) 3 ploughings. (b) Line sowing. (c) 92 Kg/ha. (d) 23 cm. between rows (e)—. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+ 45 Kg/ha. of K_2O as Mur. Pot. (vi) NP—798. (vii) Irrigated. (viii) weeding and hoeing. (ix) N.A. (x) 31.3.65.

2. TREATMENTS :

8 weedicidal treatments : To=control, T_1=Bladex G (2, 4—D amine) at 0·5 lit. in 674 lit. of water/ha., T_2=Bladex C (2, 4—D Ethyl Ester) at 0·5 lit. in 674 lit. of water/ha., T_3=Plantox 1/2 pint in 337 lit. of water/ha., T_4=T_1+2% solution of N as Urea at 674 lit. of water/ha., T_5=T_2+2% solution of N as Urea at 674 lit. of water/ha., T_6=T_3+ 4% solution of N as Urea at 337 lit. of water/ha. and T_7=2% solution of N as Urea in 674 lit. of water/ha.

3. DESIGN:

(i) R.B.D. (ii) (a) 8. (b) 10·67 m. × 6·71 m. (iii) 3. (iv) (a) and (b) 6·10 m. × 3·05 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) No of tillers, height of plants, length of plants and yield of grain. (iv) (a) 1964—only. (b) and (c) —. (v) to (vii) Nil.

5. RESULTS :

(i) 2261 Kg/ha. (ii) 315 4 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Av. yield	2357	1980	2094	2395	1953	2357	2217	2734

Crop :- Wheat (*Rabi*). **Ref :- Bh. 65(120).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'D'.**

Object:—To evaluate the effectiveness of weedicides with and without Urea as a spray in Wheat crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Red loam. (iii) 22.10.65. (iv) (a) 3 ploughings. (b) Line sowing. (c) 92 Kg/ha. (d) 23 cm. between rows. (e) —. (v) 45 Kg/ha. of N as Urea+45 Kg/ha. of P_2O_5 as Super +45 Kg/ha. of K_2O as Mur. Pot. (vi) NP—798. (vii) Un-irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 12.3.66.

2. TREATMENTS :

9 weedicidal treatments : T_0=Control, T_1=Bladex G at 1·24 lit. in 674 lit. of water/ha., T_2=Bladex C at 1·24 lit. in 674 lit. of water/ha., T_3=Plantox at 1·24 pint in 337 lit. of water/ha., $T_4=T_1+2\%$ solution of N as Urea at 674 lit. of water/ha., $T_5=T_2+2\%$ solution of N as Urea at 674 lit. of water/ha., $T_6=T_3+4\%$ solution of N as Urea at 337 lit. of water/ha., $T_7=2\%$ solution of N as Urea at 674 lit. of water/ha. and T_8=Hand weeding.

3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 3. (iv) (a) 7·01 m.×2·05 m. (b) 6·10 m.×3·05 m. (v) 2 rows on either side. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) yield of grain and straw. (iv) (a) 1965—only. (b) and (c) —. (v) to (vii) N il.

5. RESULTS :

(i) 3308 Kg/ha. (ii) 252·8 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Av. yield	3093	3360	3323	3239	3406	3439	3266	3421	3223

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Crop :- Wheat (*Rabi*). **Ref :- Bh. 60(221).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'D'.**

Object :—Hormonisation of seeds with a view to assess the effect of hormones as seed soaking on the yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) (a) Sandy loam. (iii) 26.10.60. (iv) (a) 3 ploughings. (b) Line sowing. (c) 92 Kg/ha. (d) 30 cm. between rows. (e) —. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) NP—798. (vii) Irrigated. (viii) Weeding and hoeing. (ix) NA. (x) 8.3.61.

2. TREATMENTS :

All combinations of (1), (2) and (3)+2 extra treatments :

(1) 2 duration of soaking : S_1=6 and S_2=12 hours.

(2) 3 hormones : H_1=I.A.A., H_2=2, 4—D and H_3=N.A.A.

(3) 2 concentrations : D_1=5 p.p. m. and D_2=15 p.p. m.

2 extra treatments: S_1C=Soaking in water for 6 hours and S_2C=Soaking in water for 12 hours.

3. DESIGN:

(i) R.B.D. (ii) (a) 14. (b) 55·02 m.×4·88 m. (iii) 4. (iv) (a) 3·50 m.×4·27 m. (b) 3·05 m.×3·05 m. (v) 23 cm.×61 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Height of plants, no. of tillers and leaves, no. of fertile and sterile tillers, no. of grains/ear, wt. of grain/ear, no. of ears/plant, wt. of grain and straw/plant, yield of grain and straw. (iv) (a) 1960–62 (Expts. for 1961 and 1962—N.A.) (b) Yes. (c) Nil. (v) to (vii) Nil.

5. TREATMENTS :

(i) 2411 Kg/ha. (ii) 262·5 Kg/ha. (iii) Main effect of S is highly significant. Extra treatments among themselves are significant. (iv) Av. yield of grain in Kg/ha.

S_1C=2744 Kg/ha. ; S_2C=2335 Kg/ha.

	D_1	D_2	H_1	H_2	H_3	Mean
S_1	2443	2641	2535	2570	2521	2542
S_2	2218	2254	2126	2226	2357	2236
Mean	2331	2447	2331	2398	2439	2389
H_1	2227	2434				
H_2	2314	2482				
H_3	2452	2427				

C.D. for S marginal means=153·3 Kg/ha

C.D. for extra treatment means=375·6 Kg/ha.

Crop :- Wheat (*Rabi*). **Ref :- Bh. 60(142).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'D'.**

Object :—To assess the effectiveness of soaking seeds in nutrient solutions on growth, vigour and yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) 30.10.60. (iv) (a) 3 ploughings. (b) Line sowing. (c) 92 Kg/ha. (d) Rows 25 cm. apart. (e) —. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) NP—798. (vii) Irrigated. (viii) Weeding and hoeing. (ix) 12 cm. (x) 15.3.61

2. TREATMENTS :

All combinations of (1) and (2)+one control

(1) 2 concentrations: D_1=Molat and D_2=Half molat.

(2) 5 nutrients : T_1=Urea, T_2=$(NH_4)_2SO_4$, T_3=$K(NO_3)$, T_4=KH_2PO_4 and T_5=K_2SO_4.

Duration of soaking—24 hours.

3. DESIGN :

(i) R.B.D. (ii) (a) 11. (b) 54·56 m.×4·88 m. (iii) 4. (iv) (a) 4·27 m.×4·27 m. (b) 3·05 m.×3·66 m. (v) 61 cm.×30 m. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1960—only. (b) and (c) —. (v) to (vii) Nil.

5. RESULTS:

(i) 2739 Kg/ha. (ii) 322·8 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

Control=2566 Kg/ha.

	T_1	T_2	T_3	T_4	T_5	Mean
D_1	2475	2799	2754	2799	2619	2689
D_2	3023	2485	2511	2960	3139	2823
Mean	2749	2642	2632	2879	2879	2756

Crop :- Wheat (*Rabi*). **Ref :- Bh. 60(127).**

Site :- Dumaria Chaur, Parbatta (Monghyr c.f.) **Type :- 'D'.**

Object :—To see the effect of insecticides in controlling white-ants.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) Nil. (ii) Loam. (iii) Nil. (iv) Local. (v) (a) 3 to 4 ploughings. (b) Dibbling. (c) 25 Kg/ha. (d) 23 cm.×15 cm. (e) 2. (vi) 13.11.60. (vii) Unirrigated. (viii) Weeding. (ix) 4 cm. (x) 4.4.61.

2. TREATMENTS :

3 insecticidal treatments: T_0=Control, T_1=5 % Aldrin dust at 22·4 Kg/ha. and T_2=5 % BHC dust at 33·6 Kg/ha.

Insecticides applied on 12.10.60.

3. DESIGN :

(i) R.B.D. ; 3 plots/block ; 7 replications. (ii) N.A. (iii) (a) and (b) 50·58 Sq m. (iv) Yes.

4. GENERAL :

(i) Poor. (ii) Under study. (iii) No. of plants in 4 random samples of 61 cm.×61 cm. unit area each, no. of cut plants and yield of grain. (iv) (a) 1958—60. (b) and (c) Nil. (v) and (vi) Nil. (vii) Analysed results supplied by the research station.

5. RESULTS :

Infestation data

(i) 6·47 %. (ii) 0·07 %. (iii) Treatment differences are significant. (iv) Av. percentage of cut-plants.

Treatment	T_0	T_1	T_2
Av. percentage	8·84	3·26	7·32

C.D.=0·08 %

Yield data

(i) 328 Kg/ha. (ii) 129·9 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2
Av. yield	296	405	283

Crop :- Wheat (*Rabi*). **Ref :- Bh. 61(155).**

Site :- Chhitania Chaur, Parbatta (Monghyr c.f.) **Type :- 'D'.**

Object :—To see the effect of insecticides in controlling the white-ants.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) Nil. (ii) Loam. (iii) Nil. (iv) Local. (v) (a) 3—4 *deshi* ploughings. (b) Dibbling. (c) 25 Kg/ha. (d) 23 cm × 15 cm. (e) N.A. (vi) 18.11.61. (vii) Unirrigated. (viii) Weeding. (ix) 4 cm. (x) 4.4.62.

2. TREATMENTS:

7 insecticidal treatments: T_0=Control, T_1=5 % BHC dust at 22·4 Kg/ha., T_2=5 % BHC dust at 44·8 Kg/ha. T_3=5 % Aldrin dust 11·2 Kg/ha., T_4=5 % Aldrin dust at 22·4 Kg/ha., T_5=5 % Heptachlore dust 11·2 Kg/ha. and T_6=5 % Heptachlore dust 22·4 Kg/ha.

Time of application—17.11.61.

3. DESIGN:

(i) R.B.D. ; 7 plots/block; 4 replications. (ii) N.A. (iii) (a) and (b) 50·58 Sq. m. (iv) Yes.

4. GENERAL:

(i) Good. (ii) Under study. (iii) Total no. of plants, no. of damaged plants, germination %, tillers, mortality of plants and yield of grain. (iv) (a) 1961—only. (b) and (c) —. (v) No. (vi) and (vii) Nil.

5. RESULTS:

Infestation data

(i) 5·42 degrees. (ii) 0·51 degrees. (iii) Treatment differences are highly significant. (iv) Av. percentage of damaged plants in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	
Mean infestation in degrees.	8·75	5·43	5·20	5·13	4·61	4·68	4·14	C.D.=0·76 degree.

Yield data

(i) 711 Kg/ha. (ii) 710·2 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	669	792	674	677	671	704	792

Crop :- Wheat (*Rabi*). **Ref :- Bh. 62(132).**

Site :- District Agri. Farm, Monghyr. **Type :- 'D'.**

Objeet :—To find out the effect of insecticides in controlling white-ants.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) 6.11.62. (iv) (a) 2—3 ploughings. (b) Behind the plough. (c) 70 Kg/ha. (d) Rows 24 cm. apart. (e)—. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) NP—798. (vii) Unirrigated. (viii) weeding. (ix) 0·9 cm. (x) 3.3.63.

2. TREATMENTS:

7 insecticidal treatments : T_0=Control, T_1=5% B.H.C. dust at 22·4 Kg/ha., T_2=5% B.H.C. dust at 44·8 Kg/ha., T_3=5% Aldrin dust at 11·2 Kg/ha., T_4=5% Aldrin dust at 22·4 Kg/ha., T_5=6% Heptachlore dust at 11·2 Kg/ha. and T_6=6% Heptachlore dust at 22·4 Kg/ha.

Time of application—6.11.62.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) and (b) 50.58 Sq. m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Under study. (iii) Total no. of plants, no. of plants cut by white-ants and yield of grain. (iv) (a) 1962- only. (b) and (c) —. (v) Pirpanti (Bhagalpur) and Semiri Block (Shahabad). (vi) and (vii) Nil.

5. RESULTS :

Infestation data

(i) 13·66 degrees. (ii) 1·58 degrees. (iii) Treatment differences are highly significant. (iv) Av. percentage of cut-plants in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6
Mean infestation	35·75	14·16	13·08	8·70	7·62	8·78	7·54

C.D.=2·35 degrees.

Yield data

(i) 1057 Kg/ha. (ii) 214·0 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	340	856	1092	1240	1228	1326	1314

C.D.=317·9 Kg/ha.

———

Crop :- Wheat (*Kabi*). **Ref :- 63(152).**

Site :- District Agri. Res. Farm, Monghyr. **Type :- 'D'.**

Object :—To find out the effect of insecticides in controlling White-ants (Termites).

1. BASAL CONDITIONS

(i) (a) Nil. (b) Maize. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) 13.11.63. (iv) (a) 2—3 ploughings. (b) Behind the furrow. (c) 70 Kg/ha. (d) Rows 24 cm. apart. (e) —. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) NP—799. (vii) Unirrigated. (viii) Weeding. (ix) 2 cm. (x) 18.3.64.

2. TREATMENTS :

8 insecticidal treatments : T_0=Control, T_1=5% BHC dust at 22·4 Kg/ha., T_2=5% BHC dust at 44·8 Kg/ha., T_3=5% Aldrin dust at 11·2 Kg/ha., T_4=5% Aldrin dust at 22·4 Kg/ha., T_5=6% Heptachlore dust at 11·2 Kg/ha., T_6=6% Heptachlore dust at 22·4 Kg/ha. and T_7=1% Telodrin dust at 33·6 Kg/ha.

Time of application—13.11.63.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) and (b) 10·06 m.×5·03 m. (v) Nil. (vi) Yes.

5. RESULTS :

(i) Good. (ii) Under study. (iii) No of tillers, no. of plants, no. of plants cut by white-ants and yield of grain. (iv) (a) 1963 –only. (b) and (c) —. (v) to (vii) Nil.

5. RESULTS :

Individual results

(i) 11·55 degrees. (ii) 1·25 degrees. (iii) Treatment differences are highly significant. (iv) Av. percentage of cut-plants in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Mean infestation	24·48	16·71	14·29	8·27	3·12	6·49	4·36	14·65

C.D.=1·84 degrees

Yield data

(i) 674 Kg/ha. (ii) 104·2 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Av. yield	591	625	614	674	729	706	796	658

Corp :- Wheat (*Rabi*). **Ref :- Bh. 64(146), 65(30).**

Site :- Agri. Res. Instt., Patna. **Type :- 'M'.**

Object :—To find out the effective measures to control weeds in Wheat crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) N.A. ; Maize. (c) N.A. ; 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii)) N.A. ; clayey. (iii) 28.11.64 ; 13.11.65. (iv) (a) 3—4 ploughings. (b) Dibbling ; behind the plough. (c) 23 Kg/ha. ; 70 Kg/ha. (d) 25 cm.×25 cm. ; 23 cm. between rows. (e) N.A. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super for 64 ; 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+22·5 Kg/ha. of K_2O as Mur. Pot. for 65. (vi) NP –798. (vii) Irrigated. (viii) As per treatments. (ix) N.A. (x) 7-9.4.65; 28-29.3.66.

2. TREATMENTS :

6 insecticidal treatments : W_0=Control (no weeding), W_1=Hand weeding, W_2=Bladex C, W_3=Bladex G, W_4=Tafacide 80 and W_5=Spontox.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 10·06 m.×5·03 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1964—65. (b) Yes. (c) The results of the combined analysis have been presented under 5. Results. (v) Dholi, Sabour and Kanke. (vi) Nil. (vii) Error variances are homogeneous and Treatments × Years interaction is present.

5. RESULTS:

Pooled results :

(i) 1677 Kg/ha. (ii) 631 2 Kg/ha. (based on 5 d.f. made up of Treatments × Years interaction). (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	W_0	W_1	W_2	W_3	W_4	W_5
Av. yield	1216	2007	1465	1718	2138	1520

Individual results

Treatment	W_0	W_1	W_2	W_3	W_4	W_5	Sig.	G.M.	S.E./plot
Year 1964	1097	1725	1665	1804	2313	1838	**	1740	118·6
1965	1335	2288	1265	1631	1962	1201	**	1614	109·1
Pooled	1216	2007	1465	1718	2138	1520	N.S.	1677	631·2

Crop :- Wheat (*Rabi*). **Ref :- Bh. 61(148), 62(106), 63(140).**

Site :- Agri. Res. Instt., Patna. **Type :- 'D'.**

Object :—To find out the effective measures to control weeds in Wheat crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 44·8 Kg/ha. of N as A/S+44·8 Kg/ha. of P_2O_5 as Super. (ii) Clayee loam. (iii) 29.11.61 ; 24.12.62 ; 15.11.63. (iv) (a) 4—6 *deshi* ploughings. (b) Behind the plough. (c) 92 Kg/ha. (d) 25 cm. between rows. (e) —. (v) 44·8 Kg/ha. of N as A/S+44·8 Kg/ha. of P_2O_5 as Super. (vi) NP—799. (vii) Irrigated. (viii) As per treatments. (ix) N.A. (x) 3 to 5.4.62 ; 16 to 18.4.63 ; 6.4.64.

2. TREATMENTS :

10 weedicidal treatments : T_0=Control (No weeding), T_1=80% Fernoxone (Sodium salt) at 1·1 Kg. acid equivalent/ha., T_2=Spontox (Ester of 2.4—D and 2, 4,5—T) at 1·1 Kg. acid equivalent/ha., T_3=Trixone (2, 4. 5—T) at 1·1 Kg. acid equivalent/ha., T_4=T_1 +hand hoeing, T_5=T_2+hand hoeing, T_6=T_3+hand hoeing, T_7=Hand hoeing only, T_8=Hand weeding+hand hoeing and T_9=Hand weeding only.

3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (ii) 4. (iv) (a) and (b) 8·23 m.×6·10 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination, no. of effective tillers/plant, height of plants, length of earhead, yield of grain and straw. (iv) (a) 1961—63. (b) Yes. (c) The results of the combined analysis have been presented under 5. Results. (v) Sabour, Kanke and Dholi. (vi) Nil. (vii) Error variances are heterogeneous and Treatments×Years interaction is present.

5. RESULTS :

Pooled results

(i) 2197 Kg/ha. (ii) 445·2 Kg/ha. (based on 18 d.f. made up of Treatments×Years interaction). (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9
Av. yield	1999	1983	2052	2332	2166	2207	2397	2070	2406	2363

Individual results

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9	Sig.	G.M.	S.E/plot
Year													
1961	3438	3675	3812	4186	4086	4161	4260	3638	4111	4148	**	3952	247·2
1962	434	782	788	1126	813	832	1186	747	1070	822	*	855	92·2
1963	2126	1545	1555	1684	1599	1629	1744	1824	2038	2118	**	1786	82·1
Pooled	1999	1983	2052	2332	2166	2207	2397	2070	2406	2363	N.S.	2197	445·2

Crop :- Wheat (*Rabi*). **Ref :- Bh. 64(12), 65(20).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'D'.**

Object :—To find out the effective measures to control weeds in Wheat crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) 14.11.64 ; 10-13.11.65. (iv) (a) 2 ploughings. (b) Behind the plough. (c) 92 Kk/ha. (d) 25 cm. between rows. (e) —. (v) 45 Kg/ha. of N as C/A/N+45 Kg/ha. of P_2O_5 as Super ; 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+22·5 Kg/ha. of K_2O as Mur. Pot. (vi) NP—798. (vii) Irrigated. (viii) As per treatments. (ix) N.A. (x) 31.3.65.; 23-25.3.66.

2. TREATMENTS:

6 weedicidal treatments ; T_0=Control (no weeding), T_1=Hand weeding, T_2=Bladex C, T_3=Bladex G, T_4=Tafacide 80 and T_5=Spontox.

No other details are available.

3. DESIGN:

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 8·84 m.×6·71 m. (b) 8·23 m.×6·10 m. (v) 30 cm.× 30 cm. (vi) Yes.

4. GENERAL ;

(i) Good. (ii) Nil. (iii) Height of plant, no of tillers, length of earheads, no. of grains/earhead, weight of 1000 grains and yield of grain. (iv) (a) 1964—65. (b) Yes. (c) Results of combined analysis have been presented under 5. Results. (v) Patna, Dholi and Kanke. (vi) Nil. (vii) Error variances are homogeneous and Treatments × Years interaction is present.

5. RESULTS :

Pooled results

(i) 1380 Kg/ha, (ii) 418·2 Kg/ha. (based on 5 d.f. made up of Treatments × Years interaction). (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. yield	1350	1260	1398	1430	1382	1462

Individual results

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	Sig.	G.M.	S.E./plot
year 1964	1180	1482	1232	1494	1366	1459	N.S.	1369	176·0
1965	1519	1037	1563	1365	1397	1464	*	1390	202·3
Pooled	1350	1260	1398	1430	1382	1462	N.S.	1380	418·2

Crop :- Wheat (*Rabi*). **Ref :- Bh. 61(3), 62(6), 63(129).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'D'.**

Object :—To find the effective measures to control weeds in Wheat crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) 44·8 Kg/ha. of N as A/S+44·8 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) 18.11.61 ; 15.11.62 ; 20.11.63. (iv) (a) 4—6 *deshi* ploughings. (b) Behind the plough. (c) 92 Kg/ha. (d) 25 cm. between rows. (e) —. (v) 44·8 Kg/ha. of N as A/S+44·8 Kg/ha. of P_2O_5 as Super at the time of sowing. (iv) NP—798. (vii) Irrigated. (viii) As per treatments. (ix) N.A. (b) 30/31.3.62 ; 23.3.63 ; 24.3.64.

2. TREATMENTS :

10 weedicides treatments : W_0=Control (no weeding), W_1=Hand weeding, W_2=Hand hoeing, W_3=W_1+W_2, W_4=80% Fernoxone (sodium salt) at 1·1 Kg. acid equivalent/ha., W_5=Spontox (Ester of 2, 4—D and 2, 4, 5—T) at 1·1 Kg. acid equivalent/ha., W_6=Trixone (2, 4, 5—T) at 1·1 Kg. acid equivalent/ha., W_7=W_2+W_4, W_8=W_2+W_5 and W_9=W_2+W_6.

3. DESIGN:

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) and (b) 8·23 m.×6·10 m. (v) Nil. (vi) Yse.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Height of plants, tillers, earhead, no. of grains, weight of weeds and yield of grain. (iv) (a) 1961–63. (b) Yes. (c) Nil. (v) Patna, Kanke and Dholi. (vi) Nil. (vii) As error variances are heteogeneous and Treatments × Years interaction is absent, results of individual years have been presented under 5. Results.

5. RESULTS :

61(3)

(i) 2237 Kg/ha. (ii) 1696·1 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	W_0	W_1	W_2	W_3	W_4	W_5	W_6	W_7	W_8	W_9
Av. yield	2331	2078	2264	2459	2148	2281	2191	2160	2078	2380

62(6)

(i) 2310 Kg/ha. (ii) 243·5 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	W_0	W_1	W_2	W_3	W_4	W_5	W_6	W_7	W_8	W_9
Av. yield	1660	2522	2513	2380	2242	2456	2329	2375	2055	2571

C.D.=353·2 Kg/ha.

63(129)

(i) 1664 Kg/ha. (ii) 239·8 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of grain in Kg/ha.

Treatment	W_0	W_1	W_2	W_3	W_4	W_5	W_6	W_7	W_8	W_9
Av. yield	1424	1836	1505	1755	1639	1662	1767	1750	1651	1651

C.D.=347·9 Kg/ha.

———

Crop :- Wheat (*Rabi*). **Ref :- Bh. 64(101).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'D'.**

Object :—To study the control of Wheat rusts by spraying Urea and Hexathane singly and in combination.

1. BASAL CONDITIONS :

(i) (a) to (c) Nil. (ii) Loam. (iii) 16.11.64. (iv) (a) 2 ploughings with tractor and one with *deshi* plough. (b) Behind the plough. (c) 68 Kg/ha. (d) Rows 25 cm. apart. (e) —. (v) N.A. (vi) As per treatments. (vii) Irrigated. (viii) One weeding. (ix) N.A. (x) 3.4.65.

2. TREATMENTS :

Main-plot treatments

5 spraying treatments : S_0=Control (no spray), S_1=Spray with water, S_2=Urea at 3·7 Kg. in 281 litres of water/ha., S_3=Hexathane at 700 gm. in 281 litres of water/ha. and $S_4=S_2+S_3$.

Sub-plot treatments

3 varieties : V_1=NP–798, V_2=NP–835 and V_3=Agra local.

3. DESIGN :

(i) Split-plot. (ii) (a) 5 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 6.40 m. × 3·96 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Under study. (iii) Yield of grain and straw. (iv) (a) 1964—only. (b) and (c) —. (v) Dholi. (vi) and (vii) Nil.

5. RESULTS :

(i) 1203 Kg/ha. (ii) (a) 354·9 Kg/ha. (b) 354·9 Kg/ha. (iii) Main effect of V alone is significant. (iv) Av. yield of grain in Kg/ha.

	S_0	S_1	S_2	S_3	S_4	Mean
V_1	923	1155	1000	1048	1034	1032
V_2	1309	1242	1289	1244	1301	1277
V_3	1246	1485	1244	1242	1287	1301
Mean	1159	1294	1178	1178	1207	1203

C.D. for V marginal means=229·2 Kg/ha.

Crop :- Wheat (*Rabi*). **Ref :- Bh. 60(9).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'D'.**

Object :—To find out an effective weedicide for the control of weeds in Wheat crop.

1. BASAL CONDITIONS:

(i) and (ii) N.A. (iii) 19.11.60, (iv) (a) N.A. (b) Behind the plough. (c) 92 Kg/ha. (d) 25 cm. between rows. (e) —. (v) 44·8 Kg/ha. of N as A/S+44·8 Kg/ha. of P_2O_5 as Super. (vi) NP—798. (vii) Unirrigated. (vii) As per treatments. (ix) N.A. (x) 28/29.3.61.

2. TREATMENTS :

10 weedicidal treatments : W_0=Control, W_1=One weeding, W_2=0·84 Kg/ha. of Feronoxone, W_3=1·68 Kg/ha. of Feronoxone, W_4=0·84 Kg/ha. of Chloronoxone, W_5=1·68 Kg/ha. of Chlorouoxone, W_6=0·84 Kg/ha. of Spontox, W_7=1·68 Kg/ha. of Spontox, W_8=0·84 Kg/ha. of Tropotex and W_9=1·68 Kg/ha. of Tropotex.

3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) 7·62 m.×7·32 m. (b) 7·01 m.×6·71 m. (v) 30 cm.× 30 cm. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1960—only. (b) and (c) —. (v) to (vii) Nil.

5. RESULTS :

(i) 1722 Kg/ha. (ii) 188·1 Kg/ha. (iii) Treatment differences are significant. (iv) (a) Av. yield of grain in Kg/ha.

Treatment	W_0	W_1	W_2	W_3	W_4	W_5	W_6	W_7	W_8	W_9
Av. yield	1568	2070	1435	1804	1714	1702	1766	1928	1673	1561

C.D.=272·9 Kg/ha.

Crop :- Wheat (*Rabi*). **Ref :- Bh. 60(222).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'D'.**

Object :—To assess the effectiveness of fungicides against Wheat rusts.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Maize. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Loam. (iii) 24.11.60. (iv) (a) 2 ploughings. (b) Behind the plough. (c) 69 Kg/ha. (d) 30 cm. between rows. (e) —. (v) 45 Kg/ha. of N as A/S+22·4 Kg/ha. of P_2O_5 as Super. (vi) Agra local. (vii) Irrigated. (viii) Weeding. (ix) N.A. (x) 16.4.61.

2. TREATMENTS :

7 fungicidal treatments : T_0=Control (no spraying), T_1=3 sprayings of Colloidal Sulphur at 5·6 Kg. in 1123 lit. of water/ha., T_2=4 sprayings of Colloidal Sulphur at 5·6 Kg. in 1123 lit. of water/ha., T_3=3 sprayings of Dithane Z—78 at 1·7 Kg. in 1123 lit. of water/ha., T_4=4 sprayings of Dithane Z—78 at 1·7 Kg. in 1123 lit. of water/ha., T_5=3 dustings of Sulphur dust at 28 Kg/ha. and T_6=4 dustings of Sulphur dust at 28 Kg/ha.

Dates of spraying : 25.1.60, 6.2.60, 16.2.60, 27.2.60.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 5. (iv) (a) and (b) 50·58 sq. m. (v) Nil. (vi) Nil.

4. GENERAL:

(i) Poor. (ii) Incidence of rust. (iii) Percentage incidence of rust and yield of grain. (iv) (a) 1959—61 (Expt. for 1961—N.A..) (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

Yield data

(i) 250 Kg/ha. (ii) 101·3 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	318	189	249	219	238	277	260

Incidence data

(i) 34·77 degrees. (ii) 7·89 degrees. (iii) Treatment differences are significant. (iv) Percentage incidence of rust in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6
Mean angle	47·31	32·90	34·33	33·02	31·11	33·64	31·11

C.D.=10·30 degrees.

Crop :- Wheat (*Rabi*). **Kef :- Bh. 62(2), 63(75), 64(100).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'D'.**

Object :—To assess the effectiveness of different fungicides against Wheat—rust dibease.

1. BASAL CONDITIONS :

(i) (a) to (c) Nil. (ii) Sandy loam. (iii) 10.11.62 ; 29/30.11.63 ; 17.11.64. (iv) (a) 2—3 *deshi* ploughings and one Punjabi ploughing. (b) Behind the plough. (c) 70 Kg/ha. (d) Rows 23 cm. apart. (e) —. (v) 22·4 Kg/ha of N as A/S+22·4 Kg/ha. of P_2O_5 as Super ; 33·6 Kg/ha. of N as A/S+33·6 Kg/ha. of P_2O_5 as Super ; N.A. (vi) As per treatments. (vii) Irrigated. (viii) Weeding by *khurpi* and hand—hoeing by hand hoe. (ix) N.A. (x) 29/30.3.63 ; 8.4.64 ; 4.4.65.

2. TREATMENTS :

Main-plot treatments :

8 fungicidal treatments : F_0=Control (no spray), F_1=Spraying with water, F_2=3 sprayings of Colloidal Sulphur at 5·6 Kg. in 1123 lit. of water/ha., F_3=4 sprayings of Colloidal Sulphur at 5·6 Kg. in 1123 lit. of water/ha., F_4=3 sprayings of Dithane Z-78 at 1·7 Kg. in 1123 litres of water/ha., F_5=4 sprayings of Dithane Z—78 at 1·7 Kg. in 1123 litres of water/ha., F_6=3 dustings of Sulphur at 22·4 Kg/ha. and F_7=4 dustings of Sulphur at 22·4 Kg/ha.

Sub-plot-treatments :

2 varieties : V_1=Agra local and V_2=NP—835.

3. DESIGN :

(i) Split-plot. (ii) (a) 8 main-plots/replication ; 2 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) and (b) 1/198 ha. ; 1/148 ha. ; 7·62 m.×3·05 m.. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Attack of rusts ; control measures as per treatments. (iii) Yield of grain. (iv) (a) 1962—64. (b) No. (c) Results of combined analysis have been presented under 5. Results. (v) Dholi. (vi) Nil. (vii) Main-plot and sub plot error variances are homogeneous and main-plot Treatments×Years and sub-plot Treatments×Years interactions are absent.

5. RESULTS:

Pooled results:

(i) 1164 Kg/ha. (ii) (a) 233·9 Kg/ha. (based on 56 d.f. made up of pooled error and F×Years interaction.) (b) 226·1 Kg/ha. (based on 64 d.f. made up of pooled error, V×Years and (V×F)×Years interaction. (iii) Main-effect of V is highly significant. (iv) Av. yield of grain in Kg/ha.

	F_0	F_1	F_2	F_3	F_4	F_5	F_6	F_7	Mean
V_1	1352	1174	1434	1360	1413	1207	1262	1420	1328
V_2	964	955	1091	1018	920	1074	967	1019	1001
Mean	1158	1064	1262	1189	1166	1140	1114	1219	1164

C.D. for V marginal means=75·3 Kg/ha.

Individual results :

Treatment	F_0	F_1	F_2	F_3	F_4	F_5	F_6	F_7	Sig.
Years									
1962	1483	1330	1492	1356	1406	1526	1318	1376	N.S.
1963	850	738	930	1034	830	853	872	900	N.S.
1964	1142	1126	1366	1176	1263	1043	1152	1382	N.S.
Mean	1158	1064	1262	1189	1166	1140	1114	1219	N.S.

V_1	V_2	Sig.	G.M.	S.E./plot (a)	S.E./plot (b)
1620	1202	**	1411	262·9	245·3
957	795	*	876	246·2	235·2
1406	1006	**	1206	197·2	172·2
1328	1001	**	1164	233·9	226·1

Crop :- Wheat (*Rabi*). **Ref :- Bh. 63(74).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'D'.**

Object:—To see the effect of Cuman, Flit 406, and Copper-Oxy-Chloride on the intensity of rusts and yield of Wheat.

1. BASAL CONDITIONS:

(i)(a) Nil. (b) *Jowar.* (c) Nil. (ii) Loam. (iii) 30.11.63. (iv) (a) 2 ploughings with tractor, and one with *deshi* plough. (b) Behind the plough. (c) 68 Kg/ha. (d) Rows 25 cm. apart. (e) —. (v) N.A. (vi) As per treatments. (vii) Irrigated. (viii) one weeding. (ix) N.A. (x) 6/7.4.64.

2. TREATMENTS:

Main-plot treatments:

4 sprayings of fungicides: F_0=Control, F_1=1 % Cuman, F_2=10 % Flit 406 and F_3=Copper-O-xy Chloride at 90 lit./ha.

Sub-plot treatments :

3 varieties : V_1=Agra local, V_2=NP—798 and V_3=NP—835.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 6·40 m.×3·96 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Rus t appeared and spraying done. (iii) Yield of grain and straw. (iv) (a) 1963—only. (b) and (c) —. (v) to (vii) Nil.

5. RESULTS :

(i) 626 Kg/ha. (ii) (a) 150·4 Kg/ha. (b) 100·9 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	F_0	F_1	F_2	F_3	Mean
V_1	634	685	615	676	652
V_2	565	666	579	736	636
V_3	584	642	584	552	590
Mean	594	664	593	655	626

Crop :- Wheat (*Rabi*). **Ref :- Bh, 62(44).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'D'.**

Object :—To find out the effect of insecticides on soil fertility.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) N.A. (ii) N.A. (iii) 27.11.62. (iv) (a) and (b) N.A. (c) 70 Kg/ha. (d) Rows 22 cm. apart. (e) —. (v) N.A. (vi) NP—799. (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 6.4.63.

2. TREATMENTS :

9 insecticidal treatments : T_0=Control, T_1=33·6 Kg/ha. of B.H.C., T_2=67·2 Kg/ha. of B.H.C., T_3=33·6 Kg/ha. of Aldrine, T_4=67·2 Kg/ha. of Aldrine, T_5=33·6 Kg/ha. of D.D.T., T_6=67·2 Kg/ha. of D.D.T., T_7=33·6 Kg/ha. of Gamma B.H.C. and T_8=67·2 Kg/ha. of Gamma B.H.C.

44·8 Kg/ha. of N as A/S+44·8 Kg/ha. of P_2O_5 as Super+44·8 Kg/ha. of K_2O as Mur. Pot. was applied to all the treatments execpt control.

3. DESIGN :

(l) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 4·27 m.×3·35 m. (b) 3·66 m.×2·74 m. (v) 30 cm.× 30 m. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Yield of grain. (iv) (a) 1962—65 (Treatments modified in 1963). (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS:

(i) 1902 Kg/ha. (ii) 382·8 Kg/ha. (iv) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Av. yield	1764	1764	1894	2043	1714	1963	2043	1944	1993

Crop :- Wheat (*Rabi*). **Ref :- Bh. 63(63), 64(16), 65(89).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'D'.**

Object :—To test the effect of using insecticides on soil fertility.

1. BASAL CONDITIONS:

(i) (a) Maize—Wheat. (b) Maize. (c) N.A. (ii) Sandy loam. (iii) 13.11.63; 11.11.64; 5.11.65. (iv) (a) 3 ploughings (b) Line sowing by spade. (c) 92 Kg/ha. (d) 30 cm. between rows (e) —. 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (vi) NP—799. (vii) Irrigated. (viii) Weeding by *Khurpa*. (ix) N.A. (x) 23.3.64; 22.3.65; 20.3.66.

2. TREATMENTS:

9 insecticidal treatments: T_0=Control, T_1=33·6 Kg/ha. of BHC, T_2=67·2 Kg/ha. of BHC, T_3=33·6 Kg/ha. of Aldrine, T_4=67·2 Kg/ha. ofAldrine, T_5=33·6 Kg/ha. of Heptacholor, T_6=67·2 Kg/ha. of Heptacholor, T_7=1·1 Kg/ha of Gamma BHC and T_8=2·2 Kg/ha. of Gamme BHC.

3. DESIGN:

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 4·27 m.×3·35 m. (b) 3·66 m.×2·74 m. (v) 30 cm.× 30 cm. (vi) Yes.

4. GENERAL:

(i) Satisfactory. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1962—65 (modfied in 1963). (b) No. (c) Nil. (v) and (vi) Nil. (vii) Error variances are heterogenecus and Treatments×Years interaction is absent. Hence the results of individual years have been presented and 5. Results.

3. RESULTS:

63(63)

(i) 2024 Kg/ha. (ii) 296·0 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Av. yield	1744	2193	2068	2068	1869	2068	2068	2168	1968

64(16)

(i) 1193 Kg/ha. (ii) 252·0 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Av. yield	1046	971	1122	1221	1246	1246	1321	1321	1246

65(89)

(i) 1321 Kg/ha. (ii) 135·6 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Av. yield	1122	1122	1396	1321	1346	1371	1421	1446	1346

C.D.=197·9 Kg/ha.

Crop :- Wheat (*Rabi*). **Ref :- Bh. 62(180).**

Site :- Semiri Block, Buxar (Shahabad c.f.). **Type :- 'D'.**

Object :—To determine the efficacy of insecticides in controlling white-ants.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) 45 Kg/ha. of N A/S+45 45 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (iv) NP—798. (v) 3—4 *deshi* ploughings. (b) Line sowing. (c) 60 Kg/ha. (d) 25 cm. between rows. (e) —. (vi) 3.11.62. (vii) Unirrigated. (viii) Weeding. (ix) —. (x) 25.3.63.

2. TREATMENTS :

7 insecticidal treatments : T_0=Control, T_1=5% BHC crude dust at 22·5 Kg/ha., T_2=5% BHC crude dust at 45·0 Kg/ha., T_3=5% Aldrin dust at 11·2 Kg/ha., T_4=5% Aldrin dust at 22·5 Kg/ha., T_5=3% Heptachlore dust at 9·6 Kg/ha. and T_6=3% Heptachlore dust at 19·2 Kg/ha.

Insecticides applied by dusting on 28.11.62.

3. DESIGN :

(i) R.B.D. ; 7 plots/block ; 4 replications. (ii) N.A. (iii) (a) 10·55 m.×5·48 m. (b) 10·05 m.×5·02 m. (iv) Yes.

4. GENERAL :

(i) Good. (ii) Under study. (iii) Germinatian, mortality count, height of plant, no. of standing plant, no. of plants cut by pest. (iv) (a) 1962—only. (b) and (c) —. (v) Monghyr and Pirpanti (Bhagalpur). (vi) and (vii) Nil.

5. RESULTS :

(i) 19·83 degrees. (ii) 3·38 degrees. (iii) Treatment differences are highly significant. (iv) Av. % of cut plants in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6
Mean infestation	35·8	25·7	19·0	16·3	14·1	14·2	13·7

C.D.=10·0 degrees.

Crop :- Barley (*Rabi*). **Ref :- Bh. 60(218).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object :—To find out the responses of liming on Barley crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Red loam. (iii) 23.10.60 (iv) (a) 3 ploughings. (b) Line sowing. (c) 70 Kg/ha. (d) 25 cm. between rows. (e) Nil. (v) Nil. (vi) BR—22. (vii) Irrigated. (viii) 2 weedings. (ix) N.A. (x) 16.3.61.

2. TREATMENTS :

4 liming treatments : T_0=Control, T_1=4035 Kg/ha. of lime, T_2=11·2 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot., T_3=T_1+T_2.

3. DESIGN:

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 5. (iv) (a) and (b) 20·23 sq. m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination and flowering count, yield of grain. (iv) (a) No. (b) and (c) Nil. (v) to (vli) Nil.

5. RESULTS :

(i) 1302 Kg/ha. (ii) 161·6 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3
Av, yield	421	528	1972	2289

C.D.=222·7 Kg/ha.

Crop :- Barely (*Kharif*). **Ref :- Bh. 62(93).**

Site :- Jute Res. Sub-Stn., Katihar. **Type :- 'M'.**

Object :—To compare the effect of fibre crops on soil fertility as shown by the yield of succceeding crop Barley.

1. BASAL CONDITIONS :

(i) (a) to (c) Nil. (ii) Sandy loam. (iii) 11.6.62. (iv) (a) Ploughing and laddering. (b) Line sowing. (c) 15 Kg/ha. (d) 31 cm.×8 cm. (e) Nil. (v) Nil. (vi) BR—22. (vii) Unirrigated. (viii) Weeding, thining and hoeing. (ix) 121 cm. (x) 31.10.62.

2. TREATMENTS :

Main-plot treatments:

All combinations of (1) and (2)

(1) 4 varieties of Fibre crops as previous crop : V_1=Mesta (150 EL), V_2=Rosella (R.T.NB.), V_3=Corchorus olitorious and V_4=Corchorus capsularies.

(2) 3 levels of manure for Fibre crop : M_0=Control (no manure), M_1=74 Kg/ha. of N as A/S+74 Kg/ha. of P_2O_5 as Super+49 Kg/ha. of K_2O as Mur. Pot. and M_2=148 Kg/ha. of N as A/S+148 Kg/ha. of P_2O_5 as Super+99 Kg/ha. of K_2O as Mur. Pot.

Sub-plot treatments :

3 levels of manure for Barely crop : M'_0=Control (no manure), M'_1=62 Kg/ha. of N as A/S+49 Kg/ha. of P_2O_5 as Super+49 Kg/ha. of K_2O as Mur. Pot. and M'_2=12 Kg/ha. of N as A/S+99 Kg/ha. of P_2O_5 as Super+99 Kg/ha. of K_2O as Mur. Pot.

3. DESIGN :

(i) Split-plot. (ii) (a) 12 main-plots/replication ; 3 sub-plots/main-plot. (b) 39·60 m.×44·50 m. (iii) 3. (iv) (a) N.A. (b) 9·45 m.×4·27 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Stand count, height of plant, yield of grain. (iv) (a) 1962—64 (Expt. for 63—N.A., also doses of manures changed in 1964). (b) Yes. (c) Nil. (v) No. (vi) and (vii) Nil.

5. RESULTS :

(i) 1175 Kg/ha. (ii) (a) 486·1 Kg/ha. (b) 344·8 Kg/ha. (iii) Only main effect of M' is highly significant. (iv) Av. yield of grain in Kg/ha.

	M_0	M_1	M_2	M_0'	M_1'	M_2'	Mean
V_1	1181	939	988	755	1007	1346	1036
V_2	1087	1235	1266	806	1126	1656	1196
V_3	1167	1205	1200	980	1126	1466	1191
V_4	1140	1324	1372	903	1287	1647	1279
Mean	1144	1176	1206	861	1136	1529	1175
M_0'	808	864	910				
M_1'	1104	1147	1159				
M_2'	1519	1516	1550				

C.D. for M' marginal means=164·7 Kg/ha.

Crop :- Barley (*Rabi*). **Ref :- Bh 64(184).**

Site :- Jute Res. Instt., Katihar. **Type :- 'M'.**

Object :—To test the effect of growing Jute and Mesta on soil fertility as reflected by yield on succeeding crop Barley.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Jute. (c) As per treatments. (ii) Clay loam. (iii) 4, 5.12.64. (iv) (a) 3–4 ploughings. (b) Line sowing. (c) 90 Kg/ha. (d) 25 cm. between rows. (e) —. (v) N A. (vi) As per treatments. (vii) Unirrigated. (viii) Weeding. (ix) N.A. (x) 1.4.65.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2)

(1) 4 varieties of Jute and Mesta as previous crops : V_1=Mesta, V_2=Rosella, V_3=Corchorus olitorius and V_4=Corchorus capsularies.

(2) 3 levels of fertilizers applied to Jute and Mesta: F_0=Control (no manure), F_1=33·6 Kg/ha. of N as A/S+33·6 Kg/ha. of P_2O_5 as Super+33·6 Kg/ha. of K_2O as Mur. Pot. and F_2=Twice the dose in F_1.

Sub-plot treatments :

3 levels of fertilizers applied to Barley crop : M_0=Control, M_1=28 Kg/ha. of N as A/S+28 Kg/ha. of P_2O_5 as Super+28 Kg/ha. of K_2O as Mur. Pot. and M_2=56·0 Kg/ha. of N as A/S+44·8 Kg/ha. of P_2O_5 as Super+44·8 Kg/ha. of K_2O as Mur. Pot.

3. DESIGN :

(i) Split-plot. (ii) (a) 12 main-plots/replication and 3 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) and (b) 9·45 m.×4 27 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) White-ant attack, Aldrine 5 % dust used. (iii) Wt. of Barley/plot. (iv) (a) 1962–64 (Expt. for 1963—N.A., also doses of manures changed in 1964). (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 753 Kg/ha. (ii) (a) 250·0 Kg/ha. (b) 218·0 Kg/ha. (iii) Main effects of V, F and M are highly significant. (iv) Av. yield of grain in Kg/ha.

	V_1	V_2	V_3	V_4	M_0	M_1	M_2	Mean
F_0	533	486	656	628	396	629	693	573
F_1	930	621	632	841	588	657	999	748
F_2	1086	659	1045	917	742	981	1089	938
Mean	849	588	778	795	576	756	924	753
M_0	695	440	645	511				
M_1	846	584	702	861				
M_2	1009	742	986	1014				

C.D. for V marginal means=141·1 Kg/ha.
C.D. for F marginal means=122·2 Kg/ha.
C.D. for M marginal means=103·4 Kg/ha.

Crop :- Barley (*Rabi*). **Ref :- Bh. 64(27).**

Site :- Govt. Agri. Farm, Sepaya. **Type :- 'M'.**

Object :—To test the effect of organic manure etc. on the yield of Barley crop on usar land.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy. (c) Nil. (ii) Clay loam with 'usar' patch (iii) 3.12.64. (iv) (a) Ploughing by *deshi* plough. (b) Line sowing. (c) N.A. (d) 25 cm. × 25 cm. (e) —. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) and (ix) N.A. (x) 8.4.65.

2. TREATMENTS :

5 manurial treatments : T_0=Control, T_1=*Dhaincha*, T_2=Agrosan maxican, T_3=Mixed leaves and T_4=*Jypsum*.

3. DESIGN:

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 4·00 m. × 2·50 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Nil. (ii) Covered smat. (iii) Height of plants, no. of tillers and yield of grain and straw. (iv) (a) 1964—only. (b) and (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1336 Kg/ha. (ii) 543·0 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_3	T_2	T_4	
Av. yield	648	997	1645	2294	1098	C.D.=836·7 Kg/ha.

Crop :- Barley (*Rabi*). **Ref :- Bh. 60(109).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'CV'.**

Object :—To find out the effect of different dates of sowing on the yield of different varieties of Barley.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Red laterite. (iii) As per treatments. (iv) (a) 3—4 *deshi* ploughings and one 5—tyned cultivator each followed by *henga*. (b) Behind the plough. (c) 90 Kg/ha. (d) 25 cm. (e) Nil. (v) 11·2 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) As per treatments. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 14 to 20.4.61.

2. TREATMENTS :

Main-plot treatments :

3 dates of sowing : T_1=15th Nov., 60, T_2=1st Dec., 60 and T_3=15th Dec., 60.

Sub-plot treatments :

5 varieties : V_1=BR—22, V_2=BR—24, V_3=BR—27, V_4=BR—30 and V_5=NP—21.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication and 5 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) and (b) 9·14 m. × 3·96 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Effective number of tillers, height of plants, length of earhead, no. of grains/earhead, yield of straw and grain. (iv) (a) 1960 —only. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 803 Kg/ha. (ii) (a) 391·5 Kg/ha. (b) 250·1 Kg/ha. (iii) Main effect of T alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	V_1	V_2	V_3	V_4	V_5	Mean
T_1	1106	988	987	1074	1139	1059
T_2	988	902	858	1031	956	947
T_3	440	450	440	279	408	403
Mean	845	780	762	795	834	803

C.D. for T marginal means=399·8 Kg/ha.

Crop :- Barley (*Rabi*). **Ref :- Bh. 64(84).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'CM'.**

Object :—To test the effect of soil inoculation with N fixing Algae on crop yield and soil fertility.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy. (c) N.A. (ii) N.A. (iii) 12.12.64. (iv) (a) 3 spadings before sowing, one at the time of sowing. (b) Line sowing. (c) N.A. (d) 25 cm. (e) N.A. (v) N.A. (vi) BR - 22. (vii) Irrigated. (viii) Weeding by *Khurpi*. (ix) N.A. (x) 26.3.65.

2. TREATMENTS:

7 cultural-cum-manurial treatments : T_0=Control (no manuring), T_1=Control (rouging weekly), T_2=Algae inoculation in 20 days, T_3=44·8 Kg/ha. of P_2O_5 as Super, T_4=44·8 Kg/ha. of P_2O_5 as Super (rouging weekly), T_5=Algae inoculation+ 44·8 Kg/ha. of P_2O_5 as Super and T_6=44·8 Kg/ha. of N as A/S+ 44·8 Kg/ha. of P_2O_5 as Super.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 4·27 m.×3·35 m. (b) 3·66 m.×2·74 m. (v) 30 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1962—only. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1047 Kg/ha. (ii) 264·1 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	1047	1022	1146	1022	847	1121	1121

Crop :- Barley (*Rabi*). **Ref :- Bh. 61(334).**

Site :- Irrigation Res. Station, Bikramganj. **Type :- 'I'.**

Object :—To determine the method and number of irrigation suitable for the best yield.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (ii) Sandy loam. (iii) 6 and 7.12.61. (iv) (a) 3 ploughings. (b) Line sowing. (c) 92·2 Kg/ha. (d) 30 cms. between rows. (e) —. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) BR—22. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 31.3.62 and 1.4.62.

2. TREATMENTS :

Main-plot treatments

2 methods of irrigation : M_1=Border method and M_2=Furrow method.

Sub-plot treatments

4 frequencies of irrigation : T_1=Control (no irrigation), T_2=One irrigation after 30—40 days of sowing, T_3=Pre-flowering irrigation + T_2 and T_4=Only pre-flowering irrigation.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plot/rep., 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 28·04 m.× 4·88 m. (b) 27·43 m.×4·27 m. (v) One row either side. (iv) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Average no. of plants, no. of tillers, height of plants, length of ear-head, no. of grains/earhead, weight of 1000 grains, yield of grain and straw. (iv) (a) 1961—only. (b) No. (c) Nil. (v) Madhepura. (vi) and (vii) No.

5. RESULTS :

(i) 973 Kg/ha. (ii) (a) 174·8 Kg/ha. (b) 120·2 Kg/ha. (iii) Main effect of T is highly significant. (iv) Av. yreld of grain in Kg/ha.

	T_1	T_2	T_3	T_4	Mean
M_1	675	916	1205	1135	983
M_2	827	946	1095	986	963
Mean	751	931	1150	1061	973

C.D. for T marginal means=126·3 Kg/ha.

Crop :- Barley (*Rabi*). **Ref :- Bh. 62(302).**

Site :- Botanical Sub-station, Dhangain (Bikramganj). **Type :- 'I'.**

Object :—To determine the method and number of irrigation suitable for the best yield.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 45 Kg/ha. N of A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (ii) Sandy loam. (iii) 8 and 9.12.62. (iv) (a) 3 ploughings. (b) Line sowing. (c) 92·24 Kg/ha. (d) 23 cms. between rows. (e) —. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) BR—22. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 6 and 7.4.63.

2. TREATMENTS :

Main-plot treatments

2 methods of irrigation : M_1=Border method and M_2=Furrow method.

Sub-plot treatments

4 frequencies of irrigation : T_1=Control (no irrigation), T_2=One irrigation after 30—40 days of sowing, T_3=Pre-flowering irrigation+T_2 and T_4=Only pre-flowering irrigation.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 Main-plots/rep., 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 28 04 m. × 4·88 m. (b) 26 82 m. × 3·66 m. (v) Two rows either side. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1962—only. (b) and (c) Nil. (v) No. (vi) and (vii) Nil.

5. RESULTS :

(i) 877 Kg/ha. (ii) (a) 429·7 Kg/ha. (b) 150·8 Kg/ha. (iii) Main effect of T is highly significant. (iv) Av. yield of grain in Kg/ha.

	T_1	T_2	T_3	T_4	Mean
M_1	673	939	1017	897	881
M_2	753	965	1048	722	872
Mean	713	952	1033	809	877

C.D. for T marginal means=158·5 Kg/ha.

Crop :- Barley (*Rabi*). **Ref :- Bh. 63(335).**

Site :- Distt. Agri. Farm., Dhangain (Bikramganj). **Type :- 'I'.**

Object :—To determine the method and number of irrigation suitable for the best yield.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (ii) Sandy loam. (iii) 5 and 6.12.63. (iv) (a) 3 ploughings. (b) Line sowing. (c) 92 Kg/ha. (d) 23 cms. between rows. (e) —. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) BR—22. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 6 and 7.4.63.

2. TREATMENTS :

Main-plot treatments

2 methods of irrigation : M_1=Border method and M_2=Furrow method.

Sub-plot treatments

4 frequencies of irrigation : T_1=Control (no irrigation), T_2=One irrigation after 30—40 days of sowing, T_3=Pre-flowering irrigation+T_2 and T_4=Only pre-flowering irrigation.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/rep., 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 28·04 m. × 4·88 m. (b) 26·82 m. × 3·66 m. (v) Two rows on either side.

4, GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1963—only. (b) and (c) Nil. (v) No. (vi) and (vii) Nil.

5. RESULTS :

(i) 987 Kg/ha. (ii) (a) 267·2 Kg/ha. (b) 66·9 Kg/ha. (iii) Main effect of T is highly significant. (iv) Av. yield of grain in Kg/ha.

	T_1	T_2	T_3	T_4	Mean
M_1	745	1063	1236	936	995
M_2	820	983	1158	957	979
Mean	783	1023	1197	946	987

C.D. for T marginal means=70·3 Kg/ha.

Crop :- Barley (*Rabi*). **Ref :- Bh. 62(83), 62(84), 63(13).**

Site :- Irrigation Res. Stn., Madhepura. **Type :- 'I'.**

Object :—To determine the method and number of irrigation suitable for the best yield.

1. BASAL CONDITIONS :

(i) (a) Paddy—Barley for 62 ; N.A. (b) Paddy. (c) N.A. for 62 ; 44·8 Kg/ha. of N as A/S+44·8 Kg/ha. of P_2O_5 as Super. (ii) Loam. (iii) 3.1.62 ; 2.12.62 ; 28.12.63. (iv) (a) 4—5 Bihar junior ploughings ; 1 ploughing by soil twining plough and 8 ploughings and cross ploughing done by *deshi* plough. (b) Behind the plough in rows. (c) 92 Kg/ha. for 62 ; N.A. (d) 23 cm. between rows. (e) —. (v) N.A. ; 44·8 Kg/ha. of N as A/S+44·8 Kg/ha. of P_2O_5 as Super for 62(84) and 63(13). (vi) BR—22. (vii) As per treatments for 62 ; Irrigated. (viii) Weeding and hoeing by hand. (ix) N.A. (x) 2.4.62 ; 1.4.63 ; 17.4.64.

2. TREATMENTS :

Main-plot treatments :

2 methods of irrigation : M_1=Border method and M_2=Furrow method.

Sub-plot treatments :

4 irrigational treatment : I_0=No irrigation, I_1=One irrigation after 30—40 days of germination, I_2=I_1+Pre-flowering irrigation and I_3=Pre-flowering irrigation.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication, 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 29 87 m.× 3·96 m.; 29·87 m.×3·66 m. ; 29·86 m.×3·66 m. (b) 29·57 m.×3·66 m. ; 29·57 m.×2·97 m. ; 29 56 m.× 2·74 m. (v) 15 cm.×15 cm. ; 15 cm.×34 cm. ; 15 cm.×46 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination %, flowering, height, tillers and yield of grain. (iv) (a) 1962—63. (b) Nil. (c) Results of combined analysis is presented under 5. Results. (v) and (vi) Nil. (vii) Main-plot error variances are heterogeneous and sub-plot error variances are homogeneous.

5. RESULTS :

Pooled results :

(i) 1630 Kg/ha. (ii) (a) 203·0 Kg/ha. (based on 11 d f. made up of pooled error and Treatments× Years interaction). (b) 460·6 Kg/ha. (based on 12 d.f· made up of Treatments×Years interaction). (iii) Main effect of I is highly significant. (iv) Av. yield of grain in Kg/ha.

	I_0	I_1	I_2	I_3	Mean
M_1	1282	1724	1945	1525	1619
M_2	1212	1741	1983	1625	1640
Mean	1247	1733	1964	1575	1630

C.D. for I marginal means=501·8 Kg/ha.

Individual results :

Treatment	I_0	I_1	I_2	I_3	Sig.	M_1	M_2	Sig.	G.M.	S.E./plot
Year										
1962(83)	401	398	624	468	N.S.	458	488	N.S.	473	76·8
1962(84)	1264	1960	2192	1774	**	1797	1798	N.S.	1798	629·4
1963	2176	2840	3076	2482	*	2602	2635	N.S.	2618	214·9
Pooled	1503	1735	1477	1804	**	1606	1654	N.S.	1630	203·0

Crop :- Barley (*Rabi*). **Ref :- Bh. 62(13).**

Site :- Irrigation Res. Stn., Madhepura. **Type :- 'I'.**

Object :—To determine the method and number of irrigation on the yield of Barley.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy. (c) N.A. (ii) (a) Sandy loam (iii) 2.12.62. (iv) (a) 5 ploughings by country plough and 1 leveling. (b) In furrows. (c) 92 Kg/ha. (d) 23 cm. between rows (e) —. (v) 44·8 Kg/ha. of N as A/S+44·8 Kg/ha of P_2O_5 as Super applied in furrows. (vi) N.A. (vii) Irrigated. (viii) N A. (ix) 2 cm. (x) 1.4.63.

2. TREATMENTS :

4 irrigational treatments : I_1=Pre-sowing irrigation only, I_2=I_1+irrigation after one month of sowing, I_3=I_2+pre-flowering irrigations and I_4=I_3+post-flowering irrigations.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 5. (iv) (a) 29·87 m.×3·66 m. (b) 29·11 m.×2·90 m. (v) 38 cm.× 38 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) No. of tillers, height of plants, no. of earhead, yield of grain. (iv) (a) to (c) N.A. (v) Bikramganj. (vi) and (vii) Nil.

5. RESULTS:

(i) 9341 Kg/ha. (ii) 1297·7 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of grain in Kg/ha.

Treatment	I_1	I_2	I_3	I_4
Av. yield	10356	10121	9136	7753

C.D.=1788·5 Kg/ha.

Crop :- Barley (*Rabi*). **Ref :- Bh. 64 (218).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'D'.**

Object :—To evaluate the effectiveness of weedicides with and without Urea as a spray in Barley crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar.* (c) Nil. (ii) Sandy loam. (iii) 29.10.64. (iv) (a) 3 ploughings. (b) Line sowing. (c) 92 Kg/ha. (d) 23 cm. between rows. (e) —. (iv) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+ 45 Kg/ha. of K_2O as Mur. Pot. (vi) BR—22. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 7.3.65.

2. TREATMENTS :

8 weedicidal treatments : T_0= Control, T_1=0·5 lit. of Bladex G (2, 4—D amine form 7) in 674 lit. of water/ha., T_2=0·5 lit. of Bladex C (2, 4 -D Othyl Oster) in 674 lit. of water/ha., T_3=1/2 pint of Plantox in 337 lit. of water/ha., T_4=T_1+2 % Soln. of N as Urea in 674 lit. of water/ha., T_5=T_2+2% Soln. of N as Urea in 674 lit. of water/ha., T_6=T_3+4 % Soln. of N as Urea in 337 lit. of water/ha. and T_7=2 % Soln. of N as Urea in 674 lit. of water/ha.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) 10·67 m.×6 71 m. (iii) 3. (iv) (a) and (b) 6·10 m ×3·05 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) No. of tillers, wt. of plants, length of plants, yield of grain. (iv) (a) 1964—65 (Trs. modified in 1965). (b) and (c) Nil. (v) to (vii) Nil.

5. RESULTS:

(i) 3516 Kg/ha. (ii) 575·5 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Av. yield	3660	3552	3428	3805	3568	2895	3068	4155

Crop :- Barley (*Rabi*). **Ref. :- Bh. 65(119).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'D'.**

Object :—To evaluate the effectiveness of weedicides with and without Urea as spray in Barley crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Barley. (c) 119 Kg/ha. of N as Urea+90 Kg/ha. of P_2O_5 as Super+67 Kg/ha. of K_2O as Mur. Pot. (ii) Red Loam. (iii) 21.10.65. (iv) (a) 3 ploughings. (b) Line sowing. (c) 22 Kg/ha. (d) 23 cm. between rows. (e) —. (v) 45 Kg/ha. of N as Urea+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (vi) BR—22. (vii) Un-irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 13.3.66.

2. TREATMENTS :

9 weedicidal treatments : T_0=Control. T_1=1·24 litre of Bladex G in 674 litres of water/ha., T_2=1·24 litre of Bladex C in 674 litres of water/ha., T_3=1·24 litre of Plantox in 337 litres of water/ha., T_4=674 litres of water/ha. with T_1+Urea 2% Soln., T_5=674 litres of water/ha. with T_2+Urea 2% Soln., T_6=337 litres of water/ha. with T_3+Urea 2% Soln., T_7=674 litres of water/ha. with Urea 2% Soln. and T_8=Hand weeding.

3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b). N.A. (iii) 3. (iv) (a) 7·01 m.×3·05 m. (b) 6·10 m.×3·05 m. (v) Two rows either side. (vi) Yes.

4. GENERAL :

(i) Good. Nil. (iii) yield of grain and straw. (iv) (a) 1964—65 (Trs. modified in 65). (b) Nil. (c) N.A. (v) to (vii) Nil.

5. RESULTS :

(i) 4213 Kg/ha. (ii) 369·3 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Av. yield	3906	4011	4465	3981	4449	4585	4078	4380	4063

Crop :- Barley (*Rabi*). **Ref :- Bh. :- 60(189).**

Site :- Agri. Res. Instt., Patna. **Type :- 'D'.**

Object :—To test the effect of seed dressing and fungicidal sprayings against leaf strips disease of Barley.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Clay. (iii) 21.11.60. (iv) (a) 3 4 *deshi* ploughings. (b) Line sowing. (c) 90 Kg/ha. (d) 23 cm. between rows. (e) —. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) BR –22. (vii) Irrigated. (viii) Weeding. (ix) N.A. (x) 4.4.61.

2. TREATMENTS :

6 fungicidal treatments : T_0=Control (No spray), T_1=Seed dressing with Agrosan, T_2=Seed dressing+3 sprayings with Bordeaux mixture, T_3=Seed dressing+3 sprayings with Dithane–98, T_4=Seed dressing+3 sprayings with Colloidal Sulphur and T_5=Control+3 sprayings with water.

Time : 19.1.61, 6.2.61, 23.2.61.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) 33·80 m.×10·06 m. (iii) 6. (iv) (a) 5·64 m.×10·16 m. (b) 5·18 m.×10·06 m. (v) 46 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Leaf strips of Barley, control as per treatments. (iii) Germination, tillers count, maturity count, height of plants, disease intensity and yield of grain. (iv) (a) 1960—only. (b) Yes. (c) Nil. (v) Sabour. (vi) and (vii) Nil.

5. RESULTS :

Yield data

(i) 2574 Kg/ha. (ii) 264·0 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. yield	2533	2473	2693	2584	2671	2488

Infestation data

(i) 26·7 degrees. (ii) 3·2 degrees. (iii) Treatment differences are highly significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Mean infestation	31·6	26·4	24·6	25·9	23·9	27·6

C.D.=3·8 degrees.

Crop :- Jowar (*Kharif*). **Ref :- Bh. 60(233).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object :—To find out the responses of *kharif* crops to liming.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Red loam. (iii) 9.7.60. (iv) (a) 3 ploughings. (b) Line sowing. (c) 20 Kg/ha. (d) 30 cm. between rows. (e) —. (v) Nil. (vi) Local. (vii) Irrigated. (viii) 2 weedings. (ix) N.A. (x) 12.10.60.

2. TREATMENTS :

4 liming treatments : T_0=Control, T_1=4035 Kg/ha. of Lime, T_2=45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. and T_3=T_1+T_2

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) Nil. (iii) 5. (iv) (a) and (b) 20·2 sq. m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1960—only. (b) Yes. (c) Nil. (v) Netarhat. (vi) and (vii) Nil.

5. RESULTS :

(i) 279 Q/ha. (ii) 78·1 Q/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of green fodder in Q/ha.

Treatment	T_1	T_2	T_3	T_4	C.D.=107·6 Q/ha.
Av. yield	137	206	331	441	

Crop :- Jowar (*Kharif*). **Ref :- Bh. 60(78).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'C'.**

Object :—To select the suitable mould board ploughs for different regions in the state.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Arhar*. (c) N.A. (ii) Sandy loam. (iii) 8.7.60. (iv) (a) As per treatments. (b) Behind the plough. (c) 15 Kg/ha. (d) and (e) N.A. (v) 22·4 Kg/ha. of N+44·8 Kg/ha. of P_2O_5. (vi) Local. (vii) Irrigated. (viii) Weeding and harrowing. (ix) N.A. (x) 4.11.60.

2. TREATMENTS :

8 cultural treatments: T_1=Punjab plough, T_2=Wah wah plough, T_3=A.E.R. 15 cm. plough, T_4=A.E.R. 20 cm. plough, T_5=Sabash plough, T_6=Bihar Junior plough, T_7=Bihar Senior plough and T_8=Japanese plough.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 10·67 m.×21·03 m. (b) 10·06 m.×21·12 m. (v) 30 cm. ×46 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Moisture %, flowering, maturity and yield of grain and straw. (iv) (a) No. (b) and (c) Nil. (v) No. (vi) and (vii) As germination was poor due to continuous heavy rains, re-sowing was done on 23.7.60.

5. RESULTS :

(i) 3255 Kg/ha. (ii) 758·1 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	C.D.=1115·2 Kg/ha.
Av. yield	4258	3485	2723	3928	3407	2286	2432	3519	

Crop :- Jowar (*Kharif*). **Ref :- Bh. 62(290).**

Site :- Agri. Res. Instt., Dholi. **Type :- 'C'.**

Object :—To develop a suitable method of ploughing.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Moong*. (c) Nil. (ii) Sandy loam. (iii) 14.8.62. (iv) (a) 3—4 ploughings. (b) Line sowing. (c) 23 Kg/ha. (d) 23 cm. between rows. (e) 2—3. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) Ganga—1. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 3.12.62.

2. TREATMENTS :

3 ploughing treatments : T_1=Single Bullock plough (AER), T_2=*Deshi* plough with a pair of bullock and T_3=Melur plough with a pair of bullock.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) —. (iii) 7. (iv) (a) and (b) 18·29 m.×9·14 m.. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1962—only. (b) No. (c) N.A. (v) Patna, Kanke and Sabour. (vi) No. (vii) Nil.

5. RESULTS :

(i) 146 Q/ha. (ii) 22·4 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of green fodder in Q/ha.

Treatment	T_1	T_2	T_3
Av. yield	137	143	159

Crop :- Maize (*Kharif*). **Ref :- Bh. 62(15).**

Site :- Soil Cons. Res. Demons. and Trg. Centre, Chatra. **Type :- 'M'.**

Object :—To study the response of Maize to the application of N and P.

1. BASAL CONDITIONS :

(i) (a) Maize—*Toria*. (b) and (c) Nil. (ii) Loamy sand. (iii) 12.6.62. (iv) (a) 4 spadings. (b) Line sowing. (c) 51,870 plants/ha.. (d) 75 cm.×25 cm. (e) 1. (v) Nil. (vi) Local. (vii) Unirrigated. (viii) One weeding and one hoeing. (ix) 174 cm. (x) 17.9.62.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N as A/S : N_0=0, N_1=22·4, N_2=44·8 and N_3=67·2 Kg/ha.
(2) 4 levels of P_2O_5 as Super : P_0=0, P_1=22·4, P_2=44·8 and P_3=67·2 Kg/ha.

A/S was applied half at the time of sowing and half as top dressing after 4 weeks of sowing; Super was applied in full dose before sowing in hands 5 to 8 cm. deep and 5 to 8 cm. away from seed.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 16. (b) 20 m.×10 m. (iii) 3. (iv) (a) and (b) 2·00 m.×5·00 m. (iv) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of Stem borer was noticed. No control measure taken. (ii)) Yield of grain. (iv) (a) to (c) No. (v) to (vii) Nil.

5. RESULTS :

(i) 728 Kg/ha. (ii) 240·0 Kg/ha. (iii) Main effect of N alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	P_0	P_1	P_2	P_3	Mean
N_0	370	470	650	410	475
N_1	697	500	763	830	698
N_2	820	1007	587	720	783
N_3	857	1043	963	960	956
Mean	686	755	741	730	728

C.D. for N marginal means=200·1 Kg/ha.

Crop :- Maize (*Kharif*). **Ref :- Bh. 61(89), 63(80).**

Site :- Agri. Res. Instt., Dholi. **Type :- 'M'.**

Object :—To find out the effect of split application of N vis—a—vis placement of P and K on the yield of hybrid Maize.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Wheat. (c) N.A. (ii) Sandy loam. (iii) 19.6.61 ; 19.6.63. (iv) (a) 3 *deshi* ploughings (b) Line sowing. (c) 6 Kg/ha. (d) 15 cm.×15 cm. (e) —. (v) As per treatments. (vi) Texas 26 ; Ganga 101. (vii) Unirrigated. (viii) Hand hoeing. (ix) N.A. (x) 7.10.61 ; 25.9.63.

2. TREATMENTS:

All combinations of (1) and (2)

(1) 2 methods of application of P_2O_5 and K_2O: M_1=Broadcast and M_2=Hand placement.

(2) 3 times of application of N : T_1=Full dose of N at sowing time, T_2=$\frac{1}{2}$ dose of N at sowing+$\frac{1}{2}$ at silking, T_3=$\frac{1}{3}$ dose of N at sowing+$\frac{1}{3}$ when plants are of 2 ft. high+$\frac{1}{3}$ at silking.

Dose: 112 Kg/ha. of N+89·6 Kg/ha. of P_2O_5+44·8 Kg/ha. of K_2O.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 9·14 m.×7·62 m. (v) N.A. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Spray of Endrin against borer. (iii) Yield of grain. (iv) (a) 1961—63 (Expt. for 1962—N.A.) (b) Yes. (c) Results of combined analysis are given under 5. Results. (v) Sabour. (vi) N.A. (vii) Error variances are homogeneous and Treatments×Years interaction is present.

5. RESULTS :

Pooled results

(i) 3163 Kg/ha. (ii) 599·1 Kg/ha. (based on 5 d.f. made up of Treatments×Years interaction). (iii) None of the effect is significant. (iv) Av. yield of grain in Kg/ha.

	T_1	T_2	T_3	Mean
M_1	3112	3284	3273	3223
M_2	2920	3100	3289	3103
Mean	3016	3192	3281	3163

Individual results

Treatment	M_1	M_2	Sig.	T_1	T_2	T_3	Sig.	G.M.	S.E./Plot
year 1961	3280	3068	N.S.	3194	3228	3099	N.S.	3174	261·9
1963	3166	3138	N.S.	2837	3157	3462	**	3152	308·1
Pooled	3223	3103	N.S.	3016	3192	3281	N.S.	3163	599·1

Crop :- Maize (*Rabi*). **Ref :- Bh. 62(65), 63(82).**

Site :- Agri. Res. Instt., Dholi. **Type :- 'M'.**

Object :—To find out the effect of split application of N *Vis*—a—*Vis* placement of P and K on the yield of hybrid Maize.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) As per treatments. (ii) Sandy loam. (iii) 6.11.62 ; 22.10.63. (iv) (a) 3 *deshi* ploughings. (b) Line sowing. (c) 6 Kg/ha. (d) 15 cm.×15 cm. (e) —. (v) As per treatments. (vi) Ganga 101. (vii) Irrigated. (viii) Hoeing with Ram hoe and 5 typed cultivator, earthing with ridger. (ix) N.A. (x) 27, 28.5.63 ; 18.4.64.

2. TREATMENTS:

Same as in Expt. nos. 61(89), 63(80) conducted at Dholi on page 348.

3. DESIGN:

(i) Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 9·14 m.×7·62 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Wt. of green cobs, stand count. (iv) (a) 1961—63 (Expt. conducted in 61 is N.A.) (b) Yes. (c) Results of combined analysis are given under 5. Results. (v) Sabour. (vi) Nil. (vii) Error variances are homogeneous and Treatments×Years interaction is absent.

5. RESULTS:

Pooled results (wt. of green cobs)

(i) 2891 Kg/ha. (ii) 334·7 Kg/ha. (based on 35 d.f. made up of pooled error and Treatments×Years interaction). (iii) Main effect of T is highly significant. Interaction M×T is significant. (iv) Av. yield of grain in Kg/ha.

	T_1	T_2	T_3	Mean
M_1	2562	2708	3216	2829
M_2	3014	2815	3033	2954
Mean	2788	2762	3124	2891

C.D. for T marginal means=240·2 Kg/ha.
C.D. for means in the body of the table=339·7 Kg/ha.

Individual results (wt. of green cobs.)

Treatment	M_1	M_2	Sig.	T_1	T_2	T_3	Sig.	G.M.	S.E./plot
Year 1962	2453	2576	N.S.	2402	2337	2804	*	2514	362·9
1663	3205	3332	N.S.	3173	3186	3444	N.S.	3268	337·6
Pooled	2829	2954	N.S.	2788	2762	3124	**	2891	334·7

Crop :- Maize (*Kharif*). **Ref :- Bh. 62(125).**

Site :- Agri. Res. Instt., Dholi. **Type :- 'M'.**

Object :—To test the effect of deep placement of Super on the yield of Maize.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) 20.6.62. (iv) (a) 3–4 ploughings. (b) Line sowing. (c) 20 Kg/ha. (d) 45 cm. between rows. (e) —. (v) As per treatments. (vi) Jaunpur. (vii) Unirrigated. (viii) Weedings. (ix) N.A. (x) 29.9.62.

2. TREATMENTS :

4 manurial treatments : T_0=Control, T_1=45 Kg/ha. of N as A/S, $T_2=T_1+45$ Kg/ha. of P_2O_5 applied to surface and $T_3=T_1+45$ Kg/ha. of P_2O_5 applied at plough depth.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (3) 5. (iv) (a) and (b) 9·22 m.×7·32 m. (v) No. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1962–only. (b) and (c) —. (v) to (vii) Nil,

5 RESULTS :

(i) 813 Kg/ha. (ii) 143·72 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	
					C.D.=198·0 Kg/ha.
Av. yield	518·3	833·0	957·6	943·0	

Crop :- Maize (*Kharif*). **Ref :- 62(126).**

Site :- Agri. Res. Instt., Dholi. **Type :- 'M'.**

Object :—To find out the relative value of different kinds of nitrogeneous fertilizers on crop yield.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) 19.6.62. (iv) (a) 3—4 ploughings. (b) Line sowing. (c) 20 Kg/ha. (d) 45 cm. between rows. (e) —. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) Jaunpur. (vii) Unirrigated. (viii) Weedings. (ix) Nil. (x) 29.9.62.

2. TREATMENTS :

14 manurial treatments : T_0=Control, T_1=33·6 Kg/ha. of P_2O_5 as Super+33·6 Kg/ha. of K_2O as Mur. Pot., $T_2=T_1+28·0$ Kg/ha. of N as A/S in split dose, $T_3=T_1+56·0$ Kg/ha. of N as A/S in split-dose, $T_4=T_1+28·0$ Kg/ha. of N as Urea in split-dose, $T_5=T_1+56·0$ Kg/ha. of N as Urea in split dose, $T_6=T_1+28·0$ Kg/ha. of N as A/S/N, $T_7=T_1+56·0$ Kg/ha. of N as A/S/N in split-dose, $T_8=T_1+28·0$ Kg/ha. of as C/A/N in split-dose, $T_9=T_1+56·0$ Kg/ha. of N as C/A/N in split-dose, $T_{10}=T_1+28·0$ Kg/ha. of N as A/C in split-dose, $T_{11}=T_1+56·0$ Kg/ha. of N as A/C in split-dose, $T_{12}=T_1+28·0$ Kg/ha. of N as Urea in full dose at sowing and $T_{13}=T_1+56·0$ Kg/ha. of N as Urea in full dose at sowing.

3. DESIGN :

(i) R.B.D. (ii) (a) 14. (b) N.A. (iii) 3. (iv) (a) and (b) 9·22 m.×7·32 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) No. (b) and (c) Nil. (v) Sabour. (vi) and (vii) Nil.

5. RESULTS :

(i) 1517 Kg/ha. (ii) 295·1 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	1430	1368	1660	1334	1740	1566	1568
	T_7	T_8	T_9	T_{10}	T_{11}	T_{12}	T_{13}
	1322	1453	2045	1337	1291	1245	1875

———

Crop :- Maize (*Kharif*). **Ref :- Bh. 62(285).**

Site :- Agri. Res. Instt., Dholi. **Type :- 'M'.**

Object :—To find out the method of application of N, P and K for getting optimum yield of Maize.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) 22.6.62. (iv) (a) 3 ploughings. (b) Line sowing. (c) 16 Kg/ha. (d) 75 cm.×25 cm. (e) Nil. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) Jaunpur (local). (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A.. (x) 1.10.62.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 methods of application of P_2O_5 and K_2O : M_1=Broadcast and M_2=Band placement.

(2) 3 times of application of N : T_1=Full dose at sowing, T_2=$\frac{1}{2}$ at sowing +$\frac{1}{2}$ at silking and T_3=$\frac{1}{3}$ at sowing+$\frac{1}{3}$ at knee high stage+$\frac{1}{3}$ at silking.

3. DESIGN:

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 9·14 m.×7·62 m. (v) No. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1962—only. (b) and (c) Nil. (v) Sabour. (vi) and (vii) Nil.

5. RESULTS :

(i) 3378 Kg/ha. (ii) 234·2 Kg/ha. (iii) Main effect of T alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	T_1	T_2	T_3	Mean
M_1	3636	3091	3257	3328
M_2	3664	3178	3443	3428
Mean	3650	3174	3350	3378

C.D. for T marginal means=249·5 Kg/ha.

———

Crop :- Maize (*Kharif*). **Ref :- Bh. 64((120).**

Site :- Agri. Res. Instt., Dholi. **Type :- 'M'.**

Object :—To study the correlation between crop response and Potash status of the soil for Maize.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 18/19.6.64. (iv) (a) N.A. (b) Line sowing. (c) to (e) N.A. (v) As per treatments. (vi) Jaunpur. (vii) N.A. (viii) Weeding by *khurpi* and ridger. (ix) N.A. (x) 2, 3.10.64.

2. TREATMENTS;

9 manurial treatments : M_0=Control, M_1=44·8 Kg/ha. of N as A/S, $M_2=2M_1$, M_3=44·8 Kg/ha. of N as A/S+44·8 Kg/ha. of P_2O_5 as Super. $M_4=2M_3$, M_5=44·8 Kg/ha. of N as A/S+44 8 Kg/ha. of K_2O as Mur. Pot.. $M_6=2M_5$, M_7= 4·8 Kg/ha. of N as A/S+44·8 Kg/ha. P_2O_5 as Super+44·8 Kg/ha. of K_2O as Mur. Pot. and $M_8=2M_7$.

3. DESIGN :

(i) R BD. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 10·97 m.×9·22 m. (v) N.A. (vi) Yes.

4. GENERAL:

(i) Normal. (ii) No. (iii) Yield of grain. (iv) (a) to (c) N.A. (v) Sabour and Piprakothi. (vi) and (vii) Nil.

5. RESULTS :

(i) 1135 Kg/ha. (ii) 584·7 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	M_0	M_1	M_2	M_3	M_4	M_5	M_6	M_7	M_8
Av. yield	611	669	1468	1223	1450	1094	1195	1293	1214

Crop :- Maize (*Kharif*). **Ref :- Bh. 64(135), 65(191).**

Site :- Agri. Res. Instt,. Dholi. **Type :- 'M'.**

Object :—To study the effect of time of application of different nitogeneous fertilizers on the yield of Maize.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) N.A. (ii) Sandy loam. (iii) 20.6.64 ; 25.6.65. (iv) (a) 3 ploughings. (b) Line sowing. (c) 6 Kg/ha. (d) 25 cm.×25 cm. (e) N.A. (v) 60 Kg/ha.of P_2O_5 as Super+30 Kg/ha. of K_2O as Mur. Pot. (vi) Ganga hybrid—101. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 2.10.64; 25.10.65.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 sources of N : S_1=Urea and S_2=A/S.

(2) 3 Methods of application of N at 112 Kg/ha. : M_1=Full dose at sowing, M_2=30% dose at sowing+70% dose when the crop is of 61 cm. height, M_3=30% dose at sowing+40% dose when the crop is of 61 cm. height+30% dose when the crop is of 120 cm. height.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 9.14 m×7.52 m. (b) 9.14 m×4.57 m. (v) 150 cm. on either side. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of green cobs, moisture percentage and stand count. (iv) (a) 1964—66. (b) and (c) No. (v) Sabour. (vi) As the experiment is continued beyond '65, the results of individual years are presented under 5. Results.

5. RESULTS :

64(135)

(i) 4015 Kg/ha. (ii) 590·3 Kg/ha. (iii) None of the effects is significant. (ii) Av. yield of green cobs in Kg/ha.

	M_1	M_2	M_3	Mean
S_1	4548	3800	4281	4210
S_2	3929	3757	3777	3821
Mean	4238	3778	4029	4015

65(191)

(i) 4957 Kg/ha. (ii) 695·7 Kg/ha. (iii) Main effects of M and S are highly significant. (iv) Av. yield of green cobs in Kg/ha.

	M_1	M_2	M_3	Mean
S_1	4974	5474	5968	5472
S_2	3576	4465	5287	4442
Mean	4275	4969	5627	4957

C.D. for M marginal means=605 Kg/ha.
C.D. for S marginal means=741 Kg/ha.

Crop :- Maize (*Rabi*). **Ref :- Bh. 64(136).**

Site :- Agri. Res. Instt., Dholi. **Type :- 'M'.**

Object:—To study the effect of time of application of different nitrogeneous fertilizers on the yield of Maize.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Hybrid Maize. (c) N.A. (ii) Sandy loam. (iii) 29.10.64. (iv) (a) 3 *deshi* ploughings. (b) Line sowing. (c) 6 Kg/ha. (d) 15 cm.×15 cm. (e) N.A. (v) N.A. (vi) Ganga 101. (vii) Irrigated. (viii) Weeding by *khurpi*. (ix) N.A. (x) 22.4.65.

2. TREATMENTS and 3. DESIGN :

Same as in Expt. Nos. 64(135), 65(191) on page 352.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Wt. of green cobs and stand count. (iv) (a) No. (b) and (c) Nil. (v) No. (vi) and (vii) Nil.

5. RESULTS :

(i) 7884 Kg/ha. (ii) 948·0 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of green cobs in Kg/ha.

	M_1	M_2	M_3	Mean
S_1	7629	8085	8208	7974
S_2	7209	8013	8156	7793
Mean	7419	8049	8182	7884

Crop :- Maize (*Kharif*). **Ref :- Bh. 64(357).**

Site :- Agri. Res. Instt., Dholi. **Type :- 'M'.**

Object :—To study the effect of time of application of different nitrogeneous fertilizers on the yield of Maize.

1, BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) 20.6.64. (iv) (a) 3 ploughings. (b) Sowing in line. (c) 6·5 Kg/ha. (d) 25 cm.×25 cm. (e) —. (v) As per treatments. (vi) Jaunpur. (vii) Irrigated. (vii) Weeding and hoeing. (ix) —. (x) 2.10.64.

2. TREATMENTS and 3. DESIGN ;

Same as in Expt. Nos. 64(135), 65(191), presented on page 352.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of green cobs, moisture percentage and stand count. (iv) (a) 1964—only. (b) and (c) —. (v) Sabour. (vi) No. (vii) Nil.

5. RESULTS :

(i) 5748 Kg/ha. (ii) 847·63 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of green cobs in Kg/ha.

	M_1	M_2	M_3	Mean
S_1	6465	5503	6250	6079
S_2	5533	5367	5367	5422
Mean	5999	5435	5809	5748

——=——

Crop :- Maize (*Kharif*). **Ref :- Bh. 63(118), 64(170).**

Site :- Soil Cons. Res. Stn., Jalalgarh. **Type :- 'M'.**

Object :—To study the effect of different sources of fertilization on soil, physical properties affecting soil, and water loss on the yield of Maize.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) 10.6.63 ; 24 and 25.6.64. (iv) (a) 6 *deshi* ploughings. (b) Line sowing. (c) 15 Kg/ha. (d) 61 cm.×31 cm. (e) One. (v) 67·2 Kg/ha. of P_2O_5 as Super+ 67 2 Kg/ha. of K_2O as Mur. Pot. (vi) Ganga 101. (vii) Unirrigated. (viii) 2 weedings by hand. (ix) N.A. (x) 11, 12 and 13.9.63 ; 2.10.64.

2. TREATMENTS :

Main-plot treatments :

M_1=Crop residue return to the soil and ploughed under and M_2=Crop residue removed from the soil.

Sub-plot treatments :

10 sources of N at 134·4 Kg/ha. : S_0=Control, S_1=F.Y.M., S_2=Compost, S_3=Mustard cake, S_4=Urea S_5=F.Y.M.+Urea in 1 : 1 ratio, S_6=Compost+Urea in 1 : 1 ratio, S_7=Mustard cake+Urea in 1 : 1 ratio, S_8=F.Y.M.+Mustard cake in 1 : 1 ratio and S_9=Compost+Mustard cake in 1 : 1 ratio.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 10 sub-plots/main-plot. (b) 21·03 m.×72·50 m. (iii) 4. (iv) (a) 10·36 m.×7·01 m. (b) 10·06 m.×6·71 m. (v) 15 cm.×15 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Stem borer attack, Folidol sprayed. (iii) Yield of grain. (iv) (a) 1963—64. (b) Yes. (c) Nil. (v) No. (vi) Nil. (vii) Very low yield in Rep. 1 for T_8 due to Jack's attack in 63. As sub-plot error variances are heterogeneous, individual years results are presented under 5. Results.

5. RESULTS :

63/118)

(i) 2729 Kg/ha. (ii) (a) 548·0 Kg/ha. (b) 671·0 Kg/ha. (iii) Main effect of S and interaction M×S are significant. (iv) Av. yield of grain in Kg/ha.

	S_0	S_1	S_2	S_3	S_4	S_5	S_6	S_7	S_8	S_9	Mean
M_1	1264	2899	1949	2596	2678	2924	3281	2903	3083	2647	2622
M_2	2910	2201	2603	2272	3294	3488	3025	2958	2307	3292	2835
Mean	2087	2550	2276	2434	2986	3206	3153	2931	2695	2970	2729

C.D. for S marginal means =1067·6 Kg/ha.
C.D. for S means at the same level of M=1509·8 Kg/ha.
C.D. for M means at the same level of S=1387·1 Kg/ha.

64(170)

(i) 374 Kg/ha. (ii) (a) 557·6 Kg/ha. (b) 192·7 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	S_0	S_1	S_2	S_3	S_4	S_5	S_6	S_7	S_8	S_9	Mean
M_1	133	319	348	224	367	493	382	393	332	219	321
M_2	332	400	370	582	430	345	341	472	449	550	427
Mean	233	359	359	403	398	419	362	433	390	384	374

Crop :- Maize (*Kharif*). **Ref :- Bh. 60(294).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object : –To study the effect of different kinds of phosphatic manures on the yield of Maize.

1. BASAL CONDITIONS :

(i) (a) Paddy—Maize. (b) Paddy. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (ii) Red loam. (iii) 25.6.60. (iv) (a) 3—4 ploughings. (b) Line sowing. (c) 15 Kg/ha. (d) 60 cm. between rows. (e) —. (v) 45 Kg/ha. of K_2O as Mur. Pot. (vi) Kalimpong. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 7.10.60.

2. TREATMENTS :

7 manurial treatments : T_0=Control, T_1=45 Kg/ha. of N as A/S, $T_2=T_1+45$ Kg/ha. of P_2O_5 as Super, $T_3=T_1+45$ Kg/ha. of P_2O_5 as Bone Meal, $T_4=T_1+45$ Kg/ha. of P_2O_5 as Rock. Phos., $T_5=T_1+45$ Kg/ha. of P_2O_5 as Basic Slag and $T_6=T_1+45$ Kg/ha. of P_2O_5 as Dical. Phos.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 5. (iv) (a) and (b) 67·4 sq. m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1960—only. (b) No. (c) N.A. (v) to (vii) Nil.

5. RESULTS:

(i) 128 Kg/ha. (ii) 85·4 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7	
Av. yield	30	42	266	188	173	150	46	C.D.=111·5 Kg/ha.

Crop :- Maize (*Kharif*). **Ref :- Bh. 60(296).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object :—To test the effect of different kinds of Phosphate with Lime on the crop yield.

1. BASAL CONDITIONS :

(i) (a) Paddy—Maize. (b) Paddy. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (ii) Red loam. (iii) 23.6.60. (iv) (a) 3—4 ploughings. (b) Line sowing. (c) 15 Kg/ha. (d) 60 cm. between rows. (e) —. (v) 45 Kg/ha. of K_2O as Mur. Pot. (vi) Kalimpong. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 6.10.60.

2. TREATMENTS :

8 manurial treatments : T_1=1800 Kg/ha. of Lime, T_2=1800 Kg/ha. of Lime+45 Kg/ha. of N as A/S, T_3=T_2+45 Kg/ha. of P_2O_5 as Super, T_4=T_2+45 Kg/ha. of P_2O_5 as Bone Meal, T_5=T_2+45 Kg/ha. of P_2O_5 as Rock. Phos., T_6=T_2+45 Kg/ha. of P_2O_5 as Basic Slag and T_7=T_2+45 Kg/ha. of P_2O_5 as Dical. Phos.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 5. (iv) (a) and (b) 67·4 sq. m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (il) Nil. (iii) Yield of grain. (iv) (a) to (c) No. (v) to (vii) Nil.

5. RESULTS :

(i) 949 Kg/ha. (ii) 234·6 Kg//ha. (iii) Treatment differences are significant. (iv) Av. yield of grain n Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7	
Av. yield	532	1010	1162	1139	908	1018	871	C.D.=306·3 Kg/ha.

Crop :- Maize (*Kharif*). **Ref :- Bh. 60(223), 61(316).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object :—To find out the proper frequency of Lime application in acid soil for Maize crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) As per treatments. (ii) Red loam. (iii) 18.6.60 ; 15.6.61. (iv) (a) 2—4 ploughings. (b) Line sowing. (c) 20 Kg/ha. ; 15 Kg/ha. (d) 30 cm. between rows ; 60 cm. between rows. (e) —. (v) As per treatments. (vi) Kalimpong. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 25.9.60 ; 21.9.61.

2. TREATMENTS :

8 manurial treatments : T_0=Control (no Lime), T_1=675 Kg/ha. of Lime applied every year, T_2=1350 Kg/ha. of lime applied for first two years, T_3=2700 Kg/ha. of Lime applied in one lot during *kharif* 1956, T_4=45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot., T_5=T_1+T_4, T_6=T_2+T_4 and T_7=T_3+T_4.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 5 ; 6. (iv) (a) and (b) 10 12 sq. m. ; 3·66 m.×2·97 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1956—61. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

60(223)

(i) 1245 Kg/ha. (ii) 319·1 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	
Av. yield	478	495	784	714	1625	1994	1660	1913	C.D.=413·5 Kg/ha.

61(316)

(i) 445 Kg/ha. (ii) 132·0 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	
Av. yield	187	373	303	428	659	625	526	456	C.D.=448·6 Kg/ha.

Crop :- Maize (*Kharif*). **Ref :- Bh. 60(224), 61(312), 62(203), 63(220).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object :—To find out the effect of placement of Lime on Maize crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) As per treatments. (ii) Red loam. (iii) 20.6.60 ; 18.6.61 ; 13.6.62 ; 15.6.63. (iv) (a) 2—4 ploughings. (b) Line sowing. (c) 15 Kg/ha. for 61 ; 20 Kg/ha. for others. (d) 60 cm. between rows for 61 ; 30 cm. between rows for others. (e) —. (v) Nil. (vi) Kalimpong. (vii) Irrigated. (viii) 2 weedings. (ix) N.A. (x) 28.9.60 ; 20.9.61 ; 16.9.62 ; 17.9.63.

2. TREATMENTS :

8 manurial treatments : T_0=Control, T_1=Surface application of Lime, T_2=Deep application of Lime, T_3=Half as surface and half as deep application of Lime, T_4=45 Kg/ha. of N as A/S +45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot., T_5=T_1+T_4, T_6=T_2+T_4 and T_7=T_3+T_4.

Lime applied at 675 Kg/ha.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 6 for 63 ; 5 for others (iv) (a) and (b) 40·47 sq. m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1960—63. (b) Yes. (c) Results of combined analysis are presented under 5. Results. (v) and (vi) Nil. (vii) Error variances are heterogeneous and Treatments × Years interaction is present.

5. RESULTS :

Pooled results :

(i) 616 Kg/ha. (ii) 797·3 Kg/ha. (based on 21 d.f. made up of Treatments × Years interaction). (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	
Av. yield	137	332	317	366	788	988	917	1086	C.D.=511·7 Kg/ha.

Individual results

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	Sig.	G.M.	S.E./plot
Year											
1960	104	259	265	424	865	1248	1072	1600	**	730	187·1
1961	75	101	120	138	403	539	439	590	**	301	37·5
1962	253	514	357	479	1736	1749	1879	1910	**	1110	255·0
1963	119	432	490	412	255	512	385	385	**	374	100 3
Pooled	137	332	317	366	788	988	917	1086	**	616	797·3

Crop :- Maize (*Kharif*). **Ref :- Bh. 61(238), 62(204), 63(221), 64(339).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object :—To test the effect of the quality of Lime on the crop yield of Maize.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat for 64, Maize for others. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super for 61 ; As per treatments for 62 and 63 ; 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. for 64. (ii) Red loam. (iii) 20.6.61 ; 10.6.62 ; 31.6.63 ; 26.4.64. (iv) (a) 3 ploughings. (b) Line sowing. (c) 15 Kg/ha for 64 and 20 Kg/ha. for others. (d) 60 cm. between rows for 64, 30 cm. between rows for others. (e) —. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super +45 Kg/ha. of K_2O as Mur. Pot. (vi) Ganga—1 ; Kalimpong. (vii) Irrigated. (viii) 2 weedings. (ix) N.A. (x) 24.9.61 ; 5.10.62 ; 8.10.63 ; 27.10.64.

2. TREATMENTS :

8 manurial treatments: T_0=Control, T_1=Market Lime, T_2=Lime Stone from Khelari, T_3=Lime Stone from Hazaribagh, T_4=Lime stone from Chakardharpur, T_5=Dolomite Lime Stone, T_6=Sindri factory's Calcium Carbonate and T_7=Cement waste from Khelari.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 5. (iv) (a) and (b) 7·62 m.×5·30 m. for 62 and 64, 50·58 sq. m. for 61 and 63. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1961—64. (b) No. (c) Nil. (v) No. (vi) Nil. (vi) Error variances are heterogeneous and Treatments×Years interaction is absent. Hence individual results have been presented under 5. Results.

5. RESULTS :

61(238)

(i) 1630 Kg/ha. (ii) 188·0 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	
Av. yield	1333	1821	1698	1633	1646	1621	1653	1637	C.D.=243 2 Kg/ha.

62(204)

(i) 2793 Kg/ha. (ii) 495·3 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Av. yield	2186	2894	2778	2795	2907	2654	3009	3123

63(221)

(i) 1539 Kg/ha. (ii) 193·5 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	
Av. yield	959	1756	1643	1594	1629	1495	1728	1510	C.D.=250·5 Kg/ha.

64(339)

(i) 1774 Kg/ha. (ii) 295·1 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	
Av. yield	1115	1898	1876	1834	1868	1799	1950	1849	C.D.=382·0 Kg/ha.

Crop :- Maize (*Kharif*). **Ref :- Bh. 61(239), 62(205), 63(222), 64(338).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object :—To test the effect of Lime Stone on Maize crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow ; Maize ; Maize ; Wheat. (c) Nil ; As per treatments(62, 63) : 45 Kg/ha. of N as A/S+44 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (ii) Red Loam. (iii) 22.6.61 ; 9.6.62; 1.7.63; 27.6.64. (iv) 3 ploughings. (b) Line sowing. (c) 20 Kg/ha. (61, 62, 63) ; 15 Kg/ha. (d) 60 cm. between rows for 64 ; 30 cm. between rows for others. (e) —. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (vi) K. Pong for 64 ; Ganga 131 for others. (vii) Irrigated. (viii) Weeding. (ix) N.A. (x) 26.9.61 ; 2.10.62 ; 14.10.63 ; 28.10.64.

2. TREATMENTS :

6 manurial treatments : T_0=Control, T_1=10 Mesh powdered Lime stone, T_2=50 Mesh powdered Lime stone, T_3=100 Mesh powdered Lime stone, T_4=Bye product $CaCO_3$ from Sindri and T_5=Market Lime.

3. DESIGN:

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 5. (iv) (a) and (b) 7·62 m.×5·30 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) No. (iii) Yield of straw and grain. (iv) (a) 1961—64. (b) No. (c) Nil. (v) No. (vi) Nil. (vii) Error variances are heterogeneous and Treatments×Years interaction is absent. Hence individual results are presented under 5. Results.

5. RESULTS :

61(239)

(i) 2094 Kg/ha. (ii) 208·9 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	
Av. yield	1738	2186	2238	2114	2111	2177	C.D.=275·5 Kg/ha.

62(205)

(i) 3072 Kg/ha. (ii) 326·5 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	
Av. Yield	2432	3223	3102	3321	3273	3084	C.D.=430·6 Kg/ha.

63(222)

(i) 1848 Kg/ha. (ii) 172·0 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	
Av. yield	1342	1941	2149	1996	1832	1827	C.D.=226·8 Kg/ha.

64(338)

(i) 1478 Kg/ha. (ii) 308·1 Kg/ha. (iii) Treatment differences are highly significent. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	
Av. yield	924	1552	1720	1636	1542	1493	C.D.=406·4 Kg/ha.

Crop :- Maize (*Kharif*). **Ref :- Bh. 61(309), 62(209), 63(224), 64(251), 65(1).**

Site :- Agri. Res. Instt., Kanke. Type :- 'M'

Object :—To test the effects of Magnesium in Maize crop yield under limed condition.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat for 61, Maize for others. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. ; 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super ; As per treatments for 63, 64 and 65. (ii) Red loam. (iii) 21.6.61 ; 15.6.62 ; 28.6.63 ; 26.6.64 ; 2.7.65. (iv) (a) 3 ploughings. (b) Line sowing. (c) 15 Kg/ha. for 61 ; 20 Kg/ha. for others. (d) 60 cm. between rows ; 30 cm. between rows for others. (e) . (v) As per treatments. (vi) Texsa-26 for 61 ; Ganga 101 for others. (vii) Irrigated. (viii) Weeding. (ix) N.A. (x) 2.10.61 ; 13.10.62 ; 29.9.63 22.10.64 ; 22.11.65.

2. TREATMENTS :

8 manurial treatments : T_0=Control, T_1=90 Kg/ha. of N as A/S, T_2=90 Kg/ha. of N as A/S+90 Kg/ha. of P_2O_5 as Super, T_3=90 Kg/ha. of N as A/S+90 Kg/ha. of K_2O as Mur. Pot., T_4=90 Kg/ha. of N as A/S+90 Kg/ha. of P_2O_5 as Super+90 Kg/ha. of K_2O as Mur. Pot., T_5=T_4+11·2 Kg/ha. of Mg. Sul., T_6=T_4+ 16.8 Kg/ha. of Mg. Sul. and T_7=T_4+22 4 Kg/ha. of Mg. Sul.

Lime to be applied uniformly in accordance with the requirement of the soil.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) 48·8 m.×7·62 m. (iii) 5. (iv) (a) and (b) 7·62 m.×5·30 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1961—65. (b) Yes. (c) Results of combined analysis given under 5. Results. (v) No. (vi) Nil. (vii) Error variances are homogeneous and Treatments×Years interaction is present.

5. RESULTS :

Pooled results :

(i) 2473 Kg/ha. (ii) 610·9 Kg/ha. (based on 28 d.f. made up of Treatments×Years interaction). (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	
Av. yield	892	2251	2742	2382	2836	3046	2850	2788	C.D.=353·8 Kg/ha.

Individual results:

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	Sig.	G.M.	S.E./plot
Year											
1961	889	2572	3396	2804	3612	3833	3758	3572	**	3055	395·3
1962	1924	3527	3683	3608	3847	4144	4130	3850	**	3589	378·1
1963	649	2129	2761	2308	2852	2954	2716	2635	**	2376	321·3
1964	396	1837	2159	1892	2347	2838	2332	2134	**	1992	375·4
1965	599	1189	1709	1297	1520	1461	1312	1748	**	1354	358·1
Pooled	892	2251	2742	2382	2836	3046	2850	2788	**	2473	610·9

Crop :- Maize (*Kharif*). **Ref. :- Bh. 61(310), 62(278), 64(333), 65(173).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object :—To find out the efficiency of *Basic Slag* as phosphatic fertilizer on the yield of Maize.

1. BASAL CONDITIONS:

(i) (a) Wheat—Maize. (b) Wheat. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (ii) Red loam. (iii) 23.6.61 ; 7.6.62 ; 27.6.64 ; 27.6.65. (iv) (a) 3—4 ploughings. (b) Line sowing. (c) 15 Kg/ha. (d) 60 cm. between rows (e) —. (v) Nil. (vi) Kalimpong. (vii) Irrigated. (viii) Weeding and hoeing. (ix) —. (x) 6.10.61 ; 23.2.62 ; 28.10.64 ; 16.10.65.

2. TREATMENTS:

10 manurial treatments : T_0=Control, T_1=45 Kg/ha. of P_2O_5 as Super, T_2=45 Kg/ha of P_2O_5 as Basic Slag, T_3=90 Kg/ha. of P_2O_5 as Basic Slag, T_4=180 Kg/ha. of P_2O_5 as Basic Slag, T_5=45 Kg/ha. of P_2O_5 as Super+400 Kg/ha. of Lime, T_6=45 Kg/ha. of P_2O_5 as Basic Slag+Lime (less CaO in Basic Slag), T_7=90 K/ha. of P_2O_5 as Basic Slag+Lime (less CaO in Basic Slag), T_8=180 Kg/ha. of P_2O_5 as Basic Slag +Lime (less CaO in Basic Slag) and T_9=Basic Slag equivalent to CaO in full dose of Lime (400 Kg/ha.).

45 Kg/ha. of K_2O as Mur. Pot.applied to all treatments

3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) and (b) 10·65 m. × 3·81 m. (v) Nil. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1961—65 (modified in 1963). (b) No. (c) Results of combined analysis given under 5. Results. (v) No. (vi) Nil. (vii) Error variances are homogeneous and Treatments × Years interaction is present.

5. RESULTS:

Pooled results

(i) 1984 Kg/ha. (ii) 511·3 Kg/ha. (based on 27 d.f. made up of Treatments × Years interaction). (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9
Av. yield	1258	1570	1882	2090	1908	2197	2252	2353	2137	2198

C.D.=370·9 Kgha.

Individual results

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9	Sig.	G.M.	S.E./plo
Year													
1961	409	1750	1732	1800	1692	2339	2206	2020	1836	1853	**	1764	291·1
1962	2073	1504	2371	2522	2347	2436	2774	2957	2745	2864	**	2459	371·8
1964	835	1091	1512	1885	1778	1586	1827	2012	1784	1898	**	1621	330 6
1965	1713	1935	1914	2154	1817	2428	2202	2422	2182	2175	N.S.	2094	325·9
Pooled	1258	1570	1882	2090	1908	2197	2252	2353	2137	2198	**	1984	511·3

Crop :- Maize (*Kharif*). **Ref :- Bh. 63(223).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object :—To find out the efficacies of Basic Slag in comparison with phosphatic fertilizers for Maize.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Red loam. (iii) 3.7.63. (iv) (a) 3 ploughings. (b) Line sowing. (c) 20 Kg/ha. (d) 30 cm. between rows. (e) —. (v) Nil. (vi) Kalimpong. (vii) Unirrigated. (viii) Weeding. (ix) N.A. (x) 18.10.63.

2. TREATMENTS :

10 manurial treatments : T_0=Control, T_1=45 Kg/ha. of P_2O_5 as Super, T_2=45 Kg/ha. of P_2O_5 as Basic Slag, T_3=90 Kg/ha. of P_2O_5 as Basic Slag, T_4=202 Kg/ha. of P_2O_5 as Basic Slag, T_5=45 Kg/ha. of P_2O_5 as Super+415 Kg/ha. of Lime, T_6=45 Kg/ha. of P_2O_5 as Bisac Slag+Lime (less CaO in Basic Slag), T_7=90 Kg/ha. of P_2O_5 as Basic Slag+Lime (less CaO in Basic Slag), T_8=180 Kg/ha. of as Basic Slag+Lime (less CaO in Basic Slag) and T_9=Basic Slag equivalent to CaO in full dose of Lime (415 Kg/ha).

3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) and (b) 40·47 sq. m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1961—65 (modified in 1963). (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1050 Kg/ha. (ii) 258·5 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9
Av. yield	834	859	1056	994	865	1204	1155	1118	1192	1217

Crop :- Maize (*Kharif*). **Ref :- Bh. 63(298), 64(252), 65(2).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object :—To test the effect of Magnesium in Maize crop yield under dolomatic condition.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat ; Maize for 64 and 65. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. ; As per treatments for 64 and 65. (ii) Red loam. (iii) 29.6.63 ; 25.6.64 ; 3.7.65. (iv) (a) 3—4 ploughings. (b) Line sowing. (c) 15 Kg/ha. ; 20 Kg/ha. for 64 and 65. (d) 60 cm. between rows ; 30 cm. between rows for 64 and 65. (e) —. (v) As per treatments. (vi) Ganga 101. (vii) Irrigated. (viii) Weeding and hoeing ; Weeding for 64 and 65. (ix) N.A. (x) 19.10.63; 13.10 64 ; 25.11.65.

2. TREATMENTS :

8 manurial treatments : T_0=Control, T_1=90 Kg/ha. of N as A/S, T_2=90 Kg/ha. of N as A/S+90 Kg/ha. of P_2O_5 as Super, T_3=90 Kg/ha. of N as A/S+90 Kg/ha. of K_2O as Mur. Pot., T_4=90 Kg/ha. of N as A/S+90 Kg/ha. of K_2O as Mur Pot.+90 Kg/ha. of P_2O_5 as Super, T_5=T_4+112 Kg/ha. of Mg. Sul., T_6=T_4+168 Kg/ha. of Mg. Sul. and T_7=T_4 +224 Kg/ha. of Mg. Sul.

Liming was done with powdered dolomite conditioning 7 % Mg. Liming with either market lime or dolomite was done uniformly according to the Lime requirement.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. ; 48·8 m.×7·62 m. for 64 and 65. (iii) 5. (iv) (a) and (b) 8·35 m.×5·02 m. 7·62 m.×5·30 m. for 64 and 65. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1963—65. (b) No. (c) Nil. (v) No. (vi) Nil. (vii) Error variances are heterogeneous and Treatments×Years interaction is absent. Hence individual results are presented under 5. Results.

5. RESULTS :

63(298)

(i) 2673 Kg/ha. (ii) 406·5 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	C.D.=526·5 Kg/ha.
Av. yield	906	2813	3061	2591	3087	2848	3163	2915	

64(252)

(i) 2638 Kg/ha. (ii) 242·0 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	C.D.=313·3 Kg/ha.
Av. yield	1025	2991	3244	2902	3070	3184	3135	3150	

65(2)

(i) 2088 Kg/ha. (ii) 276·2 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	C.D.=357·6 Kg/ha.
Av. yield	599	2060	2293	2020	2060	2590	2600	2486	

Crop :- Maize (*Kharif*). **Ref :- Bh. 65(162).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object :- To study the efficacy of basic slag and other steel slag for their effect on crop yield of Maize.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as as Mur. Pot. (ii) Red loam. (iii) 25.6.65. (iv) (a) 3—4 ploughings. (b) Line sowing. (c) 15 Kg/ha. (d) 60 cm. between rows. (e) —. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (vi) Kalimpong. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 27.9.65.

TREATMENTS :

7 manurial treatments : T_0=Control, T_1=Lime, T_2=Bhilai blast furnace (B.E. Slag), T_3=Bhilai open hearth (O.H. Slag), T_4=Rourkela open hearth (O.H. Slag), T_5=Rourkela L.D. Slag and T_6=Low soft Purnea Slag.

3. DESIGN:

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 3·66 m.×2·74 m. (v) N.A. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) to (c) No. (v) to (vii) Nil.

5. RESULTS:

(i) 2421 Kg/ha. (ii) 417 6 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	2156	2676	2628	2226	2369	2557	2337

Crop :- Maize (*Kharif*). **Ref :- Bh. 65(171).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object:—To find out the efficacy of basic slag in comparison with phosphatic fertilizer.

1. BASAL CONDITIONS:

(i) (a) Wheat—Maize. (b) Wheat. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (ii) Red loam. (iii) 24.6.65. (iv) (a) 3—4 ploughings. (b) Line sowing. (c) 15 Kg/ha. (d) 60 cm. between rows. (e) —. (v) 45 Kg/ha. of K_2O as Mur. Pot. (vi) K. Pong. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 30.9.65.

2. TREATMENTS:

All combinations of (1) and (2)+a control.

(1) 2 levels of N as A/S : N_0=0 and N_1=45 Kg/ha.

(2) 3 sources of P_2O_5 at 45 Kg/ha. : S_1=Basic Slag, S_2=Super and S_3=Rock. Phos.

3. DESIGN:

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 5. (vi) (a) and (b) 3·66 m.×2·74 m. (v) Nil. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1965—contd. (b) and (c) No. (v) to (vii) Nill.

5. RESULTS:

(i) 792 Kg/ha. (ii) 300·8 Kg/ha. (iii) Main effect of N and 'control *vs* others' are highly significant and that of S is significant. (iv) Av. yield of grain in Kg/ha.

Control=331 Kg/ha.

	S_1	S_2	S_3	Mean
N_0	467	351	303	374
N_1	1723	1246	1125	1365
Mean	1095	799	714	869

C.D. for N marginal means=226·7 Kg/ha.
C.D. for S marginal means=277·7 Kg/ha.
C.D. for 'Control *vs.* others'=299·9 Kg/ha.

Crop :- Maize (*Kharif*). **Ref :- Bh. 65(172)**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object :— To find out the efficiency of Basic Slag in comparison with other phosphatic fertilizers in the presence of Lime.

1. BASAL CONDITIONS :

(i) (a) Wheat. (b) Maize. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (ii) Red loam. (iii) 24.6.65. (iv) (a) 3—4 ploughings. (b) Line sowing. (c) 15 Kg/ha. (d) 60 cm. between rows. (e) —. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (vi) K. Pong. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 30.9.65.

2. TREATMENTS :

All combinations of (1) and (2) in the presence of Lime at 4000 Kg/ha. +a control (no manure)

(1) 2 levels of N as A/S : N_0=0 and N_1=45 Kg/ha.

(2) 3 sources of P_2O_5 at 45 Kg/ha. : S_1=Basic Slag, S_2=Super and S_3=Rock Phos.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 5. (iv) (a) and (b) 3·66 m.×2·74 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1965—contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1120 Kg/ha. (ii) 283·2 Kg/ha. (iii) Main effect of N and 'Control *vs.* others' are highly significant. (iv) Av. yield of grain in Kg/ha.

Control=566 Kg/ha.

	S_1	S_2	S_3	Mean
N_0	794	650	706	717
N_1	1879	1595	1651	1708
Mean	1336	1123	1179	1212

C.D. for N marginal means=213·4 Kg/ha.
C.D. for 'control *vs.* others' =282·4 Kg/ha.

———

Crop :- Maize (*Kharif*). **Ref :- Bh. 63(299), 64(331), 65(169).**

Site :- Seed Multiplication Farm, Kuru. **Type :- 'M'.**

Object :—To test the effect of Magnesium in the crop yield under dolomite condition.

1. BASAL CONDITIONS :

(i) (a) Wheat—Maize. (b) Wheat. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (ii) Red loam. (iii) 21.6.63 ; 11.6.64 ; 3.7.65. (iv) (a) 3—4 ploughings. (b) Line sowing. (c) 15 Kg/ha. (d) 60 cm. between rows. (e) —. (v) N.A. (vi) Ganga 101. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 1.10.63 ; 2.10.64 ; 23.11.65.

2. TREATMENTS :

Same as in expt. nos. 61(309), 62(209), 63(224), 64(251), 65(1) conducted at Kanke on page 360.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 5. (iv) (a) and (b) 5·56 m.×5·17 m. for 63 and 65, 8·35 m.×5·02 m. for 64. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1963–65. (b) No. (c) Results of combined analysis are given under 5 Results. (v) Kanke. (vi) Nil. (vii) Error variances are homogeneous and Treatments × Years interaction is present.

5. RESULTS :

Pooled results

(i) 2790 Kg/ha. (ii) 929·5 Kg/ha. (based on 14 d.f. made up of Treatments × Years interaction). (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	
Av. yield	1520	2548	3086	2707	2889	3334	3278	2956	C.D.=727·9 Kg/ha.

Individual results

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_8	Sig.	G.M.	S.E./plot
Year											
1963	2713	3820	4968	3889	4641	5218	4592	4397	**	4280	372·4
1964	658	930	1069	1393	1131	1145	1589	978	N.S.	1112	478·2
1965	1190	2894	3221	2839	2894	3639	3653	3493	**	2978	485·3
Pooled	1520	2548	3086	2707	2889	3334	3278	2956	**	2790	929·5

Crop :- Maize (*Kharif*). **Ref :- Bh. 63(300), 64(332), 65(170).**

Site :- Seed multiplication Farm, Kuru. **Type :- 'M'.**

Object :—To test the effect of Magnesium in crop yield under limed conditions.

1. BASAL CONDITIONS :

(i) (a) Wheat–Maize. (b) Wheat. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (ii) Red Loam. (iii) 22.6.63 ; 4.6.64 ; 2.7.65. (iv) (a) 3–4 ploughings. (b) Line sowing. (c) 15 Kg/ha. (d) 60 cm. between rows. (e) —. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (vi) Ganga—1 ; Hybrid ; Hybrid 101. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 27.9.63 ; 2.10.64 ; 22.11.65.

2. TREATMENTS :

Same as in Expt. nos. 61(309), 62(209), 63(224), 64(251), 65(1) conducted at Kanke on page 360.

3. DESIGD :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 5. (iv) (a) and (b) 6·27 m.×4·57 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1963—65. (b) No. (c) Results of combined analysis given under 5. Results. (v) Kanke. (vi) Nil. (vii) Error variances are homogeneous and Treatments × Years interaction is present.

5. RESULTS :

Pooled results

(i) 2547 Kg/ha. (ii) 1003·8 Kg/ha. (based on 14 d.f. made up of Treatments × Years interaction). (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Av. yield	1198	2245	3050	2655	2676	2901	2543	3111

C.D.=786·1 Kg/ha.

Individual results

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	Sig.	G.M.	S.E./plot
Year											
1963	1675	3532	4928	4293	4306	4858	4237	5025	**	4107	377·6
1964	1075	1528	1815	1843	1577	1787	1542	1843	N.S.	1626	594·9
1965	845	1675	2408	1829	2143	2059	1850	2464	**	1909	504·7
Pooled	1198	2245	3050	2655	2676	2901	2543	3111	**	2547	1003·8

Crop :- Maize (*Kharif*). **Ref. Bh. 61(16).**

Site :- Agri. Farm, Musheri. **Type :- 'M'.**

Object :—To study the effect of placement of fertilizers on the yield of Maize.

1. BASAL CONDITIONS:

(i) to (x) N.A.

2. TREATMENTS :

4 manurial treatments : M_0=Control, M_1=44·8 Kg/ha. of N as A/S, M_2=44·8 Kg/ha. of N as A/S+ 44·8 Kg/ha. of P_2O_5 as Super at surface and M_3=44·8 Kg/ha. of N as A/S+ 44·8 Kg/ha. of P_2O_5 as Super at plough depth.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 5. (iv) (a) and (b) 101·20 sq. m. (v) Nil. (vi) Yes.

4. GENERAL:

(i) Normal. (ii) No. (iii) Yield of grain. (iv) (a) to (c) N.A. (v) Dholi. (vi) and (vii) Nil.

5. RESUTS :

(i) 1614 Kg/ha. (ii) 348·6 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of grain in Kg/ha.

Treatment	M_0	M_1	M_2	M_3
Av. yield	1347	1402	2038	1669

C.D.=480·4 Kg/ha.

Crop :- Maize (*Kharif*). **Ref :- Bh. 61(17).**

Site :- Agri. Farm, Masheri. **Type :- 'M'.**

Object :—To study the efficacy of different levels of N, P and K on Maize crop.

1. BASAL CONDITIONS :

(i) to (x) N.A.

2. TREATMENTS :

same as Expt. No. 64(120) conducted at Dholi and presented on page no. 351.

3. DESIGN:

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 3. (iv) 101·20 sq. m. (v) Nil. (vi) Yes.

4. GENERAL:

(i) Normal. (ii) No. (iii) Yield of grain. (iv) (a) to (c) N.A. (v) to (vii) Nil.

5. RESULTS:

(i) 1318 Kg/ha. (ii) 243·5 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	M_0	M_1	M_2	M_3	M_4	M_5	M_6	M_7	M_8
Av. yield	968	1210	1233	1568	1602	1222	1395	1337	1325

C.D.=421·5 Kg/ha.

———

Crop :- Maize (*Kharif*). **Ref :- Bh. 61(21).**

Site :- Govt. Agri. Farm, Piprakothi. **Type :- 'M'.**

Object :—To study the effect of different sources of P on the yield of Maize.

1. BASAL CONDITIONS:

(i) to (x) N.A.

2. TREATMENTS:

7 manurial treatments : M_0=Control, M_1=44·8 Kg/ha. of N as A/S, $M_2=M_1+44·8$ Kg/ha. of P_2O_5 as Super, $M_3=M_1+44·8$ Kg/ha. of P_2O_5 as Bone Meal, $M_4=M_1+44·8$ Kg/ha. of P_2O_5 as Rock Phos, $M_5=M_1+44·8$ Kg/ha. of Basic Slag and $M_6=M_1+44·8$ Kg/ha. of P_2O_5 as Dical. Phos.

3. DESIGN:

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 5. (iv) 101·20 sq. m. (v) Nil. (vi) Yes.

4. GENERAL:

(i) Normal. (ii) No. (iii) Yield of grain. (iv) (a) to (c) N.A. (v) Kanke. (vi) and (vii) Nil.

5. RESULTS:

(i) 1832 Kg/ha. (ii) 374·8 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of grain in Kg/ha.

Treatment	M_0	M_1	M_2	M_3	M_4	M_5	M_6
Av. yield	1707	1883	1823	2112	1784	1863	1649

C.D.=489·3 Kg/ha.

———

Crop :- Maize (*Kharif*). **Kef :- Bh. 61(23).**

Site :- Govt. Agri. Farm, Piprakothi. **Type :- 'M'.**

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

1. BASAL CONDITIONTS:

(i) (a) to (c) N.A. (ii) to (x) N.A.

2. TREATMENTS

14 manurial treatments: M_0=Control, M_1=44·8 Kg/ha. of N as A/S+44·8 Kg/ha. of P_2O_5 as Super+44·8 Kg/ha. of K_2O as Mur. Pot., $M_2=M_1+11·2$ Kg/ha. of Mn/S, $M_3=M_1+22·4$ Kg/ha. of Mn/S, $M_4=M_1+11·2$ Kg/ha. of Zn/S. $M_5=M_1+22·4$ Kg/ha. of Zn/S, $M_6=M_1+11·2$ Kg/ha. of Borax, $M_7=M_1+22·4$ Kg/ha. of Borax, $M_8=M_1+11·2$ Kg/ha. of Cu/S. $M_9=M_1+22·4$ Kg/ha. of Cu/S, $M_{10}=M_1+11·2$ Kg/ha. of Fe/S, $M_{11}=M_1+22·4$ Kg/ha. of Fe/S, $M_{12}=M_1+11·2$ Kg/ha of A/Molybdate and $M_{13}=M_1+22·4$ Kg/ha. of A/Molybdate.

3. DESIGN :

(i) R.B.D. (ii) (a) 14. (b) N.A. (iii) 4. (iv) 50·60 sq. m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1961—N.A. (b) and (c) N.A. (v) Kanke. (vi) and (vii) Nil.

5. RESULTS :

(i) 1770 Kg/ha. (ii) 588·4 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	M_0	M_1	M_2	M_3	M_4	M_5	M_6
Av. yield	1389	1744	1504	2309	1888	1960	1424
	M_7	M_8	M_9	M_{10}	M_{11}	M_{12}	M_{13}
	1096	1432	2321	1929	1917	1879	1983

Crop :- Maize (*Kharif*). **Ref :- Bh. 64(41).**

Site :- Govt. Agri. Farm, Piprakothi. **Type :- 'M'.**

Object :—To study the correlation between crop-responses and Potash status of the soil for Maize.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 3.6.64. (iv) (a) N.A. (b) Line sowing. (c) 2. (d) N.A. (e)—. (v) As per treatments. (vi) to (ix) N.A. (x) 15.9.64.

2. TREATMENTS :

Same as in Expt. No. 64(120) conducted at Dholi and presented on page no. 351.

3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 33·11 m. × 8·84 m. (b) 12·39 m. × 8·23 m. (v) 41 cm. × 31 cm. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) No. (iii) Yield of grain. (iv) (a) to (c) N.A. (v) Dholi and Sabour. (vi and (vii) Nil.

5. RESULTS :

(i) 1796 Kg/ha. (ii) 308·0 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	M_0	M_1	M_2	M_3	M_4	M_5	M_6	M_7	M_8
Av. yield	1694	1600	1910	1529	1877	1724	2024	1934	1867

Crop :- Maize (*Kharif*). **Ref :- Bh. 61(120).**

Site :- Agri. Res. Instt., Patna (Sheikhpura farm). **Type :- 'M'.**

Object :—To study the effect of different sources of N on the yield of Maize.

1. BASAL CONDITIONS :

(i) to (x) N.A.

2. TREATMENTS :

All combinations of (1), (2) and 2 extra treatments

(1) 2 levels of N : N_1=28 and N_2=56 Kg/ha.

(2) 6 sources of N: S_1=A/S (Split-dose), S_2=Urea (split-dose), S_3=A/S (full-dose), S_4=Urea (full-dose), S_5=A/C and S_6=Ammonium Chloride.

2 extra treatments : E_0=Control and E_1=Basal dressing.

All the combinations receive a basal dose of 33·6 Kg/ha. of P_2O_5+33·6 Kg/ha. of K_2O as Mur. Pot. except E_0.

3. DESIGN:

(i) R.B.D. (ii) (a) 14. (b) N.A. (iii) 3. (iv) (a) and (b) 15·00 m.×6·71 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) No. (iii) Yield of grain. (iv) (a) to (c) N.A. (v)Dholi. (vi) and (vii) Nil.

5. RESULTS :

(i) 578 Kg/ha. (ii) 115·6 Kg/ha. (iii) Main effect of N and 'Extra *vs.* others' are highly significant and that of S is significant. (iv) Av. yield of grain in Kg/ha.

E_0=297 and E_1=313 Kg/ha.

	S_1	S_2	S_3	S_4	S_5	S_6	Mean
N_1	665	543	560	590	481	567	568
N_2	890	791	471	570	563	797	680
Mean	778	667	516	580	522	682	624

Crop :- Maize (*Kharif*). **Ref :- Bh. 60(49).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'M'.**

Object :—To study the effect of different sources of P on the yield of Maize.

1. BASAL CONDITIONS :

(i) (a) Gram—Maize. (b) Gram. (c) 22 4 Kg/ha. of N as A/S. (ii) Sandy loam. (iii) 18.6 60 (iv) (a) 3 spadings before sowing. (b) Line sowing by spading. (c) 23 Kg/ha. (d) 46 cm.×30 cm. (e) Nil. (v) Nil. (vi) Jaunpur. (vii) Irrigated. (viii) Weeding by *Khurpi* and spade. (ix) 56 cm. (x) 30.8.60.

2. TREATMENTS :

5 sources of P_2O_5 at 44·8 Kg/ha. : S_0=Control, S_1=Super, S_2=Rock Phos., S_3=Dical. Phos. and S_4=Bone Meal.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 4·27 m.×3·35 m. (b) 3·66 m.×2·74 m. (v) 30 cm.× 30 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) No. (iii) Yield of grain. (iv) (a) 1957—60. (b) and (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1632 Kg/ha. (ii) 530·2 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	S_0	S_1	S_2	S_3	S_4
Av. yield	1467	2456	1277	1509	1451

Crop :- Maize (*Kharif*). **Ref :- Bh. 60(50).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'M'.**

Object :—To study the effect of N, P and K on the yield of Maize.

1. BASAL CONDITIONS :

(i) (a) Maize—Wheat. (b) Wheat. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) (a) Sandy loam. (b) Nil. (iii) 15.6.60. (iv) (a) 3 spadings before sowing. (b) Sown by spade. (c) 23 Kg/ha. (d) 46 cm.×30 cm. (e) Nil. (v) Nil. (vi) Jaunpur. (vii) Irrigated. (viii) Weeding by *khurpi* and spade. (ix) 56 cm. (x) 3.9.60.

2. TREATMENTS :

5 manurial treatments : M_0=Control, M_1=44·8 Kg/ha. of N as A/S, M_2=M_1+44·8 Kg/ha. of P_2O_5 as Super, M_3=M_1+44·8 Kg/ha. of K_2O as Mur. Pot. and M_4=M_1+44·8 Kg/ha. of P_2O_5 as Super+44·8 Kg/ha. of K_2O as Mur. Pot.

3. DESIGN :

(i) R.B D. (ii) (a) 5. (b) N.A. (iii) 3. (iv) (a) 3·33 m ×4·27 m. (b) 2·74 m.×3·66 m. (v) 30 cm.× 30 cm. (vi) N.A.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of grain. (iv) (a) 1959—60 (b) No. (c) Nil. (v) Musheri. (vi) and (vii) Nil.

5. RESULTS :

(i)–1975 Kg/ha. (ii) 390 7 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	M_0	M_1	M_2	M_3	M_4
Av. yield	1045	2034	2093	1935	2769

C.D.=735·6 Kg/ha.

Crop :- Maize (*Kharif*). **Ref :- Bh. 60(52), 61(56).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'M'.**

Object :—To study the effect of N, P, K and trace elements on the yield of Maize.

1. BASAL CONDITIONS :

(i) (a) Wheat—Maize. (b) Wheat. (c) N A. ; 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) 22.6.60 ; 10.6.61. (iv) (a) 3 spadings before sowing. (b) Line sowing by spade. (c) 23 Kg/ha. (d) 46 cm.×30 cm. (e) Nil. (v) Nil. (vi) Jaunpur. (vii) Unirrigated. (viii) Weeding by *khurpi* and spade. (ix) 56 cm. ; 62 cm. (x) 20.8.60 ; 30.8.61.

2. TREATMENTS:

14 manurial treatments: M_0=Control, M_1=44·8 Kg/ha. of N as A/S+44·8 Kg/ha. of P_2O_5 as Super+44·8 Kg/ha. of K_2O as Mur. Pot., $M_2=M_1+11·2$ Kg/ha of Mn. Sul., $M_3=M_1+22·4$ Kg/ha. of Mn. Sul., $M_4=M_1+11·2$ Kg/ha. of Zn. Sul., $M_5=M_1+22·4$ Kg/ha. of Zn. Sul., $M_6=M_1+11·2$ Kg/ha. of Boron., $M_7=M_1+22·4$ Kg/ha. of Boron, $M_8=M_1+11·2$ Kg/ha. of Cu. Sul., $M_9=M_1+22·4$ Kg/ha. of Cu. Sul., $M_{10}=M_1+11·2$ Kg/ha. of Fe. Sul., $M_{11}=M_1+22·4$ Kg/ha. of Fe. Sul., $M_{12}=M_1+1·12$ Kg/ha. of Ammo. Molybdate and $M_{13}=M_1+2·2$ Kg/ha. of Ammo. Molybdate.

3. DESIGN:

(i) R.B.D. (ii) (a) 14. (b) N.A. (iii) 4. (iv) (a) 4·27 m.×3·35 m. (b) 3·66 m.×2·74 m. (v) 30 cm.×30 cm. (vi) Yes.

4. GENERAL:

(i) Fair. (ii) Nil. (iii) Yield of grain. (iv) (a) 1960—61. (b) No. (c) Results of combined analysis are presented under 5. Results. (v) No. (vi) Nil. (vii) Error variances are homogeneous and Treatments×Years interaction is absent.

5. RESULTS:

Pooled results

(i) 1941 Kg/ha. (ii) 634·7 (based on 91 d.f. made up of pooled error and Treatments×Years interaction). (iii) Treatment differences are significant. (iv) Av. yield of grain in Kg/ha.

Treatment	M_0	M_1	M_2	M_3	M_4	M_5	M_6
Av. yield	921	2033	2062	1816	2302	2224	1824

M_7	M_8	M_9	M_{10}	M_{11}	M_{12}	M_{13}
2107	2005	1926	2121	2034	1894	1902

C.D.=631·5 Kg/ha.

Individual results

Treatment	M_0	M_1	M_2	M_3	M_4	M_5	M_6	M_7	M_8	M_9	M_{10}	M_{11}	M_{12}	M_{13}
Year														
1960	972	2149	2004	1363	2151	1802	1670	1860	1744	1584	2149	2179	1335	2353
1961	870	1917	2121	2268	2454	2645	1977	2354	2266	2268	2093	1889	2454	1451
Pooled	921	2033	2062	1816	2302	2224	1824	2107	2005	1926	2121	2034	1894	1902

Sig.	G.M.	S.E./plot
N.S.	1808	567·4
N.S.	2073	644·8
**	1941	634·7

Crop :- Maize (*Kharif*). **Ref :- Bh. 60(60).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'M'.**

Object :—To study the effect of N, P and K on the yield of Maize.

1. BASAL CONDITIONS :

(i) (a) Maize—Wheat. (b) Wheat. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) (a) Sandy loam. (b) Nil. (iii) 20.6.60. (iv) (a) 2 ploughings and one cross ploughing and one ploughing at the time of sowing. (b)Line sowing by plough. (c) 23 Kg/ha. (d) 46 cm. (e) Nil. (v) Nil. (vi) Jaunpur. (vii) N.A. (viii) Weeding by spade in two times. (ix) 92 cm. (x) 12.9.60.

2. TREATMENTS :

Same as in expt. no. 60(50) conducted at Sabour and presented on page 371.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 13·87 m.×8·23 m. (b) 13·26 m.×7·62 m. (v) 30 cm.× 30 cm. (vi) N.A.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of grain. (iv) (a) 1959—60. (b) No. (c) Nil. (v) Musheri. (vi) and (vii) Nil.

5. RESULTS :

(i) 631 Kg/ha. (ii) 248·6 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	M_0	M_1	M_2	M_3	M_4
Av. yield	332	628	736	664	797

Crop :- Maize (*Kharif*). **Ref :- Bh. 60(62), 61(62), 62(30).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'M'.**

Object :—To test the effect of trace elements on the crop yield of Maize.

1. BASAL CONDITIONS :

(i) (a) Wheat—Maize. (b) Wheat. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) 27.6.60 ; 18.6.61 ; 20.6.62. (iv) (a) Two ploughings. (b) Sown by plough. (d) 23 Kg/ha. for 60 and 61 ; 14 Kg/ha. (d) 46 cm. ; 60 cm.; 30 cm.×75 cm. (e) Nil. (v) Nil. (vi) Jaunpur. (vii) Unirrigated. (viii) Weeding by spade. (ix) 92 cm. ; 55 cm. ; 88 cm. (x) 12.9.60 ; 15.9.61 ; 27.9.62.

2. TREATMENTS :

14 manurial treatments : M_0=Control, M_1=44·8 Kg/ha. of N as A/S+44·8 Kg/ha. of P_2O_5 as Super+ 44·8 Kg/ha. of K_2O as Mur. Pot., $M_2=M_1+11·2$ Kg/ha. of $MnSO_4$, $M_3=M_1+$ 22·4 Kg/ha. of $MnSO_4$, $M_4=M_1+11·2$ Kg/ha. of $ZnSO_4$, $M_5=M_1+22·4$ Kg/ha. of $ZnSO_4$, $M_6=M_1+11·2$ Kg/ha. of Boron, $T_7=M_1+22·4$ Kg/ha. of Boron, $M_8=M_1+11·2$ Kg/ha. of $CuSO_4$. $M_9=M_1+22·4$ Kg/ha. of $CuSO_4$, $M_{10}=M_1+$ 11·2 Kg/ha. of $FeSO_4$, $M_{11}=M_1+22·4$ Kg/ha. of $FeSO_4$, $M_{12}=M_1+1·1$ Kg/ha. of Ammo. Molybdate and $M_{13}=M_1+2·2$ Kg/ha. of Ammo. Molybdate.

4. DESIGN:

(i) R.B.D. (ii) (a) 14. (b) N.A. (iii) 4 ; 3 for 61 and 62. (iv) (a) 17·07 m.×3·66 m. ; 7·01 m.×8·53 m. (61, 62). (b) 16·46 m.×3·05 m. ; 6·40 m.×7·92 m. (61, 62). (v) 30 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Yield of grain. (iv) (a) 1960—62. (b) No. (c) Results of combined analysis are given under 5. Results. (v) No. (vi) Nil. (vii) Error variances are heterogeneous and Treatments×Years interaction is present.

5. RESULTS:

Pooled results

(i) 1514 Kg/ha. (ii) 423 Kg/ha. (based on 26 d.f. made up of Treatments × Years interaction). (iii) Treatment differences are significant. (iv) Av. yield of grain in Kg/ha.

Treatment	M_0	M_1	M_2	M_3	M_4	M_5	M_6
Av. yield	902	1593	1476	1432	1738	1340	1465
	M_7	M_8	M_9	M_{10}	M_{11}	M_{12}	M_{13}
	1530	1743	1590	1628	1623	1494	1638

C.D.=389·7 Kg/ha.

Individual results

Treatment	M_0	M_1	M_2	M_3	M_4	M_5	M_6	M_7	M_8	M_9	M_{10}	M_{11}	M_{12}	M_{13}
Year														
1960	113	282	227	197	300	154	174	215	221	125	198	285	168	244
1961	2009	2864	2599	2676	3158	2476	2660	2630	2906	3059	2960	2606	3028	3097
1362	848	2070	2017	1833	2234	1787	1991	2182	2609	2076	2201	2425	1728	2037
Pooled	902	1593	1476	1432	1738	1340	1465	1530	1743	1590	1628	1623	1494	1638

Sig.	G.M.	S.E./plot
N.S.	207	108·6
N.S.	2766	528·9
**	2003	372·6
*	1514	423·8

Crop :- Maize (*Kharif*). **Ref :- Bh. 61(54), 62(35).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'M'.**

Object :—To study the effect of P on the yield of Maize.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Gram ; Maize. (c) 22·4 Kg/ha. of N as A/S ; As per treatments. (ii) Sandy loam. (iii) 8.6.61 ; 22.6.62. (iv) (a) 3 spadings before sowing. (b) Sown by spade. (c) 23 Kg/ha. ; 14 Kg/ha. (d) 46 cm. ; 30 cm. × 75 cm. (e) N.A. (v) Nil. (vi) Jaunpur. (vii) Irrigated. (viii) Weeding by *khurpi*. (ix) 62 cm. ; 59 cm. (x) 30.8.61 ; 19.9.62.

2. TREATMENTS:

6 sources of P_2O_5 at 44·8 Kg/ha. : S_0=Control, S_1=Super, S_2=Rock Phos., S_3=Di-Calcium Phos., S_4=Basic Slag and S_5=Bone Meal.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 4·27 m. × 3·35 m. (b) 3·66 m. × 2·74 m. (v) 30 cm. × 30 cm. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) No. (iii) Yield of grain. (iv) (a) 1961—62. (b) Yes. (c) Results of combined analysis are given under 5. Results. (v) No. (vi) Nil. (vii) Error variances are homogeneous and Treatments × Years interaction is present.

5. RESULTS :

Pooled results

(i) 3583 Kg/ha. (ii) 975·1 Kg/ha. (based on 5 d.f. made up of Treatments × Years interaction). (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	S_0	S_1	S_2	S_3	S_4	S_5
Av. yield	872	4550	3933	3831	4028	4282

C.D.=1253·5 Kg/ha.

Individual results

Treatment	S_0	S_1	S_2	S_3	S_4	S_5	Sig.	G.M.	S.E. plot
Years									
1961	1047	4564	3431	3052	3719	3954	**	3294	482·1
1962	698	4535	4435	4610	4336	4610	**	3871	617·9
Pooled	872	4550	3933	3831	4028	4282	**	3583	975·1

Crop :- Maize (*Kharif*). **Ref :- Bh. 61(61), 62(29).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'M'.**

Object :—To find out the relative value of different sources of N on the yield of Maize.

1. BASAL CONDITIONS :

(i) (a) Maize—Wheat. (b) Wheat. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) 17.6.61 ; 19.6.62. (iv) (a) 2 summer ploughings, 2 ploughings and one angle ploughing. (b) Sown by plough ; line sowing. (c) 23 Kg/ha. ; 14 Kg/ha. (d) 60 cm. between rows ; 30 cm. × 75 cm. (e) Nil. (v) Nil. (vi) Jaunpur. (vii) Unirrigated. (viii) Weeding by spade and horsehoe. (ix) 55 cm. ; 88 cm. ; (x) 11.9.61 ; 27.9.62.

2. TREATMENTS :

All combinations of (1) and (2)+2 extra treatments

(1) 2 levels of N : N_1=28 Kg/ha. and N_2=56 Kg/ha.

(2) 6 sources of N : S_1=A/S, S_2=Urea, S_3=A/S/N, S_4=C/A/N, S_5=A/C and S_6=Urea (split-dose).

2 extra treatments : E_0=Control and E_1=Basal dressing.

Basal dressing : 33·6 Kg/ha. of P_2O_5 as Super+33·6 Kg/ha. of K_2O as Mur. Pot. applied to all treatments except E_0.

N B. : In S_1 to S_5, N was applied in single dose while in S_6, N was applied in two equal doses as basal and top dressing.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 14. (b) N.A. (iii) 3. (iv) (a) 9·75 m. × 9·30 m. (b) 9·14 m. × 8·67 m. (v) 30 cm. × 30 cm. (vi) Yes.

4. GENERAL :

(i) Fair ; satisfactory. (ii) No. (iii) Yield of grain. (iv) (a) 1961—62. (b) Yes. (c) Results of combined analysis are given under 5. Results. (v) Dholi, Patna. (vi) Nil. (vii) Error variances are heterogeneous and Treatments × Years interaction is present.

5. RESULTS :

Pooled results

(i) 3173 Kg/ha. (ii) 859·4 Kg/ha.(based on 13 d.f. made up of Treatments × Years interaction). (iii) 'Extra *vs.* others' is highly significant. (iv) Av. yield of grain in Kg/ha.

E_0=2045 and E_1=2520 Kg/ha.

	S_1	S_2	S_3	S_4	S_5		Mean
N_1	3582	3056	2890	3364	3216	2648	3126
N_2	3588	3252	4018	3058	3867	3318	3517
Mean	3585	3154	3454	3211	3542	2983	3322

C.D. for 'extra *vs.* others'=578·9 Kg/ha.

Individual results

Treatment	S_1	S_2	S_3	S_4	S_5	S_6	Sig.	N_1	N_2	Sig.
Years										
1961	4902	4355	4596	4321	5250	4064	**	4382	4781	•
1962	2268	1954	2312	2100	1834	1902	N.S.	1870	2253	
Pooled	3585	3154	3454	3211	3542	2983	N.S.	3126	3317	N.S.

E_0	E_1	Sig.	G.M.	S.E./plot
3536	4045	N.S.	4468	503·0
554	995	N.S.	1878	293·4
2045	2520	N.S.	3173	859·4

Crop :- Maize (*Kharif*). **Ref :- Bh. 61(63), 62(31).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'M'.**

Object :—To find out the comparative effect of solvent extracted oil cakes in soil fertility and yield of Maize.

1. BASAL CONDITIONS :

(i) (a) Maize—Wheat. (b) Wheat. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) 18.6.61 ; 21.6.62. (iv) (a) 2 summer ploughings and one cross ploughing. (b) Sown by plough. (c) 23 Kg/ha. ; 14 Kg/ha. (d) 60 cm. between rows ; 30 cm. × 75 cm. (e) N.A. (v) Nil. (vi) Jaunpur. (vii) Unirrigated (viii) Weeding by *spade*. (ix) 55 cm. ; 88 cm. (x) 18.9.61 ; 30.9.62.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 5 nitrogeneous treatments : N_0=0, N_1=22·4 Kg/ha. of N as *Mahua* Cake (solvent extracted cakes), N_2=2 N_1 , N_3=22·4 Kg/ha. of N as *Mahua* Cake (pressed) and N_4=2 N_3

(2) 2 manurial treatments : M_0=0. M_1=44·8 Kg/ha. of P_2O_5 as Super+44·8 Kg/ha. of K_2O as Mur. Pot.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 10. (b) N.A. (iii) 3. (iv) (a) 17·98 m.×6·40 m. (b) 17·37 m.×5·79 m. (v) 30 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1961—62. (b) Yes. (c) Results of combined analysis are given under 5. Results. (v) No. (vi) Nil. (vii) Error variances are homogeneous and Treatments×Years interaction is absent.

5. RESULTS :

Pooled results

(i) 1890 Kg/ha. (ii) 382·3 Kg/ha. (based on 45 d.f. made up of pooled error and Treatments×Years interaction). (iii) Main effect of N is significant. (iv) Av. yield of grain in Kg/ha.

	N_0	N_1	N_2	N_3	N_4	Mean
M_0	1342	2097	1970	1987	1854	1850
M_1	1728	1959	2094	1788	2084	1930
Mean	1535	2028	2032	1888	1969	1890

C D. for N marginal means=314·6 Kg/ha.

Individual results

Treatment	N_0	N_1	N_2	N_3	N_4	Sig.	M_0	M_1	Sig.	G.M.	S.E./plot
Year											
1961	2099	2882	2628	2572	2546	*	2483	2607	N.S.	2545	352·7
1962	970	1175	1435	1204	1392	N.S.	1216	1254	N.S.	1235	376·4
Pooled	1535	2028	2032	1888	1969	**	1850	1930	N.S.	1890	382·3

Crop :- Maize (*Kharif*). **Ref :- Bh. 61(64), 62(32), 63(64).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'M'.**

Object :—To find out the effect of placement of organic and inorganic manures on the yield of Maize crop.

1. BASAL CONDITIONS :

(i) (a) Maize—Wheat. (b) Wheat. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) 20.6.61 ; 22.6.62 ; 20.6.63. (iv) (a) 2—4 ploughings. (b) Line sowing. (c) 23 Kg/ha. ; 14 Kg/ha 23 Kg/ha. (d) 60 cm. between rows for 61 ; 30 cm. for others. (e) Nil. (v) Nil. (vi) Jaunpur. (vii) Unirrigated. (viii) Weeding by spade horsehoe. (ix) 55 cm. ; 88 cm. ; 78 cm. (x) 17.9.61 ; 29.9.62 ; 15.9.63.

2. TREATMENTS :

All combinations of (1) and (2)+a control

(1) 3 sources of N at 44·8 Kg/ha. : S_1=F.Y.M., S_2=Compost and S_3=A/S.
(2) 2 depths for application of manure : D_1=Surface and D_2=Plough depth.

3. DESIGN:

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 12·19 m.×9·30 m. (61, 62) ; 16·15 m.×7·16 m. (b) 11·58 m. ×8·69 m. (61, 62) ; 15·54 m.×6·55 m. (v) 30 cm.×30 cm. (vi) Yes.

4. GENERAL:

(i) Satisfactory. (ii) Attack of Stem borer for 63, Nil for others. (iii) Yield of grain. (iv) (a) 1961—63. (b) No. (c) Results of combined analysis are given under 5. Results. (v) No. (vi) Nil. (vii) Error variances are homogeneous and Treatments × Years interaction is present.

5. RESULTS :

Pooled results

(i) 1474 Kg/ha. (ii) 469·6 Kg/ha. (based on 12 d.f. made up of Treatments×years interaction). (iii) Main effect of S and 'control *vs.* others' are highly significant. (iv) Av. yield of grain in Kg/ha.

Control=1054 Kg/ha.

	S_1	S_2	S_3	Mean
D_1	1407	1276	1885	1523
D_2	1426	1471	1802	1566
Mean	1417	1374	1843	1544

C.D. for S marginal means=295·4 Kg/ha.

C.D. for 'control *vs.* others'=319·1 Kg/ha.

Individual results

Treatment	S_1	S_2	S_3	Sig.	D_1	D_2	Sig.
Year							
1961	2696	2552	2887	N.S.	2716	2707	N.S.
1962	1091	1008	2010	**	1296	1444	N.S.
1263	463	561	633	N.S.	557	548	N.S.
Pooled	1417	1374	1843	**	1523	1566	N.S.

Control	Sig.	G.M.	S.E./plot
2061	**	2619	266·2
870	**	1298	203·8
231	**	506	182·5
1054	**	1474	469·6

Crop :- Maize (*Kharif*). **Ref :- Bh. 61(65), 62(33), 63(65).**

Site :- Agri. Res. Instt., Sabour. **Type :-'M'.**

Object :—To find out the effect of placement of P soaked in Compost on the yield of Maize.

1. BASAL CONDITIONS :

(i) (a) Maize—Wheat. (b) Wheat. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) 2.6.61 ; 26.6.62 ; 7.6.62. (iv) (a) 2 summer ploughings, one ploughing and one angle ploughing (61 and 62) ; 3 to 4 *deshi* ploughings. (b) Sown by plough. (c) 23 Kg/ha. ; 14 Kg/ha. ; 23 Kg/ha. (d) 60 cm. ; 30 cm. ; 60 cm. (e) Nil. (v) Nil. (vi) Jaunpur. (vii) Unirrigated. (viii) Weeding by spade and horse-hoe ; weeding by horsehoe ; weeding by spade and *khurpi*. (ix) 55 cm. ; 88 cm. ; 78 cm. (x) 16.9.61 ; 29.9.62 ; 15.9.63.

2. TREATMENTS :

5 manurial treatments : M_0=Control (no manure), M_1=44·8 Kg/ha. of N as A/S+44·8 Kg/ha. of P_2O as Super in usual way, M_2=44·8 Kg/ha. of N as Compost in usual way followed by 44·8 Kg/ha. of P_2O_5 as Super at plough depth, M_3=44·8 Kg/ha. of N as Compost +44·8 Kg/ha. of P_2O_5 as Super mixed and broadcast and M_4=44·8 Kg/ha. of N as Compost+44·8 Kg/ha. of P_2O_5 as Super mixed and placed at plough depth.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 13·41 m.×8.53 m. (61, 62) ; 16·15 m.×7·16 m. (b) 12·80 m. ×7·92 m. (61, 62) ; 15·54 m.×6·55 m. (v) 30 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Simple attack of Stem borer for 63 ; Nil for others. (iii) Yield of grain and straw. (iv) (a) 1961 – 63. (b) No. (c) Results of combined analysis are given under 5. Results. (v) No. (vi) Heavy rains affected the yield in 1963. (vii) Error variances are heterogeneous and Treatments×Years interaction is present.

5. RESULTS :

Pooled results :

(i) 1022 Kg/ha. (ii) 505·8 Kg/ha. (based on 8 d.f. made up of Treatments×Years interaction). (iii) Treatment differences are significant. (iv) Av. yield of grain in Kg/ha.

Treatment	M_0	M_1	M_2	M_3	M_4
Av. yield	601	1398	1141	966	1003

C.D.=476·2 Kg/ha.

Individual results :

Treatment	M_0	M_1	M_2	M_3	M_4	Sig.	G.M.	S.E./plot
Year								
1961	1110	1837	2021	1771	1874	*	1723	361·5
1962	579	1853	1175	875	885	**	1073	297·7
1963	113	505	228	252	250	**	269	95·9
Pooled	601	1398	1141	966	1003	*	1022	505·8

Crop :- Maize (*Rabi*). **Ref :- Bh. 61(80).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'M'.**

Object :—To find out the effect of split application of N *vis-a-vis* placement of P and K on the yield of Maize.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) N.A. (ii) Sandy loam (iii) 11.11.61. (iv) (a) 3—4 *deshi* ploughings. (b) Line sowing. (c) 16-17 Kg/ha. (d) 30 cm.×75 cm. (e) N.A. (v) N.A. (vi) Ganga 101. (vii) Irrigated. (viii) 6 weedings, 3 hand hoeings and 2 spadings. (ix) N.A. (x) 20.5.62.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 112 Kg/ha. of N applied in 3 split doses : T_1=Full dose at sowing time, T_2=$\frac{1}{2}$ dose at sowing and $\frac{1}{2}$ dose at silking and T_3=$\frac{1}{3}$ dose at sowing+$\frac{1}{3}$ dose when plants are 90 cm. high+$\frac{1}{3}$ dose at silking stage.

(2) 89·6 Kg/ha. of P_2O_5+44·8 Kg/ha. of K_2O placed by 2 methods : D_1=Surface placement and D_2= 15 cm. away from the main row and 7·5 cm. deep.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 9·14 m.×6·10 m. (b) 9·14 m.×4·60 m. (v) 75 cm. to both the sides. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) No. (iii) Yield of grain. (iv) (a) No. (b) and (c) Nil. (v) to (vii) Nil.

5. RERULTS :

(i) 4186 Kg/ha. (ii) 419·9 Kg/ha. (iii) Main effect of D is highly significant and that of T is significant. (iv) Av. yield of grain in kg/ha.

	T_1	T_2	T_3	Mean
D_1	3433	4197	4149	3926
D_2	4280	4409	4649	4446
Mean	3857	4309	4399	4186

C.D. for D marginal means=365·4 Kg/ha.

C.D. for T marginal means=447·4 Kg/ha.

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Crop :- Maize (*Kharif*). **Ref :- Bh. 61(278), 62(28), 63(46), 64(31), 65(70).**

Site :- Agri. Res. Instt., Sabour. Type 'M'.

Object :—To study the correlation between crop response and Potash status of the soil.

1. BASAL CONDITIONS :

(i) (a) Wheat—Maize. (b) Wheat. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) 16.6.61 ; 18.6.62 ; 1.6.63 ; 1.6.64 ; 30.6.65. (iv) (a) 3—5 ploughings. (b) Line sowing. (c) 23 Kg/ha. for 61 and 65 ; 14 Kg/ha. for 62 and 63 ; 16 Kg/ha. for 64. (d) 60 cm. between rows ; 75 cm.× 30 cm. for 62 and 63 ; 61 cm.×46 cm. ; 30 cm. between rows. (e) —. (v) Nil. (vi) Jaunpur. (vii) Un-irrigated. (viii) Weeding and hoeing. (ix) N.A. ; 89 cm. ; 78 cm. : 68 cm. ; N.A. (x) 11.9.61 ; 20.9.62 ; 13.9.63 ; 7..0.64 ; 3.10.65.

2. TREATMENTS :

9 manurial treatments : M_0=Control (no manure), M_1=45 Kg/ha. of N as A/S, M_2=2 M_1, M_3=M_1+ 45 Kg/ha. of P_2O_5 as Super, M_4=M_2+90 Kg/ha. of P_2O as Super, M_5=M_1+ 45 Kg/ha. of K_2O as Mur. Pot, M_6=M_2+90 Kg/ha. of K_2O as Mur. Pot., M_7=45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. and M_8=2 M_7.

3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 3. (iv) (a) 16·15 m.×7·16 m. (b) 15·54 m.×6·55 m. (v) 30 cm.× 30 cm. (v) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1961—65. (b) Yes. (c) Nil. (v) and (vi) Nil. (vii) Error variances are heterogeneous and Treatments × Years interaction is present.

5. RESULTS:

Pooled results

(i) 1803 Kg/ha. (ii) 665 1 Kg/ha. (based on 32 d.f. made up of Treatments × Years interaction). (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	M_0	M_1	M_2	M_3	M_4	M_5	M_6	M_7	M_8
Mean yield	882	1471	2043	1611	2038	2000	1996	1985	2199

C.D.=494·9 Kg/ha.

Individual results

Treatment	M_0	M_1	M_2	M_3	M_4	M_5	M_6	M_7	M_8	Sig.	G.M.	S.E./plot
Year 1961	2073	3334	3560	2576	3327	3460	3352	3034	3186	**	3100	392·4
1962	891	1568	3574	2533	3407	2975	3243	2526	3531	**	2694	337·7
1963	366	866	1230	1027	1338	1676	1296	1898	1335	*	1226	394·7
1964	853	1011	1096	1112	1181	1193	1337	1384	1527	N.S.	1188	274·8
1965	229	576	753	809	936	698	750	1084	1415	**	806	104·8
Pooled	882	1471	2043	1611	2038	2000	1996	1985	2199	**	1803	665·1

Crop :- Maize (*Rabi*). **Ref :- Bh. 62(51), 63(68).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'M'.**

Object :—To find out the effect of split application of N *vis-a-vis* placement of P and K on the yield of Maize.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) N.A. (ii) Sandy loam. (iii) 2.11.63 ; 9.11.63. (iv) (a) 3 to 4 *deshi* ploughings. (b) Line sowing. (c) 16 to 17 Kg/ha. (d) 30 cm. × 75 cm. (e) N.A. (v) 112 Kg/ha. of N+89·6 Kg/ha. of P_2O_5+44·8 Kg/ha. of K_2O. (vi) Ganga hyb. No. 101. (vii) Irrigated. (viii) 2 weedings and hand hoeing. (ix) N.A. (x) 30.4.63 ; 26.4.64.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 methods of application of P_2O_5 and K_2O : M_1=Broadcast and M_2=Hand placement.

(2) 3 times of application of N : T_1=Full dose at sowing, T_2=$\frac{1}{2}$ dose at sowing+$\frac{1}{2}$ dose at silking and T_3=$\frac{1}{3}$ dose at sowing+$\frac{1}{3}$ dose at knee high plants+$\frac{1}{3}$ dose at silking.

3. DESIGN.:

(i) Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 9·14 m. × 7·62 m. (b) 9·14 m. × 4·57 m. (v) 1·52 m. on either side of the plot. (vi) Yes.

4. GENERAL:

(i) Fair. (ii) 0·4 % Endrin sprayed. (iii) Stand count and yield of green cobs. (iv) (a) 1962—63. (b) Yes. (c) Nil. (v) No. (vi) Nil. (vii) Error variances are heterogeneous and Treatments × Years interaction is absent. Hence the results of individual years are presented under 5. Results.

5. RESULTS :

62(51)

(i) 5510 Kg/ha. (ii) 857·9 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of green cobs in Kg/ha.

	T_1	T_2	T_3	Mean
M_1	5479	5529	6256	5755
M_2	5462	4620	5715	5266
Mean	5470	5075	5986	5510

63(68)

(i) 5629 Kg/ha. (ii) 439·6 Kg/ha. (iii) Main effect of M alone is significant. (iv) Av. yield of green cobs in Kg/ha.

	T_1	T_2	T_3	Mean
M_1	5449	5209	5588	5415
M_2	6157	5633	5739	5843
Mean	5803	5421	5664	5629

C.D. for M marginal means=382 4 Kg/ha.

Crop :- Maize (*Kharif*). **Ref :- Bh. 62(52), 63(72).**

Site :- Agri. Res. Instt., Sobour. **Type :- 'M'.**

Object :—To find out the effect of split application of N *vis-a-vis* placement of P and K on the yield of Maize.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Wheat ; Sugarcane. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super.; 45 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) 9.6.62 ; 31.5.63. (iv) (a) 3 to 4 *deshi* ploughings. (b) Line sowing. (c) 16—17 Kg/ha. (d) 30 cm.×75 cm. (e) Nil. (v) Nil. (vii) Ganga 101. (vii) Irrigated ; Unirrigated. (viii) 2 weedings and hand hoeing. (ix) 93 cm. ; 78 cm. (x) 27.9.62 ; 11.9.63.

2. TREATMENTS :

All combinations of (1) and (2)

1) 2 methods of application of P_2O_5 and K_2O: M_1=Broadcast and M_2=Hand placement.

(2) 3 times of application of N : T_1=Full dose at sowing, T_2=$\frac{1}{2}$ dose at sowing+$\frac{1}{2}$ dose at silk ng and T_3=$\frac{1}{3}$ dose at sowing+$\frac{1}{3}$ dose at knee high plants+$\frac{1}{3}$ dose at silking

Dose : 112 Kg/ha. of N+89·6 Kg/ha. of P_2O_5+44·8 Kg/ha. of K_2O.

3. DESIGN :

(i) Fact. in R B D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 9 14 m.×7 62 m. (b) 9·14 m.×4·57 m. (v) 1·52 m. on either side on the plot. (vi) Yes.

4. GENERAL:

(i) Fair. (ii) 0·4 % Endrine sprayed. (iii) Yield of grain. (iv) (a) 1962—63. (b) No. (c) Results of combined analysis are given under 5. Results. (v) No. (vi) Nil. (vii) Error variances are homogeneous and Treatments × Years interaction is absent.

5. RESULTS :

Pooled results

(i) 2986 Kg/ha. (ii) 486·0 Kg/ha. (based on 35 d.f. made up of pooled error and Treatments × Years interaction). (iii) Main effect of T is highly significant. (iv) (a) Av. yield of grain in Kg/ha.

	T_1	T_2	T_3	Mean
M_1	2656	2874	3488	3006
M_2	2631	2896	3373	2966
Mean	2644	2885	3430	2986

C.D. for T marginal means=348·7 Kg/ha.

Individual resnlts :

Treatment	T_1	T_2	T_3	Sig.	M_1	M_2	Sig.	G.M.	S.E./plot
Year									
1962	3220	3244	3661	N.S.	3417	3334	N.S.	3376	368·1
1963	2067	2526	3198	**	2595	2599	N.S.	2597	512·8
Pooled	2644	2885	3430	**	3006	2966	N.S.	2986	486·0

Crop :- Maize (*Kharif*). **Ref :- Bh 63(17), 64(78).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'M'.**

Object:—To study the effect of different levels and sources of P on the yield of Maize.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Barley ; Gram. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super ; 22·4 Kg/ha. of N as A/S. (ii) Sandy loam. (iii) 15.6.63 ; 25.6.64. (iv) (a) 3 spadings before sowing. (b) Line sowing. (c) 15 Kg/ha. ; 30 Kg/ha. (d) 46 cm. × 30 cm. ; 30 cm. × 50 cm. (e) Nil. (v) Nil. (vi) Jaunpur. (vii) Unirrigated. (viii) weeding by *khurpi*. (ix) 69 cm. ; 73 cm. (x) 22.9.63 ; 28.9.64.

2. TREATMENTS :

All combinations of (1) and (2)+2 extra treatments

(1) 3 levels of P_2O_5 : P_1=44·8, P_2=67·2 and P_3=89·6 Kg/ha.

(2) 2 sources of P_2O_5: S_1=Super and S_2=Dical. Phos.

2 extra treatments : E_0=Control and E_1=Basal dressing.

Basal dressing of 44·8 Kg/ha. of N as A/S is given to all treatments except E_0.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 4·57 m. × 3·35 m. (b) 3·66 m. × 2·74 m. (v) 30 cm. × 30 cm. (vi) Yes.

4 GENERAL :

(i) Normal. (ii) Little attack of stem borer, Endrin applied as control-measure ; No. (iii) Yield of grain. (iv) (a) 1963—64. (b) Yes. (c) Nil. (v) No. (vi) Nil. (vii) Error variances are homogeneous and Treatments × Years interaction is present.

5. RESULTS :

Pooled results

(i) 3032 Kg/ha. (ii) 633·4 Kg/ha. (based on 7 d.f. made up of Treatments × Years interaction). (iii) Extra treatments among themselves are highly significant and 'Extra *vs.* others' effect is significant. (iv) Av. yield of grain in Kg/ha.

E_0=648 and E_1=3027 Kg/ha.

	P_1	P_2	P_3	Mean
S_1	3239	3351	3650	3413
S_2	2989	3625	3724	3446
Mean	3114	3488	3687	3430

C.D. for E marginal means=749·0 Kg/ha.

C.D. for 'E *vs* others' =432·4 Kg/ha.

Individual results

Treatment	P_1	P_2	P_3	Sig.	S_1	S_2	Sig.	E_0	E_1
Year 1963	2155	2516	2902	**	2491	2557	N.S.	299	2192
1964	4074	4460	4472	*	4335	4336	N.S.	977	3862
Pooled	3114	3488	3687	N.S.	3413	3446	N.S.	648	3027

Sig.	G.M.	S.E./plot
**	2204	419·7
**	3859	337·9
**	3032	633·4

———

Crop :- Maize (*Kharif*). **Ref :- Bh. 63(48).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'M'.**

Object :—To find out the comparative effect of solvent extracts and pressed oil cakes and soil fertility and yield of Maize.

1. BASAL CONDITIONS:

(i) (a) Maize—Wheat. (b) Wheat. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) 2.6.63. (iv) (a) 3 to 4 *deshi* ploughings. (b) Line sowing. (c) 20 Kg/ha. (d) 30 cm. between rows. (e) Nil. (v) Nil. (vi) Jaunpur. (vii) Irrigated. (viii) Weeding by horse hoe and spading. (ix) 78 cm. (x) 16.9.63.

2. TREATMENTS:

All combinations of (1) and (2)+2 extra treatments

(1) 5 nitrogeneous treatments : N_0=0, N_1=22·4 Kg/ha. of N as *Mahua Cake* (solvent extracted), N_2=2 N_1, N_3=22·4 Kg/ha. of N as *Mahua Cake* (pressed), N_4=2 N_3.

(2) 2 manurial treatments : M_0=Control and M_1=44·8 Kg/ha. of P_2O_5 as Super+44·8 Kg/ha. of K_2O as Mur. Pot.

2 extra treatments : E_0=22·4 and E_1=44·8 Kg/ha. of N as A/S.

3. DESIGN:

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 16·15 m.×7·16 m. (b) 15·54 m.×6·55 m. (v) 30 cm.×30 cm. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Simple attack of stem borer (iii) Yield of grain and straw. (iv) (a) 1963—only. (b) and (c) Nil. (v) to (vii) Nil.

5. RESULTS:

(i) 365 Kg/ha. (ii) 172·5 Kg/ha. (iii) None of the effect is significant. (iv) Av. yield of grain in Kg/ha.

E_0=351 and E_1=581 Kg/ha.

	N_0	N_1	N_2	N_3	N_4	Mean
M_1	290	383	322	469	476	388
M_2	312	230	304	278	375	301
Mean	301	311	313	373	426	345

Crop :- Maize (*Kharif*). **Ref :- Bh. 64(8), 65(82).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'M'.**

Object :—To find out the effect of heavy dose of N in different forms applied as basal dose and top dressing on the yield of Maize.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Wheat. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur.Pot. (ii) Sandy loam. (iii) 29.6.64 ; 6.7.65. (iv) (a) 3—4 ploughings. (b) Line sowing. (c) 16 Kg/ha. ; 23 Kg/ha. (d) 45 cm.×30 cm. (e) —. (v) As per treatments. (vi) Jaunpur. (vii) Irrigated. (viii) Weeding and earthing. (ix) 67 cm. ; N.A. (x) 21.10.64 ; 1.10.65.

2. TREATMENTS:

14 manurial treatments : T_0=Control (no manure), T_1=45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot., T_2=T_1+45 Kg/ha. of N as A/S (top-dressed), T_3=T_1+90 Kg/ha. of N as A/S (top-dressed), T_4=T_1+135 Kg/ha. of N as A/S (top-dressed), T_5=T_1+45 Kg/ha. of N as A/S (basal dressed), T_6=T_1+90 Kg/ha. of N as A/S (basal dressed) T_7=T_1+135 Kg/ha. of N as A/S (basal dressed), T_8=T_1+45 Kg/ha. of N as Urea (top-dressed), T_9=T_1+90 Kg/ha. of N as Urea (top-dressed), T_{10}=T_1+135 Kg/ha. of N as Urea (top-dressed), T_{11}=T_1+45 Kg/ha. of N as Urea (basal dressed), T_{12}=T_1+90 Kg/ha. of N as Urea (basal dressed) and T_{13}=T_1+135 Kg/ha. of N as Urea (basal dressed).

3. DESIGN :

(i) R.B.D. (ii) (a) 14. (b) N.A. (iii) 4. (iv) (a) 4·27 m.×3·35 m. (b) 3·66 m.×2·74 m. (v) 30 cm.× 30 cm. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1964—65. (b) No. (c) Results of combined analysis are given under 5. Results (v) Dholi. (vi) Nil. (vii) Error variances are heterogeneous and Treatments × Years interaction is present.

5. RESULTS :

Pooled results

(i) 2782 Kg/ha. (ii) 1005·5 Kg/ha. (based on 13 d.f. made up of Treatments × Years interaction). (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	1022	1246	2678	3264	3650	2616	2965
	T_7	T_8	T_9	T_{10}	T_{11}	T_{12}	T_{13}
	3725	2138	2878	2978	2654	3402	3738

C.D.=1085·9 Kg/ha.

Individual results

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}	T_{12}	T_{13}
Year 1964	1295	1394	3238	3960	4634	3213	4110	4284	2083	2890	3238	3437	3637	4085
1965	748	1097	2119	2568	2667	2019	1820	3166	2194	2867	2717	1870	3166	3390
Pooled	1022	1246	2678	3264	3650	2616	2965	3725	2138	2878	2978	2654	3402	3738

Sig.	G.M.	S.E /plot
**	3250	259·2
**	2315	451·2
**	2782	1005·5

Crop :- Maize (*Kharif*). **Ref :- Bh. 64(86).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'M'.**

Object :—To study the effect of different levels of N applied at different times on the yield of Maize.

1. BASAL CONDITIONS :

(i) (a) Wheat—Maize. (b) Wheat. (c) N.A. (ii) N.A. (iii) 29.6.64. (iv) (g) 1 Punjabi ploughing, 3 *deshi* ploughings and 1 angle ploughing. (d) Sowing by spade in line. (c) 23 Kg/ha. (d) 30 cm. × 45 cm. (e) N.A. (v) N.A. (vi) Jaunpur. (vii) Unirrigated. (viii) Weeding. (ix) N.A. (x) 7.10.64.

2. TREATMENTS :

All combinations of (1), (2) and (3)+2 extra treatments

(1) 3 levels of N : N_0=44·8, N_1=89·6 and N_2=132·4 Kg/ha.
(2) 2 sources of N : S_1=A/S and S_2=Urea.
(3) 2 times of application : T_1=Top dressing and T_2=Basal dressing.

2 extra treatments: E_0=Control and E_1=Basal dressing.

All the treatments except E_0, receive a basal dressing of 44·8 Kg/ha. of P_2O_5 as Super+44·8 Kg/ha. of K_2O as Mur. Pot.

3. DESIGN :

(I) R.B.D. (ii) (a) 14. (b) N.A. (iii) 4. (iv) (a) 4·27 m.×3·35 m. (b) 3·66 m ×2·74 m. (v) 30 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) No. (iii) Yield of grain and straw. (iv) (a) 1964—only. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 3253 Kg/ha. (ii) 282·1 Kg/ha. (iii) Main effects of S, T, N, interaction S×T and 'E *vs.* others' are highly significant. (iv) Av. yield of grain in Kg/ha.

E_0=1296 and E_1=1395 Kg/ha.

	N_1	N_2	N_3	T_1	T_2	Mean
S_1	3227	4036	4461	3945	3870	3908
S_2	2778	3264	3662	2749	3721	3235
Mean	3002	3650	4602	3347	3796	3571
T_1	2678	3426	3937			
T_2	3327	3874	4186			

C.D. for S or T marginal means=164·7 Kg/ha.
C.D. for N marginal means =201·6 Kg/ha.
C.D. for the body of S×T table=232·9 Kg/ha.
C.D. for 'Extra vs. others' =218·0 Kg/ha.

Crop :- Maize (*Kharif*). **Ref :- Bh. 64(104), 65(66).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'M'.**

Object :—To study the effect of different times of application and sources of N on the yield of Maize.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat ; Maize. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super ; 112·5 Kg/ha. of N as A/S+67 Kg/ha. of P_2O_5 as Super+33·5 Kg/ha. of K_2O as Mur. Pot. (ii) Sandy loam. (iii) 25.6.64 ; 12.7.65. (iv) 3 to 4 ploughings. (b) Line sowing. (c) 16—17 Kg/ha. ; 20 Kg/ha. (d) 30 cm.×75 cm. ; 90 cm. between rows. (e) Nil. (v) 67 Kg/ha. of P_2O_5+33·6 Kg/ha. of K_2O. (vi) Ganga 101. (vii) Un-irrigated. (viii) 2 weedings. (ix) 61 cm. ; N.A. (x) 6.10.64 ; 30.10.65.

2. TREATMENTS:

All combinations of (1) and (2)

(1) 2 sources of N : S_1=Urea and S_2=A/S.

(2) 3 times of application of N : T_1=112 Kg/ha. of N at sowing, T_2=33·6 Kg/ha. of N at sowing+78·4 Kg/ha. of N at 61 cm. height of plant and T_3=33·6 Kg/ha. of N at sowing+44·8 Kg/ha. of N at 61 cm. height of plant+33·6 Kg/ha. of N at boot stage.

3. DESIGN:

(i) Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 9·14 m.×7·62 m. (b) 9·14 m.×4·57 m. (v) 1·52 m. on either side of the plot. (vi) Yes.

4. GENERAL:

(i) Fair ; Good. (ii) Endrine sprayed ; Nil. (iii) Yield of grain. (iv) (a) 1964—65. (b) No. (c) Nil. (v) Dholi. (vi) Nil. (vii) Error variances are heterogeneous and Treatments×Years interaction is absent. Hence the results of individual years are presented under 5. Results.

5. RESULTS:

64(104)

(i) 3720 Kg/ha. (ii) 533·1 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	T_1	T_2	T_3	Mean
S_1	3577	4194	3722	3831
S_2	3912	3138	3780	3610
Mean	3744	3666	3751	3720

65(66)

(i) 4875 Kg/ha. (ii) 1048·0 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	T_1	T_2	T_3	Mean
S_1	4290	5647	4615	4851
S_2	5348	5294	4045	4896
Mean	4819	5470	4330	4873

Crop :- Maize (*Kharif*). **Ref :- Bh. 64(87), 65(81).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'M'.**

Object :—To compare Urea with A/S under different methods of application.

1. BASAL CONDITIONS:

(i) (a) Wheat—Maize. (b) Wheat. (c) N.A. (ii) Sandy loam. (iii) 29.6.64 ; 5.7.65. (iv) (a) 3 ploughings and puddlings. (b) Sowing by spade in line. (c) 23 Kg/ha. (d) 45 cm.×30 cm. (e) —. (v) Nil. (vi) Jaunpur. (vii) Unirrigated. (viii) Weeding and earthing. (ix) N.A. (x) 6.10.64 ; 2.10.65.

2. TREATMENTS :

All combinations of (1), (2) and (3)+a control

(1) 3 levels of N : N_1=45, N_2=90 and N_3=135 Kg/ha.
(2) 2 sources of N : S_1=A/S and S_2=Urea.
(3) 2 times of application : T_1=Top dressing and T_2=Basal dressing

3. DESIGN :

(i) R.B.D. (ii) (a) 13. (b) N.A. (iii) 4. (iv) (a) 4·27 m.×3·35 m. (b) 3·66 m.×2·74 m. (v) 30 cm.× 30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) yield of grain. (iv) (a) 1964–65. (b) No. (c) Results of combined analysis are given under 5. Results. (v) and (vi) Nil. (vii) Error variances are homogeneous and Treatments×Years interaction is absent.

5. RESULTS :

Pooled results

(i) 2789 Kg/ha. (ii) 488·0 Kg/ha. (based on 72 d.f. made up of pooled error). (iii) Main effects of S, N and 'control *vs.* others' are highly significant. (iv) Av. yield of grain in Kg/ha.

Control=1159 Kg/ha.

	N_1	N_2	N_3	T_1	T_2	Mean
S_1	2642	2978	3502	2990	3090	3040
S_2	2561	2841	3026	2782	2838	2810
Mean	2601	2910	3264	2886	2964	2925
T_1	2542	2891	3226			
T_2	2661	2929	3302			

C.D. for S marginal means =198·7 Kg/ha.
C.D. for N marginal means =243·4 Kg/ha.
C.D. for 'Control *vs.* others'=358·3 Kg/ha.

Individual results

Treatment	S_1	S_2	Sig.	N_1	N_2	N_3	Sig.	T_1	T_2	Sig.	Control	Sig.	G.M.	S.E./plot
Year														
1964	3709	3215	**	3078	3346	3962	**	3530	3394	N-S.	1595	**	3318	410·6
1965	2372	2404	N.S.	2125	2473	2566	N.S.	2242	2534	N.S	723	**	2260	554·8
Pooled	3040	2810	**	2601	2910	3264	**	2886	2964	N.S.	1159	**	2789	488·0

Crop :- Maize (*Rabi*). **Ref :- Bh. 64(110), 65(67).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'M'.**

Object :—To find out whether nitrogeneous fertilizer should be applied in full dose at sowing or in 2 or 3 split-applications.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize ; *Kalai*. (c) N.A. (ii) Sandy loam. (iii) 31.10.64 ; 7.11.65. (iv) (a) 3 to 4 *deshi* ploughings. (b) Line sowing. (c) 16—17 Kg/ha. ; 20 Kg/ha. (d) 75 cm. × 30 cm. ; 90 cm. between rows. (e) —. (v) 112 Kg/ha. of N+67·2 Kg/ha. of P_2O_5+33·6 Kg/ha. of K_2O. (vi) Ganga 101. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 22.4.65 ; 20.4.66.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 sources of N : S_1=Urea and S_2=A/S.

(2) 3 times of application of N : T_1=112 Kg/ha. of N at sowing, T_2=33·6 Kg/ha. of N at sowing+78·4 Kg/ha. of N at 61 cm. height of plant and T_3=33·6 Kg/ha. of N at sowing+44·8 Kg/ha. of N at 61 cm. height of plant+33·6 Kg/ha. of N at boot-stage.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 9·14 m. × 7·62 m. (b) 9·14 m. × 4·57 m. (v) 1·52 m. on either side of the plot along breadth. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Endrine sprayed in 64 ; Nil. (iii) Yield of green cob and stand count. (iv) (a) 1964—65. (b) No. (c) Results of combined analysis are given under 5. Results. (v) and (vi) Nil. (vii) Error variances are homogeneous and Treatments × Years interaction is absent.

5. RESULTS :

Pooled results (yield of green cob)

(i) 6982 Kg/ha. (ii) 724·7 Kg/ha. (based on 35 d.f. made up of pooled error and Treatments × Years interaction.) (iii) None of the effects is significant. (iv) Av. yield of green cob in Kg/ha.

	T_1	T_2	T_3	Mean
S_1	6622	7347	7154	7041
S_2	6942	6804	7023	6923
Mean	6782	7076	7088	6982

Individual results (yield of green cob)

Treatment	T_1	T_2	T_3	Sig.	S_1	S_2	Sig.	G.M.	S.E./plot
Year									
1964	6045	5966	5923	N.S.	5838	6118	N.S.	5978	623·9
1965	7520	8185	8253	N.S.	8244	7728	N.S.	7986	716·4
Pooled	6782	7076	7088	N.S.	7041	6923	N.S.	6982	724·7

Crop :- Maize (*Kharif*). **Ref :- Bh. 65(76).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'M'.**

Object :—To find out the suitability of different forms of phosphatic fertilizers in different soil.

1. BASAL CONDITIONS:

(i) (a) Gram—Maize. (b) Gram. (c) As per treatments. (ii) Sandy loam. (iii) 29.6.65. (iv) (a) 3 ploughings. (b) Line sowing. (c) 23 Kg/ha. (d) 60 cm. between rows. (e)—. (v) Nil. (vi) Jaunpur. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 15.9.65.

2. TREATMENTS:

8 manurial treatments: T_0=Control (no manure), T_1=45 Kg/ha. of N as A/S, $T_2=T_1+45$ Kg/ha. of P_2O_5 as Super, $T_3=T_1+67{\cdot}5$ Kg/ha. of P_2O_5 as Super, $T_4=T_1+90$ Kg/ha. of P_2O_5 as Super, $T_5=T_1+45$ Kg/ha. of P_2O_5 as Dical. Phos., $T_6=T_1+67{\cdot}5$ Kg/ha. of P_2O_5 as Dical. Phos. and $T_7=T_1+90$ Kg/ha. of P_2O_5 as Dical. Phos.

3. DESIGN:

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 4·27 m.×3·35 m. (b) 3·66 m.×2·74 m. (v) 61 cm.×61 cm. (vi) Yes.

4. GENERAL:

(i) Good, (ii) Attack of Stem borer, Endrine 20 EC sprayed. (iii) Yield of grain. (iv) (a) to (c) No (v) to (vii) Nil.

5. RESULTS:

(i) (a) 4098 Kg/ha. (ii) 864·7 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	
Av. yield	1321	3690	4612	4562	4462	4363	4911	4861	C.D.=1272 Kg/ha.

Crop :- Maize. **Ref :- Bh. 65(M.A.E.)**

Site :- M.A.E. Centre, Narauli. **Type :- 'M'.**

Object :—Type XI : To study the effect of micro-nutrients on the yield of Maize.

1. BASAL CONDITIONS:

(i) (a) to (c) N.A. (ii) Sandy loam. (iii) to (vi) N.A. (vii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS:

15 micro-nutrient treatments : T_0=Control (no fertilizer), T_1=70 Kg/ha. of N+50 Kg/ha. of P_2O_5+50 Kg/ha. of K_2O, $T_2=T_1$+Spartan at 395 Kg/ha., $T_3=T_1$+Manganese as Manganese Sul. at 60 Kg/ha., $T_4=T_1$+Zn as Zinc Sul. at 30 Kg/ha., $T_5=T_1$+Cu as Copper Sul. at 30 Kg/ha., $T_6=T_1$+Boron as Borax at 17·5 Kg/ha., $T_7=T_1$+Molybedenum as Sodium Molybdate at 1·25 Kg/ha., $T_8=T_1$+Mn+Zn+Cu+Bo+Mo, $T_9=T_1$+Manganese as Manganese Sul. at 17·5 Kg/ha., $T_{10}=T_1$+Zn as Zinc Sul. at 12·5 Kg/ha., $T_{11}=T_1$+Cu as Copper Sul. at 12·5 Kg/ha., $T_{12}=T_1$+Boron as Borax at 6·2 Kg/ha., $T_{13}=T_1$+Molybdenum as Sodium Molybdate at 0·62 Kg/ha. and $T_{14}=T_1$+Mn+Zn+Cu+Bo+Mo.

Treatments T_3 to T_8 applied by soil application and T_9 to T_{14} by foliar spray.

3. DESIGN:

(i) R.B.D. (ii) (a) 15. (b) N.A. (iii) 4. (iv) (a) and (b) N.A. (v) Nil. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1965—66. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1917 Kg/ha. (ii) 537·3 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Av. yield	1250	1998	2668	2247	2422	2107	1485	1782

T_8	T_9	T_{10}	T_{11}	T_{12}	T_{13}	T_{14}
2345	1661	2022	1350	1892	1708	1820

C.D.=758 Kg/ha.

Crop :- Maize. **Ref :- Bh. 60(SFT).**

Site :- (District) : Monghyr (C.F.) **Type :- 'M'.**

Object :—Type A : To study the response of Maize to different levels of N, P and K applied individually and in combination.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Alluvial. (iii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments :

Control=No manure,
N=22·4 Kg/ha. of N,
P=22·4 Kg/ha. of P_2O_5,
K=22·4 Kg/ha. of K_2O,
NP=22·4 Kg/ha. of N+22·4 Kg/ha. of P_2O_5,
NK=22·4 Kg/ha. of N+22·4 Kg/ha. of K_2O,
PK=22·4 Kg/ha. of N+22·4 Kg/ha. of K_2O and
NPK=22 4 Kg/ha. of N+22·4 Kg/ha. of P_2O_5+22·4 Kg/ha. of K_2O.

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 a rabi cereal, 8 on cash crop, 4 on an oilseed crop and 3 on a legumenous crop. Half the number of trial 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) 1/98·8 ha. (b) 1/197·7 ha. (iv) Yes.

4. GENERAL :

(i) to (vii) N.A

5. RESULTS :

Treatment	N	P	K	S.E	NP	NK	PK	NPK	S.E.
Av. response of grain in Kg/ha.	290	250	100	65·0	—60	—10	—90	120	47·0

Control mean=1060 Kg/ha. ; No. of trials=2.

Crop :- Maize. **Ref :- Bh. 60, 61(SFT).**

Site :- (District) : Monghyr (c.f.) **Type :- 'M'.**

Object : —Type B : To investigate the relative efficiency of different nitrogeneous fertilizers at different doses.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Alluvial. (iii) to (x) N.A.

2. TREATMENTS :

Control=No manure,
n_1=22·4 Kg/ha. of N as A/S,
n_2=44·8 Kg/ha. of N as A/S,
n_1'=22·4 Kg/ha. of N as Urea,
n_2'=44·8 Kg/ha. of N as Urea,
n_1''=22·4 Kg/ha. of N as A/S/N,
n_2''=44·8 Kg/ha. of N as A/S/N,
n_1'''=22·4 Kg/ha. of N as C/A/N,
n_2'''=44·8 Kg/ha. of N as C/A/N.

3. DESIGN :

Same as in type A on page 392

4. GENERAL :

(i) to (vii) N.A.

5. RESULTS :

60(SFT)

Treatment	n_1	n_1'	n_1''	n_1'''	n_2	n_2'	n_2''	n_2'''	S.E.
Av. response of grain in Kg/ha.	—	80	340	290	—	170	420	340	65·0

Control mean=1410 Kg/ha. : No. of trials=3.

61(SFT)

Treatment	n_1	n_1'	n_1''	n_1'''	n_2	n_2'	n_2''	n_2'''	S.E.
Av. response in	320	280	420	540	470	450	500	850	143·0

Control mean=640 Kg/ha. ; No. of trials=2.

Crop :- Maize (*Kharif*). **Ref :- Bh. 63, 64, 65(SFT) for Monghyr ; 62, 64, 65(SFT) for Bhagalpur and 64(SFT) for Hazaribagh.**

Site :- (District) : Monghyr, Bhagalpur and Hazaribagh. **Type :- 'M'.**

Object : — Type A_1 : To study the response curves of important cereal, cash and oilseed crops to Nitrogen applied singly and in combination with other nutrients.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Alluvial for Monghyr and Bhagalpur and red for Hazaribagh. (iii) to (vi) N.A. (viii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS:

8 manurial treatments :

O=Control (no manure)
N_1=60 Kg/ha. of N,
N_2=120 Kg/ha. of N
P_1=35 Kg/ha. of P_2O_5,
N_1P_1=60 Kg/ha. of N+35 Kg/ha. of P_2O_5,
N_2P_1=120 Kg/ha. of N+35 Kg/ha. of P_2O_5,
N_2P_2=120 Kg/ha. of N+70 Kg/ha. of P_2O_5,
$N_2P_2K_1$=120 Kg/ha. of N+70 Kg/ha. of P_2O_5+35 Kg/ha. of K_2O,

N applied as A/S, P_2O_5 as Super and K_2O as Mur. Pot.

3. DESIGN :

(i) A selected district is divided into four agriculturally homogeneous zones based on climate, soil, cropping pattern etc. In each zone one block is selected at random. A block normally consists of a group of 50-100 villages. In each block 36 experiments are conducted in a year of which 11 are of type A_1, 11 of type A_2, 11 of type A_3 and 3 are of type C. The eleven experiments under type A_1, A_2 and A_3 are distributed as 3 on a kharif cereal, 3 on a rabi cereal, 3 on a cash crop and 2 on oilseed. All the three type-C experiments are conducted on a legume crop. For the purpose of conducting the A_1, A_2 and A_3 experiments 11 villages are randomly selected in each block and in each village 3 experiments one each of type A_1, A_2 and A_3 are laid out. For conducting the three type-C trials three villages are randomly selected in each block.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1963-66 Monghyr, 1962-66 (63—N.A.) for Bhagalpur and 1964-66 (65—N.A.) for Hazaribagh. (b) N.A. (c) Nil. (v) to (vi) Nil.

5. RESULTS:

Monghyr

63(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	199	579	106	551	736	1082	1474	149·3

Control mean=1023 Kg/ha. ; No. of trials=3

64(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	351	630	165	493	718	1073	1194	60·5

Control mean=1058 Kg/ha. ; No. of trials=8

65(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E
Av. response of grain in Kg/ha.	369	596	157	557	765	1065	1090	32·2

Control mean=801 Kg/ha. ; No. of trials=5

Bhagalpur

62(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	328	480	154	460	585	703	931	69·9

Control mean=1589 Kg/ha. ; No. of trials=3

64(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	307	474	140	387	547	655	753	25·8

Control mean=730 Kg/ha. ; No. of trials=12

65(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	296	476	149	350	544	627	684	23·8

Control mean=887 Kg/ha. ; No. of trials=6

Hazaribagh

64(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	882	1352	128	1287	1648	1862	2014	117·7

Control mean=1258 Kg/ha. ; No. of trials=6.

Crop :- Maize (*Kharif*). **Ref :- Bh. 65(SFT) for Muzaffarpur and 63(SFT) for Hazaribagh.**

Site :- (District) : Muzaffarpur and Hazaribagh (c.f.) **Type :- 'M'.**

Object:—Type A_1 : To study the response curves of important cereal, cash and oilseed crops to Nitrogen applied singly and in combination with other nutrients.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Alluvial for Muzaffarpur and red for Hazaribagh. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS:

8 manurial treatments :

O=Control (no manure)
N_1=60 Kg/ha. of N
N_2=120 Kg/ha. of N
P_1=35 Kg/ha. of P_2O_5
N_1P_1=60 Kg/ha. of N+35 Kg/ha. of P_2O_5
N_2P_1=120 Kg/ha. of N+35 Kg/ha. of P_2O_5
N_2P_2=120 Kg/ha. of N+70 Kg/ha. of P_2O_5 and
$N_2P_2K_1$=120 Kg/ha. of N+70 Kg/ha. of P_2O_5+35 Kg/ha. of K_2O

N applied as A/S, P_2O_5 as Super and K_2O as Mur. Pot.

3. DESIGN:

Same as in type A_1—Unirrigated on page 393.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1965—only for Muzaffarpur and 1963—only for Hazaribagh. (b) Nil. (c) N.A. (v) to vii) Nil.

5. RESULTS:

Muzaffarpur

65(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S E.
Av. response of grain in Kg/ha.	396	684	257	792	1038	1321	1445	126·5

Control mean=699 Kgha. ;No. of trials=3

azaribagh

63(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	305	877	184	985	1188	1546	1726	96·6

Control mean= 1520 Kg/ha. ; No. of trials=3

Crop :- Maize (*Kharif*). **Ref :- Bh. 64(SFT) for Monghyr and Bhagalpur and 63, 64(SFT) for Hazaribagh.**

Site :- (District) : Monghyr, Bhagalpur and Hazaribagh. **Type :- 'M'.**

Object :—Type A_2 : To study the response curves of important cereal cash and oilseed crops tp phosphorous applied singly and in combination with other nutrients.

1. BASAL CONDITION :

(i) (a) to (c) N.A. (ii) Alluvial for Monghyr and Bhagalpur, red for Hazaribagh. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments :

O=Control (no manure)
N_1=60 Kg/ha. of N,
P_1=35 Kg/ha. of P_2O_5,
P_2=70 Kg/ha. of P_2O_5,
N_1P_1=60 Kg/ha. of N+35 Kg/ha. of P_2O_5,
N_1P_2=60 Kg/ha. of N+70 Kg/ha. of P_2O_5,
N_2P_2=120 Kg/ha. of N+70 Kg/ha. of P_2O_5,
$N_2P_2K_2$=120 Kg/ha. of N+70 Kg/ha. of P_2O_5+70 Kg/ha. of K_2O.

N applied as A/S, P_2O_5 as Super and K_2O as Mur. Pot.

3. DESIGN :

Same as in type A_1—Unirrigated on page 393.

4. GENERAL:

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 64 for Monghyr and Bhagalpur and 1963—64 for Hazaribagh (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

Monghyr

64(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	465	275	463	440	735	921	1226	81·0

Control mean= 1252Kg/ha. ; No. of trials=7

Bhagalpur

64(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	276	158	304	369	335	682	796	48.1

Control mean=801 Kg/ha.; No. of trials=13

Hazaribagh

63(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	305	877	184	985	1188	1546	1726	96·6

Control mean=1520 Kg/ha.; No. of trials=3

64(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	875	42	275	1147	1249	1574	1667	129·5

Control mean=1420 Kg/ha.; No. of trials=6.

Crop :- Maize (*Kharif*) **Ref :- Bh. 63, 65(SFT) for Monghyr; 62, 63, 65(SFT) for Bhagalpur and 65 (SFT) for Hazaribagh.**

Site :- (District) : Monghyr, Bhagalpur and Hazaribagh. **Type :- 'M'.**

Object :—Type A_2: To study the response curves of important cereal, cash and oilseed crops to phosphorus applied singly and in combination with other nutrients.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Alluvial for Monghyr and Bhagalpur, red for Hazaribagh. (iii) to (vi) N.A. (vii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS :

Same as in type A_2—Irrigated on page 396.

3. DESIGN:

Same as in type A_1—Unirrigated on page 393.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 63—66(64—N.A.) for Monghyr, 62—66(64—N.A.) for Bhagalpur and 65—66 for Hazaribagh. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

Monghyr

63(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	230	123	245	352	452	776	1163	123·5

Control mean=1053 Kg/ha.; No. of trials=3.

65(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	350	202	308	606	731	1003	1155	59·7

Control mean=831 Kg/ha. ; No. of trials=6.

Bhagalpur

62(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	424	290	380	515	585	742	983	53·2

Control mean=1579 Kg/ha. ; No. of trials=4

63(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	391	222	293	430	476	596	687	21·5

Control mean=961 Kg/ha. ; No. of trials=6.

65(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S·E.
Av. response of grain in Kg/ha.	220	67	174	466	242	571	662	121·8

Control mean=882 Kg/ha. ; No. of trials=6.

Hazaribagh

65(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of grain in Kg/ha.	3499	27	52	791	1145	1275	1579	1468.7

Control mean=1653 Kg/ha. ; No. of trials=6.

Crop :- Maize (*Kharif*).

Ref :- Bh. 63(SFT) for Hazaribagh and 65(SFT) for Muzaffarpur.

Site :- (District) : Hazaribagh and Muzaffarpur.

Type :- 'M'.

Object :—Type A_2 : To study the response curves of important cereal, cash and oilseed crops to Potash applied singly and in combination with other nutrients.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Red for Hazaribagh and alluvial for Muzaffarpur. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments :

O=Control (no manure),
N_1=60 Kg/ha. of N,
K_1=35 Kg/ha. of K_2O,
K_2=70 Kg/ha. of K_2O,
N_1K_1=60 Kg/ha. of N+35 Kg/ha. of K_2O,
N_1K_2=60 Kg/ha. of N+70 Kg/ha. of K_2O,
N_2K_2=120 Kg/ha. of N+70 Kg/ha. of K_2O and
$N_1P_1K_1$=60 Kg/ha. of N+35 Kg/ha. of P_2O_5+35 Kg/ha. of K_2O.

N applied as A/S, P_2O_5 as Super and K_2O as Mur. Pot.

3. DESIGN :

Same as in type A_1—Unirrigated on page 393.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1963— only for Hazaribagh and 1965—only for Muzaffarpur. (b) N.A. (c) Nil. (v) to (viii) Nil.

2. RESULTS :

Hazaribagh

63(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	401	—15	92	1219	1273	1400	1403	108·0

Control mean=N.A.; No. of trials=6.

Muzaffarpur

65(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	369	123	214	439	598	695	948	83·4

Control mean=661 Kg/ha. ; Na. of trials=3.

Crop :- Maize (*Kharif*).

Ref :- Bh. 62, 63, 64, 65(SFT) for Bhagalpur; 63, 64, 65(SFT) for Monghyr and 64(SFT) for Hazaribagh.

Site :- (District) : Bhagalpur, Monghyr and Hazaribagh (c.f.)

Type :- 'M'.

Object :—Type A_3 : To study the response curves of important cereal, cash and oilseed crops to Potash applied singly and in combination with other nutrients.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Alluvial for Bhagalpur and Monghyr, red for Hazaribagh. (iii) to (vi) N.A. (vii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS :

Same as in type A_3—Irrigated on page 398.

3. DESIGN :

Same as in type A_1—Unirrigated on page 393.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1962—66 for Bhagalpur ; 1963—66 for Monghyr, 1964—66 (65—N.A.) for Hazaribagh. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

Bhagalpur

62(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	430	205	283	513	559	661	624	78·0

Control mean=1630 Kg/ha. ; No. of trials=4.

63(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	359	227	312	408	449	518	516	20·9

Control mean=936 Kg/ha. ; No. of trials=6.

64(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	289	144	214	441	414	518	569	47·1

Contro mean=756 Kg/ha. ; No. of trials=13.

65(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	258	148	180	326	363	478	584	32·6

Contral mean=794 Kg/ha. ; No. of trials=6.

Monghyr

63(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	330	99	329	448	618	813	991	178·3

Control mean=946 Kg/ha. ; No. of trials=3.

64(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	327	215	258	438	561	842	584	61·4

Control mean=1191 Kg/ha. ; No. of trials=8.

65(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kg/ha.	280	57	143	458	543	765	726	67·5

Control mean=805 Kg/ha. ; No. of trials=6.

Hazaribagh

64(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of grain in Kgha.	1220	—28	34	1581	1569	1786	1769	67·9

Control mean=1331 Kgha. ; No. of trials=6.

Crope :- Maize (*Rabi*). **Ref :- Bh. 62(78).**

Site :- Agri. Res. Instt., Dholi. **Type :- 'MV'.**

Object :—To study the effect of different fertilizers on the yield of different varieties of Maize.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Maize. (c) N.A. (ii) Sandy loam. (iii) 7/8.11.62. (iv) (a) 3 ploughings with tractor and 1 Punjab ploughing. (b) Line sowing. (c) N.A. (d) 60 cm. between rows (e) N.A. (v) 89·6 Kg/ha. of 5 P_2O_5+44·8 Kg/ha. of K_2O. (vi) As per treatments. (vii) Irrigated. (viii) Hoeing with Ram hoe and typed cultivators, earthing with junior and senior ridges. (ix) N.A. (x) 23/24.5.63.

2. TREATMENTS :

Main-plot treatments:

5 varieties : V_1=Ganga hyb. Makka—1, V_2=Ganga hyb. Makka—101, V_3=Ranjit hyb. Makka, V_4=Deccan hyb. Makka and V_5=Local (Jaunpur).

Sub-plot treatments :

2 levels of N as A/S : N_1=44·8 and N_2=112 Kg/ha.

3. DESIGN :

(i) Split-plot. (ii) (a) 5 main-plots/rep. 2 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a) 6·10 m.×15·24 m. (b) 4·88 m.×14·02 m. (v) 61 cm.×61 cm. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Germination, flowering, height, tiller, yield of grain. (iv) (a) 1962—only. (b) and (c) Nil. (v) Sabour, Patna. (vi) and (vii) Nil.

5. RESULTS :

(i) 2469 Kg/ha. (ii) (a) 860·7 Kg/ha. (b) 244·1 Kg/ha. (iii) Main effect of N alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	V_1	V_2	V_3	V_4	V_5	Mean
N_1	1882	2469	1858	2185	1945	2068
N_2	2099	3711	2862	3338	2345	2871
Mean	1990	3090	2360	2761	2145	2469

C.D. for N marginal means=280·7 Kg/ha.

Crop :- Maize (*Kharif*). **Ref :- Bh. 61(279), 62(262).**

Site :- Agri. Res. Instt., Kanke. **Type 'MV'.**

Object :—To test the suitability of newly released hybrid trial under two levels of fertilizers.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) 20.6.61 ; 12.6.62. (iv) (a) 3 ploughings. (b) Line sowing. (c) 17 Kg/ha. (d) 60 cm.×30 cm. (e) —. (v) 46 Q/ha. of F.Y.M.+90 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (vi) As per treatments. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 14.10.61 ; 29.9.62 and 16.10.62.

2. TREATMENTS

Main-plot treatments :

5 varieties : V_1=Ganga hybrid Makka—1, V_2=Ganga hybrid Makka—101, V_3=Ranjit hybrid Makka, V_4=Deccan hybrid Makka and V_5=Local.

Sub-plot treatments :

2 levels of N as A/S : N_1=45 and N_2=112 Kg/ha.

3. DESIGN :

(i) Split-plot. (ii) (a) 5 main-plots/replication ; 2 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a) N.A. (b) 15·24 m.×4·88 m. ; 15·24 m.×6·10 m. (v) N.A. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1961—62. (b) No. (c) Results of combined analysis are given under 5. Results. (v) Sabour, Patna. (vi) Nil. (vii) Main-plot error variances are homogeneous and Treatments×Years interaction is absent. Sub-plot error variances are homogeneous and Treatments×Years interaction is present.

5. RESULTS :

Pooled results

(i) 5938 Kg/ha. (ii) (a) 882·9 Kg/ha. (based on 12 d.f. made up of pooled error and Treatments×Years interaction). (b) 2717·6 Kg/ha. (based on 5 d.f. made up of Treatments×Years interaction). (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	V_1	V_2	V_3	V_4	V_5	Mean
N_1	5120	5612	5448	5424	5008	5322
N_2	6174	6808	6822	7086	5880	6554
Mean	5647	6210	6135	6755	5444	5938

Individual results :

Treatment	V_1	V_2	V_3	V_4	V_5	Sig.	N_1	N_2	Sig.
Years									
1961	3382	3708	3701	3990	3701	N.S.	2138	5255	**
1962	7912	8712	8570	8520	7187	N.S.	8507	7853	**
Pooled	5647	6210	6135	6255	5444	N.S.	5322	6554	N.S.

G.M.	S.E./plot (a)	(b)
3696	896·7	488·3
8180	908·6	258·3
5938	882·9	2717·6

Crop :- Maize (*Rabi*). **Ref :- Bh. 61(211), 62(174).**

Site :- Agri. Res. Instt., Patna. **Type :- 'MV'.**

Object :—To asses the performance of released hybrid Maize at 2 levels of fertilization during *Rabi* season.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow ; *Jowar*. (c) Nil. (ii) Clay. (iii) 20.11.61 ; 30.10.62 to 1.11.62. (iv) (a) Tractor ploughing. (b) Dibbling. (c) 16 Kg/ha. (d) 61 cm.×30 cm. (e) 1. (v) 4611 Kg/ha. of F.Y.M.+ 89·7 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (vi) As per treatments. (vii) Irrigated. (viii) Intercultural operation with *Kudal*. (ix) 7·4 cm. ; 9·1 cm. (x) 5 to 23.5.62 ; 14 to 17.6.63.

2. TREATMENTS and 3. DESIGN :

Same as in expt. No. 62(78) conducted at Dholi and presented on page 401.

4. GENERAL :

(i) Good. (ii) 75 % silking, borer infection helnunthosporium spot bacterial disease, lodging etc. (iii) Indication of fertilization defficiency, yield of grain. (iv) (a) 1961—62. (b) Yes. (c) Results of combined analysis are given under 5. Results. (v) Dholi, Sabour. (vi) Nil. (vii) Both the error variances are homogeneous and Treatments×years interaction are absent in both the cases.

5. RESULTS:

Pooled results

(i) 4073 Kg/ha. (ii) (a) 427·3 Kg/ha. (based on 12 d.f. made up of pooled error and Treatments×Years interaction). (b) 325·9 Kg/ha. (based on 15 d.f. made up of pooled error and Treatments×Years interaction). (iii) Main effects of V and N are highly significant. (iv) Av. yield of grain in Kg/ha.

	V_1	V_2	V_3	V_4	V_5	Mean
N_1	3812	4081	4495	3974	1879	3648
N_2	4787	4905	5617	4998	2185	4498
Mean	4300	4493	5056	4486	2032	4073

C.D. for V marginal means=465·5 Kg/ha.

C.D. for N marginal means=219·6 Kg/ha.

Individual results :

Treatment	V_1	V_2	V_3	V_4	V_5	Sig.	N_1	N_2	Sig.
Year									
1961	4397	4582	5271	4568	1926	**	3660	4638	**
1962	4202	4404	4841	4404	2138	**	3636	4359	**
Pooled	4300	4493	5056	4486	2032	**	3648	4498	**

G.M.	S.E./plot (a)	(b)
4149	524·3	380·4
3998	408·0	232·9
4073	427·3	325·9

Crop :- Maize (*Rabi*). **Ref :- Bh. 61(82).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'MV'.**

Object :—To study the effect of different levels of fertilizers on different varieties of Maize.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Berseem.* (c) Nil. (ii) Sandy loam. (iii) 16.6.61. (iv) (a) 3 to 4 *deshi* ploughings. (b) Line sowing. (c) 16 to 17 Kg/ha. (d) 30 cm.×75 cm. (e) Nil. (v) 89·6 Kg/ha. of P_2O_5+44·8 Kg/ha. of K_2O. (vi) As per treatments. (vii) Irrigated. (viii) 2 weedings. (ix) 74 cm. (x) 25.9.61.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 5 varieties : V_1=Ganga hybrid No. 1, V_2=Ganga hybrid No. 101, V_3=Ranjit hyb. Makka, V_4=Deccan hyb. Makka and V_5=Local (Jaunpur).

(2) 2 levels of N : N_1=44·8 and N_2=112 Kg/ha.

3. DESIGN :

(i) Fact. in R B.D. (ii) (a) 10. (b) N.A. (iii) 2. (iv) (a) N.A. (b) 14·02 m.×3·66 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of green cobs and stand count. (iv) (a) 1961—only. (b) No. (c) Nil. (v) Dholi, Kanke, Patna. (vi) and (vii) Nil.

5. RSULTS:

(i) 4772 Kg/ha. (ii) 416·6 Kg/ha. (iii) Main effect of V alone is significant. (iv) Av. yield of green cob in Kg/ha.

	V_1	V_2	V_3	V_4	V_5	Mean
N_1	4187	5025	4365	5082	4297	4591
N_2	4678	5138	4949	5629	4369	4953
Mean	4432	5081	4657	5355	4333	4772

C.D. for V marginal means=682·2 Kg/ha.

Crop :- Maize (*Rabi*). **Ref :- Bh. 61(79).**

Site :- Agri. Res. Instt. Sabour. **Type :- 'MV'.**

Object :—To study the effect of different levels of fertilizers on different varieties of Maize.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize (*kharif*). (c) N.A. (ii) Sandy loam. (iii) 12.11.61. (iv) (a) 3 to 4 *deshi* ploughings. (b) Line sowing. (c) 16 to 17 Kg/ha. (d) 30 cm.×75 cm. (e) N.A. (v) 89·6 Kg/ha. of P_2O_5+44 8 Kg/ha. of K_2O. (vi) As per treatments. (vii) Irrigated. (viii) 2 weedings. (ix) N.A. (x) 13.5.62.

2. TREATMENTS to 4. GENERAL :

Same as in expt. No. 61(82) noted above.

5. RESULTS :

(i) 4640 Kg/ha. (ii) 252·8 Kg/ha. (iii) Main effect of V alone is highly significant. (iv) Av. yield of green cob in Kg/ha.

	V_1	V_2	V_3	V_4	V_5	Mean
N_1	4226	4743	5403	5147	3947	4693
N_2	4011	5258	5115	5030	3527	4488
Mean	4118	5000	5259	5088	3737	4640

C.D. for V marginal means=404·2 Kg/ha.

Crop :- Maize (*Kharif*) **Ref :- Bh. 62(59).**

Site :- Agri. Res. Instt., Sabour. **Type 'MV'.**

Object :—To study the effect of different levels of fertilizers on different varieties of Maize.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Wheat. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) 9.6.62. (iv) (a) 3 to 4 *deshi* ploughings. (b) Line sowing. (c) 16 to 17 Kg/ha. (d) 30 cm.×75 cm. (e) Nil. (v) 89·6 Kg/ha. of P_2O_5+44·8 Kg/ha. of K_2O. (vi) As per treatments. (vii) Irrigated. (viii) 2 weedings. (ix) 88 cm. (x) 27.9.62.

2. TREATMENTS :

Main-plot treatments

5 varieties : V_1=Ganga hybrid No. 1, V_2=Ganga hybrid No. 101, V_3=Ranjit hybrid, V_4=Deccan hybrid and V_5=Local.

Sub-plot treatments

2 levels of N : N_1=44·8 and N_2=112 Kg/ha.

3. DESIGN :

(i) Split-plot. (ii) (a) 5 main-plots/replication ; 2 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a) 15·24 m.× 6·10 m. (b) 14·02 m.×4·88 m. (v) 61 cm.×61 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Wt. of green cob and stand count. (iv) (a) 1962—only. (b) No. (c) Nil. (v) Dholi, Kanke, Patna. (vi) and (vii) Nil.

5. RESULTS :

(i) 3380 Kg/ha. (ii) (a) 475·0 Kg/ha. (b) 536·8 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of green cob in Kg/ha.

	V_1	V_2	V_3	V_4	V_5	Mean
N_1	2781	3222	3300	3634	2515	3090
N_2	3294	3907	4301	3663	3190	3671
Mean	3037	3564	3800	3648	2852	3380

Crop :- Maize (*Rabi*). **Ref :- Bh. 62(58).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'MV'.**

Object :—To study the effect of different levels of fertilizers on different varieties of Maize.

1 BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) N.A. (ii) Sandy loam. (iii) 2.11.62. (iv) (a) 3 to 4 *deshi* ploughings. (b) Line sowing. (c) 16—17 Kg/ha. (d) 30 cm. × 75 cm. (e) N.A. (v) 89·6 Kg/ha. of P_2O_5+44·8 Kg/ha. of K_2O. (vi) As per treatments. (vii) Irrigated. (viii) 2 weedings. (ix) N.A. (x) 8.4.63 ; 25.4. 63 ; 30.4.63.

2. TREATMENTS to GENERAL :

Same as in expt No. 62(59) on page 405.

5. RESULTS :

(i) 4698 Kg/ha. (ii) (a) 567·2 Kg/ha. (b) 527·6 Kg/ha. (iii) Main effect of V and N are highly significant. (iv) Av. yield of green cob in Kg/ha.

	V_1	V_2	V_3	V_4	V_5	Mean
N_1	4329	4414	4861	5273	2432	4262
N_2	4760	5970	5573	6800	2573	5135
Mean	4544	5192	5217	6036	2502	4698

C.D. for V marginal means=1113·4 Kg/ha.

C.D. for N marginal means=655·0 Kg/ha.

Crop :- Maize (*Kharif*). **Ref :- Bh. 62(56).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'MV'.**

Object :—To study the effect of different levels of fertilizers on different varieties of Maize.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) 20.6.62. (iv) (a) 3 to 4 *deshi* ploughings. (b) Line sowing. (c) 16—17 Kg/ha. (d) 30 cm. × 75 cm. (e) Nil. (v) 89·6 Kg/ha. of P_2O_5+44·8 Kg/ha. of K_2O (vi) As per treatments. (vii) Irrigated. (viii) 2 weedings and hand hoeing. (ix) 88 cm. (x) 19.9.62, 30.9.62.

2. TREATMENTS :

Main-plot treatments :

9 varieties : V_1=Ganga hyb. No. 1, V_2=Ganga hyb. No. 101, V_3=Ranjit hyb., V_4=Deccan hyb. V_5= V.L. 54, V_6=Malan white × (E to PL—13—1—H—H—1—H × Tenn 29), V_7=Rudrapur white × (E to PL—13—1—H—H—1—H × Tenn 29), V_8=Indra State × (E to PL—13—1—H—H—1—H × Tenn 29) and V_9=Local (Sabour).

Sub-plot treatments :

2 levels of N : N_1=44·8 and N_2=112 Kg/ha.

3. DESIGN:

(i) Split-plot. (ii) (a) 9 main-plots/replication ; 2 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 9·14 m. × 6·10 m. (b) 9 14 m. × 4·57 m. (v) 76 cm. on either side of the plot. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) 0·4 % Endrine spraying. (iii) Yield of green cob and stand count. (iv) (a) 1962—only. (b) and (c Nil. (v) Musheri. (vi) and (vii) Nil.

5. RESULTS :

(i) 4803 Kg/ha. (ii) (a) 571·8 Kg/ha. (b) 390·1 Kg/ha. (iii) Main effect of V alone is highly significant. (iv) Av. yield of green cob in Kg/ha.

	V_1	V_2	V_3	V_4	V_5	V_6	V_7	V_8	V_9	Mean
N_1	4798	5314	5205	5339	4706	5560	5386	5750	3337	5044
N_2	4386	4521	4824	5300	4032	4976	5082	4849	3085	4562
Mean	4592	4918	5014	5320	4369	5268	5234	5299	3211	4803

C.D. for V marginal means=699·9 Kg/ha.

Crop :- Maize (*Kharif*). **Ref :- Bh. 63(73).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'MV'.**

Object :—To study the effect of different levels of fertilizers on different varieties of Maize.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize (*Rabi*). (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) 18.6.63. (iv) (a) 3 to 4 *deshi* ploughings. (b) Line sowing. (c) 16 to 17 Kg/ha. (d) 30 cm.×75 cm. (e) Nil. (v) 50·4 Kg/ha. of P_2O_5+33·6 Kg/ha. of K_2O. (vi) As per treatments. (vii) Unirrigated. (viii) 3 weedings and hoeing. (ix) 69 cm. (x) 1.10.63.

2. TREATMENTS :

Main-plot treatments :

11 varieties: V_1=Ganga hyb. No 1, V_2=Ganga hyb.. No. 101, V_3=Ranjit hyb. V_4=Deccan hyb., V_5=V.L. 54, V_6=Exptal. hyb. No 218, V_7=Exptal. hyb. No. 11, V_8=Exptal. hyb. No. 848, V_9=Exptal. hyb. No. 30, V_{10}=Exptal. hyb. no. 33 and V_{11}=Local (Sabour variety).

Sub-plot treatments :

2 levels of N : N_1=149 and N_2=44·8 Kg/ha.

3. DESIGN :

(i) Split-plot. (ii) (a) 11 main-plots/replication, 2 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 12·19 m.×4·57 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) 0·4 % Endrine spraying. (iii) Yield of green cob and stand count. (iv) (a) 1963—only. (b) and (c) Nil. (v) Kanke. (vi) Nil. (vii) V_4=Deccan hyb. has got no germination so exculding treatment V_4 the analysis for only 10 varieties was carried out.

5. RESULTS :

(i) 988 Kg/ha. (ii) (a) 211·2 Kg/ha. (b) 156·8 Kg/ha. (iii) Main effect of N alone is highly significant. (iv) Av. yield of green cob in Kg/ha.

	V_1	V_2	V_3	V_4	V_5	V_6	V_7	V_8	V_9	V_{10}	Mean
N_1	1041	1355	1183	923	955	1069	849	1129	907	1186	1060
N_2	860	940	758	727	928	804	893	1103	1011	1136	916
Mean	950	1148	970	825	942	936	871	1116	959	1161	988

C.D. for N marginal means=80·0 Kg/ha.

Crop :- Maize (*Kharif*). **Ref :- Bh. 60(85), 61(91), 62(287).**

Site :- Agri. Res. Instt., Dholi. **Type :- 'C'.**

Object :—To see the effect of oriented method of sowing Maize.

1. BASAL CONDITIONS

(i) (a) to (c) Nil. (ii) Sandy loam. (iii) 20.7.60; 21.6.61 ; 3.7.62. (iv) (a) 3 ploughings. (b) Line sowing. (c) 16 Kg/ha. (d) 75 cm.×25 cm. for 62 ; 15 cm.×15 cm. for others. (e) —. (v) 112 Kg/ha. of N+ 89·6 Kg/ha. of P_2O_5+44·8 Kg/ha. of K_2O. (vi) Ganga hybrid Makka—1. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A. ; 137 cm.; N.A. (x) 21.10.60, 2.10.61, 2.10.62.

2. TREATMENTS :

Two methods of sowing: T_1=Oriented method of sowing and T_2=General method of sowing.

3. DESIGN:

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 16. (iv) (a) and (b) 9·14 m.×1·53 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Spray of Endrox 20 % for 61, nil for others. (iii) Yield of grain. (iv) (a) 1960—62. (b) No. (c) Nil. (v) No. (vi) Nil. (vii) Error variances are heterogeneous and Treatments × Years interaction is absent. Hence individual year results are presented under 5. Results.

5. RESULTS :

60(85)

(i) 2227 Kg/ha. (ii) 461·2Kg/ha. (iii) Treatment difference is not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2
Av. yield	2214	2240

61(91)

(i) 3512 Kg/ha. (ii) 240·0 Kg/ha. (iii) Treatment difference is not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2
Av. yield	3531	3494

62(287)

(i) 2981 Kg/ha. (ii) 270·9 Kg/ha. (iii) Treatment difference is not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2
Av. yield	3014	2947

Crop :- Maize (*Kharif*). **Ref :- Bh. 64(137).**

Site :- Agri. Res. Instt., Dholi. **Type :- 'C'.**

Object :—To find out a suitable method of sowing Maize crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) N.A. (ii) Sandy loam. (iii) 19.6.64. (iv) (a) 3 *deshi* ploughings. (b) As per treatments. (c) 6 Kg/ha. (d) 15 cm.×15 cm. (e) N.A. (v) N.A. (vi) Ganga—101. (vii) Unirrigated. (viii) Weeding by *khurpi*. (ix) N.A. (x) 2.10.64.

2. TREATMENTS :

4 methods of sowing : M_1=Sowing on flat seed bed, M_2=Sowing on flat seed bed by earthing, M_3=Sowing on ridges with single row and M_4=Sowing on ridges with double rows.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) and (b) 15·24 m.×9·14 m. (v) Nil. (vi) Yes.

4. GENERAL:

(i) Good. (ii) 0·02 % Endrine spray against stem borer and wt. of green cob. (iii) Stand count, moisture% (iv) (a) 1964—only. (b) No. (c) Nil. (v) Sabour and Patna. (vi) and (vii) Nil.

5. RESULTS :

(i) 3894 Kg/ha. (ii) 362·5 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of green cob in Kg/ha.

Treatment	M_1	M_2	M_3	M_4
Av. yield	3889	3960	4044	3682

———

Crop :- Maize (*Rabi*). **Ref :- Bh. 62(112).**

Site :- Agri. Res. Instt., Dholi. **Type :- 'C'.**

Object :—To find out the economy of intensive cropping in irrigated tracts.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) As per treatments. (c) N.A. (ii) Loam. (iii) 12.6.62. (iv) (a) 4—5 *dcshi* ploughings. (b) Line sowing behind the plough. (c) 20 Kg/ha. (d) 22 cm.×60 cm. (e) —. (v) 45 Kg/ha. of N+45 Kg/ha. of P_2O_5. (vi) Jaunpur. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 29.9.62.

2. TREATMENTS ;

6 different intensive cropping treatments : T_1=Maize followed by Wheat, T_2=Maize followed by Potato followed by Onion, T_3=Maize followed by Potato followed by Cheena, T_4=Maize followed by *Mustard* followed by *Lauki*, T_5=Groundnut followed by Tomato followed by Maize (fodder) +*Moong* and T_6=Maize followed by Potato followed by *Cheena*.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) and (b) 9·14 m.×7·32 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of component crops and their monetary return. (iv) (a) 1962—64 (component crops changed every year). (b) Yes. (c) Nil. (v) Sabour and Seikhpura. (vi) Nil. (vii) Money return data for the whole season were analysed.

5. RESULTS :

(i) 1366 Rs/ha. (ii) 153·4 Rs/ha. (iii) Treatment differences are highly significant. (iv) Av. value of produce in Rs/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	
Av. produce	1282	2140	1215	1110	1007	1445	C.D.=231·15 Rs/ha.

Crop :- Maize (*Rabi*) **Ref :- Bh. 63(146).**

Site :- Agri. Res. Instt., Dholi. **Type :- 'C'.**

Object :—To find out the economy of intensive cropping in irrigated tracts.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) As per treatments. (c) Nil. (ii) Loam. (iii) 14.6.63. (iv) (a) 4—5 *deshi* ploughings. (b) Line sowing behind plough. (c) 20 Kg/ha. (d) 22 cm. × 60 cm. (e) —. (v) 45 Kg/ha. of N+45 Kg/ha. of P_2O_5. (vi) Jaunpur. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 18.9.63.

2. TREATMENTS :

Same as in Expt. No. 62(112) presented on page 409.

In T_4 instead of *Lauki*, Bhindi crop was taken.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) and (b) 9·14 m. × 7·32 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain and monetary retun of the component crops. (iv) (a) 1962—64 (component crops changed every year). (b) Yes. (c) Nil. (v) Sabour and Seikhpura. (vi) Nil. (vii) Monetary return data for the whole season were analysed.

5. RESULTS :

(i) 3165 Rs/ha. (ii) 379·59 Rs/ha. (iii) Treatment differences are highly significant. (iv) Av. value of produce in Rs/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	
Av. produce	3874	3874	3525	2749	1629	3341	C.D.=572·00 Rs/ha.

Crop :- Maize (*Kharif*). **Ref :- Bh. 64(182).**

Site :- Agri. Res. Instt. Dholi. **Type :- 'C'.**

Object :—To find out the economy of intensive cropping in irrigated tracts (up land).

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) Loam. (iii) 5.6.64. (iv) (a) 4—5 *deshi* ploughings. (b) Line sowing. (c) 20 Kg/ha. (d) 61 cm. (e) Nil (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) Jaunpur. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 13.9.64.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 62(112) presented on page 409.

In T_3, instead of *Cheena*, Wheat mixture was taken and in T_4, Onion was taken in place of *Lauki*, T_5= Groundnut followed by Wheat followed by *Moong* (fodder).

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination flowering and maturity dates, height of plant, length of earhead, no. of grains/earhead, wt. of 1000 grains, wt. of straw and yield of grain. (iv) (a) 1962–64 (component crops changed every year). (b) Yes. (c) Nil. (v) Sabour, Patna. (vi) Onion in T_2 failed due to rain. (vii) Data of monetary out turn of the season was analysed.

5. RESULTS :

(i) 2159 Rs/ha. (ii) 765·44 Rs/ha. (iii) Treatment differences are significant. (iv) Av. value of produce of legumes and vegetables in Rs/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	
Av. value	1761	2497	2196	1737	1015	3748	C.D.=1153 Rs/ha.

Crop :- Maize (*Kharif*). **Ref :- Bh. 64(356), 65(190).**

Site :- Agri. Res. Instt., Dholi. **Type :- 'C'.**

Object :—To find out a suitable method of sowing Maize for kharif crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat ; Fallow. (c) Nil ; 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (ii) Sandy loam. (iii) 19.6.64 ; 27.6.65. (iv) (a) 3 ploughings. (b) Line sowing. (c) 16 Kg/ha. (d) 23 cm.×23 cm. ; 75 cm.×30 cm. (e)—. (v) 33·8 Kg/ha. of N as A/S+67·5 Kg/ha. of P_2O_5 as Super+33·8 Kg/ha. of K_2O as Mur. Pot. (vi) Ganga–101. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 2.10.64 ; 20.10.65.

2. TREATMENTS and DESIGN:

Same as in expt. no. 64(137) conducted at Dholi presented on page no. 409.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of green cobs, stand counts etc. (iv) (a) 1964–65. (b) No. (c) Results of combined analysis are given under 5. Results. (v) Sabour, Patna. (vi) Nil. (vii) Error variances are homogeneous and Treatments×Years interaction is absent.

5. RESULTS :

Pooled results

(i) 5026 Kg/ha. (ii) 592·5 Kg/ha. (based on 21 d.f. made up of pooled error and Treatments×Years interaction). (iii) Treatment differences are not significant. (iv) Av. yield of green cob in Kg/ha.

Treatment	M_1	M_2	M_3	M_4
Mean yield	4919	5338	5152	4696

Individual results

Treatment	M_1	M_2	M_3	M_4	Sig.	G.M.	S.E./plot
Year							
1964	5403	5608	5804	5432	N.S.	5562	464·2
1965	4435	5069	4499	3961	N.S.	4491	700·5
Pooled	4919	5338	5152	4696	N.S.	5026	592·5

Crop :- Maize (*Kharif*). **Ref :- Bh. 61(93).**

Site :- Agri. Res. Instt., Dholi. **Type :- 'C'.**

Object :—To study the efficiency of Chinese method of Maize cultivation.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Wheat. (c) N. A. (ii) Sandy loam. (iii) 20.6.61. (iv) (a) 3 *deshi* ploughings. (b) Dibbling. (c) 15 Kg/ha. (d) 15 cm.×15 cm. (e) N.A. (v) 112 Kg/ha. of N+89·6 Kg/ha. of P_2O_5+44·8 Kg/ha. of K_2O. (vi) Ganga 26. (vii) Unirrigated. (viii) Weeding by *khurpi*. (x) 137 cm. (x) 30.9.61.

2. TREATMENTS:

2 methods of cultivation : M_0=Control (General method of cultivation) and M_1=Chinese method of cultivation.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 16. (iv) (a) N.A. (b) 9·14 m.×1·53 m. (v) N.A. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Endrox spray 20%. (iii) Germination counts, moisture % and yield of grain. (iv) (a) 1961—only. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS:

(i) 3843 Kg/ha. (ii) 473·7 Kg/ha. (iii) Treatment difference is not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	M_0	M_1
Av. yield	3877	3789

Crop :- Maize (*Kharif*). **Ref :- Bh. 62(66).**

Site :- Agri. Res. Instt., Dholi. **Type :- 'C'.**

Object : To test the yielding ability of Maize seed taken from different parts of the cob.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) N.A. (ii) Sandy loam. (iii) 8.11.62. (iv) (a) 3 *deshi* ploughings. (b) Behind the plough. (c) 6 Kg/ha. (d) 15 cm.×15 cm. (e) N.A. (v) 67·2 Kg/ha. of N+44·8 Kg/ha. of P_2O_5+22 4 Kg/ha. of K_2O. (vi) Jaunpur. (vii) Irrigated. (viii) Hoeing with *Ram hoe* and type 5 cultivator, earthing with ridger. (ix) N.A. (x) 25.5.63.

2. TREATMENTS :

4 types of seeds : T_1=African seed, T_2=Central seed, T_3=Basal seed and T_4=Mixed seed (check).

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 9·14 m.×3·05 m. (v) N.A. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Aldrex at 22·4 Kg/ha. was applied at the time of final land preperation. (iii) Germination, stand count, moisture % and yield of grain. (iv) (a) 1962—only. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS:

(i) 1476 Kg/ha. (ii) 76·1 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4
Av. yield	1541	1484	1433	1448

Crop :- Maize (*Kharif*). **Ref :- Bh. 63(86).**

Site :- Agri. Res. Instt., Dholi. **Type :- 'C'.**

Object:—To test the yielding ability of Maize seed taken from different parts of the cob.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Wheat. (c) N.A. (ii) Sandy loam. (iii) 22.6.63. (iv) (a) 3 *deshi* ploughings. (b) Behind the plough. (c) 6 Kg/ha. (d) 15 cm.×15 cm. (e) —. (v) 67·2 Kg/ha. of N+44·8 Kg/ha. of P_2O_5+ 22·4 Kg/ha. of K_2O. (vi) Jaunpur. (vii) Irrigated. (viii) Hoeing with wheat hoe. (ix) N.A. (x) 26.9.63.

2. TREATMENTS and 4. GENERAL:

Same as in expt. No. 62(66) on page 412.

5. RESULTS:

(i) 1764 Kg/ha. (ii) 255·5 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4
Av. yield	1559	1857	1751	1888

Crop :- Maize (*Rabi*). **Ref :- Bh. 62(291).**

Site :- Agri. Res. Instt., Dholi. **Type :- 'C'.**

Object :—To determine the most suitable combination of implements for cultivation of Maize crop.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Maize. (c) Nil. (ii) Sandy loam. (iii) 24/25.10.62. (iv) (a) 3—4 ploughings. (b) Line sowing. (c) 20 8 Kg/ha. (d) 23 cm. between rows. (e) 2—3. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) Ganga hybrid—101. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. 23 to 29.4.63.

2. TREATMENTS:

5 cultural treatments : T_1=Indigeneous local implements, T_2=M.B. plough+cultivator+ridger., T_3= M.B. plough+Disc Harrow+ridger+cultivator, T_4=Disc plough+disc harrow+ cultivator ridger and T_5=Disc plough+cultivator+ridger.

3. DESIGN:

(i) R.B.D. (ii) (a) 5. (b) N A. (iii) 4. (iv) (a) N.A. (b) 41·15 m.×10·97 m. (v) N.A. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1962—65 (modified every year and expt. for 63—N.A.). (b) and (c) No. (v) Patna, Kanke and Sabour. (vi) No. (vii) Nil.

5. RESULTS :

(i) 1851 Kg/ha. (ii) 170·3 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5
Av. yield	1751	1892	1844	1856	1914

Crop :- Maize (*Rabi*). **Ref :- Bh. 64(364).**

Site :- Agri. Res. Instt., Dholi. **Type :- 'C'.**

Object :—To determine the most suitable combination of implements for cultivation of Maize crop.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Wheat. (c) Nil. (ii) Sandy loam. (iii) 21.6.64. (iv) (a) 3 ploughings. (b) Line sowing. (c) 21 Kg/ha. (d) 23 cm. between rows. (e) 2—3. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) Ganga—101. (vii) Un-irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 11.12.64.

2. TREATMENTS:

5 cultural treatments: T_1=Indigeneous local implements, T_2=M.B. plough+cultivator+seed drill+ridger, T_3=M.B. plough+disc harrow+seed drill+ridger+cultivator, T_4=Disc harrow+seed drill+cultivator+ridger and T_5=Disc plough+cultivator+seed-drill+ridger.

3. DEEIGN:

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 41·15 m.×10·97 m. (v) N.A. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1962—65 (modified every year). (b) and (c) No. (v) Patna, Kanke and Sabour. (vi) No. (vii) Nil.

5. RESULTS :

(i) 601 Kg/ha. (ii) 96·1 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5
Av. yield	565	615	659	548	620

Crop :- Maize (*Kharif*). **Ref :- Bh. 65(195).**

Site :- Agri. Res. Instt., Dholi. **Type :- 'C'.**

Object :—To determine the most suitable combination of implements for cultivation of Maize crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) Nil. (ii) Sandy loam. (iii) 3/4.7.65. (iv) (a) 3 ploughings. (b) Line sowing. (c) 18·5 Kg/ha. (d) 23 cm. between rows. (e) 2—3. (v) 89·7 Kg/ha. of N as A/S+67·2 Kg/ha. of P_2O_5 as Super+33·6 Kg/ha. of K_2O as Mur. Pot. (vi) Ganga—1. (vii) Un-irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 10.1.66.

2. TREATMENTS :

5 cultural treatments: T_1=Indigeneous method, T_2=M.B. plough+disc harrow+behind *deshi* plough+cultivator+ridger.

3. DESIGN :

(i) Paired-plots. (ii) (a) 2. (b) N.A. (iii) 2. (iv) (a) N.A. (b) 1/10·28 of hactre. (v) No. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1962–65 (modified every year). (b) and (c) No. (v) Patna, Kanke and Sabour. (vi) No. (vii) Nil.

5. RESULTS :

(i) 1537 Kg/ha. (ii) 236·4 Kg/ha. (iii) Treatment differences is not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2
Av. yield	1583	1491

Crop :- Maize (*Kharif*). **Ref :- Bh. 64(362).**

Site :- Agri. Res. Instt., Dholi. **Type :- 'C'.**

Object :–To develop a suitable ploughing method.

1. BASAL CONDITIONS :

(i) (a) Nii. (b) Gram. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (ii) Sandy loam. (iii) 14/15.8.64. (iv) (a) 3–4 ploughings. (b) Line sowing. (c) 24 Kg/ha. (d) 23 cm. between rows. (e) 2–3. (v) 22·5 Kg/ha. of N as A/S+45 Kg/ha. P_2O_5 as Super. (vi) Ganga–1. (vii) Un-irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 4/5.12.64.

2. TREATMENTS :

3 types of plough : T_1=Single bullock plough (AER), T_2=*Deshi* plough with a pair of bullocks and T_3=Melur plough with a pair of bullocks.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 7. (iv) (a) N.A. (b) 18·29 m.×9·14 m. (v) N.A. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1964—only. (b) and (c) Nil. (v) Patna, Kanke and Sabour. (vi) and (vii) Nil.

5. RESULTS:

(i) 2609 Kg/ha. (ii) 472·7 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3
Av. yield	2534	2555	2739

Crop :- Maize (*Kharif*). **Ref :- Bh. 63(277).**

Site :- Agri. Res Instt., Patna. **Type :- 'C'.**

Object :—To develop a suitable ploughing method.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Clay. (iii) 21.11.63. (iv) (a) 3 ploughings. (b) Dibbling. (c) 17 Kg/ha. (d) 75 cm. between rows. (e) —. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) Jaunpur. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 26.3.64.

2. TREATMENTS:

Same as in Expt. No. 64(362) conducted at Dholi and presented on page no. 415.

3. DESIGN:

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 7. (iv) (a) and (b) 18·39 m.×9·14 m. (v) Nil. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1963—only. (b) No. (c) N.A. (v) Sabour. (vi) and (vii) Nil.

5. RESULTS:

(i) 1061 Kg/ha. (ii) 156·3 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	C.D.=182·0 Kg/ha.
Av. yield	1297	1080	806	

— ——

Crop :- Maize (*Kharif*). **Ref :- Bh. 64(181).**

Site :- Agri. Res. Instt., Patna. **Type :- 'C'.**

Object:—To find out the economy of intensive cropping in irrigated tracts (up land).

1. BASAL CONDITIONS:

(i) (a) Nil. (b) and (c) N.A. (ii) Clayey (iii) 26.6.64. (iv) (a) 4—5 *deshi* ploughings. (b) Line sowing. (c) 20 Kg/ha. (d) 61 cm. (e) Nil. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) Jaunpur. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 23.9.64.

2. TREATMENTS:

6 cropping treatments of Maize and succeeding crops: T_1=Maize—Wheat, T_2=Maize—Potato—Onion, T_3=Maize—Potato—Wheat (mixed) - *Kalai* (GM), T_4=Maize—Mustard—Onion, T_5=Groundnut—*Moong* (fodder) and T_6=Maize—Potato—Late Potato—Cheena.

3. DESIGN:

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 11·20 m.×6·71 m. (b) 10 97 m.×6·10 m. (v) 23 cm.×61 cm. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Germination, flowering and maturity dates, height of plants, length of earhead, no. of grains/earhead, wt. of 1000 grains. wt. of straw and yield of grain. (iv) (a) 1964—only. (b) Yes. (c) Nil. (v) Sabour, Dholi. (vi) Maize crop totally failed. (vii) Data of the total money values for the season was analysed.

5. RESULTS:

(i) 2382 Rs/ha. (ii) 1116·3 Rs/ha. (iii) Treatment differences are highly significant. (iv) Av. value of produce in Rs/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	C.D.=1682 Rs/ha.
Av. value	1061	4352	3059	1288	2236	2294	

———

Crop :- Maize (*Kharif*). **Ref :- Bh. 64(244), 65(145).**

Site :- Agri. Res. Instt., Patna. **Type :- 'C'.**

Object: —To find out a suitable method of sowing Maize for akharif crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) 22.6.64 ; 30.6.65. (iv) (a) 3 ploughings. (b) Dibbling. (c) 16 Kg/ha. (d) 75 cm. × 25 cm. (e) 1. (v) 112 Kg/ha. of N as A/S+67 Kg/ha. of P_2O_5 as Super+34 Kg/ha. of K_2O as Mur. Pot. (vi) Ganga hybrid 101. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) 113 cm. ; N.A. (x) 3, 5.10.64, 14 ; 15.10.65.

2. TREATMENTS :

4 methods of sowing : M_1=Sowing on flat seed bed, M_2=Sowing on flat seed bed followed by earthing, M_3=Sowing on ridges with single row and M_4=Sowing on ridges with double rows.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. ; 61·00 m. × 10·06 m. (iii) 4. (iv) (a) 15·24 m. × 9·14 m. ; 15·24 m. × 10·06 m. (b) 15·24 m. × 9·14 m. ; 15·24 m. × 9·15 m. (v) Nil. ; 46 cm. on either side. (vi) Yes.

GENERAL :

(i) Good. (ii) 20 % Endrine sprayed ; Nil. (iii) Yield of grain. (iv) (a) 1964—65. (b) No. (c) Nil. (v) Dholi ; Sabour. (vi) Nil. (vii) As error variances are heterogeneous and Treatments × Years interaction is absent, individual year results are presented under 5. Results.

5. RESULTS :

64(244)

(i) 3418 Kg/ha. (ii) 908·9 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	M_1	M_2	M_3	M_4
Av. yield	3616	2882	3694	3482

65(145)

(i) 4795 Kg/ha. (ii) 256·0 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	M_1	M_2	M_3	M_4
Av. yield	4638	4792	4939	4810

Crop :- Maize (*Kharif*). **Ref :- Bh. 62(274), 63(279).**

Site :- Agri. Res. Instt., Patna. **Type :- 'C'.**

Object :—To determine the most suitable combination of implements for cultivation of Maize crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Clayey. (iii) 16 6.62 ; 12.6.63. (iv) (a) 3 ploughings. (b) Line sowing ; Dibbling. (c) 17 Kg/ha. (d) 92 cm. between rows. (e) Nil. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) Jaunpur. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 16.10.62 ; 19.9.63.

2. TREATMENTS :

5 cultural treatments : T_1=*Deshi* plough, T_2=A.E.R. 20 cm.+cultivator, T_3=A.E.R. 20 cm. M.B.+*deshi* harrow, T_4=Disc plough+disc harrow and T_5=Disc plough+cultivator.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) and (b) 18·29 m. × 9·14 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of Stem borer which was treated with Endrine 20 % E.C. for 63. (iii) Yield of grain. (iv) (a) 1962—63. (b) No. (c) Results of combined analysis are given under 5. Results. (v) Sabour. (vi) Nil. (vii) Error variances are homogeneous and Treatments × Years interaction is absent.

5. RESULTS:

Pooled results

(i) 1342 Kg/ha. (ii) 213·5 Kg/ha. (based on 28 d.f. made up of pooled error and Treatments × Years interaction). (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5
Av yield	1345	1404	1304	1348	1308

Individual results

Treatment	T_1	T_2	T_3	T_4	T_5	Sig.	G.M.	S.E./plot
year 1962	764	688	824	763	700	N.S.	748	224·2
1963	1926	2121	1783	1933	1915	N.S.	1935	192·4
Pooled	1345	1404	1304	1348	1308	N.S.	1342	230·6

Crop :- Maize (*Kharif*). **Ref :- Bh. 64(115),**

Site :- Agri. Res. Instt., Patna. **Type :- 'C'.**

Object:—To find out a suitable method of sowing Maize for *kharif* crop 409.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) and (c) N.A. (ii) N.A. (iii) 22.6.64. (iv) (a) One tractor ploughing and 3 to 4 *deshi* ploughings. (b) As per treatments. (c) 15 Kg/ha. (d) 30 cm. × 45 cm. (e) N.A. (v) N.A. (vi) Ganga hybrid. (vii) Irrigated. (viii) Weeding by *khurpi*. (ix) N.A. (x) 3 and 5.10.64.

2. TREATMENTS and 3. DESIGN :

Same as in Expt. No. 64(137) conducted at Dholi and presented on page 409.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of green cobs, moisture percentage and stand count. (iv) (a) No. (b) and (c) Nil. (v) Dholi. (vi) and (vii) Nil.

5. RESULTS:

(i) 2684 Kg/ha. (ii) 433·0 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of green cob in Kg/ha.

Treatment	M_1	M_2	M_3	M_4
Av. yield	2834	2862	2387	2654

Crop :- Maize (*Rabi*). **Ref :- Bh. 63(145).**

Site :- Agri. Res. Instt, Patna. **Type :- 'C'.**

Object:—To find out the economy of intensive cropping in irrigated tract of Maize crop.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) As per treatments. (c) N.A. (ii) Clayey. (iii) 2.7.63. (iv) (a) 4—5 *deshi* ploughings. (b) Line sowing behind plough. (c) 20 Kg/ha. (d) 30·5 cm. × 61 cm. (e) —. (v) 45 Kg/ha. of N + 45 Kg/ha. of P_2O_5. (vi) Jaunpur. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 16.10.63.

2. TREATMENTS:

6 treatments of intensive cropping : T_1=Maize followed by Wheat, T_2=Maize followed by Potato followed by Onion, T_3=Maize followed by Potato followed by *Chana*, T_4=Maize followed by Mustard followed by *Bhindi*, T_5=Groundnut followed by Tomato followed by Maize (fodder) followed by *Moong* and T_6=Maize followed by Early Potato (October sowing) followed by Potato (January sowing) followed by *Chana*.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 11·20 m.×6·71 m. (b) 10·97 m.×6·10 m. (v) 11·5 cm.× 30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of component crops and their monetary return. (iv) (a) 1962—63 (Treatments changed every year). (b) Yes. (c) Nil. (v) Sabour and Dholi. (vi) Nil. (vii) Money value of the produce was analysed.

5. RESULTS:

(i) 4997 Rs/ha. (ii) 1752·9 Rs/ha. (iii) Treatment differences are highly significant. (iv) Av. value of produce in Rs/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	
Av. produce	974	12010	2329	695	3044	10930	C.D.=2641·4 Rs/ha.

Crop :- Maize (*Rabi*). **Ref :- Bh. 62(111).**

Site :- Agri. Res. Instt., Patna. **Type :- 'C'.**

Object :—To find out the economy of intensive cropping in irrigated tracts of Maize crop.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) As per treatments. (c) N.A. (ii) Clayey. (iii) 6.6.62. (iv) (a) 4—5 *deshi* ploughings. (b) Line sowing behind plough. (c) 20 Kg/ha. (d) 30·5 cm.×61·0 cm. (e) —. (v) 45 Kg/ha. of N+45 Kg/ha. of P_2O_5. (vi) Jaunpur. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 19, 20.9.62.

2. TREATMENTS and 3. DESIGN :

Same as in Expt. No. 63(145) presented on page 418.

In T_4, *Lauki* was sown instead of *Bhindi*.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain and their monetary return. (iv) (a) 1962 – 63 (Treatments changed every year.) (b) Yes. (c) Nil. (v) Sabour and Dholi. (vi) and (vii) Nil.

5. RESULTS:

(i) 6484 Rs/ha. (ii) 230·1 Rs/ha. (iii) Treatment differences are highly significant. (iv) Av. value of produce in Rs/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	
Av. produce	4076	9665	10185	3423	2217	9339	C.D.=346·8 Rs/ha.

Crop :- Maize (*Kharif*). **Ref :- Bh. 60(325).**

Site :- Sugarcane Res. Instt., Pusa. **Type :- 'C'.**

Object :—To select a suitable improved plough for different regions in the state.

1. BASAL CONDITIONS

(i) (a) Nil. (b) Wheat. (c) Nil. (ii) Sandy loam. (iii) 12.6.60. (iv) (a) 3—4 ploughings. (b) Line sowing. (c) 23 Kg/ha. (d) 25 cm. between rows. (e) 2—3. (v) 67 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) Ganga hyb. 101. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) Nil. (x) 9.12.60.

2. TREATMENTS:

8 treatments of ploughing with different ploughs: T_1=Bihar senior plough, T_2=Bihar junior plough, T_3=U.P. No–2 plough, T_4=Vijoy plough, T_5=Pupul mark III plough, T_6=Wah–Wah. plough, T_7=A.E.R.–8 plough. and T_8=A.E.R.–6 plough.

3. DESIGN:

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 10·77 m.×21·03 m. (b) 10·16 m.×20·11 m. (v) 30 cm.× 46 cm. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) to (c) Nil. (v) Patna, Kanke and Sabour. (vi) and (vii) Nil.

5. RESULTS:

(i) 967 Kg/ha. (ii) 202·1 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	C.D.=297·1 Kg/aa.
Av. yield	925	626	1150	973	1068	1068	1192	735	

Crop :- Maize (*Kharif*). **Ref :- Bh. 60(48).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'C'.**

Object:—To study the residual effect of different crop on soil fertility shown by the succeeding Maize crop.

1. BASAL CONDITIONS:

(i) (a) Legumes –Maize. (b) Legumes. (c) Nil. (ii) Sandy loam. (iii) 15.6.60. (iv) (a) 3 spadings before sowing.. (b) Sowing by spade. (c) 23 Kg/ha. (d) 46 cm. (e) Nil. (v) Nil. (vi) Jaunpur. (vii) Unirrigated. (viii) Weeding by *khurpi* and spade. (ix) 56 cm. (x) 3.9.60.

2. TREATMENTS:

8 crops sown in *rabi* season: C_1=Gram, C_2=Pea, C_3=*Khesari*, C_4=Masoor, C_5=*Senji*, C_6=Berseem, C_7=Wheat+*Senji* and C_8=Wheat.

Residual effects are studied on the yield of Maize.

3. DESIGN:

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 4·06 m.×3·34 m. (b) 3·66 m.×2·74 m. (v) 30 cm.× 30 cm. (vi) Yes.

4. GENERAL:

(i) Fair. (ii) Nil. (iii) Yield of grain. (iv) (a) 1960—65 (modified in 1961, 63). (b) No. (c) Nil. (v) No. (vi) and (vii) Nil.

5. RESULTS:

(i) 1987 Kg/ha. (ii) 493·0 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	C.D.=725·2 Kg/ha.
Av. yield	2151	1451	1409	1351	2993	3749	1932	858	

Crop :- Maize (*Kharif*). **Ref :- Bh. 61(55), 62(37).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'C'.**

Object :—To study the residual effect of different crops on soil fertility as shown by succeeding Maize crop.

1. BASAL CONDITIONS :

(i) (a) *Rabi* —Legumes – Maize. (b) *Rabi* legumes. (c) Nil. (ii) Sandy loam. (iii) 9.6.61 ; 24.6.62. (iv) (a) 3 spadings before sowing. (b) Line sowing by spade. (c) 14 Kg/ha. for 62 ; 28 Kg/ha. for others. (d) 75 cm. × 30 cm for 62 ; 45 cm. × 30 cm. for others. (e) Nil. (vi) Nil. (vi) Jaunpur. (vii) Irrigated. (viii) Weeding by *khurpi*. (ix) 62 cm. ; 88 cm. (x) 30.8.61 ; 23.9.62.

2 TREATMENTS :

8 crops sown in *Rabi* season : C_1=Gram, C_2=Pea, C_3=Wheat+Berseem, C_4=Masoor, C_5=*Senji*, C_6=Berseem, C_7=Wheat+*Senji* and C_8=Wheat.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 3·35 m. × 4·27 m. (b) 2 74 m. × 3·66 m. (v) 30 cm. × 30 cm. (vi) Yes.

4. GENERAL :

(i) Fair ; satisfactory ; good. (ii) Simple attack of Stem borer for 63 ; Nil for others. (iii) Yield of grain. (iv) (a) 1960—65 (modified in 1961 and in 63). (b) Yes. (c) Results of combined analysis given under 5. Results. (v) No. (vi) Nil. (vii) Error variances are homogeneous and Treatments × Years interaction is present.

5. RESULTS :

Pooled results

(i) 2990 Kg/ha. (ii) 1112·3 Kg/ha. (based on 7 d.f. made up of Treatments × Years interaction.) (iii) Treatment differences are significant. (iv) Av. yield of grain in Kg/ha.

Treatment	C_1	C_2	C_3	C_4	C_5	C_6	C_7	C_8	
									C.D.=1315·2 Kg/ha.
Av. yield	2824	2733	2629	2569	4659	2960	3498	2050	

Individual results

Treatment	C_1	C_2	C_3	C_4	C_5	C_6	C_7	C_8	Sig.	G.M.	S.E./plot
Years											
1961	1612	1479	1396	1277	4184	2033	2935	1044	**	1995	581·0
1962	4036	3987	3164	3862	5133	3887	4061	2965	**	3887	647·8
Pooled	2824	2733	2629	2569	4659	2960	3498	2050	*	2990	1112·3

Crop :- Maize (*Kharif*). **Ref :- Bh 63(47), 64(89), 65(74).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'C'.**

Object : –To study the residual effect of different *Rabi* crops on soil fertility as shown by the succeeding Maize crop.

1. BASAL CONDITIONS :

(i) (a) *Rabi* legumes—Maize. (b) *Rabi* legumes. (c) Nil. (ii) Sandy loam. (iii) 30.5.63 ; 28.6.64 ; 5.7.65. (iv) (a) 3 ploughings. (b) Line sowing. (c) 23 Kg/ha. (d) 45 cm. × 30 cm. (e) Nil. (v) Nil. (vi) Jaunpur. (vii) Unirrigated. (viii) Weeding and earthing. (ix) 78 cm. ; N.A. ; N.A. (x) 14.9.63 ; 6.10.64 7.10.65.

2. TREATMENTS :

8 previous crops sown in *rabi* season : C_1=Gram, C_2=Pea, C_3=Wheat+Pea, C_4=Masoor, C_5=*Senji*, C_6=Wheat+Gram, C_7=Wheat+*Senji* and C_8=Wheat.

3. DESIGN :

(i) R B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 16·15 m.×7·16 m. for 63 ; 14·02 m.×8·14 m. for others. (b) 15·54 m.×6·55 m. for 63 ; 13·41 m.×7 54 m. for others. (v) 30 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Attack of Stem borer in 63 ; Nil for others. (iil) Yield of grain. (iv) (a) 1963--65. (b) No. (c) Results of combined analysis are given under 5. Results. (v) Nil. (vi) Heavy rains on 6.7.65. (vii) Error variances are homogeneous and Treatments×Years interaction is absent.

5. RESULTS :

Pooled results :

(i) 604 Kg/ha. (ii) 122·3 Kg/ha. (based on 77 d.f. made up of pooled error and Treatments×Years interaction). (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	C_1	C_2	C_3	C_4	C_5	C_6	C_7	C_8	
Av. yield	664	617	612	614	744	595	531	455	C.D.=99·6 Kg/ha

Individual results

Treatment	C_1	C_2	C_3	C_4	C_5	C_6	C_7	C_8	Sig.	G.M.	S.E/plot.
Year											
1963	554	523	540	474	656	496	341	359	N.S.	493	147·0
1964	1038	1025	845	959	1166	912	885	764	**	949	112·7
1965	400	302	450	408	410	378	366	242	N.S.	370	91·3
Pooled	664	617	612	614	744	595	531	455	**	604	122·3

Crop :- Maize (*Kharif*). **Ref :- Bh. 64(90), 65(75).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'C',**

Object :—To study the residual effect of different *Rabi* crops on soil fertility as shown by the succeeding Maize crop.

1. BASAL CONDITIONS :

(i) (a) *Rabi* legumes—Maize. (b) *Rabi* legumes. (c) Nil. (ii) Sandy loam. (iii) 30.6.64 ; 8.7.65. (iv) (a) 3 to 4 ploughings. (b) Line sowing. (c) 23 Kg/ha. (d) 45 cm.×30 cm. (e) —. (v) 22·5 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) Jaunpur. (vii) Irrigated. (viii) Weeding by *khurpi*. (ix) N.A. (x) 8.10.64 ; 8.10.65.

2. TREATMENTS :

Same as in Expt. Nos. 63(47), 64(90), 65(74) conducted at Sabour and presented on page 421.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 14·02 m.×9·68 m. ; 14·02 m.×8·15 m. (b) 13·41 m.×9·07 m. ; 13·41 m.×7·55 m. (v) 30 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Satisfactory ; Poor. (ii) Nil. ; Attack of Stem borer. (iii) Yield of grain. (iv) (a) 1964—65. (b) No. (c) Nil. (v) and (vi) Nil. (vii) As error variances are heterogeneous and Treatments×Years interaction is absent, indiviual year results are presented under 5. Results.

5. RESULTS:

64(90)

(i) 804 Kg/ha. (ii) 145·6 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	C_1	C_2	C_3	C_4	C_5	C_6	C_7	C_8
Av. yield	954	872	787	802	816	750	779	674

65(75)

(i) 290 Kg/ha. (ii) 68·2 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	C_1	C_2	C_3	C_4	C_5	C_6	C_7	C_8
Av. yield	351	259	341	264	286	272	328	217

Crop :- Maize (*Kharif*). **Ref :- Bh. 62(110).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'C'.**

Object:—To find out the economy of intensive cropping in irrigated tract of Maize crop.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) As per treatments. (c) N.A. (ii) Loam. (iii) 16.6.62. (iv) (a) 4—5 *deshi* ploughings. (b) Line sowing behind plough. (c) 18·4 Kg/ha. (d) 30·5 cm. × 61 cm. (e) —. (v) 45 Kg/ha. of N+45 Kg/ha. of P_2O_5. (vi) Jaunpur. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 17.9.62.

2. TREATMENTS:

6 different intensive cropping treatments: T_1=Maize followed by Wheat, T_2=Maize followed by Potato followed by Onion, T_3=Maize and *Kalai* followed by Potato followed by Wheat mixture, T_4=Maize followed by Mustard followed by Onion, T_5=Groundnut followed by Wheat followed by *Moong* fodder and T_6=Maize followed by early Potato (Oct. sowing) followed by Potato (Dec. sowing) followed by *Cheena*.

3. DESIGN:

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 10·67 m. × 7·32 m. (b) 10·06 m. × 6·71 m. (v) 30·5 cm. × 30·5 cm. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Yield of compenent crops and their monetary return. (iv) (a) 1962—64 (component crops changed every year). (b) Yes. (c) Nil. (v) Dholi and Seikhpura. (vi) and (vii) Nil.

5. RESULTS:

(i) 3572 Rs/ha. (ii) 340·17 Rs/ha. (iii) Treatment differences are significant. (iv) Av. value of produce in Rs/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6
Av. produce	2286	4638	4148	3084	3167	4107

C.D.=512·58 Rs/ha.

Crop :- Maize (*Kharif*). **Ref :- Bh. 63(144).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'C'.**

Object :—To find out the economy of intensive cropping in irrigated tracts of Maize crops.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) Loam. (iii) 25.6.63. (iv) (a) 4—5 *deshi* ploughings. (b) Line sowing behind plough. (c) 20 Kg/ha. (d) 30·5 cm.×61·0 cm. (e) —. (v) 22·5 Kg/ha. of N+45 Kg/ha. of P_2O_5. (vi) Jaunpur. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 24.9.63.

2. TREATMENTS :

6 different intensive cropping treatments : T_1=Maize followed by Wheat, T_5=Maize followed by Potato followed by Onion, T_3=Maize followed by Potato followed by *Cheena*, T_4=Maize followed by *Mustard* followed by *Bhindi*, T_2=Groundnut followed by Tomato followed by Maize (fodder) followed by *Moong* and T_6=Maize followed by early Potato (Oct. sowing) followed by Potato (Dec. sowing) followed by *Cheena*.

3. DESIGN:

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 10·61 m.×7·32 m. (b) 10·06 m.×6·71 m. (v) 27·5 cm.× 30·5 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of component crops and their monetary return. (iv) (a) 1962—64 (component crops changed every year). (b) Yes. (c) Nil. (v) Dholi and Seikhpur. (vi) Nil. (vii) The monetary return for the season has been analysed.

5. RESULTS :

(i) 7258 Rs/ha. (ii) 1368·8 Rs/ha. (iii) Treatment differences are highly significant. (iv) Av. value of produce in Rs/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6
Av. produce	2999	7943	7793	4724	4913	15176

C.D.=2062·6 Rs/ha.

Crop :- Maize (*Kharif*). **Ref :- Bh. 64(180).**

Site :- Agri. Res. Instt, Sabour. **Type :- 'C'.**

Object :—To find out the economy of intensive cropping in irrigated tract (up land).

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) Loam. (iii) 24.6.64. (iv) (a) 4—5 *deshi* ploughings. (b) Line sowing behind plough. (c) 18 Kg/ha. (d) 61 cm. (e) Nil. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) Jaunpur. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 29.9.64.

2. TREATMENTS :

Same as in expt. no. 63(144) presented on page 423.

In T_3, Wheat mixture was taken instead of *Cheena*. In T_4, Onion in place of *Bhindi*.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 10·67 m.×7·32 m. (b) 10·06 m.×6·71 m. (v) 61 cm.× 61 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination, flowering and maturity dates, height of the plant, length of earhead, No. of grains/earhead, wt. of 1000 grains, wt. of straw and yield of grain. (iv) (a) 1962—64 (component crops changed every year). (b) Yes. (c) Nil. (v) Dholi, Seikhpura (Patna). (ii) Wheat in T_3—failed. (vii) Total money value of the produce per plot in a year was analysed and presented.

5. RESULTS :

(i) 6037 Rs/ha. (ii) 370·7 Rs/ha. (iii) Treatment differences are significant. (iv) Av. value of produce in Rs/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6
Av. value	3453	9979	4668	4099	2892	11130

C.D.=558·5 Rs/ha.

———

Crop :- Maize (*Rabi*). **Ref :- Bh. 62(55).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'C'.**

Object :—To test the yielding ability of Maize seed taken from the different parts of the cob.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize (*Kharif*). (c) N.A. (ii) Sandy loam. (iii) 3.11.62. (iv) (a) 3 to 4 *deshi* ploughings. (b) Line sowing. (c) 16 to 17 Kg/ha. (d) 75 cm.×30 cm. (e) N.A. (v) 67·2 Kg/ha of N+44·8 Kg/ha. of P_2O_5+22·4 Kg/ha. of K_2O. (vi) Jaunpur. (vii) Irrigated. (viii) 2 weedings, hoeing and spading. (ix) N.A. (x) 27.4.63.

2. TREATMENTS :

4 types of seed : T_1=Apical seed, T_2=Central seed, T_3=Basal seed and T_4=Mixed seed.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 9·14 m.×3·05 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of grain ; stand count and moisture %. (iv) (a) 1962—63 (season changed in 1963). (b) Yes. (c) Nil. (v) Dholi. (vi) and (vii) Nil.

5. RESULTS:

(i) 4094 Kg/ha. (ii) 317·3 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yied of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4
Av. yield	3914	4181	3871	4409

———

Crop :- Maize (*Kharif*). **Ref :- Bh. 63(71).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'C'.**

Object :—To find out the yielding ability of Maize seed taken from the different parts of the cob.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Sugarcane. (c) N.A. (ii) Sandy loam. (iii) 31.5.63. (iv) (a) 3 to 4 *deshi* ploughings. (b) Line sowing. (c) 16 to 17 Kg/h. (d) 75 cm.×30 cm. (e) N.A. (v) 67·2 Kg/ha. of N+44·8 Kg/ha. of P_2O_5+22·4 Kg/ha. of K_2O. (vi) Jaunpur. (vii) Unirrigated. (viii) 2 weedings and hoeing. (ix) N.A. (x) 11.9.63.

2. TEEATMENTS to 4. GENERAL :

Same as in Expt. No. 62(55) presented as above.

5. RESULTS :

(i) 2067 Kg/ha. (ii) 255·5 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4
Av. yield	2095	1785	2112	2276

Crop :- Maize (*Kharif*). **Ref :- Bh. 64(108), 65(65).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'C'.**

Object :—To find out a suitable method of sowing Maize for *Kharif* season.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat ; *Rabi* Maize. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super ; 1125 Kg/ha of N as A/S+67 Kg/ha. of P_2O_5 as Super+33·5 Kg/ha. of K_2O as Mur. Pot. (ii) Sandy loam. (iii) 26.6.64 13.7.65. (iv) (a) 3 to 4 ploughings. (b) As per treatments. (c) 16 to 17 Kg/ha. ; 20 Kg/ha. (d) 30 cm.× 75 cm. ; 90 cm. between rows. (v) 112·5 Kg/ha. of N+67·2 Kg/ha. of P_2O_5+33·6 Kg/ha. of K_2O. (vi) Ganga 101. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) 61 cm. ; N.A. (x) 6.10.64 ; 31.10.65.

2. TREATMENTS and 3. DESIGN :

Same as in Expt. No. 64(137) conducted at Dholi and presented on Page 409.

4. GENERAL :

(i) Fair. (ii) Endrine sprayed ; Nil. (iii) Yield of grain ; Germination ; plant height, No. of grains/cob, grain wt. of cob, stand count, moisture %. (iv) (a) 1964—65. (b) No. (c) Results of combined analysis are given under 5. Results. (v) Dholi, Patna. (vi) Nil. (viii) Error variances are heterogeneous and Treatments × Years interaction is present.

5. RESULTS :

Pooled results

(i) 2757 Kg/ha. (ii) 1046·3 Kg/ha. (based on 3 d.f. made up of Treatments × Years interaction.) (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	M_1	M_2	M_3	M_4
Av. yield	2603	2938	3029	2457

Individual rnsults

Treatments	M_1	M_2	M_3	M_4	Sig.	G.M.	S.E./plot
Year							
1964	3496	3841	3144	3050	N.S.	3383	465.8
1965	1710	2035	2914	1864	N.S.	2131	779·7
Pooled	2603	2938	3029	2457	N.S.	2757	1046·3

Crop :- Maize (*Kharif*). **Ref :- Bh. 61(84),**

Site :- Agri. Res. Instt., Sabour. **Type :- 'C'.**

Object:—To study the effect of ploughing by different plough on the yield of Maize.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) N.A. (ii) Clayey loam. (iii) 21.6.61. (iv) (a) As per treatments. (b) Behind the plough. (c) 23 Kg/ha. (d) and (e) N.A. (v) N.A. (vi) Jaunpur. (vii) Irrigated. (viii) 2 weedings. (ix) N.A. (x) 25.9.61.

2. TREATMENTS :

types of plough : T_1=Single bullock plough, T_2=*Deshi* plough, T_3=Meher plough. T_4=Sabash plough, T_5=A.E.R. 15 cm. plough and T_6=Japanese plough.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 21·03 m.×10·67 m. (b) 20·12 m.×10·06 m. (v) 46 cm. ×30 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of grain. (iv) 1961—only. (b) and (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 444 Kg/ha. (ii) 199·2 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	412	579	314	494	408	459

———

Crop :- Maize (*Kharif*). **Ref :- Bh. 62(61), 63(76).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'C'.**

Object :—To develop a suitable plough to be drawn by single animal and to test its efficiency against *deshi* plough for Maize crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat ; N.A. (c) N.A. (ii) Clayey loam. (iii) 21.6.62 ; 12.6.62. (iv) (a) As per treatments. (b) Line sowing. (c) 16 Kg/ha. (d) 75 cm.×30 cm. (e) N.A. (v) 112 Kg/ha. of N+89·6 Kg/ha. of P_2O_5+44·8 Kg/ha. of K_2O. (vi) Ganga hybrid 101. (vii) Irrigated. (viii) Weeding and harrowing. (ix) N.A. x) 27, 28.9.62 ; 18.9.63.

2. TREATMENTS :

3 cultural treatments : T_1=Single bullock plough, T_2=*Deshi* plough (with one pair) and T_3=Meher plough (with one pair).

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 7. (iv) (a) N.A. (b) 18·29 m.×9·14 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of grain. (iv) (a) 1962—63. (b) Nil. (c) Results of combined analysis are given under 5. Results. (v) Dholi. (vi) Nil. (vii) Error variances are homogeneous and Treatments×Years interaction is present.

5. RESULTS :

Pooled results

(i) 1224 Kg/ha. (ii) 4900 Kg/ha. (based on 2 d.f. made up of Treatments×Years interaction). (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3
Av. yield	1281	1317	1075

Individual results

Treatment	T_1	T_2	T_3	Sig.	G.M.	S.E./plot
Year						
1962	2053	2151	1658	**	1954	239 8
1963	509	482	492	N.S.	494	140·5
Pooled	1281	1317	1075	N.S.	1224	490·0

Crop :- Maize (*Kharif*). **Ref :- Bh. 62(62), 63(315).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'C'.**

Object :—To determine the most suitable combination of improved implements for cultivation of Maize crop.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Wheat. (c) N.A. ; 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (ii) Clayey loam. (iii) 20.6.62 ; 1.6.63. (iv) (a) As per treatments. (b) Line sowing. (b) 16 Kg/ha, ; 18 Kg/ha. (d) 75 cm.×30 cm. ; 23 cm.×23 cm. (e) —. (v) 112 Kg/ha. of N+89·6 Kg/ha. of P_2O_5+44 8 Kg/ha. of K_2O ; 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (vi) Ganga 101. (vii) Irrigated. ; Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 28, 29.9.62 ; 11.11.63.

2. TREATMENTS:

5 cultural treatments : T_1=Indigeneous, T_2=M.B. plough+cultivation+ridger, T_3=M.B. plough+Disc harrow+cultivator+ridger and T_5=Disc plough+cultivator+ridger.

Sowing in all treatments done behind the plough in the absence of seed drill and interculturing by cultivator and ridger exception.

3. DESIGN:

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 18·29 m.×9·14 m. (v) N.A. (vi) Yes.

4. GENERAL:

(i) Fair. (ii) Nil. (iii) Yield of grain. (iv) (a) 1962—63. (b) Nil. (c) No. (v) No. (vi) Nil. (vii) Error variances are heterogeneous and Treatments×Years interaction is absent. Individual results are given under 5. Results.

5. RESULTS:

62(62)

(i) 1342 Kg/ha. (ii) 536·8 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5
Av. yield	1224	1450	1495	1405	1136

63(315)

(i) 956 Kg/ha. (ii) 123·1 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5
Av. yield	989	925	852	915	1100

Crop :- Maize (*Kharif*). **Ref :- Bh. 63(78).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'C'.**

Object :—To determine the most suitable combination of improved implements for cultivation of Maize.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) N.A. (ii) Clayey loam. (iii) 1.6.63. (iv) (a) As per treatments. (b) Line sowing. (c) 23 Kg/ha. (d) and (e) N.A. (v) N.A. (vi) Ganga hybrid 101. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 4.12.63.

2. TREATMENTS :

5 cultural treatments : T_1=Indigeneous plough, T_2=M.B. plough+cultivator+ridger, T_3=M.B. plough+disc harrow+cultivator+irdger, T_4=Disc plough+disc harrow+cultivator+ridger and T_5=Disc plough+cultivator+ridger.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 18·29 m.×9·14 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1963—only. (b) and (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 697 Kg/ha. (ii) 67·5 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	
Av. yield	822	723	707	636	595	C.D.=104·0 Kg/ha.

Crop :- Maize (*Kharif*). **Ref :- Bh. 63(81), 65(189).**

Site :- Agri. Res. Instt., Dholi. **Type :- 'CV'.**

Object :—To find out the effect of different dates of sowing on the yield of different varieties of Maize.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) Nil. (ii) Sandy loam. (iii) As per treatments. (iv) (a) 3 ploughings. (b) Line sowing. (c) 15 Kg/ha. (d) 75 cm.×30 cm. (e) —. (v) 112 Kg/ha. of N+67·2 Kg/ha. of P_2O_5+33·6 Kg/ha. of K_2O. (vi) As per treatments. (vii) Irrigated. (viii) 1—2 hand weedings and hoeing. (ix) N.A. (x) 9.9.63. 18.9.65 to 18.10.65.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 varieties : V_1=Ganga 1 and V_2=Ganga 101.

(2) 5 dates of sowing : D_1=15th May, D_2=30th May, D_3=15th June, D_4=30th June and D_5=15th July.

3. DESIGN:

(i) Fact. in R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) 9·14 m.×7·62 m. (b) 9·14 m.×4·67 m. (v) 1·52 m. on either side. (vi) Yes.

4. GENERAL :

(i) Good. (ii) 0·02 % Endrine sprayed against Stem borer for 63 ; Nil. (iii) Stand count, moisture % and yield of grain. (iv) (a) 1963—65(64 N.A.). (b) No. (c) Results of combined analysis are given under 5 Results. (v) N.A. (vi) Nil. (vii) Error variances are homogeneous and Treatmeats×Years interaction is present.

5. RESULTS :

Pooled results

(i) 4314 Kg/ha. (ii) 1434·3 Kg/ha. (based on 9 d.f. made up of Treatments × Years interaction). (iii) Main effect of D is significant. (iv) Av. yield of grain in Kg/ha.

	D_1	D_2	D_3	D_4	D_5	Mean
V_1	3980	4864	4922	3932	2711	4082
V_2	4498	5482	5539	3616	3595	4546
Mean	4239	5173	5231	3774	3153	4314

C.D. for D marginal means=1146·9 Kg/ha.

Individual results

Treatments	D_1	D_2	D_3	D_4	D_5	Sig.	V_1	V_2
Year								
1963	4325	4714	4636	2778	2130	**	3713	3721
1965	4152	5633	5825	4770	4175	**	4451	5372
Pooled	4239	5173	5231	3774	3153	*	4082	4546

Sig.	G.M.	S.E./plot
N.S.	3717	478·7
**	4911	460·6
N.S.	4314	1434·3

Crop :- Maize (*Kharif*). **Ref :- Bh. 61(109), 62(286), 63(99).**

Site :- Agri. Res. Instt., Dholi. **Type :- 'CV'.**

Object :—To study the effect of method of sowing on different varieties of Maize.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Wheat. (c) N.A. (ii) Sandy loam. (iii) 12.6.61/20.6.61 ; 3.7.62/30.7.62 ; 29.6.63/26.7.63. (iv) (a) 3 ploughings. (b) Line sowing. (c) 20 Kg/ha. ; 16 Kg/ha. ; N.A. (d) 45 cm. × 25 cm. ; 75 cm. × 25 cm. ; 45 cm. × 30 cm. (e) One. (v) N.A. ; 111·1 Kg/ha. of N as A/S + 67 Kg/ha. of P_2O_5 as Super + 45 Kg/ha. of K_2O as Mur. Pot. ; N.A. (vi) As per treatments. (vii) Unirrigated. (viii) One weeding. (ix) 37 cm. ; N.A. for 62 and 63. (x) 13·9·61, 25.9.61, 7.10.61 ; 10.10.62 ; 7.10.63.

2. TREATMENTS:

Main-plot treatments :

2 varieties : V_1=Jaunpur, V_2=Ganga—1.

Sub-plot treatments :

2 methods of sowing : S_1=Normol sowing and S_2=Transplanting.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 2 sub-plots/main-plot. (b) N.A. (iii) 8. (iv) (a) N.A. (b) 9·14 m.×1·52 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Spray of Endrine 20 % for 61 and 63 ; Nil for 62. (iii) Yield of grain. (iv) (a) 1961—63. (b) No. (c) Nil. (v) No. (vi) Nil. (vii) Sub-plot error variances are homogeneous. Since the main-plot error variances are heterogeneous and Treatments×Years interaction is absent, individual results are given under 5. Results.

5. RESULTS :

61(109)

(i) 2939 Kg/ha. (ii) (a) 119·9 Kg/ha. (b) 260·8 Kg/ha. (iii) Main effect of V is significant. Main effect of S and interaction V×S are highly significant. (iv) Av. yield of grain in Kg/ha.

	S_1	S_2	Mean
V_1	3730	1930	2830
V_2	3185	2912	3049
Mean	3457	2421	2939

C.D. for V marginal means=100·3 Kg/ha.
C.D. for S marginal means=197·8 Kg/ha.
C.D. for S means at the same level of V=279·7 Kg/ha.
C.D. for V means at the same level of S=221·3 Kg/ha.

62(286)

(i) 1714 Kg/ha. (ii) (a) 459·8 Kg/ha. (b) 276·5 Kg/ha. (iii) Main effect of S is highly significant. (iv) Av. yield of grain in Kg/ha.

	S_1	S_2	Mean
V_1	2216	835	1525
V_2	2749	1059	1902
Mean	2481	947	1714

C.D. for S marginal means=209 7 Kg/ha.

63(99)

(i) 2883 Kg/ha. (ii) (a) 247·2 Kg/ha. (b) 376·3 Kg/ha. (iii) Main effect of S is significant. (iv) Av. yield of grain in Kg/ha.

	S_1	S_2	Mean
V_1	4203	1321	2762
V_2	4397	1609	3003
Mean	4300	1465	2883

C.D. for S marginal means=285·3 Kg/ha.

Crop :- Maize (*Kharif*). **Ref :- Bh. 63(83).**

Site :- Agri. Res. Instt., Dholi. **Type :- 'CV'.**

Object :—To find out the effect of different dates of sowing on the yield of hybrid Maize.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) Nil. (ii) Sandy loam. (iii) As per treatments. (iv) One tractor ploughing, one Punjab plough and 5 tyned cultivator twice. (b) Behind the plough. (c) 15 Kg/ha. (d) 75 cm. × 30 cm. (e) N.A. (v) 112 Kg/ha. of N+67·2 Kg/ha. of P_2O_5+33·6 Kg/ha. of K_2O. (vi) As per treatments. (vii) Unirrigated. (viii) Weeding by *khurpi* (ix) N.A. (x) 17.10.63.

2. TREATMENTS to 4. GENERAL :

Same as in expt. nos. 63(81), 65(189) persented on page 429.

5. RESULTS :

(i) 3317 Kg/ha. (ii) 308·1 Kg/ha. (iii) Main effects of V and D are highly significant. (iv) Av. yield of grain in Kg/ha.

	D_1	D_2	D_3	D_4	D_5	Mean
V_1	2376	3726	3927	3466	1785	3056
V_2	3534	4174	4345	4155	1685	3579
Mean	2955	3950	4136	3810	1735	3317

C.D. for D marginal means=316·1 Kg/ha.
C.D. for V marginal means=199·9 Kg/ha.

———

Crop :- Maize (*Rabi*). **Ref :- Bh. 62(76), 63(98), 64(152).**

Site :- Agri. Res. Instt., Dholi. **Type :- 'CV'.**

Object :—To find out suitable dates of sowing late and early maturing Maize hybrid for *Rabi* crops.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) N.A. (ii) Sandy loam. (iii) As per treatments. (iv) (a) 3 ploughings. (b) Line sowing. (c) 20 Kg/ha. (d) 45 cm. × 25 cm. (e) N.A. (v) N.A. vi) As per treatments. (vii) Irrigated. (viii) Weeding for 62 and 64 ; hoeing with 5 tyned cultivator. (ix) N.A. (x) 24.4.63 ; 21.5.63 ; 31.5.63 ; 28.3.64 ; 18,19.5.64 ; 1,21.4.65 ; 7,15.5.65.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 varieties : V_1=Ganga 1 and V_2=Ganga 101.

(2) 4 dates of sowing : D_1=10th Oct., D_2=30th Oct., D_3=15th Nov. and D_4=30th Nov.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 9·14 m. × 7.62 m. (b) 9·14 m. × 4·57 m. (v) 1·52 m. on either side along the length. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Spray of Endrine Emulsion against borer effect. (iii) Yield of grain. (iv) (a) 1962—64. (b) Yes. (c) Results of combind analysis are given under 5. Results. (v) Sabour, Patna, Bikramganj. (vi) Nil. (vii) Error variances are heterogeneous and Treatments × Years interaction is present.

5. RESULTS :

Pooled results

(i) 3422 Kg/ha. (ii) 2137·2 Kg/ha. (based on 14 d.f. made up Treatments × Years interaction). (iii) Main effect of D is significant. (iv) Av. yield of grain in Kg/ha.

	D_1	D_2	D_3	D_4	Mean
V_1	4184	3082	2883	2806	3239
V_2	5133	3603	3235	2455	3606
Mean	4658	3343	3059	2630	3422

C.D. for D marginal means=1323·4 Kg/ha.

Individual results

Treatment	D_1	D_2	D_3	D_4	Sig.	V_1	V_2	Sig.	G.M.	S.E./plot
Year 1962	2585	2590	2546	3279	*	2728	2772	N.S.	2772	511·9
1963	3619	2067	1937	1057	**	1879	2461	**	2170	203·8
1964	7771	5371	4694	3555	**	5109	5587	N.S.	5348	700·0
Pooled	4658	3343	3059	2630	*	3239	3606	N.S.	3422	2137·2

Crop :- Maize (*Rabi*). **Ref :- Bh. 62(175), 64(243).**

Site :- Agri. Res. Instt., Patna. **Type ;- 'CV'.**

Object :—To find out the suitable dates of sowing late and early maturity Maize hybrids for *Rabi* crop. (conducted at Mithapur farm).

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar* and fodder ; fallow. (c) Nil. (ii) Clay. (iii) As per treatments. (iv) (a) Ploughing with tractor and *deshi* plough. (b) Dibbling. (c) 16 Kg/ha. (d) 76 cm. × 30 cm. (e) 1. (v) 112 Kg/ha. of N as A/S+67 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (vi) As per treatments. (vii) Irrigated. (viii) Intercultural operation with *kudal* and hoeing. (ix) 9·1 cm., 32 cm. (x) 29.4.63 ; 22.4.65.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 varieties : V_1=Ganga—1 and V_2=Ganga—101.

(2) 4 dates of sowing : D_1=15th Oct., D_2=30th Oct., D_3=15th Nov. and D_4=30th Nov.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) 9·14 m. × 60 96 m. (iii) 4. (iv) (a) and (b) 9·14 m. × 7 62 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Days to 75% silking, borer infestation, heliminthosporium spot, Bacterial disease, lodging, vigour etc , yield of grain. (iv) (a) 1962—64. (b) Yes. (c) Results of combined analysis are given under 5. Results. (v) Sabour, Dholi. (vi) Nil. (vii) As D_1 and D_4 failed in 63, results of 63 are given seperately. Error variances for 62 and 64 are heterogeneous and Treatments × Years interaction is present.

5. RESULTS :

Pooled results

(i) 4452 Kg/ha. (ii) 2378·3 Kg/ha. (based on 7 d.f. made up of Treatments × Years interaction). (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	D_1	D_2	D_3	D_4	Mean
V_1	4817	5260	4052	3642	4443
V_2	5273	5299	4252	3018	4460
Mean	5045	5280	4152	3330	4452

Individual results

Treatments	D_1	D_2	D_3	D_4	Sig.	V_1	V_2	Sig.	G.M.	S.E./plot
Years										
1962	4264	4043	4779	2988	**	3668	4370	**	4109	607·1
1964	5826	6517	3525	3672	**	5218	4551	**	4885	338·5
Pooled	5045	5280	4152	3330	N.S.	4443	4460	N.S.	4452	2378·3

Crop :- Maize (*Rabi*). **Ref :- Bh. 63(211).**

Site :- Agri. Res. Instt., Patna. **Type :- 'CV'.**

Object :—To find out the suitable date for sowing late and early maturity Maize hybrids in *Rabi* crop (conducted at Mithapur Farm).

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Clay. (iii) As per treatments (iv) (a) Ploughing with *deshi* plough. (b) Dibbling. (c) 16 Kg/ha. (d) 76 cm.×30 cm. (e) 1. (v) 112 Kg/ha. of N as A/S+89·7 Kg/ha. of P_2O_5 as Super+45 Kg/ha. K_2O an Mur. Pot. (vi) As per treatments. (vii) Irrigated. (viii) Intercultural operation with *kudal* and hoeing. (ix) 11·3 cm. (x) 27.4.64.

2. TREATMENTS and 4. DESIGN :

Some as in expt. no 62(175), 64(243) persented on page 433.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a)1962—64 (As D_1 and D_4 failed in 63, results of 63 are given separately and the combined analysis for 1962 and 1964 are presented above on page 433). (b) Yes. (c) Nil. (v) Sabour, Dholi. (vi) Nil. (vii) Treatments D_1 and D_4 failed.

5. RESULTS :

(i) 2824 Kg/ha. (ii) 304·2 Kg/ha. (iii) Main effect of D is significant. (iv) Av. yield of grain in Kg/ha.

	V_1	V_2	Mean
D_2	3001	2979	2990
D_3	2707	2610	2658
Mean	2854	2794	2824

C.D. for D marginal means=344·0 Kg/ha.

Crop :- Maize (*Rabi*). **Ref :- Bh. 62(73), 64(149).**

Site :- Agri. Res. Instt., Patna. **Type :- 'CV'.**

Object :—To find out suitable dates of sowing late and early maturity Maize bybrid for *Rabi* crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar* for fodder. (c) N.A. (ii) N.A. (iii) As per treatments (iv) (a) One tractor ploughing and 3 to 4 *deshi* ploughings. (b) Hand dibbling. (c) N.A ; 16 Kg/ha. (d) 30 cm.×45 cm. (e) N.A. (v) 112 Kg/ha. of N as A/S+89·6 Kg/ha. of P_2O_5+44·8 Kg/ha. of K_2O. (vi) As per treatments. (vii) Irrigated ; Unirrigated. (viii) Weeding by *khurpi*. (ix) N.A. (x) 19.3.63 ; 14, 29.4.63, 17.5.63 ; 11, 22.4.65 and 2, 9.5.65.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 dates of sowing : D_1=15th Oct., D_2=30 th Oct., D_3=15th Nov. and D_4=30th Nov.

(2) 2 varieties : V_1=Ganga hybrid—1 and V_2=Ganga hybrid—101.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 9·14 m.×7·62 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Days of 75% silking, borer infestation and yield of grain. (iv) (a) 1962—64 (63 N.A.). (b) Yes. (c) Results of combined analysis given under 5. Results. (v) No. (vi) Nil. (vii) Error variances are homogeneous and Treatments×Years interaction is present.

5. RESULTS :

Pooled results

(i) 3539 Kg/ha. (ii) 1002·4 Kg/ha. (based on 7 d.f. made up of Treatments×Years interaction). (iii) Main effects of D and V are significant. (iv) Av. yield of grain in Kg/ha.

	D_1	D_2	D_3	D_4	Mean
V_1	3228	3844	3270	2598	3235
V_2	3988	4582	3581	3221	3843
Mean	3608	4213	3425	2910	3539

C.D. for D marginal means=838·1 Kg/ha.
C.D. for V marginal means=592·7 Kg/ha.

Individual results

Treatments	D_1	D_2	D_3	D_4	Sig.	V_1	V_2	Sig.	G.M.	S.E./plot
Years										
1962	3468	3785	3651	2582	**	3163	3581	N.S.	3372	567·2
1964	3747	4640	3199	3237	**	3307	4105	**	3706	493·3
Pooled	3608	4213	3425	2910	*	3235	3843	*	3539	1002·4

Crop -- Maize (*Kharif*). **Ref :- Bh. 64(114).**

Site :- Agri. Res. Instt., Patna. **Type :- 'CV'.**

Object —:To find out suitable date for sowing late and early maturity Maize hybrid

1. BASAL CONDITIONS :

(i) (a) No. (b) and (c) N.A. (ii) N.A. (iii) As per treatments. (iv) (a) One tractor ploughing and 3 to 4 *deshi* ploughings. (b) Hand dibbling method. (c) 15 Kg/ha. (d) 30 cm.×45 cm. (e) N.A. (v) N.A. (vi) As per treatments. (vii) Irrigated. (viii) Weeding by *khurpi*. (ix) N.A. (x) 20.9.64 and 21 9.64.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 5 dates of sowing: D_1=15.5.64, D_2=30.5.64, D_3=15.6.64, D_4=30.6.64 and D_5=15.7.64.

(2) 2 varieties : V_1=Ganga hyb.—1 and V_2=Ganga hyb.—101.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 9·14 m.×7·62 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of grain. (iv) (a) 1964—only. (b) and (c) Nil. (v) No. (vi) Nil. (vii) Tteatments D_4 and D_5 failed due to heavy rain.

5. RESULTS :

(i) 2446 Kg/ha. (ii) 494·0 Kg/ha. (iii) Main effect of D alone is significant. (iv) Av. yield of grain in Kg/ha.

	D_1	D_2	D_3	Mean
V_1	2360	2616	2122	2366
V_2	2443	3080	2056	2526
Mean	2401	2848	2089	2446

C.D. for D marginal means=517·3 Kg/ha.

Crop :- Maize (*Kharif*). **Ref :- Bh. 62(54).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'CV'.**

Object:—To find out the suitable date of sowing for *Rabi* cultivation of hybrid Maize.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Wheat. (c) 45 Kg/ha of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) As per treatments. (iv) (a) 3—4 *deshi* ploughings. (b) Line sowing. (c) 16—17 Kg/ha. (d) 30 cm.×75 cm. (e) Nil. (v) 112 Kg/ha. of N+89·6 Kg/ha. of P_2O_5+44·8 Kg/ha. of K_2O. (vi) As per treatments. (vii) Irrigated. (viii) 2 weedings and 4 hoeing. (ix) 97 cm. (x) 19, 29 9.62 and 15.10.62.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 dates of Sowing: D_1=30.5.62, D_2=15.6.62, D_3=30.6.62 and D_4=15.7.62.

(2) 2 varieties : V_1=Ganga hyb.no. 1 and V_2=Ganga hyb. no. 101.

4. DESIGN ;

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 9·14 m.×7·62 m. (b) 9·14 m.×4·57 m. (v) 76 cm. on either side. (vi) Yes.

3. GENERAL :

(i) Fair. (ii) No. (iii) Yield of grain. (iv) (a) 1962—64 (Modified in 63 and 64). (b) Yes. (c) Nil. (v) Dholi and Patna. (vi) and (vii) Nil.

5. RESULTS :

(i) 2186 Kg/ha. (ii) 473·1 Kg/ha. (iii) Main effect of D is highly significant and that of V is significant. (iv) Av. yield of grain in Kg/ha.

	D_1	D_2	D_3	D_4	Mean
V_1	1995	2824	1852	1178	1962
V_2	2625	3108	2489	1420	2410
Mean	2310	2966	2170	1299	2186

C.D. for D marginal means=492·0 Kg/ha.
C.D. for V marginal means=348·0 Kg/ha.

Crop :- Maize (*Kharif*). **Ref :- Bh. 63(70), 64(105).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'CV'.**

Object :—To find out the suitable dates for sowing late and early maturity Maize hybrids.

1. BASAL CONDITIONS :

(i) (a) No. (b) Sugarcane ; Wheat. (c) 45 Kg/ha. of P_2O_5 as Super ; 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) As per treatments. (iv) (a) 3—4 ploughings. (b) Line sowing. (c) 16—17 Kg/ha. (d) 75 cm.×30 cm. (e) Nil. (v) 112 Kg/ha. of N+89·7 Kg/ha. of P_2O_5+44·8 Kg/ha. of K_2O. (vi) As per treatments. (vii) Irrigated ; unirrigated. (viii) 2 weedings. (ix) 101 cm. ; 89 cm. (x) 8.9.63, 15.10.63 ; 9.9.64, 3, 6 and 22.10.64.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 5 dates of Sowing : D_1=15th May, D_2=30th May, D_3=15th June, D_4=30th June and D_5=15th July.

(2) 2 varieties : V_1=Ganga—1 and V_2=Ganga—101.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) 9·14 m.×7·62 m. (b) 9·14 m.×4·57 m. (v) 152 cm. on either side along breadth. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) 0·4 % Endrine sprayed. (iii) Yield of grain. (iv) (a) 1962–64 (modified in '63). (b) Yes. (c) Results of combined analysis are given under 5. Results. (v) and (vi) Nil. (vii) Error variances are homogeneous and Treatments×Years interaction is absent.

5. RESULTS :

Pooled results

(i) 1708 Kg/ha. (ii) 231·7 Kg/ha. (based on 63 d.f. made up of pooled error and Treatments×Years interaction). (iii) Main effects of D and V are highly significant. (iv) Av. yield of grain in Kg/ha.

	D_1	D_2	D_3	D_4	D_5	Mean
V_1	2052	1872	1265	1357	1303	1570
V_2	2295	2200	1801	1516	1423	1846
Mean	2172	2036	1533	1437	1363	1708

C.D. for D marginal means=163·8 Kg/ha.
C.D. for V marginal means=103·6 Kg/ha.

Individual results

Treatment	D_1	D_2	D_3	D_4	D_5	Sig.	V_1	V_2	Sig	G.M.	S.E./plo
Year											
1963	1965	1873	1162	1295	1106	**	1364	1597	**	1480	216·7
1964	2380	2200	1905	1579	1620	*	1776	2096	*	1936	215·8
Pooled	2172	2036	1533	1437	1363	**	1570	1846	**	1708	231·7

Crop :- Maize (*Rabi*). **Ref :- Bh. 62(53), 63(69), 64(111).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'CV'.**

Object :—To find out the suitable dates of sowing for *Rabi* cultivation of hybrid Maize.

1. BASAL CONDITIONS :

(i) (a) No. (b) Maize. (c) N.A. (ii) Sandy loam. (iii) As per treatments. (iv) (a) 3—4 *deshi* ploughings. (b) Line sowing. (c) 16—17 Kg/ha. (d) 75 cm. × 30 cm. (e) N.A. (v) 112 Kg/ha. of N+89·6 Kg/ha. of P_2O_5+44·8 Kg/ha. of K_2O. (vi) As per treatments. (vii) Irrigated. (viii) 2 weedings and hoeing. (ix) N.A. (x) 25, 30.4.63 and 5.5.63 ; 12, 26.4.64 and 6.5.64 ; 12.4.65, 2 and 5.5.65.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 dates of sowing : D_1=15th Oct., D_2=30th Oct, D_3=15th Nov. and D_4=30th Nov.

(2) 2 varieties: V_1=Ganga hybrid no. 1 and V_2=Ganga−101.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 9·14 m. × 7·62 m. (b) 9·14 m. × 4·57 m. (v) 152 cm. on either side along breadth. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) 0·4 % Endrine sprayed for 64 ; Nil for others. (iii) Yield of green cobs and stand count. (iv) (a) 1962—64. (b) Yes. (c) Results of combined analysis given under 5. Results. (v) No. (vi) Nil. (vii) Error variances are heterogeneous and Treatments × Years interaction is present.

5. RESULTS :

Pooled results

(i) 4344 Kg/ha. (ii) 1485·0 Kg/ha. (based on 14 d.f. made up of Treatments × Years interaction). (iii) None of the effects is significant. (iv) Av. yield of green cob in Kg/ha.

	D_1	D_2	D_3	D_4	Mean
V_1	4401	4775	4437	3929	4385
V_2	4567	4761	4526	3355	4302
Mean	4484	4768	4482	3642	4344

Individual results

Treatment Year	D_1	D_2	D_3	D_4	Sig.	V_1	V_2	Sig.	G.M.	S.E./plot
1962	3963	3909	3595	3451	N.S.	3290	4169	**	3729	978·6
1963	4442	5306	5038	2753	*	4817	3953	*	4385	603·2
1964	5046	5087	4813	4722	N.S.	5049	4785	N.S.	4917	529·5
Pooled	4484	4768	4482	3642	N.S.	4385	4302	N.S.	4344	1485·0

Crop :- Maize (*Rabi*). **Ref :- Bh. 61(50).**

Site :- Irrigation Res. Stn., Bikramganj. **Type :- 'IV'.**

Object :—To determine the critical level of moisture in irrigating Maize crop for its maximum yield with respect to different varieties of Maize.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Light clayee loam. (iii) 30.10.61. (iv) (a) N.A. (b) Line sowing by dibbling method. (c) 18 Kg/ha. Jaunpuri, 20 Kg/ha. G. Hybrid no. 1. (d) 76 cm. × 30 cm. (e) N.A. (v) F.Y.M. at 277 Q/ha. +N at 90 Kg/ha. + P_2O_5 at 90 Kg/ha. + K_2O at 90 Kg/ha. (vi) N.A. (vii) Irrigated. (viii) Hoeing and earthing. (ix) N.A. (x) 14.4.62.

2. TREATMENTS :

Main-plot trentments :

2 varieties : V_1=Ganga hybrid no. 1 and V_2=Jaunpuri.

Sub-plot treatments :

4 irrigational treatments : I_1=Irrigation at 4 % available moisture, I_2=Irrigation at 5 % available moisture, I_3=Irrigation at 60 % available moisture and I_4=Irrigation at 75 % available moisture.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 10·97 m. × 5·18 m. (b) 10·36 m. × 4·57 m. (v) 30 cm. × 30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination counts and yield of grain. (iv) (a) 1961—65 (Trs. changed in 1962 63—64 and 65.) (b) and (c) N.A. (v) to (vii) Nil.

5. RESULTS :

(i) 1959 Kg/ha. (ii) (a) 649·1 Kg/ha. (b) 186·7 Kg/ha. (iii) Main effect of V alone is significant. (iv) Av. yield of grain in Kg/ha.

	I_1	I_2	I_3	I_4	Mean
V_1	2572	2480	2306	2261	2405
V_2	1600	1546	1528	1624	1574
Mean	2086	2013	1917	1942	1989

C.D. for V marginal means=730·4 Kg/ha.

Crop :- Maize (*Rabi*). **Ref :- Bh. 62(24).**

Site :- Irrigation Res. Stn., Bikramganj. **Type :- 'IV'.**

Object :—To determine the critical level of moisture in irrigating Maize crop from the maximum yield with respect to different varieties of Maize.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Light clayee. (iii) 26.10.62. (iv) (a) First of all F.Y.M. was broadcasted and land was fully ploughed. P_2O_5 and Mur. Pot. were applied at the time of last ploughing. (b) Line sowing by dibbling method. (c) N.A. (d) 76 cm.×30 cm. (e) N.A. (v) F.Y.M. at 276 Q/ha., 90 Kg/ha. of N as A/S, 90 Kg/ha. of P_2O_5 as Super and 90 Kg/ha. K_2O as Mur. Pot. (vi) N.A. (vii) Irrigated. (viii) 4 hoeings and earthings. (ix) N.A. (x) 20 and 21, 22.4.63.

2. TREATMENTS:

Main-plot treatments :

4 irrigational treatments : I_1=Irrigation at 40 % available moi ture, T_2=Irrigatioo at 50% available moisture, I_3=Irrigation at 60% available moisture and T_4=Irrigation at 75% available moisture.

Sub-plot-tteatments :

3 varieties : V_1=Ganga hybrid no. 1, V_2=Ganga hybrid no. 101 and V_3=Jaunpuri.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 3 sub-plots/main-plot. (b) N A. (iii) 4. (iv) (a) 14·63 m. ×4·57 m. (b) 13·41 m.×3·05 m. (v) 61 cm.×76 cm. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Germination counts, yield of grain. (iv) (a) 1961—65 (Trs. changed in 1962, 63—64 and then in 65). (b) No. (c) Nil. (v) to (vii) Nil.

5. 5. RESULTS :

(i) 3654 Kg/ha. (ii) (a) 344·9 Kg/ha. (b) 370·0 Kg/ha. (iii) Main effect of V is highly significant and that of I is significant. (iv) Av. yield of grain in Kg/ha.

	I_1	I_2	I_3	I_4	Mean
V_1	2948	3361	2275	2856	2860
V_2	4715	4749	4529	4281	4568
V_3	3654	3734	3272	3471	3533
Mean	3772	3948	3359	3536	3654

C.D. for I marginal means=318·6 Kg/ha.
C.D. for V marginal means=270·0 Kg/ha.

———

Crop :- Maize (*Rabi*). **Ref :- Bh. 63(41), 64(68).**

Site :- Irrigation Res. Stn., Bikramganj. **Type :- 'IV'.**

Object :—To determine the critical level of moisture in irrigating a Maize crop for the maximum yield with respect to different varieties of Maize.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy. (c) N.A. (ii) Light clayee. (iii) 21.10.63 ; 31.10.64. (iv) (a) 3 to 5 ploughings. (b) Line sowing by dibbling method (c) N.A. (d) 75 cm.×30 cm ; 60 cm.×30 cm. (e) 2 to 3. (v) 276 Q/ha. of F.Y.M.+90 Kg/ha. of N as A/S+90 Kg/ha. of P_2O_5 as Super+90 Kg/ha. of K_2O as Mur. Pot. (vi) As per treatments. (vii) Irrigated. (viii) Hoeing and earthing. (ix) 4 cm. ; N A. (x) 1 to 3.4.64 ; 8 to 10.4.65.

2. TREATMENTS:

Main-plot treatments:

4 irrigational treatments : I_1=Irrigation at 40 % available moisture, I_2=Irrigation at 50 % available moisture, I_3=Irrigation at 60 % available moisture and I_4=Irrigation at 75 % available moisture.

Sub-plot treatments:

3 varieties : V_1=Ganga hybrid—101, V_2=Deccan and V_3=Jaunpuri.

3. DESIGN:

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 14·63 m. ×4 57 m. (b) 13·41 m.×3·05 m. (v) 61 cm.×76 cm. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Germination counts and yield of grain. (iv) (a) 1961—65 (Trs. changed in 1962, 63—64 and then in 65.) (b) Yes. (c) Nil. (v) and (vi) Nil. (vii) Both the error variances are heterogeneous and so individual year results are presented under 5. Results.

5. RESULTS:

63(41)

(i) 4128 Kg/ha. (ii) (a) 802·3 Kg/ha. (b) 510·5 Kg/ha. (iii) Main effect of V is highly significant. (iv) Av. yield of green cobs in Kg/ha.

	I_1	I_2	I_3	I_4	Mean
V_1	3329	3495	3294	3239	3339
V_2	4556	5763	4764	4841	4981
V_3	3974	4646	3717	3918	4064
Mean	3953	4635	3925	3999	4128

C.D. for V marginal means=372·6 Kg/ha.

64(68)

(i) 4333 Kg/ha. (ii) (a) 357·1 Kg/ha. (b) 266·6 Kg/ha. (iii) Main effect of V is significant. (iv) Av. yield of green cobs in Kg/ha.

	I_1	I_2	I_3	I_4	Mean
V_1	4540	4525	4495	4403	4491
V_2	4464	4189	4464	4128	4311
V_3	3975	4250	4495	4066	4196
Mean	4326	4321	4485	4199	4333

C.D. for V marginal means=194·6 Kg/ha.

Crop :- Maize (*Rabi*). **Ref :- Bh. 65(212).**

Site :- Irrigation Res. Stn., Bikramganj. **Type :- 'IV'.**

Object :—To determine the critical level of moisture for irrigating Maize crop for its maximum yield with respect to different varieties of Maize.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) Nil. (ii) Sandy loam. (iii) 11.11.65. (iv) (a) 3 ploughings. (b) Line sowing. (c) 15 Kg/ha. (d) 23 cm. between rows. (e) —. (v) 276·7 Q/ha. of F.Y.M.+90 Kg/ha. of N as A/S+90 Kg/ha. of p_2O_5 as Super+90 Kg/ha. of K_2O as Mur. Pot. (vi) As per treatments. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 25 and 28.4.66.

2. TREATMENTS:

Main-plot treatments :

3 varieties : V_1=Ganga—101, V_2=Ganga Safeda—2 and V_3=Ganga Safeda—3.

Sub-plot treatments :

4 levels of irrigation : T_1=Irrigation at 40 % available moisture, T_2=Irrigation at 50 % available moisture, T_3=Irrigation at 60 % available moisture and T_4=Irrigation at 70 % available moisture.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 14 63 m. ×4·57 m. (b) 13·11 m. ×3·05 m. (v) 76 cm. ×76 cm. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1961—65 (Trs. changed in 1962, 63—64 and then in 65.) (b) and (c) No. (v) to (vii) Nil.

5. RESULTS:

(i) 2789 Kg/ha. (ii) (a) 601·0 Kg/ha. (b) 675·0 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	T_1	T_2	T_3	T_4	Mean
V_1	2688	2407	2814	2438	2587
V_2	3017	2860	3064	2814	2938
V_3	2845	2657	2970	2892	2841
Mean	2850	2642	2949	2714	2789

Crop :- Maize (*Rabi*). **Ref :- Bh. 60(46), 61(49), 62(23).**

Site :- Irrigation Res. Stn., Bikramganj. **Type :- 'IM'.**

Object :—To determine the number and frequency of irrigation with different levels of manure for Maize.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy. (c) N.A. (ii) Clayee loam. (iii) 3, 7.2.60 ; 3, 4.2.61 ; 1, 2.2.62. (iv) (a) One heavy pre-sowing irrigation was done nearly 10cm. 4 ploughings and planking. Then Compost and feartilisers were broadcasted and mixed with soil completely. (b) Line sowing. (c) 42 Kg/ha. (d) 91 cm. ×30 cm. for 60, 60 cm ×30 cm. for others. (e) N.A. (v) N.A. (vi) Hybried—Texas—26 for 60 and 61, Ganga—101 for 63. (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 17.6.60 ; 10 to 22.6.61 ; 3.6.62.

2. TREATMENTS :

Main-plot treatments :

2 levels of manures : M_1=56 Kg/ha. of N+44·8 Kg/ha. of P_2O_5+44·8 Kg/ha. of K_2O and M_2=112 Kg/ha. of N+89·6 Kg/ha. of P_2O_5+44·8 Kg/ha. of K_2O

Sub-plot treatments :

4 irrigational treatments : I_1=Irrigation at every 20 days , I_2=Irrigation at every 16 days, I_3=Irrigation at every 12 days and I_4=Irrigation at every 8 days.

Initial irrigation was given to all the plots at sowing.

3. DESIGN:

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 46·79 m. ×5·18 m. for 60 ; 22·56 m.×5·18 m. for others. (b) 44·96 m.×4·57 m. for 60 ; 21·34 m.×4·57 m. for others. (v) 91 cm.×30 cm. for 60 ; 61 cm.×30 cm. for others. (vi) Yes.

4. GENERAL;

(i) Good. (ii) Nil. (iii) Germination counts and yield of grain. (iv) (a) 1960—62. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Both the error variances are homogeneous and Treatments×Years interactions are absent.

5. RESULTS:

Pooled results

(i) 1326 Kg/ha. (ii) (a) 276·3 Kg/ha. (based on 11 d.f. made up of pooled error and Treatments×Years interaction). (b) 248·3 Kg/ha. (based on 66 d.f. made up of pooled error and Treatments×Years interaction). (iii) Main effects of M and I are highly significant. (iv) Av. yield of grain in Kg/ha.

	I_1	I_2	I_3	I_4	Mean
M_1	1018	1064	1168	1410	1165
M_2	1304	1280	1476	1890	1488
Mean	1161	1172	1322	1650	1326

C.D. for M marginal means=124·1 Kg/ha.
C.D. for I marginal means =143·2 Kg/ha.

Individual results

Treatment	M_1	M_2	Sig.	I_1	I_2	I_3	I_4	Sig.
Years								
1960	572	887	N.S.	497	624	749	1049	**
1961	1898	2186	N.S.	1983	1930	1973	2282	
1962	1026	1390	*	1004	963	1244	1619	**
Pooled	1165	1488	**	1161	1172	1322	1650	**

G.M.	S.E./plot (a)	(b)
730	357·6	190·6
2042	300·4	256·2
1208	232·0	302·2
1326	276·3	248·3

Crop :- Maize (*Summer*). **Ref :- Bh. 64(3),**

Site :- Irrigation Reg. Stn., Madhepura. **Type :- 'IM'.**

Object :—To determine the level of critical moisture with respect to varying doses of manuring for Maize.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy. (c) N.A. (ii) Loam. (iii) 3.3.64. (iv) (a) 5 ploughings. (b) Sown in furrows opened by *Sharma* hand hoe. (c) N.A. (d) 46 cm. (e) —. (v) Compost at 69 Q/ha. (vi) Hot weather Maize. (vii) As per treatments. (viii) 2 hand hoeing by hand hoe and 1 weeding by spades. (ix) N.A. (x) 25 to 27.6.64

2. TREATMENTS:

Main-plot treatments:

2 levels of manures : M_1=44·8 Kg/ha. of N as A/S+44·8 Kg/ha. of P_2O_5 as Super and M_2=67·2 Kg/ha. of N as A/S+44·8 Kg/ha. of P_2O_5 as Super.

Sub-plot treatments:

4 levels of irrigation : I_1=No irrigation (only Pre-sowing irrigation), I_2=I_1+one irrigation 20 days after sowing, I_3=I_2+irrigation at every 12 days interval and I_4=I_2+irrigation at every 8 days interval.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 4 sub-plots/main-plot. (b)N.A. (iii) 4. (iv) (a) 28·04 m.× 3·05 m. (b) 28·04 m.×2·13 m. (v) 46 cm. on either side of the. plot. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Attack of stem borer and controlled by Endrine. (iii) Height of plant & yield of grain. (iv) (a) 1964—only. (b) No. (c) N.A. (v) to (vii) Nil.

5. RESULTS :

(i) 629 Kg/ha. (ii) (a) 226·0 Kg/ha. (b) 80·5 Kg/ha. (iii) Main effect of I is significant and interaction I×M is significant. (iv) Av. yield of grain in Kg/ha.

	I_1	I_2	I_3	I_4	Mean
M_1	552	543	604	612	578
M_2	569	535	782	836	680
Mean	560	539	693	724	629

C.D. for I marginal means =84·6 Kg/ha.
C.D. for I means at the same level of M=119·6 Kg/ha.
C.D. for M means at the same level of I=270·8 Kg/ha.

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Crop :- Maize (*Summer*). **Ref :- Bh. 62(82), 63(105), 64(162).**

Site :- Irrigation Res. Stn., Madhepura. **Type :- 'IMV'.**

Object :—To study the effect of different levels of manures at different levels of irrigation on different varieties on the yield of Maize.

1. BASAL CONDITIONS :

(i) (a) Paddy—Maize. (b) Paddy. (c) N.A. (ii) Sandy loam. (iii) 9.2.62 ; 2.3 63 ; 6.3.64. (iv) (a) 4 to 5 Bihar junior ploughings. (b) Line sowing. (c) 23 Kg/ha. (d) 61 cm.×30 cm. (e) One. (v) N-A. (vi) and (vii) As per treatments. (viii) Weeding and hoeing. (ix) N.A. (x) 24.6.62 ; 19 to 25.6.63 ; 22, 30 6.64 and 3.7.64.

2. TREATMENTS :

Main-plot treatments:

4 irrigational treatments : I_1=Pre-sowing irrigation, I_2=Pre-sowing irrigation+Irrigation after 20 days of sowing, I_3=I_2+irrigation after every 12 days interval and I_4=I_2+ irrigation after every 8 days interval.

Sub-plot treatments :

All combinations of (1) and (2)

(1) 3 varieties : V_1=Ganga—1, V_2=Jaunpur and V_3=Ganga—101.

(2) 2 levels of manures : M_1=56 Kg/ha of N as A/S+44·8 Kg/ha. of P_2O_5 as Super and M_2=2 M_1.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 6 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 6·70 m.× 6 09 m. (b) 5·49 m.×5·49 m. (v) 61 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination, flowering, height of tiller and yield of grain and straw. (iv) (a) 1962—64. (b) N.A. (c) Nil. (v) and (vi) Nil. (vii) Since the sub-plot error variances are heterogeneous, individual year results are presented under 5. Results.

5. RESULTS:

62(82)

(i) 1867 Kg/ha. (ii) (a) 310·0 Kg/ha. (b) 368·4 Kg/ha. (iii) Main effects of I, V, M and interaction V×I are highly significant. (iv) Av. yield of grain in Kg/ha.

	I_1	I_2	I_3	I_4	M_1	M_2	Mean
V_1	1222	1329	1678	1271	1206	1544	1375
V_2	1262	1810	1997	2047	1584	1974	1779
V_3	1719	2459	2628	2982	2370	2524	2447
Mean	1401	1866	2101	2100	1720	2014	1867
M_1	1357	1614	1940	1969			
M_2	1445	2118	2262	2231			

C.D. for I marginal means =202·4 Kg/ha.
C.D. for V marginal means =184·2 Kglha.
C.D. for M marginal means =150·4 Kg/ha.
C.D. for V means at the same level of I=368·4 Kg/ha.
C.D. for I means at the same level of V=380·9 Kg/ha.

63(105)

(i) 2754 Kg/ha. (ii) (a) 531·2 Kg/ha. (b) 641·9 Kg/ha. (iii) Main effects of I, M and V are highly significant. (iv) Av. yield of grain in Kg/ha.

	I_1	I_2	I_3	I_4	M_1	M_2	Mean
V_1	2388	2761	2429	3010	2376	2918	2647
V_2	2013	2283	2720	2948	2345	2637	2491
V_3	2409	2969	3362	3756	3010	3238	3124
Mean	2270	2671	2837	3238	2577	2931	2754
M_1	2104	2546	2768	2890			
M_2	2436	2796	2906	3586			

C.D. for I marginal means =346·8 Kg/ha.
C.D. for M marginal means=262·0 Kg/ha.
C.D. for V marginal means=321·0 Kg/ha.

64(162)

(i) 1706 Kg/ha. (ii) (a) 651·1 Kg/ha. (b) 442·7 Kg/ha. (iii) Main effects of I and M are significant and that of V is highly significant. (iv) Av. yield of grain in Kg/ha.

	I_1	I_2	I_3	I_4	M_1	M_2	Mean
V_1	848	1382	1164	1790	1208	1384	1296
V_2	1067	2010	2013	2242	1759	1907	1833
V_3	1283	2071	1827	2775	1806	2172	1989
Mean	1066	1821	1668	2269	1591	1821	1706
M_1	999	1791	1534	2040			
M_2	1133	1851	1802	2498			

C.D. for I marginal means =425·0 Kg/ha.
C.D. for M marginal means=180·8 Kg/ha.
C.D. for V marginal means =221·4 Kg/ha.

Crop :- Maize (*Kharif*). **Ref :- Bh. 63(316), 64(353), 65(187).**

Site :- Agri. Res. Instt., Dholi. **Type :- 'D'.**

Object :— To see the efficacy of different insecticides and also of different sprayings against stem borer on Maize crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) 22.6.63 ; 25.6.64 ; 26.6.65. (iv) (a) 3 ploughings. (b) Line sowing. (c) 15 Kg/ha. (d) 23 cm. between rows. (e) —. (v) 11·2 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (vi) Jaunpur. (vii) Un-irrigated. (viii) Weeding & hoeings. (ix) N.A. (x) 10, 15.10.63 ; 11.10.64 ; 21.10.65.

2. TREATMENTS :

Main-plot treatments :

4 insecticidal treatments : I_0=Control, I_1=0·05% Endrin, I_2=0·05% Telodrin and I_3=0·05% Deptrex

Sub-plot treatments :

4 times of spraying : T_1=2 weeks old crop, T_2=3 weeks old crop, T_3=4 weeks old crop and $T_4=T_1+T_2+T_3$ (three applications).

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) 9·14 m.×5·30 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1963–65. (b) No. (c) Results of combined analysis given under 5. Results. (v) No. (vi) Nil. (vii) Both the error variances are homogeneous and Treatments×Years interactions are absent.

5. RESULTS :

pooled results

(i) 3035 Kg/ha. (ii) (a) 524·6 Kg/ha. (based on 33 d.f. made up of pooled error and Treatments×Years interaction). (b) 703·8 Kg/ha. (based on 132 d.f. made up of pooled error and Treatments×Years interaction). (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	I_0	I_1	I_2	I_3	Mean
T_1	2947	3088	2876	3170	3020
T_2	3166	2874	3081	2917	3009
T_3	3124	3198	2948	3130	3100
T_4	2739	3298	3125	2873	3009
Mean	2994	3114	3007	3022	3035

Individual results

Treatment	I_0	I_1	I_2	I_3	Sig.	T_1	T_2	T_3	T_4	Sig.	G.M.	S.E./plot (a)	S.E./plot (b)
Year 1963	3592	3612	3695	3544	N.S.	3525	3499	3896	3524	N.S.	3611	698·7	754·4
1964	1940	2183	2145	2070	N.S.	1994	2219	2074	2051	N.S.	2084	468·9	604·6
1965	3451	3548	3182	3452	N.S.	3542	3311	3330	3451	N.S.	3408	364·4	803·6
Pooled	2994	3114	3007	3022	N.S.	3020	3009	3100	3009	N.S.	3035	524·6	703·8

Crop :- Maize *Kharif*). **Res. Bh. 61(92).**

Site :- Agri. Res. Instt., Dholi. **Type :- 'D'.**

Ocject :—To study the effect of Gamma B.H.C on the yield of Maize.

1. BASAL CONDITIONS :

(i) (a) No. (b) Wheat. (c) N.A. (ii) Sandy loam. (iii) 22.6.61. (iv) (a) 3 *deshi* ploughings. (b) Behind the plough. (c) 6 Kg/ha. (d) N.A. (e) 1. (v) N.A. (vi) Ganga—101. (vii) Unirrigated. (viii) Crust. making and hand hoeing (ix) 138 cm. (x) 9.10.61.

2. TREATMENTS :

2 treatments : T_0=Control and T_1=Gamma B.H.C. sprayed.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 8. (iv) (a) N.A. (b) 9·14 m. × 4·57 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Spray of Endrex 20%. (iii) Germination counts and yield of grain. (iv) (a) No. (b) and (c) Nil. (v) No. (vi) and (vii) Nil.

5. RESULTS :

(i) 1621 Kg/ha. (ii) 446·8 Kg/ha. (iii) Treatment difference is significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1
Av. yield	1765	1478

Crop :- Maize (*Kharif*). **Ref :- Bh. 63(126).**

Site :- Agri. Res. Instt., Dholi. **Type :- 'D'.**

Object :—To find out response of pre-emergence and post-emergence application of weedicides separately and in combination for Maize.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Gram. (c) Nil. (ii) Sandy loam. (iii) 12.6.63. (iv) (a) One ploughing with tractor, 2 ploughings with *deshi* plough. (b) Behind the plough. (c) 23 Kg/ha. (d) 61 cm.×23 cm. (e) 1—2. (v) 44·8 Kg/ha. of N as A/S+44·8 Kg/ha. of P_2O_5 as Super. (vi) Jaunpur. (vii) Unirrigated. (viii) Weeding by hand. (ix) N.A. (x) 24.9.63.

2. TREATMENTS :

6 weedicidal treatments : T_0=Control (No weeding), T_1=Hand weeding, T_2=2·2 Kg. a e./ha. of M.C.P.A. as Agroxone as pre-emergence application, T_3=2 2 Kg. a.e./ha. of Sodium salt of 2, 4—D as Feroxone as pre-emergence application, T_4=½ dose of T_3 applied each at pre-emergence and post-emergence, T_5=½ dose of T_3 applied each at pre-emergenc and post-emergence.

Rates of application=1103 liters/ha.; Dates of application : 17.6.63 and 17.7.63.

3. DESIGN :

(i) R B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) N.A. (iv) 8·50 m.×5·90 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination popn. count, height of plant, length of earhead, no. of grains/cob and yield of grain. (iv) (a) No. (b) and (c) Nil. (v) Sabour and Kanke. (vi) and (vii) Nil.

5. RESULTS :

(i) 182·2 Kg/ha. (ii) 188·2 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha

Treatment	T_0	T_1	T_3	T_4	T_5
Av. yield	1647	2034	1793	1756	1844

———

Crop :- Maize (*Kharif*). **Ref :- Bh. 60(152).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'D'.**

Object :—To study the effect of different groups of hormones as seed soaking treatments on growth, physiology and yield of Maize crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of as P_2O_5 Super. (ii) Sandy loam. (iii) 23.6.60. (iv) (a) 3 ploughings. (b) Dibbling method. (c) 20 Kg/ha. (d) 30 cm. plant to plant. 46 cm. row to row. (e) Nil. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) Kalimpong. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) 105 cm. (x) 1.10.60.

2. TREATMENTS :

Main-plot treatments :

2 durations of soaking : S_1=4 hours and S_2=12 hours.

Sub-plot treatments :

All combinations of (1) and (2) and a control.

(1) Three hormones : H_1=IAA, H_2=2—4—D and H_3=NAA.

(2) Two concentrations : D_1=10 ppm and D_2=25 ppm.

One Control—Ho Do.

3. DESIGN:

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 7 sub-plots/main-plot. (b) 44·50 m.×3·50 m. (iii) 4. (iv) (a) and (b) 3·05 m.×3·20 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Height of plant, no. of leaves, no. of female plants, no. of cobs/plant, wt. of stalk/plant, wt. of 1000 grains, yield of grain and stalks. (iv) (a) 1960—62 (modified in 61). (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS:

(i) 1488 Kg/ha. (ii) (a) 1255 Kg/ha. (b) 286·7 Kg/ha. (iii) Main effects of H, D and 'control *vs* others'. are highly significant. (iv) Av. yield of grain in Kg/ha.

Control=742.

	H_1	H_2	H_3	D_1	D_2	Mean
S_1	2600	1782	1760	2188	1906	2047
S_2	1438	986	1109	1408	947	1178
Mean	2019	1384	1434	1798	1426	1612
D_1	2175	1510	1710			
D_2	1863	1258	1159			

C.D. for H marginal means=205·8 Kg/ha.
C.D. for D marginal means=168·0 Kg/ha.
C.D. for 'control *vs*. others'=222·2 Kg/ha.

Crop :- Maize (*Kharif*). **Ref :- Bh. 60(147).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'D'.**

Object :—To study the effect of different groups of hormones as aerial sprays at different growth stages on the yield of Maize.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) 22.6.60. (iv) (a) 3 ploughings. (b) Dibbling. (c) 20 Kg/ha. (d) 46 cm.×30 cm. (e) 2—3. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) Kalimpong. (vii) Unirrigated. (viii) Weeding, hoeing and earthing-up. (ix) 102 cm. (x) 28.9.60.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2)+a control

(1) 3 types of hormones: H_1=IAA, H_2=NAA and H_3=2–4—D.

(2) 2 concentrations : D_1=25 ppm. and D_2=100 ppm.

and Control=(Ho Do).

Sub-plot treatments :

Aerial sprays at 3 stages of crop growth : S_1=Thinning, S_2=Tasseling and S_3=Grain filling.

3. DESIGN :

(i) Split-plot. (ii) (a) 7 main-plots/replication ; 3 sub-plots/main-plot. (b) 39·92 m.×9·14 m. (iii) 3. (iv) (a) 5·18 m.×2·74 m. (b) 4·26 m.×2·13 m. (v) 46 cm.×30 m. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Height of plants, no. of plants/plot, no. of male and female plants/plot, no. of cobs/plot, wt. of grain and stalk/plot, wt. of grain/plant, wt. of stalk/plant, wt. of 100 grains, no. of leaves/plant, and yield of grain. (iv) (a) 1958—60. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1771 Kg/ha. (ii) (a) 422 1 Kg/ha. (b) 370·3 Kg/ha. (iil) None of the effects is significant. (iv) (a) Av. yield of grain in Kg/ha.

Control=1841 Kg/ha.

	H_1	H_2	H_3	D_1	D_2	Mean
S_1	1813	2041	1555	1730	1876	1803
S_2	1880	1834	1624	1915	1643	1779
S_3	1889	1668	1528	1545	1845	1695
Mean	1861	1848	1569	1730	1788	1759
D_1	1812	1740	1637			
D_2	1909	1954	1501			

Crop :-Maize (*Kharif*). **Ref :- Bh. 63(17C).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'D'.**

Object :—To find out the effect of Tofapen and Simazine weedicides on Maize.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Grass. (c) Nil. (ii) Sandy loam. (iii) 22.6.63. (iv) (a) 3 ploughings. (b) Dibbling. (c) —. (d) 30 cm.×46 cm. (e) 1 plant/hole after thining. (v) 112·1 Kg/ha. of N as A/S and 112·1 Kg/ha. of P_2O_5 as Super. (vi) Ganga—101. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) 115·3 cm. (x) 2.10.63.

2. TREATMENTS :

4 weedicidal treatments : T_0=Control, T_1=Pre-emergence application of 2·24 Kg/ha. of Simazine, T_2=Pre-emegence application of 1·12 Kg/ha. of Tofapen and $T_3=T_1+T_2$.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) 10·36 m.×4·27 m. (iii) 6. (iv) (a) 4·27 m.×2·74 m. (b) 3·35 m.×1·22 m. (v) 46 cm.×76 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) No. of tillers and leaves ; no. of grains and weight/panicle ; yield of grain and straw (iv) (a) 1963—only. (b) and (c) —. (v) to (vii) Nil.

5. RESULTS :

(i) 1546 Kg/ha. (ii) 552·5 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3
Av. yield	1627	1802	1700	1054

Crop :- Maize (*Kharf*). **Ref :- Bh. 63(176).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'D'.**

Object :—To assess the effect of weedicides as pre-emergence spray as weed control in Maize.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Wheat. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) 22.6.63. (iv) (a) 2 ploughings. (b) Line sowing. (c) 23 Kg/ha. (d) 30 cm. between rows ; 61 cm. between rows. (e) Nil. (v) 112·1 Kg/ha. of N as A/S+112·1 Kg/ha. of P_2O_5 as Super. (vi) Ganga—101. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) 95 cm. (x) 28.9.63.

2. TREATMENTS :

9 weedicidal treatments: T_0=Control, T_1=1·12 Kg/ha. of Karmex W, T_2=0·56 Kg/ha. of Karmex W, T_3=1·12 Kg/ha. of Karmex DW, T_4=0·56 Kg/ha. of Karmex DW, T_5=1·12 Kg/ha. of Simazine, T_6=0·56 Kg/ha. of Simazine, T_7=1·12 Kg/ha. of Crag herbicide and T_8=0·56 Kg/ha. of Crag herbicide.

3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) 29·56 m.×4·27 m. (iii) 3. (iv) (a) and (b) 4·88 m.×1·83 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) No. of tillers and leaves, height of plant, yield of grain and straw. (iv) (a) to (c) No. (v) to (vii) Nil.

5. RESULTS:

(i) 978 Kg/ha. (ii) 506·6 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Av. yield	650	660	1245	746	1342	1399	922	1097	741

———

Crop :- Maize (*Kharif*). **Ref :- Bh. 64(210).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'D'.**

Object: —To evaluate the effect of weedicides on weed population on the yield of upland crop such as Maize.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Cotton. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (ii) Sandy loam. (iii) 22.6.64. (iv) (a) 3 ploughings. (b) Line sowing by dibbling method. (c) 23 Kg/ha. (d) 76 cm.×46 cm. (e) N.A. (v) 67·2 Kg/ha. of N as A/S+67·2 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (vi) Kalimpong. (vii) Unirrigated. (viii) Weeding, hoeing and earthing. (ix) 108 cm. (x) 28.9.64.

2. TREATMENTS :

10 weedicidal treatments : T_0=Control, T_1=1·12 Kg/ha. of Simazine (pre-emergence), T_2=14·83 litres/ha. of Tok—E—25 (pre-emergence), T_3=7·41 pints/ha. of Gramexone (pre-emergence) T_4=1·12 Kg/ha. of Simazine (pre-emergence)+2·24 Kg/ha. of Tofapen (post-emergence), T_5=14·83 litres/ha. Tok—E—25 (pre-emergence)+2·24 Kg/ha. of Tofapen, (post-emergence), T_6=4·94 pints/ha. of Riglone (pre-emergence), T_7=1·12 Kg/ha. of Karmex W (pre-emergence), T_8=1·12 Kg/ha. of Karmex DW (pre-emergence) and T_9=Hand weeding.

In all the treatments from T_1 to T_8 the water content is 364 litres except in T_6 when it is 136 litres.

3. DESIGN:

(i) R.B.D. (ii) (a) 10. (b) 37·34 m.×4·11 m. (iii) 3. (iiv) (a) 4·57 m.×3·05 m. (b) 3·66 m.×3·05 m. (v) 46 cm. on either side. (vi) Yes.

4. GENERAL :

(i) Good (ii) Nil. (iii) No. of tillers, no. of cobs/plant, wt. of cob, no. of grains/cob, yield of grain. (iv) (a) 1964—contd. (modified in 65). (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1260 Kg/ha. (ii) 437·0 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9
Av. yield	359	2332	574	574	1363	1426	332	1821	1642	2179

C.D.=749·6 Kg/ha.

Crop :- Maize (*Kharif*). **Ref :- Bh. 65(106).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'D'.**

Object: —To evaluate the effect of weedicides on weed population on the yield of upland crop such as Maize.

1. BASAL CONDITIONS:
(i) (a) Nil. (b) Maize. (c) 11·2 Kg/ha. of N as A/S+90 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (ii) Red loam. (iii) 20.6.65. (iv) (a) 3 ploughings. (b) Line sowing. (c) 23 Kg/ha. (d) 75 cm. ×46 cm. (e) —. (v) 11·2 Kg/ha. of N as A/S+90 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (vi) Deccan Hyb. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 26.9.65.

2. TREATMENTS :

10 weedicidal treatments : T_0=Control, T_1=2 25 Kg/ha. of Simazine, T_2=7 0 Kg/ha. of Tok—E—25, T_3=3 pints/ha. of Gramexone, T_4=2·25 Kg/ha. of Simazine+2·25 Kg/ha. of Tofapen (post-emergence), T_5=7 Kg/ha. of Tok—E—25+2·25 Kg/ha. of Tofapen post-emergence), T_6=2 pints/ha. of Reglone, T_7=1·12 Kg/ha. of Karmex W, T_8=1·12 Kg/ha. of Karmex DW and T_9=Hand weeding.

Note : (1) For treatment T_6 water content is 336·8 litres and for other treatments it is 898 litres.
(2) Treatments are applied pre-emergence except where mentioned.

3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 3. (iv) (a) 4·06 m.×3·05 m. (b) 3·45 m.×3·05 m. (v) 30 cm. on either side. (vi) Yes.

4, GENERAL :

(i) Good. (ii) Nil. (iii) Height of plants, weed population, no. of leaves, no. of cobs/plot, yield of grain and straw. (iv) (a) 1964—contd. (modified in 65). (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2417 Kg/ha. (ii) 695·1 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9
Av. yield	1507	3164	2545	2117	3425	2489	2094	1501	2551	2773

C.D.=1192·4 Kg/ha.

Crop :- Maize (*Kharif*). **Ref :- Bh. 65(112).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'D'.**

Object :—To evaluate the effect of different weedicides on weed population and yield of Maize crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar*. (c) Nil. (ii) Red loam. (iii) 22.6.65. (iv) (a) 3 ploughings. (b) Line sowing. (c) 23 Kg/ha. (d) 61 cm.×46 cm. (e) —. (v) 112 Kg/ha. of N as A/S+90 Kg/ha. of P_2O_5 as Super+ 45 Kg/ha. of K_2O as Mur. Pot. (vi) Deccan. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 30.9.65.

2. TREATMENTS :

13 weedicidal treatments : T_0=Control, T_1=2·25 Kg/ha. of Simazine, T_2=5·60 Kg/ha. of Tok—E—25 T_3=2·25 Kg/ha. of Atrazine, T_4=2·25 Kg/ha. of Lorax. T_5=3·46 Kg/ha. of Seasone, T_6=4048 Kg/ha. of CP 31393, T_7=1·68 Kg/ha. of 2, 4—D, T_8=9 quarts/ha. of Vegadox, T_9=9 quarts/ha. of Randox, T_{10}=5·60 Kg/ha. of Tenoron, T_{11}=4·5 Kg/ha. of Tillam and T_{12}=Hand weeding.

3. DESIGN :

(i) R.B.D. (ii) (a) 13. (b) N.A. (iii) 5. (iv) (a) 4·57 m.×3·05 m. (b) 3·96 m.×3·05 m. (v) 30 cm. on either side. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1965—contd. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2295 Kg/ha. (ii) 164·6 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	1590	2509	2335	2351	2293	2376	2318
	T_7	T_8	T_9	T_{10}	T_{11}	T_{12}	
	2343	2227	2169	2260	2558	2500	

C.D.=210 0 Kg/ha.

Crop :- Maize (*Kharif*). **Ref :- Bh. 62(241).**

Site :- Dhamdaha Ghat (Purnea c.f.) **Type :- 'D'.**

Object :—To find out the comparative efficacy of different insecticides against the pest.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) Nil. (iv) Local. (v) (a) 2—3 ploughings. (b) Line sowing. (c) 15 Kg/ha. (d) 61 cm. between rows. (e) —. (vi) 26.5.62. (vii) Unirrigated. (viii) Weeding hoeing and earthing up. (ix) N.A. (x) 1.9.62.

2. TREATMENTS :

8 insecticidal trials : T_0=Control, T_1=33·62 Kg/ha. of BHC 5 % dust, T_2=67·25 Kg/ha. of BHC 5 % dust, T_3=22·42 Kg/ha. of Aldrin 5 % dust, T_4=44·83 Kg/ha. of Aldrin 5 % dust, T_5=22·42 Kg/ha. of Heptachlor, T_6=44·83 Kg/ha. of Heptachlor 5 % dust and T_7=1·68 Kg/ha. of Gamma BHC.

Time 26.5.52. In scticides were applied before sowing.

3. DESIGN :

(i) R.B.D., 8, 4. (ii) N.A. (iii) (a) and (b) 10·06 m.×5·03 m. (iv) Yes.

4. GENERAL :

(i) Good. (ii) field cricket on Maize. (iii) Percentage of plant cut by field cricket pest and wt. of cobs/ plot. (iv) (a) 1962 64 (Trs. are modified every year). (b) Yes. (c) Nil. (v) No. (vi) and (vii) Nil.

5. RESULTS:

Yield data

(i) 2761 Kg/ha. (ii) 621·7 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of cobs in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Av. yield	3014	2678	2678	2515	2875	2550	3211	2562

Percentages of cut-plants

(i) 17·48 degrees. (ii) 1·02 degrees. (iii) Treatment differences are highly significant. (iv) Av. percentage of plants cut in degree.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Av. cut-plants	20·69	20·85	18·98	19 89	11·22	19·99	10·43	17·81

C.D.=1·50 degrees.

Crop :- Maize (*Kharif*). **Ref :- Bh. 63(241).**

Site :- Rupauli (Purnea c.f.) **Type :- 'D'**

Object :—To find out the comparative efficacy of different insecticides against the pest on Maize.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (iii) Sandy loam. (iii) Nil. (iv) Jaunpur. (v) (a) 2—3 ploughings. (b) Line sowing. (c) 15 Kg/ha. (d) 61 cm. between rows. (e) —. (vi) 28.5.63. (vii) Unirrigated. (viii) Weedings, hoeing and earthing up. (ix) N.A. (x) 19.8.63.

2. TREATMENTS :

10 insicticidal treatments : T_0=Control, T_1=33·85 Kg/ha. of BHC 5% dust, T_2=67·50 Kg/ha. of BHC 5 % dust, T_3=22·50 Kg/ha. of Aldrin 5% dust, T_4=45·00 Kg/ha. of Aldrin 5 % dust, T_5=22·50 Kg/ha. of Heptachlor 6 %, T_6=45·00 Kg/ha. of Heptachlor 6 % T_7=8·33 Kg/ha. of Gamma BHC, T_8=33·8 Kg/ha. of Telodrin 1 % dust and T_9=37·50 Kg/ha. of Telodrin 1 % dust.

3. DESIGN :

(i) R B D., 10, 4. (ii) N.A. (iii) (a) and (b) 10·80 m.×4·50 m. (vi) Yes.

4. GENERAL :

(i) Good. (li) Attack of field cricket. (iii) Percentage of plants cut by field cricket pest. (iv) (a) 1962 – 64 (Trs. are modified every year). (b) Yes. (c) Nil. (v) and (vi) Nil. (vii) Yield data—N.A.

5. RESULTS :

Percentage of plants cut

(i) 27·73 degree. (ii) 3·41 degree. (iii) Treatment differences are highly significant. (iv) Av. percentage of cut-plants in degree.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9
Av. cut-plants	53·06	28·55	28·47	24·89	21·00	21·11	20·88	25·76	27·37	26·25

C.D.=4·93 degrees.

Crop :- Maize (*Kharif*). **Ref :- Bh. 64(263).**

Site :- Mansarpur (Purnea c.f.). **Type :- 'D'.**

Object :— To find out the comparative efficacy of different insecticides against the pest on Maize.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) Nil. (iv) Jaunpur. (v) (a) 2 -3 ploughings. (b) Line sowing. (c) 15 Kg/ha. (d) 61 cm. between rows. (e) —. (vi) 17.5.64. (vii) Unirrigated. (viii) Weedings, hoeing and earthing up. (iv) N.A. (x) 18.8.64.

2. TREATMENTS :

11 insecticidal treatments : T_0=Control, T_1=33·85 Kg/ha. of B.H.C. 5% dust, T_2=67·25 Kg/ha. of B.H.C. 5% dust, T_3=22·50 Kg/ha. of Aldrin 5% dust, T_4=45·00 Kg/ha. of Aldrin 5% dust, T_5=22·50 Kg/ha. of Heptachlor 6% dust, T_6=45 Kg/ha. of Heptachlor 6% dust, T_7=33·85 Kg/ha. of Telodrin 1% dust, T_8=67·25 Kg/ha. of Telodrin 1% dust, T_9=45·00 Kg/ha. of Chlordane 5% and T_{10}=8·25 Kg/ha. of Gamma B.H.C.

3. DESIGN:

(i) R.B.D., 11, 3. (ii) N.A. (iii) (a) and (b) 18·30 m.×2·44 m. (iv) Yes.

4. GENERAL:

(i) Good. (ii) Attack of field cricket. (iii) Percentage of cut-plants. (iv) (a) 1962 -64 (Trs. modified every year). (b) Yes. (c) Nil. (v) and (vi) Nil. (vii) Yield data—N.A.

5. RESULTS :

Percentage of cut-plants.

(i) 30·05 degree. (ii) 1·37 degree. (iii) Treatment differences are highly significant. (iv) Av. percentage of cut-plants in degree.

Treatments	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9	T_{10}
Av. cut-plants	43·20	39·39	32·30	21·64	20·92	30·29	25·71	30·23	25·15	27·03	34·71

C.D.=2·33 degree.

———

Crop :- Maize (*Kharif*). **Ref :- Bh. 60(136).**

Site :- Vill. Balutoly, Dhamdaha, (Purnea c.f.). **Type :- 'D'.**

Object :—To study the comparative efficacy of different insecticides to control field cricket on Maize crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) Nil. (iv) Local. (v) (a) 2—3 ploughings. (b) Line sowing. (c) 15·0 Kg/ha. (d) 61 cm. between rows, 38 cm. between plants. (e) —. (vi) 13.5.60. (vii) Un-irrigated. (viii) Earthing, weeding and hoeing. (ix) N.A. (x) 15.8.60.

2. TREATMENTS :

5 insecticidal trials : T_0=Control, T_1=33·62 Kg/ha. of B.H.C. 5% dust, T_2=33·62 Kg/ha. of D.D.T. 5% dust, T_3=22·42 Kg/ha. of Aldrex 5% dust and T_4=1123·36 lit./ha. of water with 0·04% Endrex spray.

3. DESIGN :

(i) R.B.D., 5, 4. (ii) N.A. (iii) (a) and (b) 101·17 sq. m. (iv) Yes.

4. GENERAL :

(i) Good. (ii) Field cricket, control measure as per treatments. (iii) No. of cut-plants out of 500 plants. (iv) (a) 1960—62 (Trs. modified in 62, site changed in 61). (b) No. (c) Nil. (v) No. (vi) Nil. (vii) Yield data—N.A.

5. RESULTS :

Pereentage of cut-plants

(i) 24·91 degrees. (ii) 14·41 degree. (iii) Treatment differences are not significant. (iv) Av. percentage of cut-plants in degree.

Treatment	T_0	T_1	T_2	T_3	T_4
Av. cut-plants	28·75	18·75	16·85	32·95	27·25

Crop :- Maize (*Kharif*). **Ref :- Bh. 61(259).**

Site :- Dhamdaha (Purnea c.f.). **Type :- 'D'.**

Object :—To see the effect of insecticides to control field cricket on Maize crop.

1. BASAL CONDITIONS :

(i) (a) Nil (b) *Rahar*. (c) Nil. (ii) Clayey loam. (iii) Nil. (iv) Local. (v) 2—3 ploughings. (b) Line sowing. (c) 45 Kg/ha. (d) 23 cm. between rows. (e) —. (vi) 19.5.61. (vii) Irrigated. (viii) Weedings. (ix) N.A. (x) 25.8.61.

2. TREATMENTS :

5 insecticidal treatments : T_0=Control, T_1=33·62 Kg/ha. of B.H.C. 5% dust, T_2=33·62 Kg/ha. of D.D.T. 5% dust, T_3=22·42 Kg/ha. of Aldrex 5% dust and T_4=1123·36 lit/ha. of water with 0·04% Endrex spray.

3. DESIGN :

(i) R.B.D., 5, 4. (ii) N.A. (iii) (a) and (b) 101·17 sq. m. (iv) Yes.

4. GENERAL :

(i) Good. (ii) Fieid cricket on Maize, control measure as per treatments. (iii) No. of plants cut by field cricket pest out of 500 plants taken at randam at 5 different spots in each plot, No. of cricket holes in the field 20 days after treatments, yield of grain. (iv) (a) 1960—62 (Trs. modified in 62, site changed in 61). (b) No. (c) Nil. (v) No. (vi) and (vii) Nil.

5. RESULTS:

Yield data

(i) 1877 Kg/ha. (ii) 589·9 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4
Av. yield	1869	1849	1760	1801	2107

Percentage of cut-plants

(i) 21·73 degree. (ii) 0·26 degree. (iii) Treatment differences are highly significant. (iv) Av. percantage of cut-plants in degree.

Treatment	T_0	T_1	T_2	T_3	T_4
Av. cut-plants	21·55	22·21	22·54	21·84	20·52

C.D.=0·40 degree.

Crop :- Maize (*Kharif*). **Ref :- Bh. 62(242).**

Site :- Dhamdaha (Purnea c.f.). **Type :- 'D'.**

Object :—To find out the comparative efficacy of different insecticides as a check against the pest.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) Nil. (iv) Local. (v) (a) 2–3 ploughings. (b) Line sowing. (c) 15 Kg/ha. (d) 61 cm. between rows. (e) —. (vi) 26.5.62. (vii) Unirrigated. (viii) Weedings and hoeings. (ix) N.A. (x) 2.9 62.

2. TREATMENTS:

5 insecticidal treatments: T_0=Control, T_1=33·63 Kg/ha. of B.H.C. 5% dust, T_2=33·63 Kg/ha. of D.D.T. 5% dust, T_3=33·63 Kg/ha. of Aldrin 5% dust and T_4=1123 lit/ha. of water with 0·04% Endrin spray.

Time of application—9.6.62, Treatments were appliep after 13 days of sowing when crop attained 2·5 to 7·5 cm. in height.

3. DESIGN:

(i) R.B.D., 5, 4. (ii) N.A. (iii) (a) and (b) 101·08 sq. m. (iv) Yes.

4. GENERAL:

(i) Good. (ii) Attack of field cricket. (iii) No. of plants-cut by pest, percentage of cut plants, yield of grain. (iv) (a) 1960—62 (Trs. modified in 62, site changed in 61). (b) No. (c) Nil. (v) No. (vi) and (vii) Nil.

5. RESULTS:

Yield data

(i) 2340 Kg/ha. (ii) 361·6 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4
Av. yield	2244	2387	2042	2357	2671

Percentage of cut-plants

(i) 22·68 degree. (ii) 1·74 degree. (iii) Treatment differences are highly significant. (iv) Av. percentage of cut-plants in degree.

Treatment	T_0	T_1	T_2	T_3	T_4
Av. cut-plants	23·61	24·53	23·90	23·07	18·29

C.D.=2·68 degree.s

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Crop :- Maize (*Kharif*). **Ref :- Bh. 60(242).**

Site :- Sugarcane Res. Instt., Pusa. **Type :- 'D'.**

Object :—To find out the optimum dose and time of application of Endrine 0·5% foliar spray to control stem borer on Maize.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Wheat. (c) 45 Kg/ha. of N as A/S+67·2 Kg/ha. of P_2O_5 as Super. (ii) Loam. (iii) 22.6.60. (iv) (a) 3—4 ploughings. (b) Dibbling method. (c) N.A. (d) 76 cm. between rows. (e) —. (v) N.A. (vi) Janupur. (vii) Irrigated. (viii) Weeding. (ix) N.A. (x) 8.10.60.

2. TREATMENTS:

4 insecticidal treatments: T_0=Control, T_1=Spray of 0·05% Endrine after 4 weeks of germination, T_2= Spray of Endrine 0·05% after 6 weeks of germination and T_3=T_1+T_2

Time of application: 5 and 23.8.60,

3. DESIGN:

(i)R.B.D. (ii) (a) 4. (b) 68·28 m×19·20 m. (iii) 6. (iv) (a) and (b) 9·22 m.×5·26 m. (v) Nil. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Maize stem borer. (iii) No. of plants, no. of affected plants, yield of grain. (iv) (a) 1960–62 (modified in 61). (b) Yes. (c) Nil. (v) No. (vi) and (vii) Nil.

5. RESULTS:

Yield data

(i) 1469 Kg/ha. (ii) 479·9 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3
Av. yield	1106	1325	1574	1870

Precentage of cut-plants

(i) 34·37 degree. (ii) 9·74 degree. (iii) Treatment differences are highly significant. (iv) Av. percentage of cut-plants in degree.

Treatment	T_0	T_1	T_2	T_3	
Av. cut-plants	49·69	29·41	30·90	27·53	C.D.=11·96 degree.

Crop :- Maize (*Kharif*). **Ref :- Bh. 61(245), 62(216).**

Site :- Sugarcane Res. Instt., Pusa. **Type :- 'D'.**

Object :—To find out the optimum dose & time of application of Endrine 0·05% foliar spray to control stem borer on Maize.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Wheat. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Loam. (iii) 19.6.61 ; 4.7.62. (iv) (a) 3—4 ploughings. (b) Dibbling method. (c) N.A. (d) 76 cm. between rows. (e) 2. (v) N.A. (vi) Jaunpur. (vii) Irrigated. (viii) Weeding. (ix) N.A. (x) 17.10.61 ; 8.10.62.

2. TREATMENTS:

4 insecticidal treatments : T_0=Control, T_1=Spray of 0·05% Endrine 2 weeks after germination, T_2=Spray of 0·05% Endrine 4 weeks after germination and $T_3=T_1+T_2$.

3. DESIGN:

(i) R.B.D. (ii) (a) 4. (b) 68·28 m.×19·20 m. (iii) 6. (iv) (a) and (b) 9·22 m.×5·26 m. (v) Nil. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Maize stem borer. (iii) No. of plants, no. of affected plants, yield of grain. (iv) (a) 1960—62 (modified in 1961). (b) Yes. (c) Results of combined analysis are given under 5. Results. (v) No. (vi) Nil. (vii) Error variances are heterogeneous and Treatments × Years interaction is absent for yield data.

5. RESULTS:

Yield data

61(245)

(i) 2062 Kg/ha. (ii) 471·7 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3
Av. yield	1854	1924	2144	2327

62(216)

(i) 1872 Kg/ha. (ii) 274·2 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3
Av. yield	1644	1834	1912	2097

Percentage of incidence

61(245)

(i) 45·21 degree. (ii) 4·85 degree. (iii) Treatment differences are not significant. (iv) Mean infestation in degree.

Treatment	T_0	T_1	T_2	T_3
Mean infestation	45·33	42·94	47·46	45·09

62(216)

(i) 29·66 degree. (ii) 4·90 degree. (iii) Treatment differences are highly significant. (iv) Mean infestation in degree.

Trtatment	T_0	T_1	T_2	T_3
Mean infestation	41·15	35·35	22·83	19·33

C.D.=6·03 degree.

Crop :- Maize (*Kharif*). **Ref :- Bh. 60(241), 61(244).**

Site :- Sugarcane Res. Instt., Pusa. **Type :- 'D'.**

Object :—To find out the optimun dose of Gamma BHC required to control Maize stem borer by soil application infurrows at the time of planting Maize.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Loam. (iii) 22.6.60 ; 18.6.61. (iv) (a) 3—4 ploughings. (b) Line sowing by dibbling method. (c) N.A. (d) 76 cm. between. rows. (e) 2. (v) N.A. (vi) Jaunpur. (vii) Irrigated. (viii) Weeding. (ix) N.A. (x) 8.10.60 ; 17.10.61.

2. TREATMENTS :

4 insecticidal treatments : T_0=Control, T_1=0·84 Kg/ha. of Gamma BHC, T_2=0·56 Kg/ha. Gamma BHC and T_3=0·28 Kg/ha. Gamma BHC.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) 19·20 m.×68·28 m. (iii) 6. (iv) (a) and (b) 9·22 m.×5·26 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Maize stem borer. (iii) Germination, incidence of borer and yield of grain. (iv) (a) 1960–62 (Trs. modified in 1962). (b) No. (c) Results of combined analysis are given under 5. Results. (v) No. (vi) Nil. (vii) Error variances are heterogeneous and Treatments×Year interaction is absent for yield data.

5. RESULTS :

Yield data

60(241)

(i) 1917 Kg/ha. (ii) 523·7 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3
Av. yield	1301	2026	2034	2306

C.D.=644·2 Kg/ha.

61(244)

(i) 2379 Kg/ha. (ii) 276·0 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3
Av. yield	2301	2481	2368	2367

Percentage of incidence

60(241)

(i) 20·68 degree. (ii) 3·23 degree. (iii) Treatment differences are not significant. (iv) Mean infestation in degree.

Treatment	T_0	T_1	T_2	T_3
Mean infestation	22·86	20·39	19·68	19·78

61(244)

(i) 50·96 degree. (ii) 3·51 degree. (iii) Treatment differences are not significant. (iv) Mean infestation in degree.

Treatment	T_0	T_1	T_2	T_3
Mean infestation	50·18	51·91	53·62	48·12

Crop :- Maize (*Kharif*). **Ref :- Bh. 62(215).**

Site :- Sugarcane Res. Instt., Pusa. **Type :- 'D'.**

Object :—To find out the optimum dose of Gamma BHC required to control Maize stem borer by soil application in furrows at the time of planting Maize.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Wheat. (c) 45 Kg/ha. of N as A/S+67·2 Kg/ha. of P_2O_5 as Super. (ii) Loam. (iii) 4.7.62. (iv) (a) 3—4 ploughings. (b) Line sowing by dibbling method. (c) N A. (d) 76 cm. between rows. (e) —. (v) Nil. (vi) Jaunpur. (vii) Irrigated. (viii) Weeding. (ix) N.A. (x) 8.10.62.

2. TREATMENTS :

5 insecticidal treatments : T_0=Control, T_1=0·28 Kg/ha. of Gamma BHC, T_2=0·56 Kg/ha. of Gamma BHC, T_3=0·56 Kg/ha. of Heptachlor and T_4=1·12 Kg/ha. of Heptachlor.

Time of application : 4.7.62.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) 19·20 m.×68·28 m. (iii) 4. (iv) (a) and (b) 9·22 m.×5·26 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (iil) Maize stem borer. (iii) Germination, incidince %. (iv) (a) 1960—62 (Trs. are modified in 62). (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

Yield data

(i) 1722 Kg/ha. (ii) 330·4 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4
Av. yield	1636	1618	1961	1744	1654

Percentage of incidince

(i) 37·05 degree. (ii) 3·87 degree. (iii) Treatment differences are not significant. (iv) Mean infestation in degree.

Treatment	T_0	T_1	T_2	T_3	T_4
Mean infestation	39·64	38·08	37·92	34·77	34·83

Crop :- Maize (*Kharif*). **Ref :- Bh. 60(2), 61(2), 62(15).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'D'.**

Object :—To find out a suitable weedicide for Maize crop.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Wheat ; Wheat ; N.A.. (c) 44·8 Kg/ha. of N as A/S+44·8 Kg/ha. of P_2O_5 as Super for 60 and 61 ; Nil. (ii) Sandy loam. (iii) 1.6.60; 17.6.61 ; 12.6.62. (iv) (a) 3 to 4 *deshi* ploughings. (b) Behind the plough. (c) 18 Kg/ha. (d) 61 cm.×23 cm. (e) Nil. (v) 22·4 Kg/ha. of N as A/S and 44·8 Kg/ha. of P_2O_5 as Super at the time of sowing and 22·4 Kg/ha. of N as A/S at the time of earthing up. (vi) Jaunpur. (vii) Irrigated. (viii) weeding by horse-hoe. (ix) 96 cm. ; 6·55 cm. ; 72 cm. (x) 6.9.60 ; 11.9.61 ; 6.9.62.

2. TREATMENTS :

4 weedicidal treatments : W_0=Control, W_1=Cray Herbicide, W_2=Agroxone and W_3=Fernoxone.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 5. (iv) (a) 8·99 m.×6·86 m. (b) 8·23 m.×6·10 m. (v) 38 cm.×38 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1960—65 (Trs. modified in 63, and again in 64.) (b) No. (c) Results of combined analysis are given under 5. Results. (v) No. (vi) Nil. (vii).Error variances are homogeneous and Treatments×Years interaction is absent.

5. RESULTS :

Pooled results

(i) 1977 Kg/ha. (ii) 621·0 Kg/ha. (based on 42 d.f. made up of pooled error and Treatments×Years interaction.) (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	W_0	W_1	W_2	W_3
Av. yield	1692	1879	2160	2177

Individual results

Treatment	W_0	W_1	W_2	W_3	Sig.	G.M.	S.E./plot
Year							
1960	2171	2023	2616	2273	N.S.	2271	490·7
1961	1660	2580	2841	2555	*	2409	585·7
1962	1245	1033	1024	1704	N.S.	1252	658.1
Pooled	1692	1879	2160	2177	N.S.	1977	621·0

Crop :- Maize (*Kharif*), **Ref :- Bh. 63(16).**

Site :- Agri. Res. Instt., Sabour, **Type :- 'D'.**

Object : –To find out a suitable weedicide for Maize crop.

1. BASAL CONDITIONS :

(i) (a) Maize—Gram. (b) Gram. (c) 44·8 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) 31.5.63. (iv) (a) 1 ploughing by tractor and 2 ploughings by *deshi* plough. (b) Behind the plough. (c) 23 Kg/ha. (d) 61 cm.×23 cm. (e) Nil. (v) 44·8 Kg/ha. of N as A/S and 44·8 Kg/ha of P_2O_5 as Super. (vi) Jauupur. (vii) Unirrigated. (viii) Hand weeding. (ix) 78 cm. (x) 10.9.63.

2. TREATMENTS :

6 weedicidal treatments : W_0=Control, W_1=2·2 Kg/ha. of Agroxone, W_2=2·2 Kg/ha. of feronoxone, W_3=1·1 Kg/ha. of Agroxone, W_4=1·1 Kg/ha. of Feronoxone and W_5=Hand weeding.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 8·84 m.×6·70 m. (b) 8·25 m.×6·10 m. (v) 30 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1960—65 (Trs. modified in 1963 and again in 64.) (b) No. (c) Nil. (v) Dholi. (vi) and (vii) Nil.

5. RESULTS :

(i) 352 Kg/ha. (ii) 126·4 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	W_0	W_1	W_2	W_3	W_4	W_5	
Av. yield	378	279	238	244	320	651	C.D.=190·5 Kg/ha.

Crop :- Maize (*Kharif*). **Ref :- Bh. 64(11), 65(1).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'D'.**

Object :—To find out suitable weedicide for Maize crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat ; Linseed. (c) 44·8 Kg/ha. of N as A/S+44·8 Kg/ha. of p_2O_5 as Super ; 33·6 Kg/ha. of N as A/S+33·6 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) 29.6.64 ; 30.7.65. (iv) (a) 2 ploughings by tractor and *deshi* plough. (b) Behind the plough. (c) 23 Kg/ha. ; 18 Kg/ha. (d) 61 cm.×23 cm. (e) Nil. (v) 22·4 Kg/ha. of N as A/S+44·8 Kg/ha. of P_2O_5 as Super at the time of sowing+22·4 Kg/ha. of N as A/S at the time of earthing up. (vi) Jaunpur. (vii) Unirrigated. (viii) As per treatments. (ix) 61 cm. N.A. (x) 30.9.64 : 2.10.65.

2. TREATMENTS:

7 weedicidal treatments : T_1=3·9 Kg/ha. of Gesatop (pre-emergence), T_2=3·9 Kg/ha. of Gesaprim (pre-emergence), T_3=2·2 Kg/ha. of Agroxone (pre-emergence), T_4=33 Kg/ha. of Tafazine (pre-emergence), T_5=2·8 Kg/ha. of Gesaprim (pre+post emergence), T_6=2·2 Kg/ha. of Tafazine (pre+post emergence) and T_7=Hand weeding.

3. DESIGN :

(i) R B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 8·84 m.×6·70 m. (b) 8·23 m.×6·09 m. (v) 30 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) and (ii) Nil. (iii) Yield of grain. (iv) (a) 1960—65 (Trs. modified in 1963 and again in 64). (b) No. (c) Nil. (v) No. (vi) Nil. (vii) Error variances are heterogeneous and Treatments×Years interaction is absent. Hence individual year results given under 5. Results.

5. RESULTS:

64(11)

(i) 2405 Kg/ha. (ii) 795·9 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Av. yield	2000	2767	2279	2604	2952	2046	2186

65(1)

(i) 1188 Kg/ha. (ii) 470·0 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Av. yield	1086	1240	1264	1074	1205	1311	1134

Crop :- Maize (*Kharif*). **Ref :- Bh. 60(51).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'D'.**

Object :—To study the effect of insecticides on micro-bio-activities of soil and on the yield of Maize crop.

1. BASAL CONDITIONS:

(i) (a) Gram—Maize. (b) Gram. (c) 22·4 Kg/ha. of N as A/S. (ii) Sandy loam. (iii) 8.6.60. (iv) (a) 3 spadings before sowing. (b) Line sowing by spade. (c) 23 Kg/ha. (d) 46 cm.×30 cm. (e) Nil. (v) N.A. (vi) Jaunpur. (vii) Unirrigated. (viii) Weeding by *khurpi* and spade. (ix) 56 cm. (x) 23.8.60.

2. TREATMENTS:

7 insecticidal treatments : T_0=Control, T_1=33·6 Kg/ha. of BHC, $T_2=2T_1$, T_3=33·6 Kg/ha. of Aldrine, $T_4=2T_3$, T_5=33·6 Kg/ha. of D.D.T. and $T_6=2\ T_5$.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 3·35 m.×4·27 m. (b) 2·74 m.×3·66 m. (v) 30 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of grain. (iv) (a) 1960—65 (modified in 61 and again in 64). (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS:

(i) 820 Kg/ha. (ii) 381·4 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	712	723	856	784	812	986	870

Crop :- Maize (*Kharif*). **Ref:- Bh. 61(75), 62(36), 63(49).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'D'.**

Object :—To study the effect of insecticides on micro-bio-activities of soil and on the yield of Maize crop.

1. BASAL CONDITIONS :

(i) (a) Gram—Maize ; Gram—Wheat—Maize ; Wheat—Maize. (b) Gram ; Gram ; Wheat. (c) 22·4 Kg/ha. of N as A/S for 61 and 62 ; 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) 9.6.61 ; 27.6.62 ; 6.6.63. (iv) (a) 3 spading before sowing. (b) Line sowing by spade. (c) 23 Kg/ha. ; 14 Kg/ha. ; 20 Kg/ha. (d) 30 cm.×75 cm. for 61 and 62 ; 45 cm.×30 cm. for 63. (e) Nil. (v) As per treatments. (vi) Jaunpur. (vii) Unirrigated. (viii) Weeding by *khurpi*. (ix) 62 cm ; 88 cm. ; 78 cm. (x) 30.8.61 ; 24.9.62 ; 13.9.63.

2. TREATMENTS :

9 insecticidal treatments : T_0=Control, T_1=33·6 Kg/ha. of BHC, T_2=2 T_1, T_3=33·6 Kg/ha. of Aldrine, T_4=2T_3, T_5=33·6 Kg/ha. of D.D.T., T_6=2T_5, T_7=1·1 Kg/ha. of Gamma B.H.C. and T_8=2 T_7.

All the treatments except T_0 receives a basal dressing of 44·8 Kg/ha. of N as A/S+44·8 Kg/ha. of P_2O_5 as Super+44·8 Kg/ha. of K_2O as Mur. Pot.

3. DESIGN:

(i) R B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 3·35 m.×4·27 m. (b) 2·74 m.×3·66 m. (v) 30 cm.× 30 cm. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Simple attack of stem borer for 63 ; Nil for others. (iii) Yield of grain. (iv) (a) 1960—65 (Trs. modified in 1961 and again in 1964). (b) N.A. (c) Results of combined analysis are given under 5. Results. (v) No. (vi) Nil. (vii) Error variances are homogeneous and Treatments × Years interaction is absent.

5. RESULTS :

Pooled results

(i) 3259 Kg/ha. (ii) 696·8 Kg/ha. (based on 88 d.f. made up of pooled error and Treatments × Years interaction). (iii) Treatment differences are significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Av. yield	2815	3252	3299	3641	3781	3229	3173	3051	3088

C.D.=566·1 Kg/ha.

Individual results

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	Sig.	G.M.	S.E./plot
Year												
1961	2614	2456	3021	3198	2921	2935	2717	2426	2587	N.S.	2764	651·3
1962	3189	3937	4136	4311	4385	3887	4111	3937	3787	N.S.	3964	697·7
1963	2641	3364	2740	3413	4036	2865	2690	2790	2890	N.S.	3048	819·0
Pooled	2815	3252	3299	3641	3781	3229	3173	3051	3088	**	3259	696·8

Crop -- Maize (*Kharif*). **Ref :- Bh. 64(75), 65(79).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'D'.**

Object :—To test the effect of insecticides on micro-bio-activities of soil and on the yield of Maize crop.

1. BASAL CONDITIONS :

(i) (a) Wheat—Maize. (b) Wheat. (c) N.A. (ii) Sandy loam. (iii) 26.6.64 ; 8.7.65. (iv) (a) 3 ploughings. (b) Sowing in line. (c) 30 Kg/ha. ; 23 Kg/ha. (d) 45 cm.×30 cm. ; 60 cm. between rows. (e)—. (v) As per treatments. (vi) Jaunpur. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 26.9.64 ; 26.9.65.

2. TREATMENTS:

9 insecticidal treatments : T_0=Control, T_1=33·6 Kg/ha. of BHC, T_2=2T_1, T_3=33·6 Kg/ha. of Aldrin, T_4=2T_3, T_5=33·6 Kg/ha. of Heptachlor, T_6=2T_5, T_7=1·1 Kg/ha. of Gamma BHC and T_8=2 T_7.

All the above treatments except T_0 receives a basal dressing of 44·8 Kg/ha. of N as A/S+44·8 Kg/ha. of P_2O_5 as Super+44·8 Kg/ha. of K_2O as Mur. Pot.

3. DESIGN:

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 4·27 m.×3·35 m. (b) 3·66 m.×2·74 m. (v) 30 cm.×30 cm. (vi) Yes.

4. GENERAL:

(i) Satisfactory. (ii) Nil; Attack of stem borer, Endrin 20% E.C. sprayed. (iii) Yield of grain. (iv) (a) 1960—65 (Trs. modified in 1961 and again in 1964). (b) N.A. (c) Nil. (v) and (vi) Nil. (vii) Error variances are heterogeneous and Treatments×Years interaction is absent. Hence individual year results are presented under 5. Results.

5. RESULTS:

64(75)

(i) 1891 Kg/ha. (ii) 349·5 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Av. yield	1573	2027	1503	2359	2254	1887	2079	1660	1677

C.D.=510·2 Kg/ha.

65(79)

(i) 3342 Kg/ha. (ii) 717·6 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Av. yield	3353	3030	3477	3726	3254	3502	3030	3105	3602

Crop :- Marua (*Kharif*). **Ref :- Bh. 60(229).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object :—To find out responses of *kharif* crops to liming.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Red loam. (iii) 11.7.60. (iv) (a) 3 ploughings. (b) Line sowing. (c) 12 Kg/ha. (d) 30 cm. between rows. (e) —. (v) Nil. (vi) Local. (vii) Unirrigated. (viii) 2 weedings. (ix) N.A. (x) 14.10.60.

2. TREATMENTS :

9 manurial treatments : T_0=Control, T_1=4035 Kg/ha. of lime, T_2=11·2 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. and T_3=T_1+T_2.

3. DESIGN:

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 5. (iv) (a) and (b) 20·24 sq. m. (v) Nil. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1960—only. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS:

(i) 1610 Kg/ha. (ii) 852·6 Kg/ha. (iii) Treatment defferences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	
					C.D.=1146·9 Kg/ha.
Av. yield	352	787	2685	2616	

Crop :- Marua (*Kharif*). **Ref :- Bh. 60(236), 61(313), 62(206).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object :—To study the comparative effects of Compost and green leaves with normal and narrow C/N ratios on humes formation on Marua crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize ; Fallow ; Maize. (c) 89·7 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+green manure ; Nil ; green manure+89·7 Kg/ha. of N as A/S+89·7 Kg/ha. of P_2O_5 as Super. (ii) Red loam. (iii) 4.8.60 ; 3.8 61 ; 17.7.62. (iv) (a) 3 ploughings. (b) Line sowing. (c) 20 Kg/ha. (1960 and 62) ; 10 Kg/ha. (d) 30 cm. between rows. (e) N.A. (v) N.A. (vi) Local. (vii) Irrigated. (viii) Weedings. (ix) N.A. (x) 11.11.60 ; 6.12.61 ; 25.10.62.

2. TREATMENTS :

6 manurial treatments : T_0=Control, T_1=90 Kg/ha. of N as A/S+90 Kg/ha. of P_2O_5 as Super, T_2=90 Kg/ha. of N as Compost+90 Kg/ha. of P_2O_5 as Super, T_3=90 Kg/ha. of N as green leaves+90 Kg/ha. of P_2O_5 as Super, T_4=90 Kg/ha. of N as Compost+Karanj Cake to narrow down C/N ratio to 20/1, T_5=90 Kg/ha. of N as green leaves+Karanj Cake to narrow down the C/N ratio to 19/1.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) and (b) 50·58 sq. m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1960—62. (b) No. (c) Results of combined analysis is presented under 5. Results. (v) No. (vi) Nil. (vii) Error variances are homogeneous and Treatments × Years interaction is absent.

5. RESULTS :

Pooled results

(i) 647 Kg/ha. (ii) 152·4 Kg/ha. (based on 55 d.f. made up of pooled error and Treatments × Years interaction). (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	
							C.D.=215·5 Kg/ha.
Av. yield	416	726	598	652	741	749	

Individual results

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	Sig.	G.M.	S.E./plot
Year 1960	286	538	451	726	683	746	*	572	176·0
1961	265	541	355	326	410	495	**	399	97·2
1962	698	1098	987	903	1128	1005	**	970	136·7
Pooled	416	726	598	652	741	749	**	647	152·4

Crop :- Marua (*Kharif*). **Ref :- Bh. 63(85), 64(139); 65(192).**

Site :- Agri. Res. Instt., Dholi. **Type :- 'C'.**

Object: —To find out the effect of age of seedlings the on yield of Marua crop.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Maize ; Moong (1964 and 65). (c) Nil. (iii) Sandy loam. (iii) 25.5.63 to 8.7.63 ; 2.6.64 to 9.7.64 ; 5 to 9.7.65. (iv) (a) 3 *deshi* ploughings. (b) Transplanting for 1963 and 64 ; line sowing. (c) 6 Kg/ha. for 1963 and 64 ; 10 Kg/ha. for 65. (d) 15 cm. × 15 cm. for 1963 and 64 ; 23 cm. between rows and between plants. (e) —. (v) N.A. ; N.A. ; 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (vi) A—407. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 10.10.63 ; 17. 18.10.64 ; 21, 22.10.65.

2. TREATMENTS :

4 ages of seedlings : T_1=2, T_2=3, T_3=4 and T_4=5 weeks.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) 3·66 m. × 10·97 m. (1963 and 64) ; N.A. (b) 3·05 m. × 10·97 m. (1963 and 64) ; 15·24 m. × 9·14 m. (v) 30 cm. on either side (1963 and 64) ; N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1963—65. (b) Yes. (c) Results of combined analysis are presented under 5. Results. (v) Sabour, Kanke. (vi) Nil. (vii) Error variances are homogeneous and Treatments × Years interaction is present.

5. RESULTS :

Pooled results

(i) 915 Kg/ha. (ii) 726·0 Kg/ha. (based on 6 d.f. made up of Treatments × Years interaction). (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4
Av. yield	1089	667	947	958

Individual results

Treatment	T_1	T_2	T_3	T_4	Sig.	G.M.	S.E./plot.
Year							
1963	1317	1456	1208	1384	N.S.	1341	163·6
1964	1441	1370	1240	1166	N.S.	1304	341·2
1965	508	407	394	324	**	408	43·9
Pooled	1089	667	947	958	N.S.	915	726·0

Crop :- Marua (*Kharif*). **Ref :- Bh. 63(84), 64(138), 65(193).**

Site :- Agri. Res. Instt., Dholi. **Type :- 'C'.**

Object :—To find out the best method of sowing of Marua crop.

1 BASAL CONDITIONS:

(i) (a) Nil. (b) Maize ; Marua for 1964 and 65. (c) N.A. (ii) Sandy loam. (iii) 7.6.63/3.7.63 ; 1.8.64; 23 and 24.7.65. (iv) (a) 3 *deshi* ploughings. (b) As per treatments for 1963 and 64 ; sowing in line. (c) 6 Kg/ha. (d) Nil. (e) N.A. (v) Nil. (vi) A—407. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 18.9.63 ; 15.10.64 ; 23, 24.10.65.

2. TREATMENTS:

2 methods of sowing: T_1=Broadcasting and T_2=Transplanting.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 16. (iv) (a) 1·83 m.×3·66 m. (b) 1·22 m.×3·66 m. (v) 30 cm. on either side. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1963—65. (b) Yes. (c) Results of combined analysis are presented under 5. Results. (v) Kanke and Sabour. (vi) Nil. (vii) Error variances are heterogeneous and Treatments×Years interaction is present.

5. RESULTS :

Pooled results

(i) 2051 Kg/ha. (ii) 1471·1 Kg/ha. (based on 2 d.f. made up of Treatments×Years interaction). (iii) Treatment difference is not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2
Av. yield	2029	2072

Individual results

Treatment	T_1	T_2	Sig.	G.M.	S.E./Plot
Year					
1963	974	985	N.S.	980	260·2
1964	1836	2415	**	2125	261·9
1965	3277	2817	N.S.	3047	629·2
P coled	2029	2072	N.S.	2051	1471·1

Crop :- Marua (*Kharif*). **Ref :- Bh. 64(33), 65(68).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'C'.**

Object : – To find out the effect of age of seedlings on the yield of Marua crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) 1, 8, 15, 22.7.64 ; 23.7.65. (iv) (a) 1 ploughing ; 3 ploughings. (b) Transplanting in rows. (c) 12 Kg/ha. (d) 15 cm.×15 cm. : 30 cm. between rows. (e) 1 ; Nil. (v) 92·2 Q/ha. of cow dung Compost+22·4 Kg/ha. of N as A/S+44·8 Kg/ha. of P_2O_5 as Super ; 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+ 22·5 Kg/ha. of K_2O as Mur. Pot. (vi) A–407. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) 61 cm.; N.A. (x) 2.11.64 ; 2.11.65.

2. TREATMENTS :

4 ages of seedlings : T_1=2, T_2=3, T_3=4 and T_4=5 weeks.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. ; 44·53 m.×4·57 m. (iii) 4. (iv) (a) 10·97 m.×3·66 m. for 1964 and 65 (b) 10·97 m.×2·74 m. ; 10·97 m.×3·05 m. (v) 46 cm. ; 30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Slight attack of stem borer, Copper compound sprayed as control measure ; Nil. (iii) Height of plant, no. of tillers, yield of grain, (iv) (a) 1964—65. (b) Yes. (c) Nil. (v) Dholi, Kanke. (vi) Nil. (vii) Error varriances are heterogeneous and Treatments × Years interaction is absent. Hence the individual results are presented under 5. results.

5. RESULTS :

64(33)

(i) 3101 Kg/ha. (ii) 48·0 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	
Av. yield	3072	3496	2972	2865	C.D.=76 8 Kg/ha.

65(68)

(i) 1900 Kg/ha. (ii) 200·0 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	
Av. yield	2000	2300	1800	1500	C.D.=319 8 Kg/ha.

Crop :- Marua (*Kharif*). **Ref :- Bh. 64(32), 65(69).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'C'.**

Object :—To find out the best method of sowing Marua crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) 25.7.64/11.8.64 ; 20.7.65. (iv) (a) 1 ploughing by country plough ; 3 ploughings. (b) As per treatments. (c) 12 Kg/ha. (d) 15 cm.×15 cm. ; 30 cm. between rows. (e) 1. ; N.A. (v) 92·2 Kg/ha. of cow dung Compost+44·8 Kg/ha. of N as A/S+44·8 Kg/ha. of P_2O_5 as Super ; 45 Kg/ha. of N as A/S+45 Kg/ha. o P_2O_5 as Super+22·5 Kg/ha. of K_2O as Mur. Pot. (vi) A—407. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) 39 cm. ; N.A. (x) 7.11.64 ; 3.11.65.

2. TREATMENTS :

2 methods of sowing : T_1=Broadcasting and T_2=Transplanting.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. ; 2·28 m.×3·66 m. (iii) 16. (iv) (a) 3·66 m.×1·83 m. (b) 3·66 m.×1·22 m. (v) 30 cm. on either side. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Little attack of wilt and stem borer ; Nil. (iii) Height of plant, no. of tillers, yield of grain. (iv) (a) 1964—65. (b) No. (c) Results of combined analysis are presented under 5. Results. (v) Dholi and Kanke. (vi) Nil. (vii) Error variances are heterogeneous and Treatments×Years interaction is present

5. RESULTS:

Pooled results

(i) 4713 Kg/ha. (ii) 2333·3 Kg/ha. (based on 1 d.f. made up of Treatments×Years interaction). (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_2
Av. yield	4260	5166

Individual results

Treatment	T_1	T_2	Sig.	G.M.	S.E./plot
Year					
1964	4498	4821	**	4660	233·3
1965	4022	5511	**	4767	1409·0
Pooled	4260	5166	N.S.	4713	2333·2

Crop :- Marua (*Kharif*) **Ref :- Bh. 63(168).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'D'.**

Object :—To find out the response of Tofapen and Simazine as weedicides on Marua crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) 12.6.63. (iv) (a) 3 ploughings. (b) Line sowing. (c) 18 Kg/ha. (d) 25 cm.×25 cm. (e) Nil. (v) 33·6 Kg/ha. of N as A/S+22·4 Kg/ha. of P_2O_5 as Super+22·4 Kg/ha. of K_2O as Mur. Pot. (vi) Local. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) 115 cm. (x) 15.10.63.

2. TREATMENTS:

4 weedicidal treatments: T_0=Control, T_1=Pre-emergence Simazine at 1·1 Kg/ha. (actual), T_2=Pre-emergence Tofapen at 1·1 Kg/ha. (actual) and $T_3=T_1+T_2$

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) 10·36 m.×4·27 m. (iii) 3. (iv) (a) 4·27 m.×2·74 m. (b) 3·66 m.×1·83 m. (v) 30 cm.×46 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Height of plant, yield of Marua. (iv) (a) to (b) No. (v) to (vii) Nil.

5. RESULTS :

(i) 659 Kg/ha. (ii) 176·2 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3
Av. yield	469	728	741	699

Crop :- Gundali (*Kharif*). **Ref :- Bh. 63(256), 64(285), 65(123).**

Site :. Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object: —To find out the suitable dose of N, P and K for the crop Gundali.

1. BASAL CONDITIONS :

i) (a) Nil. (b) Maize. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) 27 and 28.6.63 ; 23 to 25.6.64 ; 23 and 24.6.65. (iv) (a) 3 ploughings. (b) Line sowing. (c) 12 Kg/ha. (d) 23 cm. between rows. (e) N.A. (v) Nil. (vi) Local. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 21.9.63 and 5.10.63 ; 6 to 16.9.64 ; 11 to 13.9.64.

2. TREATMENTS:

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

(1) 3 levels of N as A/S : N_0=11·2, N_1=22·5 and N_2=33·8 Kg/ha.

(2) 3 levels of P_2O_5 as Super : P_0=11·2, P_1=22·5 and P_2=33·8 Kg/ha.

(3) 3 levels of K_2O as Mur. Pot.: K_0=11·2, K_1=22·5 and K_2=33·8 Kg/ha.

3. DESIGN:

(i) 3^3 fact. in partially confounding. (ii) (a) 9 plots/block, 3 blocks/replication. (b) N.A. (iii) 4. (iv) (a) 4·26 m.×6·06 m. (b) 3·05 m.×6·09 m. (v) 1·21 m. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1963—65. (b) Yes. (c) Nil. (v) No. (vi) Nil. (vii) Error variances are heterogeneous and Treatments × Years interaction is absent. Hence individual year results are presented under 5. Results.

5. RESULTS:

63(256)

(i) 593 Kg/ha. (ii) 152·4 Kg/ha. (iii) Only main effect of N is significant. (iv) Av. yield of Gundali in Kg/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	500	556	571	486	550	591	542
N_1	547	651	606	618	627	559	601
N_2	625	651	630	647	626	633	636
Mean	557	619	602	584	601	594	593
K_0	531	589	630				
K_1	564	604	636				
K_2	577	665	541				

C.D. for N marginal means=71·8 Kg/ha.

64(285)

(i) 1079 Kg/ha. (ii) 167·4 Kg/na. (iii) None of the effects is significant. (iv) Av. yield of Guudali in Kg/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	1086	1097	1079	1061	1100	1100	1087
N_1	1063	1082	1092	1087	1054	1096	1079
N_2	1127	1061	1024	1123	1046	1044	1071
Mean	1092	1081	1064	1090	1067	1080	1079
K_0	1069	1075	1127				
K_1	1119	1050	1030				
K_2	1088	1117	1036				

65(123)

(i) 1007 Kg/ha. (ii) 118·8 Kg/ha. (iii) The interaction P×K is significant. (iv) Av. yield of gundali in Kg/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	943	958	1032	1005	957	973	978
N_1	1009	1013	1052	1045	987	1041	1024
N_2	999	1035	1020	1029	1029	996	1018
Mean	983	1002	1035	1026	991	1003	1007
K_0	985	1085	1009				
K_1	1012	950	1010				
K_2	953	971	1085				

C.D. for P×K interaction=99·8 Kg/ha.

Crop :- Gundali (*Kharif*). **Ref :- 60(230).**

Site :- Agri Res. Instt., Kanke. **Type :- 'M'.**

Object :—To find out rhe response of *kharif* crops to liming.

1. BASAL CONDITIONS :

(i)(a) Nil. (b) Fallow. (c) Nil. (ii) Red loam. (jii) 18.6.60. (iv) (a) 3 ploughings. (b) Line sowing. (c) 12 Kg/ha. (d) 15 cm. between rows. (e) —. (v) Nil. (vi) D.L.—1. (vii) Unirrigated. (viii) 2 weedings. (ix) N.A. (x) 19.8.60.

2. TREATMENTS :

4 manurial treatments : T_0=Control, T_1=4035 Kg/ha. of lime, T_2=11·2 Kg/ha. for legume and 45 Kg/ha. of N as A/S for other crops+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. and $T_3=T_1+T_2$.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 5. (iv) (a) and (b) 20·24 sq. m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1960—only. (b) and (c) Nil. (v) Nil. (vi) and (vii) Nil.

5. RESULTS:

(i) 574 Kg/ha. (ii) 181·8 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of Gundali in Kg/ha.

Treatment	T_0	T_1	T_2	T_3
Av. yield	109	288	945	954

C.D.=250·6 Kg/ha.

———

Crop :- Gram (*Rabi*). **Ref :- Bh. 60(217).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object :—To find out the response of *Rabi* crops to liming.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Red loam. (iii) 21.10.69. (iv) (a) 3 ploughings. (b) Line sowing. (c) 70 Kg/ha. (d) 30 cm. between rows. (e) Nil. (v) Nil. (vi) BR—65. (vii) Irrigated. (viii) 2 weedings. (ix) N.A. (x) 22.3.61.

2. TREATMENTS :

4 manurial treatments : T_0=Control, T_1=40·4 Kg/ha. of Lime, T_2=11·2 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. and $T_3=T_1+T_2$.

3. DESIGN:

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 5. (iv) (a) and (b) 20·23 sq. m. (v) Nil. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Germination and flowering count, height of plant and yield of grain. (iv) (a) No. (b) and (c) Nil. (v) No. (vi) Nil. (vii) One replication discarded and one plot is missing.

5. RESULTS:

(i) 797 Kg/ha. (ii) 252·6 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	
Av. yield	216	973	584	1416	C.D.=348·1 Kg/ha.

Crop :- Gram (*Rabi*). **Ref :- Bh. 60(300).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object : —To find out the effect of placement of lime.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Nil. (iii) 17.10.60. (iv) (a) 3—4 ploughings. (b) Line sowing. (c) 60 Kg/ha. (d) 23 cm. between rows. (e) —. (v) N.A. (vi) BR—65. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 29.3.61.

2. TREATMENTS:

6 manurial treatments: T_0=Control, T_1=4000 Kg/ha. of Lime at surface, T_2=2000 Kg/ha. of lime at surface+2000 Kg/ha. of lime at depth, T_3=11·2 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot., $T_4=T_1+T_3$ and $T_5=T_2+T_3$.

3. DESIGN:

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 5. (iv) (a) and (b) 10·12 sq. m. (v) Nil. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1958—60 (Treatments modified in 60). (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS:

(i) 696 Kg/ha. (ii) 303·6 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	
Av. yield	173	621	553	293	1199	1335	C.D.=400·6 Kg/ha.

Crop :- Gram (*Rabi*). **Ref :- Bh. 65(155).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object : —To evaluate basic slag as a source of Phosphate.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (ii) Red loam. (iii) 11.10.65. (iv) (a) Ploughing. (b) Line sowing. (c) to (e) N.A. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 29.3.66.

2. TREATMENTS :

All combinations of (1) and (2)+a control

(1) 2 levels of N as A/S : N_0=0 and N_1=45 Kg/ha.

(2) 3 sources of 45 Kg/ha. of P_2O_5 : S_1=Basic slag, S_2=Super and S_3=Rock. Phos.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 5. (iv) (a) and (b) 3·66 m.×2·74 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Yield of grain. (iv) (a) to (c) No. (v) to (vii) Nil.

5. RESULTS :

(i) 2079 Kg/ha. (ii) 352·8 Kg/ha. (iii) Main effect of S and 'control *vs.* others' are highly significant. (iv) Av. yield of grain in Kg/ha.

Control=1314 Kg/ha.

	S_1	S_2	S_3	Mean
N_0	2898	1922	1418	2079
N_1	2908	1978	2112	2333
Mean	2903	1950	1765	2206

C.D. for S marginal means=325·6 Kg/ha.

C.D. for 'control *vs.* others'=351·8 Kg/ha.

Crop :- Gram (*Rabi*). **Ref :- Bh. 65(157).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object :—To evaluate Basic slag as a sources of Phosphate.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (ii) Red loam. (iii) 12.10.65. (iv) (a) to (e) N.A. (v) Nil. (vi) BR—77. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 28.3.66.

2. TREATMENTS :

All combinations of (1) and (2) in the presences of lime+a control

(1) 2 levels of N : N_0=0 and N_1=45 Kg/ha. of N as A/S.

(2) 3 sources of 45 Kg/ha. of P_2O_5 : S_1=Basic slag, S_2=Super and S_3=Rock. Phos.

3. DESIGN:

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 5. (iv) (a) and (b) 3·66 m.×2·74 m. (v) Nil. (vi) Yes.

4. GENERAL:

(i) Satisfactory. (ii) Nil. (iii) Yield of grain. (iv) (a) to (c) No. (v) to (vii) Nil.

5. RESULTS:

(i) 3636 Kg/ha. (ii) 341·4 Kg/ha. (iii) 'Control *vs.* others' is significant. (iv) Av. yield of grain in Kg/ha.

Control=3313 Kg/ha.

	S_1	S_2	S_3	Mean
N_0	3739	3636	3715	3697
N_1	3963	3434	3650	3682
Mean	3851	3535	3682	3689

C.D. for 'control *vs.* others'=340·4 Kg/ha.

Crop :- Gram (*Rabi*). **Ref :- Bh. 65(158).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object : -To study the comparison of basic slag and other steel slag for their effe.t on the crop yield.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Red loam. (iii) 6.10.65. (iv) (a) 3—4 ploughings. (b) Line sowing. (c) 60 Kg/ha. (d) 23 cm. between rows. (e) —. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super +45 Kg/ha. of K_2O as Mur. pot. (vi) BR—77. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 15.3.66.

2. TREATMENTS:

7 manurial treatments: T_0=Control, T_1=Dolomite, T_2=Bhilai blast furnace slag, T_3=Lovo soft furnace slag, T_4=Reurkela open hearth slag, T_5=Rourkela L.D. slag and T_6=Bhilai open hearth slag.

3. DESIGN:

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 5. (iv) (a) and (b) 3·66 m.×2·74 m. (v) Nil. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1964—65. (Expt. for 1964—N.A.). (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS:

(i) 1485 Kg/ha. (ii) 311·6 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	
Av. yield	708	1576	1938	1386	1785	1536	1466	C.D.=406·8 Kg/ha.

Crop :- Gram (*Rabi*). **Ref :- Bh. 65(160).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object :—To test the effect of placement of Super Phosphate on the crop yield.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Red loam. (iii) 11.10.65. (iv) (a) 3—4 ploughings. (b) Line sowing. (c) 60 Kg/na. (d) 23 cm. between rows. (e) —. (v) 22·5 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (vi) BR—77. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 24.3.66.

2. TREATMENTS :

3 manurial treatments : T_0=Control, T_1=Super Phos. at surface and T_2=Super Phos. in furrows at ploughing at the depth 9·5 cm.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) and (b) 26·98 sq, m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (li) Nil. (iii) Yield of grain. (iv) (a) and (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2872 Kg/ha. (ii) 422·1 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2
Av. yield	2766	3072	2780

Crop :- Gram (*Rabi*). **Ref :- Bh. 60(74).**

Site :- Govt. Exptl. Farm, Nawada. **Type :- 'M'.**

Object :—To test the effect of placement of Super Phosphate.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Gram. (c) N.A. (ii) N.A. (iii) 26.10.60. (iv) (a) 3 *deshi* ploughings. (b) Behind the plough. (c) 70 Kg/ha. (d) and (e) N.A. (v) 75 Kg/ha. of P_2O_5 as Super. (vi) N.A. (vii) Unirrigated. (viii) 2 weedings. (ix) 12 cm. (x) 15.3.61.

2. TREATMENTS :

3 methods of application of 44·8 Kg/ha. of P_2O_5 : M_0=Control, M_1=At surface and M_2=At plough depth.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 10·97 m.×9·14 m. (v) N.A. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) to (c) No. (v) to (vii) Nil.

5. RESULTS :

(i) 605 Kg/ha. (ii) 97·7 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	M_0	M_1	M_2	
				C.D.=142·5 Kg/ha.
Av. yield	465	623	726	

Crop :- Gram (*Rabi*). **Ref :- Bh. 60(54), 61(58), 62(42).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'M'.**

Object :—To test the effect of different kinds of Phosphate on the yield of gram.

1. BASAL CONDITIONS :

(i) (a) Maize—Gram for 60, 61 ; Nil. (b) Maize. (c) N.A. (ii) N.A. (iii) 25.11.60 ; N.A. ; 15.11.62. (iv) (a) 3 spading before sowing. (b) Line sowing by spade. (c) 69 Kg/ha. (d) 46 cm. between rows for 60 and 62 ; 22 cm. between rows. (e) N.A. (v) N.A. (vi) ST—4. (vii) Irrigated. ; unirrigated ; irrigated. (viii) Weeding. (ix) N.A. (x) 24.3.61 ; N.A. ; 19.3.63.

2. TREATMENTS:

6 sources of P_2O_5 at 44·8 Kg/ha. : S_0=Control, S_1=Super, S_2=Bone meal, S_3=Rock Phos. S_4=Di-calcium Phos. and S_5=Basic slag.

3. DESIGN :

(i) R.B.D. (ii) 6. (b) N.A. (iii) 4. (iv) (a) 4·30 m.×3·40 m. for 60 and 61 ; N.A. (b) 3·70 m.×2·70 m. for 60 and 61 ; 11·10 m.×9·10 m. for 62. (v) 30 cm.×35$\frac{1}{2}$cm. for 60, 61 ; N.A. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Yield of grain. (iv) (a) 1960—62. (b) Yes. (c) Combined analysis is presented under 5. Results. (v) No. (vi) Nil. (vii) Error variances are homogeneous and Treatments×Years interaction is present.

5. RESULTS:

Pooled results

(i) 1593 Kg/ha. (ii) 799·1 Kg/ha. (based on 10 d.f. made up of Treatments×Years interaction). (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	S_0	S_1	S_2	S_3	S_4	S_5
Av. yield	1608	1772	1756	1670	1630	1122

Individual results

Treatment	S_0	S_1	S_2	S_3	S_4	S_5	Sig.	G.M.	S.E./plot
Year									
1960	1614	2018	1874	1800	2021	2004	N.S.	1888	260·4
1961	2034	2034	1921	2034	1921	2034	N.S.	1996	271·2
1962	1176	1265	1344	1102	1168	1129	*	1197	92·2
Pooled	1608	1772	1756	1670	1630	1122	N.S.	1593	799·1

Crop :- Gram (*Rabi*). **Ref :- Bh. 60(70), 61(72), 62(46).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'M'.**

Object :—To test the effect of different kinds of Phosphate on the yield of gram.

1. BASAL CONDITIONS:

(i) (a) Nil ; Maize—Gram ; Nil. (b) *Chana* ; Maize ; Maize. (c) N.A. (ii) N.A. (iii) 11.11.60 ; 16.11.61 12.11.62. (iv) (a) N.A. ; 2 ploughings. (b) Sown by plough. (c) 70 Kg/ha. (d) 45 cm. between rows for 1960 and 61 ; 30 cm. × 75 cm. (e) N.A. (v) N.A. (vi) S.T.—4. (vii) Irrigated. (viii) Weeding. (ix) N.A. (x) 29.3.61 ; 30.3.62 ; 19.3.63.

2. TREATMENTS:

6 sources of P_2O_5 at 44·8 Kg/ha. : S_0=Control, S_1=Super, S_2=Bone meal, S_3=Rock Phos, S_4=Di-calcium Phos. and S_5=Basic slag.

3. DESIGN:

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 13·4 m. × 8·50 m. for 1960 and 61 ; 4·30 m. × 3·40 m. (b) 12·80 m. × 7·90 m. for 1960 and 61 ; 3·70 m. × 2·70 m. (v) 30 cm. × 30 cm. for 60 and 61 ; 30 cm. × 35 cm. (vi) N.A.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of grain. (iv) (a) 1960—62. (b) N.A. (c) Nil. (v) No. (vi) Nil. (vii) Error variances are heterogeneous and Treatments × Years interaction is absent. Hence individual year results are presented under 5. Results.

5. RESULTS:

60(70)

(i) 978 Kg/ha. (ii) 208·0 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	S_0	S_1	S_2	S_3	S_4	S_5
Av. yield	1028	1003	1144	999	1014	683

61(72)

(i) 701 Kg/ha. (ii) 49·6 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	S_0	S_1	S_2	S_3	S_4	S_5	
Av. yield	671	693	693	671	816	660	C.D.=73·7 Kg/ha.

62(46)

(i) 1981 Kg/ha. (ii) 328·9 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	S_0	T_1	S_1	S_2	S_4	S_5
Av. yield	1944	2193	2168	1719	1844	2018

Crop :- Gram (*Rabi*). **Ref :- Bh. 63(52), 64(83), 65(88).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'M'.**

Object :—To find out the suitability of different forms of Phosphate fertilizer in different soil region.

1. BASAL CONDITIONS:

(i) (a) Maize—Gram. (b) Maize. (c) N.A.; N.A.; As per treatments. (ii) N.A.; N.A.; Sandy loam. (iii) 15.11.63; 3. 11.64; 27.10.65. (iv) (a) N.A.; four spadings before sowing; 2 ploughings. (b) N.A.; line sowing for 1964 and 65. (c) N.A.; N.A.; 70 Kg/ha. (d) N.A.; 45 cm.; 30 cm. (e) N.A. (v) Nil. (vi) ST—4. (vii) Unirrigated. (viii) Weeding. (ix) N.A. (x) 19.3.64; 15.3.65; 21.3.66.

2. TREATMENTS:

All combinations of (1) and (2) with 11·2 Kg/ha. of N as A/S+2 extra treatments

(1) 3 levels of P_2O_5: P_1=44·8, P_2=67·2 and P_3=89·7 Kg/ha.

(2) 2 sources of P_2O_5: S_1=Super and S_2=Di-calcium Phos.

2 extra treatments : T_0=Control and T_1=11·2 Kg/ha. of N as A/S.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 4·30 m.×3·40 m. (b) 3·70 m.×2·70 m. (v) 30 cm. ×30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1963—65. (b) and (c) Nil. (v) No. (vi) Nil. (vii) As error variances are heterogeneous and Treatments×Years interaction is absent. Hence individual year results are presented under 5. Results.

5. RESULTS :

63(52)

(i) 2084 Kg/ha. (ii) 299·0 Kg/ha. (iii) 'Extra treatments *vs.* others' is significant. (iv) Av. yield of grain in Kg/ha.

T_0=1819 Kg/ha., T_1=1919 Kg/ha.

	P_1	P_2	P_3	Mean
S_0	1993	2267	2093	2118
S_1	2217	2143	2217	2182
Mean	2105	2205	2155	2155

C.D. for extra treatment means=335·8 Kg/ha.

64(83)

(i) 1894 Kg/ha. (ii) 244·2 Kg/ha. (iii) Main effects of P, S and interaction P×S are significant. (iv) Av. yield of grain in Kg/ha.

T_0=1794 Kg/ha., T_1=1944 Kg/ha.

	P_1	P_2	P_3	Mean
S_0	1993	2043	1993	2010
S_1	1944	1370	2068	1794
Mean	1968	1706	2030	1902

C.D. for P marginal means=89·8 Kg/na.

C.D. for S marginal means=59·8 Kg/ha.

C.D. for the body of P×S table=179·6 Kg/ha.

65(88)

(i) 1970 Kg/ha. (ii) 150·6 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

T_0=1845 Kg/ha., T_1=1969 Kg/ha.

	P_1	P_2	P_3	Mean
S_0	2019	2044	1994	2019
S_1	1994	1919	2044	1986
Mean	2007	1982	2019	2003

———

Crop :- Gram (*Rabi*). **Ref :- Bh. 62(117).**

Site :- Dist. Agri. Farm, Sepaya. **Type :- 'M'.**

Object :—To test the effect of different kinds of Phosphate.

1. BASAL CONDITIONS :

(i) (a) Fallow—Gram. (b) Fallow. (c) Nil. (ii) Clay loam. (iii) 19.11.62. (iv) (a) Bihar plough, country plough and *Henga*. (b) Behind the plough. (c) 92 Kg/ha. (d) 25 cm. between rows. (e) —. (v) 14·4 Kg/ha. of P_2O_5 as Super + 11·5 Kg/ha. of P_2O_5 as Bone meal + 9·2 Kg/ha. of P_2O_5 as Rock Phos. + 6·9 Kg/ha. of P_2O_5 as Dical. Phos. + 27·7 Kg/ha. of P_2O_5 as Basic slag. (vi) NP—58. (vii) Unirrigated. (viii) Nil. (ix) 4 cm. (x) 12.4.63.

2. TREATMENTS :

6 manurial treatments : T_0=Control, T_1=45 Kg/ha. of P_2O_5 as Super, T_2=45 Kg/ha of P_2O_5 as Dical. Phos., T_3=45 Kg/ha. of P_2O_5 as Bone meal, T_4=45 Kg/ha. of P_2O_5 as Rock Phos. and T_5=45 Kg/ha. of P_2O_5 as Basic slag.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 8·31 m. × 7·32 m. (b) 7·54 m. × 6·71 m. (v) 36 cm. × 30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Branch counts, height measurement, no. of pods/plant, no. of grains/pod, wt. of 1000 grains, yield of grain and straw. (iv) (a) 1962—only. (b) Yes. (c) Nil. (v) Sabour. (vi) and (vii) Nil.

5. RESULTS :

(i) 645 Kg/ha. (ii) 93·2 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	
							C.D. = 143·6 Kg/ha.
Av. yield	472	991	646	564	651	548	

Crop :- Gram (*Rabi*). **Ref :- Bh. 60(20).**

Site :- Agri. Res. Instt., Dholi. **Type :- 'C'.**

Object: -To find out seed rate and suitable date of sowing of gram crop.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) As per treatments (iv) (a) 4 ploughings. (b) Line sowing. (c) As per treatments. (d) 30 cm. between rows. (e) —. (v) 44·8 Kg/ha. of P_2O_5 as Super. (vi) N.A. (vii) Unirrigated. (viii) Weeding by *khurpi*. (ix) and (x) N.A.

2. TREATMENTS :

Main-plot treatments

5 dates of sowing : D_1=15.10.60, D_2=30.10.60, D_3=15.11.60, D_4=30.11.60 and D_5=15.12.60.

Sub-plot treatments

4 seed rates : R_1=35, R_2=46, R_3=58 and R_4=69 Kg/ha.

3. DESIGN :

(i) Split-plot. (ii) (a) 5 main-plots/replication and 4 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 10 96 m. × 7·32 m. (b) 10 06 m. × 6·71 m. (v) 46 cm. × 30 cm. (vi) Yes.

4. GENERAL:

(i) and (ii) Nil. (iii) Height of plants, yield of grain and straw. (iv) (a) No. (b) and(c) Nil. (v) Sabour and Sepaya. (vi) and (vii) Nil.

5. RESULTS:

(i) 906 Kg/ha. (ii) (a) 83·0 Kg/ha. (b) 87·6 Kg/ha. (iii) Main effect of D alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	D_1	D_2	D_3	D_4	D_5	Mean
R_1	1569	1525	762	538	202	919
R_2	1547	1984	874	412	112	986
R_3	1479	1289	762	504	80	823
R_4	1300	1479	1098	549	45	894
Mean	1474	1569	874	501	110	906

C.D. for D marginal means=82·9 Kg/ha.

Crop :- Gram (*Rabi*). **Ref :- Bh. 60(108).**

Site :- Dist. Agri. Farm, Purnea. **Type :- 'C'.**

Object :—To see the effect of different dates of topping on the yield of Gram.

1. BASAL CONDITIONS

(i) (a) to (c) Nil. (ii) Sandy loam. (iii) 23.10.60. (iv) (a) 4 *deshi* ploughings. (b) Behind the plough in line. (c) 92 Kg/ha. (p) 25 cm. (e) 2. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) ST—4. (vii) Unirrigated. (viii) Weeding by *khurpi*, hoeing by hand hoe. (ix) 14 cm. (x) 6.5.61.

2. TREATMENTS:

4 dates of topping : D_1=23.10.60, D_2=1.12.60, D_3=10.12.60 and D_4=20.12.60.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 2. (iv) (a) 1·22 m.×9·14 m. (b) 1·22 m.×8·53 m. (v) 30 cm. on either side. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of Agrotis. (iii) Germination, flowering, maturity and tillers count, height of plants, and yield of grain. (iv) to (vii) Nil.

5. RESULTS:

(i) 2929 Kg/ha. (ii) 192·7 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	D_1	D_2	D_3	D_4
Av. yield	1907	3270	2997	3542

C.D.=613·2 Kg/ha.

Crop :- Gram (*Rabi*), **Ref :- Bh. 60(12).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'C'**

Object :—To evolve optimum time of sowing and seed-rate of Gram.

1. BASAL CONDITIONS:

(i) (a) to (c) N.A. (ii) Loam. (iii) As per treatments. (iv) (a) N.A. (b) Behind the plough. (c) As per treatments. (d) 30 cm. between rows. (e) —. (v) 44 8 Kg/ha. of P_2O_5 as Super applied at the time of sowing in furrows. (vi) NP—58. (vii) to (ix) N.A. (x) 30 and 31.3.61.

2. TREATMENTS:

Main-plot treatments

6 dates of sowing : D_1=1.10.60, D_2=15.10.60, D_3=30.10.60, D_4=15.11.60, D_5=30.11.60 and D_6= 15.12.60.

Sub-plot treatments

4 seed rates: R_1=35, R_2=46, R_3=58 and R_4=69 Kg/ha.

4. DESIGN :

(i) Spil-plot. (ii) (a) 6 main-plots/replication ; 4 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 8·84 m.×7·62 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Water lodging in D_1 plots. (ii) Nil. (iii) Population counts, height of plant, No. of branches/plant, No. of pods, No. of grains, weight of 1000 grains, yields of straw and grain. (iv) (a) to (c) Nil. (v) Dholi and Sepaya. (vi) Nil. (vii) Analysis is done with 5 main-plots only.

5. RESULTS:

(i) 1263 Kg/ha. (ii) (a) 101·0 Kg/ha. (b) 63 6 Kg/ha. (iii) Main effect of D alone is significant. (iv) Av. yield of grain in Kg/ha.

	D_2	D_3	D_4	D_5	D_6	Mean
R_1	1714	1882	1108	929	716	1270
R_2	1850	1518	1091	860	658	1195
R_3	1686	1830	1512	941	762	1346
R_4	1628	1506	1264	1016	785	1240
Mean	1720	1684	1244	936	730	1263

C.D. for D marginal means=74·9 Kg/ha.

Crop :- Gram (*Rabi*). **Ref :- Bh. 60(21).**

Site :- Govt. Agri. Farm, Sepaya. **Type :- 'C'.**

Object :—To find out seed rate and suitable date of sowing of Gram crop.

1. BASAL CONDITIONS:

(i) (a) N.A. (b) Maize. (c) 33·6 Kg/ha. of N as A/S+33·6 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) As per treatments (iv) (a) 4 ploughings and plankings. (b) Line sowing. (c) As per treatments. (d) 30 cm. between rows. (e) N.A. (v) 44·8 Kg/ha. of P_2O_5 as Super. (vi) N.A. (vii) Un-irrigated. (viii) Weeding by *khurpi*. (ix) 4 cm. (x) 13, 14, 25 and 26.4 61.

2. TREATMENTS:

Main-plot treatments :

5 dates of sowing : D_1=15.10.60, D_2=30.10.60, D_3=15.11.60, D_4=30.11.60 and D_5=15.12.60.

Sub-plot treatments

4 seed rates : R_1=35, R_2=46, R_3=58 and R_4=69 Kg/ha.

3. DESIGN:

(i) Split-plot. (ii) (a) 5 main-plots/replication and 4 sub-plots/main plot. (b) N.A. (iii) 3. (iv) (a) 10·97 m. ×7·32 m. (b) 10·06 m.×6·71 m. (v) 46 cm.×30 cm. (vi) Yes.

4. GENERAL:

(i) and (ii) Nil. (iii) Height of plant, No. of branches, yield of grain and straw. (iv) (a) 1960—only. (b) and (c) Nil. (v) Dholi and Sabour. (vi) and (vii) Nil.

5. RESULTS:

(i) 346 Kg/ha. (ii) (a) 355·2 Kg/ha. (b) 144·8 Kg/ha. (iii) Main effects of D and interaction D×R are significant. (iv) Av. yield of grain in Kg/ha.

	D_1	D_2	D_3	D_4	D_5	Mean
R_1	505	525	92	138	231	298
R_2	530	648	104	184	231	340
R_3	1063	461	208	208	225	433
R_4	559	507	150	208	150	315
Mean	664	535	138	184	209	346

C.D. for D marginal means=343·9 Kg/ha.

C.D. for D means at the same level of R=401·7 Kg/ha.

C.D. for R means at the same level of D=241·4 Kg/ha.

Crop :- Gram (*Rabi*). **Ref :- Bh. 64(26).**

Site :- Govt. Agri. Farm, Hazaribagh. **Type :- 'CM'.**

Object :—To test the effect of seed inoculation with nodule bacteria with Phosphate and Amon. Molybdenum.

1. BASAL CONDITIONS:

(i) (a) to (c) N.A. (ii) N.A. (iii) 21.11.64. (iv) and (v) N.A. (vi) ST—4. (vii) Irrigated. (viii) and (ix) N.A. (x) 7.4.65.

2. TREATMENTS:

4 cultural-cum-manurial treatments : T_0=Control, T_1=Seed inoculation with nodule bacteria, T_2=T_1+ 44·8 Kg/ha. of P_2O_5 as Super and T_3=T_2+2·2 Kg/ha. of Malybdenum.

3. DESIGN:

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 5·83 m.×3·96 m. (v) N.A. (vi) Yes.

4. GENERAL

(i) and (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1964—only. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1164 Kg/ha. (ii) 313·0 Kg/ha. (iii) Treatment differences are not significant. (iv) (a) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3
Av. yield	1022	1311	896	1427

Crop :- Gram (*Rabi*). **Ref :- Bh. 64(42).**

Site :- Govt. Agri. Farm, Piprakothi, **Type :- 'CM'.**

Object :—To test the effect of legume inoculation on the yield of Gram crop.

1. BASAL CONDITIONS:

(i) (a) to (c) N.A. (ii) N.A. (iii) 20.11.64. (iv) (a) to (e) N.A. (v) As per treatments. (vi) N.A. (vii) Irrigated. (viii) Weeding. (ix) and (x) N.A.

2. TREATMENTS:

Same as in Expt. No. 64(26) at Hazaibagh on page 485.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) 9·22 m.×5·49 m. (b) 8·31 m.×4·88 m. (v) 46 cm.× 30 cm. (vi) Yes.

4. GENERAL:

(i) and (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1964—only. (b) No. (c) Nil. (v) Seikhpura, Kanke Purnea and Madhepura. (vi) and (vii) Nil.

5. RESULTS :

(i) 538 Kg/ha. (ii) 89·5 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3
Av. yield	513	528	559	550

Crop :- Gram (*Rabi*). **Ref :- Bh. 60(288).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'CM'.**

Object :—To study the effect of inoculation with root nodules bacteria on the yield of Gram.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Red loam. (iii) 2.11.60. (iv) (a) 3—4 ploughings. (b) Line sowing. (c) 60 Kg/ha. (d) 23 cm between rows. (e) —. (v) 22·5 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super +45 Kg/ha. af K_2O as Mur. Pot. (vi) BR—65. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 27.3.61.

2. TREATMENTS :

4 culturial-cum-manural treatments : T_0=Control, T_1=Seed inoculation, T_2=45 Kg/ha. of P_2O_5 as Super, T_3=45 Kg/ha. of P_2O_5 as Super+seed inoculation, T_4=2·2 Kg/ha of Molybdenum as Am. Moly, T_5=T_1+T_4, T_6=922 Kg/ha. of lime and T_7=922 Kg/ha. of lime+T_1.

3. DESIGN :

(i) R.B D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) and (b) 25·28 sq. m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good (ii) Nil. (iii) Yield of grain. (iv) (a) 1960—only. (b) and (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 383 Kg/ha. (ii) 135·7 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Av. yied	291	323	372	496	418	334	389	441

Crop :- Gram (*Rabi*). **Ref :- Bh. 60(139), 61(163).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'D'.**

Object :—To study the effect of different groups of hormones as seed soaking treatments on growth, physiology and yield.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) 17 10.60 ; 7.11.61. (iv) (a) 3 ploughings. (b) Line sowing. (c) 69 Kg/ha. (d) 30 cm. between rows. (e) Nil. (v) 11·2 Kg/ha. of N as A/S+22·4 Kg/ha. of P_2O_5 as Super+22·4 Kg/ha. of K_2O as Mur. Pot. (vi) ST—4. (vii) Irrigated. (viii) Weeding and hoeing. (ix) 12 cm. ; 10 cm. (x) 28.3.61 ; 7.4.62.

2. TREATMENTS :

All combinations of (1) and (2)

(1) Two soaking durations: S_1=6 and S_2=12 hours.

(2) 5 hormonal treatments : T_0=Control, T_1=IAA at 5 ppm, T_2=NAA at 5 ppm, T_3=IAA at 15 ppm and T_4=NAA at 15 ppm.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 10. (b) 32·92 m.×4·27 m. (iii) 4. (iv) (a) and (b) 3·66 m.×2·74 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Spread of plants, fresh and dry wt. of plant, yield of grain and straw. (iv) (a) 1960—61. (b) Yes. (c) Nil. (v) No. (vi) Nil. (vii) Since error variances are heterogeneous and Treatments×Years interaction is absent, individual year results are presented under 5. Results.

5. RESULTS :

60(139)

(i) 3081 Kg/ha. (ii) 487·9 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	T_0	T_1	T_2	T_3	T_4	Mean
S_1	2979	3119	3269	2970	2810	3029
S_2	3209	3368	2950	2979	3159	3133
Mean	3094	3244	3109	2974	2984	3081

61(163)

(i) 1495 Kg/ha. (ii) 194·6 Kg/ha. (iii) None of the effects is significant. (iv) (a) Av. yield of grain in Kg/ha.

	T_0	T_1	T_2	T_3	T_4	Mean
S_1	1413	1502	1585	1578	1592	1534
S_2	1580	1522	1587	1321	1273	1457
Mean	1496	1512	1586	1449	1432	1495

Crop :- Gram (*Rabi*). **Ref :- Bh. 61(213), 62(177).**

Site :- Mokamah Tal (Patna c.f.) **Type :- 'D'.**

Object :—To determine the efficacy of the various insecticides in controlling cut worm pests on the green crop.

1. BASAL CONDITIONS :

(i) (a) to (c) Nil. (ii) Loam (Tal area). (iii) Nil. (iv) Local. (v) (a) One ploughing. (b) Behind the plough. (c) 25 Kg/ha. (d) 23 cm. between rows. (e) N.A. (vi) 6.11.61 ; 23.10.62. (vii) Unirrigated. (viii) Nil. (ix) N.A. (x) 12.4.62 ; 12.4.63.

2. TREATMENTS :

8 insecticidal treatments : T_0=Control, T_1=3·4 Kg/ha. of Gamma BHC 20 %, T_2=4·5 Kg/ha. of Gamma BHC 20 %, T_3=5·6 Kg/ha. of Gamma BHC 20 %, T_4=7·9 Kg/ha. of Aldrin 30 % EC, T_5=6·7 Kg/ha. of D.D.T. 25 % EC, T_6=9·0 Kg/ha. of D.D.T 25 % E.C., and T_7=11·2 Kg/ha. of D.D.T. 25 % E.C.

Time : 29.11.61 ; 10.11.62.

Method is by spraying.

3. DESIGN :

(i) R.B.D., 8, 4. (ii) N.A. (iii) (a) 10·06 m.×5·49 m. (b) 10·06 m.×5·03 m. (iv) Yes.

4. GENERAL :

(i) Good. (ii) Attack of cut-worm pests, control measure taken as per treatments. (iii) Germination, flowerings and maturity count, no. of plants, no. of plants cut by pests. (iv) (a) 1960—62 ((Expt. for 1960—N.A.) (b) Yes. (c) Nil. (v) Sabour. (vi) and (vii) Nil.

5. RESULTS :

61(213)

(i) 7·7 degrees. (ii) 0·6 degrees. (iii) Treatment differences are highly significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Mean infestation	16·4	6·1	6·3	5·4	5·6	7·3	7·2	7·2

C D.=0·9 degrees.

62(177)

(i) 6·3 degrees. (ii) 0·7 degrees. (iii) Treatment differences are highly significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Mean infestation	11·2	5·8	5·8	6·0	5·0	6·1	5·3	5·1

C.D.=1·0 degrees.

Crop :- Gram (*Rabi*). **Ref :- Bh. 61(212).**

Site :- Mokamgarh, Mokamah (Patna c.f.) **Type :- 'D'.**

Object :—To determine the efficacy of the various insecticides in controlling cut-worm pests on the crop Gram.

1. BASAL CONDITIONS :

(i) (a) to (c) Nil. (ii) Loam (Tal area). (iii) Nil. (iv) Local. (v) One ploughing. (b) Behind the plough. (c) 25 Kg/ha. (d) 23 cm. between the rows. (e) —. (vi) 20.10.61. (vii) Unirrigated. (viii) Nil. (ix) N.A. (x) 10.4.62.

2. TREATMENTS :

Same as in 61(213) and 62(177) on page 488.

3. DESIGN :

(i) R.B.D., 8,4. (ii) N.A. (iii) (a) 10·06 m.×5·49 m. (b) 10·06 m.×5·03 m. (iv) Yes.

4. GENERAL :

(i) Good. (ii) Attack of cut-worm pests, control measure taken as per treatments. (iii) Germination, flowering and maturity count, total no. of plants, no. of plants cut by pest. (iv) (a) 1960—62 (expts. in 1960 and 62—N.A.). (b) Yes. (c) Nil. (v) Sabour. (vi) and (vii) Nil.

5. RESULTS :

(i) 6·9 degrees. (ii) 1·0 degrees. (iii) Treatment differences are highly significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Mean infestation	14·1	6·4	5·6	4·6	5·2	6·6	6·4	6·1

C.D.=1·5 degrees.

Crop :- Gram (*Rabi*). **Ref :- Bh. 60(196), 61(215), 62(179).**

Site :- Mokamah Tal, Patna (c.f.) **Type :- 'D'.**

Object :—To find out the comparative efficacy of the different insecticides in different doses to control cut-worm on the gram crop.

1 BASAL CONDITIONS :

(i) (a) to (c) Nil. (ii) Loam (Tal area). (iii) Nil. (iv) Local. (v) (a) One ploughing. (c) Behind the plough. (c) 25 Kg/ha. (d) 23 cm. between rows. (e) —. (vi) 21.11.60 ; 3.12.61 ; 12.12.62. (vii) Unirrigated. (viii) Nil. (ix) N.A. (x) 20.4.61 ; 14.4.62 ; 15.4.63.

2. TREATMENTS :

9 insecticidal treatments : T_0=Control, T_1=Diazinon 20 % EC at 1·12 Kg/ha , T_2=Diazinon 20 % EC at 1·68 Kg/ha., T_3=Diazinon 20 % EC at 2 24 Kg/ha., T_4=D.D.T. 20 % EC at 6·72 Kg/ha., T_5=D.D.T. 20 % dust at 8·96 Kg/ha., T_6=D.D.T. 20 %, EC at 11·20 Kg/ha., T_7=D.D.T. 5 % dust at 28·00 Kg/ha. and T_8=Aldrin 5 % dust at 22·40 Kg/ha.

Time : 2.12.60 ; 19.12.61 ; 29.12.62.

Method is by spraying and dusting.

3. DESIGN :

(i) R.B.D., 9, 4. (ii) N.A. (iii) (a) 10·65 m.×10·35 m. (b) 10·05 m.×10·05 m. (iv) Yes.

4. GENERAL :

(i) Good. (ii) Attack of cut-worm pest, control, measure as per treatments. (iii) Germination, flowering and maturity count, no. of plants and no. plants cut by pest. (iv) (a) 1960—62. (b) and (c) Nil. (v) Sabour (vi) No. (vii) Nil.

5. RESULTS :

60(196)

(i) 7·4 degrees. (ii) 0·8 degrees. (iii) Treatment differences are highly sign ficant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Mean infestation	12·9	7·9	7·9	7·6	7·5	5·5	4·5	8·0	4·7

C.D.=1·2 degree.s

61(215)

(i) 5·9 degrees. (ii) 0·3 degrees. (iii) Treatment differences are highly significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Mean infestation	7·2	5·7	5·8	5·6	5·7	5·7	5·2	5·7	6·2

C.D.=0·4 degree.

62(179)

(i) 6·7 degrees. (ii) 1·0 degrees. (iii) Treatment differences are highly significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Mean infestation	9·5	7·0	6·5	6·1	6·5	5·9	5·6	7·0	5·9

C.D.=1·5 degrees.

Crop :- Cram (*Rabi*). **Ref :- Bh. 60(195), 61(214), 62(178).**

Site :- Mokamah Tal (Patna c.f.) **Type :- 'D'.**

Object :—To find out the comparative efficacy of the different insecticides in different doses to control cut-worm on the gram crop.

1. BASAL CONDITIONS :

(i) (a) to (c) Nil. (ii) Loam (Tal area). (iii) Nil. (iv) Local. (v) (a) One ploughing. (b) Behind the plough. (c) 25 Kg/ha. (d) 23 cm. between rows. (e) N.A. (vi) 5.11.60 ; 6.11.61 ; 13.11.62. (vii) Unirrigated. (viii) Nil. (ix) N.A. (x) 10.4.61 ; 9.4.62 ; 12.4.63.

2. TREATMENTS:

9 insecticidal treatments : T_0=Control, T_1=1·1 Kg/ha. of Diazinon at 20 %, E.C., T_2=1·7 Kg/ha. of Diazinon at 20 % E.C., T_3=2·2 Kg/ha. of Diazinon at 20 %, E.C., T_4=6·7 Kg/ha. of D.D.T. at 20 % E.C., T_5=9·0 Kg/ha. of D.D.T. at 20 % E.C., T_6=11·2 Kg/ha. of D.D.T. at 20 % E.C., T_7=28·0 Kg/ha. of D.D.T. at 5 % dust and T_8=22·4 Kg/ha. of Aldrin at 5 % dust.

Time : 18.11.60 ; 21.11.61 ; 5.12.62.

Method is by spraying and dusting.

3. DESIGN :

(i) R.B.D., 9, 4. (ii) N.A. (iii) 10·65 m.×10·35 m. (b) 10·05 m.×10·05 m. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Attack of cut-worm pest, control measure as per treatments. (iii) Germination, flowering and maturity count, total no. of plants, no. of plants cut by insects. (iv) (a) 1960—62. (b) Yes. (c) Nil. (v) Sabour. (vi) No. (vii) Nil.

5. RESUTS :

60(195)

(i) 9·5 degrees. (ii) 1·6 degrees. (iii) Treatment differences are highly significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Mean infestation	16·3	9·8	9·6	9·3	8·4	8·4	7·5	10·0	6·0

C.D.=2·3 degrees

61(214)

(i) 7·4 degrees. (ii) 0·4 degrees. (iii) Treatment differences are highly significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Mean infestation	13·6	7·0	7·0	5·7	6·7	6·3	6·7	6·7	7·1

C.D.=0·6 degree.

62(178)

(i) 7·8 degrees. (ii) 0·6 degrees. (iii) Treatment differences are highly significant. (iv) Mean infestation in degrees

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Mean infestation	13·3	7·8	7·5	7·4	7·4	6·8	5·8	7·6	6·2

C.D.=0·9 degree.

Crop :- Gram (*Rabi*). **Ref :- Bh. 60(129).**

Site :- Botanical Sub-station, Purnea. **Type :- 'D'.**

Object: – To study the effect of one and two application of different insecticides as a curative trial against the pest.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) 45 Kg/ha. of N as A/S 45+45 Kg/ha of P_2O_5 as Super. (ii) (a) Loamy sand. (b) Nil. (iii) 15.11.60. (iv) (a) 2-3 ploughings. (b) Behind the plough. (c) 74 Kg/ha. (d) 23 between rows. (e) Nil. (v) Nil. (vi) BR—17. (vii) Unirrigated. (viii) Weeding. (ix) 66·28 cm. (x) 28.4.61.

2. TREATMENTS :

9 insecticidal treatments : T_0=Control, T_1=22·42 Kg/ha. of one dusting of BHC at 5% dust, T_2=22·42 Kg/ha. of two dusting of BHC at 5% dust, T_3=22·42 Kg/ha. of one dusting of D.D.T. at 5% dust, T_4=22·42 Kg/ha. of two dusting of D.D T. at 5% dust, T_5=16·81 Kg/ha. of one dusting of Aldrin 5% dust, T_6=16·81 Kg/ha. of two dusting of Aldrin at 5% dust, T_7=One spray of Endrin at 0·04% spray and T_8=Two spray of Endrin at 0·04% spray.

(One and two application of the treatments at 15 days interval after the infestation set in).

Time of application : 17.3.61 and 4.4.61.

3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 3. (iv) (a) and (b) 6·71 m.×7·62 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Pod Borer, control measure as per treatments. (iii) Percentage of infestation, yield of grain. (iv) (a) 1960—only. (b) No (c) Nil. (v) (a) Sabour. (b) Nil. (vi) and (vii) Nil.

5. RESULTS:

Yield data

(i) 235 Kg/ha. (ii) 83·9 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Trtatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Av. yield	204	173	301	361	277	342	179	158	119

C.D.=145·3 Kg/ha.

Infestation data

(i) 16·75 degrees. (ii) 0·58 degrees. (iii) Treatment differences are highly significant. (iv) Av. percentage of infested Pods in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Mean infestation	19·21	18·56	17·46	12·01	16·35	13·81	15·15	12 01	26·16

C.D.=1·00 degree.

Crop :- Gram (*Rabi*). **Ref :- Bh. 62(135).**

Site :- Rupauli (Ajokopa) (Purnea c.f.). **Type :- 'D'.**

Object :—To study the effect of one and two applications of different insecticides as a curative trial against the pest.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) Nil. (ii) Sandy loam. (iii) Nil. (iv) Local. (v) (a) 2—3 ploughings. (b) Broadcast. (c) 70 Kg/ha. (d) and (e) Nil. (vi) 23.1.62. (vii) Unirrigated. (viii) Nil. (ix) 2·58 cm. (x) 22.4.62.

2. TREATMENTS :

9 insecticidal treatments : T_0= Control, T_1=22·42 Kg/ha. of one dusting of BHC at 5% dust, T_2=22·42 Kg/ha. of two dusting of BHC at 5% dust, T_3=22·42 Kg/ha. of one dusting of D D.T. at 5% dust, T_4=22·42 Kg/ha. of two dusting of D.D.T. at 5% dust, T_5=16·81 Kg/ha. of one dusting of Aldrin at 5% dust, T_6=16·81 Kg/ha. of two dusting of Aldrin at 5% dust, T_7=One spraying of Endrin at 0·04% spray and T_8=Two sprayings of Endrin at 0·04% spray.

3. DESIGN:

(i) R.B.D , 9, 3. (ii) Purposive. (iii) (a) and (b) 10·06 m. × 5·03 m. (iv) Yes.

4. GENERAL:

(i) Good. (ii) Pod Borer, control measure as per treatments. (iii) Percentage of infested Pods, yield of grain. (iv) (a) 1960–64 (Expt. for 61—N.A. and site changed every year). (b) No. (c) Nil. (v) Sabour. (vi) and (vii) Nil.

5. RESULTS :

Yield data

(i) 699 Kg/ha. (ii) 52·6 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Av. yield	599	669	630	676	704	704	884	907	515

C.D.=91·1 Kg/ha.

Infestation data

(i) 15·86 degrees. (ii) 0·53 degrees. (iii) Treatment differences are highly significant. (iv) Av. percentage o infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Mean infestation	20·03	19·27	15·49	13·97	15·06	15·00	10·08	9·80	24·02

C.D.=0·92 degree.

Crop :- Gram (*Rabi*). **Ref :- Bh. 63(151).**

Site :- Rupauli (Purnea c.f.) **Type :- 'D'.**

Object :—To study the effect of one and two applications of different insicticides as a curative trial against pest.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Maize. (c) Nil. (ii) Sandy loam. (iii) Nil. (iv) Local. (v) 2—3 ploughings. (b) Broadcast. (c) 70·0 Kg/ha. (d) and (e) Nil. (vi) 20.2.63. (vii) Unirrigated. (viii) Nil. (ix) 3·00 cm. (x) 21·4·63.

2. TREATMENTS :

9 insecticidal treatments : T_0=Control, T_1=One dusting of BHC 5% dust at 22·42 Kg/ha., T_2=Two dusting of BHC 5 % dust at 22·42 Kg/ha., T_3=One dusting of D.D.T. 5% dust at 22·42 Kg/ha., T_4=Two dusting of D.D.T. 5% dust at 22·42 Kg/ha., T_5=One dusting of Aldrin 5% dust at 16·81 Kg/ha., T_6=Two dusting of Aldrin 5% dust at 16·81 Kg/ha., T_7=One spraying of Endrin 0·04% spray and T_8=Two sprayings of 0·04% Endrin spray.

Time of application : 24·3·63 and 7.4.63.

3. DESIGN :

(i) R.B.D., 9, 3. (ii) Purposive. (iii) (a) and (b) 13·06 m. × 5 03 m. (iv) Yes.

4. GENERAL :

(i) Good. (ii) Pod borer, control measure as per treatments. (iii) Percentage of infested pods, yield of grain. (iv) (a) 1960 - 64 (Expt. for 1961—N.A. and site changed every year). (b) No. (c) Nil. (v) Sabour. (vi) and (vii) Nil.

5. RESULTS :

Percentage infestation of pods

(i) 19·29 degrees. (ii) 0·382 degrees. (iii) Treatment differences are highly significant. (iv) Av. percentage of infested pods in degrees.

T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
26 13	22·14	21·64	18·53	17·85	18·15	18·34	15·24	15·45

C.D =0·65 degree.

Yield of grain

(i) 720 Kg/ha. (ii) 112·52 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
576	615	669	722	811	784	757	780	765

Crop :- Gram (*Rabi*). **Ref :- Bh. 64(193).**

Site :- Dobha in Rupauli (Purnea c.f.). **Type :- 'D'.**

Object :—To study the effect of one and two applications of different insecticides as a curative trial against the pest.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) Nil. (ii) Sandy loam. (iii) Nil. (iv) Nil. (v) (a) 2—3 ploughings. (b) Broadcast. (c) 70·0 Kg/ha. (d) and (e) Nil. (vi) 8.1,64. (vii) Unirrigated. (viii) Nil. (ix) 0·51 cm. (x) 16.4.64.

2. TREATMENTS :

9 insecticidal treatments : T_0=Control, T_1=One dusting of BHC 5% dust at 22·42 Kg/ha., T_2=Two dusting of BHC 5% dust at 22·42 Kg/h., T_3=One dusting of D.D.T. at 5% dust at 22·42 Kg/ha., T_4=Two dusting of D.D.T. at 5% dust 22·42 Kg/ha., T_5=One dusting of Aldrin at 5% dust 16·81 Kg/ha., T_6=Two dusting of Aldrin 5% dust at 16·81 Kg/ha., T_7=One spray of Endrin 0·04% spray at 11·23 lit./ha. and T_8=Two spray of Endrin 0·06% spray at 11·23 Kg/ha.

Time of application : 10.3.64 (1st time), 26.4.64 (2nd time).

3. DESIGN :

(i) R.B.D., 9, 3. (ii) Purposive. (iii) (a) and (b) 10·06 m. × 5·03 m. (iv) Yes.

4. GENERAL :

(i) Good. (ii) Pod-borer, control measure as per treatments. (iii) Popn. of infested pods and plants before treatments, Popn. of infested pods and plants after treatments, yield of grain. (iv) (a) 1960 64 (expt. for 61—N.A. and site changed every year). (b) Yes. (c) Nil. (v) Sabour. (vi) and (vii) Nil.

5. RESULTS :

Percentage infestation of pods

(i) 13·4 degrees. (ii) 1·8 degrees. (iii) Treatment differences are highly significant. (iv) Av. percentage of infested pods in degrees

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_7	T_7	T_8
Mean infestation	25·60	18·55	16·73	12·96	11·69	13·36	12·64	4·41	4·31

C.D.=3·1 degrees.

Percentage infestation of plants

(i) 16·3 degrees. (ii) 5·7 degrees. (iii) Treatment differenees are highly significant. (iv) Av. percentage of infested piants in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Mean infestation	29·05	26·11	21·37	14·44	12·33	15·20	13·64	7·42	7·49

C.D.=0·91 degrees.

Yield of grain

(i) 7·22 Kg/ha. (ii) 50·7 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Av. yield	530	561	692	750	757	738	780	857	834

C.D.=87·8 Kg/ha.

———

Crop :- Gram (*Rabi*). **Ref :- Bh. 60(55), 61(59).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'D'.**

Object :—To test the effect of using insecticide on micro-bio-activity of soil.

1. BASAL CONDITIONS :

(i) (a) Gram—Maize. (b) Maize. (c) N.A. (ii) N.A (iii) 5.11.60 ; N.A. (iv) (a) 3 spadings before sowing. (b) Sowing by spade. (c) 69 Kg/ha. ; N.A. (d) 46 cm. between rows ; N.A. (e) N.A. (v) N.A. (vi) S.T.—4. (vii) Irrigated ; N.A. (viii) Weedings ; N.A. (ix) N.A. ; (x) 27.3.61 ; N.A.

2. TREATMENTS :

9 chemical treatments : T_0=Control, T_1=B.H.C. at 33·6 Kg/ha., T_2=B.H.C. at 67·2 Kg/ha., T_3=Aldrin at 33·6 Kg/ha., T_4=Aldrin at 67·2 Kg/ha., T_5=D.D.T. at 33·6 Kg/ha., T_6=D.D.T. at 67·2 Kg/ha. T_7=Gamma B.H.C. at 1·1 Kg/ha. and T_8=Gamma B.H.C. at 2·2 Kg/ha.

3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 4·40 m.×3·40 m. (b) 3·70 m.×2·70 m. (v) 30 cm.×30 cm. (vi) N.A.

4. GENERAL :

(i) Fair. (ii) Rat attacked. (iii) Nil. (iv) (a) 1960—61. (b) N.A. (c) Results of combined analysis is presented under 5. Results. (v) No. (vi) Nil. (vii) Error variances are heterogeneous and Treatments×Years interaction is absent Hence individual year results are presented under 5. Results.

5. RESULTS :

60(55)

(i) 1834 Kg/ha. (ii) 227·9 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Av. yield	1888	1844	1918	1739	2002	1656	1830	1700	1932

61(59)

(i) 1770 Kg/ha. (ii) 353·1 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Av. yield	1582	1695	1808	1695	1808	1808	1921	1808	1808

Crop :- Gram (*Rabi*). **Ref :- Bh. 63(160), 64(203).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'D'.**

Object:—To study the effect of different stregths of insecticides to control the cut-worm pest.

1. BASAL CONDITIONS :

(i) (a) to (c) Nil. (ii) Loam. (iii) 24.11.63 ; 20.11.64. (iv) (a) 3—4 plouhgings. (b) Behind the plough. (c) 74 Kg/ha. (d) 23·0 cm. between rows. (e) Nil. (v) Nil. (vi) Local. (vii) Unirrigated. (viii) Nil. (ix) N.A. (x) 9.3.64 ; 12.3.65.

2. TREATMENTS:

6 insecticidal treatments : T_0=Control, T_1=Telodrin 1 % dust at 28·02 Kg/ha., T_2=Aldrin 5 % dust at 28·02 Kg/ha., T_3=Heptachlore 3 % dust at 28·02 Kg/ha., T_4=Chlordane 5 % dust at 28·02 Kg/ha. and T_5=B.H.C. 5 % dust at 28·02 Kg/ha.

3. DESIGN:

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 5. (iv) (a) and (b) 50·58 sq. m. (v) Nil. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Cut worm pests ; control measure as per treatments. (iii) Totol no. of plants ; data on infestation. (iv) (a) 1963—64. (b) Yes. (c) Nil. (v) and (vi) Nil. (vii) Yield of grain is not available.

5. RESULTS :

63(160)

(i) 3·4 degrees (ii) 1·4 degrees. (iii) Treatment differencces are highly significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Mean infestation	6·9	1·6	2·0	2·0	3·6	4·3

C.D.=1·8 degrees.

64(203)

(i) 12·3 degrees. (ii) 4·9 degrees. (iii) Treatment differences are highly significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Mean infestation	26·4	4·4	8·8	9 0	9·4	15·8

C.D.=6·4 degrees.

Crop :- Gram (*Rabi*). **Ref :- Bh. 63(159), 64(201).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'D'.**

Object :—To study the effect of different strengths of insecticides on early exposed land.

1. BASAL CONDITIONS :

(i) (a) to (c) Nil. (ii) Loam. (iii) 26.11.63 ; 20.11.64. (iv) (a) 3—4 ploughings. (b) Line sowing. (c) 74·13 Kg/ha. (d) 23 cm. between rows. (e) Nil. (v) Nil. (vi) Local. (vii) Unirrigated. (viii) Nil. (ix) 0·51 cm. (x) 13.3.64 ; 11.3.65.

2. TREATMENTS :

9 insecticidal treatments : T_0=Control, T_1=Telodrin 1% dust at 33·62 Kg/ha., T_2=Telodrin 1% dust at 44·83 Kg/ha., T_3=Aldrin 5 % dust at 22·42 Kg/ha., T_4=Aldrin 5 % dust at 44 83 Kg/ha., T_5=Helptachlore 3 % dust at 33·62 Kg/ha., T_6=Heptachlore 3% dust in 67·25 Kg/ha., T_7=Chlordane 5% dust at 44·83 Kg/ha. and T_8=B.H.C. 5 % dust at 44·83 Kg/ha.

3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) and (b) 10·06 m.×5·03 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Cut worm pest, control measure as per treatments. (iii) No. of plants cut by the pest, yield of grain. (iv) (a) 1963—64. (b) No. (c) Nil. (v) No. (vi) Nil. (vii) Yield of grain is not available.

5. RESULTS :

63(159)

(i) 15·9 degrees. (ii) 1·8 degrees. (iii) Treatment differences are highly significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Mean infestation	23·6	14·3	15·8	18·1	14·8	14·2	10·8	16 0	15·3

C.D.=2·1 degrees.

64(201)

(i) 21·1 degrees. (ii) 9·2 degrees. (iii) Treatment differences are highly significant. (iv) Mean infestation in degree.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Mean infestation	67·0	8·5	6·5	21·6	15·9	16·0	11·2	19·6	23·8

C.D.=10·7 degrees.

Crop :- Gram (*Rabi*). **Ref :- Bh. 60(128), 62(134).**

Site :- Tal Kadwa, Sabour (Bhagalpur c.f.). **Type :- 'D'.**

Object :—To study the effect of one and two applications of different insecticides as a curative trial against the pest.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat and gram. (c) Nil. (ii) Clayee. (iii) Nil. (iv) BR—17 ; Local. (v) (a) 2 ploughings. (b) Behind the plough. (c) 74 Kg/ha. (d) 23 cm. between rows. (e) Nil. (vi) 28.10.60 ; 12.1.62. (vii) Unirrigated. (viii) Nil. (ix) 4 cm. ; 1 cm. (x) 29.3.61, 29.3.62.

2. TREATMENTS :

9 insecticidal treatments : T_0=Control, T_1=One dusting of BHC 5% dust at 22·42 Kg/ha., T_2=Two dusting of BHC 5% dust at 22·42 Kg/ha., T_3=One dusting of D D.T. 5% dust at 22·42 Kg/ha., T_4=Two dusting of D.D.T. 5% dust at 22·42 Kg/ha. T_5=One dusting of Aldrin 5 % dust at 16·81 Kg/ha. ; T_6=Two dusting of Aldrin 5 % dust at 16·81 Kg/ha. ; T_7=One spraying of 0·04% Endrin and T_8=Two sprayings of 0·04% Endrin.

3. DESIGN:

(i) R.B.D., 9, 4. (ii) Purposive. (iii) N.A.; 10·06 m.×5·03 m. (b) 6·71 m.×7·62 m.; 10·06 m.×5·03 m. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Pod borer, control measure as per treatments. (iii) Yield of grain. (iv) (a) 1960–62 (expt. for 1961—N.A.) (b) No. (c) Results of combined analysis are presented under 5. Results. (v) Purnea. (vi) Nil. (vii) Error variances are heterogeneous and Treatments×Years interaction is present.

5. RESULTS:

Yield data

Pooled results

(i) 1241 Kg/ha. (ii) 162·8 Kg/ha. (based on 8 d.f. made up of Treatments×Years interaction). (iii) Treatment differences are significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Av. yield	1005	1119	1152	1288	1362	1159	1230	1431	1422

C.D.=187·7 Kg/ha.

Individual results

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	Sig.	G.M.	S.E./p lot
Year												
1960	1379	1528	1547	1813	1862	1535	1631	1851	1832	**	1664	26·8
1962	507	576	626	588	695	658	695	872	876	**	677	48·0
Pooled	1005	1119	1152	1288	1362	1159	1230	1431	1422	*	1241	162·8

Infestation data

60(128)

(i) 13·7 degrees (ii) 1·0 degree. (iii) Treatment differences are highly significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Mean infestation	20·0	15·2	14·7	12·7	11·7	13·8	13·2	11·3	10·5

C.D.=1·5 degrees.

62(134)

(i) 16·4 degrees. (ii) 0·7 degree. (iii) Treatment differences are highly significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Mean infestation	25·0	19·9	19·0	15·3	14·3	16·8	16·8	10·3	10·1

C D.=1·2 degrees.

Crop :- Gram (*Rabi*). **Bh. 60(123), 61(151), 62(130).**

Site :- Tal Kadwa, Sabour (Bhagalpur c.f.). **Type :- 'D'.**

Object:—To study the effect of different strengths of insecticides on early exposed land.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat and gram. (c) Nil. (ii) Clayee. (iii) Nil. (iv) Local. (v) (a) 1—2 *deshi* ploughings. (b) Behind the plough. (c) 74·13 Kg/ha. (d) 23 cm. between rows. (e) Nil. (vi) 13.11.60 ; 5.12.61 ; 13.11.62. (vii) Unirrigated. (viii) Nil. (ix) 3·52 cm. ; 2·11 cm. ; 1·04 cm. (x) 27.3.61 ; 6.4.62 ; 28.3.63.

2. TREATMENTS :

8 insecticidal treatments : T_0=Control, T_1=Pure Gamma B.H.C. 20 % at 3 36 Kg/ha , T_2=Pure Gamma B.H.C. 20% at 4·48 Kg/ha., T_3=Pure Gamma 20 % at 5·60 Kg/ha., T_4=Aldrin 30 % E.C. at 7·84 Kg/ha., T_5=D.D.T. 25 % E C. at 6·67 Kg/ha., T_6=D.D.T. 25 % E.C. at 8·97 Kg/ha. and T_7=D.D.T. 25 % E.C. at 11·21 Kg/ha.

3. DESIGN :

(i) R.B.D., 8, 4. (ii) Purposive method. (iii) (a) and (b) 10·06 m. × 5·03 m. for 60 and 61 ; 101·17 sq. m. (iv) Yes.

4. GENERAL :

(i) Good. (ii) Attack of cut worm pest, control measure as per treatments. (iii) No. of cut plants ; yield of grain. (iv) (a) 1960—62. (b) No. (c) Nil. (v) No. (vi) Nil. (vii) Yield data is not available for expts. for 1960 and 62.

5. RESULTS :

Infestation data

60(123)

(i) 4·4 degrees. (ii) 2·5 degrees. (iii) Treatment differences are not significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Mean infestation	6·9	3·8	4·4	4·2	3·6	4·5	4·3	3·7

61(151)

(i) 6·6 degrees. (ii) 1·2 degrees. (iii) Treatment differences are highly significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Mean infestation	12·0	7·0	5·9	4·7	6·6	6·8	4·8	5·0

C.D.=1·8 degrees.

62(130)

(i) 12·0 degrees. (ii) 1·7 degrees. (iii) Treatment differences are highly significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Mean infestation	18·3	13·4	12·9	12·1	9·0	11·0	9·8	9·5

C.D.=2·5 degrees.

Yield data

61(151)

(i) 1186 Kg/ha. (ii) 64·6 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Av. yield	971	1108	1180	1342	1245	1153	1199	1294

C.D.=95·0 Kg/ha.

Crop :- Gram (*Rabi*). **Ref :- Bh. 60(124), 61(152), 62(131).**

Site :- Tal Kadwa, Sabour (Bhagalpur c.f.). Type :- 'D'.

Object :—To study the effect of different strengths of insecticides on late exposed land.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat and gram. (c) Nil. (ii) Clayee. (iii) Nil. (iv) Local. (v) (a) 1—2 ploughings. (b) Behind the plough. (c) 74·13 Kg/ha. (d) 23 cm. between rows. (e) Nil. (vi) 18.11.60 ; 8.12.61 ; 21.11.62. (vii) Unirrigated. (viii) Nil. (ix) 3·52 cm. : 2.11 cm. ; 1·04 cm. (x) 22.3.61 ; 1.4.62 ; 5.4 63.

2. TREATMENTS :

8 insecticidal treatments : T_0=Control, T_1=Pure Gamma B.H C. 20% at 3·36 Kg/ha., T_2=Pure Gamma B.H.C. 20 % at 4·48 Kg/ha., T_3=Pure Gamma B.H.C. 20 % at 5·60 Kg/ha., T_4=Aldrin 30 % E.C. at 7·85 Kg/ha., T_5=D.D.T. 25 % E.C. at 6·72 Kg/ha., T_6=D.D.T. 25 % E.C. at 8·97 Kg/ha. and T_7=D.D.T. 25 % E.C. at 11·2 Kg/ha.

3. DESIGN :

(i) R.B.D., 8, 4. (ii) Purposive. (iii) (a) and (b) 10·06 m. × 5·03 m. (iv) Yes.

4. GENERAL :

(i) Good. (ii) Cut worm pest, control measure as per treatments. (iii) Total no. of damaged plants, yield of grain. (iv) (a) 1960—62. (b) No. (c) Results of combined analysis are presented under 5. Results. (v) No. (vi) Nil. (vii) Yield data is not available for 1962. Error variances are homogeneous and Treatments × Years interaction is present.

5. RESULTS :

Pooled results

(i) 696 Kg/ha. (ii) 214·0 Kg/ha. (based on 7 d.f. made up of Treatments × Years interaction). (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Av. yield	537	676	720	789	656	690	770	733

Individual results

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	Sig.	G.M.	S E./plot
Year 1960	291	495	456	433	518	461	564	389	*	451	81·2
1961	783	857	985	1146	793	919	975	1076	**	942	87·6
Pooled	537	676	720	789	656	690	770	733	N.S.	696	214·0

Infestation data

60(124)

(i) 5·1 degrees. (ii) 2·1 degrees. (iii) Treatment differences are significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Mean infestation	10·0	5·8	5·6	4·3	3·9	4·0	3·5	4·0

C.D.=3·1 degrees.

61(152)

(i) 7·3 degrees. (ii) 1·2 degrees. (iii) Treatment differences are highly significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Mean infestation	15·1	8·5	7·4	6·5	7·3	8·0	6·5	6·4

C.D.=1·8 degrees.

62(131)

(i)9·9 degrees. (ii) 2·3 degrees. (iii) Treatment differences are significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Mean infestation	13·5	12·0	10·1	8·5	9·3	9·1	9·3	7·6

C.D.=3·4 degrees.

Crop :- Gram (*Rabi*). **Ref :- Bh. 60(125), 61(153).**

Site :- Tal Kadwa (Sabour c.f.) **Type :- 'D'.**

Object :—To study the effect of the different strengths of insecticides on early exposed lands.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat and gram. (c) Nil. (ii) Clayee. (iii) Nil. (iv) Local. (v) (a) 1—2 ploughings. (b) Behind the plough. (c) 74 Kg/ha. (d) 23 cm. between rows. (e) Nil. (vi) 20.11.60 ; 25.11.61. (vii) Unirrigated. (viii) Nil. (ix) 3·52 cm. ; 2·11 cm. (x) 29.3 61 ; 4.5.62.

2. TREATMENTS :

9 insecticidal treatments : T_0=Control, T_1=Diazinon 20 % E.C. at 1·12 Kg/ha., T_2=Diazinon 20 % E.C. at 1·68 Kg/ha., T_3=Diazinon 20 % E.C. at 2·24 Kg/ha , T_4=D.D.T. 25 % E.C. at 6·72 Kg/ha., T_5=D.D.T. at 25 % E.C. at 8·97 Kg/ha., T_6=D.D.T. 25 % E.C. at 11·21 Kg/ha., T_7=D.D.T. 5 % dust at 28·02 Kg/ha. and T_8=Aldrin 5 % dust at 28·02 Kg/ha.

3. DESIGN :

(i) R.B.D., 9, 4. (ii) Purposive. (iii)(a) and (b) 10·06 m. × 10·06 m. ; 101·17 sq.m. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Cut worm pests, control measnre as per treatments. (iii) Total no. of cut plants, yield of grain. (iv) (a) 1960—62 (expt. for 1962—N.A.) (b) No. (c) Nil. (v) No. (vi) and (vii) Yield data for 61—N.A.

5. RESULTS :

Infestation data

60(125)

(i) 8·1 degrees. (ii) 1·1 degrees. (iiii) Treatment differences are significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Mean infestation	15·7	8·5	8·3	8·5	7·3	6·8	6·2	6·0	5·6

C.D.=1·5 degrees.

61(153)

(i) 7·0 degrees. (ii) 2·4 degrees. (iii) Treatment differences are significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Mean infestation	11·8	7·7	5·5	5·8	6·1	6·0	6·4	6·5	8·0

C.D.=3·50 degrees.

Yield data

60(125)

(i) 561 Kg/ha. (ii) 129·1 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Av. yield	528	512	584	597	561	571	671	535	490

———

Crop :- Gram (*Rabi*). **Ref :- Bh. 60(126), 61(164).**

Site :- Tal Kadwa (Sabour c.f.) **Type :- 'D'.**

Object :—To study the effect of different strengths of insecticides on late exposed land.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Wheat and gram. (c) Nil. (ii) Clayee. (iii) Nil. (iv) Local. (v) (a) 1—2 ploughings. (b) Behind the plough. (c) 74 Kg/ha. (d) 23 cm. between rows. (e) Nil. (vi) 25.11.60 ; 15.12.61. (vii) Unirrigated. (viii) Nil. (ix) 4 cm. ; 2 cm. (x) 1.4.61 ; 7.4.62.

2. TREATMENTS:

9 insecticidal treatments : T_0=Control, T_1=Diazinon 20 % E.C. at 1·1 Kg/ha., T_2=Diazinon 20 % E.C. at 1.7 Kg/ha., T_3=Diazinon 20% E.C. at 2·2 Kg/ha., T_4=D.D.T. 25 % E.C. at 6·7 Kg/ha., T_5=D.D.T. 25 % E.C. at 9·0 Kg/ha., T_6=D.D.T. 25 % E.C. at 11·2 Kg/ha., T_7=D.D.T. 5 % dust at 28·0 Kg/ha. and T_8=Aldrin 5 % dust at 28·0 Kg/ha.

3. DESIGN :

(i) R.B.D., 9, 4. (ii) Purposive. (iii) (a) and (b) 10·10 m.×10·10 m. (iv) Yes.

4. GENERAL:

(i) Good. (ii) Cut worm pests, control measure as per treatments. (iii) Yield of grain. (iv) (a) 1960—62 (expt. for 1962—N.A.). (b) No. (c) Nil. (v) Results for combined analysis is presented under 5. Results. (vi) Nil. (vii) Error variances are heterogeneous and Treatments × Years interaction is present.

5. RESULTS:

Pooled results

(i) 418 Kg/ha. (ii) 176·1 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Av. yield	289	352	412	453	494	495	484	453	327

Individual results

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	Sig.	G.M.	S.E./plot
Year 1960	228	259	236	252	304	261	308	216	216	N.S.	253	44·3
1961	351	444	588	654	683	729	659	691	438	**	582	33·2
Pooled	289	352	412	453	494	495	484	453	327	N.S.	418	176·1

Crop :- Gram (*Rabi*). **Ref :- Bh. 64(205), 65(26).**

Site :- Tal Kadwa (Sabour c.f.) **Type :- 'D'.**

Object :—To study the comparative efficacies of different insecticides against the incidence of Gram pod borer (both on plants and pods).

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Nil ; Fallow. (c) Nil. (ii) Loam ; sandy loam. (iii) Nil. (i
ings. (b) Behind the plough. (c) 75 Kg/ha, ; 10 Kg/ha. (d) 23 cm. between rows ; 21 cm. between rows. (e) Nil. (vi) 26.10.64, 13.11.65. (vii) Unirrigated. (viii) Nil ; weeding. (ix) N.A. (x) 15.3.65 ; 18.4.66.

2. TREATMENTS :

6 insecticidal treatments : T_0=Control, T_1=Endrin 0·04 %, T_2=D.D.T. 5 % dust at 28 Kg/ha., T_3=Malathion 0·25 %, T_4=Dimecron 0·03 % and T_5=Hexasen 0·25%.

3. DESIGN :

(i) R.B.D., 6, 4. (ii) Purposive. (iii) (a) and (b) 10·10 m × 5·00 m. ; 50·60 sq. m. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Pod borer, control measure as per treatments. (iii) No. of plants and attacked plants, no. of pods and infested pods. (iv) (a) 1964—65. (b) Yes. (c) Results of combined analysis are presented under 5. Results. (v) and (vi) Nil. (vii) Error variances are homogeneous and Treatments × Years interaction is present.

5. RESULTS :

Pooled results

(i) 10·4 degrees. (ii) 7·1 degrees (based on 5 d.f. made up of Treatments × Years interaction). (iii) Treatment differences are highly significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Mean infestation	24·4	5·0	11·2	4·6	7·8	9·1

C.D. = 12·9 degrees.

Individual results

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	Sig.	G.M.	S.E./plot
Year 1964	21·9	3·9	4·1	3·8	5·4	3·5	**	7·1	2·4
1965	27·0	6·1	18·2	5·4	10·3	14·6	**	13·6	2·4
Pooled	24·4	5·0	11·2	4·6	7·8	9·1	*	10·4	7·1

Crop :- Gram (*Rabi*). **Ref :- Bh. 64(202).**

Site :- Talkadwa, Sabour (Bhagalpur c.f.). **Type :- 'D'.**

Object :—To study the comparative efficacies of different insecticides in different dozes of treatments to control the pest on late exposed land.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat and Gram. (c) Nil. (ii) Loam. (iii) Nil. (iv) Local. (v) (a) 3-4 ploughings. (b) Line sowing. (c) 74 Kg/ha. (d) 23 cm. between rows. (e) Nil. (vi) 26.11.64. (vii) Unirrigated. (viii) Nil. (ix) N.A.. (x) 10.3.65.

2. TREATMENTS ;

9 insecticidal treatments : T_0=Control, T_1=Telodrin 1% dust at 33·6 Kg/ha., T_2=Telodrin 1% dust at 44·8 Kg/ha., T_3=Aldrin 5% dust at 22·4 Kg/ha , T_4=Aldrin 5% dust at 44·8 Kg/ha., T_5=Heptachlore 3% dust at 33·6 Kg/ha., T_6=Heptachlore 3% dust at 67·2 Kg/ha., T_7=Chlordane 5% dust at 44 8 Kg/ha. and T_8=B.H.C. 5% dust at 44·8 Kg/ha.

Time of application : 26.11.64.

3. DESIGN :

(i) R.B.D., 9, 6. (ii) Purposive. (iii) (a) and (b) 10·10 m.×5·00 m. (iv) Yes.

4. GENERAL:

(i) Good. (ii) Cut worm pest, control measure as per treatments. (iii) Total no. of plants in 4 random samples, total no. of cut plants. (iv) (a) 1964—65 (expt. for 65—N.A.). (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 11·2 degrees. (ii) 4·5 degrees. (iii) Treatment differences are highly significant, (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Mean infestation	28·0	11·3	2·8	8·6	5·1	10·0	5·6	11·2	17·8

C.D.=5·3 degrees.

Crop :- Gram (*Rabi*). **Ref :- Bh, 65(25).**

Site :- Tal Berhel, Sabour (Bhagalpur c.f.). **Type :- 'D'.**

Object :—To find out the comparative efficacies of different chemicals in controlling the pest on Gram.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (iv) Local. (v) (a) 2—3 ploughings. (b) Line sowing. (c) 35 Kg/ha. (d) 23 cm. between rows. (e) —. (vi) 12.11.65. (vii) Unirrigated. (viii) Weedings (ix) N.A. (x) 15.4.66.

2. TREATMENTS :

6 insecticidal treatments : T_0=Control, T_1=Telodrin 1% dust at 28·02 Kg/ha., T_2=Aldrin 5% dust at 28·02 Kg/ha., T_3=Heptachlor 6% dust at 28·02 Kg/ha., T_4=Chlordane 5% dust at 28·02 Kg/ha. and T_5=B.H.C. 5% dust at 28·02 Kg/ha.

3. DESIGN :

(i) R.B.D., 6, 5. (ii) N.A. (iii) (a) and (b) 50·58 sq. m. (iv) Yes.

4. GENERAL :

(i) Good. (ii) Cut worm. (iii) Percentage of incidence pest, yield of grain. (iv) 1963—65 (Expts. for 1963 and 64—N.A.). (b) Yes. (c) Nil. (v) No. (vi) and (vii) Nil.

5. RESULTS :

Yield data

(i) 1358 Kg/ha. (ii) 327·4 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	
Av. yield	457	1979	1675	1523	1523	990	C.D.=431·9 Kg/ha.

Infestation data

(i) 16·0 degrees. (ii) 2·5 degrees. (iii) Treatment differences are highly significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	
Mean infestation	33·3	6·8	11·7	12·2	12·4	19·6	C.D.=3·3 degrees.

Crop :- Arhar (*Kharif*). **Ref :- Bh. 60(226).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object : —To find out the responses of *kharif* crops to liming.

1. BASAL CONDITIONS

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Red loam. (iii) 17.6.60. (iv) (a) 3 ploughings. (b) Line sowing. (c) 15 Kg/ha. (d) Rows 60 cm. apart. (e) —. (v) Nil. (vi) BR—13. (vii) Un-irrigated. (viii) 2 weedings. (ix) N.A. (x) 6.1.61.

2. TREATMENTS :

4 manurial treatments : T_0=Control, T_1=4035 Kg/ha. of Lime, T_2=45 Kg/ha. of N as A/S +45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. and $T_3=T_1+T_2$.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 5. (iv) (a) and (b) 20·24 sq. m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1958—60. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 336 Kg/ha. (ii) 55·9 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	
Av. yield	32	305	233	772	C.D.=77·0 Kg/ha.

Crop :- Arhar (*Rabi*). **Ref :- Bh. 63 (148).**

Site :- Sub-divisional farm, Latehar. **Type :- 'M'.**

Object :—To study the effect of inoculation with root modul bacteria on the yield of Arhar.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Clayey loam. (iii) 17.11.63. (iv) (a) 3—4 ploughings. (b) Line sowing. (c) 14 Kg/ha. (d) Rows 61 cm. apart. (e) —. (v) 22·5 Kg/ha of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (vi) BR—65. (vii) Un-irrigated. (viii) Weedings. (ix) N.A. (x) 3.4.64.

2. TREATMENTS :

5 manurial treatments : T_0=Control, T_1=Seed inoculation, $T_2=T_1+45$ Kg/ha. of P_2O_5 as Super, $T_3=T_2+896{\cdot}6$ Kg/ha. of Lime and $T_4=T_3+2{\cdot}2$ Kg/ha. of Moly.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) and (b) 40·47 sq. m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1963—only. (b) and (c) —. (v) to Nil.

5. RESULTS :

(i) 1174 Kg/ha. (ii) 68·2 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	
						C.D.=82·2 Kg/ha.
Av. yield	790	1050	1196	1327	1509	

Crop :- Arhar (*Kharif*). **Ref :- Bh. 65(115).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'D'.**

Object : —To evaluate the effect of weedicides on weed population and yield of upland crop Arhar.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) Nil. (ii) Red loam. (iii) 24.6.65. (iv) (a) 3 ploughings. (b) Line sowing. (c) 70 Kg/ha. (d) 91 cm.×31 cm. (v) 22·5 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (vi) BR—183. (vii) Irrigated. (vii) Weeding and hoeing. (ix) N.A. (x) 28.12.65.

2. TREATMENTS:

10 weedicidal treatments : T_0=Control, T_1=1·1 Kg/ha. of Simazin, T_2=1·1 Kg/ha. of Atragim, T_3=3·4 Kg/ha of Seasone, T_4=4·5 Kg/ha. of CP 31393, T_5=1·1 Kg/ha. of Lorax, T_6=3·4 Kg/ha. of Tillam, T_7=2·2 Kg/ha. of Eptam, T_8=1·1 Kg/ha. of Simazin (Pre-emergence)+4·5 Kg/ha. of Tofapen (Post-emergence) and T_9=Hand weeding.

3. DESIGN :

(i) R.B.D. (ii) (a) 10, (b) N.A. (iii) 4. (iv) (a) 4·27 m.×2·74 m. (b) 3·66 m.×2·74 m. (v) 30 cm. on either side. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Weed population, yield of grain and straw. (iv) (a) 1965—contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 3070 Kg/ha. (ii) 493·2 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9
Av. yield	3370	3246	2430	1266	3193	3570	3353	3492	3328	3448

C.D.=715·6 Kg/ha.

Crop :- Arhar (*Kharif*). **Ref :- Bh. 64(208), 65(105):**

Site :- Agri. Res. Instt., Kanke. **Type :- 'D'.**

Object :—To evaluate the effect of weedicides on weed population and yield of upland crop of Arhar.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton, Arhar. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. ; 22·5 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (ii) Sandy loam ; Red loam. (iii) 26.6.64 ; 23.6.65. (iv) (a) 3 ploughings. (b) Line sowing. (c) 18 Kg/ha. (d) 61 cm.×61 cm. ; 91 cm.×31 cm. (e) Nil. (v) 22·5 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super +45 Kg/ha. of K_2O as Mur. Pot. (vi) BR—65 ; BR—183. (viii) Weeding and Hoeing. (ix) 108·5 cm. ; N.A. (x) 25.12.64 ; 28.12.65.

2. TREATMENTS :

10 weedicidal treatments : T_0=Control, T_1=1·1 Kg/ha. of Simazin (Pre-emergenee) in 898·4 litres of water, T_2=7·0 Kg/ha. of Tok—E—25 (pre-emergence) in 898·4 litres of water, T_3=3·0 pints/ha. of Gramexine (pre-emergence) in 898·4 litres of water, T_4=T_1+2·2 Kg/na. of Tofapen (post-emergence) in 898·4 litres of water, T_5=T_2+2·2 Kg/ha. of Tofapen (post emergence) in 898·4 litres of water, T_6=2 pints/ha. of Reglone (pre-emergence) in 336·9 litres of water, T_7=1·1 Kg/ha. of Karmex W (pre-emergence) in 898·4 litres of water, T_8=1·1 Kg/ha. of Karmex DW (pre-emergence) in 898·4 litres of water and T_9=Hand weeding.

3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 3. (iv) (a) 3·66 m.×3·05 m. for 64, 3.96 m.×3·05 m. for 65. (b) 3·66 m.×3·05 m. for 64, 3·35 m.×3·05 m. for 65. (v) Nil ; 30 cm. on either side. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Weeds population, yield of grain. (iv) (a) 1964—contd. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Since the experiment is continued beyond 65, hence individual years results are presented under 5. Results.

5. RESULTS :

64(208)

(i) 1843 Kg/ha. (ii) 549·0 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9
Av. yield	1289	2338	1715	1076	2389	1952	1976	1454	1967	2272

65(105)

(i) 819 Kg/ha. (ii) 385·6 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9
Av. yield	502	424	1041	757	940	1651	685	297	936	953

C.D.=66·1 Kg/h.

Crop :- Arhar (*Rabi*). **Ref :- 64(23).**

Site :- Govt. Agri. Farm, Pipra Kothi. **Type 'D'.**

Object :—To study the effect of legume inoculation on the yield of Arhar.

1. BASAL CONDITIONS:

(i) and (ii) N.A. (iii) 25.7.64. (iv) (a) to (e) N.A. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) 2 Interculturings. (ix) and (x) N.A.

2. TREATMENTS:

7 weedicidal treatments: T_0=Control, T_1=Inoculation with culture No. 1 (Microbiological), $T_2=T_1+44·8$ Kg/ha. of P_2O_5 as Super, $T_3=T_2+2·5$ Kg/ha. of Ammonium Molybdate, T_4=Inoculation with culture No. 2 (Microbiological), $T_5=T_4+44·8$ Kg/ha. of P_2O_5 as Super and $T_6=T_5+2·5$ Kg/ha. of Ammonium Molybdate.

3. DESIGN:

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 5·54 m.×1·83 m. (v) N.A. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1964—contd. (expt. for 65—N.A.). (b) Yes. (c) Nil. (v) Latehar. (vi) and (vii) Nil.

5. RESULTS:

(i) 2660 Kg/ha. (ii) 608·7 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	2755	2656	2817	2446	3039	2668	2236

Crop :- Kalai (*Kharif*). **Ref :- Bh. 60(225).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object .—To find out the responses of liming on Kalai crop.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Red loam. (iii) 14.7.60. (iv) (a) 3 ploughings. (b) Line sowing. (c) 20 Kg/ha. (d) 45 cm. between rows. (e)—. (v) Nil. (vi) Local. (vii) Un-irrigated. (viii) 2 weedings. (ix) N.A. (x) 20.10.60.

2. TREATMENTS:

10 manurial treatments: T_0=Control, T_1=4035 Kg/ha. of lime, T_2=45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. and $T_3=T_1+T_2$.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 5. (iv) (a) and (b) 20·2 sq. m. (v) Nil. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1958—60 (Treatments modified in 1960). (b) Yes. (c) Nil. (v) Netarhat. (vi) and (vii) Nil.

5. RESULTS:

(i) 276 Kg/ha. (ii) 80·3 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3
Av. yield	144	305	320	334

C.D.=110·7 Kg/ha.

Corp :- Kalai (*Kharif*). **Ref :- Bh. 60(311).**

Site :- Netarhat Farm, Netarhat. **Type :- 'M'.**

Object :—To find out the effect of lime on Kalai.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Red loam. (iii) 9.7.60. (iv) (a) 3—4 ploughings. (b) Line sowing. (c) 90 Kg/ha. (d) 23 cm. between rows. (e) —. (v) N.A. (vi) Local. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 13.11.60.

2. TREATMENTS :

10 manurial treatments: T_0=Control, T_1=Lime 4000 Kg/ha., T_2=11·2 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. and $T_3=T_1+T_2$.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 5. (iv) (a) and (b) 10·96 m.×3·66 m. (v) Nil. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1960—only. (b) and (c) —. (v) to (vii) Nil.

5. RESULTS :

(i) 503 Kg/ha. (ii) 171·1 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3
Av. yield	448	520	531	513

Crop :- Kalai (*Kharif*). **Ref :- Bh. 63(18), 64(77), 65(78).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'M'.**

Object :—To determine the effect of heavy Phosphatic manuring of *Kharif* legumes on the succeeding *Rabi* cereals.

1. BASAL CONDITIONS :

(i) (a) Nil for 63 ; Kalai—Wheat for others. (b) Maize for 63 ; Wheat for others. (c) 44·8 Kg/ha. of N as A/S+44·8 Kg/ha. of K_2O as Mur. Pot.; 45·0 Kg/ha. of N as A/S+45·0 Kg/ha. of P_2O_5 as Super ; Nil. (ii) Sandy loam. (iii) 10.9 63 ; 17.8.64 ; 10.8.65. (iv) (a) 3 to 4 ploughings for 63 and 65, 3 spadings for 64. (b) Line sowing (c) 20 Kg/ha. (d) 30 cm. between rows. (e) —. (v) Nil. (vi) Tinpakhia. (vii) Irrigated for 63 ; unirrigated for others. (viii) Weeding by *khurpi*. (ix) 5·0 cm. ; 34·0 cm. ; N.A. (x) 25.11.63 ; 26.10.64 ; 13.11.65.

2. TREATMENTS :

4 manurial treatments: T_0=Control, T_1=11·2 Kg/ha. of N as A/S, T_2=11·2 Kg/ha. of N as A/S+56·0 Kg/ha. of P_2O_5 as Super and T_3=11·2 Kg/ha. of N as A/S+112·1 Kg/ha. of P_2O_5 as Super.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 4·27 m.×3·35 m. (b) 3·66 m.×2·74 m.. (v) 30 cm.× 30 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil, (iii) Yield of grain. (iv) (a) 1963—65. (b) Yes. (c) Nil. (v) No. (vi) Nil. (vii) As the error variances are heterogeneous and Treatments×Years interaction is absent, individual year results are presented under 5. Results.

5. RESULTS :

63(18)

(i) 1080 Kg/ha. (ii) 215·8 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3
Av. yield	1113	1130	946	1130

64(77)

(i) 893 Kg/ha, (ii) 105·6 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3
Av. yield	930	897	897	847

65(78)

(i) 743 Kg/ha. (ii) 138·9 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3
Av. yield	743	726	760	743

Crop :- Kalai (*Rabi*). **Ref :- Bh. 63(56).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'M'.**

Object :—To find out the suitability of different kinds of Phosphate on the yield of Kalai.

1. BASAL CONDITIONS :

(i) (a) Kalai—Wheat. (b) Wheat. (c) N.A. (ii) N.A. (iii) 14.11.63. (iv) (a) 2 ploughings. (b) Line sowing. (c) to (e) N.A. (v) and (vi) N.A. (vii) Unirrigated. (viii) Weeding. (ix) N.A. (x) 20.3.64.

2. TREATMENTS ;

Same as in Expt. No. 63(18) at Sabour on page 509.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 5. (iv) (a) 4·27 m.×3·35 m. (b) 3·66 m.×2·74 m. (v) 30 cm.× 30 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of grain. (iv) (a) 1962--63 (expt. for 1962—N.A.) (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1046 Kg/ha. (ii) 221·3 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3
Av. yield	1136	1096	897	1056

Crop :- Kalai (*Kharif*). **Ref :- Bh. 63(21).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'M'.**

Object :—To find out the suitablitity of different forms of phosphatic fertilizers in different soil regions.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) 12.9.63. (iv) (a) 3 spadings. (b) Line sowing by spade. (c) 46 Kg/ha. (d) N.A. (e) —. (v) N.A. (vi) Tinpakhai. (vii) Irrigated. (viii) Weeding by *khurpi*. (ix) 39 cm. (x) 25.11.63.

2. TREATMENTS :

4 manurial treatments : T_0=Control, T_1=11·2 Kg/ha. of N as A/S, T_2=11·2 Kg/ha. of N as A/S+ 56·0 Kg/ha. of P_2O_5 as Super and T_3=11·2 Kg/ha. of N as A/S+112·1 Kg/ha. of P_2O_5 as Super.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 4·27 m.×3·35 m. (b) 3·66 m.×2·74 m. (v) 30 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of heavy cutter piller, Endrine (E 60) sprayed. (iii) Yield of grain. (iv) (a) 1963-only. (b) and (c) —. (v) to (vii) Nil.

5. RESULTS :

(i) 1960 Kg/ha. (ii) 222·3 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3
Av. yield	1478	1993	2176	2192

C.D.=273·5 Kg/ha.

Crop :- Kalai (*Kharif*). **Ref :- Bh. 64(88), 65(73).**

Site :- Agri, Res. Instt., Sabour. **Type :- 'M'.**

Object :—To test the effect of trace elements on the yield of Kalai.

1. BASAL CONDITIONS :

(i) (a) Kalai—Barley. (b) Barley. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (ii) Sandy loam. (iii) 28.8.64 ; 1.9.65. (iv) (a) 3 ploughings. (b) Line sowing. (c) N.A. 23 Kg/ha. (d) 45 cm. between rows ; 25 cm. between rows. (e) N.A. ; 2. (v) Nil. (vi) Tinpathia. (vii) Un-irrigated. (viii) Weeding. (ix) N.A. (x) 23.11.64 ; 16.11.65.

2. TREATMENTS :

14 manurial treatments : T_0=Control, T_1=11·2 Kg/ha. of N as A/S+45·0 Kg/ha. of P_2O_5 as Super+45·0 Kg/ha. of K_2O as Mur. Pot., T_2=T_1+11·2 Kg/ha. of Mn SO_4, T_3=T_1+22·5 Kg/ha. of Mn SO_4, T_4=T_2+11·2 Kg/ha. of Zn SO_4, T_5=T_1+22·5 Kg/ha. of Zn SO_4, T_6=T_1+11·2 Kg/ha. Borax, T_7=T_1+22·5 Kg/ha. of Borax, T_8=T_1+11·2 Kg/ha. of Cu So_4, T_9=T_1+22·5 Kg/ha. of Cu So_4, T_{10}=T_1+11·2 Kg/ha. of Fe So_4, T_{11}=T_1+22·5 Kg/ha. of Fe So_4, T_{12}=T_1+1·1 Kg/ha. of Ammo. Molyb., T_{13}=T_1+2 2 Kg/ha. of Ammo. Molyb., T_{14}=T_1+11·2 Kg/ha. of Mn So_4+11·2 Kg/ha. of Zn So_4+11·2 Kg/ha. of Borax+11·2 Kg/ha. of Cu So_4+11·2 Kg/ha. of Fe So_4+11·2 Kg/ha. of Ammo. Molyb. and T_{15}=T_1+22·5 Kg/ha. of Mn So_4+22·5 Kg/ha. of Zn So_4+22·5 Kg/ha. of Borax+22·5 Kg/ha. of Cu So_4+22·5 Kg/ha. of Fe So_4+2·2 Kg/ha. of Ammo. Molyb.

3. DESIGN :

(i) R.B D. (ii) (a) 16. (b) N.A. (iii) 3. (iv) (a) 15·24 m.×4·45 m. ; 3·96 m.×15·24 m. (b) 14·63 m.×3·45 m. ; 3·45 m.×16·63 m. (v) 30 cm.×30 cm. ; 61 cm.×61 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Catter piller at flowering stage, folidol was sprayed. (iii) Yield of grain. (iv) (a) 1964—65. (b) No. (c) Nil. (v) No. (vi) Nil. (vii) As the error variances are heterogeneous and Treatments×Years interaction is absent, the individual year results are presented under 5. Results.

5. RESULTS :

64(88)

(i) 611 Kg/ha. (ii) 76·6 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Av. yield	594	613	600	587	580	699	633	693
	T_8	T_9	T_{10}	T_{11}	T_{12}	T_{13}	T_{14}	T_{15}
	567	561	567	561	660	574	607	673

65(73)

(i) 312 Kg/ha. (ii) 141·9 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Av. yield	330	376	350	370	224	357	172	442
	T_8	T_9	T_{10}	T_{11}	T_{12}	T_{13}	T_{14}	T_{15}
	330	416	198	304	304	363	284	178

Crop :- Kalai (*Kharif*). **Ref :- Bh. 64(76), 65(77).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'M'.**

Object :—To study the effect of different forms and levels of Phoshate on the yield of *Kalai*.

1. BASAL CONDITIONS :

(i) (a) Wheat—*Kalai*. (b) Wheat. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super ; As per treatments. (ii) N.A. ; Sandy loam. (iii) 18.8.64 ; 13.8.65. (iv) (a) 2—3 ploughings. (b) Line sowing. (c) 20 Kg/ha. ; 23 Kg/ha. (d) 45 cm. between rows ; 30 cm. between rows. (e) —. (v) Nil. (vi) *Tinpathia* ; N.A. (vii) Unirrigated. (viii) Weeding by *khurpi*. (ix) 34 cm. ; N.A. (x) 27.10.64 ; 12.11.65.

2. TREATMENTS :

All combinations of (1) and (2) in presence of 11·2 Kg/ha. of N as A/S+2 extra treatments

(1) 3 levels of P_2O_5 : P_1=44·8, P_2=67·2 and P_3=89·7 Kg/ha.

(2) 2 sources of P_2O_5 : S_1=Super and S_2=Dicalcium Phosphate.

2 extra treatments : E_0=Control and E_1=11·2 Kg/ha. of N as A/S.

3. DESIGN:

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 4·27 m.×3·35 m. (b) 3·66 m.×2·74 m. (v) 30 cm. alround the plot. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1964–65. (b) No. (c) Nil. (v) No. (vi) Nil. (vii) As the error variances are heterogeneous and Treatments×Years interaction is absent, the individual year results are presented under 5. Results.

5. RESULTS :

64(76)

(i) 990 Kg/ha. (ii) 106·6 Kg/ha. (iii) Interaction P×S is significant. (iv) Av. yield of grain in Kg/ha.

E_0=897 and E_1=972 Kg/ha.

	P_1	P_2	P_3	Mean
S_1	1046	972	1022	1013
S_2	872	1071	1071	1005
Mean	959	1022	1046	1009

C.D. of the body of P×S table=78·4 Kg/ha.

65(77)

(i) 692 Kg/ha. (ii) 216·6 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

E_0=673 and E_1=598 Kg/ha.

	P_1	P_2	P_3	Mean
S_1	748	723	573	681
S_2	773	773	673	740
Mean	760	748	623	711

Crop :- Kalai (*Rabi*). **Ref :- Bh. 63(54).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'M'.**

Object :—To study the effect of different forms and levels of Phosphate on the yield of *Kalai*.

1. BASAL CONDITIONS:

(i) (a) Wheat—*Kalai*. (b) Wheat. (c) N.A.(ii) N.A. (iii) 19.11.63. (iv) (a) 2 ploughings. (b) Line sowing. (c) N.A. (d) 45 cm.×30 cm. (e) —. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) 1 weeding. (ix) N.A. (x) 5.3.64.

2. TREATMENTS:

All combinations of (1) and (2) in presence of 11·2 Kg/ha. of N as A/S+2 extra treatments.
(1) 3 levels of P_2O_5 : P_1=44·8, P_2=67·5 and P_3=89·7 Kg/ha.
(2) 2 sources of P_2O_5 : S_1=Super and S_2=Dicalcium Phos.

2 extra treatments : E_0=Control and E_1=11·22 Kg/ha. of N as A/S.

3. DESIGN:

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 4·27 m.×3·35 m. (b) 3·66 m.×2·74 m. (v) 30 cm.×30 cm. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1963—only. (b) and (c) —. (v) to (vii) Nil.

5. RESULTS:

(i) 1121 Kg/ha. (ii) 119·6 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha

E_0=997 and E_1=1121 Kg/ha.

	P_1	P_2	P_3	Mean
S_1	1121	1071	1096	1096
S_2	1221	1196	1146	1188
Mean	1171	1134	1121	1142

Crop :- Moong (*Kharif*). **Ref :- Bh. 60(292).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object :—To test the effect of seed inoculation with root nodule bacteria with and without Phosphate Molybdenum and Lime.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Red loam. (iii) 29.7.60. (iv) (a) 3—4 ploughings. (b) Line sowing. (c) 25 Kg/ha. (d) 30 cm. between rows. (e) —. (v) 22·5 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super +45 Kg/ha. of K_2O as Mur. Pot. (vi) Local. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 18.9.60.

2. TREATMENTS:

5 manurial treatments : T_0=Control, T_1=Seed inoculation, T_2=Seed inoculation+45 Kg/ha. of P_2O_5 as Super. T_3=T_1+900 Kg/ha. of Lime and T_4=T_3+seed inoculation.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) and (b) 50·58 sq. m. (v) Nil. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1959—60. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 114 Kg/ha. (iii) 33·3 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4
Av. yield	27	26	92	203	220

C.D.=40·1 Kg/ha.

Crop :- Moong (*Kharif*). **Ref :- Bh. 60(227).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object :—To find out the responses of *kharif* crop to liming.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil, (ii) Red loam. (iii) 8.7.60. (iv) (a) 3 ploughings. (b) Line sowing. (c) 20 Kg/ha. (d) Rows 45 cm. apart. (e) —. (v) Nil. (vi) Local. (vii) Unirrigated. (viii) 2 weedings. (ix) N.A. (x) 11.9.60.

2. TREATMENTS :

4 manurial treatments : T_0=Control, T_1=4035 Kg/ha. of Lime, T_2=45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. and $T_3=T_1+T_2$.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 5. (iv) (a) and (b) 20·24 sq. m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1958—60. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 180 Kg/ha. (ii) 61·8 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3
Av. yield	58	268	98	297

C.D.=85·2 Kg/ha.

Crop :- Moong (*Kharif*). **Ref :- Bh. 63(183), 64(226).**

Site :- Agri. Res. Instt., Kanke. **Tyye :- 'D'.**

Object :—To find out the effect of seed dressing and spraying against *Moong* leaf blight.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) *Moong*. (c) Same as in the present expt. (ii) Sandy loam. (iii) 3.8.63; 31.7.64. (iv) (a) 3—4 ploughings. (b) Line sowing. (c) 6·2 Kg/ha. (d) 23 cm.×46 cm. (e) —. (v) 135 Kg/ha. of N as A/S+269 Kg/ha. of P_2O_5 as Super+90 Kg/ha. of K_2O as Mur. Pot.+2 Cart load/ha. of Compost. (vi) NP—36. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) 67·3 cm., 95·2 cm. (x) 12 to 23.10.63; 30·10.64 to 1.11.64.

2. GENERAL:

5 weedicidal treatments: T_0=Control, T_1=Hot water treatment at 55°C for 5 minutes, T_2=T_1+3 sprayings of Bordeaux mixture (5 : 5 : 50), T_3=T_1+3 sprayings of Dithane Z—18 at 0·64 Kg. in 1123 lit. of water/ha. and T_4=T_1+3 sprayings of spersul 2·27 Kg in 1123·6 lit. of water/ha.

Time and method of application: 1st spray at disease appearance and others 20 days interval.

3. DESIGN:

(i) R.B.D. (ii) (a) 5. (b) 22·25 m.×11·12 m. (iii) 5. (iv) (a) and (b) 10·36 m.×4·90 m. (v) Nil. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Leaf blight, Control measure as per treatments. (iii) Incidence disease on *Moong* leaf, yield of grain. (iv)(a) 1963—64. (b) Yes. (c) Nil. (v) No. (vi) Nil. (vii) As the error variances are heterogeneous and Treatments×Years interaction is absent, the results of individual years are presented under 5. Results.

5. RESULTS:

Yield data

63(183)

(i) 612 Kg/ha. (ii) 100·5 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	
Av. yield	548	594	751	586	580	C.D.=134·8 Kg/ha.

64(226)

(i) 508 Kg/ha. (ii) 64·5 Kg/ha. (ii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	
Av. yield	379	474	678	526	483	C.D.=86·5 Kg/ha.

Infestation data

63(183)

(i) 57·5 degrees. (ii) 3·3 degrees. (iii) Treatment differences are highly significant. (iv) Mean disease incidence on *Moong* leaf in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	
Mean infestation	64·6	62·7	40·4	59·6	60·1	C.D.=4·4 Degrees.

64(226)

(i) 41·7 degrees. (ii) 6·0 degrees. (iii) Treatment differences are significant. (iv) Mean disease incidence on *Moong* leaf in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	
Mean infestation	44·0	46·6	31·2	40·3	46·5	C.D.=8·0 degrees.

Crop :- Moong (*Kharif*), **Ref :- Bh. 62(148).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'D'.**

Ob)ect :—To find out the effect of seed dressing and spraying against *Moong* leaf blight.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Moong*. (c) Same as in the present experiment. (ii) Sandy loam. (iii) 12·7.62. (iv) (a) 3—4 ploughings. (b) Line sowing. (c) 6 Kg/ha. (d) 46 cm.×23 cm. (e) —. (v) 135 Kg/ha. of A/S+35 8 Kg/ha. of Super+90 Kg/ha. of Mur. Pot. (vi) NP—36. (vii) Unirrigated. (viii) Weeding and earthing up. (ix) 63·3 cm. (x) 20.9.62.

2. TREATMENTS:

10 weedicidal treatments : T_0=Control T_1=Seed dressing with Agroson 'GR.', $T_2=T_1+3$ sprayings of Bordeaux mixture (5 : 5 : 50), $T_3=T_1+3$ sprayings of Colloidal Sulpher 2·27 Kg. in 1123 lit. of water/ha., $T_4=T_1+3$ sprayings of Diethane Z—18, at 0·64 Kg. in 1123 lit. of water/ha., T_5=Hot. water treatment at 55°C for 5 minutes, $T_6=T_5+3$ sprayings of Bordeaux mixture (5 : 5 : 50), $T_7=T_5+$ 3 sprayings of Colloidal Sulpher 2·27 Kg. in 1123 lit. of water/ha., $T_8=T_5+$ 3 sprayings of Diethane Z–18 at 0·64 Kg. in 1123 lit. of water/ha. and T_9=Agroson 'GR.'+water spraying.

Time and method of application : Ist spray at the time of disease appearance+others at 20 days interval.

3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) 22·25 m.×11·12 m. (iii) 3. (iv) (a) and (b) 10·36 m.×4·88 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Leaf blight, control measure as per treatment. (iii) Incidence disease on *Moong* leaf and stem, yield of grain. (iv) (a) 1962—only. (b) and (c) —. (v) to (vii) Nil.

5. RESUTS :

Infestation data on *Moong* leaf.

(i) 45·4 degrees. (ii) 3·1 degrees. (iii) Treatment differences are significant. (iv) Mean incidence of disease on *Moong* leaf in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9
Mean infestation	46·5	45·7	46·5	44·1	46·4	40·4	39·7	44·5	49·5	51·0

C.D.=5·3 degrees.

Infestation data on *Moong* stem.

(i) 28·4 degrees. (ii) 3·0 degrees. (iii) Treatment differences are significant. (iv) Mean incidence disease on *Moong* stem in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9
Mean infestation	29·2	30·9	32·0	28·4	26·6	30·6	29·6	28·5	24·0	24·1

C.D.=5·1 degrees.

Yield data

(i) 215 Kg/ha. (ii) 91·1 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9
Av. yield	222	239	335	200	197	144	157	241	111	299

Crop :- Moong (*Kharif*). **Ref :- Bh. 60(145), 61(173).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'D'.**

Object :—To find out the effect of seed dressing and spraying against *Moong* leaf blight.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Moong*. (c) Same as in the present expt. (ii) Sandy loam. (iii) 3 to 5.9.60 ; 27/28.7.61. (iv) (a) 3—4 ploughings. (b) Line sowing. (c) 6 17 Kg/ha. (d) 46 cm. × 23 cm. (e) —. (v) 135 Kg/ha. of A/S+358 Kg/ha. of Super+90 Kg/ha. of Mur. Pot.+2 C.L./ha. of Compost. (vi) NP—36. (vii) Unirrigated. (viii) Weeding and earthing up. (ix) 24·2 cm ; 112·5 cm. (x) 22.11.60 to 3.12.60 ; 12.10 61 to 30.11.60.

2. TREATMENTS :

6 weedicidal treatments : T_0=Control, T_1=Seed dressing with Agroson, T_2=T_1+3 sprayings of Bordeaux mixture (5 : 5 : 50), T_3=T_1+3 sprayings of Diethane Z—78 at 0·9 Kg. in 1123 lit. of water/ha., T_4=T+3 sprayings of Colloidal Sulpher at 2·3 Kg. in 1123 lit. of water/ha. and T_5=Hot water treatment at 55°C.

Time and method of application : Ist spray at disease appearence and others at 20 days interval.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) 22·25 m. × 11·12 m. (iii) 6. (iv) (a) and (b) 10·36 m. × 4·88 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Leaf blight, control measure as per treatment. (iii) Incidence of disease on *Moong* leaf, yield of grain. (iv) (a) 1960—61. (b) Yes. (c) Results of combined analysis are present under 5. Results. (v) No. (vi) Nil. (vii) Error variances are heterogeneous and Treatments × Years interaction is present,

5. RESULTS :

Yield data

Poold results

(i) 437 Kg/ha. (ii) 425·9 Kg/ha. (based on 5 d.f. made up of Treatments × Years interaction) (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. yield	491	406	497	453	437	335

Individual results

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	Sig.	G.M.	S.E./plot
Year 1960	215	90	92	174	156	299	**	171	73 9
1961	766	722	903	733	718	370	*	702	221·0
Pooled	491	406	497	453	437	335	N.S.	437	425·9

Infestation data on *Moong* leaf.

60(145)

(i) 42·6 degrees. (ii) 2·8 degrees. (iii) Treatments differences are significant. (iv) Mean incidence on *Moong* leaf in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Mean infestation	43·7	40·9	40·3	41·6	43·4	45·5

C.D.=3·3 degrees.

61(173)

(i) 42·1 degrees. (ii) 3·9 degrees. (iii) Treatment differences are not significant. (iv) Mean incidence on *Moong* leaf in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Mean infestation	44·2	42·7	38·4	40·4	41·7	44·8

Crop :- Masur (*Rabi*). **Ref :- 60(302), 61(304).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object :—To find out the response of *Rabi* crop to liming.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Red loam. (iii) 13.10.60 ; 7.11.61. (iv) (a) 3—4 ploughings. (b) Line sowing. (c) 60 Kg/ha. (d) 23 cm. between rows (e) —. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (vi) BR—25. (vii) Un-irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 21.2.61 ; 18.2.62.

2. TREATMENTS :

4 manurial treatments: T_0=Control, T_1=4000 Kg/ha. of Lime, T_2=45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. and $T_3=T_1+T_2$.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 5. (iv) (a) and (b) 20·23 sq. m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1958—61. (b) No. (c) Results of combined analysis are presented under 5. Results. (v) No. (vi) Nil. (vii) Expts. for 58,59 have also been considered for pooled analysis. Error variances are heterogeneous and Treatments × Years interaction is present.

5. RESULTS :

Poaled results

(i) 535 Kg/ha. (ii) 464·3 Kg/ha. (based upon 9 d.f. made up of Treatments × Years interaction). (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3
Av. yield	165	400	583	992

C.D.=664·2 Kg/ha.

Individual results

Treatment	T_0	T_1	T_2	T_3	Sig.	G.M.	S.E./plot
Year							
1960	187	649	711	1533	**	770	143·1
1961	196	357	929	1038	**	630	176·5
Pooled	165	400	583	992	**	535	464·3

Crop :- Kulthi (*Kharif*). **Ref :- Bh. 60(234), 61(314).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object : To find out the response of *Kharif* crop to liming.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize ; Fallow. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super ; Nil. (ii) Red loam. (iii) 15.9.60 ; 5.9.61. (iv) (a) 3 ploughings. (b) Line sowing. (c) 20 Kg/ha. ; 90 Kg/ha. (d) 38 cm. between rows ; 23 cm. between rows. (e) —. (v) Nil. (vi) Local. (vii) Unirrigaied ; Irrigated. (viii) 2 weedings ; weeding and hoeing. (ix) N.A. (x) 12.12.60 ; 25.12.61.

2. TREATMENTS:

4 manurial treatments: T_0=Control, T_1=4035 Kg/ha. of Lime, T_2=11·2 Kg/ha. of N as A/S for legume+45 Kg/ha. of N as A/S for other crops+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. and $T_3=T_1+T_2$.

3. DESIGN :

(i) R.B.D. (iii) 4. (b) N.A. (iii) 5. (iv) (a) and (b) 20·24 sq. m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1960—61. (b) Yes. (c) Nil. (v) No. (vi) Nil. (vii) Error variances are heterogeneous and Treatments × Years interaction is absent. Hence individual year results are presented under 5. Results.

5. RESULTS :

60(234)

(i) 317 Kg/ha. (ii) 49·1 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	
Av. yield	184	311	300	472	C.D.=67·7 Kg/ha.

61(314)

(i) 216 Kg/ha. (ii) 120·9 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	
Av. yield	77	166	190	433	C.D.=166·6 Kg/ha.

Crop :- Pea (*Rabi*). **Ref :- Bh. 64(19), 65(150).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object :—To test the effect of deep placement of fertilizers on the yield of Pea crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) N.A. ; Fallow. (c) Nil. (ii) N.A. ; Red loam. (iii) 19.11.64 ; 20.10.65. (iv) (a) N.A. ; 3—4 ploughings. (b) N.A. ; Line sowing. (c) N.A. ; 90 Kg/ha. (d) N.A. ; 30 cm. between rows. (e) —. (v) 22·5 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (vi) BR—12. (vii) Irrigated. (viii) Interculturing and weeding ; weeding and hoeing. (ix) N.A. (x) 25.3.65 ; 10.3.66.

2. TREATMENTS :

3 manurial treatments: T_0=Control, T_1=45 Kg/ha. of P_2O_5 as Super at surface, T_2=45 Kg/ha. of P_2O_5 as Super at plough depth.

3. DESIGN :

(i) R B.D. (ii) (a) 3. (b) N.A. (iii) 4 ; 6. (iv) (a) N.A. ; 25·30 sq. m. (b) 9·14 m.×4·88 m. ; 25·30 sq. m. (v) N.A. ; Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of Pea-pods. (v) (a) 1964—65. (b) Yes. (c) Results of combined analysis are presented under 5. Results. (v) No. (vi) Nil. (vii) Error variances are homogeneous and Treatments ×Years interaction is present.

5. RESULTS :

Pooled results

(i) 2760 Kg/ha. (ii) 779·0 Kg/ha. (based on 2 d.f. made up of Treatments×Years interaction). (iii) Treatment differences are highly significant. (iv) Av. yield of Pea-pods in Kg/ha.

Treatment	T_0	T_1	T_2
Av. yield	1866	2906	3508

C.D.=2163·6 Kg/ha.

Individual results

Treatment	T_0	T_1	T_2	Sig.	G.M.	S.E./plot
Year						
1964	2285	3808	4481	**	3525	214·0
1965	1587	2304	2859	**	2250	293·9
Pooled	1866	2906	3508	**	2760	779·0

Crop :- Pea (*Rabi*). **Ref :- Bh. 62(201), 63(219), 64(248), 65(153).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object :—To find out the appropriate condition of soil reaction at which the basic slag can be most effective in the acidic red loam of Chotanagpur for Pea crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Red loam. (iii) 15.11.62 ; 31.10.63 ; 19.11.64 ; 19.10.65. (iv) 2 ploughings ; 3 ploughings for 1963 to 65. (b) Line sowing. (c) 37 Kg/ha for 1962 to 64. ; 90 Kg/ha. (d) and (e) Nil. (v) 22·5 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (vi) BR—12. (vii) Irrigated ; Unirrigared for 1963 to 65. (viii) Weedings. (ix) N.A. (x) 13.3.63 ; 19.3.64 ; 24.3.65 ; 4.3.66.

2. TREATMENTS :

7 manurial treatments : T_0=Control, T_1=67·2 Kg/ha. of P_2O_5 as Basic slag, T_2=1125 Kg/ha. of Lime+67·2 Kg/ha. of P_2O_5 as Basic slag, T_3=2250 Kg/ha. of Lime+67·2 Kg/ha. of P_2O_5 as Basic slag, T_4=4500 Kg/ha. of Lime+62·2 Kg/ha. of P_2O_5 as Basic slag, T_5=67·2 Kg/ha. of P_2O_5 as Super and T_6=4500 Kg/ha. of Lime+67·2 Kg/ha. of P_2O_5 as Super.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 5. (iv) (a) and (b) 4·57 m.×4·42 m. ; 10·12 sq. m. for 1963 and 64 ; 20·23 sq. m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of Pea-pods. (iv) (a) 1962—65. (b) No. (c) Results of combined analysis are presented under 5. Results. (v) No. (vi) Nil. (vii) Error variances are heterogeneous and Treatments × Years interaction is present.

5. KESULTS:

Pooled results

(i) 1697 Kg/ha. (ii) 588·0 Kg/ha. (based on 18 d.f. made up of Treatments × Years interaction). (iii) Treatment differences are highly significant. (iv) Av. yield of Pea-pods in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	
Av. yield	739	1789	1772	1758	1868	1737	2219	C.D.=552·5 Kg/ha.

Individual results

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	Sig.	G.M.	S.E./plot
Year 1962	232	762	744	731	689	1273	1352	**	826	222·6
1963	684	1771	1535	1812	1897	1727	2059	**	1644	463 0
1964	1567	3255	3360	2868	3447	2577	3409	**	2926	359·2
1965	473	1366	1428	1621	1440	1369	2056	**	1394	187·2
Pooled	739	1789	1772	1758	1868	1737	2219	**	1697	588·0

Crop :- Pea (*Rabi*). **Ref :- Bh. 60(216), 61(303).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object :—To find out the response of *Rabi* crop to liming for pea crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize ; Fallow. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Red loam. (iii) 22.10.60 ; 2.11.61. (iv) (a) 3—4 ploughings. (b) Line sowing. (c) 37 Kg/ha, ; 90 Kg/ha. (d) Nil. 30 cm. between rows. (e) Nil. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (vi) BR—12. (vii) Irrigated ; Unirrigated. (viii) Two weedings ; weeding and hoeing. (ix) N.A. (x) 22.2.61 ; 16 2.62.

2. TREATMENTS :

4 manurial treatments : T_0=Control, T_1=400 Kg/ha. of Lime, T_2=11·2 Kg/ha. of N as A/S+45·0 Kg/ha. of P_2O_5 as Super+45·0 Kg/ha. of K_2O as Mur. Pot. and $T_3=T_1+T_2$.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 5. (iv) (a) and (b) 20·23 sq. m. (v) Nil. (vii) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of Pea-pods. (iv) (a) 1960—61. (b) Nil. (c) Results of combined analysis are presented under 5. Results. (v) No. (vi) Nil. (vii) Error variances are homogeneous and Treatments × Years interaction is absent.

5. RESULTS :

Pooled results

(i) 695 Kg/ha. (ii) 177·0 Kg/ha. (based on 27 d f. made up of pooled error and Treatments × Years interaction). (iii) Treatment differences are highly significant. (iv) Av. yield of Pea-pods in Kg/ha.

Treatment	T_0	T_1	T_2	T_3
Av. yield	265	517	599	1401

C.D.=229·7 Kg/ha.

Individual results

Treatment	T_0	T_1	T_2	T_3	Sig.	G.M.	S.E./plot
Year							
1960	259	525	496	1366	**	662	156·1
1961	270	510	702	1435	**	729	200·1
Pooled	265	517	599	1401	**	695	177·0

Crop :- Pea (*Rabi*). **Ref :- Bh. 60(305), 61(208), 62(199). 63(296), 64(324).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object :—To find out the relative effects of various phosphatic festilizers in acid soil.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Fallow for 60, 61, 63, 64 ; Maize. (c) Nil for 60, 61, 63, 64, 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Red loam. (iii) 4.11.60 ; 4.11.61 ; 27.10.62 ; 29.10.63 ; 26.10.64. (iv) (a) 3—4 ploughings. (b) Line sowing. (c) 90 Kg/ha. for 60, 61, 63, 64 ; 37 Kg/ha. (d) 30 cm. between rows for 60, 61, 63, 64 ; Nil. (e) —. (v) 22·5 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. for 60, 61, 63, 64 ; 56 Kg/ha. of N as A/S+67·2 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot.+Lime at 4500 Kg/ha. (vi) BR—12. (vii) Un-irrigated for 60, 61, 63, 64 ; Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 26.3.61 ; 16.3.62 ; 6.3.63 ; 12.3.64 ; 9.3.65.

2. TREATMENTS:

8 manurial treatments : T_0=Control, T_1=67·5 Kg/ha. of P_2O_5 as Super, T_2=67·5 Kg/ha. of P_2O_5 of Rock. Phos., T_3=67·5 Kg/ha. of P_2O_5 as Bone meal, T_4=67·5 Kg/ha. of P_2O_5 as Di. Cal. Phos., T_5=67·5 Kg/ha. of P_2O_5 as Basic Slag, T_6=67·5 Kg/ha. of P_2O_5 as Cal. Metaphos. and T_7=67·2 Kg/ha. of P_2O_5 as Glycrophos.

3. DESIGN:

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4 for 60, 63, 64 ; 5 for 1961 and 62. (iv) (a) N.A. (b) 8·10 sq. m. ; 3·66 m. × 2·70 m. ; N.A. ; 10·26 sq. m. ; 3·66 m. × 2·70 m. (v) Nil. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Yield of Pea-pods. (iv) (a) 1960—64. (b) No. (c) Results of combined analysis are presented under 5. Results. (v) No. (vi) Nil. (vii) Error variances are heterogeneous and Treatments × Years interaction is present. Yield in 1963 and 64 is very low, so individual results are presented and are not included for pooled analysis.

5. RESULTS :

Pooled results

(i) 603 Kg/ha. (ii) 317·7 Kg/ha. (based on 14 d.f. made up of Treatments × Years interaction). (iii) Treatment differences are significant. (iv) Av. yield of Pea-pods in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	
Av. yield	385	871	583	583	697	770	398	542	C.D.=421·8 Kg/ha.

Individual results

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	Sig.	G.M.	S.E./plot
Year 1960	386	602	469	351	432	469	351	449	N.S.	439	205·2
1961	270	534	355	493	521	742	313	391	**	452	106·2
1962	500	1423	901	858	1085·	1038	520	767	**	886	167·3
Pooled	385	871	583	583	697	770	398	542	*	603	317·7

63(296)

(i) 129 Kg/ha. (ii) 49·3 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of Pea-pods in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	
Av. yield	19	83	37	42	55	682	13	98	C.D.=63·8 Kg/ha.

64(324)

(i) 271 Kg/ha. (ii) 149·5 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of Pea-pods in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	
Av. yield	35	304	167	221	21	1060	35	323	C.D.=193·6 Kg/ha.

Crop :- Pea (*Rabi*). **Ref :- 60(304), 61(307), 63(285), 64(329).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object :—To find out the relative effects of various Phosphate fertilizers in acid soil.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Red loam. (iii) 3.11.60 ; 4.11.61 ; 29.10.63 ; 26.10.64· (iv) (a) 3—4 ploughings. (b) Line sowing. (c) 90 Kg/ha. (d) 30 cm. between rows. (e) —. (v) 22·5 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (vi) BR—12. (vii) Unirrigated. (viii) Weeding and hoeing. (iv) N.A. (x) 23.3.61 ; 17.3.62 ; 16.3.64 ; 9.3.65.

2. TREATMENTS :

8 manurial treatments : T_0=Control, T_1=4000 Kg/ha. Lime+67·5 Kg/ha. of P_2O_5 as Super, T_2=4000 Kg/ha. of Lime+67·5 Kg/ha. of P_2O_5 as Rock. Phos., T_3=4000 Kg/ha. of Lime+67·5 Kg/ha. of P_2O_5 as Bone meal, T_4=4000 Kg/ha. of Lime+67·5 Kg/ha. of P_2O_5 as Di-cal. Phos., T_5=4000 Kg/ha. of Lime+67·5 Kg/ha.o f P_2O_5 os Basic Slag, T_6=4000 Kg/ha. of Lime+67·5 Kg/ha. of Cal. metaphos., T_7=4000 Kg/ha. of Lime+67·5 Kg/ha. of P_2O_5 as Glycro. Phos.

3. DESIGN ;

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4 for 60 and 5 for others. (iv) (a) and (b) 8·10 sq. m ; 3·66 m.×2·7 m. for 61, 63, 64. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of Pen-pods. (iv) (a) 1960—64 (Expt. for 1962—N.A.). (b) No. (c) Results of combined analysis are presented under 5. Results. (v) No. (vi) Nil. (vii) Error variances are heterogeneous and Treatments×Years interaction is present.

5. RESULS :

Pooled results

(i) 882 Kg/ha. (ii) 438·1 Kg/ha. (based on 21 d.f. made up of Treatments×Years interaction). (iii) Treatment differences are significant. (iv) Av. yield of Pea-pods in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	
Av. yield	604	1008	913	898	872	1089	638	1031	C.D.=512·8 Kg/ha.

Individual reuslts

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	Sig.	G.M.	S.E./plot
Year											
1960	743	360	901	847	711	1176	700	821	N.S.	776	275·7
1961	730	1306	947	981	1248	913	820	1370	*	1040	291·3
1963	335	919	516	580	578	965	379	622	**	612	149·7
1964	632	1318	1286	1172	917	1358	666	1268	**	1077	221·8
Pooled	604	1008	913	898	872	1089	638	1031	*	882	438·1

Crop :- Pea (*Rabi*). **Ref :- Bh. 62(118), 63(149).**

Site :- Distt. Agri. Farm, Pipra Kothi. **Type :- 'M'.**

Object —To test the effects of deep placement of fertilizers (Super) on crop yield.

BASAL CONDITIONS :

(i) (a) Nil. (b) Pea. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Clay loam. (iii) 27.10.62 ; 23.10.63. (iv) (a) 3—4 ploughings. (b) Line sowing. (c) 70 Kg/ha. (d) 30 cm. between rows (e) —. (v) Nil. (vi) Local ; Etawa Pea. (vii) Unirrigated. (viii) Weeding ; *kacha* plough and weeding by *khurpi*. (ix) N.A. (x) 7.2.63 ; 11, 12.3. 64.

2. TREATMENTS:

3 manurial treatments : T_0=Control, T_1=45 Kg/ha. of P_2O_5 as Super at surface and T_2=45 Kg/ha. of P_2O_5 as Super at plough depth.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 4. (iv) (a) 12·90 m.×8.80 m. (b) 12·30 m.×8·20 m. (v) One row either side. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil ; Attack of stem borer, Endrin 20% E.C. sprayed. (iii) Yield of Pea-pods. (iv) (a) 1961—63 (Expt. for 1961—N.A.). (b) Yes. (c) Results of combined analysis are presented under 5. Results. (v) No. (vi) Nil. (vii) Error variances are homogeneous and Treatments×Years interaction is absent.

5. RESULTS:

Pooled results

(i) 1918 Kg/ha. (ii) 141·9 Kg/ha. (based upon 14 d.f. made up of pooled error and Treatments × Years interation). (ii) Treatment differences are highly significant. (iv) Av. yield of Pea-pods in Kg/ha.

Treatment	T_0	T_1	T_2
			C.D.=214·9 Kg/ha.
Av. yield	1700	1864	2192

Individual results

Treatment	T_0	T_1	T_2	Sig.	G.M.	S.E./plot
Year						
1962	1304	1496	1842	*	1547	185·4
1963	2096	2231	2542	**	2290	105·1
Pooled	1700	1864	2192	**	1918	141·1

Crop :- Pea (*Rabi*). **Ref :- Bh. 62(45).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'M'.**

Object :—To test the effect of phosphobacterin on crop yield.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Maize. (c) N.A. (ii) N.A. (iii) 23.11.62. (iv) (a) to) (e) N.A. (v) N.A. (vi) BR—12. (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 26.3.63.

2. TREATMENTS:

13 manurial treatments : T_0=Control, T_1=Phosphobacterin, T_2=44·8 Kg/ha. of P_2O_5 as Super, T_3=44·8 Kg/ha. of P_2O_5 as Rock Phos., T_4=44·8 Kg/ha. of P_2O_5 as B.M., T_5=44·8 Kg/ha. of P_2O_5 as F.Y.M., $T_6=T_1+44·8$ Kg/ha. of P_2O_5 as Super, $T_7=T_1+44·8$ Kg/ha. of P_2O_5 as Rock phos, $T_8=T_1+44·8$ Kg/ha. of P_2O_5 as B.M., $T_9=T_1+44·8$ Kg/ha. of P_2O_5 as F.Y.M., $T_{10}=T_6+44·8$ Kg/ha. of P_2O_5 as F.Y.M., $T_{11}=T_7+44·8$ Kg/ha. of P_2O_5 as F.Y.M. and $T_{12}=T_8+44·8$ Kg/ha. of P_2O_5 as Super.

3. DESIGN:

(i) R.B.D. (ii) (a) 13. (b) N.A. (iii) 3. (iv) (a) 4·27 m.×3·35 m. (b) 3·66 m.×2·74 m. (v) 30 cm.× 30 cm. (vi) Yes.

4. GENERAL:

(i) Satisfactory. (ii) Nil. (iii) Yield of Pea-pods. (iv) (a) 1962—only. (b) and (c) Nil. (v) to (vii) Nil.

5. RESULTS:

(i) 1150 Kg/ha. (ii) 170·4 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of Pea-pods in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	1329	1130	1229	997	1229	1030	1262

T_7	T_8	T_9	T_{10}	T_{11}	T_{12}
1063	1329	1063	1096	930	1262

———

Crop :- Pea (*Rabi*). **Ref :- Bh. 64(25).**

Site :- Govt. Agri. Farm, Hazaribagh. **Type :- CM'.**

Object :—To test the effect of seed inoculation with module bacteria in presence of Phosphate, Amon. Molyb. and Lime.

4. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 22.11.64. (iv) to (vi) N.A. (vii) Irrigated. (viii) and (ix) N.A. (x) 28.3.65.

2. TREATMENTS :

4 cultural-cum-manurial treatments: T_0=Control, T_1=Seed inoculation with bacterial culture, T_2=T_1+ 44·8 Kg/ha. of P_2O_5 as Super and T_3=T_1+2·2 Kg/ha. of Ammonium Molybdate.

3. DESIGN :

(i) R.B.D (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 3·66 m.×3·66 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) and (ii) Nil. (iii) Yield of Pea-pods. (iv) (a) 1964—only. (b) Nil. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 588 Kg/ha. (ii) 125·0 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of Pea-pods in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	
Av. yield	414	556	599	785	C.D.=200·0 Kg/ha.

Crop :- Pea (*Rabi*). **Ref :- Bh. 64(22).**

Site :- Govt. Agri. Farm, Pipra Kothi. **Type :- 'CM'.**

Object :—To test the effect of seed inoculation with nodule bacteria with Phosphate, Amon. Molyb. and Lime.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 19.11.64. (iv) to (vi) N.A. (vii) Unirrigated. (viii) Interculturing. (ix) and (x) N.A.

2. TREATMENT :

Same as in Expt. No. 64(25) as noted above.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) 9·22 m.×5·49 m. (v) 8·30 m.×4·88 m. (v) 46 cm.× 30 cm. (vi) Yes.

4. GENERAL :

(i) and (ii) Nil. (iii) Yield of Pea-pods. (iv) (a) 1964—only. (b) and (c) Nil. (v) Kanke. (vi) and (vii) Nil.

5. RESULTS :

(i) 1510 Kg/ha. (ii) 184·4 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of Pea-pods in Kg/ha.

Treatment	T_0	T_1	T_2	T_3
Av. yield	1482	1686	1424	1448

Crop .- Pea (*Rabi*). **Ref :- Bh. 64(142).**

Site :- Agri. Res. Instt., Patna. **Type :- 'CM'.**

Object : —To test the effect of seed inoculation nodule bacteria with Phosphate, Molybdenum and Lime.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Ganera*. (c) 45 Kg/ha. of N as A/S. (ii) N.A. (iii) 17.11.64. (iv) (a) 3 *deshi* ploughings. (b) Behind the plough. (c) 70 Kg/ha. (d) 45 cm. (e) N.A. (v) and (vi) N.A. (vii) Irrigated. (viii) Weeding. (ix) N.A. (x) 22, 23.3.65.

2. TREATMENTS :

Same as in 64(22) at Piprakothi on page 527.

3. DESIGN:

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) 8·10 m.×6·30 m. (b) 7·30 m.×5·50 m. (v) 38 cm.×38 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Bordeaux mixture spraying. (iii) Germination, flowering and maturity count, yield of Pea-pods. (v) (a) 1964 -only. (b) and (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 386 Kg/ha. (ii) 120·1 Kg/ha. (iii) Treatment differences are not significant. (iv) (a) Av. yield of Pea-pods in Kg/ha.

Treatment	T_0	T_1	T_2	T_3
Av. yield	346	416	480	303

Crop :- Pea (*Rabi*). **Ref :- Bh. 64(219).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'D'.**

Object : —To evaluate the effectiveness of weedicides with and without Urea as a spray in red Pea crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (ii) Sandy loam. (iii) 26.10.64. (iv) (a) 3 ploughings. (b) Line sowings. (c) 69 Kg/ha. (d) 30 cm. between rows. (e) Nil. (v) 22·4 Kg/ha. of N as A/S+33·6 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. pot. (vi) Local. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 25.3.65.

2. TREATMENTS :

4 weedicidal treatments : T_0=Control, T_1=3 pints of Tropotox in 280·8 lit. of water/ha., T_2=T_1+2% Soln. of N as Urea in 288·8 lit. of water/ha. and T_3=2 % Soln. of N as Urea in 280·8 lit. of water/ha.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) 17·68 m.×4·88 m. (iii) 4. (iv) (a) and (b) 4·57 m.×3·66 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) No. of tillers, height and length of plants. wt. of 1000 grains and yield of Pea-pods. (iv) (a) 1964 –65 (treatments modified in 65). (b) and (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1112 Kg/ha. (ii) 307·1 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of Pea pods in Kg/ha.

Treatment	T_0	T_1	T_2	T_3
Av. yield	1037	1098	1300	1012

Crop :- Pea (*Rabi*). **Ref :- Bh. 65(118).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'D'.**

Object :—To evaluate the effectiveness of weedicides with and without Urea as a spray in Pea crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Pea. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (ii) Red loam. (iii) 19.10.65. (iv) (a) 3 ploughings. (b) Dibbling. (c) 45 Kg/ha. (d) 23 cm.×25 cm. (e) N.A. (v) 22·5 Kg/ha. of N as Urea+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (vi) BR—12. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 15.2.66.

2. TREATMENTS :

6 weedicidal treatments : T_0=Control, T_1=3·98 litres of Tropotox in 280 lit. of water/ha., T_2=T_1+2% solution of N as Urea in 280 lit. of water/ha., T_3=5·60 Kg/ha. of Tenoron in 899 lit. of water/ha., T_4=T_3+2 % solution of N as Urea in 899 lit. of water/ha. and T_5=Hand weeding.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 5. (iv) (a) 4·57 m.×2·74 m. (b) 3·66 m.×2·74 m. (v) 45 cm. on either side. (vi) Yes.

4. GENERAL ;

(i) Good. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1965—contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2687 Kg/ha. (ii) 540·2 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of Pea pods in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. yield	2278	2788	2880	2872	2445	2862

Crop :- Pea (*Rabi*). **Ref :- Bh. 60(317), 61(288).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'D'.**

Object :—To ascertain the best time of fungicidal application to control powdery mildew on Pea crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow ; Paddy. (c) Nil ; 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+ 22·5 Kg/ha. of K_2O as Mur. Pot. (ii) Red loam. (iii) N.A. ; 25, 26, 27.11.61. (iv) (a) 3—4 ploughings. (b) Line sowing. (c) 92 Kg/ha. ; 70 Kg/ha. (d) 30 cm. between rows ; 15 cm.×10 cm. (e) —. (v) 22·5 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. ; 22·5 Kg/ha. of N as A/S+22·5 Kg/ha. of P_2O_5 as Super+22·5 Kg/ha. of K_2O as Mur. Pot. (vi) BR—178 ; BR—12. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) N.A. ; 2, 3, 4.4.62.

2. TREATMENTS:

4 fungicidal treatments : T_0=Control, T_1=2 sprayings with Colloidal Sulphur, first at the time of disease appearance and second 15 to 20 days thereafter, T_2=2 sprayings of Spersul, first 15 days after disease appearance and second 15 to 20 days thereafter and T_3=2 sprayings of Spersul, first 30 days after disease appearence and second 15 to 20 days thereafter.

3. DESIGN:

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) N.A. ; 10·70 m.×3·70 m. (b) 10·10 m.×3·60 m. ; 10·10 m.× 3·70 m. (v) N.A. ; 30 cm. on either side. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil ; powdery mildew, control measures as per treatments. (iii) Yield of grain. (iv) (a) 1960-61. (b) No. (c) Nil. (v) No. (vi) Nil. (vii) As error variances are heterogeneous and Treatments × Years interaction is absent, individual years' results are presented under 5. Results.

5. RESULTS :

60(317)

(i) 1638 Kg/ha. (ii) 417·2 Kg/ha. (iii) Treatment differences are not significant. (v) Av. yield of Pea pods in Kg/ha.

Treatment	T_0	T_1	T_2	T_3
Av. yield	1515	1658	1827	1553

61(288)

(i) 1428 Kg/ha. (ii) 225·9 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of Pea pods in Kg/ha.

Treatment	T_0	T_1	T_2	T_3
Av. yield	1266	1616	1429	1403

Crop :- Pea (*Rabi*). **Ref :- Bh. 61(270).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'D'.**

Object:—To ascertain the best time of application of Colloidal Sulphur.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Loam. (iii) 3.11.61. (iv) (a) 2 ploughings. (b) Line sowing by hand. (c) 46 Kg/ha. (d) 31 cm. between rows. (e) —. (v) 18 Kg/ha. of P_2O_5 as Super. (vi) BR—178. (vii) Un-irrigated. (viii) Weedings. (ix) N.A. (x) 18.3.62.

2. TREATMENTS:

5 fungicidal treatments : T_0=Control (no spraying), T_1=Spraying with water only, T_2=2 sprayings of Colloidal Sulphur, 1st at the time of disease appearance and 2nd 15 to 20 days thereafter, T_3=2 sprayings of Colloidal Sulpher, 1st 15 days after disease appearance and 2nd 15 to 20 days thereafter and T_4=2 sprayings of Colloidal Sulphur, 1st at 30 days after disease appearance and 2nd 15 to 20 days thereafter.

Dates of application : 15, 31.1.62, 15.2.62 and 3.3.62.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) 44·98 m.×24·70 m. (iii) 6. (iv) (a) and (b) 6·86 m.×4·57 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Powdery mildew, control measures as per treatments. iii) Percentage of incidence, yield of grain. (iv) (a) 1960–61 (Expt. for 60–N.A.). (b) Yes. (c) Nil. (v) Kanke. (vi) and (vii) Nil.

5. RESULTS :

(i) 1182 Kg/ha. (ii) 199·2 Kg/ha. (iii) Treatment differences are highly significant. (ix) Av. yield of Pea pods in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	
Av. yield	1085	952	1531	1206	1133	C.D.=262·8 Kg/ha.

Crop :- Pea (*Rabi*). **Ref :- Bh. 63(156).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'D'.**

Object :—To find out the comparative efficacy of different insecticides against Pea stem-fly.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) 9.11.63. (iv) (a) 2–3 ploughings. (b) Line sowing. (c) 74 Kg/ha. (d) 23 cm.×14 cm. (e) Nil. (v) Nil (vi) NP—29. (vii) Unirrigated. (viii) Nil. (ix) N.A. (x) 27.2.64.

2. TREATMENTS :

7 insecticidal treatments : T_0=Control, T_1=Telodrin at 0·02%, T_2=Endrin at 0·02%, T_3=Endrin at 0·04%, T_4=Folidol at 0·02%, T_5=Diptrex at 0·01% and T_6=Dieldrex at 0·02%.

Dates of application : 4.12.63, 19.12.63 and 15.1.64.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) and (b) 50·60 sq. m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Stem-fly, control measures as per treatments. (iii) Total no. of plants in 91 cm.×91 cm. unit area, no. of plants damaged. (iv) (a) 1963—65 (modified in 64). (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 13·31 degrees. (ii) 2·03 degrees. (iii) Treatment differences are highly significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	
Mean infestation	17·58	11·68	10·72	12·24	13·68	12·43	15·36	C.D.=3·02 degrees.

Crop :- Pea (*Rabi*). **Ref :- Bh. 64(198), 65(23).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'D'.**

Object :—To find out the comparative efficacy of different insecticides against the incidence of Pea stem-fly.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) 25.10.64; 12.11.65. (iv) 2—3 ploughings. (b) Line sowing. (c) 74 Kg/ha. (d) 23 cm. × 14 cm. ; 23 cm. between rows. (e) —. (v) Nil ; 10 Kg/ha. of N as A/S+20 Kg/ha. of P_2O_5 as Super. (vi) BR—2 ; BR—12. (vii) Unirrigated. (viii) Nil ; Weeding. (ix) N.A. (x) 20.2.65 ; 20.3.66.

2. TREATMENTS :

8 insecticidal treatments : T_0=Control, T_1=Telodrin at 0·02% spray ; T_2=Endrin at 0·02% spray, T_3= Endrin at 0·04% spray, T_4=Folidol at 0·02% spray, T_5=Diptrex at 0·01% spray, T_6=Dieldrex at 0·02% spray and T_7=Dimecron at 0·03% spray.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 50·60 sq. m. ; 51·20 sq. m. (b) 50·60 sq. m. for 64 and 65. (v) Nil ; 30 cm. (vi) Yes.

4. GENERAL :

(i) Good, (ii) Pea stem-fly, control measures as per treatments. (iii) Percentage incidence of pest, yield of grain. (iv) (a) 1964—65. (b) Yes. (c) Nil. (v) No. (vi) Nil. (vii) Yield data is available only for 1965.

5. RESULTS:

Yield data

65(23)

(i) 403 Kg/ha. (ii) 133·6 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Av. yield	317	449	369	472	369	444	403	403

Infestation data

64(198)

(i) 9·86 degrees. (ii) 2·08 degrees. (iii) Treatment differences are highly significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Mean infestation	17·83	8·99	9·80	5·55	9·74	9·41	7·82	9·73

C.D.=3·06 degrees.

65(23)

(i) 15·17 degrees. (ii) 1·89 degrees. (iii) Treatment differences are highly significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Mean infestation	25·72	12·32	13·94	11·13	12·98	14·46	15·27	15·52

C.D.=2·78 degrees.

Crop :- Bhindi (*Kharif*). **Ref :- Bh. 64(213), 65(109).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object : —To evaluate the effect of Urea as foliar spray on the yield of *Bhindi*.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton ; Tomato. (c) 45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. ; 90 Kg/ha. of N as A/S+90 Kg/ha. of P_2O_5 as Super+67 Kg/ha. of K_2O as Mur. Pot. (ii) Sandy loam. ; Red loam. (iii) 25.6.64 ; 6.7.65. (iv) (a) 3 ploughings. (b) Dibbling. (c) 13 Kg/ha. ; 25 Kg/ha. (d) 61 cm.×61 cm. ; 61 cm.×45 cm. (e) 3. (v) 45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (vi) Local ; *Pusa sawani*. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) 102 cm. ; N.A. (x) 19.8.64 and 5, 19.9.64 ; 18.10.65 to 12.1.66.

2. TREATMENTS :

7 manurial treatments : T_0=Control, T_1=11·2 Kg/ha. of N as 2·2% Solution of Urea as foliar spray at 35 days after sowing +33·5 Kg/ha. of N as Urea to soil at sowing, T_2=11·2 Kg/ha. of N as 2·2% Solution of Urea as foliar spray at 35 and 60 days after sowing+ 22·5 Kg/ha. of N as Urea to soil at sowing, T_3=11·2 Kg/ha. of N as 2·2 % Solution of Urea as foliar spray at 35, 60 and 85 days after sowing+11·2 Kg/ha. of N as Urea to soil at sowing, T_4=11·2 Kg/ha. of N as 2·2 % Solution of Urea as foliar spray at 60 days after sowing+33·8 Kg/ha. of N as Urea to soil at sowing, T_5=11·2 Kg/ha. of N as 2·2 % Solution. of Urea as foliar spray at 60 and 85 days after sowing+22·5 Kg/ha. of N as Urea to soil at sowing, T_6=11·2 Kg/ha. of N as 2·2 % Solution of Urea as foliar spray at 85 days after sowing+33·8 Kg/ha. of N as Urea to soil at sowing.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) 31·39 m.×4·42 m. ; N.A. (iii) 3 ; 5. (iv) (a) 3·96 m.×3·96 m. ; 4·57 m.×3·96 m (b) 3·96 m.×3·96 m. ; 3·96 m.×3·96 m. (v) Nil. ; 30 cm. on either side. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Height of plants, no. of leaves and yield of *bhindi*. (iv) (a) 1964—contd. (b) No ; Yes. (c) Nil. (v) No. (vi) Nil. (vii) As the expt. is continued beyond 1965, the results of individual years have been presented under 5. Results.

5. RESULTS :

64(213)

(i) 60·2 Q/ha. (ii) 36·3 Q/ha. (iii) Treatment differences are significant. (iv) Av. yield of *bhindi* in Q/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	
Av. yield	40.7	47·4	70·9	42·5	52·5	117·3	49·7	C.D.=64·5 Kg/ha.

65(109)

(i) 19·0 Q/ha. (ii) 8·2 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of *bhindi* in Q/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	14·7	20·3	21·4	23·0	19·5	17·1	16·7

Crop :- Bhindi (*Kharif*). **Ref :- Bh. 65(100).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object :—To evaluate the effect of Urea as foliar spray on the yield of *Bhindi*.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) Nil. (ii) Red loam. (iii) 29.6.65. (iv) (a) 2 ploughings. (b) Dibbling (c) 14 Kg/ha. (d) 61 cm.×46 cm. (e) N.A. (v) 45 Kg/ha. of P_2O_5 as Super+67 Kg/ha. of K_2O as Mur. Pot. (vi) *Pusa sawani*. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) Nil. (x) 12.10.65 to 8.1.66.

. TREATMENTS :

5 manurial treatments : T_0=Control, T_1=11·2 Kg/ha. of N as 2·2 % Solution of Urea as foliar spray at 35 days after sowing+33·6 Kg/ha. of N as Urea to soil at sowing, T_2=11·2 Kg/ha. of N as 2·2% Solution of Urea as foliar spray at 35 and 70 days after sowing+22·5 Kg/ha. of N as Urea to soil at sowing, T_3=33·5 Kg/ha. of N as Urea to soil at sowing+11·2 Kg/ha. of N as Urea to soil at 35 days after sowing and T_4=22·5 Kg/ha. N as Urea to soil at sowing+11·2 Kg/ha. of N as Urea to soil at 35 and 70 days after sowing.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 4·57 m.×2·74 m. (b) 3·96 m.×2·74 m. (v) 30 cm. on either side. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Height of plants, yield of *bhindi*. (iv) (a) 1965—only. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 29·7 Q/ha. (ii) 9·1 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of *Bhindi* in Q/ha.

Treatment	T_0	T_1	T_2	T_3	T_4
Av. yield	33·3	27·8	29·1	32·9	25·6

Crop :- Bhindi (*Kharif*). **Ref :- Bh. 63(172).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object :—To evaluate the effect of Urea as foliar spray on the yield of *Bhindi*.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) 20.6.63. (iv) (a) 3 ploughings. (b) Dibbling. (c) 13 Kg/ha. (d) 61 cm.×61 cm. (e) N.A. (v) 45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (vi) Local. (vii) Unirrigated. (viii) Weeding, hoeing and earthing. (ix) 115 cm. (x) 15.8.63, 7, 22.9.63 and 16.10.63.

2. TREATMENTS:

5 manurial treatments : T_0=Control, T_1=One foliar spray of Urea at 2·2 % Solution in 1123·4 lit. of water/ha. at 25 days after sowing+33·6 Kg/ha. of N as Urea at sowing, T_2=T_1+ one foliar spray of Urea at 2·2 % Solution in 1123 lit. of water/ha. at 50 days after sowing+22·4 Kg/ha. of N as Urea at sowing, T_3=33·6 Kg/ha. of N as Urea to soil at sowing+11·2 Kg/ha. of N as Urea to soil after 25 days of sowing, T_4= 22·4 Kg/ha. of N as Urea to soil at sowing+11·2 Kg/ha. of N as Urea to soil at 25 and 50 days after sowing.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) 16·76 m.×4·41 m. (iii) 5. (iv) (a) 4·27 m.×3·35 m. (b) 3·66 m.×2·74 m. (v) 30 cm.×30 cm. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Height of plants, no. of fruits and yield of *bhindi*. (iv) (a) 1963—64 (Expt. failed in 64). (b) Yes. (c) Nil. (v) No. (vi) and (vi) Nil.

5. RESULTS:

(i) 190·8 Q/ha. (ii) 36·4 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of *Bhindi* in Q/ha.

Treatment	T_0	T_1	T_2	T_3	T_4
Av. yield	189·7	183·8	184·8	194·0	201·7

Crop :- Bhindi (*Kharif*). **Ref :- Bh. 62(149), 63(184).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'MV'.**

Objec: :—To test the disease resistance of *Bhindi* to Mosaic under two levels of N.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Fallow ; *Bhindi*. (c) Nil ; 100·9 Kg/ha. of N as A/S+107·6 Kg/ha. of P_2O_5 as Super+100·9 Kg/ha. of K_2O as Mur. Pot. (ii) Sandy loam. (iii) 12.6.62 ; 12.6.63. (iv) (a) 3—4 ploughings. (b) Line sowing. (c) N.A. (d) 61 cm.×61 m. (e) 2—3. (v) N.A. (vi) As per treatments. (vii) Unirrigated. (viii) Weeding, hoeing and earthing up. (ix) 73 cm. ; 115 cm. (x) 29, 31.7.62, 18, 22, 25, 29.8.62, 1, 5, 8, 12, 13, 15, 19, 25, 26 and 29.9.62 ; 2, 10, 14, 17, 21, 24, 28.8.63, 4, 7, 11, 14, 18, 21, 25, 28.9.63 and 3, 9.10.63.

2. TREATMENTS:

All combinations of (1) and (2)

(1) 3 varieties: V_1=*Harichikni*, V_2=*Pusa sawani* and V_3=Local.

(2) 2 levels of N: N_1=56·0 Kg/ha. of N as A/S+107·6 Kg/ha. of P_2O_5 as Super+100·9 Kg/ha. of K_2O as Mur. Pot. and $N_2=N_1+44·8$ Kg/ha. of N as A/S.

3. DESIGN:

(i) Fact. in R.B.D. (ii) (a) 6. (b) 32·31 m.×10·67 m. (iii) 4. (iv) (a) N.A. (b) 4·88 m.×10·36 m. (v) N.A. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Yellow Mosaic, Endrin sprayed as control measure. (iii) Germination, yield of *bhindi*. (iv) 1962—64. (b) Yes. (c) Nil. (v) Patna. (vi) Nil. (vii) In 64, *Bhindi* fruits were preserved for seed purposes, hence yield of *bhindi* was not recorded. Error variances are heterogeneous and Treatments× Years interaction is absent. Hence the results of individual years are presented under 5. Results.

5. RESULTS:

62(149)

(i) 66·6 Q/ha. (ii) 17·4 Q/ha. (iii) Main effect of V alone is significant. (iv) Av. yield of *Bhindi* in Q/ha.

	V_1	V_2	V_3	Mean
N_1	74·9	69·4	66·9	70·4
N_2	86·9	42·1	59·7	62·9
Mean	80·9	55·7	63·3	66·6

C.D. for V marginal means=18·5 Q/ha.

63(184)

(i) 15·9 Q//ha. (ii) 3·7 Q/ha. (iii) Main effect of V alone is highly significant. (iv) Av. yield of *Bhindi* in Q/ha.

	V_1	V_2	V_3	Mean
N_1	19·4	22·7	9·4	17·2
N_2	18·6	17·2	8·2	14·6
Mean	19·0	20·0	8·8	15·9

C.D. for V marginal means=5·6 Q/ha.

Crop :- Bhindi (*Kharif*). **Ref :- Bh. 62(168), 63(207), 64(240).**

Site :- Agri. Res. Instt., Patna. **Type :- 'MV'.**

Object :—To test different varieties of *Bhindi* for the resistence to Mosaic under two levels of N.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Loam. (iii) 12.6.62 ; 23.6.63 ;'2.7.64. (iv) (a) 1—2 ploughings. (b) Line sowing. (c) 12 Kg/ha. (d) 61 cm.×61 cm. (e) —. (v) 56 Kg/ha. of N as A/S+106·8 Kg/ha. of P_2O_5 as Super+100·9 Kg/ha. of K_2O as Mur. Pot. (vi) As per treatments. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 9.8.62 to 6.10.62 ; 19.8.63 to 4.10.63 ; 28.8.64 to 22.10.64.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 varieties : V_1=*Harichikni* 'R', V_2=*Pusa sawani* and V_3=Local.

(2) 2 levels of N as A/S : N_0=0 and N_1=45 Kg/ha.

3. DESIGN:

(i) Fact. in R.B.D. (ii) (a) 6. (b) 33·50 m.×10·36 m. (iii) 4. (iv) (a) 5·49 m.×10 36 m. (b) 4·88 m.× 10·36 m. (v) 30 cm. on either side. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Rust. (iii) Germination and flowering count., height of plants, yield of *bhindi*. (iv) (a) 1962—64. (b) Yes. (c) Results of combined analysis are presented under 5. Results. (v) Kanke. (vi) Nil. (vii) Error variances are heterogeneous and Treatments×Years interaction is present.

5. RESULTS :

Pooled results

(i) 26·5 Q/ha. (ii) 8·7 Q/ha. (based on 10 d.f. made up of Treatments×Years interaction). (iii) None of the effects is significant. (iv) Av. yield of *Bhindi* in Q/ha.

	V_1	V_2	V_3	Mean
N_0	30·8	24·7	22·0	25·9
N_1	30·7	32·6	18·3	27·2
Mean	30·7	28·7	20·2	26·5

Individuals results

Treatment Year	V_1	V_2	V_3	Sig.	N_0	N_1	Sig.	G.M.	S.E./plot
1962	43·0	39·9	28·8	*	35·7	38·8	N.S.	37·2	9·3
1963	21·9	17·2	16·5	N.S.	17·2	19·9	N.S.	18·5	4·3
1964	27·4	28·9	15·1	**	24·7	23·0	N.S.	23·8	4·8
Pooled	30·7	28·7	20·2	N.S.	25·9	27·2	N.S.	26·5	8·7

Crop :- Brinjal (*Rabi*). **Ref :- Bh. 63(329).**

Site :- Musheri (Muzaffarpur-c.f.). **Type :- 'D'.**

Object :— To study the efficacies of insecticides against Brinjal stem-borer.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) Nil. (iv) Local (Blee long). (v) (a) N.A. (b) Transplanting. (c) —. (d) 90. cm. × 90 cm. (e) One. (vi) 2.8.63. (vii) Irrigated. (viii) Weedings. (ix) N.A. (x) 29 and 30 4.64.

2. TREATMENTS:

6 insecticidal treatments : T_0=Control, T_1=Endrine 20% E.C. at 0·02%, T_2=Telodrin 15% E.C. at 0·02%, T_3=DDT at 0·25%, T_4=Melathion at 0·1% and T_5=Gamma BHC 20% E.C. at 0·05%.

Time of application : First spraying was given 10 days after transplanting. Two subsequent sprayings were given at 15 days interval.

3. DESIGN:

(i) R.B.D., 6 plots/block, 4 replications. (ii) N.A. (iii) (a) N.A. (b) 2·74 m × 2·74 m. (iv) Yes.

4. GENERAL :

(i) Good. (ii) Under study. (iii) Percentage of infestation. (iv) (a) 1963—65 (treatments modified in 64 and 65). (b) and (c) No. (v) and (vi) Nil. (vii) The final observations were taken after splitting the plants.

5. RESULTS :

(i) 30·4 degrees. (ii) 9·9 degrees. (iii) Treatment differences are highly significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	
Mean infestation	46·9	29·9	13·6	37·2	40·4	14·1	C.D.=14·9 degrees

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Crop :- Brinjal (*Rabi*). **Ref :- Bh. 64(371).**

Site :- Musheri (Muzaffarpur-c.f.). **Type :- 'D'.**

Object :—To study the the efficacies of insecticides against Brinjal stem-borer.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) Nil. (iv) Blee long. (v) (a) N.A. (b) Transplanting. (c) —. (d) 61 cm. × 61 cm. (e) one. (vi) 22.8 64. (vii) Irrigated. (viii) Weedings. (ix) N.A. (x) 3.4.65.

2. TREATMENTS :

8 insecticidal treatments : T_0=Control, T_1=Endrin 20% E.C. at 0·02%, T_2=Telodrin at 0·02%, T_3=DDT Solution W.P. at 0·125%, T_4=Helathin at 0·1%, T_5=Gamma BHC at 0·05%, T_6=Follidol at 0·02% and T_7=Diptex at 0·04%.

Time of application : First spraying was given 10 days after transplanting. Two subsequent sprayings were given at 15 days interval.

3. DESIGN :

(i) R.B.D. (ii) 8 plots/block; 4 replications. (iii) (a) N.A. (b) 2·74 m.×2·74 m. (iv) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of brinjal. (iv) (a) 1963—65 (with modified treatments in 63 and 65). (b and (c) No. (v) No. (vi) and (vii) Nil.

5. RESULTS :

(i) 1358 Kg/ha. (ii) 459·3 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of brinjal in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Av. yield	1129	1438	1680	1151	1148	1394	1499	1423

——

Crop :- Brinjal (*Rabi*). **Ref :- Bh. 65(202).**

Site :- Musheri (Muzaffarpur-c.f.). **Type :- 'D'.**

Object :—To study the efficacies of insecticides against Brinjal stem-borer.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) Nil. (iv) Blee long. (v) (a) N.A. (b) Transplenting (c) —. (d) 61 cm.×90 cm. (e) One. (vi) 21.8.65. (vii) Irrigated. (viii) Weedings. (ix) N.A. (x) 11.4.66.

2. TREATMENTS:

7 insecticidal treatments : T_0=Control, T_1=Endrin 15% E.C. at 0·02%, T_2=Telodrin 15% E.C. at 0·02%, T_3=DDT 50% W.P. at 0·125%, T_4=Melathion 50% at 0·1%, T_5=Gamma BHC at 0·05% and T_6=Dimecron 100% at 0·02%.

3. DESIGN :

(i) R.B.D., 7 plots/block ; 4 replications. (ii) N.A. (iii) (a) N.A. (b) 2·74 m.×2·74 m. (iv) Yes.

4. GENERAL :

(i) Good. (ii) Plants damaged (iii) Yield of Brinjal, % of affected plants. (iv (a) 1963—65 (treatments modified in 63 and 64). (b) and (c) No. (v) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 38·3 Q/ha. (ii) 2·80 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of brinjal in Q/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	36·2	40·0	37·7	37·9	36·6	39·5	40·0

———

Crop :- Brinjal (*Winter*). **Ref :- Bh. 60(134), 62(160), 64(194).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'D'.**

Object :—To find out the efficacies of different insecticidal sprays against fruit and shoot borers on Brinjal crop.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Potato. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Loam. (iii) 30.12.60 ; 5.1.62; 5.2.64. (iv) (a) 2—3 ploughings. (b) Transplanting. (c) —. (d) 61 cm.×91 cm. (e) 1. (v) 138·3 Q/ha. of Compost. (vi) *Pusa Purple*. (vii) Irrigated by pipe fortnightly during Jan. and Feb. and weekly upto mid-June. (viii) Weeding and earthing. (ix) 6 cm. ; 4 cm. ; 9 cm. (x) 20, 28.3.61, 10, 18, 27.4.61, 9, 15.5.61 ; 23, 30.4.62, 6, 13, 20, 27.5.62 ; 13, 22, 30.4.64, 7, 15, 23.5.64 and 12.6.64.

2. TREATMENTS:

4 insecticidal treatments : T_0=Control, T_1=Endrin at 0 04%, T_2=Nicotine Sulphate at 6·5 ml. per 4·5 litres of water and T_3=Tobacco dicoction.

3. DESIGN:

(i) R.B.D. (ii) (a) 4. (b) 1 83 m.×10·06 m. (iii) 8. (iv) (a) and (b) 1·83 m.×1·83 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Shoot and fruit borer of Brinjal, control measures as per treatments. (iii) No. of fruits, no. of fruits infested, no. of shoots present in the plant, no. of shoots infested. (iv) (a) 1960—64 (expts. for 1961 and 63—N.A.). (b) Yes. (c) Nil. (v) No. (vi) Nil. (vii) Yield data—N.A.

5. RESULTS :

Results for fruit-borer

60(134)

(i) 30·2 degrees. (ii) 3·0 degrees. (iii) Treatment differences are highly significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	
Mean infestation	42·5	20·8	26·8	30 8	C.D.=3·1 degrees.

62(160)

(i) 35·0 degrees. (ii) 10·7 degrees. (iii) Treatment differences are not significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3
Mean infestation	46·9	28·2	31·1	33·9

64(194)

(i) 35·0 degrees. (ii) 2·1 degrees. (iii) Treatment differences are highly significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	
Mean infestation	46·6	22·5	36·6	34·6	C.D.=2·2 degrees.

Results for shoot-borer

64(130)

(i) 32·4 degrees. (ii) 2·11 degrees. (iii) Treatment differences are highly significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	
Mean infestation	42·0	21·6	32·1	33·8	C.D.=2·4 degrees.

62(160)

(i) 15·8 degrees. (ii) 5·90 degrees. (iii) Treatment differences are highly significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	
Mean infestation	22·4	12·2	14·4	14·3	C.D.=6·7 degrees.

64(194)

(i) 12·2 degrees. (ii) 2·11 degrees. (iii) Treatment differences are highly significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	
Mean infestation	16·2	7·6	13·1	11·8	C.D.=2·4 degrees.

Crop :- Brinjal (*Kharif*). **Ref :- Bh. 60(254).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'D'.**

Object :—To find out the effect of insecticides to control Brinjal shoot and fruit borers.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) 11.8.60. (iv) (a) 2—3 ploughings. (b) Line sowing. (c) N.A. (d) 61 cm. between rows. (e) 2. (v) 11·2 Kg/ha. of N as A/S+11·2 Kg/ha. of P_2O_5 as Super. (vi) Local. (vii) Unirrigated. (viii) Weedings. (x) 12, 18, 25.12.60.

2. TREATMENTS :

5 insecticidal treatments : T_0=Control, T_1=Folidol at 0·04 %, T_2=Basudin at 0·025 %, T_3=Endrex at 0·02% and T_4=D.D.T. at 0·125 %+Folidol at 0·04 %.

Method of application—three sprayings.

Time of application—16, 31.10.60 and 15.11.60.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) Nil. (iii) 4. (iv) (a) and (b) 5·49 m.×3·05 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Brinjal shoot and fruit borer, control measures as per treatments. (iii) No. of shoots and fruits and no. of shoots and fruits infested. (iv) (a) 1959—60. (b) Yes. (v) and (vi) Nil. (vii) Yield data—N.A.

5. RESULTS :

Shoot infestation data.

(i) 20·6 degrees. (ii) 3·0 degrees. (iii) Treatment differences are highly significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	
Mean infestation	30·8	22·2	19·8	12·8	17·3	C.D.=3·2 degrees.

Fruit infestation data.

(i) 33·0 degrees. (ii) 3·8 degrees. (iii) Treatment differences are highly significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	
Mean infestation	54·0	37·0	33·9	14·9	24·8	C.D.=4·2 degrees.

Crop :- Brinjal (*Winter*). **Ref :- Bh. 64(196).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'D'.**

Object :—To find out the comparative efficacy of different insecticides against Brinjal stem-borer.

1. BASAL CONDITIONS :

(i) (a) Potato—Brinjal. (b) Potato. (c) 45 Kg/ha. of N as A/S+30 Kg/ha. of P_2O_5 as Super. (ii) Loam. (iii) 5.2.64. (iv) (a) 2—3 ploughings. (b) Transplanting. (c) —. (d) 61 cm.×91 cm. (e) 1. (v) Compost at 138·3 Q/ha. (vi) Blue Bug. (vii) Irrigated fortnightly by pipe during Feb. and weekly thereafter upto mid-June. (viii) Weeding and earthing. (ix) N.A. (x) 13, 22, 30.4.64, 7, 15, 23.5.64 and 12.6.64.

2. TREATMENTS:

6 insecticidal treatments: T_0=Control, T_1=Endrin at 0·02 %, T_2=Telodrin at 0·02 %, T_3=D.D.T. at 0·25 %, T_4=Malathion at 0·1 % and T_5=Gamma BHC at 0·05 %

Dates of application—15.2.64, 2.3.64 and 17.3.64.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) 1·83 m.×10·06 m. (iii) 4. (iv) (a) and (b) 1·83 m.×1·83 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Stem-borer, control measures as per treatments. (iii) No. of plants examined, No. of plants infested, no. of fruits, yield of fruits. (iv) (a) 1964—only. (b) and (c) —. (v) and (vi) Nil. (vii) Yield data—N.A.

5. RESULTS :

(i) 40·9 degrees. (ii) 3·8 degrees. (iii) Treatment differences are highly significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Mean infestation	64·7	24·1	32·8	43·4	45·8	34·6

C.D.=5·7 degrees.

Crop :- Brinjal (*Winter*). **Ref :- Bh. 65(197), 65(22).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'D'.**

Object :—To find out the comparative efficacies of different insecticides against the stem-borer of Brinjal crop.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Potato ; Fallow. (c) 45 Kg/ha. of N as A/S+30 Kg/ha. of P_2O_5 as Super ; Nil. (ii) Loam ; Sandy loam. (iii) 10.3.65 ; 28.12.65. (iv) (a) 2—3 ploughings ; 1 ploughing. (b) Transplanting. (c) —. (d) 61 cm.×91 cm. (e) 1. (v) 183·3 Q/ha. of Compost ; 22·5 Kg/ha. of N as A/S+20·0 Kg/ha. of P_2O_5 as Super. (vi) Blue long ; Local. (vii) Irrigated by pipe weekly upto mid-June ; Unirrigated. (viii) Weeding and earthing. (ix) N.A. (x) 27.4.65, 15, 12, 19. 26.5.65, 2, 9.6.65; 12, 18, 25.4.66.

2. TREATMENTS :

7 insecticidal treatments : T_0=Control, T_1=Endrin at 0·02 %, T_2=Telodrin at 0·02 %, T_3=D.D.T. at 0·25 %, T_4=Malathion at 0·1 %, T_5=B.H.C. Gamma at 0·05 % and T_6=Dimecron at 0·03 %.

Dates of application : 2.3.65 ; 5, 20.4.65 ; 4, 19.3.66 and 3.4.66.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) 1·83 m.×10·06 m. ; N.A. (iii) 4. (iv) (a) and (b) 1·83 m.×1·83 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Stem-borer, control measures as per treatments. (iii) No. of plants examined, no. of plants found attacked and yield of brinjal. (iv) (a) 1964—65. (b) Yes. (c) Nil. (v) and (vi) Nil. (vii) Yield data for 65(197)—N.A.

5. RESULTS :

Yield data

65(22)

(i) 4799 Kg/ha. (ii) 2301·1 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of brinjal in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	3084	4627	5598	4669	7098	4669	3845

Infestation data

65(197)

(i) 35·7 degrees. (ii) 14·8 degrees. (iii) Treatment differences are highly significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	
Mean infestation	51·7	15·8	14·6	24·1	57·2	31·2	55·4	C.D.=22·0 degrees.

65(22)

(i) 24·8 degrees. (ii) 11·7 degrees. (iii) Treatment differences are highly significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	
Mean infestation	49·3	19·9	8·0	15·4	18·1	14·1	38·8	C.D.=17·4 degrees.

Crop :- Potato (*Rabi*). **Ref : Bh. 63(165).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object :—To find out the effect of foliar spray of Urea on Potato crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Groundnut. (c) 22·4 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (ii) Sandy loam. (iii) 13.11.63. (iv) (a) 3 ploughings. (b) Dibbling. (c) N.A. (d) 38 cm. ×23 cm. (e) One tuber/hole. (v) 112 Kg/ha. of P_2O_5 as Super+112 Kg/ha. of K_2O as Mur. Pot. (vi) D.R R. (vii) Irrigated. (viii) Weeding and hoeing. (ix) 3 cm. (x) 24.2.64.

2. TREATMENTS :

6 spraying treatments : T_0=Control, T_1=2·16 % Solution of Urea as foliar spray at 25 days after dibbling, T_2=T_1+2·16 % Solution of Urea as foliar spray at 50 days after dibbling, T_3=T_2+2·16 % Solution of Urea as foliar spray at 75 days after dibbling, T_4=2·16 % Solution of Urea as foliar spray at 50 days after dibbling and T_5=2·16 % Solution of Urea as foliar spray at 75 days after dibbling.

3. DESIGN:

(i) R.B.D. (ii) (a) 6. (b) 11·89 m.×3·96 m. (iii) 3. (iv) (a) 3·66 m.×2·74 m. (b) 3·66 m.×1·22 m. (v) 76 cm. on either side. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Height of plant, no. and wt. of fruits/plant, yield of tuber. (iv) (a) No. (b) and (c) —. (v) to (vii) Nil.

5. RESULTS :

(i) 154·1 Q/ha. (ii) 15·8 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of tuber in Q/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. yield	154·7	152·9	155·9	151·4	169·3	140·5

Crop :- Potato (*Rabi*). **Ref :- Bh. 63(166).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object :—To assess the effectiveness of foliar spray of nutrients at different growth stages on growth, vigour and yield of Potato.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Gora* Paddy. (c) 22·4 Kg/ha. of N as A/S+22·4 Kg/ha. of P_2O_5 as Super+22·4 Kg/ha. of K_2O as Mur. Pot. (ii) Sandy loam. (iii) 22.10.63. (iv) (a) 3 ploughings. (b) Dibbling. (c) N.A. (d) 23 cm.×23 cm. (e) One tuber/hole. (v) 42 Kg/ha. of P_2O_5 as Super+112 Kg/ha. of K_2O as Mur. Pot. (vi) DRR. (vii) Irrigated. (viii) Weeding, hoeing and earthing. (ix) N.A. (x) 10.2.64.

2. TREATMENTS:

5 spraying treatments : T_0=Control, T_1=2·2 % Solution of Urea as foliar spray at 25 days after dibbling+78·5 Kg/ha. of N as Urea at sowing, T_2=2·2% Solution of Urea as two foliar sprays at 25 and 70 days after dibbling+67·2 Kg/ha. of N as Urea to soil at sowing, T_3=78·5 Kg/ha. of N as Urea to soil at sowing+11·2 Kg/ha. of N as Urea to soil at 35 days after sowing and T_4=67·2 Kg/ha. of N as Urea to soil at sowing+11·2 Kg/ha. of N as Urea applied each time to soil at 35 and 70 days after sowing.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) 19·20 m.×3·96 m. (iii) 6. (iv) (a) and (b) 3·66 m.×2·74 m. (v) Nil. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Height of plant and yield of tuber. (iv) (a) No. (b) and (c) —. (v) to (vii) Nil.

5. RESULTS :

(i) 66·9 Q/ha. (ii) 10 46 Q/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of tuber in Q/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	
Av. yield	28·6	75·5	68·9	82·8	78·9	C.D.=12·6 Q/ha.

Crop :- Potato (*Rabi*). **Ref :- Bh. 61(201), 62(71), 63(94), 64(141).**

Site :- Agri. Res. Instt., Patna. **Type :- 'M'.**

Object :—To test the effect of Potash on the yield of Potato crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow ; Maize ; Nil ; *Ganera*. (c) N.A. (ii) N.A. (iii) 3 to 6.11.61 ; 7/8.11.62 ; 9/10.11.63 12 to 14.11.64. (iv) (a) 3 *deshi* ploughings. (b) Line sowing. (c) 15 Kg/ha. for 61 ; N.A. for others. (d) 15 cm. between rows. (e) N.A. (v) N.A. (v) Up—to—date. (vii) Irrigated. (viii) 2 weedings. (ix) 4 cm. ; 1·6 cm. ; 21 cm. ; N.A. (x) 24/25/28.2.62 ; 20 to 23.2.63 ; 3 to 6.3 64 ; 3/4.3.65.

2. TREATMENTS :

5 manurial treatments : T_0=Control, T_1=168 Kg/ha. of N as A/S, T_2=T_1+84 Kg/ha. of P_2O_5 as Super, T_3=T_1+67 Kg/ha. of K_2O as Mur. Pot. and T_4=168 Kg/ha. of N as A/S+84 Kg/ha. of P_2O_5 as Super+67 Kg/ha. of K_2O as Mur. Pot.

3. DESIGN :

(i) R B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 9·14 m.×5·64 m. (b) 7 92 m.×5·03 m. (v) 61 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil for 61 and 62 ; N.A. for 63 and 64. (iii) Yield of tuber. (iv) (a) 1961—64. (b) Yes. (c) Results of combined analysis are presented under 5. Results. (v) to (vi) Nil. (vii) Error variances are heterogeneous and Treatments×Years interaction is present.

5. RESULTS :

Pooled results

(i) 143·7 Q/ha. (ii) 68·06 Q/ha. (based on 12 d.f. made up of Treatments×Years interaction). (iii) Treatment differences are significant. (iv) Av. yield of tuber in Q/ha.

Treatment	T_0	T_1	T_2	T_3	T_4
Av. yield	73·8	136·0	170·0	156·6	181·9

C.D.=11·24 Q/ha.

Individual results

Treatment	T_0	T_1	T_2	T_3	T_4	Sig.	G.M.	S.E./plot
Year								
1961	136·4	226·1	306·0	258·3	342·4	**	253 8	25·36
1962	64·1	119·2	182·2	152·6	202·8	**	144·2	8·34
1963	61·2	113·9	108·8	142·2	89·7	**	103·3	22·70
1964	73·3	84·9	83·0	73·0	93·0	N.S.	73·5	29·32
Pooled	73·8	136·0	170·0	156·6	181·9	*	143·7	68·06

Crop :- Potato (*Rabi*). **Ref :- Bh. 62(114).**

Site .- Agri. Res. Instt., Sabour. **Type :- 'M'.**

Object :—To study the correlation between crop response and the Potash status of the soil.

1. BASAL CONDITONS :

(i) (a) Nil. (b) Groundnut. (c) 22·5 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (ii) Sandy loam. (iii) 5.11.62. (iv) (a) 3—4 ploughings. (b) Dibbling. (c) N.A. (d) 38 cm. between rows. (e) One tuber/hole. (v) Nil. (vi) Up-to-date. (vii) Irrigated. (viii) Weeding. (ix) N.A. (x) 26.2.63.

2. TREATMENTS:

5 manurial treatments : T_0=Control, T_1=168·1 Kg/ha. of N as A/S, T_2=T_1+84·1 Kg/ha. of P_2O_5 as Super T_3=T_1+67·2 Kg/ha. of K_2O as Mur. Pot. and T_4=T_1+67·2 Kg/ha. of K_2O as Mur. Pot.+84·1 Kg/ha. of P_2O_5 as Super.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) and (b) 40·47 sq. m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of tuber. (iv) (a) No. (b) and (c) —. (v) Patna. (vi) and (vii) Nil.

5. RESULTS:

(i) 161 5 Q/ha. (ii) 30·99 Q/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of tuber in Q/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	
Au. yield	49·3	180·7	181·3	182·8	213·3	C.D.=47·8 Q/ha.

Crop :- Potato. **Ref :- Bh. 60, 61(SFT).**

Site :- (District) : Bhagalpur, Gaya, Monghyr, Patna. Shahabad, Ranchi, Santhal Parganas, Hazaribagh and Muzaffarpur. **Type :- 'M'.**

Object :—Type A :—To study the response of Potato to different levels of N, P and K applied individually and in combination.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) As per results. (iii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments

O=Control (no manure),
N=56 Kg/ha. of N,
P=28 Kg/ha. of P_2O_5,
K=28 Kg/ha. of P_2O_5,
NP=56 Kg/ha. of N+28 Kg/ha. of P_2O_5,
NK=56 Kg/ha. of N+28 Kg/ha. of K_2O,
PK=28 Kg/ha. of P_2O_5+28 Kg/ha. of K_2O and
NPK=56 Kg/ha. of N+28 Kg/ha. of P_2O_5+28 Kg/ha. of K_2O.

N applied as A/S, P_2O_5 as Super and K_2O as Mur. Pot.

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 a rabi cereal, 8 on cash crop, 4 on an oilseed crop and 3 on a legumenous 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) 1/98·8 ha. (b) 1/197·7 ha. (iv) Yes.

4. GENERAL .

(i) to (vii) N.A.

5. RESULTS :

District	Year	Soil class	No. of trials	Control mean Kg/ha.	Av. response of tuber in Kg/ha. N	P	K	S.E.	NP	NK	PK	NPK	S.E.
Muzaffarpur	1960	Alluvial	4	10650	2980	1480	1980	279·0	90	—650	340	390	324·0
Bhagalpur	1960	,,	11	5360	1840	720	290	196·0	520	—	30	80	78·0
	1961	,,	4	7330	3150	1560	170	334·0	500	—750	700	—80	444·0
Gaya	1960	,,	8	20640	3160	2200	2750	379·0	120	—650	—190	610	280·0
	1961	,,	8	13510	5550	3390	2020	385·0	150	—510	—610	470	271·0
Monghyr	1960	,,	8	8020	4750	3350	560	459·0	720	10	370	750	174·0
	1961	,,	12	9500	3190	1750	1320	98·0	—480	—670	—310	780	114·0
Patna	1960	Other alluvial	15	10030	4290	2150	1660	517·0	—90	—360	—450	580	218·0
	1961	,,	12	6810	3140	2150	1640	277·0	10	490	470	280	267·0
Shahabad	1960	Alluvial	6	7310	2180	1440	1160	250·0	—40	80	80	180	166·0
	1961	,,	12	6380	4550	4210	2600	255·0	570	—640	—70	—160	256·0
Ranchi	1960	Red	4	6640	2000	1824	720	355·0	880	510	—320	710	171·0
	1961	,,	5	3890	3120	1970	1390	618·0	620	270	380	—	467·0
S-Parganas	1960	,,	16	4800	930	470	770	100·0	10	—130	—170	80	125·0
	1961	,,	7	5230	1210	480	1150	134·0	30	—60	—200	280	129·0
Hazaribagh	1960	,,	11	4940	2550	2600	2580	158·0	—300	—40	—140	180	192·0
	1961	,,	9	5650	2390	2210	2970	136·0	—250	—40	—430	—150	136·0

———

Crop :- Potato. **Ref :- Bh. 60, 61(SFT).**

Site :- District : Muzaffarpur, Bhagalpur, Gaya, Monghyr, Patna, Shahabad, S-Parganas, Hazaribagh and Ranchi. **Type :- 'M'.**

Object :—Type B : To investigate the relative efficiency of different nitrogeneous fertilisers at different levels.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) As per results. (iii) to (x) N.A.

2. TREATMENTS :

9 manurial treatments :

O=Control (no manure),
n_1=56 Kg/ha. of N as A/S,
n_2=112 Kg/ha. of N as A/S,
n_1'=56 Kg/ha. of N as Urea,
n_2'=112 Kg/ha. of N as Urea,
n_1''=56 Kg/ha. of N as A/S/N,
n_2''=112 Kg/ha. of N as A/S/N,
n_1'''=56 Kg/ha. of N as C/A/N and
n_2'''=112 Kg/ha. of N as C/A/N.

3. DESIGN :

Same as in type A on page 545.

4. GENERAL :

(i) to (vii) N.A.

5. RESULTS :

District	Year	Soil class	No. of trials	Control mean in Kg/ha.	Av. response of tuber in Kg/ha. n_1	n_1'	n_1''	n_1'''	n_2	n_2'	n_2''	n_2'''	S.E. of response
Muzaffarpur	1960	Alluvial	4	8350	4330	5070	3970	6130	7420	6590	6550	9180	1027·0
Bhagalpur	1960	,,	15	5510	2840	3030	1600	1140	3260	2640	2350	2110	550·0
	1961	,,	4	7190	2260	3650	2080	2910	5080	6460	3780	4290	743 0
Gaya	1960	,,	7	18730	5830	6380	3310	6220	8520	9150	6710	9730	1282·0
	1961	,,	8	13530	5560	5720	3620	4520	8930	9720	8140	8670	702·0
Monghyr	1960	,,	8	7960	4520	5200	3170	2320	6360	5690	5390	4950	996·0
	1961	,,	8	9600	5590	4160	4370	4160	6030	4950	4650	4370	236·0
	1961	,,	4	9960	2670	4520	4520	—	5810	7610	6450	—	844·0
Patna	1960	Other alluvial	4	11760	—	7980	3550	8210	—	9270	5160	9130	1110·0
	1961	,,	12	6870	3110	3230	3020	2820	6880	6200	5570	7110	542·0
	1960	,,	7	6450	3550	3130	4210	4100	7660	6890	7740	8470	850·0
	1960	,,	4	10150	1610	2120	1710	—	2810	3370	2950	—	467·0
Shahabad	1960	Alluvial	10	7310	3890	3920	2870	2620	6080	6700	6010	5070	705·0
	1961	,,	9	6290	4390	4560	3630	4430	8100	8770	7010	7680	544·0
S-Parganas	1960	Red	12	4590	840	820	730	620	1800	1680	1400	1280	127·0
	1960	,,	3	3010	—	1720	1790	930	—	2090	2530	1300	231·0
	1961	,,	9	5020	490	1160	860	1630	1540	2080	1720	2590	240·0
Hazaribagh	1960	,,	11	5180	3640	3190	5310	4750	6470	5720	7040	7720	452·0
	1961	,,	7	5100	1260	930	3920	3590	3270	2680	5030	6040	133·0
Ranchi	1960	,,	4	5580	2310	2910	—	—	3920	3830	—	—	820·0
	1961	,,	3	3010	2280	—	2090	3260	4250	—	3880	5290	384·0

Crop :- Potato. **Ref :- Bh. 62, 63, 64, 65(SFT),**

Site :- District : Monghyr, Muzaffarpur, Bhagalpur Type :- 'M'.
Gaya, Patna, Shahabad, Hazaribagh,
Ranchi and S—Parganas.

Object.—Type A_1 : To study the response of Potato to Nitrogen applied singly and in combination with other nutrients :

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Red for Ranchi ; Hazaribagh and S-Parganas and alluvial for all others. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments :

O=Control (no manure),
N_1=90 Kg/ha. of N,
N_2=180 Kg/ha. of N,
P_1=35 Kg/ha. of P_2O_5,
N_1P_1=90 Kg/ha. of N+35 Kg/ha. of P_2O_5,
N_2P_1=180 Kg/ha. of N+35 Kg/ha. of P_2O_5,
N_2P_2=180 Kg/ha. of N+70 Kg/ha. of P_2O_5 and
$N_2P_2K_1$=180 Kg/ha. of N+70 Kg/ha. of P_2O_5+60 Kg/ha. of K_2O.

N applied as A/S, P_2O_5 as Super. and K_2O as Mur. Pot.

3. DESIGN :

A selected district is divided into four agriculturally homogeneous zones based on climate, soil, cropping pattern etc. In each zone one block is selected at random. A block normally consists of a group of 50—100 villages. In each block 36 experiments are conducted in a year of which 11 are of type A_1, 11 of type A_2, 11 of type A_3 and 3 are of type C. The eleven experiments under type A_1, A_2 and A_3 are distributed as 3 on a kharif cereal, 3 on a rabi cereal, 3 on a cash crop and 2 on oil seed. All the three type - C experiments are conducted on a legume crop. For the purpose of conducting the A_1, A_2 and A_3 experiment 11 villages are randomly selected in each block and in each village 3 experiments one each of type A_1, A_2 and A_3 are laid out. For conducting the three type—C trials three villages are randomly selected in each block.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of tuber. (iv) (a) 1962—66 for Monghyr, 1963—66 for Muzaffarpur, 1962—66 for Bhagalpur, Gaya, Patna, Shahabad and Hazaribagh, 1962—66 (63 N.A.) for Ranchi and S-Parganas (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

Monghyr

62(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of tuber in Kg/ha.	3618	8210	2949	7365	9515	11063	12177	786.1

Control mean=9406 Kg/ha. ; No. of trials=10.

63(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of tuber in Kg/ha.	2696	6307	2639	5391	7159	9127	11396	548·9

Control mean=10437 Kg/ha. ; No. of trials=12.

64(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of tuber in Kg/ha.	3988	6664	2033	4939	7641	9183	9767	696.7

Control mean=9809 Kg/ha. ; No. of trials=9.

65(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of tuber in Kg/ha.	2956	4506	1046	4128	5951	7018	7731	245·1

Control mean=7934 Kg/ha. ; No. of trials=12.

Muzaffarpur

63(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of tuber in Kg/ha.	5581	6523	303	6497	7563	7630	8882	1265·3

Control mean=10140 Kg/ha. ; No. of trials=3.

64(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of tuber in Kg/ha.	3442	3709	1680	4398	5320	6688	9172	1018·5

Control mean=12058 Kg/ha. ; No. of trials=6.

65(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of tuber in Kg/ha.	5440	6746	306	5366	7760	9606	10266	1984.0

Control mean=8819 Kg/ha. ; No. of trials=3.

Bhagalpur

62(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of tuber in Kg/ha.	2815	4462	1137	3230	4745	4907	6216	455.6

Control mean=10320 Kg/ha. ; No. of trials=10.

63(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of tuber in Kg/ha.	2322	3494	1490	2876	3874	4761	5426	394·4

Control mean=8454 Kg/ha. ; No. of trials=11.

64(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of tuber in Kg/ha.	1737	2444	799	2290	2997	3436	4007	135·3

Control mean=5185 Kg/ha. ; No. of trials=13.

65(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of tuber in Kg/ha.	2406	3475	728	2924	3993	4722	5342	255.6

Control mean=6977 Kg/ha. ; No. of trials=9.

Gaya

62(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of tuber in Kg/ha.	1331	2945	461	1469	2985	3183	1226	1332·0

Control mean=4474 Kg/ha. ; No. of trials=3.

63(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of tuber in Kg/ha.	3584	5890	1752	4737	7136	9132	10542	733·1

Control mean=7544 Kg/ha. ; No. of trials=3.

64(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av, response of tuber in Kg/ha.	2052	3882	955	3068	5189	6627	7712	295·4

Control mean=9503 Kg/ha ; No. of trials=12.

65(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of tuber in Kg/ha.	1982	4406	737	3628	5086	6175	7306	364·7

Control mean=10426 Kg/ha. ; No. of trials=9

Patna

62(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of tuber in Kg/ha.	2348	4916	—1700	3557	5817	7164	8555	1059·3

Control mean=10723 Kg/ha. ; No. of trials=8.

63(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of tuber in Kg/ha.	4464	6722	1789	6851	7735	8846	9940	487·6

Control mean=9608 Kg/ha. ; No. of trials=10

64(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of tuber in Kg/ha.	4869	6891	1287	5411	7000	7634	8778	622·5

Control mean=11848 Kg/ha. ; No. of trials=13

65(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of tuber in Kg/ha.	6026	6391	2966	6102	7097	7300	7357	204·5

Control mean=8713 Kg/ha. No. of trials=7

Shahabad

62(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of tuber in Kg/ha.	3532	6952	2352	6024	8276	10484	11887	447·2

Control mean=8656 Kg/ha. ; No. of trials=6

63(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of tuber in Kg/ha.	3900	6642	3011	7037	8174	9333	9953	623·4

Control mean=10131 Kg/ha. ; No. of trials=6

64(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of tuber in Kg/ha.	3047	4813	1370	5479	7775	9267	10134	1002·6

Control mean=6974 Kg/ha. ; No. of trials=6

65(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of tuber in Kg/ha.	1203	2093	960	2669	4816	5486	7893	502·3

Control mean=7643 Kg/ha. ; No. of trials=6

Hazaribagh

62(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of tuber in Kg/ha.	1548	2229	769	2155	2851	3525	4560	493·9

Control mean=5728 Kg/ha. ; No. of trials=9

63(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of tuber in Kg/ha.	1570	1965	785	2722	3271	3873	4843	322·7

Control mean=4903 Kg/ha. ; No. of trials=12

64(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of tuber in Kg/ha.	2687	3764	1456	3635	4474	4933	5237	428·9

Control mean=5862 Kg/ha. ; No. of trials=12

65(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of tuber in Kg/ha.	2419	3220	1105	3801	4108	5363	6178	430·6

Control mean=5678 Kg/ha. ; No. of trials=12

Ranchi

62(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of tuber in Kg/ha.	494	863	376	1107	923	1410	1107	394·9

Control mean=1832 Kg/ha. ; No. of trials=3

64(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of tuber in Kg/ha.	705	1561	975	1765	2741	3129	3578	373·9

Control meao=4777 Kg/ha. ; No. of trials=3

65(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of tuber in Kg/ha.	630	1526	1220	1670	2829	3113	3449	232·7

Control mean=4796 Kg/ha. ; No. of trials=6

S-Parganas

62(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of tuber in Kg/ha.	1313	1818	896	1462	2115	2323	2672	235·0

Control mean=6072 Kg/ha. ; No. of trials=5

64(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of tuber in Kg/ha.	941	1544	527	1674	2088	2764	3300	198·2

Control mean=4213 Kg/ha. ; No. of trials=12.

65(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of tuber in Kg/ha.	1376	2169	921	2188	2917	3669	4133	160·5

Control mean=5533 Kg/ha. ; No. of trials=11.

Crop :- Potato. **Ref :- Bh. 62, 63, 64, 65(SFT).**

Site :- (District) : Monghyr, Muzaffarpur, Bhagalpur, Gaya, Patna, Shahabad, Hazaribagh, Ranchi and S-Parganas. **Type :- 'M'.**

Object :—Type A_2 : To study the response of Potato to Phosphate applied singly and in combination with other nutrients.

1. BASAL CONDITIONS:

(i) (a) to (c) N.A. (ii) Red for Hazaribagh, Ranchi and S—Parganas. Alluvial for all others. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments :

O=Control (no manure),
N_1=90 Kg/ha. of N,
P_1=35 Kg/ha. of P_2O_5,
P_2=70 Kg/ha. of P_2O_5,
N_1P_1=90 Kg/ha. of N+35 Kg/ha. of P_2O_5,
N_1P_2=90 Kg/ha. of N+70 Kg/ha. of P_2O_5,
N_2P_2=180 Kg/ha. of N+70 Kg/ha. of P_2O_5 and
$N_2P_2K_2$=180 Kg/ha. of N+70 Kg/ha. of P_2O_5+120 Kg/ha. of K_2O.

N applied as A/S, P_2O_5 as Super and K_2O as Mur. Pot.

3. DESIGN :

Same as in type A_1 on page 547.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1962—66 for Monghyr, 1963—66 for Muzaffarpur, 1962—66 for Bhagalpur, Gaya, Patna, Shahabad and Hazaribagh, 1962—66 (63 N.A) for Ranchi and S—Parganas. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

Monghyr

62(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of tuber in Kg/ha.	4003	2186	3758	6016	6778	10889	12238	614·7

Control mean=9602 Kg/ha. ; No. of trials=7

63(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of tuber in Kg/ha.	3449	2970	3591	5006	6413	8714	10897	506·2

Control mean=9966 Kg/ha. ; No. of trials=12

64(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of tuber in Kg/ha.	4030	1148	2501	4172	5739	8793	10602	845·5

Control mean=9118 Kg/ha. ; No. of trials=8

65(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of tuber in Kg/ha.	2389	748	1336	3338	4353	6083	7660	396·6

Control mean=7604 Kg/ha. ; No. of trials=12

Muzaffarpur

63(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of tuber in Kgha.	6464	915	856	5633	5330	10081	10292	1171·8

Control mean=10417 Kg/ha. ; No. of trials=3

64(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of tuber in Kg/ha.	4194	1838	3525	4895	6938	7936	11010	802·1

Control mean=11735 Kg/ha. ; No. of trials=6

65(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of tuber in Kg/ha.	1766	246	—80	4520	3906	9180	10566	1232·6

Control mean=10233 Kg/ha. ; No. of trials=3.

Bhagalpur

62(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of tuber in Kg/ha.	3760	8119	1498	3447	3834	5783	6902	590·2

Control mean=9494 Kg/ha. ; No. of trials=10

63(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of tuber in Kg/ha.	2016	1296	1463	2362	2790	3830	4851	332·9

Control mean=8578 Kg/ha. ; No. of trials=13

64(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of tuber in Kg/ha.	2348	836	1197	2749	3021	3842	4663	175·3

Control mean=6053 Kg/ha. ; No. of trials=13

65(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of tuber in Kg/ha.	2154	848	1302	3145	3440	3478	5366	345·2

Control mean=5974 Kg/ha. ; No. of trials=11.

Gaya

62(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of tuber in Kg/ha.	1127	198	1120	1502	1805	3249	4402	198·2

Control mean=3400 Kg/ha. ; No. of trials=3

63(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of tuber in Kg/ha.	4348	1670	3765	5218	6800	9231	11297	779·2

Control mean=7828 Kg/ha. ; No. of trials=2

64(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of tuber in Kg/ha.	2909	952	1798	3739	4829	6732	7640	504·4

Control mean=9444 Kg/ha. ; No. of trials=12.

65(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of tuber in Kg/ha.	2764	1328	1882	3791	5397	8522	8966	475·8

Control mean=10351 Kg/ha. ; No. of trials=9

Patna

62(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of tuber in Kg/ha.	3409	982	239	4569	5311	7666	8830	911.2

Control mean=9594 Kg/ha. ; No. of trials=9.

63(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of tuber in Kg/ha.	4096	706	1584	4027	5484	7456	7764	317·5

Control mean=9608 Kg/ha. ; No. of trials=9.

64(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of tuber in Kg/ha.	4260	623	1198	4650	5043	6690	7314	594·6

Control mean=11587 Kg/ha. ; No. of trials=13.

65(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of tuber in Kg/ha.	4473	371	982	4148	4804	6537	7182	256·2

Control mean=8566 Kg/ha. ; No. of trials=7.

Shahabad

62(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of tuber in Kg/ha.	5314	4250	5980	8322	8214	9788	12035	842·0

Control mean=9271 Kg/ha. ; No. of trials=6

63(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of tuber in Kg/ha.	3960	3597	5594	6711	7574	9228	10806	393·8

Control mean=10200 Kg/ha. ; No. of trials=6

64(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of tuber in Kg/ha.	4576	3232	4642	6227	7146	9585	11882	573·6

Control mean=6918 Kg/ha. ; No. of trials=7

65(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of tuber in Kg/ha.	873	476	943	2236	3200	5436	7836	468·9

Control mean=7309 Kg/ha. ; No. of trials=6

Hazaribagh

62(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of tuber in Kg/ha.	1423	1577	2104	3095	3044	3989	5720	340·8

Control mean=5913 Kg/ha. ; No. of trials=9.

63(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of tuber in Kg/ha.	2142	1302	1399	2401	3191	3879	4882	234·1

Control mean=5152 Kg/ha. : No. of trials=9

64(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of tuber in Kg/ha.	2765	1270	1854	2854	3802	4926	5936	451·9

Control mean=6862 Kg/ha. ; No. of trials=11

65(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of tuber in Kg/ha.	2159	1201	1526	3313	3753	4760	5771	248·3

Control mean=6168 Kg/ha. ; No. of trials=12

Ranchi

62(SFT)

Treatments	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of tuber in Kg/ha.	303	494	481	916	1041	1595	1654	179·5

Control mean =2451 Kg/ha. ; No. of trials=3

64(TFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of tuber in Kg/ha.	1304	955	513	1785	2181	3294	3498	532·5

Control mean=4698 Kg/ha. ; No. of trials=3

65(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of tuber in Kg/ha.	1532	996	1252	1916	2376	3244	3392	289 1

Control mean=4736 Kg/ha.; No. of trials=5

S-Parganas

62(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of tuber in Kg/ha.	1785	1500	1778	2492	2789	2993	3411	160·0

Control mean=6622 Kg/ha.; No. of trials=8

64(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of tuber in Kg/ha.	1400	629	1047	1803	2212	3177	3872	176·7

Control mean=5454 Kg/ha.; No. of trials=10

65(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of tuber in Kg/ha.	1395	633	1037	1764	2077	3065	3384	147·4

Control mean=5642 Kg/ha.; No. of trials=11

Crop :- Potato. **Ref :- Bh. 62, 63, 64, 65(SFT).**

Site :- (District) : Monghyr, Bhagalpur, Gaya, Patna, Shahabad, Hazaribagh, Ranchi, S-Parganas and Muzaffarpur. **Type :. 'M'.**

Object :—Type A_3 : To study the response of Potato crop to Potash applied singly and in combination with other nutrients.

1. BASAL CONDITIONS:

(i) (a) to (c) N.A. (ii) Red for Hazaribagh, Ranchi and S—Parganas. Alluvial for all others. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS:

8 manurial treatments :

O=Control (no manure),
N_1=90 Kg/ha. of N,
K_1=60 Kg/ha, of K_2O,
K_2=120 Kg/ha. of K_2O,
N_1K_1=90 Kg/ha. of N+60 Kg/ha. of K_2O,
N_1K_2=90 Kg/ha. of N+120 Kg/ha. of K_2O,
N_2K_2=180 Kg/ha. of N+120 Kg/ha. of K_2O and
$N_1P_1K_1$=90 Kg/ha. of N+35 Kg/ha. of P_2O_5+60 Kg/ha. of K_2O.

N applied as A/S, P_2O_5 as Super and K_2O as Mur. Pot.

3. DESIGN:

Same as in type A_1 on page 547.

4. GENERAL:

(i) and (ii) N.A. (iii) Yield of tuber. (iv) (a) 1962—66 for Monghyr, Bhagalpur, Gaya. Patna, Shahabad and Hazaribagh. 1962—66 (1963 N.A.) for Ranchi and S—Parganas and 1963—66 for Muzaffarpur. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS:

Monghyr

62(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of tuber in Kg/ha.	3832	2473	3150	5059	6593	8497	7294	821·5

Control mean=9263 Kg/ha.; No. of trials=9.

63(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of tuber in Kg/ha.	3423	2747	4195	5526	6259	8879	8416	616·5

Control mean=9648 Kg/ha.; No. of trials=12.

64(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of tuber in Kg/ha.	3990	1177	1872	4118	4779	6532	5849	833·7

Control mean=8302 Kg/ha.; No. of trials=9.

65(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of tuber in Kg/ha.	2300	700	1824	2553	3096	5301	4571	529·6

Control mean=7404 Kg/ha.; No. of trials=12.

Bhagalpur

62(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of tuber in Kg/ha.	3557	2442	3531	4106	4448	7524	5327	709 4

Control mean=8506 Kg/ha.; No. of trials=10.

63(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of tuber in Kg/ha.	1872	1257	2040	2425	2753	2969	3139	219·2

Control mean=7673 Kg/ha.; No. of trials=11.

64(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of tuber in Kg/ha.	1887	626	1017	2298	2671	3451	3676	125·8

Control mean=5089 Kg/ha.; No. of trials=12.

65(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of tuber in Kg/ha.	2268	700	1280	2886	3216	4436	3758	106·0

Control mean=5903 Kg/ha. ; No. of trials=12

Gaya

62(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of tuber in Kg/ha.	1588	158	165	1265	1661	3288	1786	178·6

Control mean=3604 Kg/ha. ; No. of trials=3

63(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of tuber in Kg/ha.	3597	1508	2587	5699	6273	9811	9317	623·9

Control mean=7498 Kg/ha. ; No. of trials=3

64(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of tuber in Kg/ha.	2775	635	1668	3884	4938	6963	6605	396·2

Control mean=9302 Kg/ha. ; No. of trials=12

65(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of tuber in Kg/ha.	3122	1457	2360	3593	4744	7677	7764	557·7

Control mean=9795 Kg/ha. ; No. of trials=9

Patna

62(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of tuber in Kg/ha.	3251	1151	1759	3945	4676	7938	5983	275·8

Control mean=9743 Kg/ha. ; No. of trials=9

63(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of tuber in Kg/ha.	3281	698	1156	3813	4274	5698	5749	382·4

Control mean=9330 Kg/ha. ; No. of trials=10

64(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of tuber in Kg/ha.	4348	129	1077	4114	3286	5681	5274	762·7

Control mean=11019 Kg/ha. ; No. of trials=13

65(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of tuber in Kg/ha.	6344	891	2680	4942	5864	6280	4780	709·7

Control mean=8462 Kg/ha. ; No. of trials=7

Shahabad

62(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of tuber in Kg/ha.	1067	507	1446	4013	4593	6823	8807	10054.

Control mean=11297 Kg/ha. ; No. of trials=6

63(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of tuber in Kg/ha.	4998	2368	4879	7076	7811	9653	8760	741·0

Control mean=9771 Kg/ha. ; No. of trials=6

64(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of tuber in Kg/ha.	3261	1859	2413	5689	7500	8500	6862	1025·3

Control mean=7630 Kg/ha. ; No. of trials=5

65(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of tuber in Kg/ha.	1020	90	270	2606	3380	5223	4120	556·3

Control mean=7166 Kg/ha. ; No. of trials=6

Hazaribagh

62(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of tuber in Kg/ha.	1764	1595	2254	2271	3262	3879	3886	261·2

Control mean=6433 Kg/ha. ; No. of trials=9

63(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of tuber in Kg/ha.	2002	1606	2498	2981	3772	4650	4414	215·6

Control mean=4856 Kg/ha. ; No. of trials=12

64(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of tuber in Kg/ha.	2440	288	838	3739	4788	5535	5471	417·4

Control mean=7443 Kg/ha. ; No. of trials=12

65(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of tuber in Kg/ha.	2571	533	731	3314	3833	4926	4568	239·7

Control mean=5851 Kg/ha.; No. of trials=12

Ranchi

62(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of tuber in Kg/ha.	125	—186	—186	369	316	863	679	217·1

Control mean=2998 Kg/ha.; No. of trials=3

64(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of tuber in Kg/ha.	1423	131	256	2108	2497	2853	3531	318·0

Control mean=5238 Kg/ha.; No. of trials=3

65(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of tuber in Kg/ha.	1606	170	483	2193	2259	2699	3386	186·5

Control mean=5276 Kg/ha.; No. of trials=6

S-Parganas

62(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of tuber in Kg/ha.	1853	1284	1363	2211	2344	2834	2938	127·4

Control mean=6412 Kg/ha.; No. of trials=7

64(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of tuber in Kg/ha.	1431	415	749	1774	2095	2937	2790	219·9

Control mean=4212 Kg/ha.; No. of trials=12

65(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of tuber in Kg/ha.	1690	292	633	1905	2067	3365	3152	1653·

Control mean=5068 Kg/ha.; No. of trials=11

Muzaffarpur

63(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of tuber in Kg/ha.	6793	2457	2490	7755	7663	9837	9811	805·4

Control mean=8572 Kg/ha.; No. of trials=3

64(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of tuber in Kg/ha.	3433	1907	3683	7353	6645	6931	9040	1634·4

Control mean=12295 Kg/ha.; No. of trials=6

65(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of tuber in Kg/ha.	4450	—60	—90	3820	4960	7040	6530	1363·2

Control mean=10620 Kg/ha.; No. of trials=2

———

Crop :- Potato (*Kharif*). **Ref :- Bh. 60(14), 61(123).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'MV'.**

Object :—To see the effect of manure at different levels on different varieties of Potato in rainy season.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) N.A. (iii) 21.7.60 ; 24/25.7.61. (iv) (a) 4 *deshi* ploughings. (b) Line sowing. (c) 12 Q/ha. (d) 30 cm.×46 cm. (e) N.A. (v) and (vi) As per treatments. (vii) Irrigated. (viii) N.A.; Weeding by *khurpi*. (ix) N.A. (x) 12/13.10·60 ; 10/11.10.61.

2. TREATMENTS :

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

(1) 3 varieties : V_1=*Satha*, V_2=Up–to–date and V_3=ON–2236.

(2) 3 levels of K_2O as Mur. Pot. : K_0=0, K_1=44·8 and K_2=89·7 Kg/ha.

(3) 3 levels of P_2O_5 as Super : P_0=0, P_1=44·8 and P_2=89·7 Kg/ha.

3. DESIGN :

(i) 3^3 confd. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 3·70 m.×3·70 m. (b) 3·70 m.×2·70 m. (v) 46 cm. on either side. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of wilt. (iii) Yield of tuber. (iv) (a) 1960—62 (Expt. for 62—N.A.). (b) N.A. (c) Results of combined analysis are presented under 5. Results. (v) and (vi) Nil. (vii) Error variances are homogeneous and Treatments×Years interaction is absent.

5. RESULTS :

Pooled results

(i) 32·6 Q/ha. (ii) 15·66 Q/ha. (based on 66 d.f. made up of pooled error and Treatments×Years interaction). (iii) Main effect of V alone is highly significant. (iv) Av. yield of tuber in Q/ha.

	V_1	V_2	V_3	K_0	K_1	K_2	Mean
P_0	15·4	30·7	40·3	22·8	38·1	25·5	28·8
P_1	18·5	41·0	43·7	35·1	34·0	34·1	34·4
P_2	19·4	41·2	43·1	34·3	32·1	37·3	34·5
Mean	17·7	37·6	42·4	30·7	34·7	32·3	32·6
K_0	17·4	40·0	34·8				
K_1	17·3	37·7	49·2				
K_2	18·6	35·2	43·1				

C.D. for V marginal means=7·38 Q/ha.

Individual results

Treatment	P_0	P_1	P_2	Sig.	K_0	K_1	K_2	Sig.	V_1	V_2	V_3
Year 1960	19·2	25·5	26·1	N.S.	20·2	26·9	23·7	N.S.	13·5	28·7	28·6
1961	38·4	43·2	42·9	N.S.	41·3	42·4	40·8	N.S.	21·9	46·5	56·1
Pooled	28·8	34·4	34·5	N.S.	30·7	34·7	32·3	N.S.	17·7	37·6	42·5

Sig.	G.M.	S.E./plot
**	23·6	11·76
**	41·5	13·07
**	32·6	11·96

Crop :- Potato (*Kharif*). **Ref :- Bh. 61(125).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'MV'.**

Object :—To demonstrate the performances of different varieties of Potato in respect of different fertilizers at different levels.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 1.8.61. (iv) (a) 4 *deshi* ploughings. (b) Line sowing. (c) 12 Q/ha. (d) 46 cm.× 30 cm. (e) N.A. (v) 276·7 Kg/ha. of N as A/S. (vi) As per treatments. (vii) Unirrigated. (viii) Weeding by *khurpi*. (ix) N.A. (x) 12.10.61.

2. TREATMENTS:

Main-plot treatments :

6 manurial treatments: M_0=Control, M_1=276·7 Kg/ha. of Mur. Pot., M_2=M_1+368·9 Kg/ha. of Super, M_3=M_1+737·8 Kg/ha. of Super, M_4=737·8 Kg/ha. of Super+138·8 Kg/ha. of Mur. Pot. and M_5=737·8 Kg/ha. of Super.

Sub-plot treatments :

3 varieties : V_1=*Satha*, V_2=Up—to—date and V_3=ON—2236.

3. DESIGN :

(i) Split-plot. (ii) (a) 6 main-plots/replication, 3 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) and (b) 4·60 m.×3·20 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination, maturity, height of plants and yield of tuber. (iv) (a) 1961-only. (b) and (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 24·9 Q/ha. (ii) (a) 27·87 Q/ha. (b) 11·25 Q/ha. (iii) Main effect of V alone is highly significant. (iv) Av. yield of tuber in Q/ha.

	M_0	M_1	M_2	M_3	M_4	M_5	Mean
V_1	9·7	9·2	18·5	25·4	21·9	23·2	17·9
V_2	11 7	15 0	33·1	22·8	27·6	26·4	22·8
V_3	18·2	15·7	39·2	48·0	40·4	41·8	33·9
Mean	13·2	13·3	30·2	32·1	29·9	30·5	24·9

C.D. for V marginal means=5·25 Q/ha.

=———

Crop :- Potato (*Kharif*), **Ref :- Bh. 61(124).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'CV'.**

Object :—To study the best time of growing of different varieties of Potato during rainy season.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) As per treatments. (iv) (a) 4 *deshi* ploughings. (b) Line sowing. (c) 1199 Kg/ha. (d) 30 cm.×46 cm. (e) N.A. (v) N.A. (vi) As per treatments. (vii) Irrigated. (viii) Weeding by *khurpi*. (ix) N.A. (x) 3, 13, 25.10.61.

2. TREATMENTS :

Main-plot treatments

3 dates of sowing : D_1=15th July 61, D_2=1st Aug. 61 and D_3=15th Aug. 61.

Sub-plot treatments :

3 varieties : V_1=*Satha*, V_2=Up–to date and V_3=ON—2236.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication, 3 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 4·88 m.×3·05 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of cut-worm blight. (iii) Germination, maturity, stand and tillers count, length of earhead, height of plants and yield of tuber. (iv) (a) to (c) No. (v) to (vii) Nil.

5. RESULTS :

(i) 28·4 Q/ha. (ii) (a) 5·08 Q/ha. (b) 3·58 Q/ha. (iii) Main effects of D and V and interaction D×V are highly significant. (iv) Av. yield of tuber in Q/ha.

	V_1	V_2	V_3	Mean
D_1	9·9	14·6	30·3	18·3
D_2	17·0	38·1	53·4	36·1
D_3	12·8	31·9	47·9	30·9
Mean	13·2	28·2	43·8	28·4

C.D. for D marginal means=6·65 Q/ha.
C.D. for V marginal means=3·67 Q/ha.
C.D. for D means at the same level of V=8·38 Q/ha.
C.D. for V means at the same level of D=6·37 Q/ha.

———

Crop :- Potato (*Rabi*). **Ref :- Bh. 60(44), 61(43), 62(21).**

Site :- Irrigation Res. Stn., Bikramganj. **Type :- 'I'.**

Object : —To determine the influence of irrigation at different interval on the yield of Potato.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy (CH—10). (c) N.A. (ii) Light clay. (iii) 31.10.60 to 3.11.60 ; 13 to 16.11.61 ; 1 to 3.11.62. (iv) (a) 4 ploughings by *deshi* plough. (b) Line ridge sowing for 60 and 61 ; Row to row sowing for 62. (c) 851 Kg/ha. ; 1207 Kg/ha. ; 924 Kg/ha. (d) 61 cm.×18 cm. ; 61 cm.×23 cm. ; 61 cm.×23 cm. (e) N.A. (v) 84·1 Kg/ha. of N+89·7 Kg/ha. of P_2O_5+89·7 Kg/ha. of K_2O+184·5 Q/ha. of F.Y.M. for 60 and 61 ; 84·1 Kg/ha. of N+89·7 Kg/ha. of P_2O_5+89·7 Kg/ha. of K_2O for 62. (vi) D.R.R. for 60 and Up-to-date for 61 and 62. (vii) Irrigated as per treatments. (viii) Nil. (ix) N.A. (x) 15 to 20 3.61 ; 27.2.62 ; 26/28.2.63.

2. TREATMENTS :

4 irrigational treatments : T_1=Irrigation at 7 days interval, T_2=Irrigation at 10 days interval, T_3=Irrigation at 13 days interval and T_4=Irrigation at 16 days interval.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 44·20 m.×4·27 m. (b) 43·43 m.×3·66 m. (v) 38 cm.× 30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil for 60 and 61 ; Spraying of Diathane (Z)+DDT 60% done on 14.12.62, 2nd spraying with Diathane (Z) and BHC 5% on 30.12.63 and 3rd spraying with Diathane and BHC 50 % on 9.1.63. (iii) Germination, maturity, yield of tuber. (iv) (a) 1960—62. (b) Yes. (c) Results of combined analysis are presented under 5. Results. (v) and (vi) Nil. (vii) Error variances are homogeneous and Treatments × Years interaction is absent.

5. RESULTS :

Pooled results

(i) 54·8 Q/ha. (ii) 12·58 Q/ha. (based on 51 d.f. made up of pooled error and Treatments × Years interaction). (iii) Treatment differences are not significant. (iv) Av. yield of tuber in Q/ha.

Treatment	T_1	T_2	T_3	T_4
Av. yield	49·9	61·2	54·6	53·6

Individual results

Treatment	T_1	T_2	T_3	T_4	Sig.	G.M.	S.E./plot
Year							
1960	11·6	12·5	12·0	9·9	*	11·5	13·68
1961	74·0	96·0	77·2	85·9	**	83·3	9·60
1962	64·1	75·1	74·6	64·9	N.S.	69·7	13·36
Pooled	49·9	61·2	54·6	53·6	N.S.	54·8	12·58

Crop :- Potato (*Rabi*). **Ref :- Bh. 63(44), 64(72).**

Site :- Irrigation Res. Stn., Bikramganj. **Type :- 'I'.**

Object : —To determine the method of irrigation and level of critical moisture for optimum yield of Potato.

B ASAL CONDITIONS :

(i) (a) N.A. (b) Paddy. (c) 50·4 Kg/ha. of N+50·4 Kg/ha. of P_2O_5. (ii) Light clay. (iii) 30, 31.10.63 ; 26, 27.10.64. (iv) (a) N.A. (b) Ridge and furrow method. (c) 996 Kg/ha. (d) 60 cm.×20 cm. (e) N.A. (v) 84 Kg/ha. of N+90 Kg/ha. of P_2O_5+90 Kg/ha. of K_2O. (vi) Up—to—date (early). (vii) Irrigate (viii) 2 weedings, gap filling and earthing up. (ix) N.A. (x) 6, 7.2.64 ; 3 to 5.2.65.

2. TREATMENTS:

Main-plot treatments:

2 methods of irrigation: M_1=Furrows method and M_2=Sprinkler method.

Sub-plot treatments:

3 levels of irrigation: I_1=Irrigation at 30 % available moisture, I_2=Irrigation at 50 % available moisture and I_3=Irrigation at 70 % available moisture.

3. DESIGN:

(i) Split-plot. (ii) (a) 2 main-plots/replication and 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 21·34 m. ×3·66 m. (b) 20·12 m.×2 44 m. (v) 61 cm.×61 cm. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Spraying of Copper fungicides as preventive measure against blight. (iii) Germination, length of root, length and number of branches and yield of tuber. (iv) (a) 1963 –65. (b) Yes. (c) Results of combined analysis are presented under 5. Results. (v) and (vi) Nil. (vii) Expt. for 1965 was not included in the pooled analysis due to very low yield. Both the sub-plot and main plot error variances are homogeneous for the years 1963 and 64 and both the sub-plot and main-plot Treatments × Years interactions are absent.

5. RESULTS:

Pooled results

(i) 34·7 Q/ha. (ii) (a) 19·08 Q/ha. (based on 7 d.f. made up of pooled error and Years × Main-plot treatment interaction.) (b) 8·13 Q/ha. (based on 28 d.f. made up of pooled error and Years × Sub-plot treatment and Years × Main-plot × Sub-plot interaction). (iii) Av. yield of tuber in Q/ha.

	I_1	I_2	I_3	Mean
M_1	35·0	32·5	41·5	36·4
M_2	32·6	30·8	35·8	33·1
Mean	33·8	31·7	38·7	34·7

Individual results

Treatment	I_1	I_2	I_3	Sig.	M_1	M_2	Sig.	G.M.	S.E./plot main-plot	S.E./plot Sub-plot
Years										
1963	33·2	33·5	38·4	N.S.	35·7	34·4	N.S.	35·0	25·80	9·50
1964	34·4	29·9	39·0	*	37·1	31·8	N.S.	34·4	13·10	6·40
Pooled	33·8	31·7	38·7	N.S.	36·4	33·1	N.S.	34·7	19·08	8·13

Crop :- Potato (*Rabi*). **Ref :- Bh. 60(105), 62(12), 63(3), 64(163),**

Site :- Irrigation Res. Centre, Madhepura. **Type :- 'I'.**

Object :—To determine the critical level of moisture for optimum yield of Potato.

1. BASAL CONDITIONS:

(i) (a) N.A. (b) Aus Paddy and Jute for 60 and 64; Maize for 62 and *Dhaincha* green manuring for 63. (c) N.A. for 60, 63, 64; 56·0 Kg/ha. of N as A/S+44·8 Kg/ha. of P_2O_5 as Super for 62. (ii) Sandy loam. (iii) 14.11.60; 6.11.62; 28.11.63; 31.10.64. (iv) (a) 4—5 Bihar junior ploughings for 60, 64, 8 ploughings for

62, 63. (b) Tuber was kept at ground level and covered with 15 cm. soil by spade for 60, 64; Flat for 62 and Ridge for 63. (c) 948 Kg/ha. for 60 and 64; 406 Kg/ha. for 62 and 738 Kg/ha. for 63. (d) 46 cm.× 15 cm. for 60, 64; 61 cm.×15 cm. for 62; N.A. for 63. (e) N.A. (v) N.A.; Compost+84 Kg/ha. of N as Urea+90 Kg/ha. of P_2O_5 as Supcr+90 Kg/ha. of K_2O as Mur. Pot.; 420·3 Kg/ha. of N as A/S+560·4 Kg/ha. of P_2O_5 as Super+179·3 Kg/ha. of K_2O as Mur. Pot.; N.A. (vi) N.A. (vii) Irrigated as per treatments. (viii) Weeding; hoeing and earthing. (ix) N.A. for 60, 63, 64,; 2·4 cm. for 62. (x) 24 to 26.2.61; 12 to 16.3.63; N.A.; 29 to 30.3.65.

2. TREATMENTS :

4 irrigational treatments : T_0=Control (pre-sowing alone), T_1=Irrigation at 10 days interval, T_2=Irrigation at 15 days interval and T_3=Irrigation at 20 days interval.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 5. (iv) (a) 30·48 m.×3·35 m. (b) 28·65 m.×2·13 m. (v) 91 cm.× 61 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of tuber. (iv) (a) 1960—64 (Expt. for 61—N.A.). (b) N.A. (c) Results of combined analysis are presented under 5. Results. (v) and (vi) Nil. (vii) Error variances are heterogeneous and Treatments×Years interaction is present.

5. RESULTS :

Pooled results

(i) 176·8 Q/ha. (ii) 19·01 Q/ha. (based on 9 d.f. made up of Treatments×Years interaction). (iii) Treatment differences are highly significant. (iv) Av. yield of tuber in Q/ha.

Treatment	T_0	T_1	T_2	T_3
				C.D.=6·01 Q/ha.
Av. yield	56·9	84·2	90·1	76·2

Individual results

Treatment	T_0	T_1	T_2	T_3	Sig.	G.M.	S.E./plot
1960	48·4	58·6	60·0	59·7	N.S.	56·8	15·54
1962	77·5	103·6	101·2	91·4	N.S.	93·4	16 73
1963	21·7	51·6	63·2	46·2	**	45·7	6·96
1964	80·3	123·0	135·9	107·5	**	111·6	8·88
Pooled	56·9	84·2	90·1	76·2	**	76·8	19·01

Crop :- Potato (*Rabi*). **Ref :- Bh. 61(117).**

Site :- Irrigation Res. Stn., Madhepura. **Type :- 'I'.**

Object :—To determine the critical level of moisture to fix the irrigation schedule.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Aus Paddy and Jute. (c) N.A. (ii) N.A. (iii) 29.11.61. (iv) (a) 4—5 Bihar junior ploughings. (b) Line sowing. (c) N.A. (d) 46 cm.×15 cm. (e) N.A. (v) 420·3 Kg/ha. of A/S+560·4 Kg/ha. of Super+179·3 Kg/ha. of Mur. Pot. (vi) D.R.R. (vii) As per treatments. (viii) Weeding and hoeing by hand. (ix) N.A. (x) 15.3.62.

2. TREATMENTS :

4 irrigational treatments : I_0=Control, I_1=Irrigation upto 3·8 cm. at an interval of 10 days in Nov., 20 days in Dec., 10 days in Jan. and 7 days in Feb., I_2=Irrigation upto 5·1 cm. at an interval of 15 days in Nov., 20 days in Dec., 15 days in Jan. and 10 days in Feb. and I_3=Irrigation upto 7·0 cm. at an interval of 20 days in Nov., 20 days in Dec., 20 days in Jan. and 14 days in Feb.

3. DESIGN :

(i) R.B.D (ii) (a) 4. (b) N.A. (iii) 5. (iv) (a) 30·50 m.×3·40 m. (b) 28·60 m.×2·10 m. (v) 95 cm.× 65 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination count, height of plants, maturity count and yield of tuber. (iv) (a) 1961—only. (b) and (c) Nil. (v) to (vii) Nil.

5. RESULTS:

(i) 32·1 Q/ha. (ii) 5·56 Q/ha. (iii) Treatment differences are significant. (iv) Av. yield of tuber in Q/ha.

Treatment	T_0	T_1	T_2	T_3
Av. yield	36·8	28·6	26·4	36·6

C.D.=7·6 Q/ha.

Crop :- Potato (*Rabi*). **Ref :- Bh. 61(118). 62(92).**

Site :- Irrigation Res. Stn., Madhepura. **Type :- 'I'.**

Object :—To determine the critical level of moisture for optimum yield of Potato.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Aus Paddy. (c) N.A. (ii) N.A. (iii) 25.11.61 ; 5.11.62. (iv) (a) 4—5 Bihar junior ploughings. (b) Line sowing. (c) 553 Kg/ha. (d) 46 cm.×15 cm. (e) 1. (v) 420·3 Kg/ha. of A/S+560·4 Kg/ha. of Super+179·3 Kg/ha. of Mur. Pot. (vi) D.R.R. (vii) As per treatments. (vii) Weeding and hoeing by hand. (ix) N.A. (x) 15 to 18.2.62 ; 17 to 20 2.63.

2. TREATMENTS :

4 Irrigational treatments : I_0=Control (only pre-sowing irrigation). I_1=Irrigation at 2·5 cm./ha in Nov., 3·8 cm./ha in Dec., 3·8 cm./ha. in Jan. and 5·0 cm./ha in Feb. at an interval of 10 days, I_2=Irrigation at 3·1 cm./ha. in Nov., 3·8 cm./ha. in Dec., 5·0 cm./ha. in Jan. and 6·9 cm./ha. in Feb. at an interval of 15 days and I_3=Irrigation at 3·8 cm./ha. in Nov., 3·8 cm./ha. in Dec., 6·9 cm,/ha. in Jan. and 10 cm./ha. in Feb. at an interval of 20 days.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 5. (iv) (a) 30·48 m.×3·35 m. (b) 28·65 m.×2·13 m. (v) 91 cm.× 61 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil ; spray of Copper fungicides against early and late blight infestation. (iii) Germination, height measurement and yield of tuber. (iv) (a) 1961—62. (b) N.A. (c) Nil. (v) No. (vi) Nil. (vii) Error variances are heterogeneous and Treatments×Years interaction is absent. Hence the results of individual years are presented under 5. Results.

5. RESULTS :

61(118)

(i) 63·2 Q/ha. (ii) 14·91 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of tuber in Q/ha.

Treatment	I_0	I_1	I_2	I_3
Av. yield	64·7	60·7	64·4	63·0

62(92)

(i) 122·7 Q/ha. (ii) 56·49 Q/ha. (iii) Treatment differences are **not** significant. (iv) Av. yield of tuber in Q/ha.

Treatment	I_0	I_1	I_2	I_3
Av. yield	83·4	176·6	111·2	119·4

Crop :- Potato (*Rabi*). **Ref :- Bh. 63(9).**

Site :- Irrigation Res. Stn., Madhepura. **Type :- 'I'.**

Object :—To determine the critical level of moisture for optimum yield of Potato.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Maize and *Kalai*. (c) Nil. (ii) Sandy loam. (iii) 21.11.63. (iv) (a) 8 ploughings, plankings, harrowing and leveling by Bihar junior plough and *deshi* plough. (b) Ridge method. (c) 738 Kg/ha. (d) 61 cm.×15 cm. (e) N.A. (v) 110·7 Q/ha. of Compost+420·3 Kg/ha. of A/S+560·4 Kg/ha. of Super+179·3 Kg/ha. of Mur. Pot. (vii) As per treatments. (viii) 2 earthings by spade, 2 weedings by hand hoe and 2 weedings by *khurpi*. (ix) N.A. (x) 15 to 18.3.64.

2. TREATMENTS :

4 levels of irrigation : T_0=Control (pre-sowing irrigation alone), T_1=16 cm., T_2=14 cm. and T_3=11 cm. irrrigation per hectare.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 5. (iv) (a) 30·50 m.×3·40 m. (b) 28·60 m.×2·10 m. (v) 91 cm.×61 cm. (vi) Yes.

4. GENERAL :

(i) Nil. (ii) Virus and late blight attack spray with Copper fungicide. (iii) Height of plants, no. of tuber per plant, weight of tuber per plant, growth of tuber, yield of tuber. (iv) (a) 1963—only. (b) No. (c) N.A. (v) to (vii) Nil.

5. RESULTS :

(i) 109·2 Q/ha. (ii) 14·00 Q/ha. (iii) Treatment differences are significant. (iv) Av. yield of tuber in Q/ha.

Treatment	T_0	T_1	T_2	T_3
Av. yield	89·1	116·9	120·3	110·5

C.D.=19·3 Q/ha.

Croy :- Potato (*Kharif*). **Ref :- Bh. 61(166), 62(141), 63(174).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'D'.**

Object :—To assess the effect of weedicides as pre-emergence spray as weed control in Potato.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Fallow for 61 and 62 ; Wheat. (c) Nil for 61 and 62 ; 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) 10.8.61 ; 17.8.62 ; 5.8.63. (iv) (a) 2 ploughings. (b) Line sowing for 61 and 62 ; Dibbling. (c) 720 Kg/ha. for 61 and 62 ; N A. (d) 22·86 cm. between plants ; 38·10 cm. between rows. (e) N.A. for 61 and 62 ; One tuber/hole. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+67·2 Kg/ha. of K_2O as Mur. Pot. (vi) ON—2236. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) 80·0 cm. ; 42·8 cm. ; 67·2 cm. (x) 20.10.61 ; 12.11.62 ; 15.10.63.

2. TREATMENTS :

9 weedicidal treatments : T_0=Control, T_1=1·12 Kg/ha. of Karmex W, T_2=0·56 Kg/ha. of Karmex W, T_3=1·12 Kg/ha. of Karmex DW, T_4=0·56 Kg/ha. of Karmex DW, T_5=1·12 Kg/ha. of Simazine, T_6=0·56 Kg/ha. of Simazine, T_7=1·12 Kg/ha. of Crag hetricides and T_8=0·56 Kg/ha. of Crag hetricides.

3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) 29·60 m. × 4·30 m. (iii) 3. (iv) (a) and (b) 4·90 m. × 2·40 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Height of plants ; no. of tuber/plant ; yield of tubers. (iv) (a) 1961–63. (b) Yes. (c) Results of combined analysis are presented under 5. Results. (v) No. (vi) (vii) Error variances are heterogeneous and Treatments × Years interaction is present.

5. RESULTS :

Pooled results

(i) 46·3 Q/ha. (ii) 20·73 Q/ha. (based on 16 d.f. made up of Treatments × Years interaction). (iii) Treatment differences are not significant. (iv) Av. yield of tuber in Q/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Av. yield	40·5	44·1	43·7	53·0	47·7	52·4	52·3	44·7	37·8

Individual results

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	Sig.	G.M.	S.E./plot
Year 1961	14·5	21·6	24·8	22·1	25 0	27·3	33·0	19·7	27·6	N.S.	23 9	6·4
1962	28·5	9·5	16·5	33·1	33·9	39 3	29·0	40·8	32·7	**	29·3	7·4
1963	78·5	101·3	89·9	103·7	84·2	90·7	95·0	73·7	53·1	**	85·6	12·2
Pooled	40·5	44 1	43·7	53·0	47·7	52·4	52·3	44·7	37·8	N.S.	46·3	20·7

Crop :- Potato (*Kharif*). **Ref :- Bh. 62(281).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'D'.**

Object :—To know the comparative efficacy of different Nematocides to check the nemotode infestation.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Potato. (c) 245 Kg/ha. of N as A/S+300 Kg/ha. of P_2O_5 as Super+125 Kg/ha. of K_2O as Mur. Pot. (ii) Red laterite. (iii) 10.7.62. (iv) (a) 3–4 ploughings. (b) Ridge method. (c) 2·5 Q/ha. (d) 90 cm. between rows. (e) —. (v) 245 Kg/ha. of A/S+300 Kg/ha. of Super+125 Kg/ha. of Mur. Pot. (vi) ON—2236. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 16.10.62.

2. TREATMENTS :

All possible combinations of (1) and (2)+one control

(1) 5 chemical treatments : T_1=28 Kg/ha. of Nemagon (1 : 3 : : chemical : water i.e. 112 Kg/ha. of mixture), T_2=45 Kg/ha. of Nematox (1 : 4 : : chemical : water i.e. 225 Kg/ha. of mixture), T_3=224 Kg/ha. of D.D. soil fumigant, T_4=2·85 Kg/ha. of Gamma BHC (1·12 Kg/ha. in 90 litres of water i.e. 562·25 Kg/ha.).

(2) 2 methods of application of Nematocides : M_1=Injection method and M_2=Furrows method.

3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 3. (iv) (a) and (b) 4·57 m. × 2·43 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of nematodes, control measure as per treatments. (iii) % of infestation, yield of tuber. (iv) (a) 1962—only. (b) and (c) Nil. (v) Netarhat. (vi) and (vii) Nil.

5. RESULTS:

Yield data

(i) 61·8 Q/ha. (ii) 21·00 Q/ha. (iii) Main effect of M is highly significant. (iv) Av. yield of tuber in Q/ha.

Control=89·9 Q/ha.

	T_1	T_2	T_3	T_4	Mean
M_1	64·0	76·2	72·2	83·1	73·9
M_2	48·9	55·8	31·3	40·8	42·7
Mean	53·4	66·0	51·7	61·9	58·3

C.D. for M marginal means=18·18 Q/ha.

Infestation data

(i) 34·7 degrees. (ii) 8·17 degrees. (iii) Main effect of M is highly significant. (iv) Mean infestation in degrees.

Control=44·7 degrees.

	T_1	T_2	T_3	T_4	Mean
M_1	32·5	28·5	18·4	30·5	27·5
M_2	42·5	38·5	39·6	37·1	39·4
Mean	37·5	33·5	29·0	33·8	33·4

C.D. for M marginal means=5·00 degrees.

Crop :- Potato (*Kharif*). **Ref :- Bh. 62(280).**

Site :- Netarhat (Palamaul c.f.). **Type :- 'D'.**

Object :—To find out the optimum dose of Nematox in controlling the nematode infestation.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Potato. (c) 245 Kg/ha. of A/S+300 Kg/ha. of Super+125 Kg/ha. of Mur. Pot. (iii) Red laterite. (iii) 245 Kg/ha. of A/S+300 Kg/ha. of Super+125 Kg/ha. of Mur. Pot. (iv) ON—2236. (v) (a) 3—4 ploughings. (b) Ridge method. (c) 2·5 Q/ha. (d) 90 cm. between rows. (e) —. (vi) 29.7.62. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 22.10.62.

2. TREATMENTS :

5 nematocidal treatments applied on 9.7.62: T_0=0, T_1=45·00, T_2=33·67, T_3=22·50 and T_4=11·25 lit./ha. of Nematox.

3. DESIGN:

(i) R.B.D., 5 plots/replications and 4 replications. (ii) N.A. (iii) (a) N.A. (b) 5·48 m.×2·74 m. (iv) Yes.

4. GENERAL:

(i) Good. (ii) Nematode attack, control measure as per treatments. (iii) Percentage of infestation, yield of tuber. (iv) (a) 1962—65. (b) No. (c) Nil. (v) No. (vi) Nil. (vii) Yield data for 62—N.A. Only this expt. has been conducted on the cultivators' field and other years expt. at Govt. Agri. Farm, Netarhat. Hence the results for 62 and 63 to 65 have been presented separately.

5. RESULTS:

(i) 16·9 degrees. (ii) 3·85 degrees. (iii) Treatment differences are not significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	
Mean infestation	25·7	12·6	15·6	18·3	12·3	C.D.=3·64 degrees.

Crop :- Potato (*Kharif*). **Ref :- Bh. 64(345).**

Site :- Govt. Agri. Farm, Netarhat. **Type :- 'D'.**

Object :—To know the effective dose of Nematox for controlling nematode infestation.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Potato. (c) 245 Kg/ha. of A/S+300 Kg/ha. of Super+125 Kg/ha. of Mur. Pot. (ii) Red laterite. (iii) 23.7.64. (iv) (a) 3—4 ploughings. (b) Ridge method. (c) 2·5 Q/ha. (d) 90 cm. between rows. (e) —. (v) 245 Kg/ha. of A/S+300 Kg/ha. of Super+125 Kg/ha. of Mur. Pot. (vi) ON-2236. (vii) Irrigated. (viii) Weeding and narrowing. (ix) N.A. (x) 18.10.64.

2. TREATMENTS:

5 nematocidal treatments : T_0=Control, T_1=Nematox at 11·37 litres/ha. with a carrier K.Oil., T_2=Nematox at 22·75 litres/ha. with a carrier K.Oil, T_3=Nematox at 34·12 litres/ha. with a carrier K. oil and T_4=Nematox at 45·50 litres/ha. with a carrier K. oil.

3. DESIGN :

(i) R.B.D (ii) (a) 5. (b) N.A. (iii) 3. (iv) (a) and (b) 5·48 m.×2·74 m. (v) Nil. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nematode attack, control measure as per treatments. (iii) Percentage of infestation, yield of tubers. (iv) (a) 1962—65 (In 62, expt. was conducted on cultivators' field). (b) No. (c) Nil. (v) No. (vi) Nil. (vii) Results of the expt. for 1962 is presented under reference no. 62(280) on page 571 further the crop under treatment T_4 in 1964 did not germinate, hence the results for 1964 has been presented excluding T_4 under 5. Results. Also pooled analysis for 1963 and 65 is presented on Page 573.

5. RESULTS:

Yield data

(i) 10·7 Q/ha. (ii) 2·52 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of tuber in Q/ha.

Treatment	T_0	T_1	T_2	T_3
Av. yield	10·6	9·6	13·1	9·6

Infestation data

(i) 21·58 degrees. (ii) 3·26 degrees. (iii) Treatment differences are highly significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	
Mean infestation	23·2	19·3	16·3	27·5	C.D.=6·89 degrees.

Crop :- Potato (*Kharif*). **Ref :- Bh. 63(311),65(181).**

Site :- Govt. Agri. Farm, Netarhat. **Type :- 'D'.**

Object :—To find out optimum dose of Nematox in controlling the nematode infestation.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Potato. (c) 245 Kg/ha. of A/S+300 Kg/ha. of Super+125 Kg/ha. of Mur. Pot. (ii) Red laterite. (iii) 7.8.63 ; 22.7.65/6.8.65. (iv) (a) 3—4 ploughings. (b) Ridge method. (c) 2·5 Q/ha. (d) 90 cm. between rows. (e) —. (v) 245 Kg/ha. of A/S+300 Kg/ha. of Super+125 Kg/ha. of Mur. Pot. (vi) ON—2236. (vii) Irrigated. (viii) Weeding and harrowing. (ix) N.A. (x) 1 to 3.11.63 ; 3/23.10.65.

2. TREATMENTS:

5 nematocidal treatments : T_0=Control, T_1=Nematox at 11·37 litres/ha. with a carrier K.oil, T_2=Nematox at 22·75 litres/ha. with a carrier K. Oil, T_3=Nematox at 34·12 litres/ha. with a carrier K. Oil and T_4=Nematox at 45·50 litres/ha. with a career K. Oil.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) and (b) 5·48 m.×2·74 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nematode attack, control measure as per treatments. (iii) Percentage of infestation, yield of tuber. (iv) (a) 1962—65 (in 62, expt. was conducted on cultivators' field and in 64, crop under treatment T_4 did not germinate). (b) No. (c) Nil. (v) No. (vi) Nil. (vii) As error variances for the years 63 and 65 are heterogeneous and Treatments×Years interaction is absent, the results of individual years are presented under 5. Results.

5. RESULTS :

Yield data

63(311)

(i) 37·0 Q/ha. (ii) 9·53 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of tuber in Q/ha.

Treatment	T_0	T_1	T_2	T_3	T_4
Av. yield	35·4	33·2	35·6	36·6	44·2

65(181)

(i) 133·1 Q/ha. (ii) 17·55 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of tuber in Q/ha.

Treatment	T_0	T_1	T_2	T_3	T_4
Av. yield	135·1	132·3	135·0	132 0	130·8

Infestation data

63(311)

(i) 16·9 degrees. (ii) 3·85 degrees. (iii) Treatment differences are not significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4
Mean infestation	15·7	17·2	16·9	17·8	16·6

65(181)

(i) 14·6 degrees. (ii) 2·77 degrees. (iii) Treatment differences are not significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4
Mean infestation	15·6	16·1	14·0	13·8	13·3

———

Crop :- Potato (*Kharif*). **Ref :- Bh. 60(316), 61(321), 63(312).**

Site :- Govt. Agri. Farm, Netarhat. **Type :- 'D'.**

Object :—To know the comparative efficacy of different Nematocides to check the nematode infestation.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Potato. (c) 245 Kg/ha. of A/S+300 Kg/hg. of Super+125 Kg/ha. of Mur. Pot. (ii) Red laterite. (iii) 22.7.60; 21.7.61 ; 7.8.63. (iv) (a) 3—4 ploughings. (b) Ridge method. (c) 2·5 Q/ha. (d) 90 cm. between rows. (e) N.A. (v) 245 Kg/ha. of A/S+300 Kg/ha. of Super+125 Kg/ha. of Mur. Pot. (vi) ON—2236. (vii) Irrigated. (viii) Weeding and harrowing. (ix) N.A. (x) 17.10.60 ; 11.10.61 ; 28.10.63.

2. TREATMENTS :

All combinations of (1) and (2)+one control

(1) 4 chemical treatments : T_1=28 Kg/ha. of Nemagon (1 : 3 : : chemical : water, i.e. 112 Kg/ha. of mixture), T_2=45 Kg/ha. of Nematox (1 : 3 : : Chemical : K. Oil i.e. 224 Kg/ha. mixture), T_3=224 Kg/ha. of D.D. soil fumigant and T_4=2·85 Kg/ha. Gamma of BHC (1·12 Kg/ha. in 90 litres of water i.e. 562·25 Kg/ha.).

(2) 2 methods of application of nematocides : M_1=Injection and M_2=Furrow.

3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 3. (iv) (a) and (b) 5·48 m.×2·74 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of nematocides, control measure as per treatments. (iii) P.C. of infestation ; yield of tuber. (iv) (a) 1960—65. (Expt. for 62—N.A. ; treatments modified in 1964). (b) No. (c) Results of combined analysis are persented under 5. Results. (v) Kanke. (vi) Nil. (vii) Error variances are heterogeneous and Treatments×Years interaction is present.

5. RESULTS :

Yield data

Pooled results

(i) 47·2 Q/ha. (ii) 59·39 Q/ha. (based on 16 d.f. made up of Treatments×Years interaction). (iii) Treatment differences are not significant. (iv) Av. yield of tuber in Q/ha.

Control=53·1 Q/ha.

	T_1	T_2	T_3	T_4	Mean
M_1	40·5	59·0	48·5	49·0	49·2
M_2	34·5	52·4	45·7	42·4	43·7
Mean	37·5	55·7	47·1	45·7	46·5

Individual results

Treatment	T_1	T_2	T_3	T_4	Sig.	M_1	M_2	Sig.	Control
Year 1960	36·7	76·8	56·4	42·5	**	56·9	49·4	**	60·1
1961	38·1	48·7	47·6	59·3	*	52·2	44·7	N.S.	63·7
1963	37·5	41·6	37·3	35·3	N.S.	38·7	37·2	N.S.	35·6
Pooled	37·5	55·7	47·1	45·7	N.S.	49·2	43·7	N.S.	53·1

Sig.	G.M.	S.E./plot
N S.	53 9	21·33
N.S.	50·1	11·90
N.S.	37·7	6·93
N.S.	47·2	59·39

Infestation data

60(316)

(i) 43·4 degrees. (ii) 8·38 degrees. (iii) Main effect of T and M are highly significant. (iv) Mean infestation in degrees.

Control=66·7 degrees

	T_1	T_2	T_3	T_4	Mean
M_1	23·7	16·7	20·5	49·7	27·6
M_2	44·9	53·1	46·1	69·8	53·5
Mean	34·3	34·9	33·3	59·7	40·5

C.D. for M marginal means=7·25 degrees.

C.D. for T marginal means=5·13 degrees.

61(321)

(i) 44·4 degrees. (ii) 6·17 degrees. (iii) Main effects of M and T are highly significant. (iv) Mean infestation in degrees.

Control=67·5 degrees

	T_1	T_2	T_3	T_4	Mean
M_1	52·0	26·3	31·8	27·2	34·3
M_2	62·6	47·7	41·4	43·3	48·7
Mean	57·3	37·0	36·6	35·2	41·5

C.D. for M marginal means=3·78 degrees.

C.D. for T marginal means=5·34 degrees.

63(312)

(i) 14·0 degrees. (ii) 5·1 degrees. (iii) Treatment differences are not significant. (iv) Mean infestation in degrees.

Control=22·8 degrees

	T_1	T_2	T_3	T_4	Mean
M_1	8·8	11·6	13·6	18·4	13·1
M_2	13·0	10·1	12·4	15·2	12·7
Mean	10·9	10·9	13·0	16·8	12·9

Crop :- Potato (*Kharif*). **Ref :- Bh. 64(346), 65(182).**

Site :- Govt. Agri. Farm, Netarhat. **Type :- 'D'.**

Object :—To know the comparative efficacy of different Nematocides to control the nematode infestation.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Potato. (c) 245 Kg/ha. of A/S+300 Kg/ha. of Super+125 Kg/ha. of Mur. Pot. (ii) Red laterite. (iii) 22.7.64 ; 22 and 6.8.65. (iv) (a) 3—4 ploughings. (b) Ridge method. (c) 2·5 Kg/ha. (d) 90 cm. between rows. (e) —. (v) 245 Kg/ha. of A/S+300 Kg/ha. of Super+125 Kg/ha. of Mur. Pot. (vi) ON-2236. (vii) Irrigated. (viii) Weeding and harrowing. (ix) N.A. (x) 17.10.64 ; 3 and 23.10.65.

2. TREATMENTS :

All possible combination of (1) and (2)+3 extra treatments

(a) 4 types of nematocides: T_1=224 Kg/ha. of D.D. soil fumigant, T_3=28 Kg/ha. of Nematox with a carrier of K. Oil, T_3=45 Kg/ha. of Nemagon with a carrier of K. Oil and T_4=2·85 Kg/ha. of Gamma BHC.

(b) 2 methods of application : M_1=Injection and M_2=Furrow.

3 extra treatments : E_0=Control, E_1=2·24 Kg/ha. of Nelite (drenching with water) and E_2=37 Q/ha. of Karanj cake.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 11. (b) N.A. (iii) 3. (iv) (a) and (b) 5·48 m.×2·74 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of nematodes, control as per treatments. (iii) P.C. of infestation, yield of tuber. (iv) (a) 1960-65 (expt. for 1962—N.A. and Trs. modified in 64). (b) No. (c) Nil. (v) No. (vi) Nil. (vii) Yield data for 64—N.A., hence the analysis results for the yield data of 1965 are presented only and for infestation data for both the years are presented individualy under 5. results.

5. RESULTS :

Yield data

65(182)

(i) 141·7 Q/ha. (ii) 11·7 Q/ha. (iii) Main effect of T is highly significant and that of M and 'extra vs others' is significant. (iv) Av. yield of tuber in Q/ha.

E_0=152·9, E_1=142·1, E_2=153·3 Q/ha.

	T_1	T_2	T_3	T_4	Mean
M_1	148·4	133·2	130·9	117·5	132·5
M_2	149·9	142·8	157·4	130·0	145·1
Mean	149·2	138·0	144·2	123·8	138·8

C.D. for T marginal means=14·06 Q/ha.

C.D. for M marginal means=9·93 Q/ha.

C.D. for 'Extra *vs.* others'=4·56 Q/ha.

Infestation data

64(346)

(i) 19·8 degrees. (ii) 4·15 degrees. (iii) Extra treatments among themselves are significant. (iv) Mean infestation in degrees.

E_0=33·2, E_1=18·3 and E_2=24·9 degrees.

	T_1	T_2	T_3	T_4	Mean
M_1	24·5	24·6	16·7	19·5	21·3
M_2	23 1	20·1	23·0	23·7	22·5
Mean	23·8	22·4	19·8	21·6	21·9

C.D. for extra treatments=10·06 degrees.

65(182)

(i) 19·8 degrees. (ii) 4·15 degrees. (iii) 'Error *vs.* others' is highly significant and extra treatments among themselves are significant. (iv) Mean infestation in degrees.

E_0=30·9, E_1=22·2 and E_2=18·9 degrees.

	T_1	T_2	T_3	T_4	Mean
M_1	16·4	16·9	19·5	16·8	17·4
M_2	18·9	17·3	19·2	21·0	19·1
Mean	17·7	17·1	19·3	18·9	16·2

C.D. for 'Extra *vs.* others'=3·38 degrees.
C.D. for extra treatments=7·07 degrees.

Crop :- Tomato (*Rabi*). **Ref :- Bh. 62(140).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'D'.**

Objeet :—To assess the effectiveness of harmones and other chemical spray in inducing increased parthenocaspy, early fruit setting and improved fruit size.

1. BALAL CONDITIONS :

(i) (a) Nil. (b) *Gora* Paddy. (c) 22·4 Kg/ha. of N as A/S+22·4 Kg/ha. of P_2O_5 as Super+22·4 Kg/ha. of K_2O as Mur. Pot. (ii) Sandy loam. (iii) 12.10.62. (iv) (a) 3 ploughings. (b) Transplanting. (c) —. (d) 61 cm.×61 cm. (e) 2. (v) 90 Kg/ha. of N as A/S+90 Kg/ha. of P_2O_5 as Super+67·2 Kg/ha. of K_2O as Mur. Pot. (vi) Marglobe. (vii) Irrigated. (viii) Weeding, hoeing and earthing. (ix) 16 cm. (x) 28.1.63 to 2.5.63.

2. TREATMENTS :

3 harmonical treatments : T_0=Control, T_1=25 mg./lit. of β Napthony acetic acid and T_2=50 mg./lit. of β Napthony acetic acid

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) 15·85 m.×5·18 m. (iii) 6. (iv) (a) 4·88 m.×2·44 m. (b) 3·66 m.×2·44 m. (v) 61 cm. on either side. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Height of plants, no. of fruits, yield of Tomato. (iv) (a) 1962—65 (treatments modified in 63 and then again in 64). (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS:

(i) 116 Q/ha. (i) 49 9 Q/ha. (iii) Treatment differences are not significant. (iv) Av· yield of Tomato in Q/ha.

Treatment	T_0	T_1	T_2
Av. yield	42·3	149·6	87·2

Crop :- Tomato (*Rabi*). **Ref :- Bh. 63(163).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'D'.**

Object : – To assess the effectiveness of harmones and other chemical spray in inducing increased parthenocaspy, early fruit setting and improved fruit size.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Gora* Paddy. (c) 22·4 Kg/ha. of N as N/S+22·4 Kg/ha. of P_2O_5 as Super+22·4 Kg/ha. of K_2O as Mur. Pot. (ii) Sandy loam. (iii) 13.10.63. (iv) (a) 3 ploughings. (b) Transplanting. (c) —. (d) 61 cm.×61 cm. (e) 2. (v) 90 Kg/ha. of N as A/S+90 Kg/ha. of P_2O_5 as Super+67·2 Kg/ha. of K_2O of Mur. Pot. (v) Marglobe. (vii) Irrigated. (viii) Weeding, hoeing and earthing (ix) 34 cm. (x) 25.1.64 to 5.5.64.

2. TREATMENTS:

5 harmonical treatments : T_0=Control, T_1=25 mg./lit. of β Napthony acetic acid, T_2=50 mg./lit of β Napthony acetic acid, T_3=25 mg./lit. of Indole Butyric acid and T_4=50 mg./lit. Indole Butyric acid.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) 15·85 m.×5·18 m. (iii) 6. (iv) (a) and (b) 4·88 m.×2·44 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Height of plants, no. of fruits, yield of Tomato. (iv) (a) 1962—65 (treatments modified in 63 and then again in 64). (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS:

(i) 419·4 Q/ha. (ii) 75·2 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of Tomato in Q/ha.

Treatment	T_0	T_1	T_2	T_3	T_4
Av. yield	421·2	431·3	436·3	383·6	425·4

Crop :- Tomato (*Rabi*). **Ref :- Bh. 64(216), 65(117).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'D'.**

Object :—To assess the effect of harmones and other chemical sprays in inducing increased parthenocaspy, early fruit setting and improved fruit size.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Bhindi*; Wheat. (c) Nutrient spray; 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Sandy Loam; Red loam. (iii) 25.10.64; 12.11.65. (iv) (a) 3 ploughings; 2 ploughings. (b) Transplanting; Dibbling. (c) —. (d) 61 cm.×61 cm.; 46 cm.×46 cm. (e) 3. (v) 90 Kg/ha. of N as A/S+90 Kg/ha. of P_2O_5 as Super+67·2 Kg/ha. of K_2O as Mur. Pot.; 112 Kg/ha. of N as A/S+90 Kg/ha. of P_2O_5 as Super+67·2 Kg/ha. of K_2O as Mur. Pot. (vi) Marglobe. (vii) Irrigated; Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 30.1.65 to 3.5.65; 5.3.66 to 25.5.66.

2. TREATMENTS :

7 harmonical treatments : T_0=Control, T_1=Para-chlorophenoxy acetic acid at 25 mg./lit. of water, T_2= Para-chlorophenoxy acetic acid at 50 mg./lit. of water, T_3=Nepthoxy acetic acid at 25 mg./lit. of water, T_4=Nepthoxy acetic acid at 50 mg./lit. of water, T_5=Indole Butyric acid at 25 mg./lit. of water aud T_6=Indole Butyric acid at 50 mg./lit. of water.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) 22·86 m.×4·27 m ; N.A. (iii) 4. (iv) (a) 4·88 m.×2·44 m ; 3·05 m.×4·57 m. (b) 3·66 m.×2·44 m ; 3·05 m.×3·66 m. (v) 61 cm. on either side ; 45 cm. on either side. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) No. of fruits and yield of Tomato. (iv) (a) 1962—65 (treatments modified in 63 and then again in 64). (b) Yes. (c) Results of co nbined analysis are presented under 5. Results. (v) No. (vi) Nil. (vii) Error variances are homogeneous and Treatments×Years interaction is absent.

5. RESULTS :

Pooled results

(i) 276·2 Q/ha. (ii) 44·69 Q/ha. (based on 42 d.f. made up of pooled error and Treatments×Years interaction). (iii) Tretment differences are not significant. (iv) Av. yield of Tomato Q/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	278·9	281·9	255·8	285·6	275·8	279·2	272·4

Individual results

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	Sig.	G.M.	S.E./plot
Year 1964	394·5	387·7	329·3	368·6	335·9	364·9	364·9	N.S.	363·7	38·37
1965	163·3	176·1	182·4	202·5	215·7	193·4	179·8	N.S.	187·6	47·35
Pooled	278·9	281·9	255·8	285·6	275·8	279·2	272·4	N.S.	276·2	44·69

Crop :- Bitter Gaurd (*Kharif*). **Ref :- Bh. 63(238), 64(261).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'D'.**

Object :— To find out the comparative efficacy of insecticides against melon fruit-fly on Bitter gaurd.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Brinjal. (c) Compost at 138·3 Q/ha. (ii) Loam. (iii) 18.7.63 ; 8.7.64. (iv) (a) 3 local ploughings. (b) Local. (c) Nil. (d) 1·52 m. between pits. (e) 4. (v) Compost at 138·3 Q/ha. (vi) Local. (vii) Unirrigated. (viii) Weeding, hoeing and earthing up. (ix) N.A. (x) 10,16,28.8.63, 3,8,18 and 25.9.63 ; 11, 17, 27.8.64, 2, 11, 17 and 25.9.64.

2. TREATMENTS:

12 insecticidal treatments : T_0=Control (with molasses), T_1=0·4% Rogar—40 with molasses, T_2=0·012% Paramar with molasses, T_3=0·1% Malamar with molasses, T_4=0·018% Dieldrin with molasses, T_5=0·1% Diptock with molasses, T_6=Control without molasses, T_7=0·04% Rogar—40 without molasses, T_8=0·012% Paramar without molasses, T_9=0·1% Malamar without molasses, T_{10}=0·018% Dieldrin without molasses and T_{11}=0·1% Diptock without molasses.

3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 4 (iv) (a) and (b) 1·52 m.×1·52 m. (4 plants in each replication). (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Melon fruit fly (iii) Percentage of infested fruits. (iv) (a) 1962—65 (treatments are modified in 1962 and 65). (b) Yes. (c) Nil. (v) No. (vi) and (vii) Nil.

5. RESULTS:

63(238)

(i) 43·5 degrees. (ii) 6·1 degrees. (iii) Treatment differences are significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	
Mean infestation	54·4	42·6	40·2	51·3	34·3	35·5	
	T_6	T_7	T_8	T_9	T_{10}	T_{11}	C.D.=8·8 degrees.
	52·2	43·0	42·3	46·2	39·5	40·6	

64(261)

(i) 35·5 degrees. (ii) 2·0 degrees. (iii) Treatment differences are highly significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	
Mean infestation	50·2	26·4	30·0	42·8	32·4	30·8	
	T_6	T_7	T_8	T_9	T_{10}	T_{11}	C.D.=3·0 degrees.
	43·9	30·5	34·1	40·1	32·2	32 1	

Crop :- Bitter Gaurd (*Kharif*). **Ref :- Bh. 60(137), 61(260), 62(239).**

Site :- Agri. Res. Instt., Sabour. **Type 'D'.**

Object :—To study the effect of insecticides to control melon fruit-fly.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Brinjal for 60 and 62 ; fallow for 61. (c) Compost at 138·3 Q/ha. for 60 and 62 ; Nil for 61. (ii) Loam ; Sandy loam ; Loam. (iii) 3.7.60 ; 12.8.61 ; 5.7.62. (iv) 3 plougaings for 60 and 62 ; 1—2 ploughings for 61. (b) Local method for 60 and 62 ; line sowing for 61. (c) N.A. (d) 1·52 m. between pits for 60 and 62; 30 cm. between rows for 61. (e) 4 for 60 and 62 ; 2 for 61. (v) Compost at 138·3 Q/ha. for 60 and 62 ; Nil for 61. (vi) Local. (vii) Unirrigated ; irrigated ; Unirrigated. (viii) Weeding, hoeing and earthing up for 60 and 62 ; weeding for 61. (ix) N.A. (x) 12, 19, 26.8.60, 3, 10, 17, 24.9.60 ; 10, 15.12.61 ; 15, 18, 25.12.63, 6.1.64.

2. TREATMENTS :

4 insecticidal treatments : T_0=Control. T_1=Endrex 0·04 %, T_2=Basudin 0·02 % and T_3=Dieldrin 0 02 %.

Dates of application : 16.9.60 ; 15.10.60 ; 7.10.61 ; 17.9.62, 5, 24.10.62 18.9.62, 5, 24.10.62.

3. DESIGN:

(i) R.B.D. (ii) (a) 4. (b) N.A. (ii) 5. (iv) (a) and (b) 1·52 m.×1·52 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Melon fruit-fly, control measures as per treatments. (iii) Total no. of fruits infested. (iv) (a) 1959—62 (expt. for 1959—N.A.). (b) Yes. (c) Nil. (v) No. (vi) Nil. (vii) Expt no. 62(239) was conducted in two sets, one with molasses and other without molasses.

5. RESULTS :

60(137)

(i) 41·6 degrees. (ii) 14·3 degrees. (iii) Treatment differences are not significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3
Mean infestation	51·7	46·8	39·5	28·5

61(260)

(i) 50·0 degrees. (ii) 14·2 degrees. (iii) Treatment differences are not significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3
Mean infestation	65·1	42·4	41·4	50·0

62(239) **Infestation data** (without molasses).

(i) 43·5 degrees. (ii) 4·8 degrees. (iii) Treatment differences are highly significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3
Mean infestation	54·5	44·3	42·5	32·9

C.D.=6·6 degrees.

62(239) **Infestation data** (with molasses).

(i) 37 2 degrees. (ii) 5·3 degrees. (iii) Treatment differences are highly significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3
Mean infestation	44·3	37·8	37·0	29·9

C.D.=7·3 degrees.

Crop :- Bitter Gaurd (*Kharif*). **Ref :- Bh. 62(240).**

Site :- Horticulture Garden, Agri. Res. Instt., Sabour. **Type :- 'D'.**

Object :—To find out the comparative efficacy of different insecticides against melon fruit-fly on Bitter gaurd.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Brinjal. (c) Compost at 138·3 Q/ha. (ii) Loam. (iii) 2.8.62. (iv) (a) 3 ploughings. (b) Local. (c) Nil. (d) 152 cm. between pits. (e) 4. (v) Compost at 138·3 Q/ha. (vi) Local. (vii) Un-irrigated. (viii) Weeding, hoeing and earthing up. (ix) N.A. (x) 17, 24, 30.11.62, 5, 11 and 18.12.62.

2. TREATMENTS :

5 insecticidal treatments : T_0=Control, T_1=0·04% Rogor−40, T_2=0·1% Malamar, T_3=0 012% Paramar and T_4=0·01% Dieldrin.

Date of application : 15.9.62

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) and (b) 1·50 m. × 1·50 m. (4 plants in each plot.) (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of melon fruit-fly. (iii) Percentage of infestation. (iv) (a) 1962—only. (b) No. (c) N.A (v) and (vi) Nil. (vii) The exp. was conducted in two sets, one with molasses and other without molasses.

5. RESULTS:

1. **Infestation data** (with molasses)

(i) 41·4 degrees. (ii) 20·2 degrees. (iii) Treatment differences are significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	
Mean infestation	71·5	23·6	59·6	34·4	17·6	C.D.=31·1 degrees.

2. **Infestation data** (without molasses)

(i) 46·1 degrees. (ii) 22·9 degrees. (iii) Treatment differences are not significant. (iv) Mean infestation in degreess.

Treatment	T_0	T_1	T_2	T_3	T_4
Mean infestation	67·6	35·7	35·3	46·3	45·7

Crop :- Bitter Gaurd (*Kharif*)- **Ref :- Bh. 65(41).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'D'.**

Object :—To find out the relative efflectiveness of different insecticides in controlling melon fruit-fly on Bitter gaurd.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Brinjal. (c) Compost at 138·3 Q/ha. (ii) Loam. (iii) 19.6.65 and 3.7.65. (iv) (a) 3 local ploughings. (b) Local method. (c) Nil. (d) 152 cm. between pits. (e) —. (v) Compost at 138·3 Q/ha. (vi) Local. (vii) Unirrigated. (viii) Weedings, hoeing and earthing up. (x) 15, 19, 27.11.65, 8, 14, 21.12.65.

2. TREATMENTS :

All possible combinations of (1) and (2)

(1) 7 types of insecticides sprayed : T_0=Control (no insecticides), T_1=0·04 % Rogor—40, T_2=0·01% Parathion, T_3=0·16% Malathion, T_4=0·01% Dieldrin, T_5=0·1% Diptrex and T_6=0·03 % Dimecron.

(2) 2 types of application of insecticides : A_1=Insecticides applied with molasses and A_2=Insecticides applied without molasses.

Dates of application : 8, 22.8.65 and 6.9.65.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 14. (b) N.A. (iii) 4. (iv) (a) and (b) 1·52 m.×1·52 m. (4 plants in each plot). (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of melon fruit-fly, control measures as per treatments. (iii) Percentage of infestation. (iv) (a) 1965—only. (b) No. (c) N.A. (v) to (vii) Nil.

5. RESULTS :

(i) 39·4 degrees. (ii) 4·9 degrees. (iii) Main effects of T and A and interaction T×A are highly significant. (iv) Mean infestation in degrees.

	T_0	T_1	T_2	T_3	T_4	T_5	T_6	Mean
A_1	59·2	28·6	32·4	40·1	35·6	34·4	32·2	37·5
A_2	75·0	36·4	33·4	35·9	36·8	34·6	37·4	41·3
Mean	67·1	32·5	32·9	38·0	36·2	34·5	34·8	39·4

C.D. for T marginal means=4·9 degrees.
C.D. for A marginal means=2·2 degrees.
C.D. for the body of the table=6·0 degrees.

Crop :- Toria (*Rabi*). **Ref :- Bh. 62(14).**

Site :- Soil Cons. Res. Demonst. and Trg. Centre, Chatra (Nepal). **Type :- 'M'.**

Object:—To find out the residual effect of N and P on the yield of *Toria.*

1. BASAL CONDITIONS :

(i) (a) Maize—*Toria.* (b) Maize. (c) As per treatments. (ii) Loamy sand. (iii) 4.10.62. (iv) (a) 3 ploughings. (b) Line sowing. (c) 6·7 Kg/ha. (d) Rows 50 cm. apart. (e) —. (v) Nil. (vi) Local. (vii) Unirrigated. (viii) one weeding and one hoeing. (ix) 5·5 cm. (x) 16.12.62.

2. TREATMENTS:

All combinations of (1) and (2)

(1) 4 levels of N as A/S : N_0=0, N_1=22·4, N_2=44·8 and N_3=67·2 Kg/ha.

(2) 4 levels of P_2O_5 as Super: P_0=0, P_1=22·4, P_2= 44·8 Kg/ha. and P_3=67·2 Kg/ha.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 16. (b) 20·00 m.×10·00 m. (iii) 3. (iv) (a) and (b) 2·00 m.×5·00 m. (v) Nil. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Mild attack of mustard saw-fly was noticed. Larvae were regularly hand-picked and killed. B.H.C. was dusted as control measure. (iii) Yield of *Toria.* (iv) (a) 1962—only. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 316 Kg/ha. (ii) 179 0 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of *toria* in Kg/ha.

	P_0	P_1	P_2	P_3	Mean
N_0	199	229	287	169	221
N_1	336	356	292	347	333
N_2	401	373	210	407	348
N_3	223	379	518	324	361
Mean	290	334	327	312	316

Crop :- Sugarcane. **Ref :- Bh. 63(216).**

Site :- Zonal Centre (Sugarcane Res. Instt., Pusa), Bagaha (Champaran). **Type :- 'M'.**

Object :—To study the efficacy of Sterameal manure on Sugarcane crop.

1. BASAL CONDITIONS:

(i) (a) Green manuring—Sugarcane plant—Sugarcane ratoon. (b) *Sunn hemp* as G.M. (c) Nil. (ii) Sandy loam. (iii) 27.11.63. (iv) (a) 3 ploughings and 3 harrowings by tractor. (b) Ploughing, ridge and furrows method. (c) 36012 three-budded setts/ha. (d) 91 cm. between rows. (e) Nil. (v) Nil. (vi) Bo—43 (early). (vii) Irrigated. (viii) Interculturing by five cultivator and earthing up. (ix) 155 cm. (x) 12.1.65.

2. TREATMENTS :

8 manurial treatments : T_1=33 6 Kg/ha. of N as A/S, 95·3 Kg/ha. of P_2O_5 as Super and 47·1 Kg/ha. of K_2O as Mur. Pot. at the time of planting and 33·6 Kg/ha. of N as A/S at the time of earthing up, T_2=33·6 Kg/ha. of N as Sterameal, 95·3 Kg/ha. of P_2O_5

as Super and 47·1 Kg/ha. of K_2O as Mur. Pot. at the time of planting and 33·6 Kg/ha. of N as A/S at top dressing, T_3=33·6 Kg/ha. of N as Caster cake, 95·3 Kg/ha. of P_2O_5 as Super and 47·1 Kg/ha. of K_2O as Mur. Pot. at planting and 33·6 Kg/ha. of N as A/S at earthing up, T_4=67·2 Kg/ha. of N as A/S, 95·3 Kg/ha. of P_2O_5 as Super and 47·1 Kg/ha. of K_2O as Mur. Pot. at planting, T_5=67·2 Kg/ha. of N as Caster cake, 95·3 Kg/ha. of P_2O_5 as Super and 47·1 Kg/ha. of K_2O as Mur. Pot. at planting, T_6=67·2 Kg/ha. of N as Sterameal, 95·3 Kg/ha. as Super and Sterameal and 47·1 Kg/ha. of K_2O as Mur. Pot. and Sterameal at planting, T_7=33·6 Kg/ha. of N as Rallymeal, 95·3 Kg/ha. of P_2O_5 as Super and Rallymeal, 47·1 Kg/ha. of K_2O as Rallymeal and 33·6 Kg/ha. of N as A/S at planting and T_8=67·2 Kg/ha. of N as Rallymeal, 95·3 Kg/ha. of P_2O_5 as Rallymeal and 47·1 Kg/ha. of K_2O as Rallymeal at planting.

3. DESIGN:

(i) R.B.D. (ii) (a) 8. (b) 43·90 m.×5·50 m. (iii) 5. (iv) (a) 13·72 m.×5·49 m. (b) 13·72 m.×3 66 m. (v) 91 cm. on either side. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Incidence of borer. (iii) Germination tillers and dead hearts count, height measurement, juice analysis, mature stalk count and yield of cane. (iv) (a) 1963—only. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS:

(i) 706 Q/ha. (ii) 87·1 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Av. yield	680	682	751	718	744	710	658	705

Crop :- Sugarcane. **Ref :- Bh. 60(161).**

Site :- Zonal Centre (Sugarcane Res. Instt., Pusa), Harinagar (Champaran). **Type :- 'M'.**

Object:—To study the response and economics of different phosphatic manures in combination with Urea and Castor cake for *spring* planted Sugarcane.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) 17.2.60. (iv) (a) Ploughing with tractor followed by three or four harrowings. (b) Ridge and furrows. (c) 55·34 Q/ha. (d) 91 cm. between rows. (e) 64 three-budded setts/row. (v) Nil. (vi) BO—32 (mid-early). (vii) Irrigated. (vlii) Interculturing with *deshi* plough and cultivators and earthing up with ridges. (xi) 127 cm. (x) 30.3.61 to 5.4.61.

2. TREATMENTS:

9 manurial treatments: T_0=Control, T_1=67·2 Kg/ha. of N as Urea+84·1 Kg/ha. of P_2O_5 as Super, T_2=67·2 Kg/ha. of N as Castor cake+84·1 Kg/ha. of P_2O_5 as Super, T_3=67·2 Kg/ha. of N as Urea+84·1 Kg/ha. of P_2O_5 as Bone-meal, T_4=67·2 of N as Castor cake+84·1 Kg/ha. of P_2O_5 as Bone-meal, T_5=67·2 Kg/ha. of N as Urea+84·1 Kg/ha. of P_2O_5 as Dical. Phos., T_6=67·2 Kg/ha. of N as Castor cake+84·1 Kg/ha. of P_2O_5 as Dical. Phos., T_7=67·2 Kg/ha. of N as Urea and T_8=67·2 Kg/ha. of N as Castor cake.

3. DESIGN:

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 18·44 m.×7·32 m. (b) 18·44 m.×5·49 m, (v) 91 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination and tillers count, height of plants and yield of cane. (iv) (a) 1960—61 (Planting season changed in 1961). (b) Yes. (c) Nil. (v) Pusa zonal centers : Warshaliganj Pandaul. (vi) and (vii) Nil.

5. RESULTS ;

(i) 193·9 Q)ha. (ii) 97·83 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Av. yield	92·2	144·0	294·9	251·2	267·3	191·3	202·8	142·9	159·0

Ref :- Sugarcane (*Rabi*). **Ref :- Bh. 61(180).**

Site :- Zonal Centre (Sugarcane Res. Instt., Pusa), Harinagar (Champaran). **Type :- 'M'.**

Object :—To study the response and economics of different phosphatic manures in combination with Urea and Castor cake for *Autumn* planted Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sugarcane. (c) 67·2 Kg/ha. of N as A/S+84 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) 13, 14.11.61. (iv) (a) Ploughing with tractor followed by 3—4 harrowings. (b) Ridge and furrows. (c) 55·34 Q/ha. (d) 91 cm. between rows. (e) 64 three-budded setts/row. (v) Nil. (vi) BO—32 (mid-early). (vii) Irrigated. (viii) Interculturing with *deshi* plough and tyne cultivators and earthing up with ridges. (ix) 177·8 cm. (x) 7.2.63 to 9.2.63.

2. TREATMENTS to 4. GENERAL:

Same as expt. no. 60(161) at Harinagar on page no. 584.

5. RESULTS :

(i) 681·8 Q/ha. (ii) 57·4 Q/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Av. yield	565·3	687·5	749·5	667·7	726·0	735·2	650·5	677·4	677·4

C,D.=83·8 Q/ha.

Crop :- Sugarcane. **Ref. :- Bh. 60(166), 61(184).**

Site :- Zonal Centre (Sugarcane Res. Instt., Pusa), Harinagar (Champaran). **Type :- 'M'.**

Object :—To study the response and economics of different nitrogeneous fertilizers for *Spring* planted Sugarcane.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Fallow ; Sugarcane. (c) Nil ; 67·2 Kg/ha. of N as A/S+85·1 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam (iii) 12.2.60 ; 28.2.61 to 2.3.61. (iv) (a) Ploughing with tractor fallowed by 3—4 harrowings. (b) Ridge and furrows. (c) 55·34 Q/ha. (d) 91 cm. between rows. (e) 64 three-budded setts/row. (v) As per treatments. (vi) BO—34 (mid—early). (vii) Irrigated. (viii) Weeding and earthing. (ix) 127 cm. ; 139·7 cm. (x) 6 to 9.4.61 ; 1 to 5.2.62.

2. TREATMENTS :

Main-plots

2 modes of application : M_1=Full dose at planting and M_2=$\frac{2}{3}$ rd at planting+$\frac{1}{3}$rd at earthing up.

Sub-plots

7 Sources of N at 67·2 Kg/ha. along with 84·1 Kg/ha. of P_2O_2 as Super plus one control : S_0=Control, S_1=A/S, S_2=A/S/N, S_3=Am. Chl., S_4=C/A/N, S_5=Urea and S_6=Castor cake.

3. DESIGN:

(i) Split.plot. (ii) (a) 2 main-plots/rep, 7 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) 18·44 m.×7·32 m. (b) 18·44 m.×5·49 m. (v) 91 cm.on both sides. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination and tillers count, height measurement and yield of cane. (iv) (a) 1960–61. (b) Yes. (c) Results of combined analysis are presented under 5. Results. (v) Lalgarh, Warshaliganj and Pandaul. (vi) Nil. (vii) Since Sub-plot error variances are heterogeneous, results of individual years are presented under 5. Results.

5. RESULTS:

60(166)

(i) 380·2 Q/ha. (ii) (a) 182·6 Q/ha. (b) 96·1 Q/ha. (iii) Only the main effect of S is highly significant. (iv) Av. yield of cane in Q/ha.

	S_0	S_1	S_2	S_3	S_4	S_5	S_6	Mean
M_1	271·9	447·0	320·0	419·4	281·1	419·4	377·9	362·4
M_2	235·0	460·9	329·5	426·3	410·2	479·3	444·7	398·0
Mean	253·5	453·9	324·9	422·8	345·6	449·3	411·3	380·2

C.D. for S marginal means=97·5 Q/ha.

61(184)

(i) 290·6 Q/ha. (ii) (a) 78·5 Q/ha. (b) 61·0 Q/ha. (iii) Only the main effect of S is highly significant (iv) Av. yield of cane in Q/ha.

	S_0	S_1	S_2	S_3	S_4	S_5	S_6	Mean
M_1	140·6	315·7	299·6	315·7	324·9	288·0	336·4	288·7
M_2	147·5	403·2	310·4	271·9	281·1	304·2	329·5	292·5
Mean	144·0	359·5	305·0	293·8	303·0	296·1	333·0	290·6

C.D. for S marginal means=62·0 Q/ha.

Crop :- Sugarcane. **Ref :- Bh. 61(185).**

Site :- Zonal Centre (Sugarcane Res. Instt., Pusa), Harinagar (Champaran). **Type 'M'.**

Object :—To study the response and economics of different nitrogeneous fertilizers for *Autumn* planted Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (b) Nil. (ii) Sandy loam. (iii) 9 to 11.11.61. (iv) (a) Ploughing with tractor followed by 3—4 harrowings. (b) Ridge and furrows. (c) 55·3 Q/ha. (d) 91 cm. between rows. (e) 64 three-budded setts/row. (v) As per treatments. (vi) BO—34 (mid-early). (vii) Irrigated. (viii) Weeding and earthing. (ix) 178 cm. (x) 3.2.63 to 6·2.63.

2. TREATMENTS :

Same as expt. no. 60(166) and 61(184) at Harinagar on page no. 585.

3. DESIGN :

(i) Split plot. (ii) (a) 2 main-plots/replication, 7 sub-plots/main-plot. (b) 19·80 m.×66·60 m. (iii) 4. (iv) (a) 18·40 m.×7·32 m. (b) 18·44×5·49 m. (v) 91 cm. on either side. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination and tillers count, height of plants and yield of cane. (iv) (a) 1961 only. (b) No. (c) Nil. (v) Lalgarh and Pandaul. (vi) Heavy rains and flood. (vii) Nil.

5. RESULTS :

(l) 565·8 Q/ha. (ii) (a) 125·9 Q/ha. (b) 50·4 Q/ha, (iii) Main effect of S is highly significant. (iv) Av. yield of cane in Q/ha.

	S_0	S_1	S_2	S_3	S_4	S_5	S_6	Mean
M_1	503·5	544·8	557·9	556·6	578·1	559·3	637·9	562·6
M_2	450·7	619·8	590·5	534·6	617·6	558·8	611·7	569·1
Mean	477·2	582·3	574·2	545·6	597·9	559·1	624·8	565·8

C.D. for S marginal means=51·3 Q/ha.

Crop :- Sugarcane. **Ref :- Bh. 62(195).**

Site :- Zonal Centre (Sugarcane Res. Instt., Pusa), Harinagar (Champaran). **Type :- 'M'.**

Object:—To study the efficacy and economics of Sterameal manures on Sugarcane crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) 23.11.62. (iv) (a) Ploughing with tractor and there after harrowing. (b) Ridge and furrows method. (c) 4612 Kg/ha., 45 three-budded setts/row. (d) 91 cm. between the rows. (e) Nil. (v) As per treatments. (vi) BO—43 (early). (vii) Irrigated. (viii) Intercultur-ing with *deshi* plough and earthing up. (ix) 152 cm. (x) 29 to 31.1.64.

2. TREATMENTS :

6 manurial treatments : T_0=Control, T_1=33·6 Kg/ha. of N as A/S at planting+33·6 Kg/ha. of N as A/S at earthing up+95·3 Kg/ha. of P_2O_5 as Super+47·1 Kg/ha. of K_2O as Mur. Pot., T_2=33·6 Kg/ha. of N as Sterameal+33·6 Kg/ha. of N as A/S+95·3 Kg/ha. of P_2O_5 as Super+47·1 Kg/ha. of K_2O as Mur. Pot., T_3=33·6 Kg/ha. of N as Castor cake+33·6 Kg/ha. of N as A/S+95·3 Kg/ha. of P_2O_5 as Super+47·1 Kg/ha. of K_2O as Mur. Pot., T_4=67·2 Kg/ha. of N as A/S+95·3 Kg/ha. of P_2O_5 as Super+47·1 Kg/ha. of K_2O as Mur. Pot. and T_5=67·2 Kg/ha. of N as Castor cake+95·3 Kg/ha. of P_2O_5 as Super+47·1 Kg/ha. of K_2O as Mur. Pot.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 5. (iv) (a) 13·72 m.×7·32 m. (b) 13·72 m.×5·49 m. (v) 91 cm. on either side. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination and tillers count, height measurement and yield of cane. (iv) (a) 1962—only. (b) No. (c) Nil. (v) Other zonal centres. (vi) and (vii) Nil.

5. RESULTS :

(i) 508·3 Q/ha. (ii) 50·8 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of Sugarcane in Q/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. yield	490·7	511·1	491·2	497·6	545·1	514·3

Crop :- Sugarcane. **Ref :- Bh. 63(185).**

Site :- Zonal Centre (Sugarcane Res. Instt., Pusa), Harinagar (Champaran). **Type :- 'M'.**

Object :—To find out the response of N, P and K to *Adsail* planted Sugarcane (mansoon).

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) 12.8.63. (iv) (a) Trenching and spading. (b) planting in trenches. (c) 41 Q/ha. (d) 106·7 cm. between rows. (e) 45 three-budded setts/row. (v) As per treatments. (vi) BO—34 (mid-early). (vii) Irrigated. (viii) Weeding and earthing. (ix) 139 cm. (x) 17 to 22.12.64.

2. TREATMENTS :

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

(1) 4 levels of N as A/S : N_0=67·2, N_1=134·5, N_2=201·7 and N_3=269·0 Kg/ha.

(2) 2 levels of P_2O_5 as Super : P_0=84·1 and P_1=168·1 Kg/ha.

(3) 3 levels of K_2O as Mur. Pot. : K_0=0, K_1=89 7, and K_2=179·3 Kg/ha.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 24. (b) 13·72 m. × 153·62 m. (iii) 3. (iv) (a) 13·72 m. × 6·40 m. (b) 13·72 m. × 4·27 m. (v) 106 cm. on either side. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Borer effect, BHC gamma was sprayed. (iii) Germination and tillers count, measurement of height of plants and yield of cane. (iv) (a) 1963—only. (b) No. (c) Nil. (v) Pusa and zonal centres. (vi) and (vii) Nil.

5. RESULTS :

(i) 698·8 Q/ha. (ii) 119·5 Q/ha. (iii) Only the main effect of N is highly significant. (iv) Av. yield of cane in Q/ha.

	P_0	P_1	K_0	K_1	K_2	Mean
N_0	640·1	573·7	611·6	603·1	605·9	606·9
N_1	659·6	682·8	632·4	716·9	664·3	671·2
N_2	783·3	732·1	839·2	711·2	722·6	757·7
N_3	711·2	807·9	701·3	761·0	816·5	759·6
Mean	698·6	699·1	696·1	698·1	702·3	698·8
K_0	708·1	684·2				
K_1	714·1	682·1				
K_2	673·5	731·1				

C.D. for N marginal means=80·3 Q/ha

Crop :- Sugarcane. **Ref :- Bh. 60(165).**

Site :- Zonal Centre (Sugarcane Res. Instt., Pusa), Lalgarh (Champaran). **Type :- 'M'.**

Object :—To study the response and economics of different nitrogeneous fertilizers.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sugarcane. (c) 150 Kg/ha. of G.M. cake+150 Kg/ha. of Sterameal+50 Kg/ha. of Di-ammonium Phos.+37 Kg/ha. of N as A/S. (ii) Sandy loam. (iii) 27/28.2.60. (iv) (a) One ploughing with offset plough and two with cultivators. (b) Ridge and furrows. (c) 55·3 Q/ha. (d) 91 cm. between rows. (e) 64 three-budded setts/row. (v) As per treatments. (vi) BO—34 (mid-early). (vii) Iirrigated (viii) Weeding. (ix) 125 cm. (x) 14 to 17.3.61.

2. TREATMENTS :

Main-plot treatments :

2 modes of application : M_1=Full dose at planting and M_2=$\frac{2}{3}$ rd of dose at planting+$\frac{1}{3}$rd of dose at earthing up.

Sub-plot treatments :

5 sources of N at 67·2 Kg/ha. along with 84·1 Kg/ha. of P_2O_5 as Super plus one control : S_0=Control (no manure), S_1=A/S, S_2=A/S/N, S_3=Urea and S_4=Coster cake.

3. DESIGN:

(i) Split-plot. (ii) (a) 2 main-plots/replication, 5 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 18·44 m. ×7·32 m, (b) 18·44 m.×5·49 m. (v) 91 cm. on either side. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination and tillers count, height of plants and yield of cane. (iv) (a) 1960—only. (b) and (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 499·8 Q/ha. (ii) (a) 55·4 Q/ha. (b) 74·1 Q/ha. (iii) None of the effects is significant. (iv) Av. yield of cane in Q/ha.

	S_0	S_1	S_2	S_3	S_4	Mean
M_1	493·8	520·8	485·0	462·0	537·4	499·8
M_2	490·1	531·8	546·1	439·9	490·6	499·7
Mean	491·9	526·3	515·6	450·9	514·0	499·8

Crop :- Sugarcane (*Rabi*). **Ref :- Bh. 60(160).**

Site :- Zonal Centre (Sugarcane Res. Instt., Pusa), Lalgarh (Champaran). **Type :- 'M'.**

Object :—To study the response and economics of different phosphatic manures in combination with Urea and Castor cake.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Sugarcane. (c) 1·5 Q/ha. G.M. cake+1·5 Q/ha. Sterameal+1·5 Q/ha. Di-ammonium Phos.+37·3 Kg/ha. of N as A/S. (ii) Sandy loam. (iii) 26.2.60. (iv) (a) One ploughing by offset harrow and two by cultivator's plough (b) Ridge and furrows. (c) 59·9 Q/ha. (d) 91 cm. between rows. (e) 64 three-budded setts/row. (v) As per treatments. (vi) BO—32. (vii) Irrigated. (viii) Weeding. (ix) 125 cm. (x) 22 to 27.2.61.

2. TREATMENTS:

All combinations of (1) and (2) plus one control

(1) 3 sources of P_2O_5 at 84·1 Kg/ha.: P_1=Super, P_2=Rock Phos. and P_3=Bone meal.

(2) 2 sources of N at 67·2 Kg/ha.: N_1=Urea and N_2=Castor cake.

One extra treatment: E_0= . ontrol (no manure).

3. DESIGN:

(i) Fact. in R.B.D. (ii) (a) 7. (b) 20·00 m.×52·25 m. (iii) 4. (iv) (a) 18·44 m.×7·32 m. (b) 18·44 m.× 5 49 m. (v) 91 cm. on either side. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Germination and tillers count, height of plants, maturity stalk count and yield of cane. (iv) (a) 1961—only. (b) and (c) Nil. (v) to (vii) Nil.

5. RESULTS:

(i) 632·8 Q/ha. (ii) 79·3 Q/ha. (iii) None of the effects is significant. (iv) Av. yield of cane in Q/ha.

E_0=588·8 Q/ha.

	P_1	P_2	P_3	Mean
N_1	666·6	681·2	636·2	661·3
N_2	598·9	588·8	669·4	619·0
Mean	632·7	635·0	652·8	640·1

Crop :- Sugarcane. **Ref :- Bh. 62(194).**

Site :- Zonal Centre (Sugarcane Res. Instt., Pusa), Lalgarh (Champaran). **Type :- 'M'.**

Object :—To study the efficacy and economics of Sterameal manure on Sugarcane crop.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Sugarcane. (c) 3·7 Q/ha. of G.N. Cake+3·7 Q/ha. of Sterameal+90 Kg/ha. of N as A/S +120 Kg/ha. of P_2O_5 as Dia-ammo. Phos. (ii) Sandy loam. (iii) 10.11.62. (iv) (a) Land prepared by offset harrow and cultivator's phough. (b) Ridge and furrows. (c) 5534 Kg/ha. (d) 91 cm. between rows. (e) Nil. (v) Nil. (vi) BO—43 (early). (vii) Irrigated. (viii) Weeding. (ix) 138 cm. (x) 16 to 18.2.64.

2. TREATMENTS:

All combinations of (1) and (2) along with the basal dose: 95·2 Kg/ha. of P_2O_5 as Super+47·0 Kg/ha. of K_2O as Mur. Pot.

(1) 3 sources of N: S_1=A/S, S_2=Sterameal and S_3=Castor Cake.

(2) 2 levels of N: N_1=33·6 and N_2=67·2 Kg/ha.

3. DESIGN:

(i) Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 5. (iv) (a) 13·72 m.×7·32 m. (b) 13·72 m.×5·50 m. (v) 91 cm. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Germination count, tillers count, height measurement, mature stalk count and yield of cane. (iv) (a) 1962—only. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 520·3 Q/ha. (ii) 77·1 Q/ha. (iii) None of the effects is significant. (iii) Av. yield of cane in Q/ha.

	S_1	S_2	S_3	Mean
N_1	542·3	524·0	509·1	525·1
N_2	566·1	484·8	495·4	515·4
Mean	554·2	504·4	502·3	502·3

Crop :- Sugarcane. **Ref :- Bh. 60(213).**

Site :- Zonal Centre (Sugarcane Res. Instt., Pusa), Motihari (Champaran). **Type :- 'M'.**

Object :—To study the response and economics of different phoshpatic manures in combination with Urea and Castor cake.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Sugarcane. (iii) 370 Kg/ha. of N as A/S+1107 Kg/ha. of N as Castor cake+495 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) 13.2.60. (iv) (a) 5 ploughings by tractor. (b) Sett to sett behind the plough. (c) 60 Q/ha. (d) 91 cm. between rows. (e) Nil. (v) G.M. (vi) Bo—32 (mid-early). (vii) Irrigated. (viii) Interculturing by cultivator and weedings. (ix) 142 cm. (x) 11.2.61, 8.3.61 and 10.3.61.

2. TREATMENTS :

Same as Expt. No. 60(161) at Harinagar on page 584.

3. DESIGN :

(i) (a) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 18·44 m.×7·32 m. (b) 18·44 m.×5·49 m. (v) 91 cm. on either side. (vi) Yes.

4. GENERAL:

(i) Fair. (ii) Nil. (iii) Germination and tillers count, height of plants, mature stalk count and yield of cane. (iv) (a) 1960—61 (Expt. modified in 61). (b) No. (c) Nil. (v) Motipur. (vi) and (vii) Nil.

5. RESULTS :

(i) 700·3 Q/ha. (ii) 58·6 Q/ha. (iii) Treatment differences are significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Av yield	664·3	694·5	729·1	640·4	787·4	764·6	695·7	669·4	657·6

C.D.=85·5 Q/ha.

Crop :- Sugarcane. **Ref :- Bh. 61(233).**

Site :- Zone Centre (Sugarcane Res. Instt., Pusa), Motihari (Champaran). **Type :- 'M'.**

bject :—To study the response and economics of different phosphatic manure in combination with Urea and Castor cake for Sugarcane crop.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Sugarcane. (c) 738 Kg/ha. of G. M. cake+618 Kg/ha of P_2O_5 as Super+99 Kg/ha. of N as A/S. (ii) Sandy loam. (iij) 10.11.61. (iv) (a) 5 ploughings by tractor. (b) Sett to sett behind the plough. (c) 60 Q/ha. (d) 91 cm. between rows. (e) Nil. (v) G.M. (vi) BO—32 (mid-early). (vii) Irrigated. (viii) Interculturing by cultivator and weeding. (ix) 138 cm. (x) 3 and 4.3. 63.

2. TREATMENTS:

11 manurial treatments: T_0=Control, T_1=67·2 Kg/ha. of N as Urea+84·1 Kg/ha of P_2O_5 as Super, T_2=67·2 Kg/ha. of N as Castor cake+84·1 Kg/ha. of P_2O_5 as Super, T_3=67·2 Kg/ha. of N as Urea+84·1 Kg/ha. of P_2O_5 as Rock. Phos., T_4=67·2 Kg/ha. of N as Castor cake+84·1 Kg/ha. of P_2O_5 as Rock. Phos., T_5=67·2 Kg/ha. of N as Urea+84·1 Kg/ha. of P_2O_5 as Bone Meal, T_6=67·2 Kg/ha. of N as Castor cake+84·1 Kg/ha. of P_2O_5 as Bone Meal, T_7=67·2 Kg/ha. of N as Urea+84·1 Kg/ha. of P_2O_5 as Di. Cal. Phos., T_8=67·2 Kg/ha. of N as Castor cake+84·1 Kg/ha. of P_2O_5 as Di. Cal. Phos., T_9=67·2 Kg/ha. of N as Urea alone and T_{10}=67·2 Kg/ha. of N as Castor cake alone.

3. DESIGN:

(i) R.B.D. (ii) (a) 11. (b) N.A. (iii) 4. (iv) (a) 18·44 m.×7·32 m. (b) 18·44 m.×5·49 m. (v) 91 cm. on either side. (vi) Yes.

4. GENERAL:

(i) Fair. (ii) Nil. (iii) Germination and tillers count, height of plants, mature stalk count and yield of cane. (iv) (a) 1960—61 (Expt. modified in 61). (b) No. (c) Nil. (v) Other zonal centres : Motipur, Narkatiaganj, Pandaul and S.R.I., Pusa. (vi) and (vii) Nil.

5. RESULTS:

(i) 709·2 Q/ha. (ii) 98·8 Q/ha. (iii) Treatment differances are not significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. yield	670·9	835·2	682·6	741·1	611·4	711·4

T_6	T_7	T_8	T_9	T_{10}
623·3	717·4	755·4	723·3	729·2

Crop :- Sugarcane, **Ref :- Bh. 62(193).**

Site :- Zonal Certre (Sugarcane Res. Instt., Pusa), Motihari (Champaran). **Type -- 'M'.**

Object —To study the efficiency and economics of Sterameal manure on Sugarcane crop.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Sugarcane. (c) 25 Kg/ha. of N as Castor cake+115 Kg/ha. of N as A/S+247 Kg/ha. of P_2O_5 as Super+52 Kg/ha. K_2O as Mur. Pot., (ii) Sandy loam. (iii) 28,29.11.62. (iv) (a) 5 ploughings by tractor. (b) Sett to sett behind the plough. (c) 38272 three-budded setts/ha. (d) 91 cm. between rows. (e) Nil. (v) G.M. (vi) BO—43 (late). (vii) Irrigated. (viii) Interculturing by cultivator and weeding. (ix) 109 cm. on either side. (x) 12 to 14.2.64.

2. TREATMENTS:

6 manurial treatments: T_0=Control, T_1=33·6 Kg/ha. of N as A/S at planting+33·6 Kg/ha. of N as A/S at earthing up+95·3 Kg/ha. of P_2O_5 as Super+47·1 Kg/ha. of K_2O as Mur. Pot., T_2=33 6 Kg/ha. of N as Sterameal+33·6 Kg/ha. of N as A/S+95·3 Kg/ha. of P_2O_5 as Super+47·1 Kg/ha. of K_2O as Mur. Pot , T_3=33·6 Kg/ha. of N as Castor cake+33·6 Kg/ha. of N as A/S+95·3 Kg/ha. of P_2O_5 as Super+47·1 Kg/ha. of K_2O as Mur. Pot., T_4=67·2 Kg/ha. of N as A/S+95·3 Kg/ha. of P_2O_5 as Super+47·1 Kg/ha. of K_2O as Mur. Pot., T_5=67·2 Kg/ha. of N as Castor cake+95·3 Kg/ha. of P_2O_5 as Super+47·1 Kg/ha. of K_2O as Mur. Pot. and T_6=67·2 Kg/ha. of N as Sterameal+95·3 Kg/ha. of P_2O_5 as Super+47·1 Kg/ha. of K_2O as Mur. Pot.

3. DESIGN:

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 5. (iv) (a) 13·72 m ×7·32 m. (b) 13·72 m.×5·49 m. (v) 91 cm. on either side. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Germination and tillers count, mature stalk count and yield of cane (iv) (a) 1962—64 (Expt. for 1963—N.A. and Expt. modified in 1964). (b) No. (c) Nil. (v) Other zonal centres, Motipur, Narkatiagunj and SRI, Pusa. (vi) and (vii) Nil.

5. RESULTS:

(i) 702·0 Q/ha. (ii) 100·3 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	677·6	743·5	679·7	743·7	726·7	641·0

Crop :- Sugarcane. **Ref :- Bh. 64(246).**

Site :- Zonal Centre (Sugarcane Res. Instt., Pusa). Motihari (Champaran). **Type :- 'M'.**

Object :—To study the efficiency and economics of Sterameal and Ralimeal manures on Sugarcane.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Sugarcane. (c) 369 Kg/ha. of N as G. nut.+323 Kg/ha. of Castor cake+50 Kg/ha. N of as Urea+25 Kg/ha. of K_2O as Mur. Pot.+125 Kg/ha. of P_2O_5 as Super. (ii) Sandy laom. (iii) 16.2.64. (iv) (a) 5 ploughings with tractor. (b) Sett to sett behind the plough. (c) 38272 three-budded setts/ha. (d) 91 cm. between rows. (e) 1. (v) G.M. (vi) BO—43 (late). (vii) Irrigated. (viii) Intercultring by cultivator. (ix) 137 cm. (x) 5.1. 65.

2. TREATMENTS:

8 manurial experiments: T_1=33·6 Kg/ha. of N as A/S at planting+33·6 Kg/ha. of N as A/S at earthing up+95·3 Kg/ha. of P_2O_5 as Super+47·1 Kg/ha. of K_2O as Mur. Pot., T_2=33·6 Kg/ha. of N as A/S and 33·6 Kg/ha. of N as Sterameal+95·3 Kg/ha. of P_2O_5 as Super+47·1 Kg/ha. of K_2O as Mur. Pot., T_3=33.6 Kg/ha. of N as A/S+33·6 Kg/ha. of N as Castor cake+95·3 Kg/ha. of P_2O_5 as Super+47·1 Kg/ha. of K_2O as Mur. Pot., T_4=67·2 Kg/ha. of N as A/S+95·3 Kg/ha. of P_2O_5 as Super+47·1 Kg/ha. of K_2O as Mur. Pot., T_5=67·2 Kg/ha. of N as Castor cake+95·3 Kg/ha. of P_2O_5 as Super+47·1 Kg/ha. of K_2O as Mur. Pot., T_6=67·2 Kg/ha. of N as Sterameal+95·3 Kg/ha. of P_2O_5 as Super+47·1 Kg/ha. of K_2O as Mur. Pot., T_7=33·6 Kg/ha. of N as A/S+33·6 Kg/ha. of N as Ralimeal+95·3 Kg/ha. of P_2O_5 as Super+47·1 Kg/ha. of K_2O as Mur. Pot. and T_8=67·2 Kg/ha. of N as Ralimeal+95·3 Kg/ha. of P_2O_5 as Super+47·1 Kg/ha. of K_2O as Mur. Pot.

3. DESIGN:

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 5. (iv) (a) 13·72 m.×7·32 m. (b) 13·72 m.×5·49 m. (v) 91 cm. on either side. (vi) Yes.

4. GENERAL:

(i) Fair. (ii) Nil. (iii) Germination and tillers count, height of plants and yield of cane. (iv) (a) 1962—64 (Expt. for 1963—N.A. and expt. modified in 1964). (b) No. (c) Nil. (v) Sepaya. (vi) Nil.

5. RESULTS:

(i) 641·8 Q/ha. (ii) 57·4 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Av. yield	659·8	595·6	631·2	682·9	669·9	664·9	608·8	621·1

Crop :- Sugarcane. **Ref :- Bh. 60(214)).**

Site :- Zonal Centre (Sugarcane Res. Instt., Pusa), Motihari (Champaran). **Type :- 'M'.**

Object:—To study the response and economics of different nitrogenous fertilizers on Sugarcane crop planted in *spring* season.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sugarcane. (c) 370 Kg/ha. of N as A/S+1107 Kg/ha. of N as Caster cake+495 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) 23.2.60. (iv) (a) 5 ploughings by tractor. (b) Sett to sett behind the plough. (c) 38272 three-budded setts/ha. (d) 91 cm. between rows. (e) Nil. (v) G.M. (vi) BO – 34 (mid-early). (vii) Irrigated. (viii) Interculturing by cultivator and weedings. (ix) 142·2 cm. (x) 22 and 28.2.61

2. TREATMENTS :

Main-plot treatments :

2 modes of application : M_1=Full dose at planting and M_2=$\frac{2}{3}$rd of the dose at planting+$\frac{1}{3}$rd of the dose at earthing up.

Sub-plot treatments:

7 sources of Nitrogenous fertilizer: S_0=Control (no nitrogeneous treatment), S_1=67·2 Kg/ha. of N as A/S, S_2=67·2 Kg/ha. of N as A/S/N, S_3=67·2 Kg/ha. of N as Am. Chl., S_4=67·2 Kg/ha. of N as C/A/N, S_5=67·2 Kg/ha. of N as Urea and S_6=67·2 Kg/ha. of N as Castor cake.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication, 7 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 18·44 m. ×7·32 m. (b) 18·44 m.×5·49 m. (v) 91 cm. on either side. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Germination and tillers count, height of plants, mature stalk count, yield of cane. (iv) (a) 1960—61 (Planting season changed in 61). (b) No. (c) Nil. (v) Other zonal centres. (vi) and (vii) Nil.

5. RESULTS:

(i) 616·4 Q/ha. (ii) (a) 125·4 Q/ha. (b) 136·1 Q/ha. (iii) None of the effects is significant. (iv) Av. yield of cane in Q/ha.

	S_0	S_1	S_2	S_3	S_4	S_5	S_6	Mean
M_1	641·0	543·3	564·5	709·9	576·3	595·2	650·7	617·6
M_2	578 1	601·9	614·1	647·0	562·7	659·0	685·7	621·2
Mean	609·6	572·6	589·3	678·5	569·5	627·1	668·2	616·4

———

Crop :- Sugarcane. **Ref :- Bh. 61(234).**

Site :- Zonal Centre (Sugarcane Res. Instt., Pusa), Motihari (Champaran). **Type :- 'M'.**

Object:—To study the response and economics of different nitrogenous fertilizers on Sugarcane crop planted in *Autumn* season.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sugarcane. (c) 738 Kg/ha. of Groundnut cake+618 Kg/ha. of P_2O_5 as Super+99 Kg/ha. of N as A/S. (ii) Sandy loam. (iii) 11 and 12.11.61. (iv) (a) 5 ploughings by tractor. (b) Sett to sett behind the plough. (c) 38272 three-budded setts/ha. (d) 91 cm. between rows. (e) Nil. (v) G.M. (vi) BO—34 (mid-early). (vii) Irrigated. (viii) Interculturing by cultivator. (ix) 137·7 cm. (x) 26.2.62, 2.3.62.

2. TREATMENTS and 3. DESIGN :

Same as Expt. No. 60(214) at Motihari on page 594.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Germination and tillers count, height of plants, mature stalk count, yield of cane. (iv) (a) 1960—61 (Planting season changed in 61). (b) No. (c) Nil. (v) Other zonal centres. (vi) and (vii) Nil.

5. RESULTS :

(i) 590·5 Q/ha. (ii) (a) 96·7 Q/ha. (b) 100·4 Q/ha. (iii) None of the effects is significant. (iv) Av. yield of cane in Q/ha.

	S_0	S_1	S_2	S_3	S_4	S_5	S_6	Mean
N_1	550·9	588·0	547·5	672·4	614·4	674·9	638·4	612·4
N_2	543·8	537·6	539·3	518·8	588·5	687·2	564·8	568·6
Mean	547·4	562·8	543·4	595·6	601·4	681·1	601·6	590·5

Crop :- Sugarcane. **Ref :- Bh. 61(236), 62(192), 63(215).**

Site :- Zonal Centre (Sugarcane Res. Instt., Pusa), Motihari (Champaran). **Type :- 'M'.**

Object :– To find out the response of N,,P and K on *Adsali* planted Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sugarcane. (c) 738 Kg/ha. of Groundnut cake+618 Kg/ha. of P_2O_5 as Super+99 Kg/ha. of N as A/S ; 25 Kg/ha. of Castor cake+115 Kg/ha. of N as A/S+47 Kg/ha. of P_2O_5 as Super+50 Kg/ha. of K_2O as Mur. Pot. ; 369 Kg/ha. of Groundnut cake +323 Kg/ha. of N as Urea+25 Kg/ha. of K_2O as Mur. Pot.+125 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) 17. 18 8.61 ; 20, 22.8.62 ; 18, 19.8.63. (iv) (a) 5 ploughings by tractor. (b) Sett to sett behind the plough (c) 38272 three-budded setts/ha. (d) 91 4 cm. between rows. (e) Nil. (v) G.M. (vi) BO–14 (late) ; BO—34 (mid-early) for 62 and 63. (vii) Irrigated. (viii) Interculturing by cultivator. (ix) 137·69 cm. ; 109 cm. ; 137·57 cm. (x) 23, 24.12.62 ; 19, 21.2.64 ; 18 and 23.12.64.

2. TREATMENTS and 3. DESIGN :

Same as Expt. No. 63(185) at Harinagar on page 588.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Germination and tillers count, mature stalk count and yield of cane. (iv) (a) 1961–62. (b) No. (c) Results for combined analysis are presented under 5. Results. (v) and (vi) Nil. (vii) Error variances are homogeneous and Treatments × Years interaction is absent.

5. RESULTS :

Pooled results

(i) 889 Q/ha. (ii) 201·6 Q/ha. (based on 182 d.f. made up of pooled error and Treatments × Years interaction (iii) None of the effects is significant. (iv) Av. yield of cane in Q/ha.

	P_1	P_2	K_0	K_1	K_2	Mean
N_1	834	809	809	872	784	822
N_2	873	908	854	894	924	891
N_3	908	872	838	938	894	890
N_4	943	962	964	998	895	952
Mean	890	888	866	925	874	889
K_0	870	863				
K_1	924	928				
K_2	876	872				

Individual results :

Treatment	N_1	N_2	N_3	N_4	Sig.	P_1	P_2	Sig.
Year 1961	749	890	862	861	N.S.	870	811	N.S.
1962	744	698	751	841	N.S.	757	760	N.S.
1963	972	1084	1057	1155	N.S.	1042	1092	N.S.
Pooled	822	891	890	952	N S.	890	888	N.S.

K_0	K_1	K_2	Sig.	G.M.	S.E./plot
802	874	845	N.S.	840	216·0
710	790	775	N.S.	759	194·6
1087	1112	1002	N.S.	1067	243·0
866	925	874	N.S.	889	201·6

Crop :- Sugarcane. **Ref :- Bh. 60(208).**

Site :- Zonal Centre (Sugarcane Res. Instt., Pusa). Motipur (Muzaffarpur). **Type :- 'M'.**

Object :—To study the response and economics of different phosphatic manures in combination with Urea and Castor cake for *Spring* planted Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Green manure—Sugarcane—Sugarcane (Ratoon). (b) Green manure. (c) Nil. (ii) Sandy loam. (iii) 25.2.60. (iv) (a) One disc ploughing and 2 disc harrowing followed by planking. (b) Furrows method. (c) 35584 three-budded setts/ha. (d) 91 cm. between rows. (e) Nil. (v) Green manure. (vi) BO—32 (mid-season). (vii) Irrigated. (viii) 2 interculturing and earthing up. (ix) 130 cm. (x) 20.2.61.

2. TREATMENTS and 3. DESIGN :

Same as Expt. No. 60(161) at Harinagar on page 584.

4. GENERAL:

(i) Fair. (ii) No. (iii) Germination count, tillers count, height measurment, mature stalk count and yield of cane. (iv) (a) 1960—61 (expt. modified in 61). (b) No. (c) Nil. (v) Motihari, Pandaul and Narkatiagunj. (vi) and (vii) Nil.

5. RESULTS :

(i) 375·3 Q/ha. (ii) 122·7 Q/ha. (iii) Treatment differences are significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Av. yield	198·2	313·4	308·8	440·1	412·5	511·6	479·3	364·1	350·2

C.D.=179·1 Q/ha.

Crop :- Sugarcane. **Ref :- Bh. 61(228).**

Site :- Zonal Centre (Sugarcane Res. Instt., Pusa) Motipur (Muzaffarpur). **Type :- 'M'.**

Object :—To study the response and economics of different phosphatic manures in combination with Urea and Castor cake for *Autumn* planted Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Green manure—Sugarcane—Sugarcane (Ratoon). (b) and (c) Green manure. (ii) Sandy loam—Alkaline particles. (iii) 6.12.61. (iv) (a) One disc ploughing and 2 disc harrowing and followed by planking. (b) Furrows method. (c) 35584 three-budded setts/ha. (d) 91 cm. between rows. (e) Nil. (v) Green manuring. (vi) BO—32 (mid-season). (vii) Irrigated (viii) cultural practices done by hand hoe followed by earthing up. (ix) 125 cm. (x) 3.2.63.

2. TREATMENTS and 3. DESIGN :

Same as Expt. No. 61(233) at Motihari on page 591.

4. GENERAL:

(i) Fair. (ii) No. (iii) Germination and tillers count, height of plants, mature stalk count, yield of cane (iv) (a) 1961-only. (b) No. (c) Nil. (v) Motihari, Narkatiaganj and Pandaul. (vi) and (vii) Nil.

5. RESULTS:

(i) 475·6 Q/ha. (ii) 64·9 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of cane in Q/ha.

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	463·0	495·4	478·6	419·1	505·0	518·1	499·6	415·1	449·2	511·7	476·6

Crop :- Sugarcane. **Ref :- Bh. 61(227).**

Site :- Zonal Centre (Sugarcane Res. Instt., Pusa) Motipur (Muzaffarpur). **Type :- 'M'.**

Object :—To study the response and economics of different phosphatic manures in combination with Urea and Castor cake for *Spring* planted Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Green manure—Sugarcane—Sugarcane (Ratoon). (b) and (c) Green manure. (ii) Sandy loam. (iii) 12.1.61. (iv) (a) One disc ploughing and two harrowing followed by planking. (b) Furrows method. (c) 35584 three-budded setts/ha. (d) 91 cm. between rows. (e) Nil. (v) Green manure. (vi) BO—32 (mid-season). (vii) Iirrigated. (viii) 2 interculturing and earthing up. (ix) 144 cm.(x) 15 and 20.2.62.

2. TREATMENTS and 3. DESIGN :

Same as Expt. No. 61(233) at Motihari on page 591.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Germination count, tillers count, height measurement, mature stalk count and yield of cane. (iv) (a) 1960—61 (expt. modified in 61). (b) No. (c) Nil. (v) Motihari, Narkatiagunj and Pandaul. (vi) and (vii) Nil.

5. RESULTS :

(i) 488·2 Q/ha. (ii) 143·7 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of cane in Q/ha.

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	470·9	435·1	482·5	527·2	570·2	405·5	366·5	535·6	478·6	568·2	529·7

Crop :- Sugarcane. **Ref :- Bh. 60(209).**

Site :- Zonal Centre (Sugarcane Res. Instt., Pusa), Motipur (Muzaffarpur). **Type :- 'M'.**

Object :—To study the response and economics of different nitrogenous fertilizers for *Spring* planted Sugarcane.

1. BASAL-CONDITIONS :

(i) (a) Green manure—Sugarcane—Sugarcane (Ratoon). (b) and (c) Green manure. (ii) Sandy loam. (iii) 22.2.60. (iv) (a) One disc ploughing and two harrowing followed by planking. (b) Furrows method. (c) 35584 three-budded setts/ha. (d) 91 cm. between rows. (e) Nil. (v) Green manure. (vi) BO—34 (mid-season). (vii) Irrigated (viii) Cultural practices done by hand hoe. (ix) 130 cm. (x) 20 2.61.

2. TREATMENTS :

Main-plot treatments :

2 modes of application : M_1=Full dose at planting and M_2=$\frac{2}{3}$rd at planting+$\frac{1}{3}$rd at earthing up.

Sub-plot treatments :

6 sources of N at 67·2 Kg/ha. : S_0=Control (no manure), S_1=A/S, S_2=A/S/N, S_3=Am. Chl., S_4=Urea and S_5=Castor cake.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication, 6 sub-plots/main-plot. (b) 89·6 m.×80·6 m. (iii) 4. (iv) (a) 18·44 m.×7·32 m. (b) 18·44 m.×5·49 m. (vi) 91 cm. on either side (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Germination and tillers count, height of plants, mature stalk count and yield of cane. (iv) (a) 1960—61 (Expt. modified in 1961). (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 427·2 Q/ha. (ii) (a) 42·8 Q/ha. (b) 84·0 Q/ha. (iii) Main effect of M is significant. (iv) Av. yield of cane in Q/ha.

	S_0	S_1	S_2	S_3	S_4	S_5	Mean
M_1	354·9	400·9	451·6	368·7	419·4	430·9	404·4
M_2	377·9	488·5	506·9	451·6	396·3	479·3	450·1
Mean	366·4	444·7	479·3	410·2	407·9	455·1	427·2

C.D. for M marginal means=393·3 Q/ha.

Crop :- Sugarcane. **Ref :- Bh. 61(229).**

Site :- Zonal Centre (Sugarcane Res. Instt., Pusa), Motipur (Muzaffarpur). **Type :- 'M'.**

Object :—To study the response and economics of different nitrogenous fertilizers for *Spring* planted Sugarcane.

1. BASAL CONDITIONS:

(i) (a) Green manure—Sugarcane—Sugarcane (Ratoon). (b) and (c) Green manure. (ii) Sandy loam. (iii) 10 and 11.1.61. (iv) (a) One disc ploughing and two harrowing followed by planking. (b) Furrows method. (c) 35584 three-budded setts/ha. (d) 91 cm. between rows. (e) Nil. (v) Green manure. (vi) BO—34, (mid-season). (vii) Irrigated. (viii) N.A. (ix) 144 cm. (x) 17 to 22.1.62.

2. TREATMENTS and 3. DESIGN :

Same as in Expt. No. 60(214), 61(234) at Motihari on page 594.

4. GENERAL :.

(i) Fair. (ii) Nil. (iii) Germination and tillers count, height of plants, mature stalk count, yield of cane. (iv) (a) 1960—61 (Expt. modified in 1961). (b) No. (c) Nil. (v) to (vii) Nil.

ESULTS :

(i) 374·9 Q/ha. (ii) (a) 196·4 Q/ha. (b) 102·3 Q/ha. (iii) None of the effects is significant. (iv) Av. yield of cane in Q/ha.

	S_0	S_1	S_2	S_3	S_4	S_5	S_6	Mean
M_1	326·2	342·3	445·2	421·0	386·2	328·5	492·2	391·7
M_2	296·8	425·0	353·9	361·0	377·1	343·5	348·7	358·0
Mean	311·5	383·6	399·6	391·0	381·7	336·1	420·4	374·9

Crop :- Sugarcane. **Ref :- Bh. 61(230).**

Site :- Zonal Centre (Sugarcane Res. Instt., Pusa), Motipur (Muzaffarpur). **Type :- 'M'.**

Object :—To study the response and economics of different nitrogenous fertilizers for *Autumn* planted Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Green Manure– Sugarcane—Sugarcane (Ratoon). (b) and (c) Green manure. (ii) Sandy loam. (iii) 28.10.61. (iv) (a) One disc ploughing and harrowing followed by planking. (b) Furrows method. (c) 35584 three-budded setts/ha. (d) 91 cm. between rows. (e) Nil. (v) Green manure. (vi) BO—34 (mid-season). (vii) Irrigated. (viii) 3 Interculturings with *deshi* plough. (ix) 125 cm. (x) 7 to 10.2.63.

2. TREATMENTS and 3. DESIGNS :

Same as expt. no. 60(214), 61(234) at Motihari on page no. 594.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Germination count, tillers count, height measurement, mature stalk count and yield of cane. (iv) (a) 1961—only. (b) No. (c) Nil. (v) Motihari. (vi) and (vii) Nil.

5. RESULTS :

(i) 213 2 Q/ha. (ii) (a) 99·0 Q/ha. (b) 52·8 Q/ha. (iii) None of the effects is significant. (iv) Av. yield of cane in Q/ha.

	S_0	S_1	S_2	S_3	S_4	S_5	S_6	Mean
M_1	178·8	259·3	261·0	220·0	210·6	213·1	216·8	222·8
M_2	193·1	220·3	156·8	174·3	235·3	213·4	232·1	203·6
Mean	185·9	239·8	208·9	197·2	222·9	213·2	224·5	213·2

Crop :- Sugarcane. **Ref :- Bh. 62(191).**

Site :- Zonal Centre, (Sugarcane Res. Instt., Pusa), Motipur (Muzaffarpur). **Type :- 'M'.**

Object :—To study the efficiency and economics of Sterameal manure on Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Green manure—Sugarcane—Sugarcane. (b) Green manure. (c) Nil. (ii) Sandy loam. (iii) 25.11.62. (iv) (a) 1 disc ploughing and horrowing followed by planking. (b) Furrows method. (c) 35584 three-budded setts/ha. (d) 91 cm. between rows (e) Nil. (v) Green manure. (vi) BO—43 (early). (vii) Irrigated. (viii) 2 interculturings. (ix) 132 cm. (x) 15 to 20.3.64.

2. TREATMENTS and 3. DESIGN :

Same as expt. no. 62(195) at Harinagar on page no. 587.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Germination and tillers count, height measurement, mature stalk count and yield of cane. (iv) (a) 1962—only. (b) and (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 495·5 Q/ha. (ii) 40·6 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of cane. in Q/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	488·8	488·3	512·7	489·4	483·0	511·1

Crop :- Sugarcane. **Ref :- Bh. 60(255), 61(265), 62(234).**

Site :- Sugar Factory Reserved Area, Motipur (Muzaffarpur). **Type :- 'M'.**

Object :—To assess the manurial requirments of Sugarcane with refercence to the soil type—Loamy sand recognised in surveyed areas.

1. BASAL CONDITIONS :

(i) (a) Paddy–Sugarcane. (b) Paddy. (c) Nil. (ii) Alluvial calcarious loamy sand. (iii) 75 Quintals of F.Y.M. (iv) BO–17 ; BO—32 for 61 and 62. (v) (a) 3—4 ploughings. (b) Three-budded setts in trenches or furrows. (c) 65 three-budded setts/row. (d) 92 cm. between rows. (e) Nil. (vi) 25.10.60; 3.11.61 ; 12.11.62. (vii) Irrigated. (viii) Weeding and earthing up. (ix) 102·5 cm ; 104·7 cm ; 107·5 cm. (x) 11.1.62 ; 13.1.63 ; 18.1.64.

2. TREATMENTS :

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

(1) 3 levels of N as Urea : N_0=0, N_1=67·2 and N_2=134·5 Kg/ha.
(2) 3 levels of P_2O_5 as Super : P_0=0, P_1=84·1 and P_2=168·1 Kg/ha.
(3) 3 levels of K_2O as Mur. Pot. : K_0=0, K_1=89·7 and K_2=179·3 Kg/ha.

3. DESIGN :

(i) 3^3 fact. partially confd. ; 9 plots/block, 3 blocks/rep. ; 4 rep. for 60 and 2 rep. for 61 and 62. (ii) Random selection from the list of villages and cultivators with special reference to the plot size and soil type. (iii) (a) 18·44 m. × 7·32 m. (b) 18·44 m. × 5·49 m. (iv) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination count, tillers count, mature stalk count and yield of cane. (iv) (a) 1960—62.(b) No. (c) Results of combined analysis are presented under 5. Results. (v) No. (vi) Nil. (vii) Error variances are homogeneous and Years × Treatments interaction is present.

5. RESULTS :

Pooled results

(i) 390·8 Q/ha. (ii) 101·6 Q/ha. (based on 36 d.f. made up of Years × Treatments interaction). (iii) Main effects of N and P are highly significant. (iv) Av. yield of cane in Q/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	289·0	358·8	367·0	327·0	358·0	329·8	338·3
N_1	351·8	426·5	418·0	407·5	403·2	385 5	398·7
N_2	394·2	436·5	475·8	449·8	423·0	433·8	435·5
Mean	345·0	407·3	420·3	394·8	394·7	383·0	390·8
K_0	327·8	421·5	435·0				
K_1	353·8	402·2	428·2				
K_2	353·5	398·0	397·5				

C.D. for N or P marginal means=5·13 Q/ha.

Individual results

Treatment	N_0	N_1	N_2	Sig.	P_0	P_1	P_2	Sig.	K_0	K_1	K_2	Sig.	G.M.	S.E./plot
Year														
1960	370·0	476·0	485·0	**	375·0	473·0	483·0	**	445·0	445 0	441·1	N.S.	444·0	89·3
1961	416·0	427·0	479·0	N.S.	415·0	445·0	462 0	N.S.	466·0	437·0	419·0	N.S.	441·0	89·3
1962	197·0	216·0	293·0	**	215·0	238·0	253·0	N.S	223 0	252·0	231·0	N.S.	235·0	86·8
Pooled	338·3	398·7	435·5	**	345·0	407·3	420·3	**	394·8	394·7	383·0	N.S.	390·8	101·6

Crop : Sugarcane. **Ref :- Bh. 60(256), 61(266), 62(236).**

Site :- Sugar Factory Reserved Areas, Motipur (Muzaffarpur). **Type :- 'M'.**

Object :—To assess the manurial requirments of Sugarcane with reference to soil type—Sandy loam recognised in surveyed areas.

1. BASAL CONDITIONS:

(i) (a) Paddy– Sugarcane. (b) Paddy. (c) Nil. (ii) Calcarious alluvial sandy loam. (iii) 75 Quintals of F.Y.M. (iv) BO—17 ; BO—32 ; BO—32. (v) (a) 3—4 ploughings. (b) Three-budded setts in trenches or furrows. (c) 65 three-budded setts/row. (d) 92 cm. between rows. (e) Nil. (vi) 5.11.60 ; 12.11.61 ; 30.10.62. (vii) Irrigated. (viii) Weeding and earthing up. (ix) 104·7 cm. ; 103·4 cm ; 108 cm. (x) 18.1 62 ; 15 1.63 ; 12.1.64.

2. TREATMENTS :

Same as in expt. no. 60(255), 61(265). 62(234) at Motipur on page no. 601.

3. DESIGN:

(i) 3^3 fact. partially confd. ; 9 plots/block, 3 blocks/rep. ; 4 rep. for 60 and 61 and 3 rep. for 62. (ii) Random selection from the list of villages and cultivators with special reference to the plot size and soil type. (iii) (a) 18·44 m. × 7·32 m. (b) 18·44 m. × 5·49 m. (iv) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Germination and tillers count, mature stalk count and yield of cane. (iv) (a) 1960—62. (b) No. (c) Results for combined analysis are presented under 5. Results. (v) No. (vi) Nil. (vii) Error variances are heterogeneous and N × Years, P × Years, K × Years, (NP) × Years and (PK) × Years interactions are present.

5. RESULTS:

Pooled results

(i) 399·7 Q/ha. (ii) 92·6 Q/ha. (based on 28 d.f. made up of N × Years, P × Years, K × Years, (NP) × Years and (PK) × Years interactions. (iii) Only the main effects of N and P are highly significant. (iv) Av. yield of cane in Q/ha.

	N_0	N_1	N_2	K_0	K_1	K_2	Mean
P_0	336·1	378·6	372·1	357·5	380·4	348·9	362·3
P_1	379·9	457·4	408·5	408·5	404·4	432·9	415·2
P_2	404·4	428·1	432·7	394·4	435·2	435·6	421·7
Mean	373·4	421·3	404·4	386·8	406·6	405·8	399·7

C.D. for N or P marginal means=28·27 Q/ha.

Individual results

Treatment	N_0	N_1	N_2	Sig.	P_0	P_1	P_2	Sig.	K_0	K_1	K_2	Sig.	G.M.	S.E./plot
Year														
1960	470·0	499 0	490 0	N.S.	430·0	513·0	516·0	**	463·0	508·0	488·0	N.S.	486·0	108·2
1961	320·0	377·0	365·0	**	312·0	389 0	361·0	**	351·0	353·0	358·0	N.S.	354·0	81·4
1962	316·0	377·0	343·0	**	339·0	320·0	377·0	*	333·0	343·0	360·0	N.S.	345·0	69·9
Pooled	373·4	421·3	404·4	**	362·3	415·2	421·7	**	386·8	406·6	405·8	N.S.	399·7	92·6

Crop :- Sugarcane. **Ref :- Bh. 60(257), 61(267), 62(235).**

Site :- Sugar Factory Reserved Area, Motipur (Muzaffarpur). **Type :- 'M'.**

Object :—To assess the manurial requirments of Sugarcane with reference to the soil type—Loam recognised in surveyed area.

1. **BASAL CONDITIONS :**

(i) (a) Paddy—Sugarcane. (b) Paddy. (c) Nil. (ii) Alluvial calcarious loam. (iii) 75 Quintals of FYM. (iv) BO—17 ; BO—32 for 61 and 62. (v) (a) 3—4 ploughings. (b) Three-budded se ts in trenches or furrows. (c) 65 three-budded setts/row. (d) 92 cm. between rows. (e) —. (vi) 3.11.60 ; 28.10.61 ; 17.1162. (vii) irrigated. (viii) Weeding and earthing up. (ix) 101·3 cm . ; 104·7 cm ; 105·5 cm. (x) 15.1.62 ; 17.1.63 ; 12.1.64.

2. **TREATMENTS :**

Same as in expt. no. 60(255), 61(265), 62(234) at Motipur on page no. 601.

3. DESIGN:

(i) 3^3 Fact. partially confd. ; 9 plots/block, 3 blocks/rep. ; 3 rep. for 60 and 4 rep. for 61 and 62. (ii) Random selection from the list of villages and cultivators with special refrence to the size of the plot and soil type. (iii) (a) 18·44 m. × 7·32 m. (b) 18·44 m. × 5·49 m. (iv) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Germination and tillers count, mature stalk count and yield of cane. (v) (a) 1960—62. (b) No. (c) Results of combined analysis are presented under 5. Results. (v) No. (vi) Error variances are homogeneous and Years × Treatments interaction is absent.

5. RESULTS:

Pooled results

(i) 459 6 Q/ha. (ii) 96·6 Q/ha (based on 244 d.f. made up of pooled error and Years × Treatments interaction). (iii) Main effects of N and P are highly significant. (iv) Av. yield of cane in Q/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	403·5	415·2	425·2	410·2	412·6	421·1	441·6
N_1	455·3	471·0	508·3	482·9	493·3	458·4	478·2
N_2	436·6	488·1	533·5	503·3	482·0	473·0	486·1
Mean	431·8	458·1	489·0	498·8	462·6	450·8	459·6
K_0	444·9	472 0	479·4				
K_1	448·0	456·7	483·2				
K_2	402·5	445·5	504·4				

C.D. for N or P marginal means=26·9 Q/ha.

Individual results

Treatment	N_0	N_1	N_2	Sig.	P_0	P_1	P_2	Sig.	K_0	K_1	K_2
Year 1960	483·0	540·0	557·0	*	478·0	533·0	569·0	*	524 0	539·0	517·0
1961	343·0	405·0	394·0	*	362·0	390·0	390·0	N.S.	382·0	377·0	383·0
1962	435·0	505·0	525·0	**	467·0	470 0	528·0	*	505·0	491·0	469 0
Pooled	414·6	47δ·2	486·1	*	431·8	458·1	489·0	*	498·8	462·6	450·8

Sig.	G.M.	S E./plot
N.S	527·0	109·6
N.S.	381·0	88·7
N.S.	488·0	100·5
N.S.	459·6	96·6

Crop :- Sugarcane. **Ref :- Bh. 60(204), 61(225), 62(187).**

Site :- Zonal Centre (Sugarcane Res. Instt., Pusa), Kamta Rajpur Farm, Narkatiaganj (Champaran). **Type :- 'M'.**

Object: —To study the response and economics of different nitrogenous fertilizers on Sugarcane crop.

1. **BASAL CONDITIONS:**

(i) (a) Nil. (b) Green manure. (c) Nil. (ii) Sandy and clayey loam. (iii) 28.2.60 ; 27.1.61 ; 13 and 14.2.62. (iv) (a) 3 ploughings, 5 herrowings and 2 plankings. (b) Furrows method. (c) 46·1 Q/ha. (d) 91·4 cm. between rows. (e) Nil. (v) As per treatments. (vi) BO—34 (medium). (vii) Unirrigated. (viii) 2—3 weedings. (ix) 143·3 cm ; 146·9 cm ; 195·2 cm. (x) 7 to 10.3.61 ; 18 to 29.4.62 ; 16 to 20.2.63.

2. **TREATMENTS** and 3. **DESIGN:**

Same as in expt. no. 60(214), 61(234) at Motihari on page no. 594.

4. **GENERAL:**

(i) Good. (ii) Nil. (iii) Germination and tillers count, height of plants, yield of cane. (iv) (a) 1960—62. (b) No. (c) Results for combined analysis are presented under 5. Results. (v) Other zonal centres. (vi) Nil. (vii) Since sub-plot error variances are heterogeneous, results of individual years are presented under 5. Results.

5. **RESULTS:**

60(204)

(i) 557·3 Q/ha. (ii) (a) 86·4 Q/ha. (b) 62·5 Q/ha. (iii) Only the main effect of S is significant. (iv) Av. yield of cane in Q/ha.

	S_0	S_1	S_2	S_3	S_4	S_5	S_6	Mean
M_1	547·0	547·5	588·7	598·6	566·5	569·2	625·5	577·6
M_2	424·2	557·4	593·9	565 0	536·9	527·0	535·1	537·0
Mean	485·6	552·4	591·3	581·8	561·7	548·1	580·3	557·3

C.D. for S marginal means=63·4 Q/ha.

61(225)

(i) 565·5 Q/ha. (ii) (a) 75·1 Q/ha. (b) 63·0 Q/ha. (iii) Only the main effect of S is significant. (iv) Av. yield of cane in Q/ha,

	S_0	S_1	S_2	S_3	S_4	S_5	S_6	Mean
M_1	525·2	592·2	603·8	653·4	593·2	542·5	631·2	591·6
M_2	493·3	545·0	633·7	546·7	531·6	542·8	536·9	539·4
Mean	482·3	568·6	618·7	600·1	562·4	542·7	584·0	565·5

C.D. for S marginal means=63·9 Q/ha.

62(187)

(i) 244·9 Q/ha. (ii) (a) 40·7 Q/ha. (b) 28·9 Q/ha. (iii) Only the interaction effect of M×S is significant. (iv) Av. yield of cane in Q/ha.

	S_0	S_1	S_2	S_3	S_4	S_5	S_6	Mean
M_1	248·9	251·9	285.7	257·8	238·0	262·7	248·7	256·3
M_2	225 2	238·3	179·3	234·8	267·2	252·9	236·6	233·5
Mean	237·1	245·1	232·5	246·3	252·6	257·8	242·6	244·9

C.D. for M means at the same level of S=40·0 Q/ha.
C.D. for S means at the same level of M=41·5 Q/ha.

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Crop :- Sugarcane. **Ref :- Bh. 60(203).**

Site :- Zonal Centre (Sugarcane Res. Instt., Pusa), Kamata Rajpur farm, Narkatiaganj (Champaran). **Type :- 'M'.**

Object :—To study the response and economics of different phosphatic manures in combination with Urea and Castor cake on Sugarcane crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Green manure with *Sanoi*. (c) Nil. (ii) Sandy and clayey loam. (iii) 6.3.60. (iv) (a) 3 ploughirgs, 5 harrowings and 2 plankings. (b) Furrows method. (c) 46 1 Q/ha. (d) 91 cm. between rows. (e) Nil. (v) As per treatments. (vi) BO—32 (medium). (vii) Unirrigated. (viii) 2—3 weedings. (ix) 143 cm. (x) 16 to 19.2.61.

2. TREATMENTS and 3. DESIGN :

Same as expt. no. 60(161) at Harinagar on page no. 584.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination and tillers count, height measurement, juice analysis and yield of cane. (iv) (a) 1960—62 (Trs. modified in 1961 onward). (b) and (c) Nil. (v) Other zonal centres. (vi) Heavy rains. (vii) Nil.

5. RESULTS :

(i) 51·1 Q/ha. (ii) 18·5 Q/ha. (iii) Treatment differeces are not significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Av. yield	36·6	53·2	51·1	45 1	54 7	46·1	75·2	49 1	48 8

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Crop :- Sugarcane. **Ref :- Bh, 61(224), 62(186).**

Site :. Zonal Centre (Sugarcane Res. Instt., Pusa) Kamta Rajpur Farm, Narkatiaganj (Champaran). **Type :- 'M',**

Object : — To study the response and economics of different phosphatic manure in combination with Urea and Castor cake on Sugarcane crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Green manure with *Sanoi*. (c) Nil. (ii) Sandy and clayey loam. (iii) 29.1.61 . 29, 30.1.62. (iv) (a) 3 ploughings, 5 harrowings and 2 plankings. (b) Furrows method. (c) 46·1 Q/ha. (d) 91·4 cm. between rows. (e) Nil. (v) 359 Kg/ha. of Castor cake+81 Kg/ha. of Urea+140 Kg/ha. of P_2O_5 as Super+112 Kg/ha. of Bone meal+56 Kg/ha. of Dical. Phosphate+90 Kg/ha. of Rock Phosphate. (vi) BO—32 (medium). (vii) Unirrigated. (viii) Weedings. (ix) 146·9 cm. ; 195·2 cm. (v) 27, 28.4.62 ; 3 to 7.2.63.

2. TREATMENTS ann 3. DESIGN :

Same as expt. no. 61(233) at Motihari on page no. 591.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination and tillers count, height measurement, mature stalk count, yield of cane. (iv) (a) 1960—62 (Trs. modified in 1961 onward). (b) No. (c) Results of combined analysis for 1961—62 are presented under 5. Results. (v) Other Zonal Centres : Motihari, Motipur, Narkatiaganj and S.R.I., Pusa. (vi) Nil. (vii) Error variances are homogeneous and Years × Treatments interaction is absent.

5. RESULTS:

Pooled results

(i) 459·0 Q/ha. (ii) 92·0 Q/ha. (based on 70 d.f. made up of pooled error and Years × Treatments interaction). (iii) Treatment differences are not significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. yield	444·8	500·6	485·2	414·5	477·2	501·9

	T_6	T_7	T_8	T_9	T_{10}
	456·7	447·2	510·0	364·0	446·9

Individual results

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9	T_{10}
Year											
1961	505·5	557·4	534·6	436·6	554·2	461·0	465·7	485·2	517·6	388·0	497·1
1962	384·2	443·8	435·9	392·4	400·3	542·8	447·7	409·2	502·5	340·0	396·8
Pooled	444·8	500·6	485·2	414·5	477·2	501·9	456·7	447·2	510·0	364·0	446·9

Sig.	G.M.	S.E./plot
N.S.	491·2	81·1
N.S.	426·9	101·6
N.S.	459·0	92·0

Crop :- Sugarcane. **Ref :- Bh. 63(214).**

Site :- Zonal Centre (Sugarcane Res. Instt., Pusa) **Type :- 'M'.**
Kamta Rajpur farm, Narkatiaganj (Champaran).

Object : —To study the efficiency and economics of Sterameal manure on Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) G. M. (c) Nil. (ii) Sandy and clayey loam. (iii) 5. 6.2.63. (iv) (a) 3 ploughings, 3 harrowings and 2 plankings. (b) Ridge and furrows method. (c) 46·1 Q/ha. (d) 91 cm. between rows. (e) Nil. (v) As per treatments (vi) BO—43 (early). (vii) Unirrigated. (viii) Weedings. (ix) 197 cm. (x) 13 to 16.3.64.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 62(195) at Harinagar on page no. 587.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Germination and tillers count, height of plants, mature stalk count and yield of Sugarcane. (iv) (a) 1963—only. (b) No. (c) Nil. (v) Motipur. (vi) and (vii) Nil.

5. RESULTS:

(i) 488·8 Q/ha. (ii) 53·8 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	491·9	485·9	535·7	485·9	441·7	491·5

Crop :- Sugarcane. **Ref :- Bh. 60(162).**

Site :- Zonal Centre (Sugarcane Res. Instt., Pusa), Pandaul. **Type :- 'M'.**

Object :—To study the effect and economics of different phosphatic manures in combination with Urea and Castor cake for *Spring* planted Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Wheat—*Sanai*, Sugarcane. (b) Wheat. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Salty and alkline. (iii) 8.2.60. (iv) (a) 2 ploughings and 4 harrowings. (b) Line sowing. (c) 60·2 Q/ha. (d) 91 cm. between rows. (e) 64 three-budded setts/row (v) N.A. (vi) BO—32 (medium). (vii) Unirrigated. (viii) Weeding. (ix) 82 cm. (x) 27.12.60.

2. TREATMENTS and DESIGN :

Same as expt. no. 60(161) at Harinagar on page no. 584.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination and tillers count, mature stalk count, juice analysis and yield of cane. (iv) (a) 1960—61 (Trs. modified in 1961). (b) No. (c) Nil. (v) Motihari and Motipur. (vi) and (vii) Nil.

5. RESULTS :

(i) 335·7 Q/ha. (ii) 61·4 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Av. yield	284·6	314·3	341·3	327·0	410·4	315·5	341·7	332·7	353·9

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Crop :- Sugarcane. **Ref :- Bh. 61(181).**

Site :- Zonal Centre (Sugarcane Res. Instt., Pusa), Pandaul. **Type :- 'M'.**

Object :—To study the response and economics of different phosphatic manures in combination with Urea and Castor cake for *Spring* planted Sugarcane.

1. BASAL CONDITIONS :

(i) (a) G.M.—Sugarcane—Sugarcane, Fallow—Wheat. (b) Wheat. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) 20, 21.2.61. (iv) (a) 2 deep ploughings with 4 harrowings. (b) Ridge method. (c) 41·5 Q/ha. (three-budded setts). (d) 91 cm. between rows. (e) 64 three-budded setts/row. (v) As per treatments. (vi) BO—32 (medium). (vii) Unirrigated. (viii) Weeding and earthing. (ix) 99 cm. (x) 25.12.61 to 12.2.62.

2. TREATMENTS and 3. DESIGN :

Same as Expt. No. 61(233) at Motihari on page 591.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination and tillers count, mature stalk count, yield of cane. (iv) (a) 1960—61 (Trs. modified in 1961). (c) Nil. (v) Motihari and Motipur. (vi) and (vii) Nil.

5. RESULTS :

(i) 446·1 Q/ha. (ii) 54·4 Q/ha. (iii) Treatment differences are highly significant. (iv) (a) Av. yield of cane in Q/ha.

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	228·4	512·5	489·5	420·3	487·4	442·2	468·8	467·2	510·1	404·2	476·1

C.D.=78·6 Q/ha.

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Crop :- Sugarcane (*Rabi*). **Ref :- Bh 61(182).**

Site :- Zonal Centre (Sugarcane Res. Instt., Pusa), Pandaul. Type :- 'M'.

Object :—To study the response and economics of different phosphatic manures in combination with Urea and Castor cake for *Autumn* planted Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Fallow—Wheat—*Sanai*—Sugarcane. (b) G.M. (c) Nil. (ii) Sandy loam. (iii) 9.12.61. (iv) (a) 2 deep ploughings with tractor and 4 harrowings. (b) Line sowing. (c) 41·5 Q/ha. (d) 91 cm. between rows. (e) 64 three-budded setts/row. (v) N.A. (vi) BO—32 (mid-early). (vii) Unirrigated. (viii) Weeding and earthing. (ix) 119 cm. (x) 23, 30.12.62.

2. TREATMENTS and 3. DESIGN:

Same as Expt. No. 61(233) at Motihari on page 591.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination and tillers count, mature stalk count, height of plants and yield of cane. (vi) (a) 1961-only. (b) and (c) Nil. (v) Motihari and Motipur. (vi) and (vii) Nil.

5. RESULTS :

276·3 Q/ha. (ii) 34·7 Q/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of cane in Q/ha.

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	93·3	240·0	290·9	298·3	382·0	244·7	353·1	286·7	323·7	227·4	299·0

C.D.=50·1 Q/ha.

Crop :- Sugarcane. **Ref :- Bh. 61(186).**

Site :- Zonal Centre (Sugarcane Res. Instt., Pusa), Pandaul. Type :- 'M'.

Object :—To study the response and economics of different nitrogenous fertilizers for *Spring* planted Sugarcane.

1. BASAL CONDITIONS :

(i) (a) G.M.—Sugarcane, Fallow—Wheat. (b) Wheat. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) 26 and 27.2.61. (iv) (a) 2 deep ploughings and 4 harrowings. (b) Ridge method. (c) 55·3 Q/ha. (d) 91 cm. between rows. (e) 64 three-budded setts/row. (v) N.A. (vi) BO—34 (mid-early). (vii) Unirrigated. (viii) Weeding and earthing. (ix) 182 cm. (x) 14 to 26.2.62.

2. TREATMENTS and 3. DESIGN :

Same as Expt. No. on 60(166), 61(184) at Harinagar on page 585.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Germination and tillers count, height of plants, mature stalk count and yield of cane. (iv) (a) 1961-only. (b) and (c) Nil. (v) Motihari and Motipur. (vi) and (vii) Nil.

5. RESULTS :

(i) 395·9 Q/ha. (ii) (a) 11·2 Q/ha. (b) 22·8 Q/ha. (iii) None of the effects is significant. (iv) Av. yield of cane in Q/ha.

	S_0	S_1	S_2	S_3	S_4	S_5	S_6	Mean
M_1	375·8	406·5	398·6	402·5	393·1	384·7	410·9	396·0
M_2	378·3	395·8	395·6	402·8	402·0	392·4	403·8	378·3
Mean	377·1	401·2	397·1	402·6	397·6	388·6	407·3	395·9

Crop :- Sugarcane (*Rabi*). **Ref :- Bh. 61(187).**

Site :- Zonal Centre (Sugarcane Res. Instt., Pusa), Pandaul. **Type :- 'M'.**

Object :—To study the response and economics of different nitrogenous fertilizers for *Autumn* planted Sugarcane,

1. BASAL CONDITIONS :

(i) (a) Fallow--Wheat—*Sanai*—Sugarcane. (b) G M. (c) Nil. (ii) Sandy loam. (iii) 11.12.61. (iv) (a) 2 deep ploughings and 4 harrowings. (b) Ridge method. (c) 55·3 Q/ha. (d) 91 cm. between rows. (c) 64 three-budded setts/row. (v) As per treatments. (vi) BO—34. (vii) Unirrigated. (viii) Weeding and earthing. (iv) 99 cm. (x) 19, 28.1.63.

2. TREATMENTS and 3. DESIGN:

Same as Expt. No. 60(166), 61(184) at Harinagar on page 585.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination and tillers count, height of plants, mature stalk count and yield of cane. (iv) (a) 1961-only. (b) and (c) Nil. (v) Motihari and Motipur. (vi) and (vii) Nil.

5. RESULTS :

(i) 212·5 Q/ha. (ii) (a) 44·8 Q/ha. (b) 26·4 Q/ha. (iii) Main effect of T is highly significant. (iv) Av. yield of cane in Q/ha.

	S_0	S_1	S_2	S_3	S_4	S_5	S_6	Mean
M_1	147·2	216·3	195·3	223·5	218·1	217·6	197·3	202·2
M_2	141·5	216·6	226·2	256·8	235·6	219·3	263·7	222·8
can	144·3	216·5	210·8	240·2	226·8	218·4	230·5	212·5

C.D. for T marginal means=26·7 Q/ha.

Crop :- Sugarcane. **Ref :- Bh. 62(196).**

Site :- Zonal Centre (Sugarcane Res. Instt., Pusa), Pandaul. **Type :- 'M'.**

Object :—To study the efficacy and economics of Sterameal on Sugarcane crop.

1. BASAL CONDITIONS :

(i) (a) Fallow—Wheat—*Sanai*—Sugarcane. (b) *Sanai*. (c) Nil. (ii) Sandy loam. (iii) 21.11.62. (iv) (a) Deep ploughing and harrowing. (b) Ridge method. (c) 36·9 to 46 Q/ha.; 64 three-budded setts/row. (d) 91 cm. between rows. (e) Nil. (v) N.A. (vi) BO—43 (early). (vii) Unirrigated. (viii) Interculturing, weeding and earthing up. (ix) 111 cm. (x) 29.12.63 to 2.1.64.

2. TREATMENTS :

6 manurial treatments : T_1=33·6 Kg/ha. of N as A/S+84·1 Kg/ha. of P_2O_5 as Super+47·1 Kg/ha. of K_2O as Mur. Pot., T_2=33·6 Kg/ha. of N as A/S+33·6 Kg/ha. of N as Sterameal+84·1 Kg/ha. of P_2O_5 as Super and Sterameal, T_3=33·6 Kg/ha. of N as Castor cake+33·6 Kg/ha. of N as A/S+84·1 Kg/ha. of P_2O_5 as Super+47·1 Kg/ha. of K_2O as Mur. Pot., T_4=67·2 Kg/ha. of N as A/S+84·1 Kg/ha. of P_2O_5 as Super+47·1 Kg/ha.of K_2O as Mur. Pot., T_5=67·2 Kg/ha. of N as Castor cake+84·1 Kg/ha. of P_2O_5 as Super+47·1 Kg/ha. of K_2O Mur. Pot. and T_6=67·2 Kg/ha. of N as Sterameal+84·1 Kg/ha of P_2O_5 as Super and Sterameal+47·1 Kg/ha. of K_2O as Mur. Pot.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) 43·89 m.×18·44 m. (iii) 5. (iv) (a) 18·44 m.×7·32 m. (b) 18·44 m.×5·49 m. (v) 91 cm. on either side. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination and tillers count, height measurement, mature stalk count, juice analysis and yield of cane. (iv) (a) 1962—64 (Expt. for 1963—N.A. and Trs. modified in 64). (b) Yes. (v) Other Zonal Centres. (vi) and (vii) Nil.

5. RESULTS :

(i) 302·6 Q/ha. (ii) 18·4 Q/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	
Av. yield	304·6	306·8	289·0	297·3	285·5	332·1	C.D.=24·3 Q/ha.

Cryp :- Sugarcane. **Ref :- Bh. 64(247).**

Site :- Zonal Centre (Sugarcane Res. Instt., Pusa), Pandaul. **Type :- 'M'-**

Object :—To study the efficiency and economics of Sterameal on Sugarcane crop.

1. BASAL CONDITIONS :

(i) (a) Wheat—*Sanai*—Sugarcane. (b) *Sanai*. (c) Nil. (ii) Sandy loam. (iii) 8.2.64. (iv) (a) Deep ploughing with harrow. (b) Ridge method. (c) 36·9 to 55·3 Q/ha. (d) 91 cm. between rows. (e) Nil. (v) N.A. (vi) BO—43 (early). (vii) Unirrigated. (viii) Interculturing and earthing up. (ix) 94 cm. (x) 5 to 10.1.65.

2. TREATMENTS :

8 manurial treatments : T_1=33·6 Kg/ha. of N as A/S at planting+33·6 Kg/ha. of N as A/S at earthing up+84·1 Kg/ha. of P_2O_5 as Super, T_2=33·6 Kg/ha. of N as Sterameal+33·6 Kg/ha. of N as A/S+84·1 Kg/ha. of P_2O_5 as Super, T_3=33·6 Kg/ha. of N as Castor cake+33·6 Kg/ha. of N as A/S+84·1 Kg/ha. of P_2O_5 as Super+47·1 Kg/ha. of K_2O as Mur. Pot., T_4=67·2 Kg/ha. of N as A/S+84·1 Kg/ha. of P_2O_5 as Super+47·1 Kg/ha. of K_2O as Mur. Pot., T_5=67·2 Kg/ha. of N as Castor cake +84·1 Kg/ha. of P_2O_5 as Super+47·1 Kg/ha. of K_2O as Mur. Pot., T_6=67·2 Kg/ha. of N as Sterameal+84·1 Kg/ha. of P_2O_5 as Super and Sterameal+47·1 Kg/ha. of K_2O as Mur. Pot., T_7=33·6 Kg/ha. of N as Sterameal+33·6 Kg/ha. of N as A/S+84·1 Kg/ha. of P_2O_5 as Super and Sterameal+47·1 Kg/ha. of K_2O as Mur. Pot. and T_8=67·2 Kg/ha. of N as Ralimeal+84·1 Kg/ha. of P_2O_5 as Ralimeal and Super+47·1 Kg/ha. of K_2O as Mur. Pot.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) 58·52 m.×18·44 m. (iii) 5. (iv) (a) 18·44 m.×7·32 m. (b) 18·44 m.×5·49 m. (v) 91 cm. on either side. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Germination and tillers count, height measurement, mature stalk count, juice analysis and yield of cane. (iv) (a) 1962—64 (Expt. for 63—N.A. and Trs. modified in 64). (b) Yes. (c) Nil. (v) Other Zonal Centres. (vi) and (vii) Nil.

5. RESULTS:

(i) 228·6 Q/ha. (ii) 43·3 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Av. yield	224·2	234·5	225·4	204·9	199·1	230·2	259·2	251·7

Crop : Sugarcane. **Ref :- Bh, 60(190).**

Site :- Sugarcane Res. Sub-Station, Patna. **Type :- 'M'.**

Object :—To study the effect of N, P and K on the yield of Sugarcane crop.

1. BASAL CONDITIONS:

(i) (a) N.A. (b) Paddy. (c) 67 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Clay. (iii) 28 to 30.12.59. (iv) (a) One ploughing with tractor and 2 *deshi* ploughings. (b) Ridge and furrows method (c) 37067 setts/ha. (d) 91 cm. between rows. (e) —. (v) As per treatments. (vi) CO—622 (early). (vii) Irrigated. (viii) Hoeing and earthing up. (ix) 109 cm. (x) 14.2.61.

2. TREATMENTS :

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

(1) 3 levels of N as A/S : N_0=0, N_2=89·7 and N_2=134·5 Kg/ha.

(2) 3 levels of P_2O_5 as Super : P_0=0, P_1=61·2 and P_2=100·9 Kg/ha.

(3) 3 levels of K_2O as Mur. Pot. : K_0=0, K_1=89·7 and K_2=134·5 Kg/ha.

3. DESIGN :

(i) 3^3 confd. (2nd order interaction partially confounded). (ii) (a) 9 plots/block, 3 blocks/replication (b) 22·10 m.×172·82 m. (iii) 4. (iv) (a) 22·10 m.×6·40 m. (b) 22·10 m.×4·57 m. (v) 91 cm. on either side. (vi) Yes.

4. GENERAL:

(i) Fair. (ii) Nil. (iii) Germination and tillers count, maturity count, juice analysis and yield of cane. (iv) 1960—only. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 300·9 Q/ha. (ii) 93·4 Q/ha. (iii) Main effect of N is highly significant. (iv) Av. yield of cane in Q/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	214·4	277·8	268·8	249·6	238·7	272·8	253·7
N_1	311·7	299·6	333·5	349·4	318·8	276·5	314·9
N_2	380·7	315·2	306·6	307·7	344·8	350·0	334·2
Mean	302·3	297·5	303·0	302·2	300·8	299·8	300·9
K_0	292·6	300·1	313·9				
K_1	309·0	305·6	287·8				
K_2	305·2	286·9	307·3				

C.D. for N marginal means=43·97 Q/ha.

Crop :- Sugarcane. **Ref :- Bh. 61(208), 62(172).**

Site :- Sugarcane Res. Sub-Station, Patna. **Type :- 'M'.**

Object:—To study the response and economics of different nitrogenous fertilizers for Sugarcane crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Dhaincha* G.M. (c) Nil. (ii) Clay. (iii) 19 to 22.3.61 ; 5/6.2.62. (iv) (a) One ploughing with tractor and 2 *deshi* ploughings. (b) Ridge and furrows method. (c) 37956 three-budded setts/row. (d) 91 cm. between rows. (e) Nil. (v) N.A. (vi) BO—34. (vii) Irrigated. (viii) Hoeing and earthing up. (ix) 62·8 cm. ; 82·3 cm. (x) 27.2.62 to 5.3.62 ; 4 to 10.3. 63.

2. TREATMENTS :

All combinations of (1) and (2)+one control (2 plots)

(1) 2 modes of application : M_1=Full dose at planting and M_2=$\frac{2}{3}$rd at planting+$\frac{1}{3}$rd at earthing up.

(2) 6 sources of N at 89·7 Kg/ha. along with 67·2 Kg/ha. of P_2O_5 as Super : S_1=A/S, S_2=A/S/N, S_3=Am. Chl., S_4=C/A/N, S_5=Urea and S_6=Castor, cake.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 14. (b) 18·44 m.×102·41 m. (iii) 4. (iv) (a) 18·44 m.×7·32 m. (b) 18·44 m.×5·49 m. (v) 91 cm. on either side. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil ; slight attack of pest and disease which were controlled. (iii) Germination and tillers count, mature stalk count, juice analysis and yield of cane. (iv) (a) 1960—62 (expt. for 1960—N.A.). (b) Yes. (c) Results of combined analysis are presented under 5. Results. (v) Pusa and its Zonal Centres. (vi) Nil. (vii) Error variances are homogeneous and Years×Treatments interaction is absent.

5. RESULTS :

Poold results

(i) 276·5 Q/ha. (ii) 61·0 Q/ha. (based on 92 d.f. made up of pooled error and Years×Treatments interaction). (iii) Main effect of S and 'Control *vs* others' are highly significant. (iv) Av. yield of cane in Q/ha.

Control=220·7 Q/ha.

	S_1	S_2	S_3	S_4	S_5	S_6	Mean
M_1	283·5	271·5	310·0	294·0	297·5	269·5	287·7
M_2	288·5	247·5	291·0	235·0	333·5	308·0	283·9
Mean	286·0	259·5	300·5	264·5	315·5	288·7	285·8

C.D. for S marginal means=42·9 Q/ha.
C.D. for 'Control *vs* others'=44·4 Q/ha.

Individual results

Treatment	M_1	M_2	Sig.	S_1	S_2	S_3	S_4	S_5	S_6
Years									
1961	233·8	220·9	N.S.	249·2	196·2	225·6	187·9	285·7	219·3
1962	341·6	347·1	N.S.	322·7	322·8	375·5	341·1	345·3	358·6
Pooled	287·7	283·9	N.S.	286·0	259·5	300·5	264·5	315·5	288·7

Sig.	Control	Si	G.M.	S.E./plot
*	201·5	N.S.	223·6	56·8
N.S.	239·9	**	329·4	60·5
**	220·7	**	276·5	61·0

Crop :- Sugarcane. **Ref :- Bh. 64(156).**

Site :- Sugarcane Res. Instt., Pusa. **Type :- 'M'.**

Object :—To find out the effect of heavy doses of nitrogenous fertilizers in different forms with P and K applied as basal and top dressing on the aerial growth of crop and yield.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 1 and 2.4.64. (iv) (a) 3 ploughings with tractor and one Punjab ploughing. (b) Line sowing. (c) 48 setts/row. (d) 90 cm between rows. (e) N.A. (v) 84·1 Kg/ha. of P_2O_5 as Super+44·8 Kg/ha. of K_2O as Mur. pot. (vi) BO—34. (vii) Irrigated. (viii) Weeding by *Khurpi*. (ix) N.A. (x) 20 to 22.3.65.

2. TREATMENTS :

Main-plot treatments :

2 kinds of Nitrogen : N_1=A/S and N_2=Urea.

Sub-plot treatments:

10 manurial treatments: T_0=Control, T_1=84·8 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot., T_2=T_1+77·5 Kg/ha. of N as top dressing, T_3=T_1+135·0 Kg/ha. of N as top dressing, T_4=T_1+212·5 Kg/ha. of N as top dressing, T_5=T_1+290 Kg/ha. of N as top dressing, T_6=T_1+77·5 Kg/ha. of N as basal dressing, T_7=T_1+135·0 Kg/ha. of N as basal dressing, T_8=T_1+212·5 Kg/ha. of N as basal dressing and T_9=T_1+290 Kg/ha. of N as basal dressing

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication, 10 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 9·14 m. ×4·57 m. (b) 9·14 m.×2·74 m. (v) 91 cm. on each side along breadth. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination %, flowering dates, height measurements, tillers count and yield of cane. (iv) (a) 1964-only. (b) and (c) Nil. (v) No. (vi) and (vii) Nil.

5. RESULTS :

(i) 623·2 Q/ha. (ii) (a) 39·2 Q/ha. (b) 107·9 Q/ha. (iii) Main effect of N alone is significant. (iv) Av. yield of cane in Q/ha.

	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9	Mean
N_1	672·4	663·8	655·2	669·8	731·0	702·3	647·8	614·6	613·9	578·1	656·7
N_2	649·8	645·2	557·5	616·6	655·8	525·6	693·7	585·4	612·6	356·2	589·8
Mean	661·1	654·5	606 3	643·2	693·4	622·9	670 8	600 0	613·3	467·1	623·2

C.D. for N marginal means=43·6 Kg/ha.

Crop :- Sugarcane. **Ref :- Bh. 65(13).**

Site :- Sugarcane Res. Instt., Pusa. **Type :- 'M'.**

Object :—To study the efficiency and economics of Thomas Phosphate (basic slag of the West German firm) on Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize and *Rahar*. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) (a) Light loam. (iii) 24.3.65. (iv) (a) 3—4 ploughings. (b) Flat planting. (c) 64 setts/row. (d) 91 cm. between rows. (e) —. (v) N A. (vi) BO—17. (vii) Unirrigated. (viii) Interculturing and earthing up. (ix) N.A. (x) 27 and 28 2.66.

2. TREATMENTS:

All combinations of (1) and (2) plus one control

(1) 2 sources of P_2O_5 : S_1=Thomas Phos. and S_2=Super.

(2) 4 levels of P_2O_5: P_1=84·1, P_2=112·1, P_3=140·1 and P_4=168·1 Kg/ha.

3. DESIGN:

(i) Fact. in R.B.D. (ii) (a) 9. (b) 36·58 m.×65·83 m. (iii) 4. (iv) (a) 9·14 m.×7·32 m. (b) 9·14 m.×5·49 m. (v) 91 cm. on either side. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination and tillers count, height of plant, mature stalk count and yield of cane. (iv) (a) 1965—only. (b) and (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 303·1 Q/ha. (ii) 54·6 Q/ha. (iii) None of the effects is significant. (iv) Av. yield of cane in Q/ha.

E_0=279·0 Q/ha.

	P_1	P_2	P_3	P_4	Mean
S_1	267·0	304·2	284·7	359·7	303·9
S_2	321 9	268·0	347·8	295·7	308·3
Mean	294·4	286·1	316·2	327·7	306·1

Crop :- Sugarcane. **Ref :- Bh. 60(170).**

Site :- Sugarcane Res. Instt., Pusa. **Type :- 'M'.**

Object :—To find out the response of N, P and K to *Adsali* planted Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) 45 Kg/ha. of N as A/S+56·5 Kg/ha. of P_2O_5 as Super. (ii) Light loam. (iii) 25 to 27.8.60. (iv) (a) One ploughing by tractor. (b) Line sowing. (c) 41·5 Q/ha. (d) 107 cm. between rows. (e) 1. (v) As per treatments. (vi) CO—419. (vii) Irrigated. (viii) Weeding and earthing. (ix) N.A. (x) 23 to 31.12.61.

2. TREATMENTS :

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

(1) 4 levels of N as A/S : N_1=67, N_2=134, N_3=201 and N_4=268 Kg/ha.

(2) 3 levels of K_2O as Mur. Pot. : K_0=0, K_1=90 and K_2=180 Kg/ha.

(3) 2 levels of P_2O_5 as Super : P_1=84 and P_2=168 Kg/ha.

3. DESIGN:

(i) Fact. in R.B.D. (ii) (a) 24. (b) 61·60 m.×38·47 m. (iii) 3. (iv) (a) 13·72 m.×6·40 m. (b) 13 72 m.×4·27 m. (v) 106 cm. on either side. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Tillers count, height of plants, mature stalk count, juice analysis and yield of cane. (iv) (a) 1960—63 (Expt. for 61—N.A. and Design modified in 1962 onward). (b) and (c) Nil. (v) No. (vi) and (vii) Nil.

5. RESULTS:

(i) 1178 Q/ha. (ii) 276·7 Q/ha. (iii) Main effect of N is highly significant. (iv) Av. yield of cane in Q/ha.

	P_1	P_2	K_0	K_1	K_2	Mean
N_1	909	911	674	9033	939	905
N_2	1021	1175	11545	1065	1073	1098
N_3	1356	1331	12153	1404	1411	1344
N_4	1360	1369	14532	1359	1281	1364
Mean	1159	1196	1174	1183	1176	1178
K_0	1155	1193				
K_1	1201	1165				
K_2	1122	1231				

C.D. for N marginal means=184·4 Q/ha.

Crop :- Sugarcane. **Ref :- Bh. 62(69), 63(89).**

Site :- Sugarcane Res. Instt., Pusa. **Type :- 'M'.**

Object :—To find out the response of N, P and K to *Adsali* planted Sugarcane.

1. BASAL CONDITIONS:

(i) and (ii) N.A. (iii) 18 and 19.8.62; 12.6 63, 16.7.63. (iv) (a) 3 *deshi* ploughings. (b) Line sowing. (c) 45 Q/ha. (d) 91 cm. between rows. (e) N.A. (v) As per treatments. (vi) BO—14. (vii) Irrigated (viii) Weeding by *khurpi*. (ix) N.A. (x) 12.12.63 to 10.1.64; 10.12.64.

2. TREATMENTS:

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

(1) 4 levels of N as A/S: N_1=67, N_2=134, N_3=201 and N_4=268 Kg/ha.

(2) 3 levels of K_2O as Mur. Pot.: K_0=0, K_1=90, and K_2=180 Kg/ha.

(3) 2 levels of P_2O_5 as Super: P_1=84 and P_2=168 Kg/ha.

3. DESIGN:

(i) Confd. (ii) (a) 12 plots/block, 2 blocks/rep. (b) N.A. (iii) 3. (iv) (a) 13·72 m. × 6·40 m.; (b) 13·72 m. × 4·27 m. for 62 and 63. (v) 106 cm. on either side. (vi) Yes.

4. GENERAL:

(i) Good. (ii) N.A. (iii) Germination %, yield of cane. (iv) (a) 1960–63 (Expt. for 61—N.A. and Design modified in 62 onward). (b) Yes. (c) Results of combined analysis are presented under 5. Results. (v) No. (vi) Nil. (vii) Since error variances are heterogeneous and Treatments × Years interaction is absent, results of individual years are presented under 5. Results.

5. RESULTS:

62(69)

(i) 1276 Q ha. (ii) 202·9 Q/ha. (iii) None of the effects is significant. (iv) Av. yield of cane in Q/ha.

	K_0	K_1	K_2	P_1	P_2	Mean
N_1	1320	1324	1259	1313	1289	1301
N_2	1239	1343	1198	1264	1256	1260
N_3	1209	1194	1227	1215	1205	1210
N_4	1304	1247	1448	1340	1326	1333
Mean	1268	1277	1283	1283	1269	1276
P_1	1294	1271	1284			
P_2	1242	1283	1282			

63(89)

(i) 903 Q/ha. (ii) 97·4 Q/ha. (iii) Main effect of N is highly significant. (iv) Av. yield of cane in Q/ha.

	K_0	K_1	K_2	P_1	P_2	Mean
N_1	840	833	829	803	865	834
N_2	832	840	863	835	855	845
N_3	919	906	920	921	909	915
N_4	1049	1025	980	1005	1031	1018
Mean	910	901	898	891	915	903
P_1	905	895	873			
P_2	915	907	923			

C.D. for N marginal means=65·39 Q/ha.

Crop :- Sugarcane. **Ref :- Bh. 61(90).**

Site :- Sugarcane Res. Instt., Pusa. **Type :- 'M'.**

Object:—To study the response and economics of different phosphatic manures in combination with Urea and Castor cake.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Methi* (G.M.) (c) N.A. (ii) N.A. (iv) (a) 18 to 20.2.61. (iv) (a) 3 *deshi* ploughings. (b) Line sowing. (c) 64 setts/row. (d) 91 cm. between rows. (e) N.A. (v) N.A. (vi) BO—12. (vii) Irrigated. (viii) Weeding by *khurpi*. (ix) N.A. (x) 22.1.62.

2. TREATMENTS :

11 manurial treatments : T_0=Control, T_1=44·8 Kg/ha. of N as Urea+44·8 Kg/ha. of P_2O_5 as Super, T_2=44·8 Kg/ha. of N as Castor cake+44·8 Kg/ha. of P_2O_5 as Super, T_3=44·8 Kg/ha. of N as Urea+44·8 Kg/ha. of P_2O_5 as Rock Phos., T_4=44·8 Kg/ha. of N as Castor cake+44·8 Kg/ha. of P_2O_5 as Rock Phos., T_5=44·8 Kg/ha. of N as Urea+44·8 Kg/ha. of P_2O_5 as Bone meal, T_6=44·8 Kg/ha. of N as Castor cake+44·8 Kg/ha. of P_2O_5 as Bone meal, T_7=44·8 Kg/ha. of N as Urea+44·8 Kg/ha. of P_2O_5 as Di. Cal. Phos., T_8=44·8 Kg/ha. of N as Castor cake+44·8 Kg/ha. of P_2O_5 as Di. Cal. Phos., T_9=44·8 Kg/ha. of N as Urea alone and T_{10}=44·8 Kg/ha. of N as Castor cake alone.

3. DESIGN :

(i) R.B.D. (ii) (a) 11. (b) N.A. (iii) 4. (iv) (a) 18·44 m.×7·31 m. (b) 18·44 m.×5·49 m. (v) 91 cm. on each side along length. (vi) Yes.

4. GENERAL:

(i) Good. (ii) N.A. (iii) Germination %, yield of cane and juice analysis. (iv) (a) 1960—only. (b) and (c) Nil. (v) to (vii) Nil.

5. RESULTS:

(i) 343·8 Q/ha. (ii) 90·8 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of cane in Q/ha.

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	309·3	324·7	420·6	297·8	390·2	364·7	340·0	293·8	336·8	364 7	339·3

Crop :- Sugarcane. **Ref :- Bh. 62(157)**

Site :- Sugarcane Res. Instt., Pusa. **Type :- 'M'.**

Object :—To study the effects of soil and foliar application of different kinds of nitrogenous fertilizers.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Sugarcane (c) 67·2 Kg/ha. of N as A/S+84·0 Kg/ha. of P_2O_5 as Super. (ii) Clayey. (iii) 12.2.62. (iii) 2—3 ploughings with mould board then *henga*. (b) Line sowing. (c) 64 three-budded setts/row. (e) Nil. (v) 42 Kg/ha. of P_2O_5 as Super to each plot. (vi) BO—17. (vii) Irrigated.(viii) Weeding and hoeing. (ix) N.A. (x) 12 to 17.3.61.

2. TREATMENTS:

Main-plot treatments:

2 sources of N : S_1=A/S and S_2=Urea.

Sub-plot treatments:

All combinations of (1) and (2) plus one control.

(1) 2 levels of N : N_1=33·6 and N_2=67·2 Kg/ha.

(2) 3 modes of application : M_1=Full dose in soil, M_2=½ dose in soil+½ dose by spray at 1 % solution and M_3=Full dose by spray at 1 % solution.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 7 sub-plots/main-plot. (b) 109 42 m.×14·86 m. (iii) 4. (iv) (a) 13·77 m.×6·40 m. (b) 13·77 m.×2·74 m. (v) 185 cm. on either side. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination count, tillers count and yield of cane. (iv) (a) 1962—only. (b) and (c) Nil. (v) to (vii) Nil.

5. RESULTS:

(i) 214·8 Q/ha. (ii) (a) 18 5 Q/ha. (b) 48 1 Q/ha. (iii) None of the effects is significant. (iv) Av. yield of cane in Q/ha.

Control=213·3 Q/ha.

	M_1	M_2	M_3	N_1	N_2	Mean
S_1	214·9	223·9	210·3	222·0	210·9	216·4
S_2	205·8	230·0	205·8	231·1	196·8	213·8
Mean	210·3	227·0	208·0	226·5	203·8	215·1
N_1	228·5	234·5	216·4			
N_2	192·2	219·4	199·7			

Crop :- Sugarcane. **Ref :- Bh. 63(101).**

Site :- Sugarcane Res. Instt., Pusa. **Type :- 'M'.**

Object :—To study the efficiency and economics of Sterameal manure on Sugarcane crop.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) 16.2.63. (iv) (a) 3 ploughings with tractor and one Punjab ploughing. (b) Line sowing. (c) 48 setts/row. (d) 90 cm. between rows. (e) N.A. (v) N.A. (vi) BO—43. (vii) Irrigated. (viii) Weeding by *khurpi*. (ix) N.A. (x) 9.2.64.

2. TREATMENTS :

Same as Expt. No. 62(193) at Motihari on page 592.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 5. (iv) (a) 13·72 m.×6·40 m. (b) 13·72 m.×4·57 m. (v) 91 cm. on either side. (v) Yes.

4. GENERAL :

(i) Good. (b) N.A. (iii) Germination %, flowering dates, height measurement, tillers count, yield of cane and juice analysis. (iv) (a) 1963 – only. (b) and (c) Nil. (v) Motihari, Motipur and Narkatiaganj. (vi) and (vii) Nil.

5. RESULTS :

(i) 321·3 Q/ha. (ii) 45·2 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	294·3	370·5	324·0	295·3	321·8	321·8

Crop :- Sugarcane. **Ref :- Bh. 62(158).**

Site :- Sugarcane Res. Instt., Pusa. **Type :- 'M'.**

Object :—To study the effect of foliar application of different kinds of nitrogenous fertilizers.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sugarcane. (c) 67·25 Kg/ha. of N as A/S+84·1 Q/ha. of P_2O_5 as Super. (ii) Clayey. (iii) 9.3.62. (iv) (a) 2—3 ploughings with mould board and then *henga*. (b) Line sowing. (c) 60 three-budded setts/row. (d) 91 cm. between rows. (e) Nil. (v) 42 Kg/ha. of P_2O_5 as Super to each plot in soil. (vi) BO—17. (vii) Irrigated. (viii) Weeding and hoeing. (ix) 1 to 5.4.63.

2. TREATMENTS :

Main-plot treatments :

2 sources of N : M_1=A/S and M_2=Urea.

Sub-plot treatments :

6 modes of application of N : T_0=Control (no Nitrogen), T_1=33·6 Kg/ha.of N, T_2=33·6 Kg/ha. of N as foliar spray in 1 % concentration, T_3=33·6 Kg/ha. of N as foliar spray in 2 % concentration, T_4=33·6 Kg/ha. of N as foliar spray in 3% concentration and T_5=33·6 Kg/ha. of N as foliar spray in 4 % concentration.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication, 6 sub-plots/main-plot. (b) 93·57 m.×14·86 m. (iii) 4. (iv) (a)13·72 m.×6·40 m. (b) 13·74 m.×2·7 m. (v) 183 cm. on either side. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination and tillers count, juice quality and yield of cane. (iv) (a) 1962—only. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 291·6 Q/ha. (ii) (a) 159·5 Q/ha. (b) 93·3 Q/ha. (iii) None of the effects is significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	Mean
M_1	262·4	291·1	352·9	279·0	298·6	312·2	299·4
M_2	253·4	343·9	244·3	253 4	292·6	315·2	283·8
Mean	257·9	317·5	298·6	266·2	295·6	313·7	291·6

Crop :- Sugarcane. **Ref :- Bh. 63(188).**

Site :- Sugarcane Res. Instt., Pusa. **Type :- 'M'.**

Object :—To study the efficacy of Sterameal with Castor cake in combination with nitrogenous fertilizers for *Spring* planted Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanai.* (c) Nil. (i) Sandy loam. (iii) 16.2.63. (iv) (a) 2—3 ploughings with mould board and then *henga.* (b) Line sowing. (c) 60 three-budded setts/row. (d) 91 cm. between rows. (e) Nil (v) 92 Kg/ha. of P_2O_5 as Super+46 Kg/ha. of K_2O as Mur. Pot. (vi) BO—43. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (iii) 14.2.64.

2. TREATMENTS :

Same as Expt. No. 62(193) at Motihari on page 592.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) 42·06 m.×15·85 m. (iii) 5. (iv) (a) 13·72 m.×7·32 m. (b) 13·72 m.×4·57 m. (v) 182 cm. on either side. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Leaf sample of Nitrogen content, juice quality and yield of cane. (iv) (a) 1963—only. (b) No. (c) Nil. (v) Motihari, Motipur and Narkatiaganj. (vi) and (vii) Nil.

5. RESULTS :

(i) 320·1 Q/ha. (iii) 106·1 Q/ha. (iii) Treatment differences are not significant. (iv) (a) Av. yield of cane in Q/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	312·5	303·8	336·4	317·6	330·6	319·7

Crop :- Sugarcane. **Ref :- Bh. 64(254).**

Site :- Sugarcane Res. Instt., Pusa. **Type :- 'M'.**

Object :—To study the efficacy and economics of Sterameal manures on *Autumn* planted Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) 45 Kg/ha. of N as A/S+67·2 Kg/ha. of P_2O_5 as Super. (ii) Light loam. (iii) 23.11.64. (iv) (a) 3—4 ploughings. (b) Flat planting. (c) 64 setts/row. (d) 91 cm. between rows. (e) —. (v) As per treatments. (vi) BO—43. (vi) Irrigated. (viii) Weeding and earthing up. (ix) N.A. (x) 16 to 18 12.65.

2. TREATMENTS :

6 manurial treatments : T_0=Control, T_1=34 Kg/ha. of N as A/S at planting+34 Kg/ha. of N as A/S at eathing up, T_2=34 Kg/ha. of N as Sterameal+34 Kg/ha. of N as A/S at planting, T_3=34 Kg/ha. of N as Castor cake+34 Kg/ha. of N as A/S at planting, T_4=68 Kg/ha. of N as A/S at planting, T_5=68 Kg/ha. of N as Sterameal at planting and T_6=68 Kg/ha. of N as Castor cake at planting.

3. DESIGN:

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 5. (iv) (a) and (b) 18·32 m.×5·46 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination and tillers count, height of plants, mature stalk count and yield of cane. (iv) (a) 1964—only. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 397·7 Q/ha. (ii) 41·6 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	396·7	373·4	426·0	405·3	365·1	419·8

Crop :- Sugarcane **Ref :- 60(92), 61(100).**

Site :- Sugarcane Res. Instt., Pusa. **Type :- 'M'.**

Object :—To test the efficiency of green manuring in sequence with *Sanai* and *Dhaincha* and to find out the suitable time for application of phosphatic manure.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) N.A. (iii) 28 and 29.2.60 ; 7, 8.2.61. (iv) (a) 3 *deshi* ploughings. (b) Line sowing. (c) 40 three-budded setts/sow. (d) and (e) N.A. (v) 405·8 Kg/ha. of N as A/S+315·9 Kg/ha. of P_2O_5 as Super ; 164 Kg/ha. of N as A/S+127·8 Kg/ha. of P_2O_5 as Super. (vi) BO—17. (vii) Irrigated. (viii) Weeding by *khurpi*. (ix) N.A. (x) 17.2.61 ; 29.1.62 to 5.2.62.

2. TREATMENTS :

13 manurial treatments : T_0=Control, T_1=*Sanai* for G.M.+56 Kg/ha. of P_2O_5 as Super at sowing G.M., T_2=*Sanai* for G.M.+56 Kg/ha. of P_2O_5 as Super at burrying G.M., T_3=T_1+56 Kg/ha. of P_2O_5 as Super at cane planting, T_4=T_2+56 Kg/ha. of P_2O_5 as Super at cane planting, T_5=*Dhaincha* for G.M.+56 Kg/ha. of P_2O_5 as Super at sowing G.M., T_6=*Dhaincha* for G.M.+56 Kg/ha. of P_2O_5 as Super at burrying G.M., T_7=T_5+56 Kg/ha. of P_2O_5 as Super at cane planting, T_8=T_6+56 Kg/ha. of P_2O_5 as Super at cane planting, T_9=*Sanai* for G.M. alone, T_{10}=*Dhaincha* for G.M. alone, T_{11}=56 Kg/ha. of P_2O_5 as Super alone and T_{12}=67 Kg/ha. of N as A/S at basal dressing alone.

3. DESIGN :

(i) R.B.D. (ii) (a) 13. (b) N.A. (iii) 3. (iv) (a) 18·40 m.×7·30 m. (b) 18·40 m.×5·50 m. (v) 91 cm. on each side along the breadth. (vi) Yes.

4. GENERAL:

(i) Good. (ii) N.A. (iii) Germination and tillers and count, mature stalk count, height measurements and yield of cane. (iv) (a) 1960–61. (b) Yes. (c) Results of combined analysis are persented under 5. Results. (v) and (vi) Nil. (vii) Error variances are homogeneous and Years×Treatments interaction is absent.

5. RESULTS :

Pooled results

(i) 309·2 Q/ha. (ii) 54·2 Q/ha. (based on 60 d.f. made up of pooled error and Years×Treatments interaction). (iii) Treatment differences are highly significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	227·9	252·5	344·0	344·4	346·2	301·0	348·1
	T_7	T_8	T_9	T_{10}	T_{11}	T_{12}	
	306·4	357·1	316·2	283·9	312·0	279·8	

C.D.=62·6 Q/ha.

Individual results

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}	T_{12}
Year													
1960	224·8	276·7	328·4	328·1	339·8	284·4	318·6	322·3	356·7	307·5	286 9	288 1	313·6
1961	231·0	228·3	359·7	360·8	352·5	317·6	377·6	290·6	358·1	324·9	281·7	336·0	246 1
Pooled	227·9	252·5	344·0	344·4	346·2	301·0	348·1	306·4	357·1	316·2	283·9	312·0	279·8

Sig.	G.M.	S.E./plot
N.S.	305·8	51·4
N.S.	312·7	60·5
**	309·2	54·2

Crop :- Sugarcane **Ref :- Bh. 60(163), 61(183), 62(153).**

Site :- Sugarcane Res. Instt., Pusa. **Type :- 'M'.**

Object :—To study the response and economics of different nitrogenous fertilizers

BASAL CONDITIONS :

(i) (a) Nil. (b) *Methi* for G.M. in 60 ; *Moong* in 61 and 62. (c) Nil. (ii) Light loam. (iii) 18.2.60 ; 23.2.61 ; 8.2.62. (iv) (a) 2—3 ploughings with tractor and then *henga*. (a) Line sowing. (c) 64 three-budded setts/row. (d) 91·44 cm. between rows ; 25.1.63 to 2.3.63. (e) Nil. (v) As per treatment. (vi) BO—34. (vii) Irrigated. (viii) Weeding and earthing up. (ix) N.A. (x) 7 to 13.3.61 ; 17.1.62.

2. TREATMENTS :

Same as expt. no 60(214) at Motihari on page 594.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/rep., 7 sub-plots/main-plot. (b) 102·41 m.×19·35 m. for 60 ; 51·21 m.× 38·71 m. for 61 and 62. (iii) 4. (iv) (a) 18·44 m.×7·32 m. (b) 18·44 m.×5·49 m. (v) 91 cm. on either side. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination and tillers count, height of plants, juice quality and yield of cane. (iv) (a) 1960—62. (b) No. (c) Nil. (v) Pusa, Zonal Centres and Patna. (vi) Nil. (vii) Since sub-plot error variances are heterogeneous, results of individual years are presented under 5. Results.

5. RESULTS :

60(163)

(i) 422·9 Q/ha. (ii) (a) 83·8 Q/ha. (b) 58·0 Q/ha. (iii) Only the main effect of S is highly significant. (iv) Av. yield of cane in Q/ha.

	S_0	S_1	S_2	S_3	S_4	S_5	S_6	Mean
M_1	319·9	395·5	408·8	438·4	481·2	381·8	450·2	410·8
M_2	317·6	442·2	419·6	462·1	507·5	453·7	441·5	434·9
Mean	318·8	418·9	414·2	450·2	494 4	417·8	445·9	422·9

C.D. for S marginal means=58·8 Q/ha.

61(183)

(i) 276·1 Q/ha. (ii) (a) 226·7 Q/ha. (b) 86·6 Q/ha. (iii) None of the effects is significant. (iv) Av. yield of cane in Q/ha.

	S_0	S_1	S_2	S_3	S_4	S_5	S_6	Mean
M_1	198·0	299·0	274·6	270·6	283·5	275·6	275·3	268·1
M_2	203·2	327·4	266·0	281·5	313·6	304·5	292·9	284·2
Mean	200·6	313·2	270·3	276·1	298·6	290 0	284·1	276·1

62(153)

(i) 488·9 Q/ha. (ii) (a) 41·6 Q/ha. (b) 87·1 Q/ha. (iii) None of the effects is significant. (iv) Av. yield of cane in Q/ha.

	S_0	S_1	S_2	S_3	S_4	S_5	S_6	Mean
M_1	447·7	463·5	560·3	514·1	461·8	473·9	488·9	472·9
M_2	448·2	508·7	536·9	522·0	495·9	517·6	505·6	505·0
Mean	447·9	486·1	498·6	518·1	478·8	495·7	497·3	488·9

Crop :- Sugarcane. **Ref :- Bh. 60(173), 61(189),**

Site :- Sugarcane Res. Instt., Pusa. **Type :- 'M'.**

Object :—To study the response of potash application in combination with increased dose of N and P on the yield and juice quality of Sugarcane.

1. BASAL CONDITIONS:

(l) (a) Nil. (b) Maize. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super ; 67·2 Kg/ha. of N as A/S+54·1 Kg/ha. of P_2O_5 as Super. (ii) Calyey ; Light loam. (iii) 17, 18.2.60 ; 19.2.61. (iv) (a) 2—3 ploughings with mould board and then *henga*. (b) Line sowing. (c) 60 three-budded setts/ row. (d) 91 cm. between rows. (e) Nil. (v) 125 Kg/ha. of N as A/S+168 Kg/ha. of P_2O_5 as Super. (vi) BO—17. (vii) Irrigated. (viii) Weeding and hoeing. (iz) N.A. (x) 17.2 61 ; 15.2.62.

2. TREATMENTS:

5 levels of K_2O as Mur. Pot. : K_0=0, K_1=45, K_2=90, K_3=135 and K_4=180 Kg/ha.

3 DESIGN:

(i) R.B.D. (ii) (a) 5. (b) 93·57 m.×18·46 m. (iii) 4. (iv) (a) 18 44 m.×7·32 m. (b) 18·44 m.×5·49 m. (v) 91 cm. on either side. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Germination and tillers count, analysis of juice quality and yield of cane. (iv) (a) 1960—62 (expt. for 62—N.A.). (b) No. (c) Results of combined analysis are presented under 5. Results. (v) No. (vi) Nil. (vii) Error variances are homogeneous and Years×Treatments interaction is present.

5. RESULTS:

Pooled results

(i) 253·4 Q/ha. (ii) 55·5 Q/ha. (based on 4 d f. made up of Years×Treatments interaction). (iii) Treatment differences are not significant. (iv) Av. yield of cane in Q/ha.

Treatment	K_0	K_1	K_2	K_3	K_4
Av. yield	209·5	274·3	275·1	284·2	223·7

Individual results

Treatment	K_0	K_1	K_2	K_3	K_4	Sig.	G.M.	S.E /plot
Year								
1960	164·0	217·1	212·0	195 7	186·4	N.S.	195·0	4·5
1961	255·1	331·6	338·3	372·7	261·0	**	311·7	2·5
Pooled	209·5	274·3	275·1	284·2	223·7	N,S.	253·4	55·5

Crop :- Sugarcane. **Ref :- Bh. 60(158), 61(179).**

Site :- Sugarcane Res. Instt., Pusa. **Type 'M'.**

Object :—To study the response and economics of different phosphatic manures in combination with Urea and Castor cake.

1. BASAL CONDITIONS:

(i) (a) Nil (b) *Methi* ; Fallow. (c) Nil. (ii) Light loam ; Sandy loam. (iii) 23.1.60 ; 26, 27.2.61. (iv) (a) 2—3 ploughings with mould board and then *henga*. (b) Line sowing. (c) 36·89 Q/ha. (d) 91 cm. between rows. (e) Nil. (v) As per treatments. (vi) BO—32. (vii) Unirrigated. (viii) Weeding and earthing up. (ix) N.A. (x) 16 to 19.3.61 ; 27.1.62 to 1.2.62.

2. TREATMENTS:

Same as expt. no. 61(233) at Motihari on page 591.

3. DETIGN:

(i) R.B.D. (ii) (a) 11. (b) 80·47 m.×19·35 m.; N.A. (iii) 4. (iv) (a) 18·44 m.×7·32 m. (b) 18·44 m.× 5·49 m. (v) 91 cm. on either side. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Germination and tillers count, height of plants, juice quality, yield of cane. (iv) (a) 1960—61. (b) No. (c) Nil. (v) Motihari, Motipur and Narkatiaganj. (vi) Nil. (vii) Since error variances are heterogeneous and Years×Treatments interaction is absent, results of individual years are presented under 5. Results.

5. RESULTS:

60(158)

(i) 398·0 Q/ha. (ii) 64·7 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. yield	325·1	411·7	445·9	392·9	406·3	376·9
	T_6	T_7	T_8	T_9	T_{10}	
	397·7	420·7	443·2	355·1	402·9	

61(179)

(i) 395·7 Q/ha. (ii) 110·2 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. yield	269·6	368·7	437·8	387·1	442·4	345·6
	T_6	T_7	T_8	T_9	T_{10}	
	497·7	357·2	449·3	433·2	364·1	

Crop :- Sugarcane. **Ref :- 60(86), 61(94), 62(67), 63(87), 65(4).**

Site :- Sugarcane Res. Instt., Pusa. **Type :- 'M'.**

Object :-To study the effect of short term rotation of Sugarcane with green manuring (*Sanai*) in permanent block under fixed dozes of N, P and K.

1. BASAL CONDITIONS :

(i) (a) Sugarcane followed by *Sanai*. (b) *Sanai* (green manure). (c) N.A. (iii) Light loam. (iii) 19 to 22.2.60; 16 to 19.1.61; 16 to 19.1.62 18 to 21.2.63; 24 to 27.1.65. (iv) (a) 3 ploughings. (b) Line sowing. (c) 90, three-budded setts/row. (d) 91 cm. between rows. (e) N.A. (v) N.A. (vi) BO—17. (vii) Irrigated. (viii) Weeding by *khurpi*. (ix) N.A. (x) 9 to 20.12.61; Jan. and Feb. 62; Jan. and Feb. 63; 7.2. 64 to 2.3.64; 25.1.66 to 6.2.66.

2. TREATMENTS:

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

(1) 3 levels of N as A/S : N_0=0, N_1=45 and N_2=90 Kg/ha.

(2) 3 levels of P_2O_5 as Super : P_0=0, P_1=56 and P_2=112 Kg/ha.

(3) 3 levels of K_2O as Mur. Pot. : K_0=0, K_1=90 and K_2=180 Kg/ha.

3. DESIGN :

(i) 3^3 partially confd. (ii) (a) 9 plots/block, 3 blocks/replication. (b) N.A. (iii) 4. (iv) (a) 24·19 m. × 5·44 m. (b) 24·19 m. × 3·60 m. (v) 92 cm. on either side along length. (vi) Yes.

4. GENERAL :

(i) Good. (ii) N.A. ; Gamma B.H.C. was applied whenever required. (iii) Tillers count, height of plants and yield of cane. (iv) (a) 1949—contd. (Permanent trial ; Expt. for 64—N.A.). (b) Yes. (c) Nil. (v) No. (vi) Nil. (vii) As it is a permanent manurial trial, results of individual years are presented under 5. Results.

5. RESULTS :

60(86)

(i) 451·4 Q/ha. (ii) 93·3 Q/ha. (iii) Only the main effect of N is highly significant. (iv) Av. yield of cane in Q/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	362·5	385·6	367·6	367·5	372·7	375·5	371·9
N_1	451·2	480·7	449·6	466·4	477·4	437·7	460·5
N_2	479·9	517·3	568·1	502·9	508·6	553·9	521·8
Mean	431·2	461·2	461·8	445·6	452·9	455·7	451·4
K_0	402·1	467·4	467·3				
K_1	430·6	469·7	458·4				
K_2	460·9	446·5	459·7				

C.D. for N marginal means=43·5 Q/ha.

61(94)

(i) 313·3 Q/ha. (ii) 105·0 Q/ha. (iii) Main effect of P is highly significant and that of N is significant. (iv) Av. yield of cane in Q/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	228·7	318·6	304·4	281·9	255·4	314·4	283·9
N_1	286·1	321·7	322·8	324·0	303·6	303·0	310·2
N_2	227·4	403·1	407·2	334·6	354·5	348·6	344·9
Mean	247·4	347·8	344·8	313·5	304·5	322·0	313·3
K_0	234·5	364·0	342·0				
K_1	270·9	305·8	336·8				
K_2	236·8	373·6	355·6				

C.D. for N or P marginal means=49·0 Q/ha.

62(67)

(i) 362·3 Q/ha. (ii) 111·1 Q/ha. (iii) Main effects of P and N are highly significant. (iv) Av. yield of cane in Q/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	247·2	287·5	300·2	298·5	264·5	271·9	278·3
N_1	321·7	357·9	376·4	347·8	358·3	349·5	351·9
N_2	390·5	425·6	553·7	423·7	447·9	498·2	456·6
Mean	319·8	356·9	410·1	356·7	356·9	373·2	362·3
K_0	305·4	357·8	406·9				
K_1	333·3	342·8	394·6				
K_2	320·7	370·8	428·1				

C.D. for N or P marginal means=51·8 Q/ha.

63(87)

(i) 339·2 Q/ha. (ii) 90·6 Q/ha. (iii) Main effect of N alone is highly significant. (iv) Av. yield of cane in Q/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	269·7	273·6	296·7	267·0	299·4	273·6	280·0
N_1	356·8	394·9	362·5	377·7	378·6	357·9	371·4
N_2	451·4	440·0	507·5	468·3	479·1	451·5	466·3
Mean	359·3	369·5	388·9	371·0	385·7	361·0	339·2
K_0	357·3	367·7	388·0				
K_1	356·6	405 5	395·2				
K_2	364·0	335·5	383·5				

C.D. for N marginal means=42·3 Q/ha.

65(4)

(i) 126·4 Q/ha. (ii) 16·4 Kg/ha. (iii) Main effect of N and interaction N×P are highly significant. (iv) Av. yield of cane in Q/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	108·6	132·2	112·5	126·1	110·8	116·4	117·8
N_1	131·6	121·3	132·2	125·5	129·2	130·5	128·4
N_2	125·3	138·3	135·3	140·7	129·5	128·7	133·0
Mean	121·8	130·6	126·7	130·8	120·2	125·2	126·4
K_0	123·5	136·2	132·7				
K_1	117·8	133·4	118·2				
K_2	124·2	122·2	129·1				

C.D. for N marginal means=8·1 Q/ha.
C.D. for the body of N×P table=14·0 Q/ha.

Crop .- Sugarcane. **Ref :- 60(87), 61(95), 62(68), 63(88), 65(3).**

Site :- Sugarcane Res. Instt., Pusa. **Type :- 'M'.**

Object :—To study the effect of short time rotation of Sugarcane with Maize in permanent block under fixed doses of N, P and K.

1. BASAL CONDITIONS:

(i) (a) Sugarcane fallowed by Maize. (b) Maize. (c) N.A. (ii) Light loam. (iii) 16 to 19.2.60 ; 17 to 20.2.61 ; 16 to 19.1. 62 ; 21 to 27.1.63 ; 28.1.65 to 4.2.65. (iv) (a) 3 *deshi* ploughings. (b) Line sowing. (c) 90 three-budded setts/row. (d) 91 cm. between rows . (e) Nil. (v) N.A. (vi) BO—17. (vii) Irrigated. (viii) Weeding by *khurpi*. (ix) N.A. (x) 9 to 20.12.60 ; Jan. to Feb. in 61 and 62 ; 16.1.64 to 4.2.64 ; 7 to 24.2.66.

2. TREATMENTS :

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

(1) 3 levels of N as A/S : N_0=0, N_1=45 and N_2=90 Kg/ha.

(2) 3 levels of P_2O_5 as Super : P_0=0, P_1=56 and P_2=112 Kg/ha.

(3) 3 levels of K_2O as Mur. Pot. : K_0=0, K_1=90 and K_2=180 Kg/ha.

3. DESIGN :

(i) 3^3 partially confd. (ii) (a) 9 plots/block, 3 blocks/replication. (b) N.A. (iii) 4. (iv) (a) 24·38 m.× 5·44 m. (b) 24·38 m.×3·65 m. (v) 90 cm. on either side along length. (vi) Yes.

4. GENERAL :

(i) Good. (ii) N.A. (iii) Tillers count and yield of cane. (iv) (a) 1949—contd. (Permanent trial ; Expt. for 64—N.A.). (b) Yes. (c) Nil. (v) N.A. (vi) Nil. (vii) As it is permanent manurial trial, results of individual years are presented under 5. Results.

5. RESULTS:

60(87)

(i) 306·4 Q/ha. (ii) 62·5 Q/ha. (iii) Main effect of N alone is highly significant. (iv) Av. yield of cane in Q/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	251·1	229·3	239·6	251·8	239·8	228·4	240·0
N_1	308·0	285·7	318·0	304·6	304·1	303·0	303·9
N_2	342·4	366·4	417·1	378·7	364·5	382·7	375·3
Mean	300·5	293·8	324·9	311·7	302·8	304·7	306·4
K_0	304·4	298·2	332·5				
K_1	298·1	277·4	332·9				
K_2	299·0	305·8	309·3				

C.D. for N marginal means=29·2 Q/ha.

61(95)

(i) 195·2 Q/ha. (ii) 55·4 Q/ha. (iii) Main effects of N and P are highly significant and interaction N×P is significant. (iv) Av. yield of cane in Q/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	128·7	139·6	152·3	139·8	145·1	135·7	140·2
N_1	198 6	173·7	223·2	164·0	229·5	202·0	198·5
N_2	186·0	255·2	299 5	249·1	265·6	226 0	246·9
Mean	171·1	189·5	225·0	184·3	213·4	187·9	195·2
K_0	168 9	170·3	213·7				
K_1	175·4	220·5	244·3				
K_2	169·0	177·7	217·0				

C.D. for N or P marginal means=25·8 Q/ha.

C.D. for the body of N×P table=44·8 Q/ha.

62(68)

(i) 308·4 Q/ha. (ii) 97·7 Q/ha. (iii) Main effect of N is highly significant and that of P is significant. (iv) Av. yield of acne Q/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	201·5	236·6	236·6	197·8	229·1	247·8	224 9
N_1	267·7	304 8	318·8	295·5	295·6	300·2	297 1
N_2	348·0	396·4	405·2	374·9	387·3	447 4	403·2
Mean	272·4	312·6	3402	289·4	304·0	331·8	308·4
K_0	242·2	317·2	308·8				
K_1	280·5	297·2	334·3				
K_2	294·5	323·4	377·5				

C.D. for N or P marginal means=45·6 Q/ha.

63(88)

(i) 303·8 Q/ha. (ii) 58·5 Q/ha. (iii) Main effects of N, P and interaction N×P are highly significant. (iv) Av. yield of cane in Q/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	191·1	209 0	192·7	181·5	198·9	212·4	197·6
N_1	292·5	322·1	342·1	310·4	352·3	294·0	318·9
N_2	318·0	409·4	457·3	391·6	381·8	411·3	394·9
Mean	267·2	313·5	330·7	294·5	311·0	305·9	303·8
K_0	260·4	312·8	310·3				
K_1	272·7	316·9	343·4				
K_2	268·5	310·8	338·4				

C.D. for N or P marginal means=27·3 Q/ha.
C.D. for the body of N×P table=47·3 Q/ha.

65(3)

(i) 147·3 Q/ha. (ii) 31·1 Q/ha. (ii) Main effect of N alone is significant. (iv) Av. yield of cane in Q/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	122·9	120·5	145·9	135·0	134·5	119·7	129·7
N_1	158·3	148·3	162·2	167·2	148·9	152·7	156·3
N_2	157·0	148·6	161·8	170·0	149·4	148·0	155·8
Mean	146·1	139·1	156·6	157·4	144·3	140·1	147·3
K_0	166·9	140·4	164·8				
K_1	135·9	141·9	155·0				
K_2	135·4	134·9	150·1				

C.D. for N marginal means=15·4 Q/ha.

Crop :- Sugarcane. **Ref :- Bh. 63(213).**

Site :- Saran Sub-Station, Sepaya (Saran). **Type :- 'M'.**

Object :—To study the economics and efficiency of Sterameal manure on Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) G.M. (c) Nil. (ii) Sandy loam. (iii) 18.2.63. (iv) (a) 6 deep ploughings with 4 cultivators. (b) Flat in furrows. (c) 45 three-budded setts/row. (d) 91 cm. between rows. (e) —. (v) G.M. (vi) BO—43. (vii) Unirrigated. (viii) Interculturing and earthing up. (ix) 126 cm. (x) 7.2.64.

2. TREATMENTS:

Same as expt. no. 62(193) at Motihari on page 592.

3. DESIGN:

(i) R.B.D. (ii) (a) 6. (b) 13·72 m.×56·08 m. (iii) 5. (iv) (a) 13·72 m.×7·32 m. (b) 13·72 m.×5·49 m. (v) 91 cm. on either side. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination and tillers count, height of plants, mature stalk count and yield of cane. (iv) (a) 1963—64 (Trs. modified in 1964). (b) No. (c) Nil. (v) Other zonal centres. (vi) and (vii) Nil.

5. RESULTS:

(i) 529 Q/ha. (ii) 80·5 Q/ha. (iii) Treatment differences are not significant. (ix) Av. yield of cane in Q/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	577·5	487·6	526·0	530·5	542·6	511·1

Crop :- Sugarcane. **Ref :- Bh. 64(245).**

Site :- Saran Sub-Station, Sepaya (Saran). **Type :- 'M'.**

Object :—To study the economics and efficiency of Sterameal manure on Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) G.M. (c) Nil. (ii) (a) Sandy loam. (iii) 16.2,64. (iv) 6 deep ploughings with 4 cultivators. (b) Flat in furrows. (c) 45 three-budded setts/row. (d) 91 cm. between rows. (e) Nil. (v) G.M. (vi) BO—43. (vii) Unirrigated. (viii) Interculturing and earthing up. (ix) 126 cm. (x) 10.3.65.

2. TREATMENTS :

Same as Expt. No. 64′246) at Motihari on Page 593.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) 13·72 m.×56·08 m. (b) 5. (iv) (a) 13·72 m.×7·32 m. (b) 13·72 m.×5·49 m. (v) 91 cm. on either side. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Germination and tillers count, mature stalk count and yield of cane. (ix) (a) 1963—64 (Trs. modified in 1964). (b) and (c) Nil. (v) Other Zonal Centres. (vi) and (vii) Nil.

5. RESULTS :

(i) 422·6 Q/ha. (ii) 72·7 Q/ha. (iii) Treatment differences are significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Av. yield	492·8	411·8	462·5	402·3	408·8	500·2	348·6	405·7

C.D.=95·9 Q/ha.

Crop :- Sugarcane. **Ref :- Bh. 60(200), 61(220).**

Site :- Saran Sub-Station, Sepaya (Saran). **Type :- 'M'.**

Object :—To study the response and economics of different phosphatic manures in combination with Urea and Castor cake on Sugarcane crop.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) G.M. (*Dhaincha*). (c) Nil. (ii) Sandy loam. (iii) 18.2.60 ; 12.2.61. (iv) (a) 6 deep ploughings with 4 cultivators. (b) Flat in furrows. (c) 60 three-budded setts/row. (d) 91 cm. between rows. (e) —. (v) G.M. (vi) BO—32 (main-season variety). (vii) Unirrigated. (viii) Interculturing and earthing up. (ix) 146 cm. (x) 14.1.61 ; 14.1.62.

2. TREATMENTS:

Same as expt. no. 61(233) at Motihari on page 591.

3. DESIGN:

(i) R.B.D. (ii) (a) 11. (b) N.A. (iii) 4. (iv) (a) 18·44 m.×7·32 m. (b) 18·44 m.×5·49 m (v). 91 cm. on either side. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination and tillers count, mature stalk count, and yield of cane. (iv) (a) 1960—62 (Trs. modified in 62). (b) No. (c) Results for combined analysis for 1960—61 are presented under 5. Results. (v) Other zonal centres. (vi) Nil. (vii) Error variances are homogeneous and Treatments ×Years interaction is absent.

5. RESULTS :

Pooled results

(i) 453·3 Q/ha. (ii) 65·9 Q/ha. (based on 70 d.f. made up of pooled error and Years×Treatments interaction). (iii) Treatment differences are significant. (iv) Av. yield of cane in Q/ha.

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	420·7	419·6	475·7	496·7	510·6	429·8	465·1	492·7	423·6	403·5	447·7

C.D.=65·9 Q/ha.

Individual results

Treatments	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9	T_{10}
Year											
1960	380·7	425·1	533·4	467·8	483·9	394·0	440·4	487·4	417·1	392·9	451·0
1961	460·8	414·1	418·0	525·6	537·4	465·7	489·9	498·0	430·2	414·1	444·5
Pooled	420·7	419·6	475·7	496·7	510·6	429·9	465·1	492·7	423·6	403·5	447·7

Sig.	G.M.	S.E./plot
N.S.	443·0	69·4
*	463·5	57·7
*	453·3	65·9

Crop :- Sugarcane. **Ref :- Bh. 62(182).**

Site :- Saran Sub-Station, Sepaya (Saran). **Type :- 'M'.**

Object :—To study the response and economics of different phosphatic manures in combination with Urea and Castor cake on Sugarcane crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) G.M. (*Dhaincha*). (c) Nil. (ii) Sandy loam. (iii) 14.2.62. (iv) (a) 6 deep ploughings with 4 cultivators. (b) Flat in furrows. (c) 60 three-budded setts/row. (d) 91 cm. between rows. (e) —. (v) G.M. (vi) BO—32 (main-season variety). (vii) Unirrigated. (viii) Interculturing and earthing up. (iv) 146 cm. (x) 15.3.63.

2. TREATMENTS:

Same as Expt. No. 60(161) at Harinagar on page 584.

3. DESIGN:

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 18·44 m.×7·32 m. (b) 18·44 m.×5·49 m. (v) 91 cm. on either side. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination and tillers count, height of plants, mature stalk count and yield of cane. (iv) (a) 1960—62 (Trs. modified in 1962). (b) No. (c) Nil. (v) Other zonal centres (vi) and (vii) Nil.

5. RESULTS :

(i) 402·8 Q/ha. (ii) 81·8 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Av. yield	403·5	453·7	374·7	297·0	401·6	403·2	438·7	475·6	377·4

Crop :- Sugarcane. **Ref :- Bh. 60(201).**

Site :- Saran Sub-Sation, Sepaya (Saran). **Type :- 'M'.**

Object :—To study the response and economics of different nitrogenous fertilizers on Sugarcane crop.

1. BASAL CONDITIONS :

(i) (a) Nil (b) G.M. (c) Nil. (ii) Sandy loam. (iii) 28.2.60. (iv) (a) 6 deep ploughings with 4 cultivators. (b) Flat in furrows (c) 60 three-budded setts/row. (d) 91 cm. between rows. (e) Nil. (v) G.M. (vi) BO 34 (mid-early). (vii) Unirrigated. (viii) Interculturing and earthing up. (ix) 146 cm. (x) 7.3.61.

2. TREATMENTS:

Main-plot treatments:

2 modes of application : M_1=Full dose at planting, M_2=$\frac{2}{3}$rd of the dose at planting+$\frac{1}{3}$rd of the dose at earthing up.

Sub-plot treatments :

6 sources of N at 67·2 Kg/ha. : S_0=Control, S_1=A/S, S_2=A/S/N, S_3=Ammo. Chlo., S_4=Urea and S_5=Castor cake.

3. DESIGN:

(i) Split-plot. (ii) (a) 2 main-plots/replication, 6 sub-plots/main-plot. (b) 51·21 m.×18·44 m. (iii) 4. (iv) (a) 18·44 m.×7·32 m. (b) 18·44 m.×5·49 m. (v) 91 cm. on either side. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Germination and tillers count, height of plants, mature stalk count and yield of cane. (iv) (a) 1960—62 (Trs. modified in 1961 onward). (b) No. (c) Nil. (v) Other zonal centres. (vi) and (vii) Nil.

5. RESULTS :

(i) 522·0 Q/ha. (ii) (a) 98·9 Q/ha. (b) 65·0 Q/ha. (iii) None of the effects is significant. (iv) Av. yield of cane in Q/ha.

	S_0	S_1	S_2	S_3	S_4	S_5	Mean
M_1	492·4	551·8	557·6	507·7	559·4	474·2	523·8
M_2	475·3	543·7	544·3	480·4	534·5	543·1	520·2
Mean	483·8	547·8	550·9	494·0	546·9	508·6	522·0

Crop :- Sugarcane. **Ref :- Bh. 61(221), 62(183).**

Site :- Saran Sub-Station, Sepaya (Saran). **Type :- 'M'.**

Object :—To study the response and economics of different nitrogenous fertilizers on Sugarcane crop.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) G.M. (c) Nil. (ii) Sandy loam. (iii) 21.2.61 ; 24.2.62. (iv) (a) 6 deep ploughings with 4 cultivators. (b) Flat in furrows. (c) 60 three-budded setts/row. (d) 91 cm. between rows. (e) —. (v) G.M. (vi) BO—34 (mid-early). (vii) Unirrigated. (viii) Interculturing and earthing up. (ix) 146 cm. (x) 12.3.62 ; 18.3.63.

2. TREATMENTS:

Same as Expt. No. 60(214) and 61(234) at Motihari on page 594.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication, 7 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 18.44 m. ×7·32 m. (b) 18·44 m.×5·49 m. (v) 91 cm. on either side. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination and tillers count, mature stalk count and yield of cane. (iv) (a) 1960—62 (Trs. modified in 1961 onward). (b) No. (c) Results for combined analysis for 1961-62 are presented under 5. Results. (v) Other zonal centres. (vi) Nil. (vii) Since sub-plot error variances are heterogeneous, results of individual years are presented under 5 Results.

5. RESULTS:

61(221)

(i) 295·1 Q/ha. (ii) (a) 20·1 Qha. (b) 21·0 Q/ha. (iii) Only the main effect of S is highly significant. (vi) Av. yield of cane in Q/ha.

	S_0	S_1	S_2	S_3	S_4	S_5	S_6	Mean
M_1	274·7	301·9	296·1	293·8	282·3	322·5	337·3	301·2
M_2	263·1	277·0	286·0	294·9	295·4	280·0	327·0	289·0
Mean	268·9	289·4	291·0	294·4	288·8	301·2	332·2	295·1

C.D. for S marginal means=30·2 Q/ha.

62(183)

(i) 341·0 Q/ha. (ii) (a) 80·6 Q/ha. (b) 45·0 Q/ha. (iii) None of the effects is significant. (iv) Av. yield of cane in Q/ha.

	S_0	S_1	S_2	S_3	S_4	S_5	S_6	Mean
M_1	355·3	375·8	297 0	314·5	380·4	350·9	382·3	350·9
M_2	353·0	366·8	336·7	316·4	330·0	335·0	280 2	331·2
Mean	354 2	371·3	316·8	315·4	355·2	343·0	331·2	341·0

Crop :- Sugarcane. **Ref :- Bh. 62(185).**

Site :- Saran Sub-Station, Sepaya (Saran). **Type :- 'M'.**

Object :—To find out the response of N, P and K to *Adsali* planted Sugarcane.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) G.M. (c) Nil. (iii) Sandy loam. (iii) 7.9.62. (iv) (a) 6 deep ploughings with 4 cultivators. (b) Transplanted in trenches. (c) 60 three-budded setts/row. (d) 91 cm. between rows. (e) One. (v) 185 Q/ha. of Compost. (vi) BO—34 (mid-early). (vii) Irrigated. (viii) Weedings. (ix) 125 cm. (x) 8.2.64.

2. TREATMENTS :

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

(1) 4 levels of N asA/S : N_1=67·2, N_2=134·5, N_3=201·2 and N_4=269·0 Kg/ha.

(2) 2 levels of P_2O_5 as Super : P_1=84·1 and P_2=168·1 Kg/ha.

(3) 3 levels of K_2O as Mur. Pot. : K_0=0, K_1=89·7 and K_2=179·3 Kg/ha.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 24. (b) 13·72 m.×51·20 m. (iii) 3. (iv) (a) 13·7 m.×6·40 m. (b) 13·72 m.× 4·27 m. (v) 106 cm. on either side. (vi) Nil.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Germination and tillers count, height of plants, mature stalk count and yield of cane. (iv) (a) 1962—Only. (b) and (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 155·6 Q/ha. (ii) 286·0 Q/ha. (iii) Interaction effects N×P and P×K are significant. (iv) Av. yield of cane in Q/ha.

	P_1	P_2	K_0	K_1	K_2	Mean
N_1	1549	1575	1653	1427	1607	1562
N_2	1295	1643	1450	1538	1419	1469
N_3	1384	1599	1490	1586	1397	1491
N_4	1796	1608	1722	1651	1733	1702
Mean	1506	1606	1580	1551	1539	1556
K_0	1640	1518				
K_1	1366	1735				
K_2	1512	1566				

C.D. for the body of N×P table=269·6 Q/ha.
C.D. for the body of P×K table=233·5 Q/ha.

Crop :- Sugarcane. **Ref :- Bh. 65(37).**

Site :- Factory Reserved Area, Siwan (c.f.). **Type :- 'M'.**

Object :—To assess the manurial requirments of Sugarcane with reference to soil type recognised in surveyed factory reserved area.

1. BASAL CONDITIONS:
(i) (a) Paddy—Sugarcane. (b) Paddy. (c) Nil. (ii) Calcarious loamy sand. (iii) 75 quintals of F.Y.M. (iv) BO—32. (v) (a) 3—4 ploughings. (b) Three-budded setts in trenches or furrows. (c) 65 setts/row. (d) 92 cm. between rows. (e) —. (vi) 29.10.65. (vii) Irrigated. (viii) Weedings. (ix) 109 cm. (x) 5.1.67.

2. TREATMENTS:
All combinatians of (1), (2) and (3)
(1) 3 levels of N as Urea: N_0=0, N_1=67·2, and N_2=134·5 Kg/ha.
(b) 3 levels of P_2O_5 as Super: P_0=0, P_1=84·1 and P_2=168·1 Kg/ha.
(c) 3 levels of K_2O as Mur. Pot.: K_0=0, K_1=89·7 and K_2=179·3 Kg/ha.

3. DESIGN:
(i) Fact. in R.B.D. (ii) 3 (each replication at different sites); random selection from the list of villages and cultivators with special reference to the plot size and soil type. (iii) (a) 18·44 m.×7·32 m. (b) 18·44 m. ×5·49 m. (iv) Yes.

4. GENERAL:
(i) Good. (ii) Nil. (iii) Germination and tillers count, mature stalk count and yield of cane. (iv) (a) 1965—only. (b) No. (c) Nil. (v) No. (vi) and (vii) Nil.

5. RESULTS:
(i) 481·7 Q/ha. (ii) 87·6 Q/ha. (iii) Main effects of N and P are significant. (iv) Av. yield of cane in Q/ha.

	N_0	N_1	N_2	K_0	K_1	K_2	Mean
P_0	406·5	419·9	509·8	476·4	413·3	446·6	445·4
P_1	449·6	498·7	507·9	489·0	493·4	473·7	485·4
P_2	497·9	501·9	543·2	514·8	521·0	507·3	514·3
Mean	451·3	473·5	520·3	493·4	475·9	475·9	481·7
K_0	471·9	481·2	527·0				
K_1	404·3	471·2	552·1				
K_2	477·7	468·1	481·8				

C.D. for N or P marginal means=48·5 Q/ha.

Crop :- Sugarcane. **Ref :- Bh. 61(269), 62(238), 63(235).**

Site :- Bihar Sugar works, Pachrukhi and New Siwan Sugar Mills (Siwan Reserved Areas), Siwan. **Type :- 'M'.**

Object :—To assess the manurial requirments of Sugarcane with reference to recognised soil type-loam in the surveyed factory reserved areas.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize and Green manure. (c) Nil. (ii) Gandak calcarious loam. (iii) 20 cart load of F.Y.M. for preparation of land i.e. 75 quintal/ha. (iv) BO—32. (v) (a) 3—4 ploughings. (b) Three-budded setts sown in trenches or furrows. (c) 65 three-budded setts/row. (d) 92 cm. between rows. (e) —. (vi) 23.10.61 ; 6.11.62 ; 8.1.63. (vii) Light irrigation. (viii) Weeding and earthing up. (ix) 101·6 cm.; 107·8 cm.; 112·6 cm. (x) 12.12.62 ; 3.1.64 ; 7.1.65.

2. TREATMENTS :

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

(1) 3 levels of N as Urea : N_0=0, N_1=67·2 and N_2=134·5 Kg/ha.

(2) 3 levels of P_2O_5 as Super : P_0=0, P_1=84·0 and P_2=168·1 Kg/ha.

(3) 3 levels of K_2O as Mur. Pot. : K_0=0, K_1=89·7 and K_2=179·3 Kg/ha.

3. DESIGN :

(i) Fact.in R.B.D. ; 27 plots/block and 2 rep. for 1961, 4 rep. for 1962 and 3 rep. for 1963. (ii) Random selection from the list of villages and cultivators with special references to the size of the plot and soil type. (iii) (a) 18·44 m.×7·32 m. (b) 18·44 m.×5·49 m. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination and tillers count, mature stalk count and yield of cane. (iv) (a) 1961—63. (b) No. (c) Results of combined analysis are presented under 5. Results. (v) No. (vi) Nil. (vii) Error variances are homogeneous and Treatments × Years interaction is absent.

5. RESULTS :

Pooled results

(i) 394·7 Q/ha. (ii) 81·6 Q/ha. (based on 192 d.f. made up of pooled error and Treatments × Years interaction). (iii) Main effects of N and P are highly significant. (iv) Av. yield of cane in Q/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	318·2	355·4	371·7	333·7	355·7	356·0	348·4
N_1	366·9	435·7	405·8	410·0	402·2	396·1	402·8
N_2	383·6	445·9	469·2	434·7	437·1	426·9	432·9
Mean	356·2	412·3	415·6	392·8	398·3	393·0	394·7

K_0	355 3	415·8	407·2
N_1	532·3	408 9	433·8
N_2	361·0	412·3	405·7

C.D. for N or P marginal means=25·1 Q/ha.

Individual results

Treatment	N_0	N_1	N_2	Sig.	P_0	P_1	P_2	Sig.
Year 1961	325·0	408·0	419·0	**	312·0	405·0	435·0	**
1962	362·0	391·0	403·0	N.S.	359·0	399·0	398·0	N.S.
1963	346·0	415·0	482·0	**	382·0	435·0	426·0	*
Pooled	348·4	402·8	432·0	**	359·2	412·3	415·6	**

K_0	K_1	K_2	Sig.	G.M.	S.E./plot
393·0	383·0	376·0	N.S.	384·0	76·0
379·0	380·0	397·0	N.S.	385·0	86·5
411·0	433·0	399·0	N.S.	415·0	80·6
392·8	398·3	393·0	N.S.	394·7	81·6

Crop :- Sugarcane. **Ref :- Bh. 61(268), 62(237), 63(234), 64(266), 65(38).**

Site :- Bihar Sugar Works, Pachrukhi and New Siwan Sugar Mills (Factory Reserved Areas), Siwan. **Type :- 'M'.**

Object :—To assess the manurial requirments of Sugarcane with reference to recognised soil type-sandy loam in surveyed areas.

1. BASAL CONDITIONS :

(i) (a) Maize—Paddy—Sugarcane. (b) Maize ; G.M. for 62 to 65. (c) Nil for 61, 62 and 63 ; 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super for 64 and 65. (ii) (a) Calcarious sandy loam. (iii) 20 cart load (75 quintals) of F.Y.M. for preparation of land. (iv) BO-32. (v) (a) 3—4 ploughings. (b) Three-budded setts sown in trenches or furrows. (c) 65 three-budded setts/row. (d) 92 cm. between rows. (e) Nil. (vi) 5.11.61 ; 11.11.62 ; 9.11.63 ; 7.11.64 ; 5.11.65. (vii) Irrigated. (viii) Weedings and earthing up. (ix) 101·5 cm. ; 106·5 cm. ; 104·3 cm. ; 110·5 cm. ; 109·4 cm. (x) 2.1.63 ; 7.1.64 ; 2.1.65 ; 10.1.66 ; 13.1.67.

2. TREATMENTS :

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

(1) 3 levels of N as Urea : $N_0=0$, $N_1=67{\cdot}25$ and $N_2=134{\cdot}50$ Kg/ha.
(2) 3 levels of P_2O_5 as Super : $P_0=0$, $P_1=84{\cdot}06$ and $P_2=168{\cdot}12$ Kg/ha.
(3) 3 levels of K_2O as Mur. Pot. : $K_0=0$, $K_1=89{\cdot}66$ and $K_2=179{\cdot}32$ Kg/ha.

3. DESIGN :

(i) 3^3 fact. in R.B.D. ; 27 plots/block and 3 rep. for 1961 and 64, 4 rep. for 1962, 63 and 65. (iii) Random selection from the list of villages with special reference to the size of the plot and soil type. (iii) (a) 18·44 m. ×7·32 m. (b) 18·44 m. ×5·49 m. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germimation and tillers count and yield of cane. (iv) (a) 1961—65. (b) No. (c) Results of combined analysis are presented under 5. Results. (v) No. (vi) Nil. (vii) Error variances are heterogeneous and Years×N, Years×P, Years×K, Years×(NP) and Years×(NK) interactions are present.

5. RESULTS :

Pooled results

(i) 456·2 Q/ha. (ii) 125·9 Q/ha. (based on 56 d.f. made up of Years × N, Years × P, Years × K, Years × (NP) and Years × (NK) interactions). (iii) Main effects of N and P are highly significant and the interaction N × K is significant. (iv) Av. yield of cane in Q/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	373·4	416·2	424·6	374·4	430·4	409·4	404·7
N_1	435·3	475·9	486·2	471·4	459·4	466·5	465·8
N_2	453·4	512·8	528·6	525·9	462·8	506·1	498·3
Mean	420·7	468·3	479·8	457·2	450·8	460·7	456·2

C.D. for N or P marginal means=28·1 Q/ha.

C.D. for the body of N × K table=48·6 Q/ha.

Individual results

Treatment	N_0	N_1	N_2	Sig.	P_0	P_1	P_2	Sig.
Year								
1961	322·0	335·0	345·0	N.S.	307·0	345·0	350·0	*
1962	431·0	491·0	520·0	**	418·0	493·0	531·0	**
1963	345·0	461·0	534·0	**	426·0	461 0	453·0	N.S.
1964	429·0	521·0	546·0	**	472·0	514·0	510·0	N.S.
1965	482·0	502·0	520·0	*	465·0	509·0	530·0	**
Pooled	404·7	465·8	498·3	**	420·7	468·3	479·8	**

K_0	K_1	K_2	Sig.	G.M.	S.E./plot
347·0	319·0	336·0	N.S.	334·0	66·0
490·0	466·0	486·0	N.S.	481·0	75·1
455·0	445·0	440·0	N.S.	447·0	83·9
487·0	505·0	504·0	N.S.	498·0	75·2
487·0	500·0	517·0	N.S.	511·0	58·2
457·2	450·8	460·7	N.S.	456·2	125·9

Crop :- Sugarcane. **Ref :- Bh. 60(159)**

Site :- Zonal Centre (Sugarcane Res. Instt., Pusa), Warshaliganj. **Type :- 'M'.**

Object :—To study the response and economics of different phosphatic manures in combination with Urea and Castor cake.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) 28 to 30.11.60. (iv) (a) 2—3 ploughings with tractor and then *henga*. (b) Line sowing. (c) 36·9 Q/ha. (three-budded setts). (d) 91 cm. between rows (e) Nil. (v) As per treatments, (vi) BO—32. (vii) Irrigated. (viii) Weeding and earthing up. (ix) N.A. (x) 2, 3.4.62.

2. TREATMENTS :

Same as the Expt. No. 60(203) at Kamta Rajpur farm, Narkatiaganj (Champaran) on page no. 606.

3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) 19·54 m.×66·90 m. (iii) 4. (iv) (a) 18·44 m.×7·32 m. (b) 18·44 m.×5·49 m. (v) 91 cm. on either side. (vi) Nil.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination and tillers count, height of plants, mature stalk count, analysis of juice and yield of cane. (iv) (a) 1960—only. (b) No. (c) Nil. (v) Narkatiaganj. (vi) and (vii) Nil.

5. RESULTS:

(i) 447·6 Q/ha. (ii) 92·2 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Av. yield	366·8	423·0	404·8	469·6	489·0	510·3	475·7	384·8	504·1

Crop :- Sugarcane. **Ref :- Bh. 60(164).**

Site :- Zonal Centre (Sugarcane Res. Instt., Pusa) Wa: shaliganj. Type :- 'M'.

Object :—To study the response and economics of different nitrogenous fertilizers.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) 24 to 26.11.60. (iv) (a) 2—3 ploughings with tractor and then *henga*. (b) Line sowing. (c) 36·9 Q/ha. (three-budded setts). (d) 91 cm. between rows. (e) Nil. (v) As per treatments. (vi) BO—34. (vii) Irrigated. (viii) Weeding and earthing up. (ix) N.A. (x) 18.3.62 to 4.4.62.

2. TREATMENTS

Main-plot treatments :

2 modes of application: M_1=Full dose at planting and M_2 = rd at planting+$\frac{1}{3}$rd at earthing.

Sub-plot treatments :

6 doses of fertilizers: F_0=Control, F_1=67·2 Kg/ha. of N as A/S+84·1 Kg/ha. of P_2O_5 as Super, F_2=67·2 Kg/ha. of N as A/S/N+84·1 Kg/ha. of P_2O_5 as Super, F_3=67·2 Kg/ha. of N as Am. Chl.+84·1 Kg/ha. of P_2O_5 as Super, F_4=67·2 Kg/ha. of N as Urea+84·1 Kg/ha. of P_2O_5 as Super and F_5=67·5 Kg/ha. of N as Castor cake+84·1 Kg/ha. of P_2O_5 as Super.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication, 6 sub-plots/main-plot. (b) 19·54 m.×66·90 m. (iii) 4. (iv) (a) 18·44 m.×7·32 m. (b) 18·44 m.×5·49 m. (v) 91 cm. on either side. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination and tillers count, height of plants, mature stalk count, yield of cane. (iv) (a) 1960—only. (b) and (c) Nil. (v) Other zonal centres. (vi) and (vii) Nil.

5. RESULTS :

(i) 678·0 Q/ha. (ii) (a) 113·0 Q/ha. (b) 42·5 Q/ha. (iii) Main effect of F and interaction F×M are **highly significant.** (iv) Av. yield of cane in Q/ha.

	F_0	F_1	F_2	F_3	F_4	F_5	Mean
M_1	659·0	692·4	665·9	697·0	733·9	669·4	686·3
M_2	593·4	770·3	736·2	650·9	622·2	645·2	669·7
Mean	626·2	731·4	701·1	674·0	658·0	657·3	678·0

C.D. for F marginal means=43·4 Q/ha.

C.D. fot M means at the same level of F=123·9 Q/ha.

C.D. of F means at the same level of M=95·7 Q/ha.

Crop :- Sugarcane. **Ref :- Bh. 63(186).**

Site :- Zonal Centre (Sugarcane Res. Instt., Pusa), Warshaliganj. **Type :- 'M'.**

Object :—To study the efficiency and economics of Sterameal on Surgacane.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) 8.2.63. (iv) (a) 2—3 ploughings by tractor and *henga.* **(b) Line** sowing. (c) 41 Q/ha. of three-budded setts. (d) 91 cm. between rows. (e) Nil. (v) As per **treatments. (vi)** BO—43. (vii) Irrigated. (viii) Weeding and earthing up. (ix) N.A. (x) 6 to 10.1.64 and **17.1.64.**

2. TREATMENTS :

6 manurial treatments: T_0=Control, T_1=33·6 Kg/ha. of N as A/S at planting+33·6 Kg/ha. of N as A/S at earthing up+95·3 Kg/ha. of P_2O_5 as Super+47·1 Kg/ha. of K_2O as Mur. Pot., T_2=33·6 Kg/ha. of N as Sterameal+33·6 Kg/ha. of N as A/S+95·3 Kg/ha. of P_2O_5 as Super+47·1 Kg/ha. of K_2O as Mur. Pot., T_3=33·6 Kg/ha. of N as Castor cake+33·6 Kg/ha. of N as A/S+95·3 Kg/ha. of P_2O_5 as Super+47·1 Kg/ha. of K_2O as Mur. Pot., T_4=67·2 Kg/ha. of N as A/S+95·2 Kg/ha. of P_2O_5 as Super+47·1 Kg/ha. of K_2O as Mur. Pot. and T_5=67·2 Kg/ha. of N as Castor cake+95·2 Kg/ha. of P_2O_5 as Super+47·1 Kg/ha. of K_2O as Mur. Pot.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) 43·92 m.×15·12 m. (iii) 5. (iv) (a) 13·72 m.×7·32 m. (b) 13·72 m.×5·49 m. **(v) 91 cm. on either side.** (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination and tillers count, height measurement and sucrose percentage. **(iv) (a) 1963—only.** (b) No. (c) Nil. (v) to (vi) Nil. (vii) Yield data—N.A.

5. RESULTS :

(i) 21·7 degrees. (ii) 10·60 degrees. (iii) Treatment differences are not significant, (iv) Percentage of **sucrose in Sugarcane juice in degrees.**

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Mean Angle	21·7	21·6	21·8	21·7	21·4	21·9

Crop :- Sugarcane.

Ref :- Bh. 60, 61(SFT) for Champaran and Muzaffarpur, 60(SFT) for Bhagalpur and Monghyr and 61(SFT) for Gaya & Shahabad.

Site :- (District) Champaran, Muzaffarpur, Bhagalpur, Monghyr, Gaya and Shahabad.

Type 'M'.

Object :—Type A :--To study the response of Sugarcane to different levels of N, P and K applied individually and in combination.

1. BASAL CONDITIONS ;

(i) (a) to (c) N.A. (ii) As per results. (iii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments

O=Control (no manure),

N=67·2 Kg/ha. of N,

P=44·8 Kg/ha. of P_2O_5,

K=44·8 Kg/ha. of K_2O,

NP=67·2 Kg/ha. of N+44·8 Kg/ha. of P_2O_5,

NK=67·2 Kg/ha. of N+44·8 Kg/ha. of K_2O,

PK=44·8 Kg/ha. of P_2O_5+44·8 Kg/ha. of K_2O and

NPK=67·2 Kg/ha. of N+44·8 Kg/ha. of P_2O_5+44·8 Kg/ha. of K_2O.

N applied as A/S, P_2O_5 as Super and K_2O as Mur. Pot.

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 a rabi cereal, 8 on cash crop, 4 on an oilseed crop and 3 on a legumenous 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) 1/98·8 ha. (b) 1/197·7 ha. (iv) Yes.

4. GENERAL .

(i) to (vii) N.A.

5. RESULTS :

District	Year	Soil class	No. of trials	Control mean Kg/ha.	Av. response of cane in Kg/ha. N	P	K	S.E.	NP	NK	PK	NPK	S.E.
Champaran	1960	Alluvial	12	31980	9260	3890	2990	1739·0	80	—1640	—1480	2570	1467·0
	1961	,,	12	26540	12120	8170	6100	1441·0	340	290	—920	—790	841·0
Muzaffarpur	1960	,,	8	54020	8440	8270	—1340	1069·0	—3220	—5640	—1420	4290	1357·0
	1961	,,	4	152180	15810	12210	—1440	2070·0	—4000	—1420	—540	10780	3839·0
Bhagalpur	1960	,,	4	46350	4270	3090	1360	1357·0	650	860	740	2210	674·0
Monghyr	1960	,,	4	42240	10040	4190	2340	1449·0	—640	—70	—640	—190	410·0
Gaya	1961	,,	6	50910	29160	9080	6100	4436·0	3820	2950	2240	2360	1206·0
Shahabad	1961	,,	4	26550	6050	2820	1890	1571·0	—1780	—2240	—890	—1570	1031·0

Crop :- Sugarcane. **Ref :- Bh. 60(SFT) for Champaran, Muzaffarpur and Bhagalpur and 61(SFT) for Gaya.**

Site :- (District) Champaran, Muzaffarpur, Bhagalpur and Gaya. **Type :- 'M'.**

Object :—Type B : To investigate the relative efficiency of different nitrogenous fertilisers at different levels.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) As per results. (iii) to (x) N.A.

2. TREATMENTS :

9 manurial treatments :

O=Control (no manure),

n_1=67·2 Kg/ha. of N as A/S,

n_2=134·4 Kg/ha. of N as A/S,

n_1'=67·2 Kg/ha. of N as Urea,

n_2'=134·4 Kg/ha. of N as Urea,

n_1''=67·2 Kg/ha. of N as A/S/N,

n_2''=134·4 Kg/ha. of N as A/S/N,

n_1'''=67·2 Kg/ha. of N as C/A/N and

n_2'''=134·4 Kg/ha. of N as C/A/N.

3. DESIGN :

Same as in type A on page 641.

4. GENERAL :

(i) to (vii) N.A.

5. RESULTS :

District	Year	Soil class	No. of trials	Control mean in Kg/ha.	Av. response of cane in Kg/ha. n_1	n_1'	n_1''	n_1'''	n_2	n_2'	n_2''	n_2'''	S.E. of response
Champaran	1960	Alluvial	12	34240	—	25050	16490	13630	—	25530	18200	20010	2616·0
Muzaffarpur	1960	,,	8	55640	—	20770	16650	20080	—	25120	20630	25100	2060·0
Bhagalpur	1960	,,	2	45680	—	7190	2490	3870	—	12450	4520	4700	839·0
Gaya	1961	,,	6	57360	13150	12360	11090	12250	26560	27430	22550	23770	2243·0

Crop :- Sugarcane. **Ref :- Bh. 63, 64, 65(SFT) for Champaran and Muzaffarpur,**

Site :- (District) Champaran and Muzaffarpur. **Type :- 'M'.**

Object :—Type A_1 : To study the response curves of important cereal, cash and oilseed crops to Nitrogen applied singly and in combination with other nutrients.

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 :

8 manurial treatments :

O=Control (no manure),
N_1=70 Kg/ha. of N,
N_2=140 Kg/ha. of N,
P_1=70 Kg/ha. of P_2O_5,
N_1P_1=70 Kg/ha. of N+70 Kg/ha. of P_2O_5,
N_2P_1=140 Kg/ha. of N+70 Kg/ha. of P_2O_5,
N_2P_2=140 Kg/ha. of N+140 Kg/ha. of P_2O_5 and
$N_2P_2K_1$=140 Kg/ha. of N+140 Kg/ha. of P_2O_5+70 Kg/ha. of K_2O.

N applied as A/S, P_2O_5 as Super and K_2O as Mur. Pot.

3. DESIGN :

A selected district is divided into four agriculturally homogeneous zones based on climate, soil, cropping pattern etc. In each zone one block is selected at random. A block normally consists of a group of 50—100 villages. In each block 36 experiments are conducted in a year of which 11 are of type A_1, 11 of type A_2, 11 of type A_3 and 3 are of type C. The eleven experiments under type A_1, A_2 and A_3 are distributed as 3 on a kharif cereal, 3 on a rabi cereal, 3 on a cash crop and 2 on an oilseed. All the three type—C experiments are conducted on a legume crop. For the purpose of conducting the A_1, A_2 and A_3 experiment 11 villages are randomly selected in each block and in each village 3 experiments one each of type A_1, A_2 and A_3 are laid out. For conducting the three type—C trials three villages are randomly selected in each block.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of cane. (iv) (a) 1963—66 for Champaran and Muzaffarpur. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

Champaran

63(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of cane in Kg/ha.	5267	6782	3020	8893	11105	14200	18443	1032·4

Control mean=32948 Kg/ha. ; No. of trials=9.

64(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of cane in Kg/ha.	9374	13284	5145	11691	16447	19702	21721	1224·6

Control mean=33936 Kg/ha. ; No. of trials=14.

65(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of cane in Kg/ha.	7244	10966	3277	9366	12899	15444	18333	825·3

Control mean=35655 Kg/ha. ; No. of trials=18.

Muzaffarpur

63(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of cane in Kg/ha.	9040	19053	6088	13448	24960	26024	32099	3045·8

Control mean=30462 Kg/ha. ; No. of trials=6.

64(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of cane in Kg/ha.	3680	7702	4134	5403	9027	10101	11600	1338·9

Control mean=13784 Kg/ha. ; No. of trials=4.

65(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of cane in Kg/ha.	2849	6933	1466	5633	8216	9883	12949	456.5

Control mean=15849 Kg/ha. ; No. of trials=12.

Crop :- Sugarcane. **Ref :- Bh. 63, 64, 65(SFT) for Champaran and 63, 64(SFT) for Muzaffarpur.**

Site :- (District) Champaran and Muzaffarpur. **Type :- 'M'.**

Object :—Type A_2: To study the response curves of important cereal, cash and oilseed crops to Phosphorus applied singly and in combination with other nutrients.

1. BASAL CONDITIONS:

(i) (a) to (c) N.A. (ii) Alluvial. (iii) to (vi) N.A. (vii) Unrrigated. (viii) to (x) N.A.

2. TREATMENTS:

8 manurial treatments :

O=Control (no manure),

N_1=70 Kg/ha. of N,

P_1=70 Kg/ha, of P_2O_5,

P_2=140 Kg/ha. of P_2O_5,

N_1P_1=70 Kg/ha. of N+70 Kg/ha. of P_2O_5,

N_1P_2=70 Kg/ha. of N+140 Kg/ha. of P_2O_5,

N_2P_2=140 Kg/ha. of N+140 Kg/ha. of P_2O_5 and

$N_2P_2K_2$=140 Kg/ha. of N+140 Kg/ha. of P_2O_5+140 Kg/ha. of K_2O.

N applied as A/S, P_2O_5 as Super and K_2O as Mur. Pot.

3. DESIGN:

Same as in type A_1 on page 642.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of cane. (iv) (a) 1963–66 for Champaran and 1962–66 (65 N.A.) for Muzaffarpur. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

Champaran

63(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of cane in Kg/ha.	6701	3241	4335	9005	10419	14430	15810	1091·1

Control mean=34701 Kg/ha. ; No. of trials=9

64(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of cane in Kg/ha.	7281	3311	5297	10248	11891	19364	23208	1033·3

Control mean=34314 Kg/ha. ; No. of trials=13

65(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of cane in Kg/ha.	8865	4463	6169	9122	9934	16460	18158	1013·4

Control mean=32866 Kg/ha. ; No. of trials=19

Muzaffarpur

63(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of cane in Kg/ha.	11943	6796	8065	15000	15969	27648	36860	2369·7

Control mean=27757 Kg/ha. ; No. of trials=6

64(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of cane in Kg/ha.	4615	1311	2243	3749	7900	10552	10081	1846·0

Control mean=13096 Kg/ha. ; No. of trials=4.

Crop :- Sugarcane. **Ref :- Bh. 65(SFT) for Muzaffarpur.**

Site :- (District) Muzaffarpur. **Type :- 'M'.**

Object :—Type A_2 : To study the response curves of important cereal, cash and oilseed crops to Phosphorus applied singly and in combination with other nutrients.

1. BASAL CONDITIONS:

(i) (a) to (c) N.A. (ii) Alluvial. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

Same as in type A_2 on page 644.

3. DESIGN :

Same as in type A_1 on page 642.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of cane. (iv) (a) 1965—66. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

Muzaffarpur

65(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of cane in Kg/ha.	3673	1280	2656	7483	5933	8286	12023	1563·5

Control mean=15213 Kg/ha. ; No. of trials=11

Crop :- Sugarcane. **Ref :- Bh. 65(SFT) for Muzaffarpur and 63(SFT) for Gaya.**

Site :- (District) Muzaffarpur and Gaya. **Type :- 'M'.**

Object :—Type A_s : To study the response curves of important cereal, cash and oilseed crops to Potash applied singly and in combination with other nutrients.

B ASAL CONDITIONS:

(i) (a) to (c) N.A. (ii) Alluvial (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS:

8 manurial treatments :

O=Control (no manure),
N_1=70 Kg/ha. of N,
K_1=70 Kg/ha. of K_2O,
K_2=140 Kg ha. of K_2O,
N_1K_1=70 Kg/ha. of N+70 Kg/ha. of K_2O,
N_1K_2=70 Kg/ha. of N+140 Kg/ha. of K_2O,
N_2K_2=140 Kg/ha. of N+140 Kg/ha. of K_2O and
$N_1P_1K_1$=70 Kg/ha. of N+70 Kg/ha. of P_2O_5+70 Kg/ha. of K_2O.

N applied as A/S, P_2O_5 as Super and K_2O as Mur. Pot.

3. DESIGN:

Same as in type A_1 on page 642.

4. GENERAL:

(i) and (ii) N.A. (iii) Yield of cane. (iv) (a) 1965—66 for Muzaffarpur and 1963 only for Gaya. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS:

Muzaffarpur

65(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of cane in Kg/ha.	2943	2140	3096	5926	6816	8063	7223	349·7

Control mean=13526 Kg/ha.; No. of trials=11.

Gaya

63(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of cane in Kg/ha.	10509	981	2095	13831	13771	19675	14015	2298·8

Control mean=34119 Kg/ha.; No. of trials=3.

Crop :- Sugarcane. **Ref :- Bh. 63, 64, 65(SFT) for Champaran and 63, 64(SFT) for Muzaffarpur.**

Site :- (District) Champaran and Muzaffarpur. **Type :- 'M'.**

Object :—Type A_s : To study the response curves of important cereal, cash and oilseed crops to Potash applied singly and in combination with other nutrients.

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:

Same as in type A_3 on page 446.

3. DESIGN:

Same as in type A_1 on page 642.

4. GENERAL:

(i) and (ii) N.A. (iii) Yield of cane. (iv) (a) 1963—65 for Champaran and 1963—64 for Muzaffarpur. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS:

Champaran

63(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of cane in Kg/ha.	3547	2593	4370	8737	10905	12831	15748	1145·9

Control mean=32171 Kg/ha.; No. of trials=9.

64(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of cane in Kg/ha.	8398	2139	3517	9718	11041	15815	12728	810·7

Control mean=32431 Kg/ha.; No. of trials=15.

65(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of cane in Kg/ha.	6100	282	—197	7033	6488	11553	10022	1358·6

Control mean=35646 Kg/ha.; No. of trials=17.

Muzaffarpur

63(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of cane in Kg/ha.	9106	4882	7004	15119	16834	24680	17748	4395·9

Control mean=31556 Kg/ha.; No. of trials=5.

64(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of cane in Kg/ha.	2648	1532	2704	4829	3624	5996	5195	158·8

Control mean=12111 Kg/ha.; No. of trials=4.

Crop :- Sugarcane. **Ref :- Bh. 60(167).**

Site :- Zonal Centre (S.R.I., Pusa), Lalgarh. **Type :- 'C'.**

Object :—To study the different times of harvesting on the yield and juice quality of Sugarcane.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Sugarcane. (c) 150 Kg/ha. of G.N.C.+150 Kg/ha. of Sterameal+50 Kg/ha. of Di-ammonium Phos.+37 Kg/ha. of N as A/S. (ii) Sandy loam. (iii) 28.2.60. (iv) (a) BO—35. (b) Ploughings followed by planking. (c) Ridge and furrows method. (d) 64 three-budded setts/row. (e) —. (v) 67·2 Kg/ha. of N as A/S+84·1 Kg/ha. of P_2O_5 as Super. (vi) BO—35. (vii) Irrigated. (viii) Weedings. (ix) 125 cm. (x) As per treatments.

2. TREATMENTS:

6 dates of harvesting : T_1=Mid. Nov., T_2=Mid. Dec., T_3=Mid. Jan., T_4=Mid. Feb., T_5=Mid. March and T_6=Mid. April.

3. DESIGN:

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 18·44 m.×7·32 m. (b) 18·44 m.×5·49 m. (v) 91 cm. on each side along length. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Yield of cane. (iv) (a) 1960—only. (b) No. (c) Nil. (v) Pandaul and Pusa. (vi) Nil. (vii) Crop damaged in T_6 plot.

5. RESULTS :

(i) 382·3 Q/ha. (ii) 50·75 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_1	T_2	T_3	T_4	T_5
Av. yield	381·8	427·7	393·6	384·1	324·4

———

Crop :- Sugarcane. **Ref :- Bh. 61(235).**

Site :- Zonal Centre (S.R.I., Pusa), Motihari. **Type :- 'C'.**

Object :—To study the effect of different times of harvesting on the yield and juice quality of Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sugarcane. (c) 738 Kg/ha. of G.N.C.+618 Kg/ha. of Super+99 Kg/ha. of A/S. (ii) Sandy loam. (iii) 10.11.61. (iv) (a) 5 ploughings. (b) Behind the plough. (c) 38272 three-budded setts/ha. (d) 91 cm. between rows. (e) —. (v) G.M. (vi) BO—34 ; BO—43 (late). (vii) Irrigated. (viii) Interculturings. (ix) 138 cm. (x) As per treatments.

2. TREATMENTS ;

5 date of harvestings : T_1=Mid. Nov. '62, T_2=Mid. Dec. '62, T_3=Mid. Jan. '63, T_4=Mid. Feb. '63 and T_5=Mid. March 63.

3. DESIGN:

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (v) (a) 18·44 m.×7·32 m. (b) 18·44 m.×5·49 m. (v) 91 cm. on either side along length. (vi) Yes.

4. GENERAL:

(i) Fair. (ii) Nil. (iii) Yield of cane. (iv) (a) 1961—only. (b) No. (c) Nil. (v) N.A. (vi) Nil. (vii) Separate experiment conducted on both varieties.

5. RESULTS :

BO—34

(i) 634·5 Q/ha. (ii) 81·1 Q/ha. (iii) Treatment differences are significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	
Av. yield	619·6	712·9	607·0	517·6	715·4	C.D.=125·0 Q/ha.

BO—43

(i) 650·0 Q/ha. (ii) 97·84 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_1	T_2	T_3	T_4	T_5
Av. yield	615·6	687·0	668·5	643·8	635·2

Crop :- Sugarcane . **Ref :- Bh. 60(215).**

Site :- Zonal Centre (S.R.I., Pusa), Motihari. **Type :- 'C'.**

Object :—To study the effect of field dryage on the yield and juice quality of Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sugarcane. (c) 370 Kg/ha. of A/S+1107 Kg/ha. of Castor cake+495 Kg/ha. of Super. (ii) Sandy loam. (iii) 30.10.60 for BO—29 ; 20.11.60 for BO—32 ; N.A. for BO—35. (iv) (a) 5 ploughings by tractor. (b) Sett to sett behind plough. (c) 38272 three-budded setts/ha. (d) 91 cm. between rows. (e) —. (v) G.M. (vi) BO—29 (late) ; BO—32 (mid-early) ; BO—35 (mid-early). (vii) Irrigated. (viii) Interculturing. (ix) 142 cm. (x) As per treatments.

2. TREATMENTS :

7 periods of field dryage and subsequent dates of harvesting : T_1=Mid. Nov. '61, T_2=Mid. Dec. '61, T_3=Mid. Jan. '62, T_4=Mid. Feb. '62, T_5=Mid. March '62, T_6=Mid. April '62 and T_7=Mid. May '62.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 18·44 m.×7·32 m. (b) 18·44 m.×5·49 m. (v) 91 cm on either side along length. (vi) Yes.

GENERAL :

(i) Good. (ii) Nil. (iii) Yield of cane. (iv) (a) 1960—only. (b) and (c) Nil. (v) N.A. (vi) Nil. (vii) Separate expt. conducted on each variety.

5. RESULTS :

BO—29

(i) 1000 Q/ha. (ii) 118·1 Q/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7	
Av. yield	1079	1088	1166	1096	1043	769	761	C.D.=175·5 Q/ha.

BO—32

(i) 874·4 Q/ha. (ii) 138·2 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Av. yield	875	950	931	988	876	764	737

BO—35

(i) 585 Q/ha. (ii) 103·4 Q/ha. (iii) Treatmen t differences are highly significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7	
Av. yield	693	712	635	662	649	407	337	C.D.=153·3 Q/ha.

Crop :- Sugarcane (*Annual*). **Ref :- Bh. 60(1005).**

Site :- Kamta Rajpur Farm, Zonal Centre (S.R.I., Pusa), Narkatiagunj. **Type :- 'C'.**

Objet :—To study the effect of different times of harvesting on the yield and juice quality of Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) G.M. (c) Nil. (ii) Sandy to clayey loam. (iii) 18.2.60. (iv) (a) 3 ploughings, 5 harrowings and 2 plankings. (b) Furrows method. (c) 38272 three-budded setts/ha. (d) 91 cm. between rows. (e) —. (v) 67·2 Kg/ha. of N as A/S+84·1 Kg/ha. of P_2O_5 as Super. (vi) BO—29. (vii) Unirrigated. (viii) 2 to 4 weedings. (ix) 143 cm. (x) As per treatments.

2. TREATMENTS :

7 dates of harvesting: T_1=Mid. Nov. '60, T_2=Mid. Dec. '60, T_3=Mid. Jan. '61, T_4=Mid. Feb. '61, T_5=Mid. March '61, T_6=Mid. April '61 and T_7=Mid. May '61.

3. DESIGN:

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 18·44 m.×7·32 m. (b) 18·44 m.×5·49 m. (v) 91 cm. on both sides along length. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Yield of cane. (iv) (a) 1960—only. (b) and (c) Nil. (v) N.A. (vi) and (vii) Nil.

5. RESULTS:

(i) 374·2 Q/ha. (ii) 104·0 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Av. yield	434·6	398·3	352·1	426·5	419·8	386·7	201·0

Crop :- Sugarcane (*Annual*). **Ref :- Bh. 60(1003), 60(1004).**

Site :- Kamta Rajpur Farm, Zonal Centre (S.R.I., Pusa), Narkatiagunj. **Type :- 'C'.**

Object :—To study the effect of different times of harvesting on the yield and juice quality of Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) G.M. (c) Nil. (ii) Sandy to clayey loam. (iii) 19.2.60; 17.10.60. (iv) (a) 3 ploughings, 5 harrowings and 2 plankings. (b) Furrows method. (c) 38272 three-budded setts/ha. (d) 91 cm. between rows. (e) —. (v) 67·2 Kg/ha. of N as A/S+84·1 Kg/ha. of P_2O_5 as Super. (vi) BO—35. (vii) Unirrigated (viii) 2 to 4 weedings. (ix) 143 cm.; 147 cm. (x) As per treatments in the years 60 and 61.

2. T REATMENTS:

7 dates of planting : T_1=Mid. Nov., T_2=Mid. Dec., T_3= Mid. Jan., T_4=Mid. Feb., T_5=Mid. March, T_6=Mid. April and T_7=Mid. May.

3. DESIGN :

Same as in Expt. No. 60(1005) on page 650.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of cane. (iv) (a) 1960– only. (b) and (c) Nil. (v) N.A. (vi) Nil. (vii) As the error variances are heterogeneous and Treatments × Years interaction is absent, resnlts of individual years are presented under 5. Results.

5. RESULTS:

60(1003)

(i) 262·5 Q/ha. (ii) 68·50 Q/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7	
Av. yield	390·2	381·8	367·9	264·0	270·9	126·4	36·3	C.D.=103·2 Q/ha.

60(1004)

(i) 812·9 Q/ha, (ii) 213·6 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Av. yield	961·4	812·9	899·4	919·1	835·9	780·1	481·8

Crop :- Sugarcane (*Annual*). **Ref :- Bh. 60(205), 60(206).**

Site :- Kamta Rajpur Farm, Zonal Centre (S.R.I., Pusa), Narkatiagunj. **Type :- 'C'.**

Object :—To study the effect of different times of harvesting on the yield and juice quality of Sugarcane.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) G.M. (c) Nil. (ii) Sandy and clayey loam. (iii) 10.12.59 for 60(205) ; 16.10.60. (iv) (a) 3 ploughings, 5 harrowings and 2 plankings. (b) Furrows-method. (c) 38272 three-budded setts/ha. (d) 91 cm. between rows. (e) —. (v) 67·2 Kg/ha. of N as A/S+84·1 Kg/ha. of P_2O_5 as Super. (vi) BO—32. (vii) Unirrigated. (viii) 2 to 4 weedings. (ix) 143 cm. ; 147 cm. (x) As per treatments in the years 1960 and 61.

2. TREATMENTS 3. DESIGN:

Same as in Expt. No. 60(1003), 60(1004) on page 650.

4. GENERAL :

(i) Good. (ii) Nil. (iii) yield of cane. (iv) (a) 1960— only. (b) and (c) Nil. (v) N.A. (vi) Nil. (vii) Error variances are homogeneous and Treatments × Years interaction is absent.

5. RESULTS:

Pooled results

(i) 838·3 Q/ha., (ii) 160·9 Q/ha. (based on 42 d.f. made up of pooled error and Treatments × Years interaction) (iii) Treatment differences are highly significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7	
Av. yield	978·6	103·0	979·6	924·8	816·6	761·6	376·9	C.D.=162·5 Q/ha.

Individual results

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7	Sig.	G.M.	S.E./plot
Year										
60(205)	1132	1117	1114	1036	877	818	341	**	919	160·2
60(206)	826	943	846	814	756	705	413	**	757	155·6
Pooled	979	1030	980	925	817	761	377	**	838	160·9

Crop :- Sugarcane. **Ref :- Bh. 60(90), 61(96).**

Site :- Sugarcane Res. Instt., Pusa. **Type :- 'C'.**

Object :—To ascertain the proper time of harvest of plant-cane for securing maximum yield of ratoon crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sugarcane (plant-cane). (c) N.A. (ii) Clayey loam. (iii) Ratooning as per treatments. (iv) (a) to (c) N.A. (d) Rows 30 cm. apart. (e) —. (v) N.A. (vi) BO.—35. (vii) Irrigated. (viii) Weeding by *khurpi*. (ix) and (x) N.A.

2. TREATMENTS :

7 harvesting dates of plant-cane : D_1=Mid. Nov., D_2=Mid. Dec., D_3=Mid. Jan., D_4=Mid. Feb., D_5=Mid. March, D_6=Mid. April and D_7=Mid. May.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 9·22 m.×7·31 m. (b) 9·22 m.×5·49 m. (v) 91 cm. on each side along length. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination %, dead heart count, height measurement, sucrose % in juice and yield of cane. (iv) (a) 1960—61. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Error variances are heterogeneous and Treatments × Years interaction is absent, hence results of individual years are presented under 5. Results.

5. RESULTS:

60(90)

(i) 331·7 Q/ha. (ii) 114·1 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Av. yield	427·5	325·1	276·3	323·3	336·2	260·1	408·6

61(96)

(i) 218·0 Q/ha. (ii) 36·5 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Av. yield	183·4	226·8	233·3	214·5	222·9	229·8	215·1

Crop :- Sugarcane. **Ref :- Bh. 60(88), 61(99).**

Site :- Sugarcane Res. Instt., Pusa. **Type :- 'C'.**

Object :—To ascertain the proper time of harvest of plant-cane for securing maximum yield of ratoon crop.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Sugarcane (plant-cane). (c) N.A. (ii) Clayey loam. (iii) Ratooning as per treatments. (iv) (a) to (c) N.A. (d) Rows 30 cm. apart. (e) —. (v) N.A. (vi) BO—29. (vii) Irrigated. (viii) Weeding by *khurpi*. (ix) and (x) N.A.

2. TREATMENTS and 3. DESIGN:

Same as Expt. No. 60(90), 61(96) on page 652.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Germination %, dead heart count, height measurement, sucrose % in juice and yield of cane. (iv) (a) 1960—61. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Error variances are heterogeneous and Treatments × Years interaction is absent, hence results of individual years are presented under 5. Results.

5. RESULTS:

60(88)

(i) 450·7 Q/ha. (ii) 56·3 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Av. yield	398·5	510·6	464·0	422·0	455·2	488·9	416·0

61(99)

(i) 289·0 Q/ha. (ii) 85·8 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Av. yield	349·4	304·4	300·0	317·8	307·4	287·1	157·2

Crop :- Sugarcane. **Ref :- Bh. 60(91), 61(97).**

Site :- Sugarcane Res. Instt., Pusa. **Type :- 'C'.**

Object :—To ascertain the proper time of harvest of plant-cane for securing maximum yield of ratoon crop.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Sugarcane (plant-cane). (c) N.A. (ii) Clayey loam. (iii) Ratooning as per treatments. (iv) (a) to (c) N.A. (d) Rows 30 cm. apart. (e) —. (v) N.A. (vi) BO—38. (vii) Irrigated. (viii) Weeding by *khurpi*. (ix) and (x) N.A.

2. TREATMENTS and 3 DESIGN:

Same as Expt. No. 60(90), 61(96) on page 652.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Germination %, dead heart count, height measurement, sucrose % in juice and yield of cane. (vi) (a) 1960—61. (b) No. (c) Results of combined analysis are given under 5. Results. (v) and (vi) Nil. (vii) Error variances are homogeneous and Treatments × Years interaction is absent.

5. RESULTS:

Pooled results

(i) 251·2 Q/ha. (ii) 40·3 Q/ha. (based on 42 d.f. made up of pooled error and Treatments × Years interaction.) (iii) Treatment differences are significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Av. yield	195·0	281·6	232·2	265·0	281·4	254·1	248·8

C.D.=40·7 Q/ha.

Individual results

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7	Sig.	G.M.	S.E./plot
Year 1960	220·0	355·1	291·5	306·7	348·7	295·2	303·9	*	303·0	45·0
1961	170·0	208·1	173·0	223·4	214·0	213·0	193·7	N.S.	199·3	31·6
Pooled	195·0	281·6	232·2	265·0	281·4	254·1	248·8	*	251·2	40·3

Crop :- Sugarcane. **Ref :- Bh. 60(89), 61(98).**

Site :- Sugarcane Res. Instt., Pusa. **Type :- 'C'.**

Object :—To ascertain the proper time of harvest of plant-cane for securing maximum yield of ratoon crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sugarcane (plant-cane). (c) N.A. (ii) Clayey loam. (iii) Ratooning as per treatments. (iv) (a) to (c) N.A. (d) 30 cm. between rows. (e) —. (v) N.A. (vi) BO—32. (vii) Irrigated. (viii) Weeding by *khurpi*. (ix) and (x) N.A.

2. TREATMENTS :

Same as Expts. No. 60(90) and 61(96) on page 652.

3 DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 9·22 m.×7·31 m. (b) 9·22 m.×5·49 m. (v) 91 cm. on either side along length. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination %, tillers and dead heart count, height measurement, sucrose % in juice and yield of cane. (iv) (a) 1950—61. (b) No. (c) Results of combined analysis are given under 5. Results. (v) and (vi) Nil. (vii) Error variances are homogeneous and Treatments×Years interaction is present.

5. RESULTS :

Pooled results

(i) 285·8 Q/ha. (ii) 80·4 Q/ha. (based on 42 d.f. made up of pooled error and Treatments×Years interaction). (iii) Treatment differences are not significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Av. yield	255·3	235·9	313·2	307·4	301·1	340·7	246·8

Individual results

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7	Sig.	G.M.	S.E./plot
Year 1960	336·2	333·9	411·4	371·7	333·4	454·7	317·3	N.S.	95·3	365·5
1961	174·5	137·9	215·0	243·2	268·9	226·8	176·4	N.S.	63·4	206·0
Pooled	255·3	235·9	313·2	307·4	301·1	340·7	246·8	N.S.	80·4	285·8

Crop :- Sugarcane. **Ref :- Bh. 60(95), 61(103).**

Site :- Sugarcane Res. Instt., Pusa. **Type :- 'C'.**

Object :—To study the effect of field dryage on the yield and juice quality of Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Mung*. (c) N.A. (ii) Clayey loam. (iii) 21, 22.1.60 ; 6 to 10.2.61. (iv) (a) 3 ploughings. (b) Line sowing. (c) 32 three-budded setts/row. (d) 30 cm. between rows. (e) N.A. (v) N.A. (vi) BO—32. (vii) Irrigated. (viii) Weeding by *khurpi*. (ix) N.A. (x) As per treatments.

2. TREATMENTS :

7 dates of harvesting : T_1=Mid. Nov., T_2=Mid. Dec., T_3=Mid. Jan., T_4=Mid. Feb., T_5=Mid. March, T_6=Mid. April and T_7=Mid. May.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 9·22 m.×7·31 m. (b) 9·22 m.×5 49 m. (v) 91 cm. on either side along length. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination, tillers and dead heart count, height measurement, sucrose % in juice and yield of cane. (iv) (a) 1960—61 and 63 (variety changed in 63). (b) No. (c) Results of combined analysis are given under 5. Results. (v) and (vi) Nil. (vii) T_7 is cancelled because of some abnormality. Error variances are homogeneous and Treatments×Years interaction is absent.

5. RESULTS :

Pooled results

(i) 375·2 Q/ha. (ii) 125·9 Q/ha. (based on 35 d.f. made up of pooled error and Treatments×Years interaction). (iii) Treatment differences are highly significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	420·8	493·8	428·8	407·1	284·0	216·7

C.D.=127·7 Q/ha.

Individual results

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	Sig.	S.E./plot	G.M.
Years									
1960	380·0	411·4	321·9	393·7	307·6	246·7	N.S.	343·9	136·7
1961	460·6	576·3	535·7	420·6	260·4	186·8	**	406·6	100·2
Pooled	420·3	493·8	428·8	407·1	284·0	216·7	**	375·2	125·9

Crop :- Sugarcane. **Ref :- Bh. 60(94), 61(102).**

Site :- Sugarcane Res. Instt., Pasa. **Type :- 'C'.**

Object :—To study the effect of field dryage on the yield and juice quality of Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Mung*. (ii) Clayey loam, (iii) 21, 22.1.60 ; 6, 10.2. 61. (iv) (a) 3 ploughings. (b) Line sowing. (b) 32 three-budded setts/row. (d) 30 cm. between rows. (e) N.A. (v) N.A. (vi) BO—35. (vii) Irrigated. (viii) Weeding by *khurpi*. (ix) N.A. (x) As per treatments.

2. TREATMENTS and 3. DESIGN :

Same as expts. No. 60(95), 61(103) as noted above.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination %, tillers and dead heart count, height measurement, yield of cane and sucrose % in juice. (iv) (a) 1960—61 and 63 (variety changed in 63). (b) No. (c) Results of combined analysis are given under 5. Results. (v) and (vi) Nil. (vii) T_7 cancelled because of some abnormality. Error variances are homogeneous and Treatments × Years interaction is present.

5. RESULTS :

Pooled results

(i) 379·8 Q/ha. (ii) 182·5 Q/ha. (based on 5 d.f. made up of Treatments × Years interaction). (ii) Treatment differences are not significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	456·9	547·6	410·8	348·6	326·7	188·0

Individnal results

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	Sig.	G.M.	S.E./plot
Year									
1960	475·0	664·2	582·2	459·5	508·2	238·9	**	107·8	487 9
1961	438·9	431·0	239·7	237·7	145·3	137·1	**	82·2	271·6
Pooled	456·9	547·6	410·8	348·6	326·7	188·0	N.S.	182·5	379·8

Crop :- Sugarcane. **Ref :- 63(90), 63(91), 63(92),**

Site :- Sugarcane Res. Instt., Pusa. **Type :- 'C'.**

Object :—To study the effect of field dryage on the yield and juice quality of Sugarcane.

1. BASAL CONDITIGNS :

(i) (a) Nil. (b) *Moong*. (e) N.A. (ii) Clayey loam. (iii) 17 to 19.2.63. (iv) (a) 3 ploughings. (b) Line sowing. (c) 32 three-budded setts/row. (d) 30 cm. between rows. (e) N.A. (v) N.A. (vi) CO—658 ; CO—43 ; CO – 34. (vii) Irrigated. (viii) Weeding by *khurpi*. (ix) N.A. (x) As per treatments.

2. TREATMENTS and 3. DESIGN :

Same as expt. Nos. 60(95), 61(103) on page 655.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of cane and sucrose % in juice. (iv) (a) 1960—61 and 63 (variety changed in (63 (b) Yes. (c) Nil. (v) and (vi) Nil. (vii) Plot-wise yield data of sucrose % in juice of Sugarcane is N.A.

5. RESULTS :

63(90)

(i) 226·6 Q/ha. (ii) 48·13 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Av. yield	237·7	215·5	236·2	241·7	212·5	235·2	207·6

63(91)

(i) 363·3 Q/ha. (ii) 69·57 Q/ha. (iii) Treatmcnt differences are not significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Av. yield	368·2	397·3	360·3	340·5	353·8	361·7	361·3

63(92)

(i) 268 8 Q/ha. (ii) 40·15 Q/ha. (iii) Treatm nt differences are not significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Av. yield	260·9	240·2	267·9	298·3	282·1	274·3	258·5

Crop :- Sugarcane. **Ref :- Bh. 60(96), 61(104).**

Site :- Sugarcane Res. Instt., Pusa. **Type :- 'C'.**

Object :—To study the effect of field driage on the yield and juice quality of Sugarcane.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) *Moong*. (c) N.A. (ii) Clayey loam. (iii) 21/22.1.60; 6 to 10.2.61. (iv) (a) 3 ploughings. (b) Line sowing. (c) 32 three-budded setts/row. (d) 91 cm. between rows. (e) N.A. (v) N.A. (vi) BO—29. (vii) Irrigated. (viii) Weeding by *khurpi*. (ix) N.A. (x) As per treatments.

2. TREATMENTS :

7 times of harvesting : T_1=Mid. Nov., T_2=Mid. Dec., T_3=Mid. Jan., T_4=Mid. Feb., T_5=Mid. March, T_6=Mid. April and T_7=Mid. May.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 9 22 m.×7 31 m. (b) 9 22 m.×5 49 m. (v) 91 cm. on either side along length. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination and tillers count, height measurements and yield of cane. (iv) (a) 1960—61. (b) Yes. (c) Results of combined analysis are given under 5. results. (v) and (vi) Nil. (vii) T_7 is cancelled due to abnormal yield data. Error variances are homogeneous and Treatments×Years interaction is absent.

5. RESULTS :

Pooled results

(i) 481·9 Q/ha. (ii) 105·2 Q/ha. (based on 35 d.f. made up of pooled error and Treatments×Years interaction). (iii) Treatment differences are highly significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	644·2	516·8	547·7	503·8	376·7	302·2

C.D.=106·8 Q/ha.

Individual results

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	Sig.	G.M.	S.E./plot
Year									
1960	607 9	507·3	513 3	394·3	326·5	244·4	**	432·3	83·2
1961	680 5	526·3	582·2	613·3	427 0	360 0	*	531 5	126·0
Pooled	644 2	516·8	547 7	503·8	376·7	302·2	**	481·9	105·2

Crop :- Sugarcane. **Ref :- Bh. 60(93), 61(101).**

Site :- Sugarcane Res. Instt., Pusa. **Type :- 'C'.**

Object :—To study the effect of field driage on the yield and juice quality of Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Moong*. (c) N.A. (ii) Clayey loam. (iii) 21 to 22.1.60 ; 6 to 10.2.61. (iv) (a) 3 ploughings. (b) Line sowing. (c) 32, three-budded setts/row. (d) 91 cm. between rows. (e) N.A. (v) N.A. (vi) BO—38. (vii) Irrigated. (viii) Weeding by *khurpi*. (ix) N.A. (x) As per treatments.

2. TREATMENTS and 3. DESIGN :

Same as in Expt. No. 60(96), 61(104) on page 657.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination and tillers count, height measurements, yield of cane and juice analysis. (iv) (a) 1960 61. (b) Yes. (c) Results of combined analysis are given under 5. Results. (v) and (vi) Nil. (vii) T_7 is concelled due to abnormal yield data. Error variances are homogeneous and Treatments × Years interaction is present.

5. RESULTS :

Pooled results

(i) 400·3 Q/ha. (ii) 124·0 Q/ha (based on 5 d.f. made up of Treatments × Years interaction). (iii) Treatment differences are significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	C.D.=159·4 Q/ha.
Av. yield	457·7	531·4	426·2	448·3	285 8	252·3	

Individual results

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	Sig.	G.M.	S.E./plot
Year									
1960	419 7	506 9	354·2	508·7	255·9	227·4	**	378·8	79·0
1961	495·7	556·0	498·2	388·0	315·8	277·3	**	421·8	69·4
Pooled	457·7	531·4	426·2	448·3	285·8	252·3	*	400·3	124 0

Crop :- Sugarcane. **Ref :- Bh. 63(100), 65(8).**

Site : Sugarcane Res. Instt., Pusa. **Type :- 'C'.**

Object :—To study the effect of different methods, times and modes of planting on Sugarcane.

1. BASAL CONDITIONS :

(i) (a) N.A. ; Nil. (b) N.A. ; Wheat. (c) N.A. ; 60 Kg/ha. of N as A/S+75 Kg/ha. of P_2O_5 as Super. (ii) Light loam. (iii) As per treatments. (iv) (a) 3 to 4 ploughings with tractor. (b) As per treatments. (c) 56 two-budded setts/row. (d) 90 cm. between rows. (e) N A. ; 1 to 2. (v) 188·3 Kg/ha. of N as A/S+125·5 Kg/ha. of P_2O_5 as Super ; 168 4 Kg/ha. of N as A/S+112 Kg/ha. of P_2O_5 as Super. (vi) BO 43. (vii) Irr gated. (viii) Weeding and earthing up. (ix) N.A. (x) Jan. 65; 11, 13.1.67.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2)

(1) 2 methods of planting : P_1 = Trench planting and P_2 = Furrows planting.

(2) 3 times of planting : T_1 = End of July, T_2 = End of August and T_3 = End of September.

Sub-plot treatments :

2 modes of planting : M_1 = Through seedling and M_2 = Through two-budded setts.

3. DESIGN :

(i) Split-plot. (ii) (a) 6 main-plots/replication ; 2 sub-plots/main-plot. (b) N.A. ; 102·00 m. × 50·10 m. (iii) 3. (iv) (a) 16·70 m. × 8·40 m. (b) 16·70 m. × 6·00 m. (v) 120 cm. on eicher side along length. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination count, tillers count, height measurements and yield of cane. (iv) (a) 1963—67 (1964—N.A.) (b) Yes. (c) Nil. (v) and (vi) Nil. (vii) Since expt. is continued beyond 1965, results of individual years are presented under 5. Results.

5. RESULTS:

63(100)

(i) 582·2 Q/ha. (ii) (a) 137·3 Q/ha. (b) 85·8 Q/ha. (iii) None of the effects is significant. (iv) Av. yield of cane in Q/ha.

	P_1	P_2	T_1	T_3	T_2	Mean
M_1	590·2	586·3	665·9	591·9	507·0	588·3
M_2	594·8	558·4	679·3	516·1	533·3	576·2
Mean	592·1	572·4	672·6	554·0	520·1	582·2
T_1	677·8	667·4				
T_2	563·0	545·0				
T_3	535·6	504·6				

65(8)

(i) 192·2 Q/ha. (ii) (a) 50·1 Q/ha. (b) 30·4 Q/ha. (iii) Main effect of T is significant. (iv) Av. yield of cane in Q/ha.

	P_1	P_2	T_1	T_2	T_3	Mean
M_1	199·4	177·2	222·9	158·2	183·8	188·3
M_2	207·8	184·5	241·5	176·6	170·2	196·1
Mean	203·6	180·8	232·2	167·4	177·0	192·2
T_1	247·6	216·8				
T_2	170·8	164·0				
T_3	192·2	161·7				

C.D. for T marginal means = 64·4 Q/ha.

Crop :- Sugarcane. **Ref - Bh. 65(6).**

Site :- Sugarcane Res. Instt., Pusa. **Type :- 'C'.**

Object :—To study the effect of different times of harvesting on the yield and juice quality of *Adsali* planted cane.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) 60 Kg/ha. of N as A/S+75 Kg/ha. of P_2O_5 as Super. (ii) Light loam. (iii) 26.7.65. (iv) (a) 3—4 ploughings. (b) Transplanting. (c) 45 plants/row. (d) 91 cm. between rows. (e) N.A. (v) 168 Kg/ha. of N as A/S+112 Kg/ha. of P_2O_5 as Super. (vi) BO—17. (vii) Irrigated. (viii) Weeding, hand-hoeing and earthing up. (ix) N.A. (x) As per treatments.

2. TREATMENTS :

4 dates of harvesting : T_1=7.11.66, T_2=7.12.66, T_3=7.1.67 and T_4=9.2.67.

3. DESIGN :

(i) (a) R.B.D. (ii) (a) 4. (b) 89·82 m.×28·80 m. (iii) 6. (iv) (a) 13·72 m.×7·20 m. (b) 13·72 m.× 4·80 m. (v) 120 cm. on either side along length. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination and tillers count, height of plants, mature stalk count and yield of cane. (iv) (a) 1965—only. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 292·7 Q/ha. (ii) 62·5 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_1	T_2	T_3	T_4
Av. yield	306·7	331·2	306·6	226·5

Crop :- Sugarcane. **Ref :- Bh. 62(184).**

Site :- Sugarcane Sub-Stn., Sepaya (Saran). **Type :- 'C'.**

Object :—To study the effect of field drainage on the yield and juice quality of Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Dhaincha* (G.M.) (c) Nil. (ii) Sandy loam. (iii) 15.2.62. (iv) (a) 6 deep ploughings with cultivator. (b) Flat in furrows. (c) 60, three-budded setts/row. (d) 91 cm. between rows. (e) —. (v) G.M. (vi) BO—43 ; BO—34 ; CO—658. (vii) Unirrigated. (viii) Interculturing and earthing up (ix) 146 cm. (x) As per treatments.

2 TREATMENTS :

6 dates of harvesting : T_1=Mid November, T_2=Mid. December, T_3=Mid. January, T_4=Mid. February, T_5=Mid. March and T_6=Mid. April.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 18·44 m.×7·32 m. (b) 18·44 m.×5·49 m. (v) 91 cm. on either side along length. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination and tillers count, height of plants and yield of cane. (iv) (a) 1962—63 (Expt. for 1963 is presented separately on the next page. Crop was damaged in some of the plots in 1962). (b) No. (c) Nil. (v) Other zonal centres. (vi) Nil. (vii) Crop damaged in some plots of T_1, T_5 and T_6.

5. RESULTS:

BO—43

(i) 435·6 Q/ha. (ii) 51·4 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_2	T_3	T_4
Av. yield	452·1	447·9	406·7

BO—34

(i) 378·9 Q/ha. (ii) 28·8 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_2	T_3	T_4
Av. yield	373·5	402·1	361·1

CO—658

(i) 409·7 Q/ha. (ii) 48·3 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_2	T_3	T_4
Av. yield	431·8	403·2	394·0

Crop :- Sugarcane. **Ref :- Bh. 63(212)**

Site :- Sugarcane Sub-Stn., Sepaya (Saran). **Type :- 'C'.**

Objecb:—To study the effect of field driage one the yield and juice quality of Sugarcane.

1. BASAL CONDITIONS :

(i) (a),Nil. (b) *Dhaincha* G.M. (c) Nil. (ii) Sandy loam. (iii) 19.2.63. (iv) (a) 6 deep ploughings with 4 cultivators., (b) Flat in furrows. (c) 60, three-budded setts/row. (d) 91 cm. between rows. (e) —. (v) G.M. (vi) CO—658 ; BO—34 ; BO—50 ; BO—43. (vii) Unirrigated. (viii) Interculturing and earthing up. (ix) 146 cm. (v) As per treatments.

2. TREATMENTS:

6 dates of harvesting: T_1=Mid. November, T_2=Mid. December, T_3=Mid. January, T_4=Mid. February, T_5=Mid. March and T_6=Mid. April.

3. DESIGN:

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 18·44 m.×7·32 n. (b) 18·44 m.×5·49 m. (v) 91 cm. on either side along length. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Red rot. in CO—658. (iii) Germination and tillers count, height of plants and yield of cane. (iv) (a) 1962—63 (crop was damaged in some of the plots in 1962). (b) No. (c) Nil. (v) Other zonal centres. (vi) and (vii) Nil.

5. RESULTS :

CO—658

(i) 123·8 Q/ha. (ii) 50·8 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	115·2	176·7	131·8	106·9	1[illegible]1·2	61·1

BO—34

(i) 146·6 Q/ha. (ii) 40·1 Q/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	
Av. yild	198·6	139·6	129·5	134·1	196·1	81·8	C.D.=60·5 Q/ha.

BO—50

(i) 173·1 Q/ha. (ii) 46·3 Q/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	
Av yield	251·2	165·4	168·4	177·0	222·1	54·4	C.D.=69·7 Q/ha.

BO—43

(i) 168·5 Q/ha. (ii) 35·3 Q/ha. (iii) Treatment differences are not significant. (iv) Ax. yield of cane in Q/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	
Av. yield	198·6	183·2	191·5	210·1	122·3	105·5	C.D.= 53·0 Q/ha.

Crop :- Sugarcane. **Ref :- Bh. 60(202), 61(222),**

Site :- Sugarcane Sub-Station, Sepaya (Saran). **Type :- 'C'.**

Object :—To study the effect of field driage on the yield and juice quality of Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Green manure *Dhaincha*. (c) Nil. (ii) Sandy loam. (iii) 29.2.60 ; 25.2.61. (iv) (a) 6 deep ploughings with 4 cultivators. (b) Flat in furrows. (c) 60 three-budded setts/row. (d) 91 cm. between rows. (e) —. v) Green manure. (vi) BO—32. (vii) Unirrigated. (viii) Interculturing and earthing up. (ix) 146·05 cm. (x) As per treatments.

2. TREATMENTS :

6 times of harvesting: T_1=Mid. Nov., T_2=Mid. Dec., T_3=Mid. Jan., T_4=Mid. Feb., T_5=Mid. March and T_6=Mid. April.

3. DESIGN:

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 18·44 m.×7·32 m. (b) 18·44 m.×5·49 m. (v) 91 cm on either side. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Red rot. (iii) Germination and tillers count, height of plants, mature stalk count, yield of cane. (iv) (a) 1960—61. (b) No. (c) Results of combined anlysis are given under 5. Results. (v) Other zonal centres. (vi) Nil. (vii) Error variances are heterogeneous and Treatments×Years interaction is present.

5. RESULTS :

Pooled results

(i) 484·3 Q/ha. (ii) 162·8 Q/ha. (based on 5 d.f. made up of Treatments×Years interaction). (iii) Treatment differences are not significant. (iv· Av. yield of cane in Q/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	535·2	531·0	501·4	489·6	436·1	412·2

Individual results

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	Sig.	G.M.	S.E./plot
Year 1960	347·3	362·2	365·2	391·7	350·3	379 8	N.S.	366·1	115·8
1961	723·1	699 8	637·6	587·4	521·9	444·7	**	602·4	65·8
Pooled	535 2	531·0	501·4	489 6	436·1	412·2	N.S.	484·3	162·8

Crop :- Sugarcane. **Ref :- Bh. 60(1001), 61(1001).**

Site .- Sugarcane Sub-Stn., Sepaya (Saran). **Type :- 'C'.**

Object :—To study the effect of field driage on the yield and juice quality of Sugarcane.

1. BASAL CONDITIONS :

(i) to (v) and (vii) to (x): same as in Expt. No. 60(202), 61(222) on page 662 (vi) BO—38.

2. TREATMENTS and 3. DESIGN :

Same as in Expt. No. 60(202), 61(222) on page 662.

4. GENERAL :

(i) Good. (ii) Red rot. (iii) Germination and tillers count, height of plants, mature stalk count and yield of cane. (iv) (a) 1960—61. (b) No. (c) Results of combined analysis are given under 5. Results. (v) Other zonal centres. (vi) Nil. (vii) Error variances are homogeneous and Treatments × Years interaction is absent.

5. RESULTS :

Pooled results

(i) 387·2 Q/ha. (ii) 29·0 Q/ha. (based on 35 d.f. made up of pooled error and Treatments × Years interaction). (iii) Treatment differences are not significant. (iv) Av. yield of cane Q/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	395·7	418·8	451·2	391·3	363·9	302·0

Individual results

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	Sig	G.M.	S.E./plot
Year 1960	438 9	363·9	498·2	412·5	420·5	345·6	N.S.	102 4	413·3
1961	352·6	473·7	404·2	370·1	307·4	258·5	**	67·7	361·1
Pooled	395·7	418·8	451·2	391·3	363·9	302·0	N.S.	29·0	387·2

Crop :- Sugarcane. **Ref :- Bh. 60(1002), 61(1002).**

Site :- Sugarcane Sub-Stn., Sepaya (Saran). **Type : 'C'.**

Object :—To study the effect of field driage on the yield and juice quality of Sugarcane.

1. BASAL CONDITIONS :

(i) to (v) and (vii) to (x) Same as in expt. no. 60(202), 61(222) on page 662. (xi) BO—35.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 60(202), 61(222) on page 662.

4. GENERAL :

(i) Good. (ii) Red rot.(iii) Germination and tillers count, height of plants, mature stalk count and yield of cane. (iv) (a) 1960—61. (b) No. (c) Results of combined analysis are given under 5. Results. (v) Other zonal centres. (vi) Nil. (vii) Error variances are homogeneous and Treatments × Years interaction is present.

5. RESULTS :

Pooled results

(i) 448·4 Q/ha. (ii) 119·9 Q/ha. (based on 5 d.f. made up of Treatments × Years interaction). (iii) Treatment differences are not significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	524·9	461·2	458·1	527·0	411·8	307·6

Inidvidual results

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	Sig.	G.M.	S.E./plot
Year									
1960	482·8	421 0	397·0	484·6	407·9	362·9	N.S.	426·0	64·0
1961	567·1	501·4	519·2	569·4	415·7	252·3	**	470·8	58·4
Pooled	524·9	461·2	458·1	527·0	411·8	307·6	N.S.	448·4	119·9

Crop :- Sugarcane. **Ref :- Bh. 60(210).**

Site :- Sugar Factory Farm, Motipur (Mazaffarpur c.f.). **Type 'C'.**

Object :—To study the effect of different times of harvesting on the yield and juice quality of Sugarcane.

1. BASAL CONDITIONS :

(i) (a) G.M.—Sugarcane—Sugarcane (Ratoon). (b) and (c) G.M. (ii) Sandy loam alkaline patches. (iii) 67 2 Kg/ha. of N as A/S+84 Kg/ha. of P_2O_5 as Super. (iv) BO—29, BO—32, BO - 35, BO—38. (v) (a) 1 disc ploughing, 2 disc harrowings. (b) Furrows method fallowed by planking. (c) 35584 three-budded setts/ha. (d) 91 cm. between rows. (e) Nil. (vi) 11, 13.11.59. (vii) Irrigated. (viii) Intercul turing with *deshi* plough. (ix) 130 cm. (x) As per treatments.

2. TREATMENTS :

7 times of harvesting : T_1 = Mid. Nov. '60, T_2 = Mid. Dec. '60, T_3 = Mid. Jan. '61, T_4 = Mid. March '61, T_5 = Mid April '61 and T_7 = Mid May '61.

3. DESIGN :

(i) R B.D. 7 plots/replication and 3 replications. (ii) N.A. (iii) (a) 18·44 m. × 7·32 m. (b) 18 44 m. × 5 49 m. (iv) Yes.

4. GENERAL ;

(i) Normal. (ii) Nil. (iii) Yield of cane. (iv) (a) 1959–62. (b) No. (c) Nil. (v) Pusa, Lalgarh and Pandaul. (vi) Nil. (vii) Treatment T_7 is not considered in 60(210), variety changed in 1961 and treatments are modified in 1962 ; hence the individual expt. is presented. Also separate expt. is conducted on each variety.

5. RESULTS:

BO—29

(i) 518·6 Q/ha. (ii) 88·2 Q/ha. (iii) Treatment differences are significant. (iv) Av. yield of of cane in Q/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	
Av. yield	607·5	609·1	592·7	535·1	421·8	345·7	C.D.=160·4 Q/ha.

BO—32

(i) 586·0 Q/ha. (ii) 152·4 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	591·0	617·0	590·4	733·3	510·4	474·1

BO—35

(i) 606·8 Q/ha. (ii) 114·0 Q/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	
Av. yield	782·3	771·1	628·6	627·9	440·6	390·2	C.D.=207·4 Q/ha.

BO—38

(i) 530·2 Q/ha. (ii) 101·1 Q/ha. (iii) Treatment differences are significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	
Av. yield	719·8	552·2	559·8	415·5	539·0	395·1	C.D.=183·9 Q/ha.

Crop :- Sugarcane. **Ref :- Bh. 60(211).**

Site :- Sugar Factory Farm, Motipur (Muzaffarpur c.f.). **Type :- 'C'.**

Object :—To study the effect of different times of harvesting on the yield and juice quality of Sugarcane.

1. BASAL CONDITIONS:

(i) (a) G.M.—Sugarcane—Sugarcane (Ratoon). (b) G.M. (c) G.M. (ii) Sandy loam. (iii) 67·2 Kg/ha. of N as A/S+84·1 Kg/ha. of P_2O_5 as Super. (iv) BO—29, BO—32, BO—32, BO—38. (v) (a) 1 disc ploughing and 2 disc harrowing followed by planking. (b) Furrows method. (c) 35584 three-budded setts/ha. (d) 91 cm. between rows. (e) Nil. (vi) 10.11.60. (vii) Irrigated. (viii) 2 interculturings. (ix) 144 cm. (x) As per treatments.

2. TREATMENTS and 3. DESIGN:

Same as in Expt. No. 60(210) on page 664.

4. GENERAL:

(i) Normal. (ii) Nil. (iii) Germination and tillers count, height of plants and yield of cane. (iv) (a) 1959—62. (b) No. (c) Nil. (v) Lalgarh and Pandual. (vi) Nil. (vii) Treatment T_7 is not considered in 60(210), variety changed in 61 and treatments are modified in 1962; hehce the individual expt. is presented. Also separate expt. is conducted on each variety.

5. RESULTS:

BO - 29.

(i) 278·5 Q/ha. (ii) 72·7 Q/ha. (iii) Treatment differences are significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7	
Av. yield	248·6	280·9	469·9	373·4	225·9	175·8	175·2	C.D.=129·3 Q/ha.

BO—32

(i) 326·7 Q/ha. (ii) 78 5 Q/ha. (iii) Treatment differences are significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7	
Av.yield	251·2	417·8	403·3	347·0	376·7	183·4	307 5	C.D.= 139 6 Q/ha.

BO—35

(i) 460·5 Q/ha. (ii) 86·3 Q/ha. (iii) Treatment differences are highly sign'ficant. (iv) Av. yield of cane in Q/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7	
Av. yield	503·5	659·3	540·4	679·4	330·0	264 8	246·3	C.D.=153·5 Qha.

BO—38

(i) 348·9 Q/ha. (ii) 82·7 Q/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7	
Av yield	670·7	272·3	436·3	222·9	349·0	260·1	231·1	C.D.=147 1 Q/ha.

———

Crop :- Sugarcane. **Ref :- Bh. 61(231)**

Site :- Motipur Sugar Factory Farm, Motipur (Muzaffarpur c.f.) **Type :- 'C'.**

Object: —To study the effect of different times of harvest ng on the yield and juice quality of Sugarcane.

1. BASAL CONDITIONS :

(i) (a) G.M.—Sugarcane—Sugarcane (Ratoon). (b) and (c) G.M. (ii) Sandy loam with alkaline patches. (iii) 67 2 Kg/ha of N as A/S+84·1 Kg/ha. of P_2O_5 as Super. (iv) BO—34 ; BO—43 ; BO—50 ; CO—658. (v) (a) 1 ploughing, 2 harrowings followed by planking. (b) Furrows method. (c) 35584 three-budded setts/ha. (d) 91 cm between rows. (e) Nil. (vi) 17.11.61. (vii) Irrigated. (viii) Interculturing and earthing. (ix) 125 cm. (x) As per treatments.

2 TREATMENTS :

7 times of harvesting : T_1=Mid. Nov., T_2=Mid. Dec., T_3=Mid. Jan., T_4=Mid. Feb., T_5=Mid. March, T_6=Mid April and T_7=Mid May.

3. DESIGN :

(i) R B D ; 7 plots/block and 4 replications. (ii) N.A. (iii) (a) 18·44 m.×7·32 m. (b) 18 44 m.×5 49 m. (vi) Yes.

4. GENERAL

(i) Normal. (ii) Nil. (iii) Yield of cane. (iv) (a) 1959—62 (variety changed in 61 and Trs. are m odified in 62). (b) No. (c) Nil. (v) N.A. (vi) Nil. (vii) Treatments T_1, T_5, T_6 and T_7 are failed. Also separate expt. is conducted on each variety.

5. RESULTS :

BO—34

(i) 189·3 Q/ha. (ii) 56·09 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_2	T_3	T_4
Av. yield	217·3	225·2	125·4

BO—43

(i) 266 0 Q/ha. (ii) 91·10 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_2	T_3	T_4
Av. yield	301·0	260·8	236·1

BO—50

(i) 345·4 Q/ha. (ii) 58·93 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_2	T_3	T_4
Av. yield	313·6	342·0	380·5

CO—658

(i) 338·6 Q/ha. (ii) 70·00 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_2	T_3	T_4
Av. yield	372·5	331·2	362·3

Crop :- Sugarcane. **Ref :- Bh. 62(189).**

Site :- Sugar Factory Farm, Motipur (Muzaffarpur c.f.) **Type :- 'C'.**

Object :—To study the effect of different times of harvesting on the yield and juice quality of Sugarcane.

1. BASAL CONDITIONS :

(i) (a) G.M.—Sugarcane—Sugarcane (Ratoon). (b) and (c) G.M. (ii) Sandy loam. (iii) 67·2 Q/ha. of N as A/S+84·1 Kg/ha. of P_2O_2 as Super. (iv) BO—34, BO—43, BO—50, CO—658. (v) (a) 1 ploughing, 2 harrowings followed by planking. (b) Furrows method. (c) 35584 three-budded setts/ha. (d) 91 cm. between rows. (e) Nil. (vi) 25.11.62. (vii) Irrigated. (viii) Interculturing and earthing. (ix) 133 cm. (x) As per treatments.

2. TREATMENTS :

5 times of harvesting : T_1=Mid. Nov. '63, T_2=Mid Dec. '63, T_3=Mid. Jan. '64, T_4=Mid. Feb. '64 and T_5=Mid. March '64.

3. DESIGN :

(i) R.B.D., ; 5 plots/block ; 4 replications. (ii) N.A. (iii) (a) and (b) 9·22 m. × 5·49 m. (vi) Yes.

4. GENERAL:

(i) Satisfactory. (ii) Nil. (iii) Yield of cane. (iv) (a) 1959—62. (b) No. (c) Nil. (v) Lalgarh and Pandaul. (vi) Nil. (vii) Treatments are modified in 62. Also separate expt. are conducted on each variety.

5. RESULTS :

BO—34

(i) 944·0 Q/ha. (ii) 91·31 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_1	T_2	T_3	T_4	T_5
Av. yield	926·0	985·3	814·4	1020	974·0

BO—43

(i) 1050 Q/ha. (ii) 102·5 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of cane in Q/ha

Treatment	T_1	T_2	T_3	T_4	T_5
Av. yield	1074	1043	1003	1115	1018

BO—50

(i) 1118 Q/ha. (ii) 112·7 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_1	T_2	T_3	T_4	T_5
Av. yield	1111	1102	1083	1169	1125

CO—658

(i) 804·4 Q/ha. (ii) 83·84 Q/ha. (iii) Treatmnt differences are not significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_1	T_2	T_3	T_4	T_5
Av. yield	842·6	752·7	780·3	913·7	732·4

Crop :- Sugarcane. **Ref :- Bh. 60(212).**

Site :- Zonal Centre (S.R.I., Pusa), Motipur (Muzaffarpar). **Type :- 'CV'.**

Object :—To study the performance of some promising cane varieties under *Adsali* planting with different spacings.

1. BASAL CONDITIONS ;

(i) (a) G.M.—Sugarcane—Sugarcane. (b) G.M. (c) G.M. (ii) Sandy loam. (iii) 5.7.60. (iv) (a) Disc ploughing, disc harrowing followed by planking. (b) French method. (c) 35584 three budded setts/ha. (d) As per treatments. (e) Nil. (v) G.M. (vi) As per treatments. (vii) Irrigated. (viii) Five interculturing and one earthing up. (ix) 14·4 cm. (x) 4 to 16.1.62.

2. TREATMENTS :

Main-plot treatments

All combinations of (1) and (2)

(1) 2 row spacings : S_1 = 106 and S_2 = 122 cm.

(2) 2 plant spacings : P_1 = 31 and P_2 = 45 cm.

Sub-plot treatments

4 varieties : V_1 = BO—14, V_2 = BO—17, V_3 = BO—34 and V_4 = CO—419.

3 DESIGN :

(i) Split-plot. (ii) 4 main-plots/replication ; 4 sub-plots/main-plot. (b) 135·32 m. × 43·28 m. (iii) 3. (iv) 10·97 m. × 10·67 m. for S_1 ; 10·97 m. × 10·97 m. for S_2. (b) 10·97 m. × 8·53 m. (v) 107 cm. for S_1 and 122 cm. for S_2 on either side along length. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Germination and tillers count, height of plants, mature stalk count and yield of cane. (iv) (a) 1960–62 (modified and site changed in 61). (b) No. (c) Nil. (v) Pusa. (vi) and (vii) Nil.

5. RESULTS :

(i) 890 6 Q/ha. (ii) (a) 187·7 Q/ha. (b) 126·5 Q/ha. (iii) Main effect of V alone is significant. (iv) Av. yield of cane in Q/ha.

	S_1	S_2	V_1	V_2	V_3	V_4	Mean
P_1	876·4	848·3	948·1	921·4	813·4	766·6	862·4
P_2	894·8	942·9	1009·4	1108·2	766·0	791·9	918·9
Mean	835·6	895·6	978·7	1014·8	789·7	779·2	890·6
V_1	935·3	1022·2					
V_2	994·4	1035·2					
V_3	800·1	779·4					
V_4	812·7	745·8					

C.D. for V marginal means=106·5 Q/ha.

Crop :- Sugarcane (*Annual*). **Ref :- Bh. 61(232).**

Site :- Sugar Factory Farm (S.R.I., Pusa), Motipur (Muzaffarpur c.f.). **Type :- 'CV'.**

Object :—To study the performance of some promising Sugarcane varieties under *Adsal* planting with different spacings.

1. BASAL CONDITIONS :

(i) (a) G.M.– Sugarcane–Sugarcane. (b) and (c) G.M. (ii) Sandy loam. (iii) 276·7 Q/ha. of Compost. (iv) As per treatments. (v) (a) One ploughing, 2 harrowings followed by planking. (b) Trench method. (c) 35584 three-budded setts/ha. (d) As per treatments. (e) Nil. (vi) 16.8.61. (vii) Irrigated. (viii) Weeding, hoeing and earthing. (ix) 125 cm. (x) 31.12.62 to 4.1.63.

2. TREATMENTS :

Main-plot treatments

All combinations of (1) and (2)

(1) 2 row spacings: S_1=107 and S_2=122 cm.

(2) 2 spacings between plants : P_1=30 and P_2=46 cm.

Sub-plot treatments

3 varieties: V_1=BO—11, V_2=BO—17 and V_3=BO—32.

3. DESIGN :

(i) Split-plot ; 4 main-plots/replication and 3 sub-plots/main-plot ; 3 replications. (ii) N.A. (iii) (a) 10·97 m. ×10·67 m. for S_1 ; 10·97 m.×10·97 m. for S_2 (b) 10·97 m.×8·53 m. (iv) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Yield of cane. (iv) (a) 1960–62 (further modified in 1962). (b) No. (c) Nil. (v) S.R.I., Pusa. (vi) and (vii) Nil.

5. RESULTS :

(i) 935·2 Q/ha. (ii) (a) 76·23 Q/ha. (b) 60·07 Q/ha. (iii) The interaction P×V is significant. (iv) Av. yield of cane in Q/ha.

	S_1	S_2	V_1	V_2	V_3	Mean
P_1	917·0	925·7	874·2	949·0	941·0	921 4
P_2	930·6	971·5	987·1	938·6	927 4	951·0
Mean	923·8	948·6	930 6	943·8	934·2	936·2
V_1	915·5	945·8				
V_2	919·1	968·6				
V_3	936 9	931·5				

C.D. for V means at the same level of P=73·52 Q/ha.

C.D. for P means at the same level of V=88·31 Q/ha.

Crop :- Sugarcane. **Ref :- Bh. 62(190).**

Site :- Sugar Factory Farm (S.R.I., Pusa), Motipur (Muzaffarpur c.f). **Type :- 'CV'.**

Object :—To study the performance of some promising varieties of sugarcane under *Adsali* planting with different spacings.

1. BASAL CONDITIONS :

(i)(a) G.M.—Sugnrcane—Sugarcane. (b) and (c) G.M. (ii) Sandy loam with alkaline patches. (iii) 368·9 Q/ha. of Compost. (iv) As per treatments. (v) (a) One ploughing, 2 harrowings followed by planking. (b) Trench method. (c) 35584 three-budded setts/ha. (d) As per treatments. (e) Nil. (vi) 24.8.62. (vii) Irrigated. (viii) 2 interculturings. (ix) 125 cm. (x) 4 to 12.1.64.

2. TREATMENTS :

Main-plot treatments

All combinations of (1) and (2)

(1) 2 row spacings : S_1=107 and S_2=122 cm.

(2) 2 plant spacings : P_1=30 and P_2=46 cm.

Sub-plot treatments

5 varieties : V_1=BO—14, V_2=BO—17, V_3=BO—29, V_4=BO—34 and V_5=BO—43.

3. DESIGN :

(i) Split-plot ; 4 main-plots/replication, 5 sub-plots/main-plot; 3 replications. (ii) N.A. (iii) (a) 10·97 m. ×10·57 m. for S_1 and 10 97 m.×10·97 m. for S_2. (b) 10 97 m.×8·53 m. (iv) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of cane. (iv) (a) 1960—62 (modified in 62). (b) No. (c) Nil. (v) Pusa. (vi) and (vii) Nil.

5. RESULTS :

(i) 1132 Q/ha. (ii) (a) 105·5 Q/ha. (b) 80·8 Qha. (iii) Main effect of V alone is highly significant. (iv) Av. yield of cane in Q/ha.

	S_1	S_2	V_1	V_2	V_3	V_4	V_5	Mean
P_1	1115	1099	1025	1045	1211	1024	1231	1107
P_2	1209	1104	1163	1092	1276	1045	1206	1156
Mean	1622	1101	1094	1068	1244	1035	1218	1132
V_1	1116	1072						
V_2	1084	1053						
V_3	1283	1204						
V_4	1057	1012						
V_5	1271	1165						

C.D. for V marginal means=67·15 Q/haa.

Crop :- Sugarcane. **Ref :- Bh. 60(207), 61(226), 62(188).**

Site :- Kamta Rajpur Farm, Zonal Centre, (SRI, Pusa) Narkatiaganj (Champaran), **Type :- 'CV'.**

Object :—To study the performance of some promising varieties of Sugarcane under *Adsali* planting.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Green Manures. (c) Nil. (ii) Sandy and clayey loam. (iii) BO 14—10.7.60 ; 7.7.61 ; 16 8.62 ; BO 17—1.7.60 ; 10.7.61 ; 19.8 62 ; BO 32—11.7.60 ; 31.7.61 ; 21 8.62 ; BO 34—30.6.60 ; 23.7.61 ; 26.8.62 ; CO 419—26.7.60 ; 9.7.61 ; 1.9.62. (iv) (a) 8 ploughings, 6 harrowings and 3 plankings. (b) Furrows method ; Trench method (61—62). (c) 46 Q/ha. (three-budded setts). (d) As per treatments. (e) One. (v) N as A/S at 89·7 Kg/ha.+N as C-cal. at 45 Kg/ha.+P_2O_5 as Super at 1·35 Kg/ha. (vi) As per treatments. (vii) Irrigated. (viii) Weedings. (ix) 146·9 cm. ; 195·2 cm. ; 197·7 cm. (x) 17 to 19.12.61 ; 9 to 12.1.63 ; 9 to 14.1.64.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2)

(1) 2 row spacings : S_1=106·68 and S_2=121·92 cm.

(2) 2 plant spacings: P_1=30·48 and P_2=45·72 cm.

Sub-plot treatments :

5 varieties : V_1=BO 14, V_2=BO 17, V_3=BO 32, V_4=BO 34 and V_5=CO 419.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication, 5 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 10·97 m × 10·67 m. (b) 10·97 m. × 8·93 m. (v) 122 cm. on either side. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Germination and tillers count, height of plants, mature stalk count and yield of cane. (iv) (a) 1960—62. (b) No. (c) Nil. (v) Other zonal centres. (vi) Nil ; sometimes draught and heavy rains in 1961 and 62. (vii) Error variances for main and sub-plot treatments are homogeneous and Treatments × Years interaction is absent in both the cases.

5. **RESULTS:**

Pooled results

(i) 1569 Q/ha. (ii) (a) 122 9 Q/ha. (based on 24 d.f. made up of pooled error and Treatments × Years interaction). (b) 161·4 Q ha. (based on 128 d f. made up of pooled error and Treatments × Years interaction). (iii) None of the effects is significant. (iv) Av. yield of cane in Q/ha.

	S_1	S_2	V_1	V_2	V_3	V_4	V_5	Mean
P_1	1525	1559	1500	1620	1505	1584	1473	1542
P_2	1613	1579	1669	1570	1573	1589	1579	1596
Mean	1569	1569	1585	1610	1539	1587	1526	1569
V_1	1552	1618						
V_2	1612	1608						
V_3	1577	1501						
V_4	1587	1586						
V_5	1519	1533						

Individual results

Treatment	P_1	P_2	Sig.	V_1	V_2	V_3	V_4	V_5	Sig.
Year									
1960	817	937	*	1007	953	817	936	672	N.S.
1961	1909	1881	N.S.	1888	1912	1809	1929	1937	N.S.
1962	1901	1971	*	1860	1965	1991	1895	1969	N.S.
Pooled	1542	1596	N.S.	1585	1610	1539	1587	1526	N.S

G.M.	S.E./plot	
	Main-plot	Sub-plot
877	15·7	189·9
1895	109·3	160·5
1935	100·9	148·0
1569	122·9	161·4

Crop :- Sugarcane. **Ref :- Bh. 60(168).**

Site :- Zonal Centre (S R.I., Pusa), Pandaul. **Type :- 'CM'.**

Object :—To study the effect of field driage on the yield and juice quality of cane.

1. BASAL CONDITIONS :

(i) (a) Wheat—*Sanai*—Sugarcane. (b) Wheat. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Alkaline patches. (iii) 21 to 24.11.59. (iv) (a) 2 deep ploughings, 4 harrowings (b) Ridge methods. (c) 60 0 Q/ha. (three-budded setts). (d) 91 cm. between rows. (e) N A. (v) 67·2 Kg/ha of N as A/S+84 1 Kg/ha. of P_2O_5 as Super. (vi) As per treatments. (vii) Unirrigated. (viii) Weeding. (ix) 81 cm. (x) As per treatments.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 varieties : V_1=BO—29 and V_2=BO—32.

(2) 6 times of harvest : H_1=Mid Nov., H_2=Mid Dec., H_3=Mid Jan., H_4=Mid Feb., H_5=Mid March and H_6=Mid April.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. (b) 18·44 m.×51·21 m. (iii) 4. (iv) (a) 18·44 m.×7·32 m. (b) 18·44 m.×5·49 m. (v) 91 cm. on either side along length. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Garmination and tillers count, height of plants and yield of cane. (iv) (a) 1959—60 (b) No. (c) Nil. (v) Lalgarh and Pusa. (vi) and (vii) Nil.

5. RESULTS :

(i) 492·1 Q/ha. (ii) 69·4 Q/ha. (iii) Main effect of V alone is significant. (iv) Av. yield of cane in Q/ha.

	H_1	H_2	H_3	H_4	H_5	H_6	Mean
V_1	511·3	448·4	484·6	411·3	521·9	442·4	470·0
V_2	550·0	540·8	533·9	492·9	509·7	458·1	514·2
Mean	530·7	494·6	509·2	452·1	515·8	450·2	492·1

C.D. for V marginal means=40·8 Q/ha.

Crop :- Sugarcane. **Ref :- Bh. 64(229).**

Site :- Zonal Centre (SRI, Pusa), Pandaul. **Type :- 'CV'.**

Object :—To study the effect of different times of harvesting on the yield and juice quality of cane.

1. BASAL CONDITIONS :

(i) (a) Wheat –*Sanai*—Sugarcane. (b) G.M. (c) Nil. (ii) Sandy loam. (iii) 8.2.64. (iv) (a) Two deep ploughings and 4 harrowings. (b) Ridge method. (c) 41·5 Q/ha. (d) 91 cm. between rows. (e) 64 three-budded setts/row. (v) 67·2 Kg/ha. of N as A/S+84·1 Kg/ha. of P_2O_5 as Super. (vi) As per treatments. (vii) Unirrigated. (viii) Weeding and earthing. (ix) 112 cm. (x) As per treatments.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 varieties : V_1=BO—34, V_2=BO—43, V_3=BO—50 and V_4=CO—658.

(2) 5 times of harvesting: H_1=Mid Nov., H_2=Mid Dec., H_3=Mid. Jan., H_4=Mid Feb. and H_5=Mid March.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 20. (b) 36·60 m.×73·80 m. (iii) 4. (iv) (a) 18·44 m.×7·32 m. (b) 18·44 m.×5·49 m. (v) 91 cm. on either side along length. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination and tillers count, height of plants and yield of cane. (iv) (a) No. (b) and (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 389·3 Q/ha. (ii) 55·2 Q/ha. (iii) Main effects of V and H are highly significant. (iv) Av. yield of cane in Q/ha.

	H_1	H_2	H_3	H_4	H_5	Mean
V_1	365·2	407·9	385·0	376·6	368·7	380·7
V_2	380·3	406·0	299·8	326·0	307·4	343·9
V_3	488·5	509·2	515·6	396·4	432·2	468·4
V_4	391·4	391·7	396·6	335·8	306·2	364·3
Mean	406·4	428·7	399·2	358·7	353·6	389·3

C.D. for V marginal means=35·2 Q/ha.

C.D. for H marginal means=39·4 Q/ha.

Crop :- Sugarcane. **Ref Bh. 60(171), 61(188).**

Site :- Sugarcane Res. Instt., Pusa. **Type :- 'CV'.**

Object :—To study the performance of some promising cane varieties under *Adsali* condition.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Wheat. (c) 45 Kg/ha. of N as A/S+56·5 Kg/ha. of P_2O_5 as Super. (ii) Light loam. (iii) 21 to 23.8.60 ; 12/13.8.61. (iv) (a) One ploughing with tractor. (b) Line sowing in trenches. (c) 40·5 Q/ha. (three-budded setts). (d) As per treatments. (e) One sprout/hole. (v) 89·7 Kg/ha. of N as A/S+112·1 Kg/ha. of P_2O_5 as Super +45 Kg/ha. of N as Castor cake+Compost at 84·40 Q/ha. (vi) As per treatments. (vii) Irrigated. (vii) Weeding and earthing up. (ix) N.A. (x) 20.12.61 to 16.1.62; 8.2.63.

2. TREATMENTS:

Main-plot treatments :

All combinations of (1) and (2)

(1) 2 spacings between rows : S_1=107 and S_2=122 cm.

(2) 2 spacings between plants : P_1=30 and P_2=46 cm.

Sub-plot treatments :

5 varieties: V_1=BO—14, V_2=BO—17, V_3=BO—32, V_4=BO—34 and V_5=CO—419.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication. 5 sub-plots/main-plot. (b) 25·62 m.×108·22 m. (iii) 3. (iv) (a) 10·97 m.×10·67 m. (b) 10·97 m.×7·62 m. (v) 152 cm. on either side along length. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Tillers count, height of plants, mature stalk count and yield of cane. (iv) (a) 1960-62 (modified in 62). (b) No. (c) Nil. (v) No. (vi) Nil. (vii) Variety CO—419 was completely damaged due to red-rot in expt. 61(188). Hence the expt. is not pooled.

5. RESULTS :

60(171)

(i) 1258·1 Q/ha. (ii) (a) 117·1 Q/ha. (b) 49·2 Q/ha. (iii) Main effect of V and interaction P×V are highly significant and main effect of P is significant. (iv) Av. yield of cane in Q/ha.

	S_1	S_2
P_1	1313·7	1282·4
P_2	1229·5	1206·7
Mean	1271·6	1244·5
V_1	1553·6	1546·2
V_2	1085·2	1046·7
V_3	1464·3	1427 6
V_4	1324·7	1312 9
V_5	930·1	889·2

V_1	V_2	V_3	V_4	V_5	Mean
1568·3	1090·8	1489·6	1330·7	1010·9	1298·1
1531·4	1041·2	1402·2	1306·9	808·5	1218·1
1549·9	1066·0	1445 9	1318·8	909·7	1258.1

C.D. for P marginal means=73·9 Q/ha.
C.D. for V marginal means=41·0 Q/ha.
C.D. for V means at the same level of P=57·9 Q/ha.
C.D. for P means at the same level of V=90·0 Q/ha.

61(188)

(i) 665·2 Q/ha. (ii) (a) 135·6 Q/ha. (b) 217·6 Q/ha. (iii) Interaction P×V is highly significant. Main effects of P and V and interaction S×V are significant. (iv) Av. yield of cane in Q/ha.

	S_1	S_2
P_1	608·2	622·3
P_2	765·2	665·0
Mean	686·7	643·7
V_1	740 1	649 8
V_2	499·6	812·7
V_3	611·3	411·7
V_4	895·8	700 4

V_1	V_2	V_3	V_4	Mean
423·1	729 1	492·9	815·9	615·2
966·8	583·2	530·1	780·4	715·1
694·9	656·2	511·5	798·1	665·2

C.D. for P marginal means=95·7 Q/ha.
C.D. for V marginal means=183·3 Q/ha.
C.D. for V means at the same level of P or S=259·2 Q/ha.
C.D. for P or S means at the same level of V=265·9 Q/ha.

Crop :- Sugarcane. **Ref :- Bh. 62(156).**

Site :- Sugarcane Res. Instt., Pusa; **Type :- 'CV'.**

Object :—To study the performance of some promising cane varieties under *Adsali* condition.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) 45 Kg/ha. of N as A/S+56·5 Kg/ha. of P_2O_5 as Super. (ii) Light loam. (iii) 18/19.8.62. (iv) (a) One ploughing with tractor. (b) Line sowing in trenches. (c) 40·5 Q/ha. (three-budded setts). (d) As per treatments. (e) 1. (v) 89·7 Kg/ha. of N as A/S and Urea+112·1 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of N as Castor cake+84·6 Q/ha. of Compost applied in trenches a fortnight before transplanting. (vi) As per treatments. (vii) Irrigated. (viii) Weeding and earthing up. (ix) N.A. (x) 26.2.64 to 2.3.64.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2)

(1) 2 spacings between rows : S_1=107 and S_2=122 cm.
(2) 2 spacings between plants : P_1=30 and P_2=46 cm.

Sub-plot treatments :

5 varieties : V_1=30—14, V_2=BO—17, V_3=BO—43, V_4=BO—34 and V_5=CO—775.

3. DESIGN:

(i) Split-plot. (ii) (a) 4 main-plots/replication, and 5 sub-plots/main-plot. (b) 25·62 m.×108·2 ? m. (iii) 3. (iv) (a) 10·97 m.×10·67 m. (b) 10·97 m.×7·62 m. (v) 152 cm. on either side along length. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Wilt disease in CO—775 was noticed. (iii) Germination and tillers count, height of plants, mature stalk count and yield of cane. (iv) (a) 1960—62 (modified in 62). (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 909·4 Q/ha. (ii) (a) 138·7 Q/ha. (b) 145·4 Q/ha. (iii) Main effect of V alone is highly significant. (iv) Av. yield of cane in Q/ha.

	S_1	S_2	V_1	V_2	V_3	V_4	V_5	Mean
P_1	961·9	898·6	950·4	946·3	992·3	930·9	831·4	930·3
P_2	858·2	919·0	961·8	936·5	1030·2	764·8	749·7	888 6
Mean	910·1	908·8	956·1	941·4	1011·3	847·9	790·6	909·4
V_1	937·4	974·7						
V_2	885·5	997·3						
V_3	1072 3	950·2						
V_4	855·9	839·8						
V_5	799·2	782·0						

C.D. for V marginal means=120·85 Q/ha.

Crop :- Sugarcane. **Ref :- Bh. 61(223).**

Site :- Sugarcane Sub-Stn., Sepaya (Saran). **Type :- 'CV'.**

Object :—To study the performance of some promising varieties of Sugarcane uner *Adsali* planting.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) G.M. (*Dhaincha*). (c) Nil. (ii) Sandy loam. (iii) 1.8.61. (iv) (a) 6 deep ploughings, (b) Transplanted in trenches. (c) 36 setts in trenches. (d) As per treatments. (e) 1. (v) 185 Q/ha. of Compost. (vi) As per treatments. (vii) Irrigated. (viii) Weedings. (ix) 123 cm. (x) 29.1.63.

2. TREATMENTS :

Main-plot treatments

All combinations of (1) and (2)

(1) 2 row spacings : S_1=107 and S_2=122 cm.
(2) 2 plant spacings : P_1=30 and P_2=46 cm.

Sub-plot treatments

5 varieties : V_1=BO—14, V_2=BO—17, V_3=BO—32, V_4=BO—34 and V_5=CO—419.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 5 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) 10·97 m.× 10·67 m. for S_1, 10·97 m.×10·97 m. for S_2. (b) 10·97 m.×8·53 m. (v) 107 cm. for S_1 and 122 cm. for S_2. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination and tillers count, height of plants, mature stalk count and yield of cane. (iv) (a) No. (b) and (c) Nil. (v) Motipur. (vi) Nil. (vii) V_5 could not be transplanted as it was not available.

5. RESULTS :

(i) 715·5 Q/ha. (ii) (a) 234·3 Q/ha, (b) 113·1 Q/ha. (iii) Main effect of S is significant and that of V is highly significant. (iv) Av. yield of cane in Q/ha.

	S_1	S_2	V_1	V_2	V_3	V_4	Mean
P_1	829·3	690·5	792·9	674·8	957·7	614·6	759·2
P_2	749·4	592·7	798·7	635·0	715·1	535·3	671·1
Mean	749·4	641·6	795·8	654·9	836·3	575·0	715·5
V_1	855·9	735·8					
V_2	723·6	586·2					
V_3	944·2	728·4					
V_4	633·7	516·2					

C.D. for S marginal means=165·4 Q/ha.

C.D. for V marginal means=139·6 Q/ha.

Crop :- Sugarcane (*Annual*). **Ref :- Bh. 60(172).**

Site :- Sugarcane Res. Instt., Pusa. **Type :- 'CM'.**

Object : —To study the manurial response to different times of planting.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) T_1—Wheat, T_2—Maize and T_3—Potato. (c) 45 Kg/ha. of N as A/S+56·5 Kg/ha. of P_2O_5 as Super for Wheat and Maize and 67·25 Kg/ha. of N as A/S+90·0 Kg/ha. of P_2O_5 as Super for Potato. (ii) Light loam. (iii) As per treatments. (iv) (a) One ploughing by mould board plough and digging of trenches. (b) Line sowing in trenches. (c) Nil. (d) 106·7 cm. between rows (*Adsali*), 91 cm. between rows in *Autumn* and *Spring*. (e) —. (v) As per treatments. (vi) BO—14. (vii) Irrigated. (viii) Weeding and earthing up. (ix) N.A. (x) 10 and 21.1.62.

2. TREATMENTS :

Main-plot treatments

3 times of planting: T_1=*Adsali* planting, T_2=*Autumn* planting and T_3=*Spring* planting.

Snb-plot treatments

4 manurial doses: M_1=67·2 Kg/ha. of N+84·1 Kg/ha. of P_2O_5, M_2=134·5 Kg/ha. of N+112·1 Kg/ha. of P_2O_5, M_3=201·7 Kg/ha. of N+140·1 Kg/ha. of P_2O_5 and M_4=269·0 Kg/ha. of N+168·1 Kg/ha. of P_2O_5.

N applied as A/S and P_2O_5 as Super.

3. DESIGNN:

(i) Split-plot. (ii) (a) 3 main-plots/replication and 4 sub-plots/main-plot. (b) 30·60 m.×33·50 m. (iii) 3. (iv) (a) 8·53 m.×12·19 m. (b) 6·40 m.×12·19 m. (v) 106 cm. on both sides along length. (vi) Yes

4. GENERAL:

(i) Good. (ii) Nil. (iii) Yield of cane. (iv) (a) 1960—only. (b) No. (c) Nil. (v) No. (vi) and (vii) Nil.

5. RESULTS:

(i) 531·6 Q/ha. (ii) (a) 80·70 Q/ha. (b) 74·31 Q/ha. (iii) Main effects of T and M are highly significant. (iv) Av. yield of cane in Q/ha.

	M_1	M_2	M_3	M_4	Mean
T_1	661·0	714·0	750·3	886·6	752·9
T_2	339·2	407·2	469·1	548·6	441·0
T_3	296·9	391·4	383·3	531·5	400·8
Mean	432·4	504·2	534·2	655·6	531·6

C.D. for T marginal means=91·46 Q/ha.

C.D. for M marginal means=73·60 Q/ha.

Crop Sugarcane. **Ref :- Bh. 61(110), 62(77), 63(102).**

Site :- Sugarcane Res. Instt., Pusa. **Type 'CM'.**

Object :—To study the effect of different levels of manures and different times of planting on Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat—Maize—Potato. (c) N.A. (ii) Light loam. (iii) As per treatments. (iv) (a) 3 ploughings with tractor, and one Punjab ploughing. (b) Line sowing. (c) 48, three-budded setts/row. (d) 90 cm. between rows. (e) N.A. (v) N.A.; 92·2 Q/ha. of Compost; N.A. (vi) BO—14. (vii) Irrigated. (viii) Weeding by *khurpi*. (ix) N.A. (x) Jan. to Feb. 63; 2.2.64 to 16.3.64; Jan. to Feb. 65.

2. TREATMENTS :

Main-plot treatments

3 times of planting : T_1=*Adsali* planting, T_2=*Autumn* planting and T_3=*Spring* planting.

Sub-plot-treatments

4 doses of manures : M_1=67·2 Kg/ha. of N+84·1 Kg/ha. of P_2O_5, M_2=134·5 Kg/ha. of N+112·1 Kg/ha. of P_2O_5, M_3=201·7 Kg/ha. of N+140·1 Kg/ha. of P_2O_5 and M_4=269·0 Kg/ha. of N+168·1 Kg/ha. of P_2O_5.

N applied as A/S and P_2O_5 as Super.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication.; 4 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 12·19 m.× 8·53 m. for T_1; 12·19 m.×8·23 m. for T_2 and T_3. (b) 12·19 m.×6·40 m. (v) 106 cm. on either side for T_1 and 91 cm. for T_2 and T_3. (vi) Yes.

4. GENERAL :

(i) Good. (ii) N.A. (iii) Germination %, flowering dates, height measurement, tillers count and yield of cane. (iv) (a) 1961—63. (b) N.A. (c) Results of combined analysis are given under 5. Results (v) No. (vi) Nil. (vii) Error variances for main-plot treatments is homogeneous and Treatments×Years interaction is absent and error variances for sub-plot treatments are homogeneous and Treatments×Years interaction is present.

5. RESULTS:

Pooled results

(i) 741·9 Q/ha. (ii) (a) 154·5 Q/ha. (based on 16 d.f. made up of pooled error and Traatments × Years interaction). (b) 95·8 Q/ha. (based on 18 d.f. made up of Treatments × Years interaction). (iii) Main effect of T alone is highly significant. (iv) Av. yield of cane in Q/ha.

	M_1	M_2	M_3	M_4	Mean
T_1	764·6	859·0	906·3	926·0	864 0
T_2	676·6	679·0	706·0	746·3	702·0
T_3	590·6	663·3	669·3	716 0	659·8
Mean	677·3	733·7	760·5	796·1	741·9

C.D. for T marginal means=77·7 Q/ha.

Individual results

Treatment	T_1	T_2	T_3	Sig.	M_1	M_2	M_3	M_4
Year 1961	872·6	737·0	730·2	N.S.	684·8	754·2	841·0	880·4
1962	845·7	714·4	606·6	*	667·1	732·5	728·3	760·9
1963	873·7	654·6	643·1	N.S.	680·3	715·3	752·5	747·1
Pooled	864·0	702·2	659·8	**	677·3	733·7	760·6	796·1

Sig.	G.M.	S.E./plot main-plot	S.E./plot Sub-plot
*	779·9	170·2	112·6
N.S.	722·2	115·5	81·6
N.S.	723·8	190·0	90·6
N.S.	741·9	154·5	95·8

Crop :- Sugarcane (*Annual*). **Ref :- Bh. 65(7).**

Site :- Sugarcane Res. Instt., Pusa. **Type :- 'CM'.**

Object:—To study the manurial responses to different times of planting Sugarcane.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Wheat. (c) 60 Kg/ha. of N as A/S+75 Kg/ha. of P_2O_5 as Super. (ii) Light loam. (iii) As per treatments. (iv) (a) 3 to 4 ploughings. (b) Planting in trenches. (c) 45 setts/row. (d) 91 cm. between rows. (e) —. (v) As per treatments. (vi) BO—17. (vii) Irrigated. (viii) Weedings, hoeing and earthing up. (ix) N.A. (x) 30.1.67, 10 to 12.2.67.

2. TREATMENTS:

Main-plot treatments :

3 times of planting : T_1=*Adsali* planting (22.7.66), T_2=*Autumn* planting preceded by Maize crop in *Kharif* (15.11.65, Maize on 24.6.66), T_3=*Spring* planting preceded by Maize in *Kharif* and Potato in *Rabi* (12.3.66, Maize on 24.6.65, Potato on 5.11.65).

Sub-plot treatments :

4 doses of manures : M_1=67·0 Kg/ha. of N as A/S+84·0 Kg/ha. of P_2O_5 as Super, M_2=134 Kg/ha. of N as A/S+112 Kg/ha. of P_2O_5 as Super, M_3=201 Kg/ha. of N as A/S+140 Kg/ha. of P_2O_5 as Super and M_4=268 Kg/ha. of N as A/S+168 Kg/ha. of P_2O_5 as Super.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication, 4 sub-plots/main-plot. (b) 0·3953 ha. (iii) 3. (iv) (a) 8·56 m. ×12·19 m. for *Adsali* ; 8·19 m.×12·19 m. for others. (b) 6·42 m.×12·19 m. for *Adsali* ; 6·37 m.×12·19 m. for others. (v) 107 cm. on either side for *Adsali* and 91 cm. for others. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of rats. (iii) Yield of cane. (iv) (a) 1965—only. (b) Yes. (c) Nil. (v) No. (vi) and (vii) Nil.

5. RESULTS:

(i) 189·7 Q/ha. (ii) (a) 57·63 Q/ha. (b) 57·63 Q/ha. (iii) None of the effects is significant. (iv) Av. yield of cane in Q/ha.

	M_1	M_2	M_3	M_4	Mean
T_1	166·5	205·8	180·2	203·6	189·0
T_2	151·1	179·4	152·8	193·6	169·2
T_3	220·2	155·4	233·9	234·4	211·0
Mean	179·3	180·2	189·0	210·5	189·7

Crop :- Sugarcane. **Ref :- Bh. 63(233).**

Site :- Sugarcane Res. Instt., Pusa. **Type :- 'CM'.**

Object :—To study the response of Phosphate as influenced by level and time of placement.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sugarcane. (c) 67 Kg/ha. of N as A/S+85 Kg/ha. of P_2O_5 as Super. (iii) Light loam. (iii) 8.1.63. (iv) (a) 3 to 4 ploughings. (b) Line sowing. (c) 65 three-budded setts/row. (d) 91 cm. between rows. (e) —. (v) 67 Kg/ha. of N as A/S+85 Kg/ha. of P_2O_5 as Super. (vi) BO—17. (vii) Irrigated. (viii) Weeding and earthing up. (ix) N.A. (x) 18 to 22.2.64.

2. TREATMENTS:

Main-plot treatments:

3 depths of placement : D_1=15·2, D_2=20·3 and D_3=25·4 cm.

Sub-plot treatments :

All combinations of (1) and (2)+a control

(1) 3 levels of P_2O_5 as Super : T_1=Full dose (85 Kg/ha.) of P_2O_5 at planting, T_2=½ dose at planting+½ dose after two months and T_3=⅓ dose at planting+⅓ dose after 2 months+⅓ dose after 4 months.

(2) 2 methods of placement : M_1=Peg method and M_2=Band placement.

C=(Control) : Full dose of P_2O_5 as Super at planting in furrows.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 7 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) and (b) 18·44 m.×7·32 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination and tillers count, height of plants, mature stalk count and yield of cane. (iv) (a) 1963—only. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 251·5 Q/ha. (ii) (a) 49·0 Q/ha. (b) 26·7 Q/ha. (iii) Main effect of T is significant and 'Control *vs.* others' is highly significant. (iv) Av. yield of cane in Q/ha.

D_1C=162·9, D_2C=168·8 and D_3C=180·6 Q/ha.

	T_1	T_2	T_3	M_1	M_2	Mean
D_1	245·8	255·1	263·1	248·1	261·3	254·7
D_2	260·9	264·2	273·0	254·2	277·9	266·0
D_3	260·1	272·0	289·4	278·2	269·4	273·8
Mean	255·6	263·8	275·2	260·2	269·5	273·9
M_1	247·7	265·7	267·1			
M_2	263·5	261·8	283·3			

C.D. for T marginal means=15·4 Q/ha.

C.D. for 'control *vs.* others'=16·7 Q/ha.

Crop :- Sugarcane. **Ref :- Bh. 65(11).**

Site :- Sugarcane Res. Instt., Pusa. **Tyye :- 'CM'.**

Object :—To find out the effect of heavy dose of nitrogenous fertilizers in different forms with P and K applied as basal and top dressing on the yield of Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Moong*. (c) Nil. (ii) Light loam. (iii) 25.3.65. (iv) (a) 3 to 4 ploughings. (b) Flat planting. (c) 64 setts/row. (d) 91 cm. between rows. (e) —. (v) As per treatments. (vi) BO—34. (vii) Irrigated. (viii) Weeding and earthing up. (ix) N.A. (x) 25 and 27.1.66.

2. TREATMENTS:

Main-plot treatments :

2 sources of N : S_1=A/S and S_2=Urea.

Sub-plot treatments :

All combinations of (1) and (2) in the presence of E_1+2 extra treatments

(1) 2 types of application : A_1=Top dressing and A_2=Basal dressing.

(2) 4 levels of N : N_1=67·2, N_2=134·5, N_3=201·7 and N_4=269·0 Kg/ha.

2 extra treatments : E_0=control (no fertilizers) and E_1=84·1 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot.

3. DESIGN:-

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 10 sub-plots/main-plot. (b) 93·27 m.×30·50 m. (iii) 3. (iv) (a) 9·14 m.×4·57 m. (b) 9·14 m.×2·74 m. (v) 91 cm. on either side along length. (vi) Nil.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination and tillers count, height of plants and yield of cane. (iv) (a) 1965—only. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS:

(i) 522·4 Q/ha. (ii) (a) 72·5 Q/ha (b) 86·9 Q/ha. (iii) 'Extra *vs.* others' alone is highly significant. (iv) Av. yield of cane in Q/ha.

E_0=437·9 and E_1=393·3 Q/ha.

	A_1	A_2	N_1	N_2	N_3	N_4	Mean
S_1	541·2	554·7	490·1	545·0	544·4	612·3	547·9
S_2	542·7	557·7	538·4	571·7	546·7	544·0	550·2
Mean	541·9	556·2	514·3	558·3	545·5	578·1	549·1
N_1	505·1	523·4					
N_2	548·0	568·7					
N_3	514·1	577·0					
N_4	600·6	555·7					

C.D. for 'extra *vs.* others'=56·8 Q/ha.

Crop :- Sugarcane. **Ref :- Bh. 65(12).**

Site :- Sugarcane Res. Instt., Pusa. **Type :- 'CM'.**

Object : —To find out the effect of heavy dose of nitrogenous fertilizers in different forms without P and K applied as basal and top dressing on the yield of Sugarcane.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) *Moong*. (c) Nil. (ii) Light loam. (iii) 25.3.65. (iv) (a) 3 to 4 ploughings. (b) Flat planting. (c) 64 setts/row. (d) 91 cm. between rows. (e) —. (v) As per treatments. (vi) BO—34. (vii) Irrigated. (viii) Weeding and earthing up. (ix) N.A. (x) 27, 28.1.66.

2. TREATMENTS :

Main-plot treatments :

2 sources of N : S_1=A/S and S_2=Urea.

Sub-plot treatments :

All combinations of (1) and (2)+control

(1) 2 types of application : A_1=Top dressing and A_2=Basal dressing.

(2) 4 levels of N : N_1=57·2, N_2=134·5, N_3=201·7 and N_4=269·0 Kg/ha.

3. DESIGN:

(i) Split-plot. (ii) 2 main-plots/replication : 9 sub-plots/main-plot. (b) 84·12 m.×30·50 m. (iii) 3. (iv) (a) 9·14 m.×4·57 m. (b) 9·14 m.×2·74 m. (v) 91 cm. on either side along length. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination and tillers count, height of plants and yield of cane. (iv) (a) 1965—only. (b) No. (c) Nil. (v) No. (vi) and (vii) Nil.

5. RESULTS :

(i) 415·0 Q/ha. (ii) (a) 381·0 Q/ha. (b) 81·5 Q/ha. (iii) Main effect of A alone is highly significant and 'control *vs.* others' is significant. (iv) Av. yield of cane in Q/ha.

Control=315·1 Q/ha.

	A_1	A_2	N_1	N_2	N_3	N_4	Mean
S_1	456·9	349·6	407·0	368·0	437·9	400·9	403·2
S_2	490·6	412·8	423·2	446·9	445·7	491·1	451·7
Mean	473·8	381·2	415·1	407·4	441·7	445·6	427·5
N_1	458·5	371·7					
N_2	440·6	374·3					
N_3	491·8	391·6					
N_4	504·1	387·0					

C.D. for A marginal means=47·9 Q/ha.
C.D. for 'control *vs.* others'=46·8 Q/ha.

Crop :- Sugarcane. **Ref :- Bh. 62(231).**

Site :- Sugarcane Res. Instt., Pusa. **Type :- 'CM'.**

Object :—To study the effect of Aretan an organo-mercurial fungicide in combination with higher nutrients and greater spacing on germination, growth and juice quality of Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sugarcane. (c) 67 Kg/ha. of N as A/S+85 Kg/ha. of P_2O_5 as Super. (ii) Light loam. (iii) 17.2.62. (iv) (a) 3—4 ploughings. (b) Line sowing. (c) 84 three-budded setts/row. (d) 92 cm. between rows. (e) —. (v) 67 Kg/ha. of N as A/S+85 Kg/ha. of P_2O_5 as Super. (vi) BO—14. (vii) Irrigated. (viii) Weeding and earthing up. (ix) N.A. (x) 23 to 25.2.63.

2. TREATMENTS:

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

(1) 2 spacings between rows : S_1=91 and S_2=122 cm.

(2) 3 manurial doses : M_1=67 Kg/ha. of N as A/S+85 Kg/ha. of P_2O_5 as Super, M_2=90 Kg/ha. of N as A/S+112 Kg/ha. of P_2O_5 as Super and M_3=112 Kg/ha. of N as A/S+140 Kg/ha. of P_2O_5 as Super.

(3) 2 soaking treatments : D_0=Control, D_1=Soaking in 0·68 Kg/ha. of Aretan soln. diluted in 90·9 lit. of water.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 3. (iv) (a) 6·12 m.×13·72 m. (b) 3·66 m.×13·7 m. (v) 122 cm. on either side along length.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination and tillers count, height of plants, mature stalk count and yield of cane. (iv) (a) to (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 366·0 Q/ha. (ii) 12·5 Q/ha. (iii) None of the effects is significant. (iv) Av. yield of cane in Q/ha.

	M_1	M_2	M_3	D_0	D_1	Mean
S_1	363·2	371·8	371·9	370·7	367·3	369·0
S_2	358·4	361·9	368·9	361·6	364·5	363·1
Mean	360·8	366·8	370·4	366·2	365·9	366·0
D_0	358·6	366·8	373·0			
D_1	363·0	366·9	367.8			

Crop :- Sugarcane. **Ref :- Bh. 63(11).**

Site :- Irrigation Res. Stn., Madhepura. **Type :- 'I'.**

Object :—To study the effect of irrigation on the yield of Sugarcane.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Groundnut. (c) 11·2 Kg/ha. of N as A/S+33·6 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) 20.2.63. (iv) (a) One ploughing by soil turning plough and six ploughings and cross ploughing by *deshi* plough. (b) Eye to eye setts. (c) N.A. (d) 91 cm. between rows (e) N.A. (v) Castor cake+89·7 Kg/ha. of N as Urea+84·1 Kg/ha. of P_2O_5 as Super, $\frac{1}{2}$ N and whole of P_2O_5 was applied at the time of sowing and $\frac{1}{2}$ N at the time of earthing up. (vi) BO—17. (vii) Irrigated. (viii) Weeding by *khurpi* and earthing up by Bihar senior plough. (ix) N.A. (x) 7/8.2.64.

2. TREATMENTS :

5 irrigational treatments : I_1=Pre-sowing irrigation+one irrigation after 21 days of planting, I_2=Pre-sowing irrigation+3 additional irrigations, I_3=Pre-sowing irrigation+4 additional irrigations, I_4=Pre-sowing irrigation+6 additional irrigations and I_5=Pre-sowing irrigation+7 additional irrigations.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 30·48 m.×3·35 m. (b) 29·87 m.×1·83 m. (v) 30 cm.×76 cm. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Blight attack, Copper fungicide sprayed. (iii) Height of plant and yield of cane. (iv) (a) 1963—only. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Prevalence of cold wave.

5. RESULTS :

(i) 510·8 Q/ha. (ii) 85·8 Q/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of cane in Q/ha.

Treatment	I_1	I_2	I_3	I_4	I_5	
Av. yield	326·7	502·0	540·9	523·0	661·7	C.D.=132·2 Q/ha.

Crop :- Sugarcane. **Ref :- Bh. 63(12).**

Site :- Irrigation Res. Stn., Madhepura. **Type :- 'I'.**

Object :—To study the effect of irrigation on the yield of Sugarcane.

1. BASAL CONDITIONS:

(i) (a) N.A, (b) Paddy (Aus). (c) 33·6 Kg/ha. of N as A/S+44·8 Kg/ha. of P_2O_5 as Super. (ii) Loam. (iii) 6.3.63. (iv) (a) One ploughing by soil turning plough and 8 ploughings by *deshi* plough and trench openning by Bihar senior plough. (b) Eye to eye setts in trenches. (c) 115 setts/row. (d) 91 cm. between rows. (e) —. (v) 89·7 Kg/ha. of N as A/S+84·1 Kg/ha. of P_2O_5 as Super+Castor cake. (vi) BO—17. (vii) Irrigated. (viii) Weeding by *khurpi* once and earthing up by Bihar senior plough once. (ix) N.A. (x) 20 to 22.2.64.

2. TREATMENTS:

5 irrigational treatments: I_1=Pre-sowing irrigation+1 irrigation after 21 days of sowing, I_2=Pre-sowing irrigation+3 additional irrigations, I_3=Pre-sowing irrigation+4 additional irrigations, I_4=Pre-sowing irrigation+6 additional irrigations and I_5=Pre-sowing irrigation+7 additional irrigations.

3. DESIGN:

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 30·50 m.×3·40 m. (b) 29·90 m.×1·80 m. (v) 30 cm.×76 cm (vi) Nil.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Height of plants, no. of tillers and yield of cane. (iv) (a) 1963—only. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS:

(i) 372·6 Q/ha. (ii) 64.48 Q/ha. (iii) Treatment differences are not significaat. (iv) Av. yield of cane in Q/ha.

Treatment	I_1	I_2	I_3	I_4	I_5
Av. yield	324·4	371·6	404·0	350·0	413·2

Crop :- Sugarcane. **Ref :- Bh. 60(339), 61(338), 62(301), 63(334).**

Site :- Irrigation Res. Stn., Bikramganj. **Type :- 'IM'.**

Object :—To determine the effect of irrigation at various intervals with respect to different doses of fertilizers.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Paddy. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super for 60 to 62; Nil for 63. (ii) Sandy loam. (iii) 19 to 27.2.60; 28, 29.2.61; 14 to 16.2.62; 30.1.63 to 2.2.63. (iv) (a) 3 to 4 ploughings. (b) Over lapings of setts. (c) 58·1 Q/ha. (d) 90 cm. between rows. (e) —. (v) As per treatments. (vi) BO—17. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 15.2.61; 28. 29.2.62; 29.1.63 to 3.2.63; 18.1.64 to 22.2.64.

2. TREATMENTS:

Main-plot treatments:

(1) 2 levels of manures: M_1=90 Kg/ha. of N as A/S+67·2 Kg/ha. of P_2O_5 as Super and M_2=135 Kg/ha. of N as A/S+100·4 Kg/ha. of P_2O_5 as Super.

Sub-plot treatments:

All combinations of (1) and (2)

(1) 3 levels of irrigation: I_1=4 irrigations at 25 days interval, I_2=6 irrigations at 18 days interval and I_3=8 irrigations at 13 days interval.

(2) 2 levels of pre-harvest irrigation: H_1=No pre-harvest irrigation and H_2=Pre-harvest irrigation.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 6 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 43·46 m. ×4·57 m. for 60 ; 22·71 m.×5·18 m. for 61 ; 20·73 m.×4·57 m. for 62 ; 21·34 m.×4·57 m. for 63. (b) 41·58×2·74 m. for 60 ; 22·10 m.×4·57 m. for 61 ; 18·90 m.×2·74 m. for 62 ; 20·51 m.×2·74 m. for 63. (v) 91 cm.×91 cm. ; 30 cm.×30 cm. ; 91 cm.×91 cm. ; 41 cm.×91 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of cane. (iv) (a) 1960—63. (b) No. (c) Nil. (v) No. (c) Nil. (vii) Sub-plot error variances are heterogeneous and hence the results of individual years are presented under 5. Results .

5. RESULTS :

60(339)

(i) 491·3 Q/ha. (ii) (a) 145·8 Q/ha. (b) 88·7 Q/ha. (iii) Main effect of I alone is significant. (iv) Av. yield of cane in Q/ha.

	H_1	H_2	I_1	I_2	I_3	Mean
M_1	465·4	448·7	399·4	480·0	491·6	457·0
M_2	499·2	551·9	486·2	497·9	592·7	525·6
Mean	482·3	500·3	442·8	488·9	542·2	491·3
I_1	433·9	451 7				
I_2	508·5	469·4				
I_3	504·5	579·8				

C.D. for I marginal means=64·2 Q/ha.

61(338)

(i) 146·6 Q/ha. (ii) (a) 37·3 Q/ha. (b) 54·1 Q/ha. (iii) Main effect of M and I are significant. (iv) Av. yield of cane in Q/ha.

	H_1	H_2	I_1	I_2	I_3	
M_1	130·2	118·0	98·1	132·1	142·2	124·1
M_2	182·9	155·5	131·2	181·0	195·3	169·2
Mean	156·6	136·7	114·7	156·5	168·7	146·6
I_1	134·4	94·9				
I_2	168·0	145·1				
I_3	167·2	170·3				

C.D. for M marginal means=34·0 Q/ha.

C.D. for I marginal means=39·0 Q/ha.

62(301)

(i) 159·4 Q/ha. (ii) (a) 51·6 Q/ha. (b) 43·9 Q/ha. (b) (iii) Main effect of I is highly significant and interaction M×H is significant. (iv) Av. yield of cane in Q/ha.

	H_1	H_2	I_1	I_2	I_3	Mean
M_1	139·8	185·7	135·9	161·2	191·2	162·8
M_2	162·4	149·8	127·0	154·7	186·6	156·1
Mean	151·1	167·8	131·5	157·9	188·9	159·5
I_1	107·9	155·1				
I_2	150·7	165·2				
I_3	194·7	183·1				

C.D. for I marginal means=31·6 Q/ha.

C.D. for H means at the same level of M=36·6 Q/ha.

C.D. for M means at the same level of H=52·7 Q/ha.

63(334)

(i) 568·8 Q/ha. (ii) (a) 58·6 Q/ha. (b) 82·1 Q/ha. (iii) Main effect of H and I are highly significant. and that of M is significant. (iv) Av. yield of cane in Q/ha.

	H_1	H_2	I_1	I_2	I_3	Mean
M_1	482·3	577·1	449·6	545·9	593·6	529·7
M_2	528·7	687·2	497·6	667·4	658·9	608·0
Mean	505·5	632·2	473·6	606·6	626·3	568·8
I_1	395·9	551·3				
I_2	543·8	669·5				
I_3	576·7	675·8				

C.D. for M marginal means=53·8 Q/ha.

C.D. for H marginal means=48·4 Q/ha.

C.D. for I marginal means=59·2 Q/ha.

Crop :- Sugarcane. **Ref :- Bh. 64(375), 65(209).**

Site :- Irrigation Res. Stn., Bikramganj. **Type :- 'IM'.**

Object :—To determine the effect of irrigation at various intervals with respect to different levels of N.

1. BASAL CONDITIONS :

(i) (a) to (c) Nil. (ii) Sandy loam. (iii) 3 to 5.2.64 ; 2 to 4.3.65, (iv) (a) 3 ploughings. (b) Over lapping of setts. (c) 58 Q/ha. (three-budded setts). (d) 91 cm. between rows. (e) —. (v) 45 Kg/ha. of N as A/S+90 Kg/ha. of P_2O_5 as Single Super+45 Kg/ha. of K_2O as Mur. Pot. (vi) BO—17. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 13.2. to 4.3.65 ; 27.2 to 12.3.66.

2. TREATMENTS :

Main-plot treatments :

4 levels of irrigation : I_0=Control (pre-monsoon irrigations at 21 days interval up to 25th June), I_1=6 pre-monsoon irrigations at 21 days interval+additional post-monsoon irrigations at 21 days interval depending upon rain, I_2=9 pre-monsoon irrigations

at 14 days interval+additional post-monsoon irrigations at 14 days interval depending upon rain and I_3=15 pre-monsoon irrigations at 7 days interval+ additional post-monsoon irrigations at 7 days interval depending upon rain.

Sub-plot treatments :

3 levels of N as A/S : N_1=67, N_2=134 and N_3=268 Kg/ha.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 21·03 m ×4·57 m. (b) 19·20 m.×2·74 m. (v) 91 cm.×91 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of cane. (iv) (a) 1964—65. (b) No. (c) Results of combined analysis are presented under 5. Results. (v) and (vi) Nil. (vii) Error variances for main and sub-plot treatments are homogeneous and Treatments×Years interaction is absent in both the cases.

5. RESULTS :

Pooled results

(i) 466 Q/ha. (ii) (a) 152·7 Q/ha. (based on 21 d.f. made up of pooled error and Treatments×Years interation.) (b) 79·6 Q/ha. (based on 56 d.f. made up of pooled error and Treatments×Years interaction). (iii) Main effect of N alone is highly significant. (iv) Av. yield of cane in Q/ha.

	I_0	I_1	I_2	I_3	Mean
N_1	397	434	426	431	422
N_2	440	460	428	475	451
N_3	518	509	551	518	524
Mean	452	467	468	475	466

C.D. for N marginal means=39·9 Q/ha.

Individual results :

Treatments	I_0	I_1	I_2	I_3	Sig.	N_1	N_2	N_3	Sig.
Years									
1964	497	514	507	452	N S.	445	480	552	**
1965	407	421	431	498	N.S.	400	421	495	**
Pooled	452	467	468	475	N.S.	422	451	524	**

G.M.	S.E./plot main-plot	S.E./plot sub-plot
492	99·9	86·1
439	188·6	62·1
466	152·7	79·6

Crop :- Sugarcane. **Ref :- Bh. 64(160).**

Site :- Irrigation Res. Stn., Madhepura. **Type :- 'IM'.**

Object :—To study the effect of different doses of fertilizers and levels of irrigation on the yield of Sugarcane.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) Sandy loam. (iii) 28.2.64. (iv) (a) 4 to 5 Bihar junior ploughings. (b) Furrows method. (c) 76, three-budded setts/row. (d) 91 cm. between rows. (e) N.A. (v) N.A. (vi) BO - 17. (vii) Irrigated as per treatments. (viii) 2 weedings. (ix) N.A. (x) 18 to 22.3.65.

2. TREATMENTS:

Main-plot treatments:

4 levels of irrigation: I_1=Irrigation at 21 days interval upto 25th June. I_2=Irrigation at 21 days interval (6 times), I_3=Irrigation at 14 days interval (9 times) and I_4=Irrigation at 7 days interval (15 times).

Sub-plot treatments:

2 levels of fertilizers: M_1=67·2 Kg/ha. of N as A/S+89·7 Kg/ha. of P_2O_5 as Super+44·8 Kg/ha. of K_2O as Mur. Pot. and M_2=134·5 Kg/ha. of N as A/S+89·7 Kg/ha. of P_2O_5 as Super+44·8 Kg/ha. of K_2O as Mur. Pot.

3. DESIGN:

(i) Split-plot. (ii) (a) 4 main-plots/replication; 2 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 21·34 m. × 4·57 m. (b) 20·73 m. × 2·74 m. (v) 30 cm. × 91 cm. (v) Yes.

4. GENERAL:

(i) Good. (ii) N.A. (iii) Germination and tillers count, height measurements and yield of cane. (iv) (a) No. (b) and (c) Nil. (v) to (vii) Nil.

5. RESULTS:

(i) 575·6 Q/ha. (ii) (a) 66·4 Q/ha. (b) 70·5 Q/ha. (iii) Main effects of I and M are highly significant. (iv) Av. yield of cane in Q/ha.

	I_1	I_2	I_3	I_4	Mean
M_1	435·7	484·0	590·0	675·7	546·6
M_2	455·0	628·7	582·5	752·2	604·6
Mean	445·3	556·3	586·7	713·9	575·6

C.D. for I marginal means=75·1 Q/ha.
C.D. for M marginal means=54·3 Q/ha.

Crop :- Sugarcane. **Ref :- Bh. 61(264), 63(232).**

Site :- Sugarcane Res. Instt., Pusa. **Type :- 'IM'.**

Object:—To study the effect of different levels of N, P and irrigation on the yield of cane.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Sugarcane. (c) 67 Kg/ha. of N as A/S+84 Kg/ha. of P_2O_5 as Super. (ii) Light loam. (iii) 21, 22.2.61; 18 to 20.2.63. (iv) (a) 3 to 4 ploughings. (b) Line sowing. (c) 60 three-budded setts/row (d) 92 cm. between rows. (e) —. (v) 50·7 Q/ha. of cake. (vi) BO—17. (vii) Irrigated. (viii) Weeding and earthing. (ix) N.A. (x) 25 to 27.2.62; 12 to 14.2.64.

2. TREATMENTS:

Main-plot treatments:

3 levels of irrigation: I_0=No irrigation, I_1=4 and I_2=6 irrigations.

Sub-plot treatments;

All combinations of (1) and (2)

(1) 4 levels of N as A/S: N_0=0, N_1=67, N_2=134 and N_3=201 Kg/ha.

(2) 3 levels of P_2O_5 as Super: P_0=0, P_1=85 and P_2=170 Kg/ha.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 12 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a) 18·44 m.× 7·32 m. (b) 18·44 m.×5·49 m. (v) 91 cm. on either side along length. (iv) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination and tillers count and yield of cane. (iv) 1961—63 (expt. for 62—failed). (b) No. (c) Nil. (v) No. (vi) Nil. (vii) Sub-plot error variances are heterogeneous and hence the results of individual years are presented under 5. Results.

5. RESULTS :

61(264)

(i) 315·4 Q/ha. (ii) (a) 186·5 Q/ha. (b) 70·7 Q/ha. (iii) None of the effects is significant. (iv) Av. yield of cane in Q/ha.

	N_0	N_1	N_2	N_3	P_0	P_1	P_2	Mean
I_0	347·4	293·9	359·2	330·8	310·4	350·5	337·6	332·8
I_1	280·4	248·4	280·2	330·8	272·4	320·5	261·9	285·0
I_2	280·4	328·4	332·0	372·6	345·4	332·5	307·1	328·4
Mean	302·7	290·2	323·8	344·7	309·4	334·5	302·2	315·4
P_0	317·9	251·5	351·0	317·3				
P_1	298·2	331·4	323·4	384·9				
P_2	292·1	287·8	297·0	332·0				

63(232)

(i) 322·5 Q/ha. (ii) (a) 17·9 Q/ha. (b) 15·0 Q/ha. (iii) Main effect of I is significant and main effects of N, P and interaction I×N are highly significant. (iv) Av. yield of cane in Q/ha.

	N_0	N_1	N_2	N_3	P_0	P_1	P_2	Mean
I_0	282·7	313·7	315·1	340·0	308·8	309·5	320·4	312·9
I_1	274·4	280·9	330·4	365·2	299·0	317·9	321·3	312·7
I_2	294·4	319·7	362·5	390·9	336·1	343·7	345·8	341·9
Mean	283·8	304·8	335·9	365·4	314·6	323·7	329·2	322·5
P_0	270·9	304·6	330·2	352·8				
P_1	284·3	310·2	334·7	365·5				
P_2	296·2	299·6	343·0	377·9				

C.D. for I marginal means=22·2 Q/ha.
C.D. for N marginal means=10·2 Q/ha.
C.D. for P marginal means=8·8 Q/ha.
C.D. for N means at the same level of I=17·7 Q/ha.
C.D. for I means at the same level of N=25·2 Q./ha.

Crop :- Sugarcane. **Ref :- Bh. 64(155), 65(10).**

Site :- Sugarcane Res. Instt., Pusa. **Type :- 'IM'.**

Object :—To study the effect of varying number of irrigations under high doses of N.

1. BASAL CONDITIONS :

(i) (a) N.A. ; Nil. (b) N.A. ; Wheat. (c) N.A. ; 45 Kg/ha. of N as A/S+67·2 Kg/ha. of P_2O_5 as Super. (ii) Light loam. (iii) 17, 18.2.64 ; 24 to 25.2.65. (iv) (a) 3 to 4 ploughings. (b) Line sowing. (c) 64 setts/row. (d) 91 cm. between rows. (e) N.A. (v) N.A. ; as per treatments. (vi) BO—47. (vii) Irrigated. (viii) Weeding and earthing up. (ix) N.A. (x) 9.2.65 ; 8 to 13.2.66.

2. TREATMENTS :

Main-plot treatments :

4 levels of irrigation : I_0=No irrigation, I_1=Irrigation at 21 days interval, I_2=Irrigation at 14 days interval and I_4=Irrigation at 7 days interval.

Sub-plot treatments:

4 levels of N as A/S : N_1=67, N_2=134, N_3=201 and N_4=268 Kg/ha.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 9·16 m.× 7·28 m. ; 9·16 m.×5·46 m. (b) 9·16 m.×5·46 m. (v) 91 cm. on either side along length for 64 ; Nil for 65. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination %, flowering date, height measurements and yield of cane. (iv) (a) 1964—68. (b) No. (c) Nil. (v) No. (vi) Nil. (vii) Expt. is continued beyond 1965, hence the results of individual years are presented under 5. Results.

5. RESULTS:

64(155)

(i) 704·5 Q/ha. (ii) (a) 150·4 Q/ha. (b) 149·2 Q/ha. (iii) None of the effects is significant. (iv) Av. yield of cane in Q/ha.

	N_1	N_2	N_3	N_4	Mean
I_0	684·9	693·1	740·6	663·9	695·6
I_1	650·9	750·1	772·3	724·1	724·4
I_2	724·8	661·1	667·1	642·8	673·9
I_3	740·6	717·4	695·9	742·3	724·1
Mean	700·3	705·4	719·0	693·3	704·5

65(10)

(i) 487·0 Q/ha. (ii) (a) 53·8 Q/ha. (b) 54·5 Q/ha. (iii) Main effects of I and M are highly significant. (iv) Av. yield of cane in Q/ha.

	N_1	N_2	N_3	N_4	Mean
I_0	384·4	423·9	442·1	443·1	423·4
I_1	417·4	490·4	557·3	528·9	498·5
I_2	435·6	508·4	498·9	539·1	495·5
I_3	488·1	522·3	544·8	567·1	530·6
Mean	431·4	486·2	510·8	519·5	487·0

C.D. for I marginal means=43·0 Q/ha.
C.D. for M marginal means=39·2 Q/ha

Crop :- Sugarcane. **Ref :- 63(187), 65(9).**

Site :- Sugarcane Res. Instt., Pusa. **Type :- 'IM'.**

Object :—To find out critical level of soil moisture at different levels of manuring for optimum yield of Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize ; Wheat. (c) 45 Kg/ha. of N as A/S+67·2 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) 26.3.63 ; 27.1.65. (iv) (a) 3 ploughings. (b) Line sowing. (c) 32 setts/row for 63 and 64 setts/row for 65. (d) 91 cm. between rows. (e) Nil. (v) As per treatments. (vi) BO - 34. (vii) Irrigated. (viii) Weeding and earthing up. (ix) N.A. (x) 20, 21.2.64 ; 5.2.66.

2. TREATMENTS :

Main-plot treatments

6 irrigational treatments : I_0=Control (no irrigation), I_1=Irrigation at 20% available moisture, I_2=Irrigation at 30% available moisture, I_3=Irrigation at 40 % available moisture, I_4=Irrigation at 50% available moisture and I_5=Irrigation at 60% avaiable moisture.

Sub-plot treatments

2 types of manures : M_1=67·2 Kg/ha. of N as A/S+84·0 Kg/ha. of P_2O_5 as Super and M_2=34·5 Kg/ha. of N as A/S+168·1 Kg/ha. of P_2O_5 as Super.

3. DESIGN :

(i) Split-plot. (ii) (a) 6 main-plots/replication ; 2 sub-plots/main-plot. (b) 37 m ×23 m. (iii) 3. (iv) (a) 10·00 m.×5·00 m ; 4·57 m.×9·14 m. (b) 10·00 m.×3·30 m ; 4·57 m.×9·14 m. (v) 85 cm. on either side along length for 63 ; Nil for 65. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination and tillers count, height of plants and yield of cane. (iv) (a) 1963—contd. (Expt. failed in 64). (b) Yes. (c) Nil. (v) and (vi) Nil. (vii) Expt. is continued beyond 1965, hence the results of individual years are presented under 5. Results.

5. RESULTS :

63(187)

(i) 682·1 Q/ha. (ii) (a) 116·7 Q/ha. (b) 94·1 Q/ha. (iii) Main effect of M alone is significant. (iv) Av: yield of cane in Q/ha.

	I_0	I_1	I_2	I_3	I_4	I_5	Mean
M_1	726·3	737·4	632·3	603·0	594·9	540·4	639·0
M_2	716·2	672·7	891·0	622·2	732·3	806·1	725·1
Mean	721·2	705·0	716·7	612·6	663·6	673·2	682·1

C.D. for M marginal means=68·4 Q/ha.

65(9)

(i) 361·3 Q/ha. (ii) (a) 106·6 Q/ha. (b) 70·4 Q/ha. (iii) Main effect of M alone is highly significant. (iv) Av. yield of cane in Q/ha.

	I_0	I_1	I_2	I_3	I_4	I_5	Mean
M_1	260·1	315·2	273·7	303·2	387·0	355·1	315·7
M_2	301·6	427·7	446·0	405·4	501·9	358·3	406·8
Mean	280·9	371·5	359·9	354·3	444·5	356·7	361·3

C.D. for M marginal means=51·1 Q/ha.

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Crop :- Sugarcane. **Ref :- Bh. 61(111).**

Site :- Sugarcane Res. Instt., Pusa. **Type :- 'IMV'.**

Object :—To study the effect of different levels of manures and irrigation on different varieties of Sugarcane.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Dhaincha+Moong* for seed. (c) N.A. (ii) Medium loam. (iii) 9/10.2.61. (iv) (a) 3 ploughings with tractor and *Punjab* ploughing. (b) Line sowing. (c) 48, three-budded setts/row. (d) 90 cm. between rows. (e) Nil. (v) N.A. (vi) and (vii) As per treatments (viii) Weeding by *khurpi*. (ix) N.A. (x)30.1.62 to 4.2.62.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2)

(1) 3 levels of manures : M_0=No manure, M_1=67·2 Kg/ha. of N as A/S=84·1 Kg/ha. of P_2O_5 as Super and M_2=134·5 Kg/ha. of N as A/S+168·1 Kg/ha. of P_2O_5 as Super.

(2) 3 levels of irrigation : I_0=No irrigation, I_1=2 irrigations at 21 days interval and I_2=4 irrigations at 14 days interval.

Sub-plot treatments :

3 varieties : V_1=BO—17, V_2=BO—29 and V_3=BO—32.

3. DESIGN :

(i) Split-plot. (ii) (a) 9 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) 13·72 m.× 6·40 m. (b) 13·72 m.×4·57 m. (v) 91 cm. on either side along length. (vi) Yes.

4. GENERAL :

(i) Good. (ii) N.A. (iii) Germination %, tillers and dead heart count, mature stalk count, height measurements and yield of cane. (iv) (a) 1961—65 (varieties changed in 62). (b) and (c) Nil. (v) No. (vi) and (vii) Nil.

5. RESULTS :

(i) 414·2 Q/ha. (ii) (a) 111·4 Q/ha. (b) 67·6 Q/ha. (iii) Main effects of M and V are highiy significant. (iv) Av. yield of cane in Q/ha.

	I_0	I_1	I_2	M_0	M_1	M_2	Mean
V_1	404·2	421·2	413·8	283·5	439·3	516·4	413·1
V_2	404·7	476·3	457·0	325·0	460·0	553·4	446·0
V_3	350·7	400·5	399·4	298·0	410·7	441·8	383·5
Mean	386·5	432·7	423·4	302·2	436·7	503·9	414·2
M_0	311·2	269·0	326·4				
M_1	369·8	486·1	453·8				
M_2	478·6	542·9	490·0				

C.D. for M marginal means=64·3 Q/ha.
C.D. for V marginal means=37·4 Q/ha.

Crop :- Sugarcane. **Ref :- Bh. 62(154).**

Site :- Sugarcane Res. Instt., Pusa. **Type :- 'IMV'.**

Object :—To study the differential response of varities to manure and irrigation.

1. **BASAL CONDITIONS :**

(i) (a) Nil. (b) Maize. (c) Nil. (ii) Light loam. (iii) 23.1.62. (iv) (a) 2 to 3 ploughings with tractor. and then *henga*. (b) Line sowing. (c) 64 three-budded setts/row. (d) 91 cm. between rows. (e) Nil (v) N.A. (vi) and (vii) As per treatments, (viii) Weeding and earthing. (ix) N.A. (x) 5.2.63.

2. TREATMENTS :

Main-plot treatments

All combinations of (1) and (2)

(1) 3 irrigations : I_0=No irrigation, I_1=2 irrigations at 21 days interval, and I_2=4 irrigations at 14 days interval.

(2) 3 types of manures : M_0=No manure, M_1=67·2 Kg/ha. of N as A/S+84·1 Kg/ha. of P_2O_5 Super, and $M_2=2M_1$

Sub-plot treatments

3 varieties : V_1=BO—43, V_2=BO—47 and V_3=BO—50.

3. DESIGN :

(i) Split-plot. (ii) (a) 9 main-plots/replication, 3 sub-plots/main-plot. (b) 47·24 m.×67·97 m. (iii) 2. (iv) (a) and (b) 13·72 m.×6·40 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) White ants, control measures as per treatments. (iii) Germination and tillers count, mature stalk count, height of plants and yield of cane. (iv) (a) 1961—65 (Trs. modified in 63). (b) No. (c) Nil. (v) Patna. (vi) and (vii) Nil.

5. RESULTS :

(i) 329·6 Q/ha. (ii) (a) 125·4 Q/ha. (b) 63·2 Q/ha. (ii) None of the effects is significant. (iv) Av. yield of cane in Q/ha.

	M_0	M_1	M_2	V_1	V_2	V_3	Mean
I_0	249·4	356·6	248·4	300·1	286·4	268·0	284 8
I_1	384·7	261·2	268·4	293·6	323·8	396·8	304·7
I_2	349·2	373 5	474·7	401·2	405·2	391·0	399·2
Mean	327 8	330·4	330·5	331·6	338·5	318·6	329·6
V_1	335·8	326·3	332·9				
V_2	335·2	339·7	340·5				
V_3	312·4	325·3	318·1				

Crop :- Sugarcane. **Ref :- Bh. 63(103), 64(157), 65(5).**

Site :- Sugarcane Res. Instt., Pusa. **Type :- 'IMV'**

Object :—To study the effect of different levels of manures and irrigations on different varieties f Sugarcane.

1. BASAL CONDITIONS ;

(i) (a) N.A. (b) N.A. ; Rahar; Wheat. (c) 45 Kg/ha. of N as A/S+67·2 Kg/ha. of P_2O_5 as Super. (ii) Light loam. (iii) 13 to 15.2.63 ; 1 to 3.2.64 ; 26.2.65. (iv) (a) 3 ploughings with tractor and one *Punjab* ploughing. (b) Line sowing. (c) 64, three-budded setts/row. (d) 90 cm. between rows. (e) N.A. (v) N A. (vi) and (vii) Irrigated as per treatments. (viii) Weeding by *khurpi*. (ix) N.A. (v) 22 to 24 2.64 ; 22 to 25.2. 65 ; 13 to 26 2 66.

2. TREATMENTS :

Main-plot :treatments :

All combinations of (1) and (2)

(1) 3 levels of manures : M_0=No manure, M_1=67·2 Kg/ha. of N as A/S+84·1 Kg/ha. of P_2O_5 as Super and $M_2=2M_1$.

(2) 3 levels of irrigations : I_0=No-irrigation, I_1=2 irrigations at 42 days interval and I_2=4 irrigations at 21 days interval.

Sub-plot treatments :

3 varieties : V_1=BO—43, V_2=BO—47 and V_3=BO—50.

3. DESIGN :

(i) Split-plot. (ii) (a) 9 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 18·44 m. ×7·32 m. for 63, 64 ; 16·70 m.×5·46 m. for 65. (b) 18·44 m.×5·49 m. for 63, 64 ; 16·70 m.×5·46 m. for 65. (v) 91 cm. on either side in 63 and 64 ; Nil for 65. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination and tillers count, height measurements and yield of cane. (iv) (a) 1961—65 (modified in 63). (b) Yes. (c) Nil. (v) No. (vi) Nil. (vii) As sub-plot error variances are heterogeneous, the results of individual years are presented under 5. Results.

5. RESULTS :

63(103)

(i) 491·6 Q/ha. (ii) (a) 73·7 Q/ha. (b) 36·9 Q/ha. (iii) Main effects of M and I are significant. (iv) Av. yield of cane in Q/ha.

	I_0	I_1	I_2	M_0	M_1	M_2	Mean
V_1	433·0	494·5	521·8	456·3	501·2	491·8	483·1
V_2	478·0	489·2	524·8	449·2	525·8	516·9	497·3
V_3	471·0	489·6	522·8	464·7	515·4	503·3	494·5
Mean	460·7	491·1	523·1	456·7	514·1	504·0	491·6
M_0	426·6	478·2	465·4				
M_1	458·1	501·1	583·3				
M_2	497·4	494·0	520·7				

C.D. for M or I marginal means=42·4 Q/ha.

64(157)

(i) 492·7 Q/ha. (ii) (a) 97·5 Q/ha. (b) 77·4 Q/ha. (iii) Main effect of M alone is highly significant. (iv) Av. yield of cane in Q/ha.

	I_0	I_1	I_2	M_0	M_1	M_2	Mean
V_1	481·2	462·5	456·5	398·2	476·8	525·3	466·8
V_2	492·7	497·1	494·7	411·5	537·5	535·4	494·8
V_3	485·1	534·7	524·6	414·6	558·9	571·0	514·8
Mean	486·3	498·1	491·9	408·1	524·4	543·9	492·1
M_0	441·4	405·8	377·2				
M_1	500·6	519·8	552·7				
M_2	517·0	568·8	545·8				

C.D. for M marginal means=56·2 Q/ha.

65(5)

(i) 372·7 Q/ha. (ii) (a) 53·3 Q/ha. (b) 53·0 Q/ha. (iii) Main effects of M and V are highly significant and interaction M × V is significant. (iv) Av. yield of cane in Q/ha.

	I_0	I_1	I_2	M_0	M_1	M_2	Mean
V_1	354·2	364·8	364·9	249·7	400·0	434·2	361·3
V_2	317·7	370·7	333·8	295·6	337·6	389·0	340·7
V_3	420·6	442·1	385·2	306·5	432·6	508·9	416·0
Mean	364·1	392·6	361·3	283·9	390·1	444·0	372·7
M_0	261·7	321·0	269·0				
M_1	384·1	428·7	357·5				
M_2	446·6	427·9	457·6				

C.D. for M marginal means=30·7 Q/ha.
C.D. for V marginal means=29·2 Q/ha.
C.D. for V means at the same level of M=50·7 Q/ha.
C.D. for M means at the same level of V=51·5 Qha.

Crop :- Sug cane. **Ref :- Bh. 60(193), 61(210), 62(173).**

Site :- Sugarcane Res. Stn., Agri. Res. Instt., Patna. **Type :- 'IMV'.**

Object :—To study the response of varieties at different levels of fertility and irrigation.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy for 60, 61 ; *Dhiancha* (G.M.) for 62. (c) 67 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super for 60, 62 ; Nil for 61. (ii) Clay. (iii) 7. 8.3.60 ; 15 to 18.2.61 ; 1 to 3.2.62. (iv) (a) 3 ploughings by tractor and *deshi* plough. (b) Ridge and furrows method with eye to eye setts. (c) 37050 setts/ha. (d) Rows 91 cm. apart. (e) —. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) Hoeing and earthing. (ix) 30·2 cm., 62·8 cm. ; 82·2 cm. (x) 15 to 18.2.61 ; 18 to 25.1.62 ; 12 to 18.3.63.

2. TREATMENTS :

Main-plot treatments:

All combinations of (1) and (2)

(1) 3 levels of fertility: M_0=Control, M_1=89 Kg/ha. of N as A/S+67 Kg/ha. of P_2O_5 as Super and M_2=2 M_1.

(2) 3 levels of irrigations : I_1=2 irrigations at 42 days interval, I_2=4 irrigations at 21 days interval and I_3=6 irrigations at 14 days interval.

Sub-plot treatments :

3 varieties : V_1=BO—17, V_2=BO—29, and V_3=BO—32.

3. DESIGN :

(i) Split-plot. (ii) (a) 9 main-plots/replication ; 3 sub-plots/main-plot. (b) 22·10 m. × 172·8 m. (iii) 3. (iv) (a) 22·10 m. × 6·40 m. (b) 22·10 m × 4·57 m. (v) 91 cm. on either side along length. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Germination count, no. of tillers and yield of cane. (iv) (a) 1959—64 (varieties changed in 1963). (b) No. (c) Results of combined analysis are given under 5. Results. (v) and (vi) Nil. (vii) Expt. no. 59(205) has also been included while giving combined results. Error variances for both the main and sub-plot treatments are homogeneous and Treatments × Years interactions are absent.

5. RESULTS:

Pooled results

(i) 333·1 Q/ha. (ii) (a) 87·2 Q/ha. (based on 88 d.f. made up of Treatments × Years interaction and pooled error). (b) 53·8 Q/ha. (based on 198 d.f. made up of Treatments × Years interaction and pooled error). (iii) Main effect of V alone is significant. (iv) Av. yield of cane in Q/ha.

	M_0	M_1	M_2	V_1	V_2	V_3	Mean
I_1	299·4	314·6	334·4	302·9	338·2	307·4	316·1
I_2	308·1	332·9	342·4	304·8	347·2	331·4	327·8
I_3	338·1	370·6	357·3	338·1	362·2	365.7	355·4
Mean	315·2	339·4	344·7	315·3	349·2	334·8	333·1
V_1	295·8	319·2	330·8				
V_2	348·6	354·9	344·1				
V_3	301·2	344·1	359·3				

C.D. for V marginal means=14·3 Q/ha.

Individual results

Treatment	M_0	M_1	M_2	Sig.	I_1	I_2	I_3	Sig.
Year								
1959	388·5	416·1	391·0	N.S.	391·6	402·0	402·0	N.S.
1960	376·6	398·5	368·4	N.S.	371·6	363·2	408·7	N.S.
1961	263·0	272·1	309·7	N.S.	281·0	267·7	296·1	N.S.
1962	232 7	271·0	309·9	**	220·4	278·5	314·7	**
Pooled	315·2	339·4	344·7	N.S.	316·1	327·8	355·4	N.S.

V_1	V_2	V_3	Sig.	G.M.	S.E./plot main-plot	S.E./plot Sub-plot
424·8	374·6	396·2	*	398·5	85·4	39·4
348·2	407·5	387·8	*	381·1	112·0	59·6
234·5	324·8	285·5	**	281·6	99·2	57·3
253·6	290·0	270·0	N.S.	271·2	78·9	53·9
315·3	349·2	334·8	*	333·1	87·2	53·8

Crop :- Sugarcane. **Ref :- Bh. 63(210), 64(242).**

Site :- Sugarcane Res. Sub-Stn., Agri. Res. Instt., Patna. **Type :- 'IMV'.**

Object : —To study the effect of different response of varieties to manure and irrigation for Sugarcane crop.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Paddy. (c) 22·5 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super ; 67 Kg/ha. of N as A/S +45 Kg/ha. of P_2O_5 as Super. (ii) Clay. (iii) 25 to 27.2.63 ; 21 to 25.2 64. (iv) (a) 1 ploughing by tractor and 2 *deshi* ploughings. (b) Ridge and furrows method with eye to eye setts. (c) 37050 setts/ha. (d) 91 cm. between rows. (e) —. (v) to (vii) As per treatments. (viii) Hoeing and earthing up. (ix) 113·3 cm. ; 125·8 cm. (x) 15 to 19.3.64 ; 2 to 12.1,65.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2)

(i) 3 doses of manures : M_0=Control, M_1=90 Kg/ha. of N as A/S+67 Kg/ha. of P_2O_5 as Super and M_2=179 Kg/ha. of N as A/S+135 Kg/ha. of P_2O_5 as Super.

(2) 3 irrigations : I_1=2 irrigations at 42 days interval, I_2=4 irrigations a 21 days interval and I_3=6 irrigations at 14 days interval.

Sub-plot treatments :

3 varieties : V_1=BO—34, V_2=BO—36 and V_3=BO—47.

3. DESIGN :

(i) Split-plot. (ii) (a) 9 main-plots/replication ; 3 sub-plots/main-plot. (b) 22·10 m.×172·80 m. (iii) 3. (iv) (a) 22·10 m.×6·40 m. (b) 22·10 m.×4·57 m. (v) 91 cm. on either side along length. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Germination and tillers count and yield of cane. (iv) (a) 1959—64 (varieties changed in 63). (b) No. (c) Nil. (v) No. (vi) Nil. (vii) Sub-plot error variances are heterogeneous, hence the results of individual years are presented under 5. Results.

5. RESULTS :

63(210)

(i) 278·0 Q/ha. (ii) (a) 109·6 Q/ha. (b) 98·1 Q/ha. (iii) Main effect of M is highly significant and main effect of V is significant. (iv) Av. yield of cane in Q/ha.

	M_0	M_1	M_2	V_1	V_2	V_3	Mean
I_1	218·4	279·8	354·9	332·5	232·3	288·2	284·3
I_2	218·2	244·3	344·8	298·5	286·9	221·9	269·1
I_3	23·6	229·3	380·1	332·2	242·1	277·7	280·7
Mean	223·1	251·1	359·9	317·7	253·8	262·6	278·0
V_1	260·0	270·6	422.7				
V_2	230·2	216·9	314·2				
V_3	179·0	265·9	342·9				

C.D. for M marginal means=63·2 Q/ha.
C.D. for V marginal means=54·2 Q/ha.

64(242)

(i) 384·6 Q/ha. (ii) (a) 58·8 Q/ha. (b) 57·7 Q/ha. (iii) Main effects of M and V are significant. (iv) Av. yield of cane in Q/ha.

	M_0	M_1	M_2	V_1	V_2	V_3	Mean
I_1	350·9	427·3	397·0	401·9	361·7	411·5	391·7
I_2	342·5	380·6	431·2	407·6	347·9	398·1	384·8
I_3	334·3	437·6	359·9	368·2	333·3	430·4	377·3
Mean	342·6	415·2	396·0	392·6	347·6	413·6	384·6
V_1	375·1	409·2	393·5				
V_2	288·4	390·7	363·7				
V_3	364·2	445·6	431·0				

C.D. for M marginal means=33·9 Q/ha.
C.D. for V marginal means=31·9 Q/ha.

Crop :- Sugarcane. **Ref :- Bh. 60(157).**

Site :- Sugarcane Res. Instt., Pusa. **Type :- 'ICV'.**

Object :—To study the behaviour of selected varieties for *Autumn* and *Spring* planting under irrigated and unirrigated conditions.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) Nil. (ii) Light loam. (iii) 21.10.59 (*Autumn*), 1.2.60 (*Spring*). (iv) (a) 2 to 3 ploughings with mould board plough and then *henga*. (b) Line sowing. (c) 64 three-budded settes/row. (d) 91 cm. between row. (e) Nil. (v) Nil. (vi) and (vii) As per treatments. (viii) Weeding and earthing. (ix) N.A. (x) 12.2.61.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2)

(1) 2 times of planting : A_1=*Autumn* and A_2=*Spring*.

(2) 2 irrigations: I_0=No irrigation and I_1=3 irrigations in *Autumn* and 2 irrigations in *Spring*.

Sub-plot treatments :

4 varieties: V_1=BO--17, V_2=BO—32, V_3=BO—29 and V_4=BO—35.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 4 sub-plots/main-plot. (b) 31·00 m.×81·10 m. (iii) 4. (iv) (a) 18·44 m.×7·32 m. (b) 18·44 m.×5·49 m. (v) 91 cm. on either side along length. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination and tillers count, height of plants, juice quality and yield of cane. (iv) (a) 1959 –61 (Expt. for 1961 –N.A.) (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 473·7 Q/ha. (ii) (a) 184·7 Q/ha. (b) 93·1 Q/ha. (iii) Main effect of A is highly significant and that of V is significant. (iv) Av. yield of cane in Q/ha.

	I_0	I_1	V_1	V_2	V_3	V_4	Mean
A_1	490·2	592·9	502·4	641·4	497·1	522·3	541·6
A_2	412·2	399·4	429·6	436·1	417·2	340·3	405·8
Mean	451·2	496·2	466·0	540·3	457·2	431·3	473·7
V_1	497·4	434·6					
V_2	520·6	559·9					
V_3	400·5	513·8					
V_4	386·4	476·2					

C.D. for A marginal means=104·4 Q/ha.
C.D. for V marginal means=66·8 Q/ha.

Crop :- Sugarcane. **Ref :- Bh. 60(169), 62(155).**

Site :- Sugarcane Res. Instt., Pusa. **Type :- 'ICM'.**

Object :—To find out the best dose of manures, irrigation and spacing between rows for *Adsali* planting of Sugarcane.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Wheat. (c) 45 Kg/ha. of N as A/S+56·5 to 84·1 Kg/ha. of P_2O_5 as Super. (ii) Medium loam. (iii) 17.8.60 to 20.8.60; 3 to 9.8.62. (iv) (a) 2 to 3 ploughings with tractor and then *henga*. (b) Line sowing. (c) 42·5 Q/ha. (three-budded setts). (d) As per treatments. (e) 1. (v) As per treatments. (vi) BO – 14. (vii) Irrigated as per treatments. (viii) Weeding and earthing. (ix) N.A. (x) 21.2.62 to 11.3.62 ; 15 to 25.2.64

2. TREATMENTS:

Main-plot treatments

All combinations of (1) and (2)

(1) 3 irrigations : I_1=4, I_2=6 and I_3=8 irrigations.

(2) 3 spacing between rows : S_1=91·4, S_2=106·9 and S_3=121·9 cm.

Sub-plot treatments

4 doses of manures: M_1=67·2 Kg/ha. of N+84·1 Kg/ha. of P_2O_5, M_2=134·5 Kg/ha. of N+112·1 Kg/ha. of P_2O_5, M_3=201·7 Kg/ha. of N+140·0 Kg/ha. of P_2O_5 and M_4=269·7 Kg/ha. of N+168·1 Kg/ha. of P_2O_5.

3. DESIGN:

(i) Split-plot. (ii) (a) 9 main-plots/replication ; 4 sub-plots/main-plot. (b) 59·74 m.×116·71 m. (iii) 3. (iv) (a) 27·4 m.×4·88 m. for S_1, 27·7 m.×4·88 m. for S_2, 28·04 m.×4·88 m. for S_3. (b) 25 60 m.×4 88 m. (v) Varies from 90 cm. to 132 cm. for S_1 to S_3. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Germination and tillers count, height of plants, juice anaysis and yield of cane. (iv) (a) 1960—62 (Expt. for 1961—N.A.). (b) No. (c) Results of combined analysis are given under 5. Results. (v) No. (vi) Nil. (vii) Main and sub-plot error variances are homogeneous and Treatments × Years interaction is present for main-plot and absent for sub-plot

5. RESULTS :

(i) 868 Q/ha. (ii) (a) 217·9 Q/ha. (based on 8 d.f. made up of Treatments × Years interaction). (b) 102·3 Q/ha. (based on 135 d.f. made up of pooled error and Treatments × Years interaction). (iii) None of the effects is significant. (iv) Av. yield of cane in Q/ha.

	S_1	S_2	S_3	M_1	M_2	M_3	M_4	Mean
I_1	818	842	827	839	821	826	830	829
I_2	933	874	899	872	895	881	959	902
I_3	872	901	850	886	880	863	867	874
Mean	874	872	859	865	865	857	885	868
M_1	869	874	854					
M_4	874	863	859					
M_2	865	848	858					
M_4	889	902	864					

Individual results

Treatment	I_1	I_2	I_3	Sig.	S_1	S_2	S_3	Sig.
Year								
1960	796	955	865	**	893	866	857	N.S.
1962	863	849	884	N.S.	856	878	861	N.S.
Pooled	829	902	874	N.S.	874	872	861	N.S.

M_1	M_2	M_3	M_4	Sig.	G.M.	S.E./plot main-plot	S.E./plot sub-plot
838	847	872	931	*	872	160·0	105·9
894	884	842	840	N.S.	865	117·8	90·9
866	865	857	885	N.S.	868	217·9	102·3

Crop :- Sugarcane. **Ref :- Bh. 60(192), 61(209).**

Site :- Sugarcane Res. Sub-Stn., (Agri. Res. Instt., Mithapur, Patna), Patna. **Type :- 'ICM'.**

Object :—To find out the optimum dose of N and P in combination with irrigation and spacings.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 67 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Cley. (iii) 20 to 22.3.60 ; 25 to 27.3.61. (iv) (a) One ploughing with tractor and 2 *deshi* ploughings. (b) Ridge and furrows method with eye to eye setts. (c) 37050 setts/ha. (d) As per treatments. (e) —. (v) As per treatments. (vi) BO—17 (late). (vii) As per treatments. (viii) Hoeing and earthing up. (ix) 109·2 cm. ; 62·8 cm. (x) 18 to 26.3.61 ; 15 to 24.2 62.

2. TREATMENTS:

Main-plot treatments :

3 irrigations: I_1=2 irrigations at 42 days interval, I_2=4 irrigations at 21 days interval and I_3=6 irrigations at 14 days interval.

Sub-plot treatments :

All combinations of (1) and (2)

(1) 5 doses of manures: M_0=Control, M_1=89·7 Kg/ha. of N+33·6 Kg/ha. of P_2O_5, M_2=89·7 Kg/ha. of N+67·2 Kg/ha. of P_2O_5, M_3=134·5 Kg/ha. of N+67·2 Kg/ha. of P_2O_5 and M_4=179·3 Kg/ha. of N+100·9 Kg/ha. of P_2O_5.

(2) 3 spacings: S_1=91·4, S_2=106·7 and S_3=121·9 cm. apart.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 15 sub-plots/main-plot. (b) 76·8 m.×73·1 m. for 60 ; N.A. for 61. (iii) 2. (iv) (a) 25·60 m.×4·88 m. for 60 ; 27·43 m.×4·88 m. for S_1, 27·74 m.×4·88 m. for S_2, 28·05 m.×4·88 m. for S_3 for 61. (b) 23·77 m.×4·88 m. for S_1, 23·47 m.×4·88 m. for S_2, 23·16 m.×4·88 m. for S_3 for 60 ; 25·60 m.×4 88 m. for S_1, S_2 and S_3 for 61. (v) Varies from 90 cm. to 200 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil for 60 ; Serious attack of pest and diseases. (iii) Germination and tillers count and yield of cane. (iv) (a) 1960—61. (b) No. (c) Nil. (v) No. (vi) Nil. (vii) Error variances for sub-plot treatments are heterogeneous and hence the resuts of individual years are persented under 5. Results.

5. RESULTS :

60(192)

(i) 463·6 Q/ha. (ii) (a) 132·7 Q/ha. (b) 98·3 Q/ha. (iii) Main effect of M alone is highly significant, (iv) Av. yield of cane is Q/ha.

	S_1	S_2	S_3	M_0	M_1	M_2	M_3	M_4	Mean
I_1	484·3	484·1	408·3	384·7	419·0	500·2	478·8	511·6	458·8
I_2	486·1	481·4	478·3	466·1	462·9	413·9	484·1	582·6	481·9
I_3	517·4	408·2	424·6	323·2	458·7	427·9	489·6	551·0	450·0
Mean	495·9	457·9	437·0	391·3	446·9	447·4	484·2	548·4	463·6
M_0	481.4	363 6	329·0						
M_1	485·9	408·6	446·1						
M_2	410·7	501·7	429·7						
M_3	477·3	484·5	490·7						
M_4	624·3	531·1	489·8						

C.D. for M marginal means=66·2 K/ha.

61(209)

(i) 225·5 Q/ha. (ii) (a) 87·2 Q/ha. (b) 45·6 Q/ha. (iii) Main effect of S is significant and main effect of M and interactions S×M and I×S are highly significant. (iv) Av. yield of cane in Q/ha.

	S_1	S_2	S_3	M_0	M_1	M_2	M_3	M_4	Mean
I_1	2.7·0	160·4	208·5	185·8	212·8	203·6	189·2	235·1	205·3
I_2	255·6	332·2	275·5	247·7	289·9	297·7	263·6	340·0	287 8
I_3	224·2	181·6	144·0	155·7	156·6	156·4	218·9	228·8	183·3
Mean	242,3	224·7	209·3	196·4	219·8	219·2	223·9	268·0	225·5
M_0	154·9	235·5	209'3						
M_1	276·2	201·5	181·5						
M_2	204·2	206'8	246·8						
M_3	283·6	204·8	183·2						
M_4	292.6	275·2	236·2						

C.D. for M marginal means=30·7 Q/ha.
C.D. for S marginal means=23·8 Q/ha.
C.D. for the body of S×M table=53·1 Q/ha.
C.D. for S means at the same level of I=41·2 Q/ha.
C.D. for I means at the same level of S=99.7 Q/ha.

Crop :- Sugarcane. **Ref :- Bh. 63(198).**

Site :- Bank Farm, Dalmianagar (Arrah c.f.) **Type :- 'D'.**

Object :—To find out the optimum dose of Gamma B.H.C. dust and liquid to control shoot borer of *Autumn* planted Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Pure sand. (iii) 89 Kg/ha. of N as A/S+67·2 Kg/ha. of P_2O_5 as Super. (iv) BO—14. (v) (a) 2 to 3 ploughings and then *henga*. (b) Line sowing. (c) 40, three-budded setts/row. (d) 91 cm. between rows. (e) Nil. (vi) 24 and 25.11.63. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 13 to 15.1.65.

2. TREATMENTS :

6 insecticidal treatments : T_0=Control, T_1=Gamma BHC dust at 1·12 Kg/ha., T_2=Gamma BHC dust at 0·84 Kg/ha., T_3=Gamma BHC liquid at 1·12 Kg/ha., T_4=Gamma BHC liquid at 0·84 Kg/ha. and T_5=Control with Aldrin dust 4 % at planting at 1·12 Kg/ha.

Date of application : 25.11.64.

3. DESIGN :

(i) R.B.D., 6 plots/replication, 4 replications. (ii) N.A. (iii) (a) 19·35 m.×8·23 m. (b) 18·44 m.×7·32 m. (iv) Yes.

4. GENERAL :

(i) Good. (ii) Shoot borer, control measure as per treatments. (iii) Germination and tillers count, height of plants and yield of cane. (iv) (a) 1963—only. (b) and (c) Nil. (v) Motipur and Motihari. (vi) and (vii) Nil.

5. RESULTS :

(i) 195 0 Q/ha. (ii) 54·4 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. yield	160·5	166·1	182·8	263·2	229·5	167·9

———

Crop :- Sugarcane. **Ref :- Bh. 63(197).**

Site :- Bank farm, Dalmianagar (Arrah c.f.) **Type :- 'D'.**

Object :—To find out the optimum dose of Gamma BHC dust and liquid to control shoot borer of *Spring* planted Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Pure sand. (iii) 89·7 Kg/ha. of N as A/S+67·2 Kg/ha. of P_2O_5 as Super. (iv) BO—14. (v) (a) 2 to 3 ploughings. (b) Line sowing. (c) 60, three-budded setts/row. (d) 91 cm. between rows. (e) Nil. (vi) 18.2.63. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 13 to 15.1.64.

2. TREATMENTS :

5 insecticidal treatments : T_0=Control, T_1=Gamma BHC dust at 1·12 Kg/ha., T_2=Gamma BHC dust at 0·84 Kg/ha., T_3=Gamma BHC liquid at 1·12 Kg/ha. and T_4=Gamma BHC liquid at 0·84 Kg/ha.

Insecticides applied on 18.2.63.

3. DESIGN :

(i) R.B.D., 5 plots/replication ; 4 replications. (ii) N.A. (iii) (a) 19·36 m.×8·23 m. (b) 18·44 m.×7·32 m. (iv) Yes.

4. GENERAL :

(i) Good. (ii) Shoot borer, control measures as per treatments. (iii) Germination and tillers count, height of plants, juice analysis, and percentage infestation. (iv) (a) 1963—only. (b) No. (c) Nil. (v) Warshaliganj, Motipur and Motihari. (vi) Nil. (vii) Yield data—N.A.

5. RESULTS:

(i) 20·7 degrees. (ii) 5·47 degrees. (iii) Treatment differences are highly significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4
Mean infestation	45·5	13·1	14·7	15·2	15·0

C.D.=8·43 degrees.

———

Crop :- Sugarcane. **Ref :- Bh. 60(178).**

Site :- Bairia Farm, Motihari (Champaran c.f.) **Type :- 'D'.**

Object :—To find out the optimum dose of Gamma BHC (Lindane) against shoot borer in different soil of Bihar.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 af Super. (ii) (a) Light loam. (iii) 84·1 Kg/ha. of N as Cast or cake+A/S+67·2 Kg/ha. of P_2O_5 as Super. (iv) BO—29. (v) (a) 2 to 3 ploughings with mould board and then *henga*. (b) Flat planting. (c) 64, three-budded setts/row. (d) 91 cm. between rows. (d) 91 cm. between rows. (e) Nil. (vi) 3.2.60. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 19 to 25.1.61.

2. TREATMENTS :

4 levels of Gamma BHC (E.C.) : T_0=Control, T_1=0·56, T_2=0·84 and T_3=1·12 Kg/ha. (actual in 681·9 lit. of water).

The emulsion of insecticides was poured over the setts with watering in the furrows at the time of planting on 13.2.60.

3. DESIGN :

(i) R.B.D., 4 plots/block ; 5 replications. (ii) N.A. (iii) (a) 19·66 m.×8·23 m. (b) 18·44 m.×7·32 m. (iv) Yes.

4. GENNRAL :

(i) Good. (ii) Shoot borer, control measures as per treatments. (iii) Germination count, shoot count, sett examination and incidence percentage. (iv) (a) 1960—62. (b) No. (c) Nil. (v) S R.I, Pusa-Zonal Centres. (vi) Nil. (vii) Yield data—N.A.

5. RESULTS :

(i) 18·24 degrees. (ii) 1·61 degrees. (iii) Treatment differences are highly significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	C.D.=2·22 degrees.
Mean infestation	26·6	17·8	14·4	14·3	

Crop :- Sugarcane. **Ref :- Bh. 61(194).**

Site :- Bairia Farm, Motihari (Champaran c.f.) **Type :- 'D'.**

Object :—To find out the optimum cose of Gamma BHC (Lindane) against shoot borer in different soil of Bihar.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sugarcane. (c) 67·2 Kg/ha. of N as A/S+84·1 Kg/ha of P_2O_5 as Super. (ii) Light loam. (iii) 553 4 Kg/ha. of C. cake+A/S. (iv) BO—14. (v) (a) 2 to 3 ploughings with mould board and then *henga*. (b) Flat planting. (c) 70, three-budded setts/row. (d) 91 cm. between rows. (e) Nil. (vi) 21, 22.2.61. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 25 to 30.1.62.

2. TREATMENTS :

4 levels of Gamma BHC (E.C.): T_0=Control, T_1=0·56, T_2=0·84 m. and T_3=1·12 Kg/ha. (actually in 681·9 litres of water).

The emulsion of the insecticides was pourd over the setts with watering in the furrows at the time of planting on 21, 22.2.61.

3. DESIGN :

(i) R.B.D., 4 plots/block and 5 replications. (ii) N.A. (iii) (a) 21·03 m.×10·97 m. (b) 20·12 m.×10·06 m. (iv) Yes.

4. GENERAL :

(i) Good. (ii) Shoot borer, control measures as per treatments. (iii) Germination count, shoot counting, incidence percentage of borer and yield of cane. (iv) (a) 1960—61 (variety changed in 61). (b) No. (c) Nil. (v) S.R.I., Pusa—Zonal Centres. (vi) and (vii) Nil.

5. RESULTS :

(i) 561·2 Q/ha. (ii) 45·7 Q/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_0	T_1	T_2	T_3	
Av. yield	445·4	668·6	573·0	557·8	C.D.=63·0 Q/ha.

Crop :- Sugarcane. **Ref :- Bh. 63(200), 64(236).**

Site :- Bairia Farm, Motihari (Champaran c.f.) **Type :- 'D'.**

Object : –To find out the optimum dose of Gamma BHC dust and liquid to control shoot borer.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sugarcane. (c) Nil ; 27·25 Kg/ha. of N as A/S+84·1 Kg/ha. of P_2O_5 as Super. (ii) Loam. (iii) 67·2 Kg/ha. of N as A/S+84·0 Kg/ha. of P_2O_5 as Super ; G.N.C. at 368 Kg/ha.+123·6 Kg/ha. of Super +138·3 Kg/ha of Castor cake+24·7 Kg/ha. of Mur. Pot. (iv) BO—32. (v) (a) 2 to 3 ploughings. (b) Line sowing. (c) 64 three-budded setts/row ; 60 three-budded setts/row. (d) 91 cm. between rows. (e) Nil. (vi) 18.2.63 ; 16.2.64. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 12 to 17.1.64 and 11 to 13.1.65.

2. TREATMENTS :

5 insecticidal treatments : T_0=Control, T_1=Gamma BHC dust at 1·12 Kg/ha., T_2=Gamma BHC dust at 0·84 Kg/ha., T_3=Gamma liquid at 1·12 Kg/ha. and T_4=Gamma liquid at 0·84 Kg/ha.

3. DESIGN :

(i) R.B.D., 5 plots/replication and 4 replications. (ii) N.A. (iii) (a) 19·35 m.×8·23 m. (b) 19·35 m.× 7·32 m. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Shoot borer ; control measures as per treatments. (iii) Height of plants, incidence of shoot borer and yield of cane. (iv) (a) 1963—64. (b) No. (c) Nil. (v) Motihari ; Dalmianagar. (vi) Nil. (vii) Error variances for the yield data are heterogeneous and Treatments × Years interaction is absent. Hence the results of individual years are presented under 5. Results.

5. RESULTS :

63(200)

Yield data

(i) 551·1 Q/ha. (ii) 53·3 Q/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	
Av. yield	446·9	601·9	523·4	619·0	564·5	C.D.=82·1 Q/ha.

Infestation data

(i) 30·4 degrees (ii) 4·7 degrees. (iii) Treatment differences are not significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4
Mean infestation	33·2	27·9	30·6	30·2	30·0

64(236)

Yield data

(i) 844·5 Q/ha. (ii) 76·6 Q/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_0	T_1	T_2	T_3	T_4
Av. yield	706·2	819 7	783·6	968·8	944·0

C.D.=118·2 Q/ha.

Infestation data

(i) 9·1 degrees. (ii) 0·8 degrees. (iii) Treatment differences are highly significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4
Mean infestation	11 9	7·8	8 2	8·7	9·0

C.D.=1·22 degrees.

Crop :- Sugarcane. **Ref :- Bh. 61(191).**

Site :- Rampur Farm, Bagaha (Champaran c.f.). **Type :- 'D'.**

Object :—To find out the optimum dose of Gamma BHC (Lindane) against shoot borer in different soil of Bihar.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Sugarcane. (c) 67·2 Kg/ha. of N as A/S+84·1 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) 737·8 Kg/ha. of Castor+276·7 Kg/ha. of Super+230·6 Kg/ha. of A/S. (iv) BO—34. (v) (a) 2 to 3 ploughings with mould board and then *henga*. (b) Flat planting. (c) 70, three-budded setts/row. (d) 91 cm. between rows. (e) Nil. (vi) 11.2.61. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 18.1.62.

2. TREATMENTS :

4 insecticidal treatments: To=Control, T_1=0·56, T_2=0·84 and T_3=1·12 Kg/ha. (actually in 681·9 lit. of water).

Method : The emulsion of the insecticides was poured over the setts with watering in the furrows at the time of planting on 11.2 61.

3. DESIGN :

(i) R.B.D., 4 plots/block ; 5 replications. (ii) N.A. (iii) (a) 19·35 m.×10·36 m. (b) 18·44 m.×10·97 m. (iv) Yes.

4. GERNERAL :

(i) Good. (ii) Shoot borer ; control measures as per treatments. (iii) Germination count, shoot counting, incidence percentage of borer and yield of cane. (iv) (a) 1961—only. (b) No. (c) Nil. (v) Zonal Centres and Pusa. (vi) and (vii) Nil.

5. RESULTS :

(i) 470·1 Q/ha. (ii) 46·0 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_0	T_1	T_2	T_3
Av. yield	432·1	498·8	471·9	477·7

Crop :- Sugarcane. **Ref :- 61(246).**

Site :- Ramkola farm, Marhowrah (Chapra c.f.). **Type :- 'D'.**

Object :—To find out the optimum dose of Gamma BHC at the time of planting against shoot borer.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanai*. (c) Nil. (ii) Loam. (iii) 7·4 Q/ha. of Castor cake. (iv) BO—14. (v) (a) 3 to 4 ploughings. (b) Flat planting. (c) 72 setts/row. (d) 91 cm. between rows. (e) —. (vi) 18.2.61. (vii) Irrigated. (viii) Weeding and earthing up. (ix) N.A. (x) 22.2.62.

2. TRETMENTS :

4 levels of Gamma BHC (EC) : T_0=0, T_1=0·56, T_2=0·84 and T_3=1·12 Kg/ha.
Emulsion of insecticides was poured in furrows on 18.2.61.

3. DESIGN :

(i) R.B.D. ; 4 plots/replication ; 5 replications. (ii) N.A. (iii) (a) 21·03 m.×10·36 m. (b) 20·12 m.× 10·06 m. (iv) Yes.

4. GENERAL :

(i) Good. (ii) Shoot borer ; control measures as per treatments. (iii) No. of total shoot and affected shoot and yield of cane. (iv) (a) No. (b) and (c) Nil. (v) Pusa, Bagaha, Jineshwargarh, Motipur and Motihari. (v) and (vii) Nil.

5. RESULTS :

(i) 491·9 Q/ha. (ii) 58·3 Q/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_0	T_1	T_2	T_3	
Av. yield	388·4	592·5	526·3	460·3	C.D.=80·3 Q/ha.

Crop :- Sugarcane. **Ref :- 61(195).**

Site :- Agri. Res. Instt., Dholi. **Type :- 'D'.**

Object :—To control shoot borer by soil application of pure Gamma BHC (Lindane) after complete germination of planted cane.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanai* for green manuring. (c) Nil. (ii) Sandy loam. (iii) 23.2.61. (iv) 3 to 4 ploughings. and then *henga* (b) Flat (c) 64 three-budded setts/row. (d) 91 cm. between rows. (e) Nil. (v) 230·6 Kg/ha. of A/S+230·6 Kg/ha. of Super+22·4 Kg/ha. of Eldrine 5%. (vi) BO—32. (viii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 20 to 23.1.63.

2. TREATMENTS :

4 levels of Gamma BHC : T_0=Control, T_1=0·56, T_2=1·12 and T_3=1·68 Kg/ha.
The emulsion of the insecticides was poured over plant base, ploughed with *deshi* plough and covered by *kudal* For equal distribution, the insecticides were applied with Hazara water can on 6.5.61 and 7.5.61.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) 29·26 m.×18·44 m. (iii) 5. (iv) (a) and (b) 18 44 m.×7·32 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Shoot borer, control measures as per treatments. (iii) Germination count, incidence of pests obeservations, shoot count and yield of cane. (iv) (a) 1961—only. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

Yield data

(i) 131·5 Q/ha. (ii) 32·6 Q/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of cane in Q/na.

Treatment	T_0	T_1	T_2	T_3	
Av. yield	59·9	177·6	155 0	133·5	C.D.=44·9 Q/ha.

Infestation data

(i) 13·65 degrees. (ii) 3·13 degrees. (iii) Treatment differences are not significant. (iv) Mean infestation of shoot borer in degrees.

Treatment	T_0	T_1	T_2	T_3
Mean infestation	13·7	15·5	12·1	13·2

Crop :- Sugarcane. **Ref :- Bh. 63(196).**

Site :- Mokampur Village, Warshaliganj (Gaya c.f.). **Type :- 'D'.**

Object :—To find out the optimum dose of Gamma BHC dust and liquid to control shoot borer.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sugarcane. (c) 67·2 Kg/ha. of N as A/S+84·1 Kg/ha. of P_2O_5 as Super. (ii) Light loam. (iii) F.Y.M. only. (iv) CO—421. (v) (a) 2 to 3 ploughings and then *henga*. (b) Flat planting. (c) 40 three-budded setts/row. (d) 91 cm. between rows. (e) Nil. (vi) 23 and 24.2.63. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 11 to 17.2.64.

2. TREATMENTS :

5 insecticidal treatments: T_0=Control, T_1=Gamma BHC dust at 1·12 Kg/ha., T_2=Gamma BHC dust at 0·84 Kg/ha., T_3=Gamma BHC liquid at 1 12 Kg/ha. and T_4=Gamma BHC liquid at 0·84 Kg/ha.

Insecticides were applied on 23 and 24.2.63.

3. DESIGN:

(i) (a) R.B.D., 5 plots/replication and 4 replications. (ii) N.A. (iii) (a) 19·05 m.×7·92 m. (b) 18·44 m.×7·32 m. (iv) Yes.

4. GENERAL:

(i) Good. (ii) Shoot borer, control measures as per treatments. (iii) Germination and tillers count, height of plants, incidence percentage and yield of cane. (iv) (a) No. (b) and (c) Nil. (v) Dalmia Nagar, Motipur and Motihari. (vi) Nil. (vii) Yield data—N.A.

5. RESULTS :

Infestation data

(i)15·30 degrees. (ii) 1·36 degrees. (iii) Treatment differences are highly significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	
Mean infestation	18·11	13·73	15·14	13·49	16·03	C.D.=2·10 degrees

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Crop :- Sugarcane. **Ref :- Bh. 60(175).**

Site :- Riga Village, Gopalpur (Muzaffarpur c.f.) **Type :- 'D'.**

Object :—To find out the optimum dose of pure Gamma BHC (Lindane) against shoot borer in different soil of Bihar.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Loam. (iii) 830·1 Kg/ha. of Castor cake+276·7 Kg/ha. of Super+138·3 Kg/ha. of A/S. (iv) X—3035. (v) (a) 2—3 ploughings with mould board and then *henga*. (b) Flat planting. (c) 70, three-budded setts/row. (d) 91 cm. between rows. (e) Nil. (vi) 8.2.60. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 7 and 8.1.61.

2. TREATMENTS :

4 insecticidal treatments: T_0=Control, T_1=0·56, T_2=0·84 and T_3 1·12 Kg/ha. of BHC (EC) in 681·9 lit. of water.

The emulsion of the insecticides was poured over the setts with water in the furrows at the time of planting.

3. DESIGN :

(i) R.B.D., 4 plots/block and 5 replications. (ii) N.A. (iii) (a) 20·73 m.×10·36 m. (b) 20·12 m.×10·16 m. (iv) Yes.

4. GENERAL :

(i) Good. (ii) Shoot borer, control measures as per treatments. (iii) Germination count, shoot counting, incidence percentage and yield of cane. (iv) (a) 1960—only. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS:

Yield data

(i) 743·8 Q/ha. (ii) 47·6 Q/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_0	T_1	T_2	T_3	
Av. yield	648·4	752·1	770·1	804·7	C.D.=65·6 Q/ha.

Infestation data

(i) 8·43 degrees. (ii) 0·96 degrees. (iii) Treatment differences are highly significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	
Mean infestation	10·94	7·93	7·91	6·95	C.D.=1·32 degrees.

Crop :- Sugarcane. **Ref :- Bh. 60(177), 61(193).**

Site :- Zamindari Farm, Motipur (Muzaffarpur c.f.). **Type :- 'D'.**

Object :—To find out the optimum dose of Gamma BHC (Lindane) against shoot borer in different soil of Bihar.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sugarcane. (c) 67·2 Kg/ha. of N as A/S+84·0 Kg/ha of P_2O_5 as Super. (ii) Loam. (iii) 368·92 Kg/ha. of Super+184·46 Kg/ha. of A/S. (iv) BO—14. (v) (a) 2—3 ploughings with mould board and then *henga*. (b) Flat planting. (c) 70, three-budded setts/row. (d) 91 cm. between rows. (e) Nil. (vi) 19 and 20.2.60; 11.2.61. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 15 and 21.2.61; 2.2.62.

2. TREATMENTS :

4 insecticidal treatments : T_0=Control, T_1=0·56, T_2=0·84 and T_3=1·12 Kg. of Gamma BHC (EC) In 681·9 lit. of water per hectare

3. DESIGN :

(i) R.B.D. ; 4 plots/replication ; 5 replications. (ii) N.A. (iii) (a) 21·03 m.×10·97 m. (b) 20·12 m.×10·06 m. (iv) Yes.

4. GENERAL :

(i) Good (ii) Shoot borer, control measure as per treatments. (iii) Germination count, Shoot counting and yield of cane. (iv) (a) 1960—61. (b) No. (c) Results of combined analysis are given under 5. Results. (v) S.R.I., Pusa, Zonal Centres. (vi) Nil. (vii) Error variances are homogeneous and Treatments×Years interaction is absent. Infestation data is N A. for 1961.

5. RESULTS :

Yield data

Pooled results

(i) 485·3 Q/ha. (ii) 51·5 Q/ha. (based on 27 d.f. made up of pooled error and Treatments×Years interaction). (iii) Treatment differences are highly significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_0	T_1	T_2	T_3	
Av. yield	418·7	504·8	506·9	510·7	C.D.=47·2 Q/ha.

Individual results

Treatment	T_0	T_1	T_2	T_3	Sig.	G.M.	S.E./plot
Year							
1960	418·2	511·3	526·9	555·1	**	502·9	52·9
1961	419·3	498·4	486·9	466·3	NS	667·7	46·9
Pooled	418·7	504·8	506·9	510·7	**	485·3	51·5

60(177)

Infestation data

(i) 13·1 degrees. (ii) 3·0 degrees. (iii) Treatment differences are highly significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	
Mean infestation	19·3	11·5	10·6	10·9	C.D.=4·12 degrees.

Crop :- Sugarcane. **Ref :- Bh. 60(179), 61(248),**

Site :- Zamindari Farm, Motipur (Muzaffarpur c f.) **Type :- 'D'.**

Object :—To control shoot borer by soil application of pure Gamma B.H.C. after complete germination.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sugarcane ; Paddy. (c) 67·2 Kg/ha. of N as A/S+84·1 Kg/ha. of P_2O_5 as Super ; 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Clayey loam. (iii) 461·1 Kg/ha. of Super+ 230·6 Kg/ha. of A/S ; 104·5 Kg/ha. of A/S. (iv) BO—14. (v) (a) 3 to 4 ploughings. (b) Flat planting. (c) 64 three-budded setts/row. (d) 91 cm. between rows. (e) —. (vi) 19.2.60 ; 11.2.61. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 15 to 22.1.61 ; 9.2.62.

2. TREATMENTS :

4 levels of Gamma BHC : T_0=Control, T_1=0·56, T_2=1·12 and T_3=1·68 Kg/ha.
The emulsion of the insecticides was poured over plant base, ploughed with *deshi* plough and covered with *Kudal*.

3. DESIGN :

(i) R.B.D. ; 4 plots/block ; 5 replications. (ii) N.A. (iii) (a) 19·35 m.×8·23 m. (b) 18·44 m.×7·32 m. (iv) Yes.

4. GENERAL :

(i) Good. (ii) Shoot borer, control measures as per treatments. (iii) Germination count, incidence percentage, yield of cane. (iv) (a) 1960—63 (variety changed in 62). (b) No. (c) Nil. (v) At other Zonal Centres. (vi) Nil. (vii) Yield data for 1961 was N.A.

5. RESULTS :

60(179)

Yield data

(i) 462·9 Q/ha. (ii) 45·4 Q/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_0	T_1	T_2	T_3	
Av. yield	380·8	448·7	491·7	530·5	C.D.=62·5 Q/ha.

Infestation data

(i) 15·9 degrees. (ii) 2·41 degrees. (iii) Treatment differences are highly significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	
Mean infestation	24·1	16·1	13·5	9·8	C.D.=3·3 degrees.

61(248)

Infestation data

(i) 28·7 degrees. (ii) 2·00 degrees. (iii) Treatment differences are significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	
Mean infestation	31·1	27·1	27·7	29·0	C.D.=2·74 degrees.

Crop :- Sugarcane. **Ref :- Bh. 62(160), 63(191)**

Site :- Zamindari Farm, Motipur (Muzaffarpur c.f.) **Type :- 'D'.**

Object :—To control shoot borer by soil application of pure Gamma BHC after complete germination.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Moong* ; Sugarcane. (c) G.M. ; 67·2 Kg/ha. of N as A/S+84·1 Kg/ha. of P_2O_5 as Super (ii) Sandy loam. (iii) Nil. (iv) BO 32. (v) (a) 3 to 4 ploughings. (b) Flat planting. (c) 64 three-budded setts/row. (d) 91·4 cm. between rows. (e) Nil. (vi) 13.2.62 ; ratoon crop in 63. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 5 to 8.2.63 ; 13 to 15.2.64.

2. TREATMENTS:

Same as Expt. No. 60(179), 61(248) on page 710.

3. DESIGN:

(i) R.B.D. ; 4 plots/block ; 3 replications for 62 and 5 for 63. (ii) N.A. (iii) (a) 19·35 m.×8·23 m. ; 19·35 m.×5·49 m. (b) 18·44 m.×7·32 m. ; 18·44 m.×5·49 m. (iv) Yes.

4. GENERAL:

(i) Good. (ii) Shoot borer, control measures as per treatments. (iii) Germination count, incidence of pests and yield of cane. (iv) (a) 1960—63 (variety changed in 62). (b) No. (c) Nil. (v) At other zonal centres. (vi) Nil. (vii) Very poor germination in 3rd replication, hence they were not considered in 62.

5. RESULTS:

Infestation data

62(160)

(i) 21·29 degrees. (ii) 2·17 degrees. (iii) Treatment differences are not significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3
Mean infestation	21·05	20·74	21·47	21·91

63(191)

(i) 25·53 degrees. (ii) 4·30 degrees. (iii) Treatment differences are significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3
Mean infestation	24·90	24·70	21·24	31·31

C.D.=5·92 degrees.

Yield data

63(191)

(i) 176·8 Q/ha. (ii) 15·34 Q/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of cane in Q/ha.

Tteatment	T_0	T_1	T_2	T_3
Av. yield	199·5	186·9	166·4	154·2

C.D.=21·14 Q/ha.

Crop :- Sugarcane. **Ref :- Bh. 63(199), 64(235).**

Site :- Zamindari Farm, Motipur (Muzaffarpur c.f.) **Type :- 'D'.**

Object :—To find out the optimum dose of Gamma B.H.C. dust and liquid to control shoot borer.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sugarcane. (c) N as A/S at 67·2 Kg/ha.+P_2O_5 as Super at 84·0 Kg/ha. ; G.N.C. at 553·3 Kg/ha.+Super at 184·4 Kg/ha.+A/S at 92·2 Kg/ha. (iii) Loam. (iii) N as A/S at 67·2 Kg/ha.+P_2O_5 as Super at 84·0 Kg/ha. ; G.N.C. at 645 Kg/ha.+Urea at 46·1 Kg/ha.+Super at 322·8 Kg/ha. (iv) BO—32. (v) (a) 2 to 3 ploughings and then *henga*. (b) Line sowing. (c) 60 to 64 three-budded setts/row. (d) 91 cm. between rows. (e) Nil. (vi) 20.2.63 ; 21.2.64. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 13.1.64 ; 10 to 15.1.65.

2. TREATMENTS:

5 insecticidal treatments : T_0=Control. T_1=Gamma BHC dust at 1·12 Kg/ha., T_2=Gamma BHC dust at 0·84 Kg/ha., T_3=Gamma BHC liquid at 1·12 Kg/ha. and T_4=Gamma BHC liquid at 0·84 Kg/ha.

3. DESIGN :

(i) R.B.D. ; 5 plots/replication and 4 replications. (ii) N.A. (iii) (a) 19·35 m.×8·23 m. (b) 18·44 m.× ×7·32 m. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Shoot borer ; control measures as per treatments. (iii) Germination and tillers count, height of plants, incidence % and yield of cane. (iv) (a) 1963—64. (b) No. (c) Nil. (v) Motipur, Dalmianagar ; Warshaliganj. (vi) Nil. (vii) Error variances for yield are homogeneous and Treatments×Years interaction is absent.

5. RESULTS :

Yield data

Pooled results

(i) 397·2 Q/ha. (ii) 49·0 Q/ha. (based on 28 d.f. made up of pooled error and Treatments×Years interaction). (iii) Treatment differences are highly significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_0	T_1	T_2	T_3	T_4
Av. yield	314·3	381·8	427·9	443·7	418·4

C.D.=50·2 Q/ha.

Individual results

Treatment	T_0	T_1	T_2	T_3	T_4	Sig.	G.M.	S.E./plot
Year								
1963	280·3	375·9	397·5	411·1	396·4	**	372·2	37·8
1964	348·4	387·7	458·4	476·3	440·4	N.S.	422·2	61·8
Pooled	314·3	381·8	427·9	443·7	418·4	**	397·2	49·0

Infestation data

63(199)

(i) 31·1 degrees. (ii) 6·7 degrees. (iii) Treatment differences are not significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4
Mean infestation	32·7	30·7	30·4	30·8	31·0

64(235)

(i) 11·0 degrees. (ii) 1·2 degrees. (iii) Treatment differences are highly significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4
Mean infestation	17·6	8·7	9·7	8·9	10·1

C.D.=1·85 degrees.

Crop :- Sugarcane. **Ref :- Bh. 63(190), 64(232), 65(17).**

Site :- Zamindari Farm, Motipur (Muzaffarpur c.f.) **Type :- 'D'.**

Object: To study the control measures against shoot borer by soil application of Gamma BHC (Lindane) after complete germination of planted cane.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) *Moong* for green manure ; Sugarcane. (c) Nil ; N as A/S at 67·2 Kg/ha.+P_2O_5 as Super at 84·0 Kg/ha. (for 64 and 65) (ii) Clayey loam. (iii) N at 67·2 Kg/ha+P at 84·0 Kg/ha.+C. cake at 553·3 Kg/ha.+ Super at 184·4 Kg/ha.+A/S at 92·2 Kg/ha. ; G.N.C. at 645·6 Kg/ha.+Urea at 46·1 Kg/ha.+ Super at 322·8 Kg/ha. ; N as A/S at 67·2 Kg/ha +P_2O_5 as Super at 82·5 Kg/ha. (iv) BO—32 ; BO—32 ; BO 14. (v) (a) 3 to 4 ploughings and then *henga*. (b) Flat planting. (c) 60 to 64 three-budded setts/row. (d) 91 cm. between rows. (e) Nil. (vi) 21.2.63 ; 23.2.64 ; 16.2.65. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 17 to 19.1.64 ; 12.2.65 ; 23.1.66.

2. TREATMENTS:

5 insecticidal treatments: T_0=Control, T_1=Gamma BHC (E.C.) at 1·68 Kg/ha., T_2=Gamma BHC (E.C.) at 1·12 Kg/ha., T_3= Gamma BHC (E.C.) at 0·56 Kg/ha. and T_4=Gamma BHC (E.C) at 0·84 Kg/ha.

3. DESIGN :

(i) R.B.D., 5 plots/replication, 4 replications. (ii) N.A. (iii) (a) 19·35 m.×6·40 m. (b) 18·44 m. ×5·49 m. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Shoot borer ; control measures as per treatments. (iii) Incidence of pest observations. shoot count and yield of cane. (iv) (a) 1963—65. (b) No. (c) Results of combined analysis are given under 5. Results. (v) S.R.I., Pusa and Zonal Centres. (vi) Nil. (vii) Error variances for the yield are heterogeneous and Treatments×Years interaction is present.

5. RESULTS :

Pooled results for yield

(i) 394·4 Q/ha. (ii) 112·4 Q/ha (based on 8 d.f. made up of Treatments×Years interaction). (iii) Treatment differences are not significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_0	T_1	T_2	T_3	T_4
Av. yield	306·7	411·1	411·5	371·5	471·1

Individual results

Treatment	T_0	T_1	T_2	T_3	T_4	Sig.	G.M.	S.E./plot
Year								
1963	288·7	348·1	361·5	342·4	378·0	N.S.	343·7	43·9
1964	324·1	514·4	511·5	434·4	663·3	**	489·6	76·5
1965	307·3	370·7	361·4	337·8	372·1	**	349·9	193·9
Pooled	306·7	411·1	411·5	371·5	471·	N.S.	394·4	112·4

Infestation data

63(190)

(i) 10·63 degrees. (ii) 2·22 degrees. (iii) Treatment differences are highly significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4
Mean infestation	16·80	8·58	8·72	9·83	9·24

C.D.=3·42 Q/ha.

64(23)

(i) 12·54 degrees. (ii) 1·06 degrees. (iii) Treatment differences are highly significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	
Mean infestation	18·00	10·70	12·25	12·69	9·08	C.D.=1·63 degrees

65(17)

(i) 10·44 degrees. (ii) 1·48 degrees. (iii) Treatment differences are highly significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	
Mean infestation	14·56	9·33	9·35	10·73	8·26	C.D.=2·28 degrees.

Crop :- Sugarcane. **Ref :- Bh, 64(257).**

Site :- Zamindari Farm, Motipur (Muzaffarpur c.f.). **Type :- 'D'.**

Object : – To find out optinum dose of Gamma BHC against shoot borer in planted Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sugarcane. (c) 45 Kg/ha. of N as A/S+82·5 Kg/ha. of P_2O_5 Super. (ii) Loam. (iii) 640 Kg/ha. of G.N.C.+46 Kg/ha. of Urea+323 Kg/ha. of Super. (iv) BO—32. (v) (a) 3 to 4 ploughings. (c) Flat planting. (c) 60 three-budded setts/row. (d) 91 cm. between rows. (e) —. (vi) 23.2.64. (vii) Irrigated. (viii) Weeding and earthing up. (ix) N.A. (x) 15.2.65.

2. TREATMENTS :

5 insecticidal treatments T_0=Control, T_1=Gamma BHC at 1·68 Kg/ha. (post planting application), T_2=Gamma BHC at 1·12 Kg/ha. (post planting application), T_3=Gamma BHC at 0·56 Kg/ha. (post planting application), T_4=Gamma B.H.C. at 0·84 Kg/ha. at the time of planting

Sprinkling of insecticides done with water over setts in furrows at planting. Post planting application was done by removing some soil near root area.

3. DESIGN :

(i) R.B.D., 5 plots/replication and 4 replications. (ii) N.A. (iii) (a) 18·34 m.×7·32 m, (b) 18·44 m.×5·49 m. (iv) Yes.

4. GENERAL :

(i) Good. (ii) Shoot borer ; control measures as per treatments. (iii) No. of total shoot and affected shoot and yield of cane. (iv) (a) 1964—only. (b) Yes. (c) Nil. (v) Dholi and Pusa. (vi) and (vii) Nil.

5. RESNLTS :

Yield data

(i) 486·6 Q/ha. (ii) 74·4 Q/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of cane in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	
Av. yield	324·1	499·6	511·5	434·4	663·3	C.D.=114 6 Q/ha.

Infestation data

(i) 12·54 degrees. (ii) 1·06 degrees. (iii) Treatment differences are highly significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	
Mean infestation	18·0	10·7	12·2	12·7	9·1	C.D.=1·63 degrees.

———

Crop :- Sugarcane. **Ref :- Bh. 61(247).**

Site :- Zamindari farm, Motipur (Muzaffarpur c.f.) **Type 'D'.**

Object :—To find out the optimum dose of Gamma B.H.C. in ratoon crop of Sugarcane against shoot borer.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sugarcane (planted). (c) 45 Kg/ha. of N as A/S+82·5 Kg/ha. of P_2O_5 as Super. (ii) loam. (iii) Nil. (iv) BO—14. (v) (a) to (e) N.A. (vi) Ratoon crop. (vii) Irrigated. (viii) Weeding and earthing up. (ix) N.A. (x) 12.2.62.

2. TREATMENTS :

4 insecticidal treatments : T_0=Control, T_1=0·56, T_2=1·12 and T_3=1·68 Kg/ha. of Gamma B.H.C. Insecticides applied on 25.3.61.

3. DESIGN :

(i) R.B.D.; 4 plots/replication ; 5 replications. (ii) N.A. (iii) (a) 19·35 m.×7·32 m. (b) 18·44 m.× 7·32 m. (iv) Yes.

4. GENERAL :

(i) Good. (ii) Shoot borer ; control measures as per treatments. (iii) No. of total shoots and affected shoots. (iv) (a) 1961—only. (b) No. (c) Nil, (v) Dholi. (vi) and (vii) Nil.

5. RESULTS :

(i) 16·6 degrees. (ii) 2·76 degrees. (iii) Treatment differences are not significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3
Mean infestation	16·3	18·2	15·7	16·2

———

Crop :- Sugarcane. **Bef :- Bh. 65(16).**

Site :- Zamindari farm, Motipur (Muzaffarpur (c.f.). **Type :- 'D'.**

Object :—To find out optimum dose of Gamma B.H.C. in ratoon crop of Sugarcane against shoot borer.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sugarcane (planted). (c) 45 Kg/ha. of N as A/S+82·5 Kg/ha. of P_2O_5 as Super. (ii) Clayee loam. (iii) BO—14. (v) (a) to (c) N.A. (vi) Ratoon crop. (vii) Irrigated. (viii) Weeding. (ix) N.A. (v) 13.2.66.

2. TREATMENTS :

Same as in expt. no. 61(195) at Dholi on page no. 707.

3. DESIGN :

(i) R.B.D. : 4 plots/block ; 5 replications. (ii) N.A. (iii) (a) 18·44 m.×7·32 m. (b) 18·44 m.×5·49 m. (iv) Yes.

4. GENERAL :

(i) Good. (ii) Shoot borer. (iii) No. of total shoot and affected shoot. (iv) (a) 1965—only. (b) and (c) Nil. (v) No. (vi) and (vii) Nil.

5. RESULTS :

(i) 13·4 degrees. (ii) 1·09 degrees. (iii) Treatment differences are not significant. (iv) Mean infestation in degrees.

Treamtent	T_0	T_1	T_2	T_3
Mean infestation	14·1	13·3	13·6	12·7

Crop :- Sugarcane. **Ref :- Bh. 63(194), 64(234).**

Site :- Motipur (Muzaffarpur c.f.), **Type :- 'D'.**

Object :—To find out minimum effective dose of insecticides for different types of soil against termits.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sugarcane; Fallow. (c) 67·2 Kg/ha. of N as A/S+84·0 Kg/ha. of P_2O_5 as Super ; Nil. (ii) Sandy loam ; Loam. (iii) Castor cake at 553·3 Kg/ha.+Super at 230·5 Kg/ha.+Urea at 22·42 Kg/ha. ; G.N.C. at 645·6 Kg/ha.+Urea at 49·4 Kg/ha+Super at 322·8 Kg/ha. (iv) BO—32 ; BO—14. (v) (a) 3 to 4 *deshi* ploughings. (b) Line sowing. (c) 60 three-budded setts/row. (d) 91 cm. between rows. (e) Nil. (vi) 19.2.63 ; 24 and 25.2.64. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 10 to 12.1.64 ; 30 and 31.12.64.

2. TREATMENTS :

11 insecticidal treatments : T_0=Control, T_1=BHC crude at 1·12 Kg/ha., T_2=BHC crude at 3·36 Kg/ha. T_3=Chlordane at 1·12 Kg/ha , T_4=Chlordane at 3·36 Kg/ha., T_5=Aldrine at 0·56 Kg/ha , T_6=Aldrine at 1·12 Kg/ha., T_7=Heptachlor at 0·56 Kg/ha., T_8=Heptachlor at 1·12 Kg/ha , T_9=Telodrine at 0·56 Kg/ha. and T_{10}= Telodrine at 1·12 Kg/ha.

3. DESIGN :

(i) R.B.D. ; 11 plots/replication and 4 replications. (ii) N.A. (iii) (a) 18 74 m.×5·79 m. (b) 18·44m.× 5·49 m. (iv) Yes.

4. GENERAL :

(i) Good. (ii) Termits attack, control measures as per treatments. (iii) Germination count, and yield of cane. (iv) (a) 1963–64. (b) No. (c) Nil. (v) Dalmianagar. (vi) Nil. (vii) Error variances are hetrogeneous and Treatments×Years interaction is absent, hence the results of individual years are presented under 5. Results.

5. RESULTS :

63(194)

(i) 515·0 Q/ha. (ii) 42·9 Q/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. yield	387·5	504·3	537·7	494·2	565·3	520·6

T_6	T_7	T_8	T_9	T_{10}
523·7	517·6	630·1	466·0	508·8

C.D.=61·9 Kg/ha.

64(234)

(i) 581·2 Q/ha. (ii) 99·4 Q/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. yield	423·6	530·3	545·6	540·1	561·0	555 0

T_6	T_7	T_8	T_9	T_{10}
568·8	688·5	773·7	571·6	634·8

C.D. = 143·6 Q/ha.

— —

Crop :- Sugarcane. **Ref :- Bh 60(181).**

Site :- Zamindari Farm, Motipur (Muzaffarpur c.f.). **Type :- 'D'.**

Object : —To find out the minimum effective dose of insecticides for different types of soil against termits.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sugarcane. (c) 67·2 Kg/ha. of N as A/S+84·1 Kg/ha. of P_2O_5 Super. (ii) Sandy loam. (iii) 61·2 Kg/ha. of P_2O_5 as Super+230·6 Kg/ha. of N as A/S. (iv) BO—14. (v) (a) 3 to 4 *deshi* ploughings. (b) Line sowing. (c) 60 three-budded setts/row. (d) 91 cm. between rows. (e) Nil. (vi) 19 and 20.2.60. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 30 and 31.12.60.

2. TREATMENTS :

9 insecticidal treatments : T_0=Control, T_1=BHC crude actual at 1·12 Kg/ha., T_2=BHC crude actual at 3·36 Kg/ha., T_3=Chlordane actual at 1·12 Kg/ha, T_4=Chlordane actual at 3·36 Kg/ha., T_5=Heptachlor actual at 0·56 Kg/ha., T_6=Heptachlor actual at 1·12 Kg/h ., T_7=Aldrine actual at 0·56 Kg/ha. and T_8=Aldrine actual at 1·12 Kg/ha.

The insecticides were applied in the furrows at the time of planting after placing setts on 60 and 20.2.60.

3. DESIGN :

(i) R.B.D., 9 plots/block and 4 replications. (ii) N.A. (iii) (a) 22·74 m.×5·03 m. (b) 22·13 m.×4·57 m. (iv) Yes.

4. GENERAL :

(i) Good. (ii) Termits attack, control measures as per treatments. (iii) Germination count, setts observat ons for termits,no. of setts in the unit, no. of germinated setts and yield of cane. (iv) (a) and (b) No. (c) Nil. (v) Jineshwargarh. (vi) Nil. (vii) No incidence of termits was noticed.

5. RESULTS :

(i) 413 0 Q/ha. (ii) 47·2 Q/ha. (iii) Treatment differences are not stgnificant. (iv) Av. yield of cane in Q/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Av. yield	362·6	403·2	441·0	426·3	391·2	412·4	456·7	397·7	426·3

———

Crop :- Sugarcane. **Ref :- 60(176), 61(192).**

Site :- Jineswargarh (Patna c.f). **Type :- 'D'.**

Object :—To find out the optimum dose of Gamma BHC (Lindane) against shoot borer in different soil of Bihar.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow ; Sugarcane (c) Nil ; 67·25 Kg/ha. of N as A/S+84 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) 84 Kg/ha. of N as Castor cake and A/S+ 67·2 Kg/ha. of P_2O_5 as Super. (iv) BO—14. (v) (a) 3 ploughings with mould board and then *henga*. (b) Flat planting. (c) 3 budded setts/row. (d) 91 cm. between rows. (e) Nil. (vi) 19 and 20.2.60 ; 24 and 25.2.61. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 14 to 17.2.61 ; 18.1.62.

2. TREATMENTS :

4 insecticidal teeatments : T_0=Control, T_1=Gamma B.H.C. (E.C.) at 0·56 Kg/ha. in 681·9 lit. of water, T_2=Gamma BHC (E.C.) at 0·8 Kg/ha. in 681·9 lit. of water and T_3=Gamma B.H.C. (E.C.) at 1·1 Kg. in 681·9 lit. of water.

3. DESIGN :

(i) R-B.D. ; 4 plots/replication ; 5 replications. (ii) N.A. (iii) (a) 19·30 m.×11 90 m. ; 17·30 m.×9·10 m. (b) 18·40 m.×11·00 m. ; 16.40 m.×8·20 m. (iv) Yes.

4. GENERAL :

(i) Good. (ii) Shoot borer ; control measures as per treatments. (iii) Germination count, shoot counting, sett examination, incidence percentage of borer, yield of cane. (iv) (a) 1960—61. (b) No. (c) Results of cambined analysis are given under 5. Results. (v) Pusa-Zonal Centres. (vi) Nil. (vii) Error variances are homogeneous and Treatments×Years interaction is persent.

5. RESULTS :

Pooled results

(i) 411·4 Kg/ha. (ii) 285·5 Q/ha. (based on 3 d.f. made up of Treatments×Years interaction). (iii) Treatment differences are not significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_0	T_1	T_2	T_3
Av. yield	243·9	447·9	468·0	485·6

Individual results

Treatment	T_0	T_1	T_2	T_3	Sig.	G.M.	S.E./plot
Year 1960	320·3	509·6	663·8	731·8	**	556·4	81·2
1961	167·4	386·2	272·3	249·4	**	266·4	63·3
Pooled	243·9	447·9	468·0	485·6	N.S.	411·4	285·5

60(176)

Infestation data

(i) 23·2 degrees. (ii) 4·1 degrees. (iii) Treatment differences are highly significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3
Mean infestation	46·8	17·6	15·2	13·4

C.D.=5·6 degrees.

Crop :- Sugarcane. **Ref :- Bh. 64(268).**

Site :- Bank Farm, Bihta (Patna c.f.) **Type :- 'D'.**

Object : —To find out the optimum dose at Gamma BHC dust and liquid to control shoot borer on Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Loam. (iii) 90 Kg/ha. of N as A/S+67 Kg/ha. of P_2O_5 as Super, (iv) BO—14. (v) 2 to 3 ploughings. (b) Setts burried in furrows. (c) 64 setts/row. (d) 91 cm. between rows. (e) —. (vi 18.11.64. (vii) Irrigated. (viii) Weeding. (ix) N.A. (x) 22, 24.1.66.

2. TREATMENTS :

6 insecticidal treatments : T_0=Control, T_1=Gamma BHC dust at 1·1 Kg/ha., T_2=Gamma BHC dust at 0·8 Kg/ha., T_3=Gamma BHC liquid at 1·1 Kg/ha., T_4=Gamma BHC liquid at 0·8 Kg/ha. and T_5=Aldrin dust 5 % at planting at 1·12 Kg/ha.

Insecticides were applied on 19.11.66.

3. DESIGN:

(i) R.B.D. ; 6 plots/block ; 4 replications. (ii) N.A. (iii) (a) 19·35 m.×8·23 m. (b) 18·44 m.×7·32 m. (iv) Yes.

4. GENERAL :

(i) Good. (ii) Shoot borer ; control measure as per treatments. (iii) Incidence percentage. (iv) (a) 1964 – only. (b) No. (c) Nil. (v) Dalmianagar, Motipur and Motihari. (vi) and (vii) Nil.

5. RESULTS :

(i) 12·97 degrees. (ii) 1·39 degrees. (iii) Treatment differences are highly significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Mean infestation	17 0	11·5	11·0	10·9	11·0	16·4

C.D.=2·09 degrees.

Crop :- Sugarcane. **Ref :- Bh. 60(243).**

Site : S.B. Sugar Mills, Bihta (Patna c.f.) **Type :- 'D'.**

Object:—To find out the effective insecticides for the control of beetle grub on Sugarcane when applied to furrows at the time of planting.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanai*. (c) Nil. (ii) Sandy loam. (iii) 66·2 Kg/ha. of N as A/S+84·13 Kg/ha. of P_2O_5 as Super. (iv) BO—14. (v) (a) 3 to 4 ploughings. (b) Flat planting in furrows. (c) 60 setts/row. (d) 91 cm. between rows. (e) —. (vi) 6 to 8.11.59. (vii) Irrigated. (viii) Weeding and earthing up. (ix) N.A. (x) 7.1.61

2. TREATMENTS :

5 insecticidal treatments : T_0=Control, T_1=3·4 Kg/ha. of Aldrin dust, T_2=3 4 Kg/ha. of Heptachlor dust, T_3=5·60 Kg/ha. of B.H.C. (tech) dust and T_4=5·60 Kg/ha. of Chlordane dust.

Insecticides were applied in furrows at the time of planting.

3. DESIGN :

(i) R.B.D. ; 5 plots/block ; 4 replications. (ii) N.A. (iii) (a) and (b) 18·44 m.×7·32 m. (iv) Yes.

4 GENERAL :

(i) Good. (ii) Beetle grub ; control measures as per treatments . (iii) Germination count, incendence of borer and population of beeffl grub. (iv) (a) 1960—only. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 3437 beetle grub/ha. (ii) 1437 beetle grub/ha. (iii) Treatment differences are highly significant. (iv) Av. population of beetle grub/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. popn.	7098	747	1494	1868	5977	7098

C.D.=2214 beetle grub/ha.

Crop :- Sugarcane. **Ref :- Bh. 62(217).**

Site :- Bihta Factory, Jinshewargarh (Patna c.f.). **Type :- 'D'.**

Object :—To find out the effective insecticides for the control of beetle grub on Sugarcane when applied in furrows at the time of planting and by broadcast.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Pure sand. (iii) 90 Kg/ha. of N as A/S+66·2 Kg/ha. of P_2O_5 as Super. (iv) BO—17. (v) (a) 3 to 4 ploughings. (b) Furrows method. (c) 64 setts/row. (d) 91 cm. between rows. (e) —. (vi) 8.3.62. (vii) Irrigated. (viii) Weeding and earthing up. (ix) N.A. (x) 12.4.63

2. TREATMENTS:

5 insecticidal treatments : T_0=Control, T_1=2·20 Kg/ha. of Aldrin, T_2=3·4 Kg/ha. of Heptachlor, T_3=3·4 Kg/ha. of BHC crude and T_4=5·6 Kg/ha. of Chlordane.

Soil application of insecticides in furrows at the time of planting.

3. DESIGN :

(i) R.B.D., 5 plots/replication, 8 replications. (ii) Nil. (iii) (a) 18·44 m.×7·32 m. (b) 18·44 m.×5·49 m. (iv) Yes.

4. GENERAL :

(i) Good. (ii) Beetle grub ; control measures as per treatments. (iii) Population of beetle grub. (iv) (a) 1962—only. (b) Yes. (c) Nil. (v) No. (vi) Nil. (vii) T_4 was not applied. Results as supplied by the Res. Stn. are presented under 5. Results.

5. RESULTS :

Furrows application

(i) 39343 beetle grub/ha. (ii) 17551 beetle grub/ha. (iii) Treatment differences are highly significant. (iv) Av. popn. of beetle grub/ha.

Treatment	T_0	T_1	T_2	T_3
Av. popn.	75561	18713	27727	35373

C.D.=18249 beetle grub/ha.

Broadcast application

(i) 27785 beetle grub/ha. (ii) 18153 beetle grub/ha. (iii) Treatment differences are highly significant. (iv) Av. popn. of beetle grub/ha.

Treatment	T_0	T_1	T_2	T_3
Av. popn.	58536	18012	21190	13400

C.D.=18878 beetle grub/ha.

Crop :- Sugarcane. **Ref :- Bh. 60(174), 61(190).**

Site :- Sugarcane Res. Instt., Pusa. **Type :- 'D'.**

Object :—To find out the optimum dose of pure Gamma B.H.C. against shoot borer in different soil of Bihar.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize ; Sugarcane. (c) Nil ; 67·2 Kg/ha. of N as A/S+84·0 Kg/ha. of P_2O_5 as Super. (ii) Light loam. (iii) 5 and 6.2.60 ; 7 and 8.2.61. (iv) (a) 3 ploughings. (b) Flat planting. (c) 70 three-budded setts/row ; 64 three-budded setts/row. (d) 91·4 cm. between rows. (e) Nil. (v) 329·7 Kg/ha. of G.N.C.+138·4 Kg/ha. of Super+57·6 Kg/ha. of Urea ; 461·1 Kg/ha. of G.N.C.+230·6 Kg/ha. of Super+230·6 Kg/ha. of A/S. (vi) BO—14. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 16 to 19.1.61 ; 28.12.61 to 2.1.62.

2. TREATMENTS :

Same as in Expt. No. 61(195) at Dholi on page 707.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) 43·58 m.×21·95 m. ; 34·75 m.×20·27 m. (iii) 5. (iv) (a) 20·73 m.×10·36 m. ; 19·35 m.×10·36 m. (b) 20·12 m.×10·06 m. ; 18·44 m.×10·06 m. (v) 30 cm.×15 cm. ; 46 cm.×15 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Shoot borer ; control measures as per treatments. (iii) Germination count, shoot counting, setts examination, borer incidence percentage and yield of cane. (iv) (a) 1960—62 (variety changed in 1962). (b) No. (c) Results of combined analysis are given under 5. Results. (v) Dholi and Zonal Centres. (vi) Nil. (vii) Error variances are homogeneous and Treatments×Years interaction is absent.

5. RESULTS :

Pooled results

(i) 564·0 Q/ha. (ii) 103·8 Q/ha. (based on 27 d.f. made up of pooled error and Treatments×Years interaction). (iii) Treatment differences are highly significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_0	T_1	T_2	T_3	
					C.D.=95·2 Q/ha.
Av. yield	400·7	574·0	611·2	670·0	

Individual results

Treatment	T_0	T_1	T_2	T_3	Sig.	G.M.	S.E. plot
Year 1960	461·9	587·8	630·2	708·7	*	597·1	117·7
1961	339·6	560·3	592·2	631·4	**	530·9	96·2
Pooled	400·7	574·0	611.2	670·0	**	564·0	103·3

Crop :- Sugarcane. **Ref :- Bh. 62(214).**

Site :- Sugarcane Res. Instt., Pusa. **Type :- 'D'.**

Object :—To study the effect of optimum dose of Gamma B.H.C. for ratoon crop of Sugarcane against shoot borer.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sugarcane (planted). (c) 45 Kg/ha. of N as A/S+82·5 Kg/ha. of P_2O_5 as Super. (ii) Clayey loam. (iii) Ratoon crop. (iv) (a) to (e) N.A. (v) Nil. (vi) BO—17. (vii) Irrigated. (viii) Weeding. (ix) N.A. (x) 10.2.63.

2. TREATMENTS :

Same as Expt. No. 61(195) at Dholi on page 707.

3. DESIGN:

(i) R.B.D. (ii) (a) 4. (b) 58·52 m.×6·86 m. (iii) 5. (iv) (a) 14·63 m.×6·86 m. (b) 13·72 m.×6·40 m. (v) 0·91 m.×0·46 m. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Shoot borer. (lii) No. of total shoot and affected shoot, yield of cane. (iv) (a) 1960—62 (variety changed in 1962). (b) No. (c) Nil. (v) Dholi, Motipur. (vi) Nil. (vii) Yield data—N.A.

5. RESULTS:

(i) 9·6 degrees. (ii) 1·3 degrees. (iii) Treatment differences are not significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3
Mean infestation	9·9	9·4	9·4	9·8

Crop :- Sugarcane. **Ref :- Bh. 60(240), 61(243).**

Site :- Sugarcane Res. Instt., Pusa. **Type :- 'D'.**

Object :—To find out the effect of foliar application of insecticides for the control of shoot borer in Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat ; *Dhaincha*. (c) 45 Kg/ha. of N as A/S+67·2 Kg/ha. of P_2O_5 as Super. (ii) Light loam. (iii) 4.2.60 ; 11.3.61. (iv) (a) 3 to 4 ploughings. (b) Flat planting. (c) 70 setts/row. (d) 91 cm. between rows. (e) —. (v) 323 Kg/ha. of G.N.C.+46 Kg/ha. of Urea+161 Kg/ha. of Super ; 78·46 Kg/ha. of A/S+84·0 Kg/ha. of G.N.C. and Super. (vi) BO—14. (vii) Irrigated. (viii) Weeding and earthing ud. (ix) N.A. (x) 10.1.61 ; 2.2.62.

2. TREATMENTS :

5 insecticidal treatments : T_0=Control, T_1=D.D.T. (E.C.) 0·5 % spray, T_2=Endrin (E.C.) 0·1 % spray, T_3=Dildrin (E.C.) 0·1 % spray and T_4=B.H.C.

Technical dust at top dressing at 3·4 Kg/ha.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 21·03 m.×10·36 m. ; 18·44 m.×7·32 m. (b) 20·12 m.× 10·06 m. ; 18·44 m.×7·32 m. (v) 46 cm.×15 cm. ; Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Shoot borer ; control measures as per treatments. (iii) No. of total shoots and affected shoots, yield of cane. (iv) (a) 1960—61. (b) No. (c) Results of combined analysis are presented under 5. Results. (v) No. (vi) Nil. (vii) Error variances are homogeneous and Treatments×Years interaction is absent.

5. RESULTS:

Yield

Pooled results

(i) 491·9 Q/ha. (ii) 56·8 Q/ha. (based on 28 d.f. made up of Treatments × Years interaction and pooled error). (iii) Treatment differences are highly significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_0	T_1	T_2	T_3	T_4
Av. yield	418·4	512·8	503·8	517·8	514·8

C.D.=58·2 Q/ha.

Individual results

Treatment	T_0	T_1	T_2	T_3	T_4	Sig.	G.M.	S.E./plot
Year								
1960	470·6	551·6	527·7	547·4	543·5	N.S.	527·6	59·5
1961	350·3	474·0	479·9	488·2	489·2	*	456·3	58·3
Pooled	410·4	512·3	503·8	517·8	514·8	**	419	56·8

Individual results (infestation in degrees)

Treatment	T_0	T_1	T_2	T_3	4	Sig.	G.M.	S.E./plot
Year								
1960	27·6	22·4	21·7	23·5	23·3	*	23·7	2·3
1961	40·3	29·8	23·4	35·3	34·8	**	32·8	4·3
Pooled	33·9	26·1	22·6	29·4	29·1	N.S.	28·2	6·4

Crop :- Sugarcane. **Ref :- Bh. 60(180).**

Site :- Sugarcane Res. Instt., Pusa. **Type :- 'D'.**

Object :—To control the shoot-borer by soil application of insecticides at high doses in liquid form.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) Nil. (ii) Sandy loam. (iii) 31.1.60. (iv) (a) 2—3 ploughings with tractor and then *henga*. (b) Flat planting. (c) 60 three-budded setts/row. (d) 91 cm. between rows. (e) Nil. (v) 184·5 Q/ha. of Compost+57·7 Kg/ha. of Urea+329·8 Kg/ha. of Groundnut cake+138·4 Kg/ha. of Super. (vi) BO—42. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 15 to 20.2.61.

2. TREATMENTS :

5 insecticidal treatments: T_0=Control, T_1=Gamma B.H.C. 20% (E.C.) at 1·12 Kg/ha. in 681·90 lit. of water, T_2=Aldrin 30% (E.C.) at 2·24 Kg/ha. in 681·90 lit. of water, T_3=Heptachlor 20% (E.C.) at 3·36 Kg/ha. in 681·90 lit. of water and T_4=Chlordane 7·5% (E.C.) at 5·60 Kg/ha. in 681·90 lit. of water.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) 20 57 m. × 39·47 m. (iii) 4. (iv) (a) 19·35 m × 7·62 m. (b) 18·44 m. × 7·32 m. (v) One row on one side and 30 cm. at one end. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination count, setts examination, total shoot count, borer incidence percentage. (iv) (a) 1960—65 (variety changed in 61). (b) No. (c) Nil. (v) No. (vi) and (vii) Nil.

5. RESULTS :

(i) 15·06 degrees. (ii) 1·70 degrees. (iii) Treatment differences are highly significant. (iv) Mean infestation in degrees.

Treament	T_0	T_1	T_2	T_3	T_4
Mean infestation	26·2	8·6	14·2	10·9	15·3

C.D.=2·6 degrees.

Crop :- Sugarcane. **Ref :- Bh. 61(196).**

Site :- Sugarcane Res. Instt., Pusa. **Type :- 'D'.**

Object :—To control the shoot-borer by soil application of insecticides at high doses in liquid form.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Light loam. (iii) 26.2.61. (iv) (a) 2—3 ploughings with tractor and then *henga*. (b) Flat planting. (c) 60 three-budded setts/row. (d) 91 cm. between rows. (e) Nil. (v) 57·6 Kg/ha. of Urea+329·8 Kg/ha. of Groundnut cake+138·4 Kg/ha. of Super. (vi) BO—14. (vii) Irrigated. (viii) Weeding and hoeing. (iv) N.A. (x) 12.2.62.

2. TREATMENTS :

5 insecticidal treatments : T_0=Control, T_1=Gamma B.H.C. 20% (E.C.) at 1·12 Kg/ha., T_2=Aldrine 30% (E.C.) at 2·24 Kg/ha., T_3=Heptachlor 20% (E.C.) at 3·36 Kg/ha. and T_4=Chlordane 75% (E.C.) at 5·60 Kg/ha.

Insecticides were applied in 681·9 lit. of water.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) 40·69 m.×20·57 m. (iii) 4. (iv) (a) 19·35 m.×7·92 m. (b) 18·44 m.×7·32 m. (v) One row on one side and 30 cm. on one end. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination count, borer incidence percentage, yield of cane. (iv) (a) 1961-65 (treatments modified in 62). (b) No. (c) Nil. (v) No. (vi) and (vii) Nil.

5. RESULTS :

Yield data

(i) 371·5 Q/ha. (ii) 64·9 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_0	T_1	T_2	T_3	T_4
Av. yield	314·3	390·4	409·0	422·6	320·9

Infestation data

(i) 11·9 degrees. (ii) 1·6 degrees. (iii) Treatment differences are highly significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4
Mean infestation	17·2	7·9	10·9	9·6	14·0

C.D.=2·47 degrees.

Crop :- Sugarcane. **Ref :- Bh. 62(161).**

Site :- Sugarcane Res. Instt., Pusa. **Type :- 'D'.**

Object :—To control the shoot-borer by soil application of insecticides at high doses in liquid form.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) Nil. (ii) Sandy loam. (iii) 24.1.62. (iv) (a) 2—3 ploughings with tractor and then *henga*. (b) Flat planting. (c) 64 three-budded setts/row. (d) 91 cm. between rows. (e) Nil. (v) 67·2 Kg/ha. of N as A/S+84·1 Kg/ha. of P_2O_2 as Super. (vi) BO—14. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 17 to 23.2.63.

2. TREATMENTS :

6 insecticidal treatments : T_0=Control, T_1=1·1 Kg/ha. of Gamma B.H.C. 20% (E.C.), T_2=2·2 Kg/ha. of Aldrin 30% (E.C.), T_3=3·4 Kg/ha. of Heptachlore 25% (E.C.), T_4=25·6 Kg/ha. of Chlordane 75% (E.C.) and T_5=1·1 Kg/ha. of Endrin 20% (E.C.).

Insecticides were applied in 681·9 lit. of water.

3. DESIGN:

(i) R.B.D. (ii) (a) 6. (b) 45·42 m.×19·17 m. (iii) 4. (iv) (a) 18·74 m.×7·62 m. (b) 18·44 m,×7·32 m. (v) 15 cm.×15 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination count, sett examination, total shoot count, percentage incidence of broer and yield of cane. (iv) (a) 1961—65 (treatments further modified in 63). (b) and (c) No. (v) to (vii) Nil.

5. RESULTS :

Yield data

(i) 487·8 Q/ha. (ii) 65·6 Q/ha. (iii) Treatment differences are significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_6	T_1	T_2	T_3	T_4	T_5	
Av. yield	364·6	562·2	499·2	515·3	467·4	517·9	C.D.=98·8 Q/ha.

Infestation data

(i) 22·17 degrees. (ii) 12·42 degrees. (iii) Treatment differences are highly significant. (iv) Mean infestation in degrees.

Treatment	T_6	T_1	T_2	T_3	T_4	T_5	
Mean infestation	31·32	14·70	22·70	20·09	23·02	21·18	C.D.=3·65 degrees.

Crop :- Sugarcane. **Ref :- Bh. 63(192), 64(233), 65(15).**

Site :- Sugarcane Res. Instt., Pusa. **Type :- 'D'.**

Object : —To control the shoot borer by soil application of insecticides at high doses in liquid form.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Moong* for green manure ; Maize ; Wheat. (c) Nil for 63 and 64 ; 45 Kg/ha. of N as A/S+67·2 Kg/ha. of P_2O_5 as Super. (ii) Heavy loam for 63 ; Light loam for others. (iii) 6.3.63 ; 17.3.64 ; 25.2.65. (iv) (a) 2 to 3 ploughings with tractors then *henga*. (b) Flat planting. (c) 60 three-budded setts/row for 63 and 64 ; 73 setts/row for 65. (d) 91 cm. between rows. (e) Nil. (v) 67·2 Kg/ha. of N as A/S+84·0 Kg/ha. of P_2O_5 as Super. (vi) BO—14. (vii) Irrigated. (viii) Weeding, earthing up and hoeing. (ix) N.A. (x) 8 to 11.2.64 ; 15 to 20.2.65 ; 13.2.66.

2. TREATMENTS :

7 insecticidal treatments: T_0=Control, T_1=Gamma B.H.C. 20% (E.C.) at 1·12 Kg/ha. T_2=Aldrin 30% (E.C.) at 2·34 Kg/ha., T_3=Heptachlor 20 % (E.C.) at 3·36 Kg/ha., T_4=Chlordane 75% (E.C.) at 5·63 Kg/ha., T_5=Endrine 20% (E.C.) at 1·12 Kg/ha. and T_6=Telodrine 15% (E.C.) at 1·12 Kg/ha.

Insecticides were applied in 681·9 lit. of water.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) 42·06 m.×12·13 m. (iii) 4. (iv) (a) 18·74 m.×6·10 m ; 18·90 m.×5·79 m.; 18·40 m.×7·30 m. (b) 18·44 m.×5·49 m ; 18·44 m.×5·49 m; 18·40 m.×5·50 m. (v) 15 cm.×30 cm.; 23 cm.× 15 cm ; 40 cm. on either side along length. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination count, percentage incidence of borer and yield of cane. (iv) (a) 1961—65 (Treatments modified in 63). (b) No. (c) Results of combined analysis are given under 5. Results. (v) No. (vi) Nil. (vii) Yield data for 1964—N.A. and error variances for the yield data for 1963 and 65 are heterogeneous and Treatments × Years interaction is absent, hence the results of individual years are presented under 5. Results.

5. RESULTS :

Yield data

63(192)

(i) 123·7 Q/ha. (ii) 88·2 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	166·7	84·3	184·8	75·4	144·1	63·5	146·9

65(15)

(j) 311·7 Q/ha. (ii) 27·9 Q/ha. (iii) Treatment differences are significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	
Av. yield	266·4	290·3	313·4	326·1	330·7	342·6	312·9	C.D.=41·4 Q/ha.

Infestation data

63(192)

(i) 16·40 degrees. (ii) 4·56 degrees. (iii) Treatment differences are highly significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	
Mean infestation	26·32	9·24	17·22	19·54	19·58	14·29	8·58	C.D.=6·77 degrees.

64(233)

(i) 9·85 degrees. (ii) 1·83 degrees. (iii) Treatment differences are highly significant. (iv Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	
Mean infestation	13·86	9·08	10·53	10·71	10·66	81·6	59·8	C.D.=2·70 degrees.

65(15)

(i) 14·58 degrees. (ii) 2·83 degrees. (ii) Treatment differences are highly significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	
Mean infestation	20·70	12·77	17·20	12·34	17·91	13·47	7·64	C.D.=4·19 degrees.

Crop :- Sugarcane. **Ref :- Bh. 63(189), 64(230).**

Site :- Sugarcane Res. Instt., Pusa. **Type :- 'D'.**

Object :—To control the shoot borer by foliar application of insecticides during summer.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Methi* for green manure ; *Moong* for green manure. (c) Nil. (ii) Light loam ; Medium loam. (iii) 12.3.63 ; 19.3.64. (iv) (a) 2 to 3 ploughings with mould board and then *henga*. (b) Flat planting. (c) 60, three-budded setts/row. (d) 91 cm. between rows. (e) Nil. (v) 67·2 Kg/ha. of N as A/S+84·0 Kg/ha. of P_2O_5 as Super. (vi) BO—3. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 8 to 14.2.64 ; 19 to 24.2.65.

2. TREATMENTS:

7 insecticidal treatments: T_0=Control, T_1=D.D.T (E.C.) 0·5%, T_2=Endrine (E.C.) 0·1%, T_3=Dieldrin (E.C.) 0·1 %, T_4=Gamma Cevelor 0·1 %, T_5=B.HC. crude at 3·36 Kg/ha. and T_6=Gamma B.H.C. at 0·86 Kg/ha.

Method of application : Foliar application of insecticides in 11·37 lit. of water.

3. DESIGN:

(i) R.B.D. (ii) (a) 7. (b) 19·35 m.×43·89 m. (iii) 4. (iv) (a) 19·35 m.×6·40 m. (b) 18·44 m.×5·49 m. (v) 46 cm.×46 cm. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Shoot borer, control measure as per treatments. (iii) No. of shoot borer, no. of top borer at different dates and yield of cane. (iv) (a) 1963—64. (b) No. (c) Nil. (v) No. (vi) Nil. (vii) Yield data for 1964—N.A.

5. RESULTS:

Yield data

63(189)

(i) 140·2 Q/ha. (ii) 3·70 Q/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	
Av. yield	112·1	148·7	144·7	145·3	142·7	147·4	140·0	C.D.=5·50 Q/ha.

Infestation data

63(189)

(i) 33·5 degrees. (ii) 10·5 degrees. (iii) Treatment differences are not significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6
Mean infestation	35·1	34·5	22·1	41·3	29·1	31·0	41·7

64(230)

(i) 15·5 degrees. (ii) 1·65 degrees. (iii) Treatment differences are not significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6
Mean infestation	17·1	15·8	15·2	14·9	14·3	14·7	16·3

Crop :- Sugarcane. **Ref :- Bh. 64(231).**

Site :- Sugarcane Res. Instt., Pusa. **Type :- 'D'.**

Object:—To control borer by post planting application of Gamma BHC in Ratoon crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sugarcane (planted cane). (c) 67·2 K/ha. of N as A/S+84·1 Kg/ha. of P_2O_5 as Super. (ii) Light loam. (iii) Ratoon crop. (iv) (a) 3 to 4 ploughings and then *henga*. (b) Flat planting. (c) 64 three-budded setts/row. (d) 91 cm. between rows. (e) Nil. (v) Nil. (vi) BO—3. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 14 to 16.2.65

2. TREATMENTS :

4 levels of Gamma BHC : T_0=Control, T_1=0·56, T_2=1·12 and T_3=1·68 Kg/ha.

The emulsion of insecticides was poured over plant base, ploughed with deshi plough and covered by *kudal*. For equal distribution, the insecticide was applied with Hazara/water can on 14.4.64.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) 35·66 m.×12·05 m. (iii) 3. (iv) (a) 12·51 m.×8·53 m. (b) 12·19 m.×8·23 m. (v) 16 cm.×15 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Shoot borer, control measure as per treatments. (iii) Germination count, incidence and pests observations, shoot count, no. of cane/plot, yield of cane. (iv) (a) 1964—only. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Yield data—N.A.

5. RESULTS :

(i) 10·43 degrees. (ii) 0·62 degrees. (iii) Treatment differences are highly significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	
Mean infestation	11·96	10·18	10·19	9·41	C.D.=1·07 degrees.

Crop :- Sugarcane. **Ref :- Bh. 65(14).**

Site :- Sugarcane Res. Instt., Pusa. **Type :- 'D'.**

Objec. :—To control shoot borer effect on Sugarcane crop by foliar spray of insecticides.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) 60 Kg/ha. of N as A/S+75 Kg/ha. of P_2O_5 as Super. (ii) Light loam. (iii) 24.2.65. (iv) (a) 3 to 4 ploughings. (b) Burried of setts. (c) 64 setts/row. (d) 91 cm. between rows. (e) —. (v) 45 Kg/ha. of N as A/S+82·5 Kg/ha. of P_2O_5 as Super. (vi) BO—50. (vii) Irrigated. (viii) Weeding and earthing up. (ix) N.A. (x) 1 to 3.3.66.

2. TREATMENTS :

8 insecticidal treatments : T_0=Control, T_1=D.D.T. 25% (E.C.) at 0·5% spray, T_2=Endrin 20 % (E.C.) at 0·1% spray, T_3=Malathin 50% (E.C.) at 0·05% spray, T_4=Dimecron 50% (W.P.) at 0·05 % spray, T_5=B.H.C. crude dust 5 % at 3·4 Kg/ha. at top dressing, T_6=Gamma B.H.C. 20 % E.C. at 0·8 Kg/ha. at the time of planting and T_7=Telodrin 15% (E.C.) at 0·1% spray.

Dates of spray : 10, 31.5.65 and 26.6.65.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 18·44 m.×7·32 m. (b) 18·44 m.×5·49 m. (v) 91 cm. on either side. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Attack of shoot borer. (iii) Germination and tillers count, height of plants, mature stalk count and yield of cane. (iv) (a) 1965—only. (b) Yes. (c) Nil. (v) and (vi) Nil. (vii) Yield data—N.A.

5. RESULTS :

(i) 20 3 degrees. (ii) 2·5 degrees. (iii) Treatment differences are significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Mean infestation	23·5	17·9	20·2	20·8	23·6	19·0	17·5	19·6

C.D.=3·7 degrees.

Crop :- Sugarcane. **Ref :- Bh. 62(213).**

Site :- Sugarcane Res. Instt., Pusa. **Type :- 'D'.**

Object :—To study the effect of optimum dose of pure Gamma BHC in furrows at the time of planting of Sugarcane as a measure of controlling shoot borer.

1. BASAL CONDITIONS :

(i) (a) Nii. (b) Wheat. (c) 45 Kg/ha. of N as A/S+82·5 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) 25 to 27.1.62. (iv) (a) 3 to 4 ploughings. (b) Flat planting. (c) 70 setts/row. (d) 91 cm. between rows. (e) Nil. (v) 60·2 Kg/ha. of N as A/S+84·1 Kg/ha. P_2O_5 as Super. (vi) BO—42. (vii) Irrigated. (viii) Weeding and earthing up. (ix) N.A. (x) 11.2.63.

2. TREATMENTS :

4 levels of Gamma B.H.C. 20 % (E.C.) : T_0=Control, T_1=0·56, T_2=0·84 and T_3=1·12 Kg/ha.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) 41·15 m.×21·05 m. (iii) 5. (iv) (a) 21·03 m.×10·36 m. (b) 20·12 m.×10·06 m. (v) 46 cm.×15 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Shoot borer, control measurs as per treatments. (iii) No. of total shoot and affected shoot, yield of cane. (iv) (a) 1962—only. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Yield data—N.A.

5. RESULTS :

(i) 19·37 degrees. (ii) 3·23 degrees. (iii) Treatment differences are highly significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3
Mean infestation	28·08	19·30	15·58	14·53

C.D.=4·45 degrees.

Crop :- Sugarcane. **Ref :- Bh. 62(212).**

Site :- Sugarcane Res. Instt., Pusa. **Type :- 'D'.**

Object :—To find out the effect of foliar application of insecticides on Sugarcane to control shoot borer.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) 45 Kg/ha. of N as A/S+67·2 Kg/ha. of P_2O_5 as Super. (ii) Light loam. (iii) 27 and 28.1.62. (iv) (a) 3 to 4 ploughings, (b) Flat planting. (c) 70 setts/row. (d) 91 cm. between rows. (e) Nil. (v) 70 Kg/ha. of N as A/S+75 Kg/ha. of P_2O_5 as Super. (vi) BO—42. (vii) Irrigated. (viii) Weeding and earthing up. (ix) N.A. (x) 6 to 9.2.63.

2. TREATMENTS

6 insecticidal treatments : T_0=Control, T_1=D.D.T. (E.C.) at 0·5 % spray, T_2=Endrin (E.C.) at 0·1 % spray, T_3=Dieldrin (E.C.) at 0·1 % spray, T_4=Gamma ceruder (E.C.) at 0·1 % spray and T_5=B.H.C. crude dust at 3·36 Kg/ha.

Insecticides were applied on 4, 26.5.62 and 20.6.62.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) and (b) 18·44 m.×7·32 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Shoot borer. (iii) No. of total shoot and effected shoot and yield of cane. (iv) (a) 1962—only. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Yield data—N.A.

5. RESULTS :

(i) 17·20 degrees. (ii) 2·05 degrees. (iii) Treatment differences are highly significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Mean infestation	21·72	17·39	15·23	18·30	17·25	13·32

C.D.=3·09 degrees.

Crop :- Sugarcane. **Ref :- Bh. 63(227).**

Site :- Sugarcane Res. Instt., Pusa. **Type :- 'D'.**

Object : —To study the control of nematodes associated with chlorosis disease of Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) 29.8.63. (iv) (a) 3 to 4 ploughings. (b) Flat planting. (c) 250 setts/row. (d) 91 cm. between rows. (e) —. (v) 66·2 Kg/ha. of N as A/S+84·1 Kg/ha. of P_2O_5 as Super. (vi) BO—14. (vii) Irrigated. (viii) Weeding and earthing up. (ix) N.A. (x) 15.1.65.

2. TREATMENTS :

5 insecticidal treatments : T_0=Control, T_1=10·6 gm. of D.D. soil fumigant+22·6 gm. of K. oil/bed, T_2=Spraying of 28 gm. of Fumazone in 2·7 lit. of water, T_3=Spraying of 14 gm. of Nemazone in 2·7 lit. of water and T_4=Broadcasting of 141·5 gm. of Sulphur dust.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 3. (iv) (a) and (b) 3·05 m.×1·52 m. (v) Nil. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Chlorosis effect on Sugarcane, control measure as per treatments. (iii) No. of total shoot and affected shoot, yield of cane. (iv) 1963—only. (v) and (vi) Nil. (vii) Yield data—N.A.

5. RESULTS :

(i) 15·4 degrees. (ii) 4·3 degrees. (iii) Treatment differences are not significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4
Mean infestation	14·7	12·1	16·6	16·7	17·1

Crop :- Sugarcane. **Ref :- Bh. 63(228).**

Site :- Bank Farm, Dalmianagar (Shahabad c.f.). **Type :- 'D'.**

Object : —To find out the effective insecticides for the coutrol of beetle grub of Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Pure sand. (iii) 90 Kg/ha. of N as A/S+66·2 Kg/ha. of p_2O_5 as Super. (iv) BO—32. (v) (a) 3 to 4 ploughings. (b) Flat planting in furrows. (c) 60 setts/row. (d) 91 cm. between rows. (e) N.A. (vi) 19·2·63. (vii) Irrigated (viii) Weeding and earthing up. (ix) N.A. (x) 12·2·64.

2. TREATMENTS :

9 insecticidal treatments : T_0=Control, T_1=2·2 Kg/ha. of Aldrin in furrows at planting, T_2=3·3 Kg/ha. of Aldrin at post planting application, T_3=3·3 Kg/ha. of Heptachlor in furrows at planting, T_4=3·3 Kg/ha. of Heptachlor at post planting application, T_5=5·6 Kg/ha. of Chlordane in furrows at planting, T_6=5·6 Kg/ha. of Chlordane at post planting application, T_7=3·3 Kg/ha. of B.H.C. crude in furrows at planting and T_8=5·6 Kg/ha. of B.H.C. crude at post planting application.

Insecticides were applied in furrows at planting as well as after planting.

3. DESIGN:

(i) R B.D., 9 plots/block and 4 replications. (ii) N.A. (iii) (a) 18·44 m.×7·32 m. (b) 18·44 m.×5·46 m. (iv) Yes.

4. GENERAL :

(i) Good. (ii) Beetle grub, control measures as per treatments. (iii) Germination count, incidence of borer, population of beetle grub. (iv) (a) 1963—only. (b) No. (c) Nil. (v) No. (vi) Nil. (vii) Results as supplied by the Res. Stn. are presented under 5. Results.

5. RESULTS :

(i) 12786 beetle grub/ha. (ii) 4776 beetle grub/ha. (iii) Treatment differences are highly significant. (iv) Av. population of beetle grub/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Av. popn.	20328	17424	10890	10527	6534	16335	12705	14883	5443

C.D.=6969 beetle grub/ha.

———

Crop :- Sugarcane. **Ref :- Bh. 63(229).**

Site :- Bank Farm, Dalmianagar (Shahabad c.f.). **Type :- 'D'.**

Object :—To find out the effective insecticides for the control of beetle grub on Sugarcane when applied in furrows at the time of planting and after planting.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Pure sand. (iii) 90 Kg/ha. of N as A/S+66·2 Kg/ha. of P_2O_5 as Super. (iv) BO—49. (v) (a) 3 to 4 ploughings. (b) Flat planting in furrows. (c) 60 setts/row. (d) 91 cm. between rows. (e) —. (vi) 23.11.63. (vii) Irrigated. (viii) Weedings and earthing up. (ix) N.A. (x) 10.1.65.

2. TREATMENTS :

10 insecticidal treatments : T_0=Control (no treatment), T_1=2·2 Kg/ha. of Aldrin dust 5% in furrows at planting, T_2=3·4 Kg/ha. of Heptachlor dust 5% in furrows at planting, T_3=5·6 Kg/ha. of Chlordane dust 5% in furrows at planting, T_4=3·4 Kg/ha. of B.H.C. crude dust 5% in furrows at planting, T_5=3 Kg/ha. of Aldrin dust at post planting+1·1 Kg/ha. of Aldrin at planting, T_6=3 Kg/ha. of Heptachlor dust at post planting+1·1 Kg/ha. of Aldrin at planting, T_7=5 Kg/ha. of Chlordane dust at post planting+1·1 Kg/ha. of Aldrin at planting, T_8=5 Kg/ha. of B.H.C. crude dust at post planting+1·1 Kg/ha. of Aldrin at planting and T_9=1·1 Kg/ha. of Aldrin at planting.

Dusting of insecticides mixed with road dust over cane setts at the time of planting. Broadcasting of insecticides at the time of egg laying and mixed with the help of 5-tyned cultivator.

Date of application : 23.11.63 and post-treatment on 20.6.64.

3. DESIGN :

(i) R.B.D., 10 plots/block ; 4 replications. (ii) N.A. (iii) (a) 18·44 m.×7·32 m. (b) 18·44 m.×5·49 m. (iv) Yes.

4. GENERAL :

(i) Good. (ii) Beetle grub ; control measures as per treatments. (iii) Incidence of pest. (iv) (a) 1963—64 (modified in 64, also variety is changed). (b) and (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 8252 beetle grub/ha. (ii) 2946 beetle grub/ha. (iii) Treatment differences are highly significant. (iv) Av. populaion of beetle grub/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9
Av. popn.	23222	7175	3588	9867	8073	8073	4485	5382	3588	8970

C.D.=4273 beetle grub/ha.

Crop :- Sugarcane. **Ref :- Bh. 64(258).**

Site .- Bank Farm, Dalmianagar (Shahabad c.f.). **Type :- 'D'.**

Object :—To find out the effective insecticides for the control of beetle grub on Sugarcane when applied in furrows at the time of planting and after planting.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Pure sand. (iii) 90 Kg/ha. of N as A/S+66 Kg/ha. of P_2O_5 as Super. (iv) Co—1004. (v) (a) 3 to 4 ploughings. (b) Flat planting in furrows. (c) 60 setts/row. (d) 91 cm. between rows. (e) —. (vi) 19 and 20.12.64. (vii) Irrigated. (viii) Weeding and earthing up. (ix) N.A. (x) 18.1.66.

2. TREATMENTS :

10 insecticidal treatments : T_0=Control, T_1=2·2 Kg/ha. of Aldrin dust 5% in furrows at planting, T_2=3·4 Kg/ha. of Heptachlor dust 5%, T_3=5·6 Kg/ha. of Heptachlor dust 5% at planting, T_4=3·4 Kg/ha. of B.H.C. crude dust 5% at planting, T_5=3 Kg/ha. of Aldrin dust at post planting+1·1 Kg/ha. of Aldrin at planting, T_6=3 Kg/ha. of Heptachlor dust at post-planting+1·1 Kg/ha. of Aldrin at planting, T_7=5 Kg/ha. of Chlordane dust+1·1 Kg/ha. of Aldrin at planting, T_8=5 Kg/ha. of B.H.C. crude dust+1·1 Kg/ha. of Aldrin at planting and T_9=1·1 Kg/ha. of Aldrin at planting.

Date of application : 19/20.12.64 and Post treatment—20.6.65.

3. DESIGN :

(i) R.B.D., 10 plots/block ; 4 replications. (ii) N.A. (iii) (a) 18·44 m.×7·32 m. (b) 18·44 m.×5·49 m. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Beetle grub. (iii) Germination and tillers count, incidence of borer, popn. of beetle grub. (iv) (a) 1963—64 (modified in 64 and variety is changed). (b) Yes (c) Nil. (v) No. (vi) Nil. (vii) Results as supplied by the Res. Stn. are presented under 5. Results.

5. **RESULTS:**

(i) 33189 beetle grub/ha. (ii) 11948 beetle grub/ha. (iii) Treatment differences are highly significant. (iv) Av. popn. of beetle grub/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9
Av. popn.	79834	32292	27807	25116	40365	19734	24219	24219	25116	33189

C.D.=17335 beetle grub/ha.

Crop :- Cotton (*Kharif*). **Ref :- Bh. 61(242), 62(210), 63(297).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object :—To find out the manurial requirements to cotton crop in acidic red loam soil.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Red loam. (iii) 7.6.61 ; 4.6.62 ; 16.6.63. (iv) (a) 3 ploughings. (b) Line sowing. (c) 7 Kg/ha. for 61 and 62 ; 12 Kg/ha. for 63. (d) 61 cm. between rows. (v) N.A. (vi) 216 F. (vii) Unirrigated for 61 and 62 ; Irrigated for 63. (viii) Weeding and hoeing. (ix) N.A. (x) 29.12.61 ; 27.12.62 ; 12.11.63, 10 and 18.12.63.

2. TREATMENTS :

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

(1) 2 levels of N as A/S : N_0=0 and N_1=45 Kg/ha.

(2) 2 levels of P_2O_5 as Super : P_0=0 and P_1=67·2 Kg/ha.

(3) 2 levels of K_2O as Mur. Pot. : K_0=0 and K_1=67·2 Kg/ha.

3. DESIGN :

(i) Fact. R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) and (b) 4·27 m.×12·19 m. for 61 and 62 ; 50·48 sq. m. for 63. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of *kapas*. (iv) (a) 1961-64. (b) Yes. (c) Results of combined analysis are presented under 5. Results. (v) No. (vi) Nil. (vii) Yield for 1964 is very poor and so it is not included for combined analysis. Error variances are heterogeneous and interactions NP×Years, NK×Years are present.

5. RESULTS :

Pooled results :

(i) 633 Kg/ha. (ii) 173·5 Kg/ha. (based on 8 d.f. made up of pooled interaction of NP×Years and NK×Years). (iii) Main effect of N is highly significant, (iv) Av. yield of *kapas* in Kg/ha.

	P_0	P_1	K_0	K_1	Mean
N_0	422	511	412	521	467
N_1	712	885	771	826	799
Mean	567	698	592	674	633

C.D. for N marginal means=76·04 Kg/ha.

Individual results :

Treatment	N_0	N_1	Sig.	P_0	P_1	Sig.	K_0	K_1
Year								
1961	408	837	**	562	683	**	610	635
1962	904	1379	**	1021	1262	**	1034	1248
1963	88	180	**	119	149	N.S.	131	137
Pooled	467	799	**	567	698	N.S.	592	674

Sig.	G.M.	S.E./plot
N.S.	622	80·4
**	1141	191·0
N.S.	134	49·9
N.S.	633	173·5

Crop :- Cotton (*Kharif*). **Ref :- Bh. 63(225), 64(329), 65(168).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object :—To find out the optimum dose of N and P for Cotton in acidic red loam soil.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Red loam. (iii) 6.6.63 ; 20 and 21.6.64 ; 19.6.65. (iv) (a) 3—4 ploughings. (b) Line sowing. (c) 7 Kg/ha. for 63 and 2 Kg/ha. for 64 and 65. (d) 60 cm. between rows. (e) —. (v) As per treatments. (vi) 216 F. (vii) Unirrigated ; Irrigated for 64 and 65. (viii) Weeding and hoeing. (ix) N.A. (x) 20.12.63 ; 9.11.64, 5.12.64, 17.12.64 ; 6.11.65, 11.12.65.

2. TREATMENTS :

All combinations of (1) and (2)+a control

(1) 3 levels of N as A/S : N_1=22·5 Kg/ha., N_2=45·0 Kg/ha. and N_3=67·2 Kg/ha.

(2) 5 levels of P_2O_5 as Super : P_0=0, P_1=22·5 Kg/ha., P_2=45·0 Kg/ha., P_3=67·2 Kg/ha. and P_4=89·7 Kg/ha.

3. DESIGN :

(i) Fact. R.B.D. (ii) (a) 16. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 7·50 m.×3·53 m. ; 7·51 m.×3·50 m. ; 25·29 sq. m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of *kapas*. (iv) (a) 1963-65. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Error variances are heterogeneous and Treatments × Years interaction is absent.

5. RESULTS :

63(225)

(i) 1304 Kg/ha. (ii) 264·9 Kg/ha. (iii) Main effect of N and 'control *vs.* others' are highly significant. (iv) Av. yield of *kapas* in Kg/ha.

Control=916 Kg/ha.

Treatment	P_0	P_1	P_2	P_3	P_4	Mean
N_1	1359	1166	1196	1129	1336	1237
N_2	1076	1325	1222	1314	1502	1238
N_3	1253	1365	1669	1491	1548	1455
Mean	1230	1285	1362	1311	1462	1330

C.D. for N marginal means=149·9 Kg/ha.
C.D. for 'control *vs.* others'=244·7 Kg/ha.

64(329)

(i) 480 Kg/ha. (ii) 135·2 Kg/ha. (iii) Main effect of N and 'control vs. others' are highly significant whereas the interaction N×P is significant. (iv) Av. yield of *kapas* in Kg/ha.

Control=240 Kg/ha.

	P_0	P_1	P_2	P_3	P_4	Mean
N_1	378	387	359	406	527	411
N_2	434	557	446	584	436	491
N_3	434	511	754	692	536	585
Mean	416	485	520	560	500	496

C.D. for N marginal means=76·5 Kg/ha.
C.D. for 'control *vs.* others'=124·9 Kg/ha.

65(168)

(i) 701 Kg/ha. (ii) 210·2 Kg/ha. (iii) Main effect of N, interaction N×P and 'control vs. others' are highly significant whereas main effect of P is significant. (iv) Av. yield of *kapas* in Kg/ha.

Control=384 Kg/ha.

	P_0	P_1	P_2	P_3	P_4	Mean
N_1	433	686	670	448	784	604
N_2	563	871	713	835	491	695
N_3	637	803	960	1000	932	866
Mean	544	787	781	761	735	722

C.D. for N marginal means =118·9 Kg/ha.
C.D. for P marginal means =153·4 Kg/ha.
C.D. for 'control *vs.* others' =194·2 Kg/ha.
C.D. for the body of N×P table=265·9 Kg/ha.

Crop :- Cotton (*Kharif*). **Ref :- Bh. 63(171), 64(220), 65(97).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object :—To evaluate the optimum dose of Potash requirement to Cotton crop.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Wheat for 63 and 64 ; Cotton. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam for 63 and 64 ; Red loam for 65. (iii) 8.7.63 ; 20.6.64 ; 25.6.65. (iv) (a) 3 ploughings. (b) Dibbling. (c) 7 Kg/ha. ; 11 Kg/ha. for 64 and 65. (d) 91 cm.×30 cm. (e) Nil. (v) 45 Kg/ha. of N as A/S. (v) 216 F. (vii) Unirrigated. (viii) Weeding, hoeing and earthing. (ix) 98 cm. ; 116 cm. ; N.A. (x) 2 and 24.12.63 ; 17.11.64, 14.12.64, 8 and 23.1.65 ; 12.2.66.

2. TREATMENTS:

6 manurial treatments : T_0=Control, T_1=67·2 Kg/ha. of P_2O_5 as Super, T_2=T_1+22·4 Kg/ha. of K_2O as Mur. Pot., T_3=T_1+45 Kg/ha. of K_2O as Mur. Pot., T_4=T_1+67·2 Kg/ha. of K_2O as Mur. Pot. and T_5=T_1+89·7 Kg/ha. of K_2O as Mur. Pot.

3. DESIGN:

(i) R.B D. (ii) (a) 6. (b) 14·02 m.×7·62 m. ; 15·85 m.×6·24 m. ; N.A. (iii) 6 ; 4 ; 4. (iv) (a) and (b) 7·32 m.×1·83 m. ; 5·79 m.×2·13 m. ; 5·49 m.×2·13 m. (v) Nil. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Height of plants, wt. of cotton seed/plant and yield of *Kapas*. (iv) (a) 1963—65. (b) No. (c) Nil. (v) No. (vi) Nil. (vii) Error variances are heterogeneous and Treatments×Years interaction is absent, hence the results of individual years are presented under 5. Results.

5. RESULTS:

3(171)

(i) 3497 Kg/ha. (ii) 522·6 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of *kapas* in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. yield	3340	3344	3739	3633	3116	3811

64(220)

(i) 924 Kg/ha. (ii) 169·7 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of *kapas* in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. yield	979	866	1051	888	984	777

65(97)

(i) 836 Kg/ha. (ii) 160·0 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of *kapas* in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. yield	736	861	774	919	806	919

Crop :- Cotton (*Kharif*). **Ref :- Bh. 63(173), 64(222), 65(99).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object :—To evaluate the effect of Urea as foliar spray on the yield of cotton.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Cotton ; Wheat ; Cotton. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam for 63 and 64 ; Red loam for 65. (iii) 25.6.63 ; 21.6.64 ; 25.6.65. (iv) (a) 3 ploughings. (b) Dibbling. (c) 11 Kg/ha. (d) 91 cm.×30 cm. (e) Nil. (v) 45·0 Kg/ha. of p_2O_5 as Super+67·2 Kg/ha. of K_2O as Mur. Pot. (vi) 216 F. (vii) Unirrigated. (viii) Weeding, hoeing and earthing. (ix) 116 cm. ; 107 cm. ; N.A. (x) 3.12.63 to 2.1.64 ; 14.11.64, 5.12.64, 26.12.64, 20.1.65 ; 13.2.66.

2. TREATMENTS :

5 manurial treatments : T_0=Control, T_1=One foliar spray of Urea at 2·16% Soln. in 1123·36 lit. of water/ha. after 35 days of sowing+33·6 Kg/ha. of N as Urea at sowing, T_2=Two foliar spray at 2·16 % Soln. in 1123·36 lit. of water/ha. after 3 and 70 days of sowing+ 22·4 Kg/ha. of N as Urea at planting, T_3=33·6 Kg/ha. of N as Urea to soil at sowing+11·2 Kg/ha. of N as Urea to soil after 35 days of sowing, T_4=22·4 Kg/ha. of N as Urea to soil at sowing+11·2 Kg/ha. of N as Urea to soil twice each at 35 and 70 days after sowing.

3. DESIGN:

(i) R.B.D. (ii) (a) 5. (b) 16·76 m.×3 96 m. ; 16·15 m.×4·41 m. ; N.A. (iii) 5. (iv) (a) 4·27 m ×3·35 m. for 63 and 64 ; 4·57 m.×2·74 m. for 65. (b) 3·66 m.×2·74 m. for 63. ; 3·96 m.×2·74 m. for 64 and 65. (v) 30 cm.×30 cm. ; 15 cm.30 cm.×30 cm. on either side. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Height of plants, no. of branches and leaves/plant, no. of plants/plot, wt. of 100 seeds, yield of *kapas*. (iv) (a) 1953–55. (b) No. (c) Nil. (v) No. (vi) Nil. (vii) Error variances are heterogeneous and Treatments×Years interaction is absent, hence the results of individual years are presented under 5. Results.

5. RESULTS:

63(173)

(i) 1794 Kg/ha. (ii) 552·4 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of *kapas* in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4
Av. yield	1576	1548	1865	2134	1846

64(222)

(i) 874 Kg/ha. (ii) 184·3 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of *kapas* in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4
Av. yield	587	813	1001	1028	935

C.D.=247·1 Kg/ha.

65(99)

(i) 624 Kg/ha. (ii) 94·3 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of *kapas* in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4
Av. yield	525	684	558	745	610

C.D. =126·4 Kg/ha.

Crop :- Cotton (*Kharif*). **Ref :- Bh. 60(232).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object :—To find out the responses of *kharif* crops to liming.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Red loam. (iii) 19.6.60. (iv) (a) 3 ploughings. (b) Line sowing. (c) 8 Kg/ha. (d) 60 cm. between rows. (e) —. (v) Nil. (vi) 216 F. (vii) Unirrigated. (viii) 2 weedings. (ix) N A. (x) 15.12.60

2. TREATMENTS :

4 manurial treatments : T_0=Control, T_1=4035 Kg/ha. of Lime, T_2=45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. and T_3=T_1+T_2.

3. DESIGN:

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 5. (iv) (a) and (b) 20·2 sq. m. (v) Nil. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Yield of *kapas*. (iv) (a) 1960—only.. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS:

(i) 422 Kg/ha. (ii) 49·3 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of *kapas* in Kg/ha.

Treatment	T_0	T_1	T_2	T_3
Av. yield	23	249	522	893

C.D.=67·9 Kg/ha.

Crop :- Cotton (*Kharif*). **Ref :- Bh. 64(214), 65(110).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object :—To evaluate the effect of Urea as foliar spray on the yield of Cotton crop.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Fallow ; Cotton. (c) Nil ; as per treatments. (ii) Sandy loam. ; Red loam. (iii) 25.6.64 ; 29.6.65. (iv) (a) 3 ploughings. (b) Dibbling. (c) 11 Kg/ha. ; 23 Kg/ha. (d) 91 cm.×31 cm. (e) —. (v) 45·0 Kg/ha. of P_2O_5 as Super+67·2 Kg/ha. of K_2O as Mur. Pot. (vi) 216—F. (viii) Weeding and hoeing. (ix) N.A. (x) 12, 27.11.64, 21.12.74, 20.1.65 ; 9.2.66.

2. TREATMENTS:

7 manurial treatments : T_0=Control, T_1=One foliar spray of Urea at 2·16 % solution after 35 days of sowing+33·6 Kg/ha. of N as Urea to soil at sowing, T_2=Two foliar spray of Urea at 2·16 % solution after 35 and 60 days of sowing+22·4 Kg/ha. of N as Urea to soil at sowing, T_3=Three foliar spray of N as Urea at 2·16% solution after 35, 60 and 85 days of sowing+11·2 Kg/ha. of N as Urea to soil at sowing, T_4=One foliar spray of N as Urea at 2·16 % solution after 60 days of sowing+33·6 Kg/ha. of N as Urea to soil at sowing, T_5=Two foliar spray of N as Urea at 2·16 % solution at 60 and 85 days after sowing+22·5 Kg/ha. of N as Urea to soil at sowing, T_6=One foliar spray of N as Urea at 2·16 % solution after 85 days of sowing+33·6 Kg/ha. of N as Urea to soil at sowing and transplanting.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) 31·39 m.×4·42 m. ; N.A. (iii) 3 : 5. (iv) (a) 3·96 m.×3·96 m. ; 4·57 m ×3·96 m. (b) 3·96 m.×3·96 m. for both years. (v) Nil. ; 30 c.m. on either side along length. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Height of plants, no. of seeds/plant, yield of *kapas*. (iv) (a) 1964—contd. (b) No. (c) Nil. (v) No. (vi) Nil. (vii) Since the expt. is contd. beyond 1965, the results of individual years are presented under 5. Results.

5. RESULTS :

64(214)

(i) 1280 Kg/ha. (ii) 388·0 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of *kapas* in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	895	1350	1613	1194	1335	1200	1376

65(110)

(i) 910 Kg/ha. (ii) 242·5 Kg/ha. (iii) Treatment differences are not significant (iv) Av. yield of *kapas* in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	590	893	1083	970	866	1006	963

Crop :- Cotton (*Kharif*). **Ref :- Bh. 60(75).**

Site :- Govt. Exptl. Farm, Nawada. **Type :- 'C'.**

Object :—To find out the suitable time of sowing for Cotton crop.

1. BASAL CONDITIONS:

(i) (a) to (c) N.A. (ii) N.A, (iii) As per treatments. (iv) (a) N.A. (b) Dibbling. (c) N A. (d) 91 cm. ×61 cm. (e) 2 to 3. (v) N.A. (vi) 216 F. (vii) Irrigated. (viii) One weeding. (ix) 75 cm. (x) 20.9.60 to 13.12.60.

2. TREATMENTS:

4 dates of sowing : D_1=7.5.60, D_2=14.5.60, D_3=21.5.60 and D_4=28.5.60.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) 12·19 m.×3·66 m. (b) 10·97 m.×2·74 m. (v) 46 cm.× 61 cm. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Yield of *kapas*. (iv) (a) to (c) No. (v) to (vii) Nil.

5. RESULTS:

(i) 313 Kg/ha. (ii) 82·2 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of *kapas* in Kg/ha.

Treatment	D_1	D_2	D_3	D_5	
Av. yield	286	481	244	242	C.D.=131·5 Kg/ha.

Crop :- Cotton (*Kharif*). **Ref :- Bh. 62(50).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'CM'.**

Object:—To see the manuring and spacing requirement for Cotton crop.

1. BASAL CONDITIONS:

(i) (a) to (c) Nil. (ii) N.A. (iii) 5.5.62. (iv) (a) 4 *deshi* ploughings. (b) Dibbling (c) 10 Kg/ha. (d) 90 cm. (e) 3. (v) 24·9 Q/ha. of Lime+44·8 Kg/ha. of P_2O_5 as Super. (vi) 216 F. (vii) Irrigated. (viii) 2 weedings. (ix) N.A. (x) 29.9.62, 23.10.62, 8 and 27.11.62.

2. TREATMENTS :

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

(1) 3 levels of N as A/S : N_0=0, N_1=44·8 and N_2=89·7 Kg/ha.
(2) 2 levels of K_2O as Mur. Pot. : K_0=0 and K_1=89·7 Kg/ha.
(3) 2 spacings : S_1=23 and S_2=46 cm.

3. DESIGN:

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 3·66 m.×4·57 m. (b) 2·74 m.×3·66 m. (v) 46 cm.×46 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Attack of leaf roller, sprayed 0·04 % Endrine and controlled by mechanical method of picking. (iii) Yield of *kapas*. (iv) (a) and (b) No. (c) Nil. (v) Siwan. (vi) and (vii) Nil.

5. RESULTS :

(i) 1092 Kg/ha. (ii) 449·3 Kg/ha. (iii) Main effect of S alone is highly significant. (iv) Av. yield of *kapas* in Kg/ha.

	N_0	N_1	N_2	S_1	S_2	Mean
K_0	1053	1190	1244	1390	934	1162
K_1	889	908	1268	1226	817	1022
Mean	971	1049	1256	1308	876	1092
S_1	1116	1222	1586			
S_2	826	876	926			

C.D. for S marginal means=264·1 Kg/ha.

Crop :- Cotton (*Kharif*). **Ref :- Bh. 64(99).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'CM'.**

Object:—To determine the best plant spacing and different doses of fertilizers for Cotton crop.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) N.A. (iii) 20.6.64. (iv) (a) 4 *deshi* ploughings. (b) Dibbling. (c) 15 to 17 Kg/ha. (d) 90 cm.×25 cm. (e) 3 to 4. (v) N.A. (vi) 216 *F*. (vii) Unirrigated. (viii) Weeding, thining and spading. (ix) N.A. (x) 29.10.64, 18.11 64, 7.12.64 and 4.1.65.

2. TREATMENTS :

All combinations of (1), (2), (3) and (4)

(1) 3 levels of N: N_1=22·4, N_2=44·8 and N_3=67·2 Kg/ha.
(2) 3 levels of P_2O_5: P_0=0, P_1=33·6 and P_2=67·2 Kg/ha.
(3) 3 levels of K_2O: K_0=0, K_1=33·6 and K_2=67·2 Kg/ha.
(4) 3 spacings: S_1=15, S_2=30 and S_3=46 cm.

3. DESIGN :

(i) 3^4 Confd. (ii) (a) 9 plots/block, 9 blocks/replication. (b) N.A. (iii) 1. (iv) (a) and (b) 4·57m.×2·74 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Germination count, flowering and yield of *kapas*. (iv) (a) No. (b) and (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1935 Kg/ha. (ii) 409·7 Kg/ha. (iii) Main effects of S and K are highly significant. (iv) Av. yield of *kapas* in Kg/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	S_1	S_2	S_3	Mean
N_1	2006	2109	1818	1827	2027	2079	2039	2190	1704	1977
N_2	1810	1805	1917	1567	2020	1945	1984	1935	1613	1844
N_3	1715	2158	2114	1774	1909	2304	2076	2243	1668	1996
Mean	1843	2024	1950	1723	1985	2109	2033	2123	1662	1939
S_1	1920	2109	2070	1978	1998	2123				
S_2	2004	2400	1964	1972	2125	2270				
S_3	1607	1563	1815	1218	1832	1935				
K_0	1663	1791	1714							
K_1	2025	2033	1894							
K_2	1843	2248	2236							

C.D. for S or K marginal means=225 3 Kg/ha.

Crop :- Cotton (*Kharif*). **Ref :- Bh. 60(73), 61(74).**

Site :- Agri. Res. Instt., Sabour. **Type 'CM'.**

Object :—To assess the best sowing time and manurial requirement with plant spacing.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Nil ; Wheat. (c) Nil. (ii) Clay loam. (iii) 7.5.60 ; 7.5.51. (iv) (a) 4 *deshi* ploughings. (b) Dibbling. (c) 15 to 17 Kg/ha. (d) 90 cm.×25 cm. (e) 3 to 4. (v) N.A. (vi) 216 F. (vii) Irrigated. (viii) Weeding and spading. (ix) N.A. (x) 20 and 21.9.60, 6, 7, 19 and 20.11.60, 17 and 18.12 60 ; 1.9.61, 25.10.61, 23.12.61.

2. TREATMENTS:

All combinations of (1), (2), (3) and (4)

(1) 3 times of sowing : T_1=1st week of May, T_2=2nd week of May and T_3=3rd week of May.
(2) 3 plant spacings : S_1=23, S_2=46, and S_3=61 cm.
(3) 3 levels of N : N_0=0, N_1=44·8 and N_2=89·7 Kg/ha.
(4) 3 levels of K_2O : K_0=0, K_1=67·2 and K_2=89·7 Kg/ha.

3. DESIGN :

(i) 3^4 Fact. (ii) (a) 81. (b) N.A. (iii) 2. (iv) (a) 4·57 m.×3·66 m. (b) 3 66 m.×2·74 m. (v) 46 cm.×46 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Flowering count and yield of *kapas*. (iv) 1960—61. (b) Yes. (c) Nil. (v) No. (vi) Nil. (vii) Error variances are heterogeneous and Treatments×Years interactions is absent. Hence the results of individual years are given under 5. Results,

5 RESULTS :

60(73)

(i) 417 Kg/ha. (ii) 79·7 Kg/ha. (iii) Main effects of T, S and N and interactions T×N, S×N, and S×K are highly significant and the interaction T×K is significant. (iv) Av. yield of *kapas* in Kg/ha.

	S_1	S_2	S_3	N_0	N_1	N_2	K_0	K_1	K_2	Mean
T_1	496	466	471	395	466	571	437	474	521	478
T_2	439	358	378	315	415	445	402	416	357	392
T_3	423	386	339	347	405	395	365	402	381	383
Mean	452	404	396	352	429	471	401	431	420	417
K_0	407	368	429	341	408	455				
K_1	482	441	370	341	441	512				
K_2	468	402	389	376	437	445				
N_0	347	365	345							
N_1	454	402	431							
N_2	557	444	412							

C.D. for any marginal means=30·5 Kg/ha.

C.D. for the body of any table=52·8 Kg/ha.

61(74)

(i) 684 Kg/ha. (ii) 168 7 Kg/ha. (iii) Main effects of T, S, N and K and interaction T×N are highly significant and interactions T×N and T×K are significant. (iv) Av. yield of *kapas* in Kg/ha.

	S_1	S_2	S_3	N_0	N_1	N_2	K_0	K_1	K_2	Mean
T_1	1049	833	735	761	899	957	730	687	1001	872
T_2	691	734	667	589	717	786	715	597	780	697
T_3	534	436	481	474	531	445	508	455	487	484
Mean	758	668	628	608	716	730	718	580	756	684
K_0	822	675	657	640	791	726				
K_1	667	541	532	452	613	673				
K_2	786	788	694	736	742	789				
N_0	684	592	548							
N_1	763	702	681							
N_2	826	708	654							

C.D. for any marginal means=64·6 Kg/ha.

C.D. for the body of any table=111·9 Kg/ha.

Crop :- Cotton (*Kharif*). **Ref :- Bh. 63(67).**

Site :- Siwan Farm, Siwan. **Type :- 'CM'.**

Object :—To see the manuring and spacing requirement for Cotton crop.

1. BASAL CONDITIONS :

(i) (a) and (c) Nil. (ii) N.A. (iii) 23 and 24·5.63. (iv) (a) 4 *deshi* ploughings. (b) Dibblings. (c) 10 Kg/ha. (d) 90 cm. between rows. (e) 3. (v) 24·9 Q/ha. of Lime+44·8 Kg/ha. of P_2O_5 as Super. (vi) 216 F. (vii) Unirrigated. (viii) 2 weedings. (ix) 137 cm. (x) 10, 11, 18.10.63 and 6.11.63.

2. TREATMENTS :

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

(i) 3 levels of N as A/S : N_0=0, N_1=44·8 and N_2=89·7 Kg/ha.

(2) 2 levels of K_2O as Mur. Pot. : K_0=0 and K_1=89·7 Kg/ha.

(3) 2 spacings : S_1=23 and S_2=46 cm.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. (b) N A. (iii) 4. (iv) (a) 3·66 m.×4·57 m. (b) 2·74 m.×3·66 m. (v) 46 cm.×46 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of *kapas*. (iv) (a) 1963—only. (b) No. (c) Nil. (v) Sabour. (vi) and (vii) Nil.

5. RESULTS :

(i) 619 Kg/ha. (ii) 214 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of *kapas* in Kg/ha.

	N_0	N_1	N_2	S_1	S_2	Mean
K_0	689	581	596	715	530	622
K_1	608	682	560	610	623	617
Mean	648	631	578	662	576	619
S_1	664	674	648			
S_2	632	588	508			

Crop :- Cotton (*Kharif*). **Ref : Bh. 60(155), 61(178), 62(152).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'D'.**

Object :—To evaluate the effect of harmones as foliar spray on Cotton with a view to prevent ball shedding and there by to improve yield.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize ; Cotton ; Wheat. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super (1960 and 62) ; 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. for 61, (ii) Sandy loam. (iii) 12.6.60 ; 14.6.61 ; 12.6 62. (iv) (a) 3 ploughings. (b) Dibbling. (c) 7 Kg/ha. for 60 ; 11 Kg/ha. for 61 and 62. (d) 30 cm.×61 cm. (e) Nil. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (vi) 216 F. (vii) Unirrigated. (viii) Weeding, hoeing and earthing up. (ix) 105 cm. ; 142 cm. ; 79 cm. (x) 13.10.60, 14.11.60, 4.2.61 ; 28 12.61 ; 3.12.62.

2. TREATMENTS :

All combinations of (1) and (2)+a control

(1) 2 types of harmones: $H_1=\alpha$—Napthyl acetic acid and $H_2=\beta$—Nepthyl acetic acid.

(2) 3 doses of harmones : D_1=40 ppm, D_2=20 ppm. and D_3=10 ppm.

Control=Water spray.

Harmones were applied by spraying.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) and (b) 6·10 m.×2·74 m, (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) No. of plants/plot ; Dates of flowering, no of roots/plant and yield of *kapas*. (iv) (a) 1960-62. (b) Yes. (c) Nil. (v) Sabour, Siwan and Latehar. (vi) Nil. (vii) Error variances are heterogeneous and Treatments × Years interaction is absent. Hence the results of individual years are presented under 5. Results.

5. RESULTS :

60(155)

(i) 2702 Kg/ha. (ii) 535·4 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of *kapas* in Kg/ha.

Control=2950 Kg/ha.

	D_1	D_2	D_3	Mean
H_1	2550	2816	2812	2726
H_2	2801	2330	2658	2596
Mean	2676	2573	2735	2661

61(178)

(i) 1094 Kg/ha. (ii) 244·1 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of *kapas* in Kg/ha.

Control=1042 Kg/ha.

	D_1	D_2	D_3	Mean
H_1	1145	1050	840	1012
H_2	1117	1281	1183	1194
Mean	1131	1166	1012	1103

62(152)

(i) 3025 Kg/ha. (ii) 360·9 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of *kapas* in Kg/ha.

Control=3268 Kg/ha.

	D_1	D_2	D_3	Mean
H_1	2932	2750	2863	2848
H_2	2973	3021	3368	3121
Mean	2952	2886	3116	2985

Crop :- Cotton (*Kharif*). **Ref :- Bh. 65(111).**

Site :- Agri. Res. Instt., Kanke. **Type 'D'.**

Object :—To evaluate the effect of different weedicides on weed populations and yield of Cotton.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Pea. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+67 Kg/ha. of K_2O as Mur. Pot. (ii) Red loam. (iii) 23.6.65. (iv) (a) 3 ploughings (b) Dibbling. (c) 23 Kg/ha. (d) 91 cm.× 31 cm. (e) —. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+67 Kg/ha. of K_2O as Mur. Pot. (vi) 216 F. (vii) Un-irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 18.10 65 to 12.1 66.

2. TREATMENTS :

8 weedicidal treatments : T_0=Control, T_1=1·12 Kg/ha. of Karmex W, T_2=1·12 Kg/ha. of Karmex DW, T_3=1·12 Kg/ha. of Coloran, T_4=2·25 Kg/ha. of Lorax, T_5=5·60 Kg/ha. of CP 31393, T_6=3·36 Kg/ha. of Seasone and T_7=Hand weeding.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N A. (iii) 4. (iv) (a) 4·27 m.×2·44 m. (b) 3·66 m.×2·44 m. (v) 30 cm. on either side along length. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Height of plants, no. of branches, weed population, and yield of *kapas*. (iv) (a) 1965–Contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 582 Kg/ha. (ii) 164·8 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of *kapas* in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	
Av. yield	185	787	1128	613	924	342	115	560	C.D.=242·3 Kg/ha.

Crop :- Cotton (*Kharif*). **Ref :- Bh. 61(168), 62(143), 63(179).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'D'.**

Object :—To study the effect of pre-planting, seed soaking and soil application of harmones on Cotton yield.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton for 61 ; Wheat for 62 and 63. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot for 61 ; 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super for 62 and 63. (ii) Sandy loam. (iii) 15.6.61 ; 12, 15.6 62 ; 17 to 19 6.63. (iv) (a) 3 ploughings. (b) Dibbling. (c) 7 Kg/ha. (d) 30 cm.×61 cm. for 61 and 62 ; 30 cm.×91 cm. for 63. (e) Nil. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (vi) 216 F. (vii) Unirrigated. (viii) Weeding, hoeing and earthing. (ix) 142 cm. ; 79 cm. ; 116 cm. (x) 28.12.61 ; 31.12.62 ; 25.12.63.

2. TREATMENTS :

3 harmone treatments : T_0=Control, T_1=10 pp.m. of Napthyl acetic acid and T_1=20 pp.m. of Napthyl acetic acid.

Two separate experiments were conducted to study the effect of soaking the seeds in harmones for 24 hrs. duration and another to study the effect of soil application of harmones.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) 49·68 m.×11·89 m. for 61 and 62 ; 11·28 m.×3·96 m. for 63. (ii) 8. (iv) (a) 4·57 m.×4·41 m. (b) 3·66 m.×3·66 m. (v) 45 cm.×38 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Height of plants and yield of *kapas*. (iv) (a) 1961—63. (b) Yes. (c) Nil. (v) No. (vi) Nil. (vii) Error variances are heterogeneous and Treatments×Years interaction is absent, hence the results of individual years are presented under 5. Results.

5. RESULTS ;

Seed soaking in harmones

61(168)

(i) 1219 Kg/ha. (ii) 206·6 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of *kapas* in Kg/ha.

Treatment	T_0	T_1	T_2
Av. yield	1195	1217	1246

62(143)

(i) 655 Kg/ha. (ii) 501·6 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of *kapas* in Kg/ha.

Treatment	T_0	T_1	T_2
Av. yield	652	667	645

63(179)

(i) 2299 Kg/ha. (ii) 439·2 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of *kapas* in Kg/ha.

Treatment	T_0	T_1	T_2
Av. yield	2371	2364	2162

Soil application of harmones

61(168)

(i) 965 Kg/ha. (ii) 150·3 Kg/ha. (iii) Treatment differences are not significant. (iu) Av. yield of *kapas* in Kg/ha.

Treatment	T_0	T_1	T_2
Av. yield	981	976	938

62(143)

(i) 779 Kg/ha. (ii) 469·5 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of *kapas* in Kg/ha.

Treatment	T_0	T_1	T_2
Av. yield	746	754	835

63(179)

(i) 1460 Kg/ha. (ii) 264·4 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of *kapas* in Kg/ha.

Treatment	T_0	T_1	T_2
Av. yield	1444	1514	1423

Crop :- Cotton (*Kharif*). **Ref :- Bh. 64(209).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'D'.**

Object :—To evaluate the effect of weedicides on weed population and yield of Cotton.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (ii) Sandy loam. (iii) 23.6.64. (iv) (a) 3 ploughings. (b) 10 seeds/hole. (c) 11 Kg/ha. (d) 91 cm.×30 cm. (e) —. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+67·2 Kg/ha. of K_2O as Mur. pot. (vi) 216 F. (vii) Unirrigated. (viii) Weeding, hoeing and earthing up. (ix) N A. (x) 15.10.64 to 2.1.65.

2. TREATMENTS :

10 weedicidal treatments : T_0=Control, T_1=1·12 Kg. of Simazine in 363·7 lit. of water/ha. (pre-emergence), T_2=14·33 lit. of Tok-E-25 in 363·7 lit. of water/ha. (pre-emergence), T_3=4·2 lit of Gramexone in 363·7 lit. of water/ha. (pre-emergence), T_4=T_1+2·24 Kg. of Tefapon in 363·6 lit. of water/ha. (post-emergence), T_5=T_2+2·24 Kg. of Tefapon in 363·6 lit. of water/ha. (post-emergence), T_6=2·8 lit. of Reglone in 136·38 lit. of water/ha. (pre-emergence), T_7=1·12 Kg. of Karmex W in 363.68 lit. of water/ha. (pre-emergence), T_8=1·12 Kg/ha. of Karmex DW in 363·8 lit. of water/ha. (pre-emergence) and T_9=Hand weeding.

3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) 37 34 m.×4 11 m. (iii) 3. (iv) (a) and (b) 3·66 m.×3·05 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Height of plants and yield of *kapas*. (iv) (a) 1964—65 (modified in 1965). (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 437 Kg/ha. (ii) 102·0 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of *kapas* in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9
Av. yield	157	202	432	386	264	564	300	757	834	472

Crop :- Cotton (*Kharif*). **Ref :- Bh. 65(103),**

Site :- Agri. Res. Instt., Kanke. **Type :- 'D'.**

Object :—To evaluate the effect of weedicides on weed population and yield of Cotton.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+67 Kg/ha of K_2O as Mur. Pot. (ii) Red loam. (iii) 20.6.65. (iv) (a) 3 ploughings. (b) Dibbling in hole. (c) 23 Kg/ha. (d) 91 cm.×30 cm. (e) —. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+67 Kg/ha. of K_2O as Mur. Pot. (vi) 216 F. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 18.10.65 to 10.1.66.

2. TREATMENTS :

10 weedicidal treatments : T_0=Control, T_1=1·12 Kg/ha. of Simazine in 898·4 lit. of water/ha. (pre-emergence), T_2=7 lit. of Tok-E-25. in 898·4 lit. of water/ha. (pre-emergence), T_3=3 pints of Gramexone in 898 4 lit. of water/ha. (pre-emergence), T_4=T_1+2·24 Kg. of Tefapon in 898·4 lit. of water/ha. (post-emergence), T_5=T_2+2·24 Kg/ha. of Tefapon in 898·4 lit. of water/ha. (post-emergence), T_6=1·1 lit. of Reglone in 336·6 lit. of water/ha. (pre-emergence), T_7=1·12 Kg/ha. of Karmex W in 898·4 lit. of water/ha. (pre-emergence), T_8=1·12 Kg/ha. of Karmex DW in 898·4 lit. of water/ha. (pre-emegence) and T_9=Hand weeding.

3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 3. (iv) (a) 3 96 m.×3·05 m. (b) 3·35 m.×3·05 m. (v) 30 cm. on either side along length. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Weed population and yield of *kapas*. (iv) (a) 1964—65 (modified in 1965). (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS:

(i) 251 Kg/ha. (ii) 120·9 Kg/ha. (iii) Treatment differences are highly significant. (iv) An. yield of *kapas* in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9
An.yield	114	258	300	111	287	153	150	398	532	206

C.D, =202·5 Kg/ha.

———

Crop :- Cotton (*Kharif*). **Ref :- Bh. 64(224).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'D'.**

Objeet :—To evaluate the effect of soil application of harmones on the yield of Cotton.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Cotton. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (ii) Sandy loam. (iii) 21.6 64. (iv) (a) 3 ploughings. (b) Dibbling. (c) 11 Kg/ha. (d) 91 cm.× 30 cm. (e) Nil. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+67·2 Kg/ha. of K_2O as Mur. Pot. (vi) 216 F. (vii) Unirrigated. (viii) Weeding, hoeing and earthing up. (ix) 108 cm. (x) 23.1.65.

2. TREATMENTS :

7 harmone treatments : T_0=Control, T_1=NAA at 40 ppm. after one month of sowing, T_2=NAA at 40 ppm. after one and two months of sowing, T_4=NAA at 20 ppm. after one month of sowing, T_5=NAA at 20 ppm after one and two months of sowing and T_6=NAA at 20 ppm. after one, two and three months of sowing.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) 6·24 m.×18·28 m. (iii) 3. (iv) (a) and (b) 5·79 m.×1·83 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Height of plants, no. and wt. of cotton-seed/plant, yield ot *kapas*. (iv) (a) 1964—65 (treatments modified in 1965). (b No. (c) Nil. (v) to (vii) Nil.

5. RESULTS:

(i) 1439 Kg/ha. (ii) 404·0 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of *kapas* in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	1539	1419	1649	1306	1221	1693	1243

———

Crop :- Cotton (*Kharif*). **Ref :- Bh. 65(96).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'D'.**

Object :—To evaluate the effect of soil application of harmones on the yield of Cotton.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+67 Kg/ha. of K_2O as Mur. Pot. (ii) Red loam. (iii) 26.6.65. (iv) (a) 3 ploughings. (b) Dibbling. (c) 11 Kg/ha. (d) 90 cm.×31 cm. (e) . (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+67 Kg/ha. of K_2O as Mur. Pot. (vi) 215 F. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 15.2.66.

2. TREATMENTS ;

5 harmone treatments : T_0=Control, T_1=N.A.A. at 40 ppm. after one month of sowing, $T_2=T_1$+N A.A at 40 ppm. after two months of sowing, T_3=N.A.A. at 20 ppm. after one month of sowing and $T_4=T_3$+N.A.A. at 20 ppm. after one month of sowing.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 3. (iv) (a) 6 40 m.×1·83 m. (b) 5·79 m.×1·83 m. (v) 30 cm. on either side along length. (vi) Yes

4. GENERAL :

(i) Good. (ii) Nil. (iii, Height of plants, no. of branches, yield of *kapas*. (iv) 1964—65 (treatments modified in 1965). (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 532 Kg/ha. (ii) 138·9 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of *kapas* in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4
Av. yield	544	510	522	456	629

Crop :- Cotton (*Kharif*). **Ref :- Bh. 63(308).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'D'.**

Object :—To find out the comparative efficacy of different insecticides of killing the cater-pillers of Cotton leaf-roller.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Red loam. (iii) 15.7.63. (iv) (a) 3 to 4 ploughings (b) Line sowing. (c) 12 Kg/ha. (d) 90 cm. between rows. (e) —. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (vi) 216 F. (vii) Irrigated. (viii) Weeding. (ix) N.A. (x) 10, 18 and 26.12.63.

2. TREATMENTS :

6 insecticidal treatments : T_0=Control, T_1=0·04 % Telodrin spray, T_2=0·04 % Folidol spray, T_3= 0·04 % Endrin spray, T_4=0·25 % Malamar spray and T_5=0·025 % Diazinon spray.

Two sprayings were done at 15 days interval (16.9.63 and 1.10.63), 1st spraying was done when the incidence was noticed. The percentage of mortality. of cater piller were noted by picking all the rolled leaves from each replication and by counting the number of dead and alive cater piller after 48 hours of treatments.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) and (b) 50·58 sq. m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of cater-pillers of cotton leaf-roller, control measures as per treatments. (iii) Yield of *kapas*. (iv) (a) 1963—only. (b) No. (c) N.A. (v) Sabour. (vi) and (vii) Nil.

5. RESULTS:

(i) 479 Kg/ha. (ii) 252·6 Kg/ha. (iii) Treatment differences are not significant. (iv) (a) Av. yield of *kapas* in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. yield	444	548	518	480	433	451

Crop :- Cotton (*Kharif*). **Ref :- Bh. 62(256).**

Site :- Agri. Farm, Latehar. **Type :- 'D'.**

Object:—To evaluate the effect of harmones foliar spray on Cotton with a view to prevent ball shedding and there by to improve yield.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Lalerite loam. (iii) 25.4.62. (iv) (a) 5 ploughings. (b) Dibblings. (c) 7 Kg/ha. (d) 61 cm.×30 cm. (e) —. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+ 45 Kg/ha. of K_2O as Mur. Pot. (vi) 216 F. (vii) Un-irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 5, 8.9.62, 12 and 13.11.62.

2. TREATMENTS:

7 harmone treatments: T_0=Control, T_1=α—Napthyl acetic acid at 40 ppm., T_2=α—Napthyl acetic acid at 20 ppm., T_3=α—Napthyl acetic acid at 10 ppm., T_4=β—Napthyl acetic acid at 40 ppm., T_5=β—Napthyl acetic acid at 20 ppm. and T_6=β—Napthyl acetic acid at 10 ppm.

3. DESIGN:

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 3·66 m.×4·37 m. (b) 3·05 m.×3·66 m. (v) 30 cm.×30 cm. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Yield of *kapas*. (iv) (a) No. (b) Nil. (c) N.A. (v) Kanke, Sabour and Siwan. (vi) and (vii) Nil.

5. RESULTS:

(i) 523 Kg/ha. (ii) 255·5 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of *kapas* in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	421	299	490	563	594	505	786

Crop :- Cotton (*Kharif*). **Ref :- Bh. 64(342).**

Site :- Meshra (Ranchi c.f.). **Type :- 'D'.**

Object:—To know the comparative efficacy of different insecticides in killing the cater-pillers of Cotton leaf-roller.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Red loam. (iii) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super +45 Kg/ha. of K_2O as Mur. Pot. (iv) 216 F. (v) (a) 3 to 4 ploughings. (b) Line sowing. (c) 12 Kg/ha. (d) 90 cm. between rows. (e) —. (vi) 19.7.64. (vii) Irrigated. (viii) Weeding and harrowing. (ix) N.A. (x) 15, 19 and 27.12.64.

2. TREATMENTS :

6 insecticidal treatments : T_0=Control, T_1=Spray of 0·04 % Telodrin, T_2=Spray of 0·04 % Folidol, T_3=Spray of 0·04 % Endrin, T_4=Spray of 0·25 % Malathion and T_5=Spray of Dieldrin.

Insecticides were sprayed on 31.10.64 and 18.11.64.

3. DESIGN :

(i) R.B.D., 6 plots/replication, 3 replications. (ii) N.A. (iii) (a) and (b) 50·58 sq. m. (iv) Yes.

4. GENERAL :

(i) Good. (ii) Attack of cater piller, control measures as per treatments. (iii) % of mortality. (iv) (a) 1964—only. (b) No. (c) Nil. (v) Sabour. (vi) Nil. (vii) Yield data of *kapas* N.A.

5. RESULTS :

(i) 54·7 degrees. (ii) 8·5 degrees. iii) Treatment differences are highly significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Mean infestation	25·1	77·7	71·9	52·9	50·7	48·6

C.D.=15·5 degree.

Crop :- Cotton (*Kharif*). **Ref :- Bh. 62(257).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'D'.**

Object :—To evaluate the effect of harmones as foliar spray on Cotton with a view to prevent boll shedding and there by to improve yield.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Pea. (c) 22·5 Kg/ha. of N as A/S+22·5 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) 27.4.62. (iv) (a) 3 ploughings. (b) Dibbling in holes. (c) 7 Kg/ha. (d) 61 cm.×31 cm. (e) —. (vi) 2690 Kg/ha. of F.Y.M. (vi) 216 F. (vii) Un-irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 31.8.62, 21.9.62, 7.11.62, 8 11.62.

2 TREATMENTS:

All combinations of (1) and (2)+one control

(1) Two harmones : $H_1=\alpha$—Napthyl acetic acid and $H_2=\beta$—Napthyl acetic acid.

(2) 3 concentrations : D_1=40 ppm, D_2=20 ppm and D_3=10 ppm.

3. DESIGN:

(i) Fact. in R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 4·57 m.×6·71 m. (b) 2·74 m.×6·10 m. (v) 83 cm. ×31 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Mild attack of leaf roller which was controlled by 0·02 % Endrine spray on 12.7.62. (iii) Yield of *kapas*. (iv) (a) No. (b) Nil. (c) N.A. (v) Kanke, Siwan and Latehar. (vi) and (vii) Nil.

5. RESULTS :

(i) 1006 Kg/ha. (ii) 143·0 Kg/ha. (iii) Main effect of H is highly significant. (iv) Av. yield of *kapas* in Kg/ha.

	D_1	D_2	D_3	Mean
H_1	837	1021	846	901
H_2	1107	1064	1047	1073
Mean	972	1042	946	987

C.D. for H marginal means=122·6 Kg/ha.

Crop :- Cotton (*Kharif*). **Ref :- Bh. 63(239).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'D'.**

Object :—To find out the comparative efficacy of insecticides against the pest on Cotton.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) 12.7.63. (iv) (a) 3 local ploughings. (b) Line sowing. (c) 42 Kg/ha. (d) 90 cm. between rows. (e) —. (v) 45 Kg/ha. of N as A/S+40 Kg/ha. of P_2O_5 as Super. (vi) 216 F. (vii) Unirrigated. (viii) Weedings. (ix) N.A. (x) 3.1.64.

2. TREATMENTS :

5 insecticidal treatments : T_1=0·04 % Telodrin, T_2=0·04 % Folidol, T_3=0·04 % Endrin, T_4=0·25 % Malamar, T_5=0·025 % Diazinon.

Insecticides were applied on 4 and 19.8.63.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) and (b) 50·54 sq. m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Cotton leaf roller, control measure as per treatments. (iii) Percentage of mortality of cater pillers. (iv) (a) 1963—only. (b) Yes. (c) N.A. (v) Kanke. (vi) Nil. (vii) Yield data—N.A.

5. RESULTS :

(i) 49 5 degrees. (ii) 4·0 degrees. (iii) Treatment differences are highly significant. (iv) Mean infestation in degrees.

Treatment	T_1	T_2	T_3	T_4	T_5
Mean infestation	56·0	58·0	62·8	34·8	36·0

C.D.=6·2 degrees.

Crop :- Cotton (*Kharif*). **Ref :- Bh. 62(258).**

Site :- Distt. Agri. Farm, Siwan. **Type :- 'D'.**

Object :—To find the effect of foliar spray of hormones on the yield of Cotton.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) 30.6.62. (iv) (a) 3 ploughings. (b) Dibbling (c) 7 Kg/ha. (d) 61 cm.×31 cm. (e) —. (v) 45 Kg/ha.of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (vi) 216 F. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 10.2.63.

2. TREATMENTS :

7 harmone treatments: T_0=Control, T_1=40 ppm of α—Napthyl acetic acid, T_2=20 ppm. of α—Napthyl acetic acid, T_3=10 ppm. of α—Napthyl acetic acid, T_4=40 ppm. of β—Napthyl acetic acid, T_5=20 ppm of β -Napthyl acetic acid and T_6=10 ppm of β—Napthyl acetic acid,

3. DESIGN :

(i) R.B.D (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 6·71 m.×3·05 m. (b) 6·10 m.×2·44 m. (v) 61 cm.× 61 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of *kapas*. (iv) (a) No. (b) Nil. (c) N.A. (v) Kanke, Sabour and Latehar. (vi) and (vii) Nil.

5. RESULTS :

(i) 657 Kg/ha. (ii) 370·5 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of *kapas* in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	743	747	500	385	600	728	895

Crop :- Jute (*Kharif*). **Ref :- Bh. 62(282).**

Site :- Jute Research Sub-Stn., Katihar. **Type :- 'M'.**

Object :—To study the effect of N, P and K at various levels singly and in combinations on the yield and quality of fibre crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) 28.6.62. (iv) (a) Ploughing, laddering and cleaning of weeds and raising levels around the plots. (b) Line sowing. (c) 4 Kg/ha. (d) 30 cm.×8 cm. (e) N.A. (v) Nil. (vi) J.R.O. 632. (vii) Unirrigated. (viii) Weeding, thinning and other operations are used. (ix) N.A. (x) 24.10.62.

2. TREATMENTS :

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

(1) 3 levels of N as A/S: N_0=0, N_1=45 and N_2=90 Kg/ha.

(2) 3 levels of P as Super : P_0=0, P_1=22·5 and P_2=45 Kg/ha.

(3) 3 levels of K as Mur. Pot.: K_0=0, K_1=22·5 and K_2=45 Kg/ha.

P and K to be applied as basal dressing, ½ quantity of N at the time of sowing and remaining half dose at top dressing at 6 weeks crop age.

3. DESIGN :

(i) 3^3 Confd. (ii) (a) 9 plots/block, 3 blocks/replication. (b) N.A. (iii) 4. (iv) (a) 8·99 m.×5·49 m. (b) 8 38 m.×4·88m. (v) 61 cm.×61 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of fibre. (iv) (a) 1962—64. (b) Yes. (c) Nil. (v) and (vi) No. (vii) Design is changed in 1963 and confounded effects are not known for 1964 expt. ; hence the results are not pooled.

5. RESULTS :

(i) 994 Kg/ha. (ii) 198·3 Kg/ha. (iii) Main effect of N is highly significant and that of K is significant. (iv) Av. yield of fibre in Kg/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	937	852	893	946	810	926	894
N_1	1026	984	1015	1026	941	1058	1008
N_2	1078	1068	1096	1106	1003	1134	1081
Mean	1014	968	1001	1026	918	1039	994
K_0	1019	1004	1055				
K_1	949	856	949				
K_2	1074	1044	1000				

C.D. for N or K marginal means=93·5 Kg/ha.

Crop :- Jute (*Kharif*). **Ref :- Bh. 63(122).**

Site :- Jute Res. Sub-Stn., Katihar. **Type :- 'M'.**

Object :—To study the effect of different levels of N, P and K on the yield of Jute crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Rai*. (c) Nil. (ii) Sandy loam. (iii) 2.6 63. (iv) (a) Ploughing and laddering. (b) Line sowing. (c) 3·4 Kg/ha. (d) 12 cm.×8 cm. (e) —. (v) Broadcasting of cowdung at 92·2 Q/ha. (vi) J.R O. 632. (vii) Unirrigated. (viii) Weeding by *khurpi*. (ix) 105 cm. (x) 7.10.63.

2. TREATMENTS :

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

(1) 3 levels of N as A/S : N_0=0, N_1=44·8 and N_2=89·7 Kg/ha.

(2) 3 levels of P_2O_5 as Super : P_0=0, P_1=22·4 and P_2=44·8 Kg/ha.

(3) 3 levels of K_2O as Mur. Pot. : K_0=0, K_1=22·4 and K_2=44·8 Kg/ha.

3. DESIGN :

(i) 3^3 fact. in R.B.D. (ii) (a) 27. (b) N.A. (iii) 4. (iv) (a) 8·99 m.×5·49 m. (b) 8·38 m.×4·88 m. (v) 30 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Height of plants, stand count, green wt., yield of fibre. (iv) (a) 1962—64. (b) Yes. (c) Nil. (v) No. (vi) Nil. (vii) Same as in expt. No. 62(282) on page 754.

5. RESULTS :

(i) 1822 Kg/ha. (ii) 455·7 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of fibre in Kg/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	1782	1782	1665	1700	1844	1684	1743
N_1	1769	1692	1866	1836	1773	1717	1775
N_2	1731	2053	2061	1792	1942	2111	1948
Mean	1760	1843	1864	1776	1853	1838	1822
K_0	1808	1744	1775				
K_1	1674	1919	1967				
K_2	1799	1864	1849				

Crop :- Jute (*Kharif*). **Ref :- Bh. 64(40).**

Site :- Jute Res. Sub-Stn., Katihar. **Type :- 'M'.**

Object :—To study the effect of different levels of N, P and K on the yield of Jute crop.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Mustard. (c) Nil. (ii) Sandy loam. (iii) 21, 29.4.64 and 1.5.64. (iv) (a) 6 ploughings and ladderings by Bihar and *deshi* plough. (b) Line sowing. (c) 7 Kg/ha. (d) 30 cm.×8 cm. (e) N.A. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) Weeding and hoeing by *khurpi* and wheel hoe. (ix) N.A. (x) 29 and 30.9.64.

ATMENTS :

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

(1 3 levels of N as A/S : N_0=0, N_1=44·8 and N_2=89·7 Kg/ha.

(2) 3 levels of P_2O_5 as Super : P_0=0, P_1=22·4 and P_2=44·8 Kg/ha.

(3) 3 levels of K_2O as Mur. Pot. : K_0=0, K_1=22·4 and K_2=44·8 Kg/ha.

3. DESIGN:

(i) 3^3 confd. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A. (iii) 4. (iv) (a) 8·99 m.×5·49 m. (b) 8·38 m.×4 89 m. (v) 30 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Apion attacked and Endrine sprayed as control measure. (iii) Height of plants, stand count, yield of green and dry fibre. (iv) (a) 1962—54. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Same as in Expt. No. 62(282) on page 754.

5. RESULTS :

(i) 1986 Kg/ha. (ii) 111·0 Kg/ha. (iii) Main effects of N and K and interaction N×P are significant. (iv) Av. yield of fibre in Kg/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	1760	1648	1463	1520	1738	1613	1624
N_1	2001	2013	2031	1911	2154	1980	2015
N_2	2165	2308	2484	2209	2348	2400	2319
Mean	1975	1990	1993	1880	2080	1998	1986
K_0	1879	1858	1903				
K_1	2037	2094	2109				
K_2	2010	2017	1966				

C.D. for N or K marginal means=52·2 Kg/ha.
C.D. for the body of N×P table =90·4 Kg/ha.

Crop :- Jute (*Kharif*). **Ref :- Bh. 64(174).**

Site :- Jute Res. Sub-Stn., Katihar. **Type :- 'M'.**

Object :—To evaluate the effect of Urea as foliar spray on the yield of capsularies Jute.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Arhar. (c) Nil. (ii) Sandy loam. (iii) 11.3.64. (iv) (a) Ploughing and laddering. (b) Line sowing. (c) 30 cm.×8 cm. (e) —. (v) 40 Kg/ha. of P_2O_5 as Super+40 Kg/ha. of K_2O as Mur. Pot. (vi) J.R.C. 212. (vii) Unirrigated. (viii) Weeding by *khurpi*, hoeing by wheel hoe. (ix) 124 cm. (x) 22.9.64.

2. TREATMENTS:

5 manurial treatments: T_0=Control, T_1=11·2 Kg/ha. of N as Urea as one foliar spray at 35 days after sowing+33·7 Kg/ha of N as Urea to soil at sowing, T_2=11·2 Kg/ha of N as Urea as two foliar spray each time at 35 and 70 days after sowing+22·5 Kg/ha. of N as Urea to soil at sowing, T_3=11·2 Kg/ha. of N as Urea to soil at 35 days after sowing+33·7 Kg/ha. of N as Urea to soil at sowing and T_4=11·2 Kg/ha. of N as Urea to soil each time at 35 and 70 days after sowing+22·5 Kg/ha. of N as Urea to soil at sowing.

3. DESIGN:

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) and (b) 6·10 m.×6 71 m. (v) Nil. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Height of plants, yield of green and dry fibre. (iv) (a) 1964 only. (b) and (c) Nil. (v) No. (vi) and (vii) Nil.

5. RESULTS:

(i) 1864 Kg/ha. (ii) 198·3 Kg/ha (iii) Treatment differences are not significant. (iv) Av. yield of fibre in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4
Av. yield	1695	1869	1942	1925	1888

Crop :- Jute (*Kharif*). **Ref :- Bh. 64(176).**

Site .- Jute Res. Sub-Stn., Katihar. **Type - 'M'.**

Object :—To evaluate the effect of Urea as foliar spray on the yield of Capsularies Jute.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) 3.4.64. (iv) (a) Ploughing and laddering. (b) Line sowing. (c) 7 Kg/ha. (d) 30 cm.×7 to 10 cm. (e) —. (v) 45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (vi) J.R.C. 212. (vii) Unirrigated. (viii) Weeding by *khurpi* and hoeing by hand hoe. (ix) N.A. (x) 6, 7.9.64.

2. TREATMENTS:

7 manurial treatments: T_0=Control, T_1=11·2 Kg/ha. of N as Urea as one foliar spray at 35 days after sowing+33·7 Kg/ha. of N as Urea to soil at sowing, T_2=11·2 Kg/ha. of N as Urea as two foliar spray each time at 35 and 60 days after sowing+22·5 Kg/ha. of N as Urea to soil at sowing, T_3=11·2 Kg/ha. of N as Urea as three foliar spray each time at 35, 60 and 85 days after sowing+11·2 Kg/ha. of N as Urea to soil at sowing, T_4=11·2 Kg/ha. of N as Urea as one foliar spray at 60 days after sowing +33·7 Kg/ha. of N as Urea to soil at sowing, T_5=11·2 Kg/ha. of N as Urea as two foliar spray each time at 60 and 85 days after sowing+22·5 Kg/ha. of N as Urea to soil at sowing and T_6=11·2 Kg/ha. of N as Urea as three foliar spray each time at 85 days after sowiog+33·7 Kg/ha. of N as Urea to soil at sowing.

3. DESIGN:

(i) R.B.D. (ii) 7. (b) N.A. (iii) 3. (iv) (a) and (b) 7·32 m.×5·49 m. (v) Nil. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Tillers count, yield of green and dry fibre. (iv) (a) 1964—only. (b) No. (c) Nil. (v) No. (vi) and (vii) Nil.

5. RESULTS:

(i) 3107 Kg/ha. (ii) 451·0 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of fibre in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	
Av. yield	2594	2915	3426	3023	3338	2925	3530	C.D.=802·4 Kg/ha.

Crop :- Jute (*Kharif*). **Ref :- Bh. 62(94), 63(121).**

Site :- Jute Res. Sub-Stn., Katihar. **Type :- 'M'.**

Object :—To study the effect of N, P and K at various levels, applied singly and in combination on the yield and quality of Jute fibre.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) 24.5.62 ; 4.4.63. (iv) (a) Ploughing and laddering. (b) Line sowing. (c) 7 Kg/ha. (d) 31 cm.×8 cm. (e) —. (v) Nil ; 92 Q/ha. of cowdung. (vi) J.R.C.—212. (vii) Unirrigated. (viii) Weeding by *khurpi*, hoeing by hand hoe. (ix) 124 cm. (x) 13.10.62 ; 22.9.63.

2. TREATMENTS:

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

(1) 3 levels of N as A/S : N_0=0, N_1=45 and N_2=90 Kg/ha.

(2) 3 levels of P_2O_5 as Super : P_0=0, P_1=22·5 and P_2=45 Kg/ha.

(3) 3 levels of K_2O as Mur. Pot. : K_0=0, K_1=22·5 and K_2=45 Kg/ha.

3. DESIGN :

(i) 3^3 fact. in R.B.D. (ii) (a) 27. (b) 54·25 m.×28·20 m, ; N.A. (iii) 4. (iv) (a) 8·99 m.×5·49 m. (b) 8·38 m.×4·88 m. (v) 30 cm.×30 cm. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Height of plants, yield of fibre. (iv) (a) 1962—63. (b) Yes. (c) Results of combined analysis are presented under 5. Results. (v) No. (vi) Nil. (vii) Error variances are homogeneous and Treatments × Years interaction is absent.

5. RESULTS:

Pooled results

(i) 1817 Kg/ha. (ii) 416·3 Kg/ha. (based on 182 d.f. made up of pooled error and Treatments × Years interaction). (iii) Main effect of N only is highly significant. (iv) Av. yield of fibre in Kg/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	1511	1450	1360	1436	1517	1366	1440
N_1	1846	1848	1922	1834	1920	1862	1872
N_2	2068	2138	2207	2090	2139	2185	2138
Mean	1808	1812	1829	1787	1859	1804	1817
K_0	1716	1774	1872				
K_1	1851	1876	1848				
K_2	1858	1786	1769				

C.D. for N marginal means=194·3 Kg/ha.

Individual results :

Tre atment / Year	N_0	N_1	N_2	Sig.	P_0	P_1	P_2	Sig.
1962	1098	1432	1646	**	1399	1387	1389	N.S.
1963	1782	2313	2629	**	2217	2237	2269	N.S.
Pooled	1440	1872	2138	**	1808	1812	1829	N.S.

K_0	K_1	K_2	Sig.	G.M.	S.E./plot
1325	1440	1410	N.S.	1392	268·0
2248	2277	2198	N.S.	2241	531·6
1787	1859	1804	N.S.	1817	416·3

Crop :- Jute (*Kharif*). **Ref :- Bh. 63(120), 64(173), 65(101).**

Site : Jute Res. Sub-Stn., Katihar. **Type :- 'M'.**

Object :--To evaluate the effect of Urea as foliar spray on the yield of Jute.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Oat for fodder ; Barley ; Fallow. (c) 44·8 Kg/ha. of N as A/S ;Nil ; Nil. (ii) Sandy clay. (iii) 19.5.63 ; 27.6.64 ; 1.4.65. (iv) (a) 3 *deshi* ploughings for 63 and 64 ; 6 ploughings and laddering for 65. (b) Line sowing. (c) 7 Kg/ha. ; 3·4 Kg/ha ; 7 Kg/ha. (d) 30 cm.×7 to 8 cm (e) —. (v) 44·8 Kg/ha. of K_2O as Mur. Pot.+44·8 Kg/ha. of P_2O_5 as Super. (vi) JRO -753. (vii) Unirrigated. (viii) Weeding by *khurpi*, hoeing by hand hoe. (ix) 115 cm. ; N.A. for 64 and 65. (x) 30.9.63 ; 5.10.64 ; 24.8.65.

2. TREATMENTS:

5 manurial treatments : T_0=Control, T_1=One foliar spraying of 11·2 Kg/ha. of N as Urea at 35 days after sowing+33·6 Kg/ha. of N as Urea to soil at sowing, T_2=Two foliar sprayings each of 11·2 Kg/ha. of N as Urea at 35 and 70 days after sowing+22·4 Kg/ha. of N as Urea to soil at sowing, T_3=33·6 Kg/ha. of N as Urea to soil at sowing+11·2 Kg/ha. of N as Urea to soil at 35 days after sowing and T_4=22·4 Kg/ha. of N as Urea to soil at sowing+11·2 Kg/ha. of N as Urea to soil each time at 35 and 70 days after sowing.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) and (b) 6·72 m.×6·10 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Leaf-eater, spray of endrex for 63 and 64 ; Nil. (iii) Height of plants, stand count, tillers count, yield of fibre. (iv) (a) 1963–65. (b) Yes. (c) Results of combined analysis have been presented under 5. Results. (v) No. (vi) Nil. (vii) Error variances are homogeneous and Treatments×Years interaction is absent.

5 . RESULTS :

Pooled results

(i) 2307 Kg/ha. (ii) 195 6 Kg/ha. (based on 56 d.f. made up of pooled error and Treatments × Years interaction). (iii) Treatment differences are not significant. (iv) Av. yield of fibre in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4
Av. yield	2265	2305	2334	2307	2322

Individual results

Treatment	T_0	T_1	T_2	T_3	T_4	Sig.	G.M.	S.E./plot
Year								
1963	3156	3171	3016	3139	3262	N.S.	3149	180·8
1964	1359	1493	1591	1635	1541	N.S	1524	166·9
1965	2281	2249	2396	2148	2163	N.S.	2247	198·5
Pooled	2265	2305	2334	2307	2322	N.S.	2307	195 6

Crop :- Jute (*Kharif*), **Ref :- Bh. 64(175), 65(108).**

Site :- Jute Res. Sub-Stn., Katihar. **Type :- 'M'.**

Object :—To evaluate the effect of Urea as foliar spray on the yield of Capsularies Jute.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Pea ; *Kulthi.* (c) Nil. (ii) Sandy loam. (iii) 25.6.64 ; 28.5.65. (vi) (a) Ploughing and laddering ; 4 ploughings. (b) Line sowing. (c) 7 Kg/ha. (d) 31 cm.×8 to 10 cm. (e) —. (v) 45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (vi) JRO—753. (vii) Unirrigated. (viii) Weeding by *khurpi* and hoeing. (ix) 95 cm. ; N.A. (x) 8.10.64 ; 21.9.65.

2. TREATMENTS :

7 manurial treatments : T_0=Control, T_1=One foliar spraying of 11·2 Kg/ha. of N as Urea at 35 days after sowing+33·7 Kg/ha. of N as Urea to soil at sowing, T_2=Two foliar sprayings of 11·2 Kg/ha. of N as Urea each at 35 and 60 days after sowing +22·5 Kg/ha. of N as Urea to soil at sowing, T_3=Three foliar sprayings of 11·2 Kg/ha. of N as Urea each at 35, 60 and 85 days after sowing+11·2 Kg/ha. of N as Urea to soil at sowing, T_4= One foliar spraying of 11·2 Kg/ha. of N as Urea at 60 days after sowing+33·7 Kg/ha. of N as Urea to soil at sowing, T_5=Two foliar sprayings of 11·2 Kg/ha. of N as Urea each at60 and 85 days after sowing+22·5 Kg/ha. of N as Urea to soil at sowing and T_6=Three foliar sprayings of 11·2 Kg/ha. of N as Urea at 85 days after sowing+ 33·7 Kg/ha. of N as Urea to soil at sowing.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 3. (iv) (a) 7·32 m.×5·49 m. ; 8·23 m.×5·49 m. (b) 7·32 m.×5·49 m. (v) Nil ; 46 cm. on either side along length. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Height of plants, yield of fibre. (iv) (a) 1964—65. (b) Yes. (c) Nil. (v) No. (vi) Nil. (vii) Error variances are heterogeneous and Treatments × Years interaction is absent. Hence the results of indvidual years are presented under 5. Results.

5. RESULTS :

64(175)

(i) 1767 Kg/ha. (ii) 124·5 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of fibre in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	1527	1880	1844	1580	1943	1729	1863

65(108)

(i) 2146 Kg/ha. (ii) 481·6 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of fibre in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	1974	2259	2281	2305	2389	2197	1620

———

Crop :- Jute (*Kharif*). **Ref :- Bh. 65(184).**

Site :- Jute Res. Sub-Stn., Katihar. **Type :- 'M'.**

Object :—To evaluate the effect of Urea as foliar spray on the yield of Olitorious Jute fibre.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Barley. (c) Nil. (ii) Sandy loam. (iii) 27.6.65. (iv) (a) 3 ploughings. (b) Line sowing. (c) 6 Kg/ha. (d) 30 cm.×7 to 8 cm. (e) . (v) N.A. (vi) J.R.O.—753. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 5.10.65.

2. TREATMENTS :

5 manurial treatments: T_0=Control, T_1=One foliar spraying of 2·16 % solution of N as Urea at 11·2 Kg/ha. at 35 days after sowing+33·6 Kg/ha. of N as Urea to soil at sowing, T_2=T_1+One foliar spraying of 2·16 % solution of N as Urea at 11·2 Kg/ha. at 70 days after sowing+22·5 Kg/ha. of N as Urea to soil at planting, T_3=33·6 Kg/ha. of N as Urea at sowing+11·2 Kg/ha. of N as Urea at 35 days after sowing and T_4=22·5 Kg/ha. of N as Urea at sowing+11·2 Kg/ha. of N as Urea to soil twice at 35 and 70 days after sowing.

Solution were sprayed with 1796 lit./ha. of water.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 6·71 m.×6·10 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of fibre. (iv) (a) 1965—only. (b) Nil. (v) No. (vi) and (vii) Nil.

5. RESULTS :

(i) 1523 Kg/ha. (ii) 161·9 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of fibre in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4
Av. yield	1340	1471	1628	1637	1539

———

Crop :- Jute. **Ref :- Bh. 60, 61(SFT).**

Site :- (District) Purnea. **Type :- 'M'.**

Object :—Type A : To study the response of Jute to different levels of N, P_2O_5 and K_2O applied individually and in combination.

1. BASAL CONDITIONS:

(i) (a) to (c) N.A. (ii) Other alluvial. (iii) to (x) N.A.

2. TREATMENTS:

8 manurial treatments:

O=Control (no manure),

N=44·8 Kg/ha. of N,

P=22 4 Kg/ha. of P_2O_5,

K=22·4 Kg/ha. of K_2O,

NP=44·8 Kg/ha. of N+22·4 Kg/ha. of P_2O_5,

NK=44·8 Kg/ha. of N+22·4 Kg/ha. of K_2O,

PK=22·4 Kg/ha. of P_2O_5+22·4 Kg/ha. of K_2O and

NPK=44·8 Kg/ha. of N+22·4 Kg/ha. of P_2O_5+22·4 Kg/ha. of K_2O.

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 a *rabi* cereal, 8 on cash crop, 4 on an oilseed crop and 3 on a legumenous 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) 1/98·8 ha. (b) 1/197·7 ha. (iv) Yes.

4. GENERAL :

(i) to (vii) N.A.

5. RESULTS:

60(SFT)

Treatment	N	P	K	S.E.	NP	NK	PK	NPK	S.E.
Av. response of fibre in Kg/ha.	1060	930	510	126·0	100	80	100	210	114·0

Control mean=8600 Kg/ha. ; No. of trials=14.

61(SFT)

Treatment	N	P	K	S.E.	NP	NK	PK	NPK	S.E.
Av. response of fibre in Kg/ha.	2030	2220	1240	481·0	—30	240	490	190	465·0

Control mean=11330 Kg/ha. ; No .of trials=7.

Crop :- Jute. **Ref :- Bh. 60, 61(SFT).**

Site :- (District) Purnea. **Type :- 'M'.**

Object :—Type B : To investigate the relative efficiency of different nitrogenous fertilisers at different doses.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Alluvial. (iii) to (x) N.A.

2. TREATMENTS :

9 manurial treatments :

O=Control (no manure),

n_1=44·8 Kg/ha. of N as A/S,

n_2=89·6 Kg/ha. of N as A/S,

n_1'=44·8 Kg/ha. of N as Urea,

n_2'=89·6 Kg/ha. of N as Urea,

n_1''=44·8 Kg/ha. of N as A/S/N,

n_2''=89·6 Kg/ha. of N as A/S/N,

n_1'''=44·8 Kg/ha. of N as C/A/N and

n_2'''=89·6 Kg/ha. of N as C/A/N.

3. DESIGN :

Same as in type A on page 761.

4. GENERAL :

(i) to (vii) N.A.

5. RESULTS :

District	Year	Soil class	No. of trials	Control mean in Kg/ha.	Av. response of fibre in Kg/ha. n_1	n_1'	n_1''	n_1'''	n_2	n_2'	n_2''	n_2'''	S.E. of response
Purnea	1960	Alluvial	13	8280	—	1800	1560	1440	—	2630	2130	1980	181·0
	1961	,,	5	10930	1630	2090	2350	2440	4160	6020	5330	4650	836·0
	1961	,,	3	9040	2890	1840	—	3690	1100	3990	—	2950	944·0

Crop :- Jute. **Ref :- Bh. 63, 64, 65(SFT).**

Site :- (District) : Purnea. **Type :- 'M'.**

Object :—Type A_1 : To study the response curves of important cereal, cash and oilseed crops to Nitrogen applied singly and in combination with other nutrients.

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:

8 manurial treatments:

O=Control (no manure),

N_1=60 Kg/ha. of N,

N_2=120 Kg/ha. of N,

P_1=35 Kg/ha. of P_2O_5,

N_1P_1=60 Kg/ha. of N+35 Kg/ha. of P_2O_5,

N_2P_1=120 Kg/ha. of N+35 Kg/ha. of P_2O_5,

N_2P_2=120 Kg/ha. of N+70 Kg/ha. of P_2O_5 and

$N_2P_2K_1$=120 Kg/ha. of N+70 Kg/ha. of P_2O_5+35 Kg/ha. of K_2O.

N applied as A/S, P_2O_5 as Super and K_2O as Mur. Pot.

3. DESIGN:

A selected district is divided into four agriculturally homogeneous zones based on climate, soil, cropping pattern etc. In each zone one block is selected at random. A block normally consists of a group of 50—100 villages. In each block 36 experiments are conducted in a year of which 11 are of type A_1, 11 of type A_2, 11 of type A_3 and 3 are of type C. The eleven experiments under type A_1, A_2 and A_3 are distributed as 3 on a kharif cereal, 3 on a rabi cereal, 3 on a cash crop and 2 on an oilseed. All the three type C experiments are conducted on a legume crop. For the purpose of conducting the A_1, A_2 and A_3 experiments 11 villages are randomly selected in each block and in each village 3 experiments one each of type A_1, A_2 and A_3 are laid out. For conducting the three type—C trials three villages are randomly selected in each block.

4. GENERAL:

(i) and (ii) N.A. (iii) Yield of fibre. (iv) (a) 1961—66 for Purnea. (b) N.A. (c) Nil. (v) to (vii) Nil.

5 RESULTS:

Purnea

63(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S E.
Av. response of fibre in Kg/ha.	696	904	404	1096	1469	1627	2016	91·8

Control mean=6101 Kg/ha. ; No. of trials=9.

64(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of fibre in Kg/ha.	1423	2078	773	2042	2614	2832	3250	254·8

Control mean=4622 Kg/ha. ; No. of trials=8.

65(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of fibre in Kg/ha.	3662	3300	1585	4952	6450	7121	7241	1057·4

Control mean=9854 Kg/ha. ; No. of trials=11.

Crop :- Jute (*Rabi*). **Ref :- Bh. 63(SFT).**

Site :- (District) : Purnea. **Type :- 'M'.**

Object :—Type A_2: To study the response curves of important cereal, cash and soil seed crops to phosphorus applied singly and in combination with other nutrients.

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:

8 manurial treatments

O=Control (no manure),

N_1= 60 Kg/ha. of N,

P_1=35 Kg/ha. of P_2O_5,

P_2=70 Kg/ha. of P_2O_5,

N_1P_1=60 Kg/ha. of N+35 Kg/ha. of P_2O_5,

N_1P_2=60 Kg/ha. of N+70 Kg/ha. of P_2O_5,

N_2P_2=120 Kg/ha. of N+70 Kg/ha. of P_2O_5 and

$N_2P_2K_1$=120 Kg/ha. of N+70 Kg/ha. of P_2O_5+70 Kg/ha. of K_2O.

N applied as A/S, P_2O_5 as Super and K_2O as Mur. Pot.

3. DESIGN :

Same as in type A_1 on page 763.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of fibre. (iv) (a) 1963—only. (b) and (c) Nil. (v) to (vii) Nil.

5. RESULTS:

Purnea

63(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of fibre in Kg/ha.	711	418	593	964	1219	1490	2047	53·8

Control mean=6125 Kg/ha. ; No. of trials=8

Crop :- Jute (*Kharif*). **Ref :- Bh. 64, 65(SFT)**

Site :- (District) : Purnea. **Type :- 'M'.**

Object: —Type A_2: To study the response curves of important cereal, cash and oilseed crops to phosphorus applied singly and in combination with other nutrients.

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:

Same as in Type A_2 on Page 764.

3. DESIGN :

Same as in Type A_1 on page 763.

4. GENERAL:

(i) and (ii) N.A. (iii) Yield of fibre. (iv) (a) 1964—66. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS:

Purnea

64(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of fibre in Kg/ha.	1380	608	885	1753	2095	2788	3424	113·2

Control mean=4491 Kg/ha. ; No. of trials=8

65(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of fibre in Kg/ha.	1018	2013	698	2968	3838	5726	4886	1049·1

Control mean=8118 Kg/ha. ; No. of trials=12.

Crop :- Jute (*Kharif*) **Ref :- Bh 64, 65(SFT).**

Site :- (District) : Purnea. **Type :- 'M'.**

Object :—Type A_3 : To study the response curves of important cereal, cash and oilseed crops to Potash applied singly and in combination with nutrients

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 :

8 manurial treatments :

O=Control (no manure),

N_1=60 Kg/ha. of N,

K_1=35Kg/ha. of K_2O,

K_2=70 Kg/ha. of K_2O,

N_1K_1=60 Kg/ha. of N+35 Kg/ha. of K_2O,

N_1K_2=60 Kg/ha. of N+70 Kg/ha. of K_2O,

N_2K_2=120 Kg/ha. of N+70 Kg/ha. of K_2O and

$N_1P_1K_1$=60 Kg/ha. of N+35 Kg/ha. of P_2O_5+35 Kg/ha. of K_2O.

N applied as A/S, P_2O_5 as Super and K_2O as Mur. Pot.

3. DESIGN :

Same as in type A_1 on page 763.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of fibre. (iv) (a) 1964—66. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

Purnea

64(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of fibre in Kg/ha.	1727	529	1271	2176	2211	3001	2760	162·2

Control mean=4059 Kg/ha. ; No. of trials=8

65(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of fibre in Kg/ha.	2188	1007	1511	2995	2993	3720	3738	565·7

Control mean=7879 Kg/ha. ; No. of trials=11

Crop :- Jute (*Kharif*). **Ref :- Bh. 62(93).**

Site :- Jute Res. Sub- Stn., Katihar. **Type :- 'MV'.**

Object :—To compare the effect of fibre crops on soil fertility.

1. BASAL CONDITIONS :

(i) (a) to (c) Nil. (ii) Sandy loam. (iii) N.A. (iv) (a) Ploughing and laddering. (b) Line sowing. (c) 7 Kg/ha. (d) 31 cm.×8 cm. (e) Nil. (v) Nil. (vi) Nil. (vii) Unirrigated. (viii) Weeding, thinning and hoeing. (ix) and (x) N.A.

2. TREATMENTS:

All combinations of (1) and (2)

(i) 4 varieties of fibre crop: V_1=Mesta (150 EL), V_2=Rosella (R.T. NB), V_3=Corchorus olitorious and V_4=Corchorus capsularies.

(2) 3 levels of manure: M_0=Control (no manure), M_1=74 Kg/ha. of N as A/S+74 Kg/ha. of P_2O_5 as Super+49 Kg/ha. of K_2O as Mur. Pot. and M_2=148 Kg/ha. of N as A/S+148 Kg/ha. of P_2O_5 as Super+99 Kg/ha. of K_2O as Mur. Pot.

3. DESIGN:

(i) Fact. in R.B.D. (ii) (a) 12. (b) 39·60 m.×44·50 m. (iii) 3. (iv) (a) N.A. (b) 14·02 m.×9·45 m. (v) Nil. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Green wt., stand count, height of plants and yield of fibre. (iv) (a) 1962—only. (b) and (c) Nil. (v) No. (vi) and (vii) Nil.

5. RESULTS:

(i) 976 Kg/ha. (ii) 186·4 Kg/ha. (iii) Main effect of V alone is highly significant. (iv) Av. yield of fibre in Kg/ha.

	M_0	M_1	M_2	Mean
V_1	1046	1011	836	964
V_2	762	836	773	790
V_3	1274	1237	1461	1324
V_4	753	741	977	824
Mean	959	956	1012	976

C.D. for V marginal means=182·2 Kg/ha.

Crop :- Jute (*Kharif*), **Ref :- Bh. 64(347).**

Site :- Jute Res. Sub-Stn., Katihar. **Type :- 'MV'.**

Object :—To compare the effect of fibre crops on soil fertility as shown by the yield of succeeding cereal crops.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Barley. (c) N.A. (ii) Sandy loam. (iii) 26.6.64. (iv) (a) 3 ploughings. (b) Line sowing. (c) 4 Kg/ha. (d) 30 cm.×7 to 8 cm. (e)—. (v) Nil. (vi) J.R.O.—632. (vii) Unirrigated. (viii) Weeding by hoe. (ix) N.A. (x) 9.10.64, 24.10.64, 1.11.64, 22.11.64.

2. TREATMENTS:

Main-plot treatments:

4 varieties of fiber crop : V_1=Mesta (150 EI), V_2=Rosella (R.T.I.N.B.), V_3=Olitorious (J.R.O. 632) and V_4=Capsularies (J.R.C. 147).

Sub-plot treatments :

3 doses of fertilizers : M_0=No manure, M_1=33·6 Kg/ha. of N as A/S+33·6 Kg/ha. of P_2O_5 as Super+22·4 Kg/ha. of K_2O as Mur. Pot., and M_2=67·2 Kg/ha. of N as A/S+67·2 Kg/ha. of P_2O_5 as Super+44·8 Kg/ha. of K_2O as Mur. Pot.

3. DESIGN:

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A (iii) 3. (iv) (a) 14·02 m. ×9·45 m. (b) 9·45 m.×4·27 m. (v) 2·28 m.×2 34 m. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of fibre. (iv) (a) 1964—only. (b) and (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1992 Kg/ha. (ii) (a) 459·2 Kg/ha. (iii) Main effects of M and V are highly significant. (iv) Av. yield of fibre in Kg/ha.

	V_1	V_2	V_3	V_4	Mean
M_0	2812	635	2618	776	1710
M_1	3116	990	2833	1184	2031
M_2	2958	1411	3003	1571	2236
Mean	2962	1012	2818	1177	1992

C.D. for M marginal means=529·7 Kg/ha.
C.D. for V marginal means=258·9 Kg/ha.

Crop :- Jute (*Kharif*). **Ref :- Bh 64(37).**

Site :- Jute Res. Sub-Stn., Katihar. **Type :- 'MV'.**

Objecject :—To test the effect of growing Jute and Mesta on soil fertility as reflected by the yield of succeeding crop of Barley.

1. BASAL CONDITIONS:

(i) (a) to (c) N.A. (ii) N.A. (iii) 26.6.64. (iv) (a) to (e) N.A. (v) and (vi) N.A. (vii) Unirrigated. (viii) and (ix) N.A. (x) V_1 on 1.11.64, V_2 on 22.11.64, V_3 on 9.10.64 and V_4 on 24.10.64.

2. TREATMENTS:

Main-plot treatments :

3 levels of manures: M_0=No manure, M_1=33·6 Kg/ha. of N as A/S+33·6 Kg/ha. of P_2O_5 as Super+22·4 Kg/ha. of K_2O as Mur. Pot. and M_2=67·2 Kg/ha. of N as A/S+67·2 Kg/ha. of P_2O_5 as Super+44·8 Kg/ha. of K_2O as Mur. Pot.

Sub-plot treatments :

4 fiber crops : V_1=Mesta, V_2=Rosella, V_3=Olitorious and V_4=Capsularies.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 4 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 14·02 m.×9·45 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Nil. (ii) Ring-rot in Mesta and Apion in Jute ; Endrine sprayed as control measure. (iii) Yield of fibre. (iv) (a) to (c) N.A. (v) to (vii) Nil.

5. RESULTS :

(i) 607 Kg/ha. (ii) (a) 66·4 Kg/ha. (b) 114·4 Kg/ha. (iii) Main effects of M and V are significant. (iv) Av. yield of fibre in Kg/ha.

	V_1	V_2	V_3	V_4	Mean
M_0	857	193	797	236	521
M_1	949	302	862	361	618
M_2	902	430	914	479	681
Mean	903	308	858	359	607

C.D. for M marginal means=75·3 Kg/ha.
C.D. for V marginal means=113·3 Kg/ha.

Crop :- Jute (*Kharif*). **Ref :- Bh. 63(25).**

Site :- Jute Res. Sub-Stn., Katihar. **Type :- 'MV'.**

Object :—To study the effect of different levels of manures on the yield of Jute.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Barley. (c) N.A. (ii) Sandy clay. (iii) 13.5.63. (iv) (a). 6 ploughings by *deshi* plough and paddling each time. (b) Broadcasting. (c) As per treatments. (d) and (e) N.A. (v) Nil. (vi) As per treatments. (vii) Unirrigated. (viii) 2 hoeings by *khurpi*. (ix) N.A. (x) 15.9.63, 11.10.63, 5.11.63 and 15.11.63.

2. TREATMENTS :

All combinations of (1) and (2)

(i) 4 varieties : V_1=Capsularies, V_2=Olitorious, V_3=Mesta and V_4=Rosella.

(2) 3 levels of manures: M_0=No manure, M_1=44·8 Kg/ha. of N as A/S+22·4 Kg/ha. of P_2O_5 as Super+22·4 Kg/ha. of K_2O as Mur. Pot. and M_2=89.7 Kg/ha. of N as A/S+44·8 Kg/ha. of P_2O_5 as Super+44·8 Kg/ha. of K_2O as Mur. Pot.

3. DESIGN :

(i) Fact. in R B.D. (ii) (a) 12. (b) N.A. (iii) 3. (iv) (a) and (b) N.A. (v) 61 cm. between plots. (vi) Yes.

4. GENERAL :

(i) Nil. (ii) Mesta variety attacked by ring-rot, Endrin sprayed. (iii) Height of plant, no. of plants and green weight of fibre. (iv) (a) 1963 only. (b) and (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2202 Kg/ha. (ii) 582·0 Kg/ha. (iii) Main effect of V alone is highly significant. (iv) in Kg/ha.

	V_1	V_2	V_3	V_4	Mean
M_0	2039	1970	3370	1139	2130
M_1	2119	1937	3395	1190	2160
M_2	2131	2008	3656	1477	2318
Mean	2096	1972	3474	1269	2203

C.D. for V marginal means=568·9 Kg/ha.

Crop :- Jute (*Kharif*). **Ref :- Bh. 64(39).**

Site :- Jute Res. Sub-Stn., Katihar. **Type :- 'MV'.**

Object :—To study the effect of different levels of fertilizers on the yield of different varieties of Jute.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Gram. (c) Nil. (ii) Sandy clay. (iii) 25 and 26.5.64. (iv) (a) 6 ploughings and laddering by Beher plough and *deshi* plough. (b) Line sowing. (c) 16·8 Kg/ha, (d) 30 cm.×7 to 8 cm. (e) N.A. (v) Super and Mur. Pot. as per treatments. (vi) Unirrigated. (vii) Weeding by *khurpi* on 15 and 16.6.64. (viii) and (ix) N.A. (x) 2.10.64.

2. TREATMENTS:

All combinations of (1) and (2)

(1) 3 varieties: V_1=J.R.C.—5854, V_2=J.R.C. 147 and V_3=J.R.C.—212.

(2) 4 levels of manure: M_0=No manure, M_1=20 Kg/ha. of N as A/S+10 Kg/ha. of P_2O_5 as Super+10 Kg/ha. of K_2O as Mur. Pot., M_2=40 Kg/ha. of N as A/S+20 Kg/ha. of P_2O_5 as Super+20 Kg/ha. of K_2O as Mur. Pot. and M_3=60 Kg/ha. of N as A/S+30 Kg/ha. of P_2O_5 as Super+30 Kg/ha. of K_2O as Mur. Pot.

3. DESIGN:

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 8·00 m.×6·00 m. (b) 7·40 m.×5·40 m. (v) 30 cm.×30 cm. (vi) Yes.

4. GENERAL:

(i) Nil. (ii) Semi looper and Apion attacked, Endrine sprayed as control measure. (iii) Height of plant, stand count, green wt. of fibre and fibre weight. (iv) (a) 1964 only. (b) and (c) Nil. (v) to (vii) Nil.

5. RESULTS:

(i) 1613 Kg/ha. (ii) 285·3 Kg/ha. (iii) Main effect of M and the interaction M×V are significant. (iv) Av. yield of fibre in Kg/ha.

	M_0	M_1	M_2	M_3	Mean
V_1	1296	1713	1309	1688	1501
V_2	1264	1716	1765	2029	1693
V_3	1318	1601	1777	1877	1643
Mean	1293	1677	1617	1865	1613

C.D. for M marginal means=237·3 Kg/ha.
C.D. for the body of V×M table=410·6 Kg/ha.

Crop :- Jute (*Rabi*). **Ref :- Bh. 63(330).**

Site :- Pipra Kothi Farm, pipra Kothi (Dholi). **Type :- 'C'.**

Object :—To test the suitability of seed drills for Jute.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) 25.2.63 to 26.2.63. (iv) (a) 3—4 ploughings. (b) As per treatments. (c) N.A. (d) 23 cm. between rows. (e) —. (v) 22·5 Kg/ha. of P_2O_5 as Super. (vi) J.R.C.—321. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 1.10.63.

2. TREATMENTS:

4 methods of sowing: T_1=Local method, T_2=Hand pushed Jute seed drill, T_3=U.P. Jute seed drill and T_4=A.E.R. multi seed drill.

3. DESIGN:

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 18·29 m.×9·14 m. (v) No. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Yield of fibre. (iv) (a) 1963 only. (b) and (c) Nil. (v) Patna. (vi) No. (vii) Nil.

5. RESULTS:

(i) 409 Kg/ha. (ii) 63·7 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of fibre in Kg/ha.

Treatment	T_1	T_2	T_3	T_4
Av. yield	396	441	388	411

Crop :- Jute (*Kharif*). **Ref :- Bh. 64(171).**

Site :- Jute Res. Sub-Stn., Katihar. **Type .- 'C'.**

Object :—To test the quality of fibre due to the different dates of harvesting.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) Nil. (ii) Sandy loam. (iii) 19.5.64. (iv) (a) Ploughing and laddering. (b) Line sowing. (c) 3 to 7 Kg/ha. (d) 30 cm.×8 to 10 cm. (e) —. (v) 225 Kg/ha. of N as A/S. (vi) J.R.O.—632. (vii) Unirrigated. (viii) Weeding by *khurpi*, hoeing by weed hoe. (ix) N.A. (x) As per treatments.

2. TREATMENTS:

5 datcs of harvest : T_1=60 days after sowing on 18.10.64, T_2=80 days after sowing on 7.8.64, T_3=100 days after sowing on 27.8 64, T_4=120 days after sowing on 16.9.64 and T_5=At small pod formation on 28.9.64.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 9·14 m.×7·62 m. (b) 8·53 m.×7·01 m. (v) 30 cm.× 30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Apion and Endrine spray. (iii) Height, stand count and fibre yield. (iv) (a) 1964—66 (Treatments modified in 65). (b) and (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1390 Kg/ha. (ii) 289·2 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of fibre in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5
Av. yield	312	896	1497	2069	2177

C.D.=445·7 Kg/ha.

———

Crop :- Jute (*Kharif*). **Ref :- Bh. 65(183).**

Site :- Jute Res. Sub-Stn., Katihar. **Type :- 'C'.**

Object :—To find out the effect of different dates of harvest on the yield of capsularies of oltorious Jute.

1. BASAL CONDITIONS :

(i (a) Nil. (b) Pea. (c) Nil. (ii) Sandy loam. (iii) 26.6.65. (iv) (a) 3 ploughings. (b) Line sowing. (c) 6 Kg/ha. (d) 30 cm.×7 to 8 cm. (e) —. (v) Nil. (vi) J.R O.—632, J.R.C.—6382. (vii) Unirrigated. (viii) Weeding by *khurpi*, hoeing by hand hoe. (ix) N.A. (x) As per treatments.

2. TREATMENTS :

8 caltural treatments : T_1=J.R.C.—6382 harvested after 80 days of sowing on 13.9.65, T_2=J.R.C.—6382 harvested after 100 days of sowing on 3.10.65, T_3=J.R.C.—6382 harvested after 120 days of sowing on 23.10.65, T_4=J.R.C.—6382 harvested at small pod stage on 22.10.65, T_5=J.R.O.—632 harvested after 80 days of sowing on 13.9.65, T_6=J.R.O.—632 harvested after 100 days of sowing on 3 10.65, T_7=J.R.O.—632 harvested after 120 days of sowing on 23.10.65 and T_8=J.R.O.—632 harvested at small pod stage on 22.10.65.

3. DESIGN :

(i) R.B D. (ii) (a) 8. (b) N.A. (iii) 4. (v) (a) 9·14 m.×6·62 m. (b) 8·53 m.×7·01 m. (v) One row on either side. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of fibre. (iv) (a) 1964—66 (Treatments modified in 1965). (b) Yes. (c) Nil. (v) to (vii) Nil.

5. TREATMENTS :

(i) 649 Kg/ha. (ii) 304·6 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of fibre in in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Av. yield	752	788	756	381	497	656	701	658

Crop :- Jute (*Kharif*). **Ref :- Bh. 64(172).**

Site :- Jute Res. Sub-Stn., Katihar. **Type :- 'CV'.**

Object:—To find out the best period of sowing and harvest for the high yield and quality of fibre.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Loamy. (iii) As per treatments. (iv) (a) 6 *deshi* ploughings and laddering. (b) Line sowing. (c) 7 Kg/ha. (d) 31 cm.×8 to 10 cm. (e) —. (v) 92·2 Q/ha. of Cowdung broadcasted. (vi) As per treatments. (vii) Unirrigated. (viii) Weeding by *khurpi*. (ix) N.A. (x) As per treatments.

2. TREATMENTS:

Main-plot treatments :

All combinations of (1) and (2)

(1) 3 varieties of Jute : V_1=JRC—321, V_2=D—154 and V_3=JRC—212.

(2) 4 dates of sowing : S_1=1.3.64, S_2=20.3.64, S_3=10.4.64 and S_4=1.5.64.

Sub-plot treatments :

4 dates of harvest : H_1=1.7.64, H_2=20.7.64, H_3=10.8.64 and H_4=30.8 64.

3. DESIGN :

(i) Split-plot. (ii) (a) 12 main-plots/replication ; 4 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 4·57 m.× 5·18 m. (b) 4 57 m.×2·13 m. (v) 152 cm. on either side along length. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination, height measurement and yield. (iv) (a) 1964 –only. (b) and (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1356 Kg/ha. (ii) (a) 287 8 Kg/ha. (b) 247·2 Kg/ha. (iii) Main effects of V, S and H and the interaction S×H are highly significant. (iv) Av. yield of fibre in Kg/ha.

	H_1	H_2	H_3	H_4	V_1	V_2	V_3	Mean
S_1	1122	1622	1922	1838	1403	1683	1792	1626
S_2	1000	1472	1879	2092	1441	1656	1735	1610
S_3	603	1149	1572	2028	1365	1405	1246	1338
S_4	124	598	1181	1497	769	883	897	850
Mean	712	1210	1639	1864	1244	1407	1418	1356
V_1	658	1134	1560	1627				
V_2	739	1240	1654	1998				
V_3	740	1261	1703	1967				

C.D. for V marginal means=121·8 Kg/ha.

C.D. for S marginal means=140·7 Kg/ha.

C.D. for H marginal means=116·3 Kg/ha.

C.D. for S means at the same level of H=245·6 Kg/ha.

C.D. for H means at the same leavel of S=232·6 Kg/ha.

Crop :- Jute (*Kharif*). **Ref :- Bh. 63(237).**

Site :- Jute Res. Sub-Stn., Katihar. **Type :- 'D'.**

Object :—To find out the comparative efficacy of different insecticides against the Jute stem weevil.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Jute. (c) 80 Kg/ha. of N as A/S+60 Kg/ha. of P_2O_5 as Super. (ii) Clay loam. (iii) 29.4.63. (iv) (a) 3—4 ploughings. (c) Line sowing. (c) 4·2 Kg/ha. (d) 91 cm. betwsen rows. (e) —. (v) 80 Kg/ha. of N as A/S+60 Kg/ha. of P_2O_5 as Super. (vi) Capsularies. (vii) Irrigated. (viii) Weedings. (ix) N.A. (x) 3.12.63.

2. TREATMENTS :

8 insecticidal treatments: T_0=Control, T_1=Folidol—0·02 %, T_2=Folidol 0·04 %, T_3=Endrin—0·02 %, T_4=Endrin—0·04 %, T_5=Telodrin—0·02 %, T_6=Telodrin—0·04 %, and T_7=Metasystex—0·1 %.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 3. (iv) (a) and (b) 12·80 m.×3·96 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Jute stem weevil. (iii) Percentage of infestation. (iv) (a) 1963—65 (Treatments modified in 1964). (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 55·6 degrees. (ii) 8·0 degrees. (iii) Treatment differences are highly significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Mean infestation	75·3	69·3	59·3	51·5	39·4	51·5	43·4	55·4

C D.=14·0 degrees.

Crop :- Jute (*Kharif*). **Ref :- Bh. 64(260).**

Site :- Jute Res. Instt., Katihar. **Type :- 'D'.**

Object :—To know the comparative efficacy of different insecticides in controlling the pest on Jute.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Jute. (c) 80 Kg/ha. of N as A/S+60 Kg/ha of P_2O_5 as Super. (ii) Clay loam. (iii) 5.7.64. (iv) (a) 3—4 ploughings. (b) Line sowing. (c) 4·2 Kg/ha. (d) 91 cm. between rows. (e) —. (v) 80 Kg/ha. of N as A/S+60 Kg/ha. of P_2O_5 as Super. (vi) JRO—632. (vii) Unirrigated. (viii) Weedings. (ix) N.A. (x) 6.1.65.

2. TREATMENTS :

All combinations of (1) and (2)+one control

(1) 5 types of insecticides : S_1=Folidol—0·04 %, S_2=Endrin—0·04 %, S_3=Telcdrin—0·04 %, S_4=Malenour—0·05 % and S_5=Metasystex—0·1 %.

(2) Sprayings at 3 intervals : I_1=10, I_2=15 and I_3=20 days.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 3. (iv) (a) and (b) 5·49 m.×7·32 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Jute apion, control measure taken as per treatments. (iii) Percentage of infested plants. (iv) (a) 1964—65 (Treatments modified in 1965). (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 26·9 degree. (ii) 2·3 degrees. (iii) Main effects of I and S, interaction I×S and control *vs.* others are highly significant. (iv) Mean infestation in degrees.

Control=56·6 degree.

	S_1	S_2	S_3	S_4	S_5	Mean
V_1	16·2	15·3	16 6	24·6	23·1	19·1
V_2	26·2	20·2	17·7	41·4	25·9	26·3
V_3	26·4	21·6	22·8	43·5	32·0	29·2
Mean	22·9	19·0	19·0	36·5	27·0	24·9

C.D. for S marginal means=2·19 degrees.
C.D. for I marginal means=1·70 degrees.
C.D. for means in the body of V×S table=3·80 degrees.
C.D. for control *vs.* others=2·76 degrees.

Crop :- Jute (*Kharif*). **Ref :- Bh. 65(43).**

Site :- Jute Res. Sub-Stn., Katihar. **Type :- 'D'.**

Object :—To know the comparative efficacy of different insecticides in different levels of treatments to check the infestation of the pest-Apion corchori on Jute.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Jute. (c) 80 Kg/ha. of N as A/S+60 Kg/ha. of P_2O_5 as Super. (ii) Clayey loam. (iii) 4.4.65. (iv) (a) 3—4 ploughings. (b) Line sowing. (c) 42 Kg/ha. (d) 91 cm. between rows. (e) —. (v) 80 Kg/ha. of N as A/S+60 Kg/ha. of P_2O_5 as Super. (vi) J.R.C. (vii) Irrigated. (viii) Weedings. (ix) N.A. (x) 23.11.65.

2. TREATMENTS:

All combinations of (1) and (2)+one control

(1) 5 types of insecticides sprayed: I_1=Folidol—0·04 %, I_2=Endrin—0·04 %, I_3=Telodrin—0·04 %, I_4=Dimecron 0·06 %, I_5=Meta systex 0·1 %.

(2) Spraying at 3 intervals: A_1=10, A_2=15 and I_3=20 days.
Applied on 1, 11, 16, 21.6.65 and 1.7.65.

3. DESIGN:

(i) Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 3. (iv) (a) and (b) 5·49 m.×7·32 m. (v) Nil. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Attack of Apion corchori, control measure as per treatments. (iii) Percentage of incidence, intensity of damage. (iv) (a) 1963—65 (modified in 65). (b) Yes. (c) N.A. (v) to (vii) Nil.

5. RESULTS:

(i) 23·9 degrees. (ii) 4·9 degrees. (iii) Main effect of I and Extra *vs.* others are highly significant. (iv) Mean infestation in degrees.

Control=33·7 degrees.

	I_1	I_2	I_3	I_4	I_5	Mean
A_1	19·1	19·3	15·5	25·4	25·8	**21·0**
A_2	23·9	20·3	17·5	29·5	28·5	23·9
A_3	26·4	24·7	22·3	27·1	23·9	24·9
Mean	23·2	21·4	18·4	27·3	26·1	23·3

C.D. for I marginal means=4·68 degrees.
C.D. for Ex. trt. *vs.* others=5·92 degrees.

Crop :- Jute (*Kharif*). **Ref :- Bh. 64(38).**

Site :- Jute Res. Sub-Statiyn, Katihar. **Type :- 'D'.**

Object :—To find out the economic method of controlling, foot and stem rot of Jute.

1. BASAL CONDITIONS:

(i) (a) to (c) N.A. (ii) Sandy loam. (iii) 10.7.64. (iv) (a) 6 ploughings and laddering by Bihar plough and *desi* plough. (b) Line sowing. (c) 16·8 Kg/ha. (d) 30 cm.×7 to 8 cm. (e) N.A. (v) Nil. (vi) Rosella. (vii) Unirrigated. (viii) Weeding and hoeing by *khurpi* and wheel hoe respectively. (ix) N.A. (x) 1.12.64.

2. TREATMENTS:

4 disease control treatments: T_0=Control (no operation after final thinning), T_1=Two rougings of diseased plants only within a fortnight after final thinning, T_2=Two spraying of 0·75 % of copper oxychloride (50% ca) within a fortnight after final thinning and T_3=Two rougings followed by two sprayings (strength as in T_2) within a fortnight after final thinning.

3. DESIGN:

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) 6·00 m.×4·00 m. (b) 5·40 m.×3·40 m. (v) 30 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Nil. (ii) Foot and stem-rot of Rossella attacked, control measures as per treatments. (iii) Stand count, no. of diseased plants, green weight of fibre, height of plant and dry weight of fibre. (iv) (a) to (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 869 Kg/ha. (ii) 124·8 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of fibre in Kg/ha.

Treatment	T_0	T_1	T_2	T_3
Av. yield	790	1004	800	882

Crop :- Jute (*Kharif*). **Ref :- Bh. 62(243).**

Site :- Purnea city Farm (Purnea c.f.). **Type :- 'D'.**

Object:—To find out the comparative efficacy of different insecticides against the surface feeder of Jute crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Jute. (c) 80 Kg/ha. of N as A/S+60 Kg/ha. of P_2O_5 as Super. (ii) Loam. (iii) 80 Kg/ha. of N as A/S+60 Kg/ha. of P_2O_5 as Super. (iv) JRO—632. (v) (a) 2—3 ploughings. (b) Line sowing. (c) 42 Kg/ha. (d) 99 cm. between rows. (e) —. (vi) 26.6.62. (vii) Unirrigated. (viii) Weedings. (ix) N.A. (x) 12.11.62.

2. TREATMENTS :

7 insecticidal treatments: T_0=Control, T_1=BHC 5 % dust at 22·5 Kg/ha., T_2=DDT 5 % dust at 22·5 Kg/ha., T_3=Aldrin 5 % dust at 22 5 Kg/ha., T_4=Dewrin 1·4 % dust at 22·5 Kg/ha., T_5=Endrin 0·04 % spray in 1123 lit/ha. of water and T_6=Folidol 0.04 % spray in 1123 lit/ha. of water.

Insecticides sprayed on 18.8.62.

3. DESIGN :

(i) R.B.D., 7 plots/replication and 4 replications. (ii) N.A. (iii) (a) and (b) 50·54 sq. m. (iv) Yes.

4. GENERAL :

(i) Good. (ii) Attack of semi looper. (iii) Percentage of mortality. (iv) (a) 1962 -64 (modified in 63). (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 57·8 degrees. (ii) 20·9 degrees. (iii) Treatment differences are significant. (iv) Mean reduction of pests in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6
Mean angle	19 8	78 8	56·6	66·2	58·9	73 8	50·8

C.D.=31·0 degrees.

Crop :- Jute (*Kharif*). **Ref :- Bh. 63(242).**

Site :- Purnea city Farm, Purnea (c.f.). **Type :- 'D'.**

Object:—To find out the comparative efficacy of different insecticides against the Jute stem weevil.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Jute. (c) 80 Kg/ha. of N as A/S+60 Kg/ha. of P_2O_5 as Super. (ii) Loam. (iii) 80 Kg/ha. of N as A/S+60 Kg/ha. of P_2O_5 as Super. (iv) JRO 632. (v) (a) 3—4 ploughings. (b) Line sowing. (c) 42 Kg/ha. (d) 99 cm. between rows. (e) —. (v) 2.5.63. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 20.11.63.

2. TREATMENTS:

8 insecticidal treatments: T_0=Control, T_1=B.H.C. 5% dust at 22·5 Kg/ha., T_2=D.D.T. 5% dust at 22·5 Kg/ha., T_3=Aldrin 5% dust at 22·5 Kg/ha., T_4=Dieldrin 5% dust at 22·5 Kg/ha. T_5=Endrin 0·04 %, T_6=Folidol 0·04 % and T_7=Telodrin 0·04 %.

3. DESIGN :

(i) R.B.D. 8, 4. (ii) N.A. (iii) (a) and (b) 1·52 m.×1·52 m. (iv) Yes.

4. GENERAL :

(i) Good. (ii) surface fuder (iii) Percentage of mortality of pests. (iv) (a) 1962—64 (Treatments modified in 63.) (b) Yes. (c) Nil. (v) and (vi) Nil. (vii) There was no germination in control plot.

5. RESULTS :

(i) 71·9 degrees. (ii) 3·6 degrees. (iii) Treatment differences are highly significant. (iv) Mean reduction of pests in degrees.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7	
Mean angle	72·1	60·6	68·6	74·0	77·7	78·9	71·5	C.D.=5·3 degrees.

Crop :- Jute (*Kharif*). **Ref :- Bh. 64(264).**

Site :- Purnea City Farm (Purnea c.f.). Type :- 'D'.

Object :—To know the comparative efficacy of different insicticides in controlling the Jute surface feeder.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Jute. (c) 80 Kg/ha. of N as A/S+60 Kg/ha. of P_2O_5 as Super. (ii) Loam. (iii) 80 Kg/ha. of N as A/S+60 Kg/ha. of P_2O_5 as Super. (iv) JRO 632. (v) (a) 3—4 ploughings. (b) Line sowing. (c) 42 Kg/ha. (d) 99 cm. between rows. (e) —. (vi) 8.5.64. (vii) Unirrigated. (viii) Weedings and hoeing. (ix) N.A. (x) 28.11.64.

2. TREATMENTSS:

8 insecticidal treatments : T_0=Control, T_1=BHC 5 % dust at 22·5 Kg/ha., T_2=D.D.T. 5 % dust at 22·5 Kg/ha., T_3=Aldrin 5 % dust at 22·5 Kg/ha., T_4=Dieldrin 1·5 % dust at 22·5 Kg/ha., T_5=Folidol 0·04 %, spray, T_6=Telodrin 0·04 % spray and T_7=Endrin 0·04 % spray.

3. DESIGN :

(i) R.B.D. 8, 4. (ii) N.A. (iii) (a) and (b) 50 54 sq. m. (iv) Yes.

4. GENERAL :

(i) Good. (ii) Jute surface feeder. (iii) Percentage mortality of pest. (iv) (a) 1962—64 (treatments modified in 63). (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 65·7 degrees. (ii) 11·2 degrees. (iii) Treatment differences are highly significant. (iv) Mean reduction of pests in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	
Mean angle	47·2	61·5	59·2	63·1	53·8	81·5	69·5	90·0	C.D.=16·4 degrees.

Crop :- Mesta (*Kharif*). **Ref :- Bh. 65(42).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'D'.**

Object :—To know the comparative efficacy of different insecticides to check the incidence of the pest-Bunchy top on Mesta.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Loam. (iii) 16.7.65. (iv) (a) 2—3 ploughings. (b) Line sowing. (c) 17 Kg/ha. (d) 30 cm. between rows. (e) —. (v) 60 Kg/ha. of N as A/S+40 Kg/ha. of P_2O_5 as Super. (vi) R.T. 2. (vii) Unirrigated. (viii) Weedings. (ix) N.A. (x) 25.12.65.

2. TREATMENTS :

9 insecticidal treatments: T_0=Control, T_1=0·04 % of Folidol, T_2=0·03 % of Dimecron, T_3=0·04 % of Rogar—40, T_4=0·04 % of Diazinon, T_5=0·04 % of Endrin, T_6=0·06 % of Nicotine Sulphate, T_7=Control and T_8=0·06 % of Trithion.

Insecticides applied on 29.8.65, 15 and 29.9.65.

3. DESIGN:

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) and (b) 40·47 sq. m. (v) Nil. (vi) **Yes.**

4. GENERAL :

(i) Good. (ii) Attack of Bunchy top, control measure as per treatments. (iii) Percentage of incidence. (iv) (a) 1965—contd. (b) Yes. (c) N.A. (v) to (vii) Nil.

5. RESULTS :

(i) 5·4 degrees. (ii) 1·1 degrees. (iii) Treatment differences are not significant. (iv) Mean infestation in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Mean angle	5·8	5·0	5·9	4·9	4·9	5·4	5·1	7·0	4·5

Crop :- Groundnut (*Kharif*). **Ref :- Bh. 63(249), 65(50).**

Site :- Agri. Res. Instt., Dholi. **Type :- 'M'.**

Object:—To estimate the manurial requirement for the yield of Groundnut.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Barley ; Fallow. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super ; Nil. (ii) Calcarious loam. (iii) 5.7.63 ; 10 to 12.7.65. (iv) (a) 2 ploughings. (b) Dibbling. (c) 150 Kg/ha. (d) Rows 31 cm. apart. (e) —. (v) Nil. (vi) AK—12—24. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 19,11.63 ; 25.11.65.

2. TREATMENTS :

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

(1) 3 levels of N as A/S : N_0=0, N_1=11·2 and N_2=22·5 Kg/ha.

(2) 3 levels of P_2O_5 as Super : P_0=0, P_1=22·5 and P_2=45·0 Kg/ha.

(3) 3 levels of K_2O as Mur. Pot. : K_0=0, K_1=22·5 and K_2=45·0 Kg/ha.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 27. (b) N.A. (iii) 4. (iv) (a) 14·02 m.×3·05 m. (b) 12·19 m.×2·43 m. (v) 91 cm.×31 cm. (vi) **Yes.**

4. GENERAL :

(i) Good. (ii) Tikka attack. (iii) Yield of pods. (iv) (a) 1963—65 (expt. failed in 1964). (b) No. (c) Nil. (v) Kanke. (vi) Nil. (vii) As the variances are heterogeneous and Treatments × Years interaction is absent, the results of individual years are presented under 5. Results.

5. RESULTS:

63(249)

(i) 1228 Kg/ha. (ii) 184·8 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of pods in Kg/ha.

	P_0	P_1	P_1	K_0	K_1	K_2	Mean
N_0	1211	1276	1325	1267	1338	1207	1271
N_1	1143	1238	1221	1184	1229	1188	1201
N_2	1180	1318	1139	1224	1200	1214	1212
Mean	1178	1277	1228	1225	1256	1203	1228
K_0	1191	1287	1197				
K_1	1134	1364	1269				
K_2	1210	1180	1219				

65(50)

(i) 1269 Kg/ha. (ii) 310·8 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of pods in Kg/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	1181	1145	1284	1159	1201	1250	1204
N_1	1305	1169	1294	1231	1364	1173	1256
N_2	1325	1286	1432	1311	1336	1395	1347
Mean	1271	1200	1337	1234	1301	1273	1269
K_0	1218	1127	1356				
K_1	1274	1232	1395				
K_2	1319	1241	1259				

Crop :- Groundnut (*Kharif*). **Ref :- Bh. 62(123).**

Site :- Soil Conservation Res. Sub-Stn., Jalalgarh. **Type :- 'M'.**

Object :—To test the effect of trace elements on the yield of crop.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) 28.7.62. (iv) (a) 3—4 ploughings. (b) Line sowing. (c) 90 Kg/ha. (d) 15·5 cm. between rows. (e) —. (v) N.A. (vi) Giriak. (vii) Unirrigated. (viii) Weedings. (ix) N.A. (x) 14.1.63.

2. TREATMENTS :

15 trace element treatments: T_0=Control, T_1=1793 Kg/ha. of lime, T_2=1793 Kg/ha. of Lime+11·2 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot., T_3=T_2+11·2 Kg/ha. of Mn. Sul., T_4=T_2+22·4 Kg/ha. of Mn. Sul., T_5=T_1+11·2 Kg/ha. of Zn. Sul., T_6=T_2+22·4 Kg/ha. of Zn. Sul., T_7=T_2+11·2 Kg/ha. of Borax, T_8=T_2+22·4 Kg/ha. of Borax, T_9=T_2+11·2 Kg/ha. of Cu. Sul., T_{10}=T_2+22·4 Kg/ha. of Cu. Sul., T_{11}=T_2+11·2 Kg/ha. of Fe. Sul., T_{12}=T_2+22·4 Kg/ha. of Fe. Sul., T_{13}=T_2+1·1 Kg/ha. of Ammo. Molybdate, T_{14}=T_2+2·2 Kg/ha. of Ammo. Molybdate.

3. DESIGN :

(i) R.B.D. (ii) (a) 15. (b) N.A. (iii) 4. (iv) (a) 50·58 sq. m. (v) Nil. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Yield of pods. (iv) (a) 1962 only. (b) Yes. (c) Nil. (v) Kanke. (vi) and (vii) Nil.

5. RESULTS :

(i) 1103 Kg/ha. (ii) 569·4 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of pods in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Av. yield	1106	1225	619	1039	1211	1158	922	1458

Treatment	T_8	T_9	T_{10}	T_{11}	T_{12}	T_{13}	T_{14}
Av. yield	2092	1077	932	891	1190	954	669

— — —

Crop :- Groundnut (*Kharif*). **Ref :- Bh. 62(128), 63(128), 64(189).**

Site :- Soil Conservation Res. Sub-Stn., Jalalgarh. **Type :- 'M'.**

Object : To test the effect of Borax on the yield of Groundnut.

1. BASAL CONDITIONS :

(i) (a) Nil for 1962 and 64 ; N.A. (b) Fallow for 1962 and 64 ; N.A. (c) Nil. (ii) Sandy loam. (iii) 26.7.62 ; 9.6.63 ; 2.8.64. (iv) (a) 3 –4 ploughings. (b) Line sowing. (c) 90 Kg/ha. (d) Rows 15·5 cm. apart. (e) —. (v) N.A. (vi) Giriak local. (vii) Unirrigated. (viii) Weedings. (ix) N.A. (x) 10.1.63 ; 7.1.64 ; 25/26.12.64.

2. TREATMENTS:

6 manurial treatments : T_0=Control, T_1=11·2 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot., T_2=T_1+11·2 Kg/ha. of Borax, T_3=T_1+22·4 Kg/ha. of Borax, T_4=T_1+5·6 Kg/ha. of Borax at sowing+5·6 Kg/ha. of Borax at earthing, T_5=T_1+11·2 Kg/ha. of Borax at sowing+11·2 Kg/ha. of Borax at earthing.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) and (b) 9.22 m.×7·32 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of groundnut pods. (iv) (a) 1962—64. (b) No. (c) Results of combined analysis are presented under 5. Results. (v) No. (vi) Nil. (vii) Error variances are homogeneous and Treatments × Years interaction is absent.

5. RESULTS :

Pooled results

(i) 715 Kg/ha. (ii) 202·0 Kg/ha. (based on 55 d.f. made up of pooled error and Treatments × Years interaction). (iii) Treatment differences are not significant. (iv) Av. yield of pods in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. yield	700	597	830	772	675	716

Individual results

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	Sig.	G.M.	S.E./plot
Year 1962	1343	1045	1423	1420	1291	1314	N.S.	1306	286·1
1963	500	463	545	538	415	382	N.S.	474	165·1
1964	256	284	522	357	318	451	N.S.	365	201·5
Pooled	700	597	830	772	675	716	N.S.	715	202·0

Crop :- Grountnut (*Kharif*). **Ref :- Bh. 60(308).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object:—To find out the response of *Kharif* crops liming.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Red loam. (iii) 20.6.60. (iv) (a) 3—4 ploughings. (b) Line sowing. (c) 90 Kg/ha. (d) 23 cm. between rows. (e) —. (v) N.A. (vi) Giriak. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 8.12.60.

2. TREATMENTS :

4 liming treatments : T_0=Control, T_1=400 Kg/ha. of lime, T_2=45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. and $T_3=T_1+T_2$.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 5. (iv) (a) 5. (iv) (a) and (b) 20·23 sq. m. (v) Nil. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Yield of groundnut pods. (iv) (a) 1958–60. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 830 Kg/ha. (ii) 153·9 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of pods in Kg/ha.

Treatment	T_0	T_1	T_2	T_3
Av. yield	519	1038	738	1026

C.D.=212·0 Kg/ha.

Crop :- Groundnut (*Kharif*). **Ref :- Bh. 60(291), 61(295), 62(122).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object: —To see the effect of trace elements on the crop yield.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Red loam. (iii) 3 7.60 ; 1.7.61 ; 10.7.62. (iv) (a) 2 to 4 ploughings. (b) Line sowing. (c) 92 Kg/ha. (d) Rows 23 cm. apart. (e) —. (v) N.A. (vi) Giriak. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 24.12.60 ; 25.12 61 ; 23.12.62.

2. TREATMENTS :

15 manurial treatments : T_0=Control, T_1=1800 Kg/ha. of lime, T_2=Lime at 1800 Kg/ha.+45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot., T_3=T_2+Mn Sul. at 11·3 Kg/ha., T_4=T_2+22·3 Kg/ha. of Mn. Sul., T_5=T_2+11·3 Kg/ha. of Zn. Sul., T_6=T_2+22·3 Kg/ha. of Zn. Sul., T_7=T_2+11·3 Kg/ha. of Borax, T_8=T_2+22·5 Kg/ha. of Borax, T_9=T_2+11·3 Kg/ha. of Cu. Sul., T_{10}=T_2+22·5 Kg/ha. of Cu. Sul, T_{11}=T_2+11·3 Kg/ha. of Fe. Sul., T_{12}=T_2+22·5 Kg/ha. of Fe Sul., T_{13}=T_2+1·1 Kg/ha. of Ammo. Molybdate and T_{14}=T_2+2·3 Kg/ha. of Ammo. Molybdate.

3. DESIGN :

(i) R.B.D. (ii) (a) 15 (b) N A (iii) 4. (iv) (a) and (b) 40 46 sq. m. ; 9 14 m.×4·46 m. ; 20·23 sq. m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of groundnut pods. (iv) (a) 1960 –62. (b) No. (c) Results of combined analysis are given under 5. Results. (v) No. (vi) Nil. (vii) Error variances are heterogeneous and Treatments × Years interaction is present.

5. RESULTS :

Pooled results

(i) 1553 Kg/ha. (ii) 388·2 Kg/ha. (based on 28 d.f. made up of Treatments × Years interaction). (iii) Treatment differences are highly significant. (iv) Av. yield of pods in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Av. yield	958	1296	1606	1606	1612	1727	1603	1540

Treatment	T_8	T_9	T_{10}	T_{11}	T_{12}	T_{13}	T_{14}
Av. yield	1442	1690	1646	1630	1729	1572	1637

C.D.=324·6 Kg/ha.

Individual results

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}
Year												
1960	447	605	710	666	659	656	616	605	465	664	577	598
1961	593	1162	1142	1209	1190	1563	1208	1058	1223	1288	1405	1391
1962	1833	2121	2965	2943	2987	2963	2985	2957	2640	3120	2957	2902
Pooled	958	1296	1606	1606	1612	1727	1603	1540	1442	1690	1646	1630

T_{12}	T_{13}	T_{14}	Sig.	G.M.	S.E./plot
681	612	619	N.S.	612	138·9
1473	1190	1104	N.S.	1213	338·6
3032	2913	3188	*	2834	282·2
1729	1572	1637	**	1553	388·2

Crop :- Groundnut (*Kharif*). **Ref :- Bh. 64(279), 65(54).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object:—To estimate the manurial requirement for Groundnut crop.

I. BASAL CONDITIONS :

(i) (a) Nil. (b) Nil ; Fallow. (c) 22·5 Kg/ha. of N as A/S+22·5 Kg/ha. of P_2O_5 as Super ; Nil. (ii) Red-loam. (iii) 10.7.64 ; 28.6 to 4.7.65. (iv) (a) 2 to 3 ploughings. (b) Dibbling. (c) 150 Kg/ha. (d) 30 cm. × 15 cm. (e) —. (v) Nil ; 4612 Kg/ha. of F.Y.M. (vi) AK—12—24. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 15.11.64 ; 8 to 17.11.65.

2. TREATMENTS :

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

(1) 3 levels of N as A/S : N_0=0, N_1=11·2 and N_2=22·5 Kg/ha.
(2) 3 levels of P_2O_5 as Super : P_0=0, P_1=22·5 and P_2=45 Kg/ha.
(3) 3 levels of K_2O as Mur. Pot. : K_0=0, K_1=22·5 and K_2=45 Kg/ha.

3. DESIGN :

(i) 3^3 confd. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) —. (iii) 4. (iv) (a) 14·02 m.×3·05 m. (b) 12·19 m.×2·43 m. (v) 91 cm.×31 cm. (vi) Yes.

4. GENERAL ;

(i) Good. (ii) Tikka attack. (iii) Yield of groundnut pods. (iv) (a) 1964—65. (b) No. (c) Results of combined analysis are given under 5. Results. (v) Seikhpura and Dholi. (vi) Nil. (vii) Error variances are heterogeneous and (N×P)×years and (N×K)×years interactions are present where as years×(P×K) interaction is absent.

5. RESULTS :

Pooled results

(i) 752 Kg/ha. (ii) 364 Kg/ha. (based on 14 d.f. made up of years×N, years×P, years×K, years×(NP) and years×(NK) interaction). (iii) None of the effects is significant. (iv) Av. yield of pods in Kg/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	651	790	698	657	667	815	713
N_1	668	799	814	689	759	832	760
N_2	702	745	902	729	784	837	783
Mean	674	778	805	692	737	828	752

Individual results

Treatment	N_0	N_1	N_2	Sig.	S_1	S_2	S_3	Sig.
Year								
1964	568	722	774	**	581	709	774	**
1965	859	799	793	N.S.	767	848	836	N.S.
Pooled	713	760	783	N.S.	674	778	805	N.S.

K_0	K_1	K_2	Sig.	G.M.	S.E./plot
630	680	754	**	688	115·7
754	794	903	N.S.	817	250·2
692	737	828	N.S.	752	364·5

Crop :- Groundnut (*Kharif*). **Ref :- Bh. 65(161).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object :—To test the effect of placement of Super on the yield of Groundnut.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Red loam. (iii) 7.7.65. (iv) (a) 3—4 ploughings. (b) Line sowing. (c) 60 Kg/ha. (d) 23 cm. between rows. (e) —. (v) 22·5 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (vi) Early vunner. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 29.11.65 to 2.12.65.

2 TREATMENTS :

3 manurial treatments : T_0=Control, T_1=Super at surface and T_2=Super in furrows at plough depth of 9·0 cm.

Dose and time of application of Super N.A.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) and (b) 20·23 sq. m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of pods. (iv) (a) No. (b) and (c) Nil. (v) No. (vi) and (vii) Nil.

5. RESULTS :

(i) 2315 Kg/ha. (ii) 225·6 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of pods in Kg/na.

Treatment	T_0	T_1	T_2
Av. yield	2317	2246	2382

———

Crop :- Groundnut (*Kharif*). **Ref :- Bh. 65(163).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object :—To study the comparison of basic slag and other steel slags for their effect on the yield of Groundnut.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (ii) Red loam (iii) 9.7.65. (iv) (a) 3—4 ploughings. (b) Line sowing. (c) 90 Kg/ha. (d) 80 cm. between rows. (e) —. (v) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (vi) Kaling Pong. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (v) 12.11.65 to 15.11.65.

2. TREATMENTS :

6 manurial treatments: T_0=Control, T_1=Lime, T_2=Bhilai blast furnace (B E slag), T_3=Bhilai Open Hearth (O.H. slag), T_4=Rourkela Open Health (O.H. slag), T_5=Rourkela (L.D. slag) and T_6=Low soft furnace slag.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 5. (iv) (a) and (b) 10·12 sq m. (v) Nil (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of pods. (iv) (a) 1965—only. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2573 Kg/ha. (ii) 416·6 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of pods in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	2194	2599	2539	2490	2559	2747	2885

Crop :- Groundnut (*Kharif*). **Ref :- Bh. 64(191).**

Site :- Distt. Agri. Farm., Nawadah. **Type :- 'M'.**

Object :—To determine the efficiency of gypsum in increasing the yield of Groundnut.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Loam. (iii) 8.8.64. (iv) (a) 3—4 ploughings. (b) Line sowing. (c) 90 Kg/ha. (d) 15·5 cm. between rows. (e) —. (v) 22·5 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (vi) Giriak. (vii) Unirrigated. (viii) Weedings. (ix) N.A.. (x) 3, 5.1.65.

2. TREATMENTS :

6 manurial treatments : T_0=Control, T_1=11·2 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot., T_2=Gypsum at 230·6 Kg/ha., T_3=T_1+T_2, T_4= Gypsum at 230 Kg/ha. half at sowing and half at flowering time, T_5=T_1+T_4.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) and (b) 10·06 m.×10·06 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Wt. of pods. (iv) (a) 1964—65 (Treatment modified in 65). (b) Yes. (c) Nil. (v) Patna. (vi) and (vii) Nil.

5. RESULTS :

(i) 3164 Kg/ha. (ii) 189.7 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of pods in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. yield	3179	3267	3078	3262	3060	3139

Crop :- Groundnut (*Kharif*). **Ref :- Bh. 65(149).**

Site :- Distt. Agri. Farm, Nawadah. **Type :- 'M'.**

Object :—To determine the efficiency of gypsum in increasing the yield of Groundnut.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Groundnut. (c) As per treatments. (ii) Clayee. (iii) 9 and 10.7.65. (iv) (a) 3 ploughings. (b) Line sowing. (c) 92 Kg/ha. (d) 31 cm. between rows. (e) —. (v) 22·5 Kg/ha. of N as A/S+ 45 Kg/ha. of P_2O_5 as Super. (vi) Giriak. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 13.12.65 to 18.12.65.

2. TREATMENTS :

4 manurial treatments: T_1=11·2 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super, T_2=T_1+45 Kg/ha. of K_2O as Mur. Pot., T_3=Gypsum at 230·5 Kg/ha. and T_4=T_2+T_3.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 5. (iv) (a) 125·46 sq. m. (b) 101·75 sq. m. (v) N,A. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of pods. (iv) (a) 1964—65 (Treatments modified in 1965). (b) and (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1240 Kg/ha. (ii) 83·0 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of pods in Kg/ha.

Treatment	T_1	T_2	T_3	T_4
Av. yield	1290	1200	1270	1200

— —

Crop :- Groundnut (*Kharif*). **Ref :- Bh. 64(188), 65(148).**

Site :- Distt. Agri. Farm, Nawadah. **Type :- 'M'.**

Object :—To test the effect of trace elements on the crop yield.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat ; Groundnut. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super ; 45 Kg/ha. of N as A/S+22·5 Kg/ha. of P_2O_5 as Super+22·5 Kg/ha. of K_2O as Mur. Pot. (ii) Loam ; Clayey. (iii) 4.8.64 ; 11 and 12.7.65. (iv) (a) 3—4 ploughings. (b) Line sowing. (c) 90 Kg/ha. ; 92 Kg/ha. (d) 30·5 cm. ; 15·5 cm. between rows. (e) —. (v) N.A. (vi) Giriak. (vii) Unirrigated. (viii) Weedings ; weeding and hoeing. (ix) N.A. (x) 28/29.12.64 ; 28.11 to 13.12.65.

2. TREATMENTS :

16 trace element treatments : T_0=Control, T_1=11·2 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot., $T_2=T_1$+Mn. Sul. at 11·2 Kg/ha., $T_3=T_1$+22·5 Kg/ha. of Mn. Sul., $T_4=T_1$+11·2 Kg/ha. of Zn. Sul., $T_5=T_1$+22·4 Kg/ha. of Zn. Sul., $T_6=T_1$+11·2 Kg/ha. of Borax, T_7=22·4 Kg/ha. of Borax, $T_8=T_1$+11·2 Kg/ha. of Cu. Sul., $T_9=T_1$+22·4 Kg/ha. of Borax, $T_{10}=T_1$+11·2 Kg/ha. of Fe. Sul., $T_{11}=T_1$+22·4 Kg/ha. of Fe. Sul., $T_{12}=T_1$+1·1 Kg/ha. of Ammo. Molybdate, T_{13}=2·25 Kg/ha. of Ammo. Molybdate, $T_{14}=T_1+T_2+T_4+T_6+T_8+T_{10}+T_{12}$ and $T_{15}=T_1+T_3+T_5+T_7+T_9+T_{11}+T_{13}$.

3. DESIGN :

(i) R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) and (b) 8·31 m.×6·10 m. ; 50·58 sq. m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good ; Fair. (ii) Nil. (iii) Yield of groundnut pods. (iv) (a) 1964—65. (b) Yes ; no. (c) Nil. (v) Kanke. (vi) Nil. (vii) As the error variances are heterogeneons and Treatments×Years interaction is absent, the individual years results are given under 5. Results.

5. RESULTS :

64(188)

(i) 2908 Kg/ha. (ii) 329·4 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of pods in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Av. yield	3039	3008	2538	2991	2802	3018	2943	2804

Treatment	T_8	T_9	T_{10}	T_{11}	T_{12}	T_{13}	T_{14}	T_{15}
Av. yield	2856	3041	2924	2989	2956	2902	2876	2846

65(148)

(i) 1761 Kg/ha. (ii) 224·8 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of pods in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Av. yield	1641	1690	1715	1794	1661	1814	1611	1799

Treatment	T_8	T_9	T_{10}	T_{11}	T_{12}	T_{13}	T_{14}	T_{15}
Av. yield	1641	1898	1853	1789	1755	1789	1903	1829

Crop :- Groundnut (*Kharif*). **Ref :- Bh. 64(128).**

Site :- Agri. Res. Instt., Patna. **Type :- 'M'.**

Object :—To determine the efficiency of gypsum in increasing the yield of Groundnut.

1. BASAL CONDITIONS :

(i) (a) to (c) Nil. (ii) Sandy loam. (iii) 4, 5.7.64. (iv) (a) *Deshi* ploughing. (b) Dibbling. (c) 90 Kg/ha. (d) 30 cm.×23 cm. (e) N.A. (v) Nil. (vi) Local Giriak. (vii) Unirrigated. (viii) 2 hand hoeings. (ix) N.A. (x) 8.1.65 to 12.1.65.

2. TREATMENTS :

6 manurial treatments : T_0=Control, T_1=11·2 Kg/ha. of N as A/S+44·8 Kg/ha. of P_2O_5 as Super+ 44·8 Kg/ha. of K_2O as Mur. Pot., $T_2=T_1+230·6$ Kg/ha. of Gypsum, T_3=230·6 Kg/ha. of Gypsum applied at sowing, T_4=230·6 Kg/ha. of Gypsum applied half at sowing and half at the time of flowering or 30 days after sowing and $T_5=T_1+T_4$

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 3. (iv) (a) 10·82 m.×10·52 m. (b) 10·06 m.×10·06 m. (v) 38 cm.× 23 cm. (vi) Yes.

4. GENERAL :

(i) Healthy. (ii) Aldrine applied to soil and mixed at the time of preparation of land for controlling termites. (ii) Spraying with folidol 0·04 % to control Jassids. (iii) Yield of pods. (iv) (a) to (c) No. (v) to (vii) Nil.

5. RESULTS :

(i) 3161 Kg/ha. (ii) 221·0 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of pods in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. yield	3181	3268	3239	3079	3062	3141

Crop :- Groundnut (*Kharif*). **Ref :- Bh. 64(145).**

Site :- Agri. Res. Instt., Patna. **Type :- 'M'.**

Object : To test the effect of manures and trace elements on the yield of Groundnut.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Sandy loam. (iii) 1, 2.7.64. (iv) (a) *Deshi* ploughing. (b) Dibbling. (c) 90 Kg/ha. (d) 38 cm.×23 cm. (e) —. (v) N.A. (vi) Local Giriak. (vii) Unirrigated. (viii) 2 hand hoeing. (ix) N.A. (x) 22.12.64 to 7.1.65.

2. TREATMENTS :

16 manurial treatments : T_0=Control, T_1=11·2 Kg/ha. of N as A/S+44·8 Kg/ha. of P_2O_5 as Super+44·8 Kg/ha. of K_2O as Mur. Pot., T_1=11·2 Kg/ha. of Mn. Sul., T_3=22·4 Kg/ha. of Mn. Sul., T_4=11·2 Kg/ha. of Zn. Sul., T_5=22·4 Kg/ha. of Zn. Sul., T_6=11·2 Kg/ha. of Borax, T_7=22·4 Kg/ha. of Borax, T_8=11·2 Kg/ha. of Cu. Sul., T_9=22·4 Kg/ha. of Cul. Sul., T_{10}=11·2 Kg/ha. of Fe. Sul., T_{11}=22·4 Kg/ha. of Fe. Sul., T_{12}=1·1 Kg/ha. of Ammo. Molybdate, T_{13} 2·2 Kg/ha. of Ammo. Molybdate, T_{14}=11·2 Kg/ha. of each of the above five trace elements+1·1 Kg/ha. of Ammo. Molybdate and T_{15}=2 T_{14}.

11·2 Kg/ha. of N as A/S+44·8 Kg/ha. of P_2O_5 as Super+44·8 Kg/ha. of K_2O as Mur. pot. applied in all treatments from T_2 to T_{15}.

3. DESIGN :

(i) R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 9·07 m.×6·55 m. (b) 8·31 m.×6·10 m. (v) 38 cm.× 23 cm. (vi) Yes.

4. GENERAL :

(i) Healthy. (ii) (a) Aldrin 30 % E.C. sprayed near the root zone to control termite. (ii) Spraying with 0·04 % folidol was done to control Jassids. (iii) Yield of pods. (iv) (a) 1964 -only. (b) and (c) Nli. (v) to (vii) Nil.

5. RESULTS :

(i) 2943 Kg/ha. (ii) 323·9 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of pods in Kg/ha .

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Av. yield	3042	3011	2542	2994	2806	3022	2946	2807
	T_8	T_9	T_{10}	T_{11}	T_{12}	T_{13}	T_{14}	T_{15}
	3353	3045	2928	2992	2960	2906	2879	2849

Crop :- Groundnut (*Kharif*). **Ref :- Bh. 61(169), 62(144).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'C'.**

Object :—To assess the effect of pre-sowing soaking of seeds in harmones on the yield.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) 45 Kg/ha. of N as A/S+P_2O_5 as Super. (ii) Sandy loam. (iii) 28.6.61 ; 7.6.62. (iv) (a) 3 ploughings. (b) Dibbling. (c) 90 Kg/ha. (d) 15·2 cm.×15·2 cm. (e) Nil. (v) 22·4 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (vi) AK—12—24. (vii) Unirrigated. (vlii) Weeding, hoeing and earthing. (ix) 112·5 cm. ; 77·6 cm. (x) 28.10.61 ; 24.10.62.

2. TREATMENTS :

6 cultural treatments: T_1=Soaked in IAA—5 ppm. for 4 hours, T_2=Soaked in IAA—10 ppm. for 4 hours. T_3=Soaked in IAA—5 ppm. for 24 hours, T_4=Soaked in IAA—10 ppm. for 24 hours, T_5=Soaked in water for 24 hours and T_6=Soaked in water for 4 hours.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) 19·50 m.×4·27 m. (iii) 4. (iv) (a) 4·27 m.×3·66 m. (b) 3·66m.×2·74 m. (v) 30 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of pods. (iv) (a) 1961—62. (b) Yes. (c) Results of combined analysis are given under 5. Results. (v) No. (vi) Nil. (vii) Error variances are homogeneous and Treatments×Years interaction is absent.

5. RESULTS :

Pooled results

(i) 1619 Kg/ha. (ii) 293·4 Kg/ha. (based on 35 d.f. made up of pooled error and Treatments × Years interaction). (iii) Treatment differences are not significant. (iv) Av. yield of pods in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	1615	1531	1603	1596	1603	1768

Individual results

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	Sig.	G.M.	S.E./plot
Year									
1961	1232	1280	1240	1167	1252	1501	N.S.	1279	265·6
1962	1998	1782	1967	2024	1955	2035	N.S.	1960	343·1
Pooled	1615	1531	1603	1596	1603	1768	N.S.	1619	293·4

Crop :- Groundnut (*Kharif*). **Ref :- Bh. 60(260), 61(274), 62(250).**

Site :- Agri. Res. Instt., Dholi. **Type :- 'CM'.**

Object :—To estimate the manurial cum spacing requirements for the yield of Groundnut.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Arhar. (c) Nil. (ii) Calcarious loam. (iii) 28.6.60 ; 20.6.61 ; 26.6.62. (iv) (a) 2 ploughings (b) Dibblings. (c) 150 Kg/ha. (d) 30 cm. between rows. (e) —. (v) Nil. (vi) AK—12—24. (vii) Unirrigated. (viii) Weeding and hoeings. (ix) N.A. (x) 30.11.60 ; 25.11.61 ; 27 to 30.11.62.

2. TREATMENTS :

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

(i) 3 plant spacings : S_1=10·2, S_2=15·2 and S_3=22·9 cm.

(2) 3 levels of N as A/S : N_0=0, N_1=28 and N_2=56 Kg/ha.

(3) 3 levels of P_2O_5 as Super : P_0=0, P_1=28 and P_2=56 Kg/ha.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 27. (b) N.A. (iii) 4. (iv) (a) 4·35 m.×4·26 m. (b) 3·05 m.×3·66 m. (v) 30 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Tikka disease. (iii) Yield of groundnut pods. (iv) (a) 1960—62. (b) No. (c) Results of combined analysis are given under 5. Results. (v) Shikhpura. (vi) Nil. (vii) Error variances are homogeneous and Treatments × Years interaction is absent.

5. RESULTS :

Pooled results

(i) 2074 Kg/ha. (ii) 328·5 Kg/ha. (based on 270 d.f. made up of pooled error and Treatments × Years interaction). (iii) Main effect of S alone is significant. (iv) Av. yield of pods in Kg/ha.

	N_0	N_1	N_2	P_0	P_1	P_2	Mean
S_1	2122	2040	1954	2056	1965	2095	2039
S_2	2097	1990	2012	2012	2044	2043	2033
S_3	2152	2110	2194	2116	2099	2239	2152
Mean	2124	2047	2053	2061	2036	2126	2074
P_0	2139	1987	2062				
P_1	2113	1995	2001				
P_2	2122	2158	2096				

C.D. for S marginal means=87·6 Kg/ha.

Individual results

Treatment	S_1	S_2	S_3	Sig.	N_0	N_1	N_2	Sig.
Year 1960	2707	2665	2803	N.S.	2831	2678	2666	N.S.
1961	1533	1537	1735	**	1628	1597	1580	N.S.
1962	1876	1897	1917	N.S.	1912	1865	1913	N.S.
Pooled	2039	2033	2152	*	2124	2047	2053	N.S.

P_0	P_1	P_2	Sig.	G.M.	S.E./plot
2747	2641	2787	N.S.	2724	365·1
1572	1637	1596	N.S.	1601	309·5
1865	1831	1994	N.S.	1897	322·0
2061	2036	2126	N.S.	2074	328·5

Crop :- Groundnut (*Kharif*). **Ref :- Bh. 65(56).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'CM'.**

Object :—To fix the plant popn. and its inter-relationship with fertilizer levels.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Til+Niger. (c) 22·5 Kg/ha. of N as A/S+22·5 Kg/ha. of P_2O_5 as Super. (ii) Red loam. (iii) 5, 6, 8, 9, 12 and 13.7.65. (iv) (a) 2 ploughings. (b) Dibbling. (c) 150 Kg/ha. (d) 30 cm. (e) —. (v) Nil. (vi) AK 12—24. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 18 to 25.11.65.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1), (2) and (3)+one control

(1) Two plant spacings : A_1=10·2 and A_2=15·5 cm.

(2) Two row spacings within a pair of rows : B_1=15·2 and B_2=22·9 cm.

(3) Two spacings between two pairs of rows : C_1=30·5 and C_2=45·7 cm.

One standard spacing (control) 30 cm.×15 cm.

Sub-plot treatments :

3 doses of fertilizer : F_0=No fertilizer, F_1=16·8 Kg/ha. of N as A/S+22·5 Kg/ha. of P_2O_5 as Super +22·5 Kg/ha. of K_2O as Mur. Pot. and F_2=33·5 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot.

3. DESIGN :

(i) Split-plot. (ii) (a) 9 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 9·44 m.× 5·17 m. (b) 9·14 m.×4·57 m. (v) 30 cm.×60 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Tikka disease, 0·02% folidol spray. (iii) Yield of pods. (iv) (a) 1965 –contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 426 Kg/ha. (ii) (a) 167·5 Kg/ha. (b) 110·1 Kg/ha. (iii) Main effect of B, F and Main-plot Vs control are significant. (iv) Av. yield of pods in Kg/ha.

Standard spacings : F_0=742, F_1=670 and F_2=838 Kg/ha.

	B_1	B_2	C_1	C_2	F_0	F_1	F_2	Mean
A_1	329	433	397	365	307	403	433	381
A_2	337	445	384	398	357	381	434	391
Mean	333	439	390	381	332	392	433	386
F_0	273	391	351	313				
F_1	350	434	379	405				
F_2	375	492	441	426				
C_1	331	450						
C_2	335	428						

C.D. for B marginal means=83·7 Kg/ha.
C.D. for F marginal means=53·2 Kg/ha.
C.D. for 'control vs. others'=125·5 Kg/ha.

Crop :- Groundnut (*Kharif*). **Ref :- Bh. 65(57)-**

Site :- Agri. Res. Instt., Kanke. **Type :- 'CM'.**

Object :—To fix the plant population and its inter-relationship with fertilizer levels for Groundnut.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Niger. (c) 22·5 Kg/ha. of N as A/S+22·5 Kg/ha. of P_2O_5 as Super. (li) Red loam. (iii) 21 and 22.7.65. (iv) (a) 2 ploughings. (b) Dibbling. (c) 150 Kg/ha. (d) As per treatments. (e) —. (v) F.Y.M. at 4612 Kg/ha. (vi) Big Japan. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 25.11.65 to 16.12.65.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1) (2) and (3)+one control
(1) 2 plant spacings between plants : A_1=15·2 and A_2=22·9 cm.
(2) 2 row spacings within a pair of rows : B_1=22·9 and B_2=30·5 cm.
(3) 2 spacings between two pairs of rows : C_1=45·7 and C_2=61·0 cm.

One control (standard spacing) : 30 cm.×15 cm.

Sub-plot treasments :

3 doses of fertilizers: F_0=No manure, F_1=16·8 Kg/ha. of N as A/S+22·5 Kg/ha. of P_2O_5 as Super +22·5 Kg/ha. of K_2O as Mur. Pot., F_2=33·5 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot.

3. DESIGN:

(i) Split-plot. (ii) (a) 9 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a) 9·44 m × 5·17 m. (b) 9·14 m.×4·57 m. (v) 15 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Tikka disease, 0·02% folidol sprayed. (iii) Yield of pods. (iv) (a) 1965, contd. (b) No. (c) Nil. (v) to (vii) Nil,

5. RESULTS:

(i) 1423 Kg/ha. (ii) (a) 585·3 Kg/ha. (b) 421·9 Kg/ha. (iii) None of the effect is significant. (iv) Av. yield of pods in Kg/ha.

Control: F_0=1616, F_1=1544 and F_2=1861 Kg/ha.

	B_1	B_2	C_1	C_2	F_0	F_1	F_2	Mean
A_1	1570	1304	1468	1405	1170	1459	1682	1437
A_2	1340	1357	1415	1281	1294	1350	1401	1348
Mean	1455	1330	1442	1343	1232	1404	1541	1392
F_0	1276	1188	1193	1272				
F_1	1529	1279	1375	1433				
F_2	1559	1523	1758	1324				
C_1	1528	1356						
C_2	1382	1305						

Crop :- Groundnut (*Kharif*). **Ref :- Bh. 60(253).**

Site :- Ciriak seed Multiplication Farm, Patna. **Type :- 'CM'.**

Object :—To estimate the manurial cum spacing requirements for Groundnut.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Clay. (iii) 21 and 22.7.60. (iv) (a) 3—4 ploughings. (b) Line sowings. (c) 90 Kg/ha. (d) 30 cm. between rows. (e) —. (v) Lime at 276 Kg/ha. (vi) Local. (vii) Irrigated (viii) Weedings. (ix) N.A. (x) 26.11.60 to 28.11.60.

2. TREATMENTS:

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

(1) 3 plant spacing : S_1=10·2, S_2=15·2 and S_3=22·9 cm.

(2) 3 levels of N as A/S : N_0=0, N_1=7·6 and N_2=15·2 Kg/ha.

(3) 3 levels of P_2O_5 as Super : P_0=0, P_1=7·6 and P_2=15·24 Kg/ha.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 27. (b) 32·92 m.×17·07 m. (iii) 4. (iv) (a) 5·49 m.×3·66 m. (b) 3·66 m.× 3·05 m. (v) 91 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination, growth, flowering, yield of pod. (iv) (a) 1960–62 (Trs. modified in 1962). (b) Yes. (c) Nil. (v) Kanke and Dholi. (vi) and (vii) Nil.

5. RESULTS :

(i) 1760 Kg/ha. (ii) 777·64 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of pods in Kg/ha.

	N_0	N_1	N_2	P_0	P_1	P_2	Mean
S_1	2367	1610	1698	1871	2133	1671	1892
S_2	1700	1519	1881	1746	1638	1716	1700
S_3	1406	1812	1845	1920	1892	1250	1687
Mean	1824	1647	1808	1846	1887	1546	1760
P_0	2017	1723	1797				
P_1	1716	2088	1858				
P_2	1740	1129	1768				

Crop :- Groundnut (*Kharif*). **Ref :- Bh. 61(205), 62(169).**

Site :- Agri. Res. Instt., Patna. **Type :- 'CM'.**

Object :—To estimate the manurial cum spacing requirement for Groundnut.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow ; Groundnut. (c) Nil. (ii) Clay. (iii) 31.7.61 ; 3 to 6.7.62. (iv) (a) 2–3 ploughings. (b) Dibbling. (c) 90 Kg/ha. (d) 30 cm. × 30 cm. (e) –. (v) 4 Q/ha. of lime. (vi) Giriak local. (vii) Irrigated. (viii) Weedings. (ix) N.A. (x) 31.12.61, 16.1.62 ; 19 to 25.12.62, 27 to 28.12.62.

2. TREATMENTS :

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

(1) 3 plant spacings : S_1=10·2, S_2=15·2 and S_3=22·9 cm.
(3) 3 levels of N as A/S : N_0=0, N_1=28 and N_2=56 Kg/ha.
(3) 3 levels of P_2O_5 as Super : P_0=0, P_1=28 and P_2=56 Kg/ha.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 27. (b) 32·94 m. × 17·07 m. (iii) 4 for 61 (205) ; 3 for 62(169). (iv) (a) 5·49 m. × 3·66 m. (b) 3·66 m. × 3·05 m. (v) 91 cm. × 30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of pods. (iv) (a) 1960–62 (Treatments modified in 1961). (b) Yes. (c) Nil. (v) Dholi. (vi) Nil. (vii) As the error variances are heterogeneous and Treatments × years interaction is absent, the individual year results are presented under 5. Results.

5. RESULTS :

61(205)

(i) 3124 Kg/ha. (ii) 478·4 Kg/ha. (iii) Interaction S × P alone is significant. (iv) Av. yield of pods in Kg/ha.

	N_0	N_1	N_2	P_0	P_1	P_2	Mean
S_1	3024	3180	2926	3217	2926	2986	3043
S_2	3008	2889	3307	2964	3001	3240	3068
S_3	3210	3464	3113	3120	3606	3061	3262
Mean	3081	3178	3115	3100	3178	3095	3124
P_0	3038	3158	3105				
P_1	3098	3195	3240				
P_2	3105	3180	3001				

C.D. for the body of table=389·4 Kg/ha.

62(169)

(i) 1230 Kg/ha. (ii) 284·1 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of pods in Kg/ha.

	N_0	N_1	N_2	P_0	P_1	P_2	Mean
S_1	1209	1304	1214	1164	1354	1209	1242
S_2	1219	1164	1269	1199	1229	1224	1218
S_3	1269	1194	1229	1314	1184	1194	1231
Mean	1232	1221	1237	1226	1256	1209	1230
P_0	1274	1279	1125				
P_1	1244	1204	1319				
P_2	1179	1179	1269				

Crop :- Groundnut (*Kharif*). **Ref :- Bh. 60(102).**

Site :- Irrigation Res. Stn., Madhepura. **Type :- 'IM'.**

Object : —To study the effect of irrigation on the yield of Groundnut in accordance with supply of moisture in spells of drought with various doses of fertilizers.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) N.A. (ii) Sandy loam. (iii) 13.6.60. (iv) (a) 4—5 Bihar junior ploughings. (b) Line sowing. (c) 85 Kg/ha. (d) 46 cm.×23 cm. (e) One. (v) N.A. (vi) Giriak—local. (vii) As per treatments. (viii) Weeding and hoeing by hand. (ix) N.A. (x) 8.1.61.

2. TREATMENTS:

All combinations of (1) and (2)

(1) 2 levels of manures : M_1=11·2 Kg/ha. of N+33·6 Kg/ha. of P_2O_5 and M_2=11·2 Kg/ha. of N+67·2 Kg/ha. of P_2O_5.

(2) 2 levels of irrigation : I_0=Control and I_1=Light irrigation depending upon the moisture content of the soil.

N applied as A/S, P_2O_5 applied as Super.

3. DESIGN:

(i) R.B.D. (ii) (a) 4, (b) N.A. (iii) 5. (iv) (a) 30·48 m.×3·35 m. (b) 29·57 m.×2·74 m. (v) 46 cm.× 30 cm. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Germination, flowering, yield, plant population and root length. (iv) (a) No. (b) and (c) Nil. (v) to (vii) Nil.

5. RESULTS:

(i) 164 Kg/ha. (ii) 70·6 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of pods in Kg/ha.

	I_0	I_1	Mean
M_1	190	122	156
M_2	194	152	173
Mean	192	137	164

Crop :- Groundnut (*Kharif*) **Ref :- Bh. 60(144), 61(172).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'D'.**

Object :—To test the efficacy of different fungicides on the yield of Groundnut.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Groundnut. (c) N.A. (ii) Sandy loam. (iii) 4 to 7.6.60 ; 22.6.61. (iv) (a) 3—4 ploughings. (b) Line sowing. (c) 90 Kg/ha. (d) 46 cm. between rows. (e) —. (v) 134·6 Kg/ha. of A/S+357·9 Kg/ha. of Super+89·7 Kg/ha. of Mur. Pot.+2 C.L./ha. of compost. (vi) Giriak. (vii) Unirrigated. (viii) Weeding and earthing up. (ix) 105 cm. ; 142 cm. (x) 14·11 to 3.12.60 ; 30.11.61.

2. TREATMENTS:

4 insecticidal treatments: T_0=Control, T_1=Three sprayings with Bordeaux mixture (5 : 5 : 50), T_2=Three sprayings with Colloidal Sulphur at 2·3 Kg. in 1123·4 lit/ha. of water., T_3= Three sprapings with Diathane Z—78 at 0·68 Kg/ha. in 1123 lit/ha. of water.

3. DESIGN:

(i) R.B.D. (ii) (a) 4. (b) 22·2 m.×11·1 m. (iii) 6. (iv) (a) and (b) 10·36 m.×4·88 m. (v) Nil. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Tikka disease. (iii) Yield of groundnut pods, infestation observation. (iv) (a) 1960—61. (b) Yes. (c) Results of combined analysis are given under 5. Results. (v) No. (vi) Nil. (vii) Error variances are homogeneous and Treatments×Years interaction is present.

5. RESULTS:

Pooled results

(i) 2627 Kg/ha. (ii) 442·9 Kg/ha. (based on 3 d.f. made up of Treatments×Years interaction). (iii) Treatment differences are highly significant. (iv) Av. yield of pods in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	
Av. yield	2243	3060	2817	2388	C.D.=575·3 Kg/ha.

Individual results

Treatment	T_0	T_1	T_2	T_3	Sig.	G.M.	S.E./plot
Year							
1960	2319	2881	2644	2392	N.S.	2559	159·5
1961	2168	3239	2990	2385	**	2696	214·2
Pooled	2243	3060	2817	2388	**	2627	442·9

60(144)

(i) 14·5 degree. (ii) 1·7 degree. (iii) Treatment differences are not significant. (iv) Mean infestation in degree.

Treatment	T_0	T_1	T_2	T_3
Mean infestation	14·7	14·4	14·2	14·7

Results for *disease intensity* on groundnut.

61(172)

(i) 26·5 degree. (ii) 3·2 degree. (iii) Treatment differences are not significant. (iv) Mean infestation in degree.

Treatment	T_0	T_1	T_2	T_3
Mean infestation	24·7	27·5	28·2	25·4

Results for the disease intensity on groundnut stem.

61(172)

(i) 23·7 degree. (ii) 7·3 degree. (iii) Treatment differences are highly significant. (iv) Mean infestation in degree.

Treatment	T_0	T_1	T_2	T_3
Mean infestation	34·9	10·2	16·1	33·4

C.D.=9·5 degree.

Crop :- Groundnut (*Kharif*). **Ref :- Bh. 62(147), 63(182), 64(225).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'D'.**

Object:—To test the efficacy of no. of spraying of Bordeaux mixture (5 : 5 : 50) on the incidence of Tikka disease.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Groundnut. (c) N.A. (ii) Sandy loam. (iii) 28/29.6.62 ; 17, 19.6.63 ; 27.6.64. (iv) (a) 3—4 ploughings. (b) Line sowing. (c) 90 Kg/ha. (d) 46 cm. line to line. (e) Nil. (v) 134·6 Kg/ha. of A/S+ 357·9 Kg/ha. of Super+89·7 Kg/ha. of Mur. Pot.+2 C.L./ha. of compost. (vi) Giriak. (vii) Unirrigated. (viii) Weeding and earthing. (ix) 78 cm. ; 116 cm. ; 109 cm. (x) 17 to 30.11.62 ; 13.11 to 13.12.63 ; 15.11.64 to 13.12.64.

2. TREATMENTS :

4 insicticidal treatments: T_0=Control, T_1=One spraying of Bordeaux (5 : 5 : 50) at the the time of disease appearance, T_2=T_1+2nd spraying after 20 days and T_3=T_1+2 sprayings at 20 days interval.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) 22·25 m.×11·12 m. (iii) 6. (iv) (a) and (b) 4·88 m.×10·36 m. (v) Nil. (vi) Yes

4. GENERAL:

(i) Good. (ii) Tikka disease, control measures as per treatments. (iii) Incidence of disease and yield of pods. (iv) (a) 1962—64. (b) Yes. (c) Results of combined analysis are given under 5. Results. (v) No. (vi) Nil. (vii) Error variances are homogeneous and Treatments × Years interaction is present.

5. RESULTS:

Pooled results

(i) 2717 Kg/ha. (ii) 467·4 Kg/ha. (based on 6 d.f. made up of Treatments × Years interaction). (iii) Treatment differences are highly significant. (iv) Av. yield of pods in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	
Av. yield	2359	2436	2873	3202	C.D.=381·2 Kg/ha.

Individual results

Treatment	T_0	T_1	T_2	T_3	Sig.	G.M.	S.E./plot
Year							
1962	2456	2514	2637	2867	**	2619	180·6
1963	2444	2504	3080	3476	**	2876	231·0
1964	2176	2291	2901	3264	**	2658	326·2
Pooled	2359	2436	2873	3202	**	2717	467·4

Results of infestation (leaf).

62(147)

(i) 22·6 degree. (ii) 0·3 degree. (iii) Treatment differences are highly significant. (iv) Mean infestation in degree.

Treatment	T_0	T_1	T_2	T_3	
Mean infestation	24·0	22·9	22·3	21.1	C.D.=0·4 degree.

63(182)

(i) 16·8 degree. (ii) 0·6 degree. (iii) Treatment differences are highly significant. (iv) Mean infestation in degree.

Treatment	T_0	T_1	T_2	T_3	
Mean infestation	19·8	18·4	15·6	13 2	C.D.=0·7 degree.

64(225)

(i) 14·3 degree. (ii) 2·8 degree. (iii) Treatment differences are highly significant. (iv) Mean infestation in degree.

Treatment	T_0	T_1	T_2	T_3	
Mean infestation	17·6	14·6	14·2	10·9	C.D.=3·4 degrees.

Results for disease incidence (Stem).

63(182)

(i) 14·6 degree. (ii) 4·5 degree. (iii) Treatment differences are highly significant. (iv) Mean infestation in degree.

Treatment	T_0	T_1	T_2	T_3	
Mean infestation	26·3	19·9	7·3	4·9	C.D.=5·5 degrees.

Crop :- Groundnut (*Kharif*). **Ref :- Bh. 63(169).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'D'.**

Object :—To find out the responses of Tafapon and Simezine as weedicide on Groundnut crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) 4.7.63. (iv) (a) 3 ploughings. (b) Dibbling. (c) 90 Kg/ha. (d) 23 cm.×15 cm. (e) Nil. (v) 22·4 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (vi) AK—12—24. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) 97 cm. (x) 12.10.63.

2. TREATMENTS:

4 weedicidal treatments: T_0=Control, T_1=1·12 Kg/ha. of Simezine, T_2=1·12 Kg/ha. of Tafapon and $T_3=T_1+T_2$.

Pre-emergence application of treatments were done.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) 10·96 m.×4·27 m. (iii) 6. (iv) (a) 4·27 m.×2·74 m. (b) 3·35 m.×1·22 m. (v) 46 cm.×76 cm. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Height of plant, yield of pods. (iv) (a) to (c) No. (v) to (vii) Nil.

5. RESULTS:

(i) 1406 Kg/ha. (ii) 235·9 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of pods in Kg/ha.

Treatment	T_0	T_1	T_2	T_3
Av. yield	1389	1354	1321	1560

———

Crop :- Groundnut (*Kharif*). **Ref :- Bh. 63(177).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'D'.**

Object :—To assess the effect of weedicides as Pre-emergence spray for weed control in Groundnut.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Sandy. (iii) 3.7.63. (iv) (a) 2 ploughings. (b) Dibbling. (c) 92 Kg/ha. (d) 23 cm.×15 cm. (e) Nil. (v) 22·4 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (vi) AK—12—24. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) 97 cm. (x) 28.10.63.

2. TREATMENTS:

9 weedicidal treatments: T_0=Control, T_1=1·12 Kg/ha. of Karunex W, T_2=0·56 Kg/ha. of Karunex W, T_3=1·12 Kg/ha. of Karunex DW, T_4=0·56 Kg/ha. of Karunex DW, T_5=1·12 Kg/ha. of Samezine, T_6=0·56 Kg/ha. of Samezine, T_7=1·12 Kg/ha. of Crag herbicide and T_8=0·56 Kg/ha. of Crag herbicide.

3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) 29·56 m.×4·57 m. (iii) 3. (iv) (a) and (b) 4·88 m.×1·22 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Height of plant, buds/plant and yield of pods. (iv) (a) to (c) No. (v) to (vii) Nil.

5. RESULTS:

(i) 744 Kg/ha. (ii) 224·7 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of pods in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Av. yield	624	845	582	941	658	742	862	672	767

Crop :- Groundnut (*Kharif*). **Ref :- Bh. 64(206).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'D'.**

Object :—To evaluate the effect of weed population on the yield of Groundnut.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (ii) Sandy loam. (iii) 27.6.64. (iv) (a) 3 ploughings. (b) Dibbling. (c) 92 Kg/ha. (d) 23 cm. ×15 cm. (e) 2—3. (v) 22·4 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (vi) AK—12—24. (vii) Unirrigated. (viii) Weeding, hoeing and earthing. (ix) 109 cm. (x) 25.10.64.

2. TREATMENTS :

10 insecticidal treatments : T_0=Control, T_1=1·1 Kg. in 364 lit. of water/ha. of Simazine (pre-emergence), T_2=14·83 lit. in 364 lit. of water/ha. of Tok-E—25 (pre—emergence), T_3=4·21 lit. in 364 lit. of water/ha. of Gramexone (pre—emergence), T_4=T_1+2·24 Kg. in 364 lit. of water/ha. of Tafapon (post—emergence), T_5=T_2+2·24 Kg. in 364 lit. of water/ha. of Tafapon (post—emergence), T_6=2·81 lit. in 136 lit. of water/ha. of Reglone (pre—emergence), T_7=1·1 Kg. in 364 lit. of water/ha. of Karmex DW (pre—emergence), T_8=1·1 Kg in 364 lit. of water/ha. of Karmex DW (pre—emergence) and T_9=Hand weeding.

3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) 37·34 m.×4·11 m. (iii) 3. (iv) (a) 4·57 m.×3·05 m. (b) 3·66 m.×3·05 m. (v) 46 cm. on either sides. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Height of plant, yield of pods. (iv) (a) 1964—65 (Doses of Trt. changed in 1965). (b) and (c) Nil. (v) to (vii) Nil.

5. RESULTS:

(i) 1039 Kg/ha. (ii) 122·0 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of pods in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9
Av. yield	951	932	1327	1031	996	1004	968	915	968	1300

C.D.=209·2 Kg/ha.

Crop :- Groundnut (*Kharif*). **Ref :- Bh. 65(104).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object :—To evaluate the effect of weedicides on weed population and yield of upland crop such as Groundnut.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Grounduut. (c) 22·5 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (ii) Red loam. (iii) 11.10.95. (iv) (a) 3 ploughings. (b) Dibbling. (c) 92 Kg/ha. (d) 31 cm.×15 cm. (e) —. (v) 22·5 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (vi) Giriak. (vii) Irrigated. (vii) Weeding and hoeing. (ix) N.A. (x) 15.11.65.

2. TREATMENTS:

10 weedicidal treatments: T_0=Control, T_1=1·12 Kg. in 898·4 litres of water/ha. of T_1=Simazin (pre-emergence), T_2=7 Kg. in 898·4 litres of water/ha. of Tok—E—25 (pre-emergence), T_3=1·7 lit. in 898·4 litres of water/ha. of Gramexine (pre-emergence), T_4=T_1+2·25 Kg in 898·4 litres of water/ha. of Tefapon (post-emergence), T_5=T_3+2·25 Kg. in 898·4 litres of water/ha. of Tefapon (post-emergence), T_6=1·14 lit in 336·9 litres of water/ha. of Reglone (pre-emergence), T_7=1·12 Kg. in 898·4 lit of water/ha. of Karmex W (pre emergence), T_8=1·12 Kg. in 898·4 litres of water/ha. of Karmex DW (pre-emergence) and T_9=Hand weeding.

3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 3. (iv) (a) 3·96 cm.×3·05 m. (b) 3·35 m.×3·05 m. (v) 30 cm. on either side along breadth. (v) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Weed population, yield of given/plot. (iv) (a) 1964—65 (Doses of Trs. changed in 1965. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS:

(i) 2912 Kg/ha. (ii) 448·6 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of pods in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9
Av. yield	3164	3063	1954	1455	3115	3422	3106	3372	3177	3292

C.D.=769·5 Kg/ha.

Crop :- Groundnut (*Kharif*). **Ref :- Bh. 65(113).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'D'.**

Object:—To evaluate the effect of different weedicides on weed population and upland crop such as Groundnut.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar*. (c) Nil. (ii) Red loam. (iii) 5.7.65. (iv) (a) 3 ploughings. (b) Dibbling. (c) 92 Kg/ha. (d) 23 cm.×15 cm. (e) —. (v) 22·5 Kg/ha. of N as A/S+45 Kg/ha of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (vi) AK—12—24. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 30.10.65 to 6.11.65.

2. TREATMENTS :

12 weedicidal treatments: T_0=Control, T_1=3·36 Kg/ha. of Seasone, T_2=3·36 Kg/ha. of Eptan, T_3=4·48 Kg/ha. of Tillam, T_4=5.60 Kg/ha. of CP 31393, T_5=1·12 Kg/ha. of Loran, T_6=4·48 Kg/ha. of Randox, T_7=4·48 Kg/ha. of Vegadox, T_8=3·36 Kg/ha. of Cotoran, T_9=6·72 Kg/ha. of Tok—E—25, T_{10}=5·60 Kg/ha. of Tenoron and T_{11}=Hand weeding.

3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 5. (iv) (a) 4·57 m.×3·05 m. (b) 3·96 m.×3·05 m. (v) 30 cm. on either side along breadth. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Weed population and yield of grain. (iv) (a) 1965—contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS:

(i) 1700 Kg/ha. (ii) 360·4 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of pods in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. yield	1419	1613	1638	1613	2030	2389

Treatment	T_6	T_7	T_8	T_9	T_{10}	T_{11}
Av. yield	1662	1921	370	2061	1762	1919

C.D.=460·4 Kg/ha.

Crop :- Groundnut (*Kharif*). **Ref :- Bh. 63(31).**

Site :- Irrigation Res. Stn., Kurseka. **Type :- 'D'.**

Object : —To study the effect of different fungicides on Tikka disease.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Sandy loam. (iii) 20.7.63. (iv) (a) 3 ploughings by *deshi* plough. (b) Line sowing. (c) N.A. (d) 46 cm.×15 cm. (e) N.A. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS :

4 fungicidal treatments : T_0=Control, T_1=Spraying of Bordeaux mixture, T_2=Spraying of coloidal mixture and T_3=Spraying of Diathane.

Sprayings were done on 9.9.63, 8.10.63 and 22.10.63.

3. DESIGN:

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 50·58 sq. m. (v) 61 cm. all round of each plot. (vi) Yes.

4. GENERAL :

(i) Nil. (ii) Tikka disease and spraying as per treatments. (iii) Yield of pods. (iv) (a) 1963—only. (b) No. (c) Nil. (v) Jallalgarh and Sheikhpura. (vi) and (vii) Nil.

5. RESULTS :

(i) 828 Kg/ha. (ii) 269·3 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of pods in Kg/ha.

Treatment	T_0	T_1	T_2	T_3
Av. yield	813	715	906	878

Crop :- Groundnut. **Ref :- Bh. 60(197), 61(217).**

Site :- Seed Multiplication Farm, Giriak. **Type :- 'D'.**

Object :—To test the efficacy of number of sprayings of Bordeaux mixture against the disease on Groundnut crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Clay. (iii) 16.7.60 ; 17.6.61. (iv) (a) 3 - 4 *deshi* ploughings. (b) Line sowing. (c) 90 Kg/ha. (d) 23 cm. between rows. (e) —. (v) 222·7 Kg/ha. of lime. (vi) Giriak local. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 18.11.60 ; 18.11.61.

2. TREATMENTS :

4 insecticidal treatments : T_0=Control, T_1=One spraying of Bordeaux mixture (5: 5: 50), T_2=Two sprayings of Bordeaux mixture and T_3= Three sprayings of Bordeaux mixture.

Ist spraying in each treatment was done at the time of disease appearance and subsequent sprayings at 20 days interval.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) 7·92 m.×25·60 m. ; 10·05 m.×21·94 m. (iii) 6. (iv) (a) 7·92 m.×6·40 m. ; 10 05 m.×5·49 m (b) 7·92 m.×6·40 m. ; 10·05 m.×5·03 m. (v) Nil ; one row on either side. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Tikka disease. (iii) Yield of pods. (iv) (a) 1960 - 61. (b) and (c) Nil. (v) Jallalgarh. (vi) Nil. (vii) As the variances are heterogeneous and Treatments × Years interaction is absent, the results of the individual years are presented under 5. Results.

5. RESULTS :

60(197)

(i) 1190 Kg/ha. (ii) 96·5 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of pods in Kg/ha

Treatmeant	T_0	T_1	T_2	T_3
Av. yield	961	1171	1242	1384

C.D.=118·7 Kg/ha.

61(217)

(i) 1678 Kg/ha. (ii) 1981 8 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of pods in Kg/ha.

Treatment	T_0	T_1	T_2	T_3
Av. yield	1141	1236	1352	2985

Infestation in degree

60(197)

(i) 39·4 degree. (ii) 6·5 degree. (iii) Treatmrnt differences are highly significant. (iv) Mean infestation in degree.

Treatment	T_0	T_1	T_2	T_3
Mean angle	47·9	42·0	38·1	29·6

C.D.=8·0 degree.

61(217)

(i) 38·1 degree. (ii) 3·2 degree. (iii) Treatment differences are highly significant. (iv) Mean infestation in degree.

Treatment	T_0	T_1	T_2	T_3
Mean angle	42·4	41·1	37·8	30·9

C.D.=3·9 degree.

———

Crop :- Groundnut (*Kharif*). **Ref :- Bh. 60(198), 61(218).**

Site :- Seed Multiplication Farm, Giriak. **Type :- 'M'.**

Object :—To test the efficacy of different fungicides against the disease on Groundnut crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Clay. (iii) 16 7.60 ; 17.6.61. (iv) (a) 3—4 *deshi* ploughings. (b) Line sowing. (c) 90 Kg/ha. (d) Rows 23 cm. apart. (e) —. (v) 400 Kg/ha. of lime. (vi) Giriak local. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 14.11.60 ; 16.11.61.

2. TREATMENTS :

4 fungicidal treatments: T_0=Control, T_1=Bordeaux mixture (5 : 5 : 50), T_2=2·25 Kg. of Colloidal Sulphur and T_3=Dithane Z—78 at 0·68 Kg.

Fungicides applied in mixture with water at 1123 lit./ha.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) 7·92 m.×27·43 m. ; 10·06 m.×21·95 m. (iii) 6. (iv) (a) 7·92 m.×6·86 m. ; 10·06 m.×5·49 m. (b) 7·92 m.×6·40 m. ; 10·06 m.×5·03 m. (v) One row on either side. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Tikka disease. (iii) Yield of pods and disease infection observations. (iv) (a) 1960—61. (b) No. (c) Nil. (v) Sabour, Kanke and Jalalgarh. (vi) Nil. (vii) s the error variances are heterogeneous and Treatments × Years interaction is absent, the individual years results are given under 5. Results.

5. RESULTS :

60(198)

(i) 1090 Kg/ha. (ii) 114·4 Kg/ha. (ii) Treatment differences are highly significant. (iv) Av. yield of pods in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	
Av. yield	934	1296	1018	1114	C.D.=140·7 Kg/ha.

61(218)

(i) 1282 Kg/ha. (ii) 221·3 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of pods in in Kg/ha.

Treatment	T_0	T_1	T_2	T_3
Av. yield	1188	1416	1225	1298

Insestation in degree

60(198)

(i) 38·7 degree. (ii) 7·9 degree. (iii) Treatment differences are highly significant. (iv) Mean infestation in degree.

Treatment	T_0	T_1	T_2	T_3	
Mean angle	49·9	32·8	38·0	34·0	C.D.=9·7 degree.

61(218)

(i) 40·4 degree. (ii) 5·2 degree. (iii) Treatment differences are significant. (iv) Mean infestation in degree.

Treatment	T_0	T_1	T_2	T_3	
Mean angle	44·2	34·7	38·7	43·8	C.D.=6·4 degree.

Crop :- Grouudnut (*Kharif*). **Ref :- Bh. 62(166), 63(205), 64(239).**

Site :- Agri. Res. Instt., Patna. **Type :- 'D'.**

Object :—To test the efficacy of different fungicides against the disease on Groundnut.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Faliow. (c) Nil. (ii) Clay. (iii) 6.7.62 ; 19.7.63 ; 24.7.64. (iv) (a) 3 – 4 *deshi* ploughings. (b) Line sowing. (c) 90 Kg/ha. (d) 91 cm. between rows. (e) —. (v) 4 Q/ha. of lime. (vi) Giriak local. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 18.11.62 ; 26 to 29.11 and 1.12.63 ; 26.11 to 4.12.64.

2. TREATMENTS :

4 fungicidal treatments : T_0=Control, T_1=1123 lit./ha. of Bordeaux mixture (5 : 5 : 50), T_2=5·6 Kg. in 1123 lit/ha. of Colloidal Sulphur and T_3=1·68 Kg. in 1123 lit/ha. of Dithane Z—78.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) 8·23 m. × 27·44 m. ; 8·23 m. × 26·22 m. ; 39·34 m. × 7·01 m. (iii) 6. (iv) (a) 8·23 m. × 6·56 m. for 1962 and 63 ; 6·40 m. × 7·01 m. (b) 8·23 m. × 6·10 m. for 62, 63 ; 4·57 m. × 5·49 m. (v) 23 cm. on either side for 1962 and 63 ; 91 cm. × 76 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Tikka disease. (iii) Yield of pods and disease infection observation. (iv) (a) 1962—64. (b) No. (c) Results of combined analysis are given under 5. Results. (v) No. (vi) Nil. (vii) Error variances are homogeneous and Treatments × years interaction is present.

5. RESULTS :

Pooled results

(i) 1472 Kg/ha. (ii) 625·5 Kg/ha. (based on 6 d.f. made up of Treatments × years interaction). (iii) Treatment differences are not significant. (iv) Av. yield of pods in Kg/ha.

Treatment	T_0	T_1	T_2	T_3
Av. yield	1422	1615	1439	1412

Individual results

Treatment	T_0	T_1	T_2	T_3	Sig.	G.M.	S.E./plot
Year							
1962	632	813	572	678	N.S.	674	243·7
1963	2155	2817	2552	2699	**	2556	283·9
1964	1479	1214	1194	860	N.S.	1187	349·7
Pooled	1422	1615	1439	1412	N.S.	1472	625·5

Infestation results

62(166)

(i) 41·8 degree. (ii) 7·3 degree. (iii) Treatment differences are not significant. (iv) Mean infestation in degree.

Treatment	T_0	T_1	T_2	T_3
Mean angle	48·3	37·6	39·0	42·2

63(205)

(i) 56·8 degree. (ii) 2·6 degree. (iii) Treatment differences are highly significant. (iv) Mean infestation in degree.

Treatment	T_0	T_1	T_2	T_3
Mean angle	60·2	55·4	53·2	58·3

C.D.=3·2 degree.

64(239)

(i) 24·6 degree. (ii) 4·3 degree. (iii) Treatment differences are highly significant. (iv) Mean infestation in degree.

Treatment	T_0	T_1	T_2	T_3	
Mean angle	16·5	22·0	25·2	34·7	C.D.=5·3 degree.

Crop :- Groundnut (*Kharif*). **Ref :- Bh. 62(165), 63(204), 64(238), 65(137).**

Site :- Agri. Res. Instt., Patna. **Type :- 'D'.**

Object :—To test the efficacy of number of sprayings of Bordeaux mixture (5 : 5 : 50) on Groundnut crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow for 65 ; Maize for others. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Clay. (iii) 7.7.62 ; 6.7.63 ; 21.7.64 ; 3.7.65. (iv) (a) 3 to 4 ploughings. (b) Line sowing. (c) 90 Kg/ha. (d) 91 cm. between rows ; 46 cm.×23 cm. for 63 and 64 ; 45 cm. between rows. (e) —. (v) 223 Kg/ha. of lime for 62 and 64 ; 27 Kg/ha. of N+33·6 Kg/ha. of P_2O_5 for 63 and 17 Kg/ha. of N as A/S+17 Kg/ha. of P_2O_5 as Super for 65. (vi) Giriak. (vii) Unirrigated. (vii) Weeding and hoeing. (ix) N.A. (x) 8.12.62 ; 10.12.63 ; 26.11. to 4.12.64 ; 25.11.65.

2. TREATMENTS :

4 insecticidal treatments : T_0=Control (no spray), T_1=One spay of Bordeaux mixture, T_2=Two sprays of Bordeaux mixture (5 : 5 : 50) and T_3=Three sprays of Bordeaux mixture (5 : 5 : 50).

Ist spray at the time of appearance of disease and subsequent sprays after 20 days interval.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) 8·23 m.×46·22 m. for 62 and 63 ; 5·49 m.×20·12 m. for 64 and 39·30 m.×5·33 m. for 65. (iii) 6. (iv) (a) 8·23 m.×6·56 m. for 62 and 63 ; 5·49 m.×5·03 m. (b) 8·23 m.×6·10 m. for 62 and 63 ; 5·49 m.×4·57 m. for 1964 and 25·29 sq. m. for 65. (v) 23 cm. on either side for 62, 63 and 64 ; Nil for 65. (vi) Nil.

4. GENERAL :

(i) Good. (ii) Tikka disease for 62, 63 and 64. (iii) Yield of pods. (iv) (a) 1962–65. (b) Yes. (c) Results of combined analysis are given under 5. Results. (v) Jalalgarh and Kanke. (vi) Nil. (vii) Error variances are heterogeneous and Treatments×years interaction is present.

5. RESULTS :

Pooled results

(i) 1525 Kg/ha. (ii) 227·8 Kg/ha. (based on 9 d.f. made up of Treatments×Years interaction). (iii) Treatment differences are highly significant. (iv) Av. yield of pods in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	
Av. yield	1334	1438	1528	1802	C.D.=148·7 Kg/ha.

Individual results

Treatment	T_0	T_1	T_2	T_3	Sig.	G.M.	S.E./plot
Year							
1962	994	1054	1024	1400	*	1118	227·7
1963	1495	1704	1628	2037	N.S.	1716	390·8
1964	1197	1273	1437	1533	N.S.	1360	212·4
1965	1652	1720	2024	2237	**	1908	144·8
Pooled	1334	1438	1528	1802	**	1525	227·8

Crop :- Groundnut (*Kharif*). **Ref :- Bh. 63(1).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'D'.**

Object :—To see the efficacy of number of sprayings of Bordeaux mixture fungicide against Tikka disease of Groundnut.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Sandy loam. (iii) 18.7.63. (iv) (a) 3 ploughings by *deshi* plough. (b) Line sowing. (c) N.A. (d) 46 cm.×15 cm. (e) N.A. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) 3 weedings by *khurpi*. (ix) N.A. (x) 5.1.64.

2. TREATMENTS :

4 fungicidal treatments : T_0=Control, T_1=One spraying, T_2=Two sprayings and T_3=Three sprayings.

Sprayings were done on 6.9.63, 5.10.63 and 20.10.63.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) and (b) 50·58 m. (v) 61 cm. between rows (vi) Yes.

4. GENERAL :

(i) Nil. (ii) Tikka disease. (iii) Yield of pods. (iv) (a) 1963—only. (b) No. (c) N.A. (v) Kanke and Shiekhpura. (vi) and (vii) N.A.

5. RESULTS :

(i) 1552 Kg/ha. (ii) 432·6 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of pods in Kg/ha.

Treatment	T_0	T_1	T_2	T_3
Av. yield	1538	1430	1608	1633

Crop :- Til (*Kharif*). **Ref :- Bh. 61(327), 63(250), 64(277).**

Site :- Agri. Res. Instt., Dholi. **Type :- 'M'.**

Object :—To estimate the manurial requirement for Til crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Pea ; Groundnut ; Fallow. (c) Nil ; 22·5 Kg/ha. of N as A/S+22·5 Kg/ha. of P_2O_5 as Super ; Nil. (ii) Sandy loam : calcarious loam (1963 and 64). (iii) 27.7.61 ; 10.8.63 ; 22.8.64. (iv) (a) 2 to 3 ploughings. (b) Line sowings ; Drilling behind the hand plough (1963 and 64). (c) 10 Kg/ha. (d) 30 cm.×60 cm. (e) —. (v) Nil (vi) M_1—2 (1961) ; M_2—1 (63 and 64). (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 5 and 16.12.61 ; 14.1.64 ; 20.12.64.

2. TREATMENTS :

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

(1) 3 levels of N as A/S : N_0=0, N_1=22·5 and N_2=45·0 Kg/ha.

(2) 3 levels of P_2O_5 as Super : P_0=0, P_1=22·5 and P_2=45·0 Kg/ha.

(3) 3 levels of K_2O as Mur. Pot : K_0=0, K_1=22·5 and K_2=45·0 Kg/ha.

3. DESIGN :

(i) 3^3 fact. in R.B.D. (ii) (a) 27. (b) N.A. (iii) 4. (iv) (a) 7·32 m.×3·66 m. (b) 6·71 m.×2·44 m. (v) 30 cm.×60 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil ; Virous attack and 0·04 % Endrine was sprayed (1963 and 64). (iii) Yield of grain, height of plant and yield of seed. (iv) (a) 1960 –64 (expt. for 60 and 62 N.A.). (b) No. (c) Nil. (v) No. (vi) Nil. (vii) Error variances are heterogeneous and Treatments × years interaction are absent. Hence individual years results are presented under 5. Results.

5. RESULTS :

61(327)

(i) 101 Kg/ha. (ii) 68·5 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	114	130	139	101	140	142	128
N_1	101	71	128	100	107	94	100
N_2	100	126	84	126	107	76	103
Mean	105	109	117	109	118	104	101
K_0	100	104	123				
K_1	114	138	101				
K_2	101	84	127				

63(250)

(i) 327 Kg/ha. (ii) 60·9 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	338	348	330	371	334	310	338
N_1	315	337	310	316	325	321	321
N_2	320	324	318	305	346	310	320
Mean	324	336	319	331	335	314	327
K_0	330	355	307				
K_1	316	345	345				
K_2	327	309	306				

64(277)

(i) 214 Kg/ha. (ii) 61·2 Kg/ha. (iii) Only main effect of N is highly significant. (iv) Av. yield of grain in Kg/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	221	233	202	215	236	205	219
N_1	198	179	191	183	193	192	184
N_2	232	231	240	256	216	230	234
Mean	217	214	211	218	215	209	214
K_0	207	228	219				
K_1	233	206	206				
K_2	211	209	207				

C.D. for N marginal means=28·8 Kg/ha.

Crop :- Til (*Kharif*). **Ref :- Bh. 60(261), 61(275), 62(251).**

Site :- Latehar Farm, Latehar. **Type :- 'M'.**

Object :—To estimate the manurial requirement of Til crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Red loam. (iii) 28.7.60 ; 21.7.61 ; 29.7.62. (iv) (a) 2 ploughings ; 3 ploughings. (b) Drilling. (c) 10 Kg/ha. (d) 60 cm. between rows (60, 61) ; 30 cm. between rows. (e) —. (v) Nil. (vi) M_3—1. (vii) Unirrigated. (viii) Weedings and hoeing. (ix) N.A. (x) 7.12.60, 5.12.61 ; 10.12.62.

2. TREATMENTS :

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

(1) 3 levels of N as A/S : N_0=0, N_1=22·5 and N_2=45·0 Kg/ha.

(2) 3 levels of P_2O_5 as Super: P_0=0, P_1=22·5 and P_2=45·0 Kg/ha.

(3) 3 levels of K_2O as Mur. Pot. : K_0=0. K_1=22·5 and K_2=45·0 Kg/ha.

3. DESIGN :

(i) 3^3 Fact. in R.B.D. (b) 27. (iii) 4. (iv) (a) 6·70 m.×3·05 m. (b) 6·09 m.×1·83 m. (v) 30 cm.×61 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Stem and pod borer and 0·04% endrine sprayed. (iii) Yield of grain. (iv) (a) 1960—62. (b) No. (c) Nil. (v) Dholi and Chattra. (vi) Nil. (vii) Error variances are heterogeneous and Treatments×Years interaction is absent. Hence individual years results are given under 5. Results.

5. RESULTS :

60(261)

(i) 284 Kg/ha. (ii) 108·1 Kg/ha. (iii) Main effect of P and interaction N×P are significant whereas main effect of N is highly significant. (iv) Av. yield of grain in Kg/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	174	181	149	181	185	139	168
N_1	245	329	327	273	364	264	300
N_2	311	369	474	364	365	426	385
Mean	243	293	317	273	305	276	284
K_0	236	283	298				
K_1	246	313	353				
K_2	248	283	299				

C.D. for N or P marginal means=49·9 Kg/ha.
C.D. for the body of the table=86·4 Kg/ha.

61(275)

(i) 457 Kg/ha. (ii) 103·4 Kg/ha. (iii) Only main effect of N is highly significant. (v) Av. yield of grain in Kg/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	248	333	362	335	306	303	314
N_1	491	431	461	504	441	438	461
N_2	579	609	598	597	594	596	596
Mean	439	458	474	479	447	445	457
K_0	461	460	515				
K_1	442	425	473				
K_2	415	489	433				

C.D. for N marginal means=47·8 Kg/ha.

62(251)

(i) 206 Kg/ha. (ii) 66·1 Kg/ha. (iii) Main effect of N is highly significant and interaction P×K is significant. (iv) Av. yield of grain in Kg/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	123	148	143	136	125	153	138
N_1	225	239	225	218	244	227	230
N_2	260	251	243	257	245	252	251
Mean	203	213	204	204	205	211	206
K_0	164	212	235				
K_1	220	215	179				
K_2	224	210	198				

C.D. for N marginal means=30·5 Kg/ha.

C.D. for the body of the table=52·8 Kg/ha.

Crop :- Til (*Kharif*). **Ref :- Bh. 62(252).**

Site :- Sub-Div. Farm, Chattra. **Type :- 'M'.**

Object :—To estimate the manurial requirement of Til crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Red loam. (iii) 20.7.62. (iv) (a) 3 ploughings. (b) Drilling. (c) 10 Kg/ha. (d) 30 cm. between rows. (e) —. (v) Nil. (vi) M_s—1. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A, (x) 12.12.62.

2. TREATMENTS :

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

(1) 3 levels of N as A/S : N_0=0, N_1=22·5 and N_2=45 Kg/ha.

(2) 3 levels of P_2O_5 as Super : P_0=0, P_1=22·5 and P_2=45 Kg/ha.

(3) 3 levels of K_2O as Mur. Pot. : M_0=0, M_1=22·5 and M_2=45 Kg/ha.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 27. (b) N.A. (iii) 4. (iv) (a) 6·70 m.×3·05 m. (b) 6·19 m.×1·83 m. (v) 30 cm.×61 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Stem and pod borer. (iii) Yield of grain. (iv) (a) 1962 only. (b) No. (c) N.A. (v) Latehar. (vi) and (vii) Nil.

5. RESULTS :

(i) 572 Kg/ha. (ii) 34·3 Kg/ha. (iii) Except main effect of P all the main effects, first order and second order interactions are highly significant. (iv) Av. yield of grain in Kg/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	405·7	453·5	399·4	371·2	401·4	486·1	419·6
N_1	684·9	574·6	612·3	684·1	560·4	627·3	623·9
N_2	639·6	671·4	706·6	702·5	668·1	647·1	672·5
Mean	576·8	566·5	572·8	585·9	543·3	586·8	572·0
K_0	590·3	606·4	561·1				
K_1	571·2	517·9	540·7				
K_2	568·8	575·3	616 5				

C.D. for N or K marginal means=16·1 Kg/ha.
C.D. for the body of any table =27·9 Kg/ha.

Crop :- Til. **Ref :- Bh. 60(SFT).**

Site :- (District) : Hazaribagh. **Type :- 'M'.**

Object :—Type A : To study the response of Til to different levels of N, P_2O_5 and K_2O applied indivi dually and in combination.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Red. (iii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments :

O=Control (no manure),
N=22·4 Kg/ha. of N,
P=22·4 Kg/ha. of P_2O_5,
K=22·4 Kg/ha. of K_2O,
NP=22·4 Kg/ha. of N+22·4 Kg/ha. of P_2O_5,
NK=22·4 Kg/ha. of N+22·4 Kg/ha. of K_2O,
PK=22·4 Kg/ha. of P_2O_5+22·4 Kg/ha. of K_2O and
NPK=22·4 Kg/ha. of N+22·4Kg /ha. of P_2O_5+22·4 Kg/ha. of K_2O.

N applied as A/S, P_2O_5 as Super and K_2O as Mur. Pot.

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 a *rabi* cereal, 8 on cash crop, 4 on an oilseed crop and 3 on a legumenous 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) 1/98.8 ha. (b) 1/197·7 ha. (iv) Yes.

4. GENERAL :

(i) to (vii) N.A.

5. RESULTS :

60(SFT)

Treatment	N	P	K	S.E.	NP	NK	PK	NPK.	S.E.
Av. response of Til in Kg/ha.	90	70	40	5·0	10	10	10	10	7·0

Control mean=40 Kg/ha. ; No. of trials=2.

Crop :- Til. **Ref :- Bh. 60(SFT).**

Site :- (District) : Hazaribagh. **Type :- 'M'.**

Object :—Type B : To investigate the relative efficiency of different nitrogenous fertilisers at different doses.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Red. (iii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments :

O=Control (no manure),

n_1=22·4 Kg/ha. of N as A/S,

n_2=44·8 Kg/ha. of N as A/S,

n_1'=22·4 Kg/ha. of N as Urea,

n_2'=44·8 Kg/ha. of N as Urea,

n_1''=22·4 Kg/ha. of N as A/S/N,

n_2''=44·8 Kg/ha. of N as A/S/N,

n_1'''=22·4 Kg/ha. of N as C/A/N,

n_2'''=44·8 Kg/ha. of N as C/A/N.

3. DESIGN :

Same as in type A on page No. 810.

4. GENERAL :

(i) to (vii) N.A.

5. RESULTS :

Treatment	n_1	n_1'	n_1''	n_1'''	n_2	n_2'	n_2''	n_2'''	S.E. of response
Av. response of til in Kg/ha.	130	50	60	20	270	140	180	140	12·0

Control mean=60 Kg/ha. ; No. of trials=2.

Crop :- Til (*Kharif*). **Ref :- Bh. 61(73).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'C'.**

Object :—To find out the best time of sowing of Til for maximum yield.

1. BASAL CONDITIONS:

(i) (a) Yellow Sarson—Til. (b) Yellow Sarson. (c) Nil. (ii) N.A. (iii) As per treatments. (iv) (a) 5 or 6 *deshi* ploughings. (b) Drilling behind the plough. (c) 3 Kg/ha. (d) 30 cm.×15 cm. (e) N.A. (v) M 3—2. (vii) Unirrigated. (viii) One weeding and 2 hoeings. (ix) N.A. (x) 5, 15.12.61.

2. TREATMENTS :

6 dates of sowing : D_1=25.6.61, D_2=6.7.61, D_3=18.7.61, D_4=30.7.61, D_5=11.8.61 and D_6=23.8.61.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) 37·89 m.×4·37 m. (iii) 5. (iv) (a) 6·10 m.×4·27 m. (b) 6·10 m.×3·66 m. (v) 30 cm. on either side along breadth. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Germination %, flowering dates and yield of seed. (iv) (a) 1961. (b) Yes. (c) Nil. (v) N.A. (vi) and (vii) Nil.

5. RESULTS:

(i) 78 Kg/ha. (ii) 34·7 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	D_1	D_2	D_3	D_4	D_5	D_6	
Av. yield	98	132	154	66	8	9	C.D.=45·8 Kg/ha.

Crop :- Castor (*Kharif*). **Ref :- Bh. 60(259), 61(273), 62(249).**

Site :- Agri. Res. Instt., Dholi. **Type :- 'M'.**

Object :—To find out the best manurial schedule for maximum yield of Castor crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Arhar. (c) Nil. (ii) Calcarious loam. (iii) 25.7.60 ; 23.7.61 : 21.7.62. (iv) (a) One summer plough followed by one seasonal ploughing and 2 ploughings with 5 tyned cultivators. (b) Drilled behind hand plough. (c) 18 Kg/ha. (d) 75 cm.×45 cm. (e) —. (v) Nil. (vi) E.B. 16 A. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 19.1.61 ; 17.1.62 ; 8.1.63.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N as A/S : N_0=0, N_1=33·5, N_2=67·0 and N_3=100·5 Kg/ha.

(2) 4 levels of P_2O_5 as Super : P_0=0, P_1=33·5, P_2=67·0 and P_3=100·5 Kg/ha.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 5·48 m.×3·35 m. (b) 4·57 m.×1·83 m. (v) 45 cm.×75 cm. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Shoot and capsule borer. (iii) Germination, flowering and seed yield. (iv) (a) 1960—62. (b) No. (c) Nil. (v) Sabour and Patna. (vi) Nil. (vii) As the error variances are heterogeneous and Treatments×Years interaction is absent, hence the individual years results are presented under 5. Results.

5. RESULTS:

60(259)

(i) 1161 Kg/ha. (ii) 196·0 Kg/ha. (iii) Only main effect of N is highly significant. (iv) Av. yield of seed in Kg/ha.

	P_0	P_1	P_2	P_3	Mean
N_0	1134	1050	1058	1388	1158
N_1	923	1016	1109	948	999
N_2	1287	982	1168	1092	1132
N_3	1295	1329	1270	1524	1354
Mean	1160	1094	1151	1238	1161

C.D. for N marginal means=139·3 Kg/ha.

61(273)

(i) 541 Kg/ha. (ii) 118·2 Kg/ha. (iii) Only main effect of N is highly significant. (iv) Av. yield of seed in Kg/ha.

	P_0	P_1	P_2	P_3	Mean
N_0	351	465	482	478	444
N_1	516	609	423	618	541
N_2	592	537	440	609	545
N_3	677	529	634	698	634
Mean	534	535	495	601	541

C.D. for N marginal means=84·3 Kg/ha.

62(249)

(i) 1655 Kg/ha (ii) 599·7 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of seed in Kg/ha.

	P_0	P_1	P_2	P_3	Mean
N_0	1540	1370	1387	1641	1485
N_1	1404	2377	1717	1210	1677
N_2	1895	1599	1912	1582	1747
N_3	1675	1777	1726	1675	1713
Mean	1628	1781	1686	1527	1655

Crop :- Castor (*Kharif*). **Ref :- Bh. 65(48).**

Site :- Agri. Res. Instt., Dholi. **Type :- 'M'.**

Object :—To determine the optimum dose of N and P for obtaining maximum yield of Castor.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Calcarious loam. (iii) 30.8.65. (iv) (a) 2 ploughings. (b) Dibbling by *khurpi*. (c) 20 Kg/ha. (d) 75 cm.×45 cm. (e) —. (v) As per treatments. (vi) ED 16 A. (vii) Un-irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 5.4.66.

2. TREATMENTS :

8 manurial treatments : T_0=Control, T_1=22·5 Kg/ha. of N as Urea, T_2=45·0 Kg/ha. of N as Urea, T_3=22·5 Kg/ha. of N as F.Y.M., T_4=45·0 Kg/ha. of N as F.Y.M., T_5=45·0 Kg/ha. of N as Urea+22·5 Kg/ha. of P_2O_5 as Super, T_6=45·0 Kg/ha. of N as F.Y.M.+22·5 Kg/ha. of P_2O_5 as Super and T_7=22·5 Kg/ha. of N as Urea+22·5 Kg/ha. of P_2O_5 as Super+22·5 Kg/ha. of N as F.Y.M.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 4·57 m.×14·17 m. (b) 3·05 m.×13·25 m. (v) 76 cm.× 46 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Shoots and capsules borer. (iii) Yield of seed. (iv) (a) 1965—contd. (b) and (c) No. (v) Sabour and Sickhpura. (vi) and (vii) Nil.

5. RESULTS :

426 Kg/ha. (ii) 165·7 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of seed in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Av. yield	476	334	393	584	452	288	349	536

Crop :- Castor (*Kharif*). **Ref :- Bh. 61(206), 62(170), 63(208).**

Object :- Agri. Res. Instt., Patna. **Type :- 'M'.**

Object :—To find out the best manurial schedule for maximum yield of Caster crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat for 61 and 63 ; Castor for 62. (c) 60 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super ; As per treatments ; 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Clay. (iii) 31.8.61 ; 14.7.62 ; 5.9.63. (iv) (a) One ploughing with tractor and two with *deshi* plough (1961, 62) ; 2—3 ploughings. (b) Behind the plough for 61 and 62 ; dibbling with *khurpi*. (c) 18 Kg/ha. (d) 61 cm.×46 cm. (e) N.A. (v) As per treatments. (vi) EB 16 A. (vii) Irrigated. (viii) Weedings. (ix) N.A. (x) 7.3.62 ; 24.3.63 ; 3 and 14.4.64.

2. TREATMENTS :

Same as in Expt. No. 60(259), 61(273), 62(249) presented on page No. 812.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 5·49 m.×3·05 m. (b) 4·57 m.×1·83 m. (v) 46 cm.×61 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination, growth, general flowering, stand of maturity and yield. (iv) (a) 1961—63. (b) Yes. (c) Nil. (v) Sabour, Dholi. (vi) Nil. (vii) As the error variances are heterogeneous and Treatments×Years interaction is absent. Hence the results of the indiviual years are presented under 5. Results.

5. RESULTS :

61(206)

(i) 736 Kg/ha. (ii) 221·9 Kg/ha. (iii) Only main effect of N is highly significant. (iv) Av. yield of seed in Kg/ha.

	N_0	N_1	N_2	N_3	Mean
P_0	389	568	867	1226	762
P_1	389	867	717	837	702
P_2	568	508	628	1166	717
P_3	628	688	717	1016	762
Mean	493	658	732	1061	736

C.D. for N marginal means=158·9 Kg/ha.

62(170)

(i) 719 Kg/ha. (ii) 194·4 Kg/ha. (iii) Only main effect of N is highly significant. (iv) Av. yield of seed in Kg/ha.

	N_0	N_1	N_2	N_3	Mean
P_0	529	688	792	1136	786
P_1	562	553	777	912	700
P_2	553	658	813	957	745
P_3	523	553	679	813	642
Mean	542	613	765	954	719

C.D. for N marginal means=139·2 Kg/ha.

63(208)

(i) 540 Kg/ha. (ii) 120·7 Kg/ha. (iii) Only main effect of N is highly significant. (iv) Av. yield of seed in Kg/ha.

	N_0	N_1	N_2	N_3	Mean
P_0	359	478	598	747	546
P_1	478	359	658	688	546
P_2	329	478	598	598	501
P_3	448	508	658	658	568
Mean	404	456	628	673	540

C.D. for N marginal means=86·5 Kg/ha.

Crop :- Castor (*Kharif*). **Ref :- Bh. 65(60).**

Site :- Agri. Res. Instt., Patna. **Type :- 'M'.**

Object :—To determine the optimum dose of N and P for maximum yield of Castor.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Linseed. (c) 22·5 Kg/ha. of N as A/S+22·5 Kg/ha of P_2O_5 as Super. (ii) Old gangatic alluvium. (iii) 16.8.65. (iv) (a) 2 ploughings. (b) Dibbling by *khurpi*. (c) 20 Kg/ha. (d) 76 cm.×45 cm. (e) —. (v) As per treatments. (vi) EB 16 A. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 4.3.66 to 20.4.66.

2. TREATMENTS :

Same as in Expt. No. 65(48) presented on page No. 813.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 7·61 m.×7·31 m. (b) 6·09 m.×6·40 m. (v) 76 cm.×45 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Shoot and capsule borer ; 0·04 % endrine sprayed. (iii) Yield of seed. (iv) (a) 1965—Contd. (b) and (c) No. (v) Sabour and Dholi. (vi) and (vii) Nil.

5. RESULTS :

(i) 530 Kg/ha. (ii) 73·3 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of seed in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	
Av. yield	295	340	622	359	699	609	725	590	C.D.=107·8 Kg/ha.

Crop :- Castor (*Kharif*). **Ref :- Bh. 61(258), 62(226).**

Site :- Agri. Res. Instt., Oil Seed Area, Sabour. **Type :- 'M'.**

Object: —To find out the best manurial schedule for maximum yield of Castor.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sarson ; Groundnut. (c) Nil ; 22·4 Kg/ha. of N as A/S+11·2 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) 28.6.61 ; 26.8.62. (iv) (a) 2—3 ploughings. (b) Behind the hand hoe. (c) 18 Kg/ha. (d) 46 cm. between rows. (e) —. (v) 22·4 Kg/ha. of N as A/S+11·2 Kg/ha. of P_2O_5 as Super. (vi) EB 16 A. (vii) Irrigated. (viii) Weedings. (ix) N.A. (x) 26.3.62 ; 25.3.63.

2. TREATMENTS :

Same as in Expt. No. 60(259), 61(273), 62(249) presented on page No. 812.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 16. (b) 18·29 m.×19·51 m. ; 18·90 m.×25·62 m. (iii) 4. (iv) (a) 5·49 m.× 3·05 m. ; 3·18 m.×5·49 m. (b) 4·57 m.×1·83 m. ; 2·28 m.×4·57 m. (v) 46 cm.×61 cm. ; 45 cm.×46 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) N.A. (iii) Germination, growth, flowering, stand of maturity and seed yield. (iv) (a) 1959–62. (expts. of 1959 and 60 N.A.). (b) Yes. (c) Results of combined analysis are presented under 5. Results. (v) Dholi, Patna. (vi) Nil. (vii) Error variances are homogeneous and Treatments×Years interaction is present.

5. RESULTS :

Pooled results

(i) 710 Kg/ha. (ii) 263·6 Kg/ha. (based on 15 d.f. made up of Treatments×years interaction). (iii) None of the effects is significant. (iv) Av. yield of seed in Kg/ha.

	P_0	P_1	P_2	P_3	Mean
N_0	589	651	655	873	692
N_1	652	647	688	843	708
N_2	556	591	676	774	649
N_3	611	623	645	887	691
Mean	602	628	666	844	710

Individual results

Treatment	N_0	N_1	N_2	N_3	Sig.	P_0	P_1	P_2	P_3
Year									
1961	411	469	416	531	N.S.	452	463	387	524
1962	973	947	882	852	N.S.	752	293	945	1166
Pooled	694	652	649	691	N.S.	602	628	666	844

Sig.	G.M.	S.E./plot
N.S.	457	157·7
**	913	179·1
N.S.	710	263·6

Crop :- Castor (*Kharif*). **Ref :- Bh. 65(64).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'M'.**

Object :—To determine the optimum doses of N and P for the maximum yield of Castor.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Mustard. (c) Nil. (ii) Sandy loam. (iii) 1.9.65. (iv) (a) 2 ploughings. (b) Dibbling by *khurpi*. (c) 20 Kg/ha. (d) 75 cm.×45 cm. (e) 2. (v) As per treatments. (vi) EB 16 A. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 7.4.66.

2. TREATMENTS:

Same as in Expt. No. 65(48) and presented on page No. 813.

3. DESIGN:

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 9 14 m.×6·40 m. (b) 7·61 m.×5·48 m. (v) 76 cm.×46 cm. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Germination, growth, flowering, stand at maturity and seed yield. (iv) (a) 1965—contd. (b) and (c) No. (v) Dholi and Sheikhpura. (vi) and (vii) Nil.

5. RESULTS:

(i) 380 Kg/ha. (ii) 97·2 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of seed in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Av. yield	263	411	508	297	280	532	307	440

C.D.=143·0 Kg/ha.

Crop :- Castor (*Kharif*). **Ref :- Bh. 60(252), 61(257), 62(225), 63(231).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'CV'.**

Object :—To determine the optimum time of sowing for different varieties of Castor.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Sarson. (c) Nil ; Nil ; 4611·5 Kg/ha. of F.Y.M. ; 11·2 Kg/ha. of N as A/S. (ii) Sandy loam. (iii) As per treatments. (iv) (a) 2—3 ploughings. (b) Dibbling. (c) 18 Kg/ha. (d) 23 cm. between rows. (e) 2. (v) 22·4 Kg/ha. of N as A/S+11·2 Kg/ha. of P_2O_5 as Super. (vi) As per treatments. (vii) Irrigated. (viii) Weedings. (ix) N.A. (x) 10.3.61, 15.4.61 and 8.5.61 ; 15.3.62, 18.4.62 and 13.5.62 ; 20.3.63, 20.4.63 and 3.5.63 ; 16.3.64, 3, 7, 20, 25, 28, 30.4.64, 2, 3.5.64.

2. TREATMENTS :

Main-plot treatments :

10 dates of sowing : D_1=1st July, D_2=16th July, D_3=1st August, D_4=16th August, D_5=1st Sept., D_6=16th Sept., D_7=1st Oct., D_8=16th Oct., D_9=1st. Nov. and D_{10}=16th Nov.

Sub-plot treatments :

13 varieties : V_1=HC 7—8, V_2=Z—4, V_3=TMVI, V_4=7—1, V_5=HC 4, V_6=T_3, V_7=TMV 2—6, V_8=EB 31 A, V_9=HC 1, V_{10}=TMV 3, V_{11}=HC 6, V_{12}=EB 16 A and V_{13}=Local.

3. DESIGN :

(i) Split-plot. (ii) (a) 10 main-plots/replication ; 13 sub-plots/main-plot. (b) 63·13 m.×11·43 m. (iii) 2. (iv) (a) 5·49 m.×0·76 m. (b) 4·57 m.×0·76 m. (v) 46 cm. on either side along length. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination, growth, flowering, incidence of pests, stand of maturity, yield of seed. (iv) (a) 1960—63. (b) Yes. (c) Nil. (v) No. (vi) Heavy rain in 1960. (vii) Yield in the 2nd replication sown on D_1, D_2, D_3, D_4 and D_5 were damaged due to heavy rains and yield for dates sown on D_9 and D_{10} is very poor. So analysis has been done for D_6, D_7 and D_8 in 1960. Yield for D_{10} were poor and hence excluding this treatment analysis is done in 1961. In 1962 crop failed in D_9 and D_{10} treatments.

5. RESULTS:

60(252)

(i) 314 Kg/ha. (ii) (a) 123·6 Kg/ha. (b) 131·1 Kg/ha. (iii) Interaction V×D is significant. (iv) Av. yield of seed in Kg/ha.

	V_1	V_2	V_3	V_4	V_5	V_6	V_7	V_8	V_9	V_{10}
D_6	378	336	378	294	210	504	252	252	546	252
D_7	462	168	504	336	462	336	210	504	378	630
D_8	84	210	336	126	336	126	420	168	210	294
Mean	308	238	406	252	336	322	294	308	378	392

V_{11}	V_{12}	V_{13}	Mean
420	252	210	330
546	252	210	384
168	336	168	229
378	280	196	314

C.D. for V means at same level of D=266·1 Kg/ha.
C.D. for D means at same level of V=101·4 Kg/ha.

61(257)

(i) 246 Kg/ha. (ii) (a) 107·3 Kg/ha. (b) 103·5 Kg/ha. (iii) Only main effect of D is highly significant. (iv) Av. yield of seed in Kg/ha.

	V_1	V_2	V_3	V_4	V_5	V_6	V_7	V_8	V_9	V_{10}	V_{11}	V_{12}	V_{13}	Mean
D_1	294	210	168	294	210	210	252	252	168	168	210	294	252	229
D_2	252	294	252	294	588	294	546	294	420	336	336	336	252	346
D_3	168	252	168	252	294	252	294	273	252	252	294	189	252	245
D_4	210	336	294	168	504	252	168	462	210	420	252	294	210	291
D_5	210	210	378	126	210	294	336	210	210	168	168	252	294	236
D_6	210	252	420	294	504	336	420	210	378	210	294	378	462	336
D_7	168	168	126	84	168	168	210	126	168	84	126	168	168	149
D_8	126	210	252	168	210	378	252	294	420	126	210	168	252	236
D_9	210	126	84	210	168	126	210	84	84	168	252	126	126	152
Mean	205	229	238	210	317	257	299	245	257	215	238	245	252	246

C.D. for D marginal means=68·6 Kg/ha.

62(225)

(i) 846 Kg/ha. (ii) (a) 924·1 Kg/ha. (b) 374·4 Kg/ha. (iii) Main effect of D is highly significant whereas main effect of V and interaction D × V is significant. (iv) Av. yield of seed in Kg/ha.

	V_1	V_2	V_3	V_4	V_5	V_6	V_7	V_8	V_9	V_{10}
D_1	1495	1109	915	672	433	1627	2229	1037	626	815
D_2	2333	1791	488	774	1096	1245	985	761	981	2526
D_3	1918	992	722	1185	1170	1438	1526	951	974	1528
D_4	1959	1016	1129	972	1645	1458	1611	1647	1202	1756
D_5	454	490	717	336	268	701	706	704	712	634
D_6	683	702	433	627	706	804	717	854	676	774
D_7	407	436	591	344	395	636	480	346	352	693
D_8	145	67	95	63	112	170	57	63	207	28
Mean	1174	825	636	622	728	1010	1039	795	716	1094

Contd.

V_{11}	V_{12}	V_{13}	Mean
861	582	1322	1109
1328	621	1036	1220
1087	790	1014	1177
1438	1423	1123	1106
449	586	527	560
689	490	1020	706
375	518	500	467
325	70	168	121
819	635	914	946

C.D. for D marginal means=579·7 Kg/ha.
C.D. for V marginal means=262·1 Kg/ha.
C.D. for V means at the same level of D=374·4 Kg/ha.
C.D. for D means at the same level of V=177·3 Kg/ha.

63(231)

(i) 282 Kg/ha. (ii) (a) 160·2 Kg/ha. (b) 126·1 Kg/ha. (iii) Main effect of D, V and interaction D×V are highly significant. (iv) Av. yield of seed in Kg/ha.

	V_1	V_2	V_3	V_4	V_5	V_6	V_7	V_8	V_9	V_{10}
D_1	648	857	705	1153	576	446	993	1108	769	835
D_2	605	417	320	629	885	197	374	597	266	504
D_3	403	605	392	612	590	432	518	691	648	662
D_4	425	295	475	520	229	356	307	461	346	379
D_5	263	170	137	305	189	259	104	135	117	91
D_6	140	137	62	96	65	95	36	158	59	33
D_7	180	222	143	91	94	137	243	132	32	107
D_8	85	81	46	91	40	13	46	56	20	52
D_9	104	32	50	42	27	24	35	26	12	4
D_{10}	43	40	19	20	10	29	27	48	9	23
Mean	290	286	235	376	270	199	268	341	228	269

V_{11}	V_{12}	V_{13}	Mean
929	737	1051	847
813	386	487	499
461	550	461	540
297	392	597	390
256	305	383	209
114	48	130	90
190	39	37	127
30	81	53	53
23	40	33	35
32	22	14	26
314	260	325	282

C.D. for D marginal means=100·5 Kg/ha.
C.D. for V marginal means=78·9 Kg/ha.
C.D. for V means at the same level of D=126·1 Kg/ha.
C.D. for D means at the same level of V=259·1 Kg/ha.

Crop :- Castor (*Rabi*). **Ref :- Bh. 65(27).**

Site :- Jamaldihpur (Bhagalpur c.f.). **Type :- 'D'.**

Object : —To know the comparative efficacy of different insecticides on shoot and capsule borer.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) Nil. (iv) Local. (v) (a) 2—3 ploughings. (b) Line sowing. (c) 12 Kg/ha. (d) 23 cm. between rows. (e) —. (vi) 8.11.65. (vii) Unirrigated. (viii) Weedings. (ix) N.A. (x) 12 and 18.4.66.

2. TREATMENTS :

7 insecticidal treatments : T_0=Control, T_1=Malathion 0·1 % spray, T_2=DDT 0·25 % spray, T_3=Folidol 0·04 % spray, T_4=Endrin 0·04 % spray, T_5=Dimicron 0·03 % spray and T_6=Hexavin 0·25 % spray.

No. of application : 4 at 3 weeks interval.

Time of spray 29.12.65, 19.1.66, 12.2.66 and 3.3.66.

3. DESIGN :

(i) R.B.D., 7, 3. (ii) N.A. (iii) (a) and (b) 50·58 sq. m. (iv) Yes.

4. GENERAL :

(i) Good. (ii) Castor shoot and capsules borer. (iii) Percentage of pests on corn head and capsule. (iv) (a) 1965—only. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

Infestation of pest on corn head.

(i) 10·1 degree. (ii) 2·4 degree. (iii) Treatment differences are significant. (iv) Mean infestation of pest on head in degree.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	
Mean angle	14·6	10·1	11·2	9·1	7·4	11·0	7·4	C.D.=4·1 degree.

Infestation of pest on corn capsules.

(i) 16·4 degree. (ii) 4·0 degree. (iii) Treatment differences are highly significant. (iv) Mean infestation of pest on capsules in degree.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	
Mean angle	26·0	20·2	15·4	14·6	11·4	16·5	10·5	C.D.=7·1 degree.

Crop :- Linseed (*Rabi*). **Ref :- Bh. 64(278), 65(53).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object : —To see the effect of different levels of N, P and K on the yield of Linseed crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Groundnut. (c) 45 Kg/ha. of N as A/S+67 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (ii) Red loam. (iii) 26.10.64 ; 2.11.65. (iv) (a) One ploughing. (b) Drilling in rows. (c) 15 Kg/ha. (d) 30 cm. between rows. (e) —. (v) Nil. (vi) P—142. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 28.3.65 ; 26.3.66.

2. TREATMENTS :

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

(1) 3 levels of N as A/S : N_0=0, N_1=22·5 and N_2=45 Kg/ha.

(2) 3 levels of P_2O_5 as Super : P_0=0, P_1=16·8 and P_2=33·5 Kg/ha

(3) 3 levels of K_2O as Mur. Pot. : K_0=0, K_1=22·5 and K_2=45 Kg/ha.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 27. (b) N.A. (iii) 1. (iv) (a) 4·26 m. × 11·56 m. ; 6·09 m. × 7·91 m. (b) 3·66 m. × 10·96 m. ; 5·48 m. × 7·31 m. (v) 30 cm. × 30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Rust and wilt. (iii) Germination, growth, flowering maturity, seed yield. (iv) (a) 1964 – 65. (b) No, (c) Results of combined analysis are presented under 5. Results. (v) Nawada and Patna. (vi) Nil. (vii) Error variances are homogeneous and Treatments × Years interaction is absent.

5. RESULTS :

Pooled results

(i) 333 Kg/ha. (ii) 76·2 Kg/ha. (based on 34 d.f. made up of pooled error and Treatments × Years interaction). (iii) Interactions N × K and P × K are highly significant, while interaction N × P is significant. (iv) Av. yield of seed in Kg/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	335	346	336	275	350	392	339
N_1	238	336	395	238	432	299	323
N_2	376	335	301	378	372	261	337
Mean	316	339	344	297	385	317	333
K_0	297	288	306				
K_1	323	445	386				
K_2	329	284	340				

C.D. for any interaction = 125·2 Kg/ha.

Individual results

Treatment	N_0	N_1	N_2	Sig.	P_0	P_1	P_2	Sig.
Year								
1964	359	342	390	N.S.	337	383	370	N.S.
1965	319	304	285	N.S.	295	294	318	N.S.
Pooled	339	323	337	N.S.	316	339	344	N.S.

K_0	K_1	K_2	Sig.	G.M.	S.E./plot
350	396	345	N.S.	364	172·5
243	373	291	N.S.	302	265·9
297	385	317	N.S.	333	76·2

Crop :- Linseed (*Rabi*). **Ref :- Bh. 64(103).**

Site :- Distt. Res. Farm, Nawada. **Type :- 'M'.**

Object :—To test the effect of different levels of N, P and K on the yield of Linseed crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Moong*. (c) N.A. (ii) N.A. (iii) 26.11.64. (iv)(a) 3 *deshi* ploughings. (b) Behind the plough. (c) 35 Kg/ha. (d) 30 cm. × 15 cm. (e) N.A. (v) N.A. (vi) P 142. (vii) Unirrigated. (viii) Nil. (ix) 1·0 cm. (x) 27 to 31.3.65.

2. TREATMENTS :

Same as in Expt. No. 64(278), 65(53) and presented on page No. 821.

3. DESIGN :

(i) 3^3 (NP^2K is confd.). (ii) (a) 9 plots/block, 3 blocks/replication. (b) N.A. (iii) 1. (iv) (a) 8·53 m. × 6·06 m. (b) 7·31 m. × 5·48 m. (v) 61 cm. × 30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of seed. (iv) (a) 1964—only. (b) and (c) Nil. (v) Kanke and Patna. (vi) and (vii) Nil.

5. RESULTS :

(i) 160 Kg/ha. (ii) 28·8 Kg/ha. (iii) Main effect of N alone is significant. (iv) Av. yield of seed in Kg/ha.

	K_0	K_1	K_2	P_0	P_1	P_2	Mean
N_0	166	116	100	116	108	158	127
N_1	166	191	199	158	224	174	185
N_2	149	208	149	158	199	149	169
Mean	160	172	149	144	177	160	160
P_0	141	149	141				
P_1	174	191	166				
P_2	166	174	141				

C.D. for N marginal means = 32·1 Kg/ha.

Crop :- Linseed (*Rabi*). **Ref :- Bh. 64(241), 65(59).**

Site :- Agri. Res. Instt., Patna. **Type :- 'M'.**

Object :—To determine the optimum doses of different fertilizers for Linseed crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Gram ; Paddy. (c) Nil ; 33·5 Kg/ha. of N as A/S + 22·5 Kg/ha. of P_2O_5 as Super. (ii) Loam ; Old gangatic alluvium. (iii) 2 and 3.11.64 ; 20, 21 and 24.11.65. (iv) (a) 2—3 *deshi* ploughings ; 2 ploughings. (b) Dibbling. (c) 15 Kg/ha. ; 16 Kg/ha. (d) 30 cm. × 15 cm. ; 30 cm. between rows. (e) 3—5 seeds/hole. (v) As per treatments. (vi) P—142. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 24.3.65 to 27.3.65 : 28.3.66 to 31.3.66.

2. TREATMENTS :

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

(1) 3 levels of N as A/S : N_0=0, N_1=22·5 and N_2=45·0 Kg/ha.

(2) 3 levels of P_2O_5 as Super : P_0=0, P_1=16·8 and P_2=33 5 Kg/ha.

(3) 3 levels of K_2O as Mur. Pot. : K_0=0, K_1=22·5 and K_2=45·0 Kg/ha.

3. DESIGN :

(i) 3^3 fact. (ii) (a) 27. (b) 57·34 m.×26·23 m. (iii) 1. (iv) (a) 8·54 m.×6·11 m. ; 7 91 m.×6·09 m. (b) 7·32 m.×5·49 m. ; 7·31 m.×5·48 m. (v) 60 cm.×30 cm. ; 30 cm.×30 cm. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil ; Rust and wilt. (iii) Germination, growth, flowering maturity and seed yield. (iv) (a) 1964—65. (b) No. (c) Results of combined analysis are presented under 5. Results. (v) Nawada, Kanke. (vi) Nil. (vii) Error variances are homogeneous and Treatments×years interaction is absent.

5. RESULTS :

Pooled results

(i) 629 Kg/ha. (ii) 86·1 Kg/ha. (based on 34 d.f. made up of pooled error and Treatments×Years interaction). (iii) Only main effects of K is highly significant. (iv) Av. yield of seed in Kg/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	573	611	632	623	611	582	605
N_1	640	644	606	594	694	603	630
N_2	623	648	681	693	665	594	651
Mean	612	634	640	637	657	593	629
K_0	627	635	648				
K_1	611	674	685				
K_2	598	594	586				

C.D. for K marginal means=81·7 Kg/ha.

Individual results

Treatments	N_0	N_1	N_2	Sig.	P_0	P_1	P_2	Sig.
Years								
1964	719	752	761	N S.	711	755	766	N.S.
1965	491	508	541	N.S.	513	513	513	N.S.
Pooled	605	630	651	N.S.	612	634	640	N.S.

K_0	K_1	K_2	Sig.	G.M.	S.E./plot
763	763	705	N.S.	744	75·4
510	549	480	N.S.	513	93·5
637	657	593	**	629	86·1

Crop :- Linseed (*Rabi*). **Ref :- Bh. 65(62).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'CM'.**

Object :—To determine the suitable spacing, seed rate and their interactions with fertilizers application for Linseed crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) 8.11.65. (iv) (a) 2 ploughings. (b) Dibbling behind the hand plough. (c) and (d) As per treatments. (e) —. (v) Nil. (vi) P–142. (vii) Unirrigated. (viii) As per treatments. (ix) N.A. (x) 30.3.66.

2. TREATMENTS :

Main-plot treatments :

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

(1) 3 spacings between rows: S_1=22·9, S_2=31·0 and S_3=38·1 cm.

(2) 3 seed rates : R_1=13·5, R_2=20·2 and R_3=27·0 Kg/ha.

(3) 3 doses of fertilizer : F_0=No fertilizer, F_1=22·5 Kg/ha. of N as A/S+16·8 Kg/ha. of P_2O_5 as Super+22·5 Kg/ha. of K_2O as Mur. Pot. and F_2=45 Kg/ha. of N as A/S+33·5 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot.

Sub-plot treatments :

2 interculturings : I_1=1 and I_2=2 interculturings.

3. DESIGN :

(i) Split-plot confd. (SR^2F^2 effect confd). (ii) (a) 2 sub-plots/main-plot ; 9 main-plots/block, 3 blocks/replication. (b) 50·24 m.×9·44 m. (iii) 2. (iv) (a) 9·44 m.×4·57 m. (b) 8·83 m.×4·57 m. for main-plots, 4·57 m.×4·41 m. for sub-plots. (v) 30 cm. on either side of the main-plot. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Rust and wilt. (iii) Germination, growth, flowering, maturity and seed yield. (iv) (a) 1964—65 (Expt. for 1964 N.A.) (b) No. (c) N.A. (v) to (vii) Nil.

5. RESULTS :

(i) 341 Kg/ha. (ii) (a) 137 8 Kg/ha. (b) 70·8 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of seed in Kg/ha.

	R_1	R_2	R_3	F_0	F_1	F_2	I_1	I_2	Mean
S_1	352	392	324	349	336	382	358	354	356
S_2	310	373	317	311	332	358	340	328	334
S_3	367	282	349	297	313	388	325	340	333
Mean	343	349	330	319	327	376	341	341	341
I_1	340	352	330	313	343	366			
I_2	346	346	330	325	311	386			
F_0	336	338	283						
F_1	343	320	318						
F_2	351	388	390						

Crop :- Mustard (*Rabi*). **Ref :- Bh. 60(301).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object :—To find out the response of Mustard crop to liming.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Red loam. (iii) 19.10 60. (iv) (a) 3 - 4 ploughings. (b) Line sowing. (c) 8 Kg/ha. (d) 30 cm. between rows. (e) —. (v) Nil. (vi) Local. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 18.2.61

2. TREATMENTS :

4 manurial treatments: T_0=Control, T_1=4000 Kg/ha. of lime, T_2=11·2 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. and $T_3=T_1+T_2$.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 5. (iv) (a) and (b) 20·23 sq. m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of seed. (iv) (a) 1960—61. (b) No. (c) Nil. (v) No. (vi) Nil. (vii) T_0 failed and rejected, T_1 has given very low yield.

5. RESULTS :

(i) 376 Kg/ha. (ii) 102·3 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of seed in Kg/ha.

Treatment	T_1	T_2	T_3
Av. yield	36	595	497

C.D.=149·2 Kg/ha.

———

Crop :- Mustard (*Rabi*). **Ref :- Bh. 61(315).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object :—To find out the response of Mustard crop to liming.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Red loam. (iii) 3.11.61. (iv) (a) 3—4 ploughings. (b) Line sowing. (c) 9 Kg/ha. (d) 23 cm. between rows. (e) —. (v) Nil. (vi) Local. (vii) Irrigated. (viii) Weeding and boeing. (ix) N.A. (x) 26.2 62.

2. TREATMENTS and 3. DESIGN :

Same as in Expt. No. 60(301) above.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of seed. (iv) (a) 1960—61. (b) No. (c) Nil. (v) and (vi) Nil. (vii) T_0 and T_1 failed and rejected.

5. RESULTS :

(i) 410 Kg/ha. (ii) 43·6 Kg/ha. (iii) Treatment difference is highly significant. (iv) Av. yield of seed in Kg/ha.

Treatment	T_2	T_3
Av. yield	346	475

C.D.=76·5 Kg/ha.

———

Crop :- Mustard (*Rabi*). **Ref :- Bh. 64(280).**

Site :- Distt. Agri. Farm, Purnea. **Type :- 'M'.**

Object :—To determine the optimum doses of fertilizer and manures on the crop of Rai (Mustard).

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Tori. (c) Nil. (ii) Recent gangatic alluvium. (iii) 2.11.64. (iv) (a) 2 ploughings. (b) Drilling. (c) 7 Kg/ha. (d) 60 cm.×15 cm. (e) —. (v) Nil. (vi) BR—13. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 18.12.64.

2. TREATMENTS :

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

(1) 3 levels of N as A/S : N_0=0, N_1=22·5 and N_2=45 Kg/ha.

(2) 3 levels of P_2O_5 as Super : P_0=0, P_1=16·8 and P_2=33·5 Kg/ha.

(3) 3 levels of K_2O as Mur. Pot. : K_0=0, K_1=16·8 and K_2=33·5 Kg/ha.

3. DESIGN :

(i) 3^3. (ii) (a) 27. (b) N.A. (iii) 1. (iv) (a) 13·71 m.×4·36 m. (b) 13·10 m.×3·05 m. (v) 60 cm.× 121 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Aphid attack, 0·02% folidol sprayed. (iii) Yield, no. of branches, no. of pods/plant, no. of seeds/pod and height of plant. (iv) (a) 1964—65. (b) No. (c) N.A. (v) No. (vi) and (vii) Nil.

5. RESULTS :

(i) 742 Kg/ha. (ii) 283·6 Kg/ha. (iii) Main effect of N alone is significant. (iv) Av. yield of seed in Kg/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	525	596	396	595	523	400	506
N_1	745	639	771	727	582	847	719
N_2	959	1197	850	1024	998	985	1002
Mean	743	811	672	782	701	744	742
K_0	959	840	547				
K_1	663	757	682				
K_2	607	836	788				

C.D. for N marginal means=308·3 Kg/ha.

———

Crop :- Mustard (*Rabi*). **Ref :- Bh. 65(93).**

Site :- Distt. Agri. Farm, Purnea. **Type :- 'M'.**

Object :—To find out the best manurial schedule for Mustard crop under rainfed condition.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Recent gangatic alluvium. (iii) 6.11.65. (iv) (a) 2 ploughings. (b) Drilling. (c) 7 Kg/ha. (d) 60 cm.×15 cm. (e) —. (v) Nil. (vi) BR—13. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 19.2.66.

2. TREATMENTS:

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

(1) 3 levels of N as A/S : N_0=0, N_1=22·5 and N_2=45 Kg/ha.

(2) 3 levels of of P_2O_5 as Super : P_0=O, P_1=16·8 and P_2=33·5 Kg/ha.

(3) 3 levels of K_2O as Mur. Pot. : K_0=0, K_1=16·8 and K_2=33·5 Kg/ha.

3. DESIGN:

(i) 3^3 confd. (ii) (a) 9 plots/block, 3 blocks/replication. (b) —. (iii) 2. (iv) (a) 13·71 m.×4·25 m. (b) 13·10 m.×3·05 m. (v) 30 cm.×60 m. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Aphid attack, spraying of 0·02 % folidol. (iii) Yield, no of branches, no. of pods/plant, no. of seeds/pod and height of plant. (iv) (a) 1964—65. (b) No. (c) N.A. (v) Dholi. (vi) and (vii) Nil.

5. RESULTS:

(i) 259 Kg/ha. (ii) 77·8 Kg/ha. (iii) Main effect of N and P are highly significant. (iv) Av. yield of seed in Kg/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	121	117	194	138	179	115	144
N_1	219	342	340	288	327	286	306
N_2	257	386	359	311	332	359	334
Mean	199	282	298	245	279	253	259
K_0	211	269	257				
K_1	188	321	330				
K_2	198	254	307				

C.D. for N or P marginal means=53·3 Kg/ha.

Crop :- Mustard (*Rabi*). **Ref :- Bh. 65(94).**

Site :- Distt. Agri. Farm, Purnea. **Type :- 'M'.**

Object: —To find out the best manurial schedule for Mustard crop under irrigated condition.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Fallow. (c) Nil (ii) Recent gangatic alluvium. (iii) 10.11.65. (iv) (a) 2 ploughings. (b) Drilling. (c) 7 Kg/ha. (d) 60 cm.×15 cm. (e) —. (v) Nil. (vi) BR—13. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 17.12.65.

2. TREATMENTS :

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

(1) 3 levels of N as A/S : N_0=0, N_1=22·5 and N_2=45 Kg/ha.

(2) 3 levels of P_2O_5 as Super : P_0=0, P_1=16 8 and P_2=33·5 Kg/ha.

(3) 3 levels of K_2O as Mur. Pot. : K_0=0, K_1=16·8 and K_2=33·5 Kg/ha.

3. DESIGN:

(i) 3^3 confd. (ii) (a) 9 plots/block; 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 13·71 m.×4·26 m. (b) 13·10 m.×3·05 m. (v) 30 cm.×60 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Aphids attack, spraying of 0·02 % folidol. (iii) Yield, no. of branches, no. of pods/plant, no. of seeds/pod and height of plant. (iv) (a) 1964—65. (b) No. (c) N.A. (v) to (vii) Nil.

5. RESULTS :

(i) 232 Kg/ha. (ii) 102·2 Kg/ha. (iii) Only main effect of N is highly significant. (iv) Av. yield of seed in Kg/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	131	142	165	184	96	159	146
N_1	254	229	261	296	215	234	248
N_2	248	330	330	307	273	327	302
Mean	211	234	252	262	195	240	232
K_0	261	263	263				
K_1	136	234	215				
K_2	238	204	277				

C.D. for N marginal means=70·0 Kg/ha.

Crop :- Mustard.

Ref :- Bh. 60(SFT) for Muzaffarpur and Bhagalpur and 60, 61(SFT) for Purnea, Gaya Patna, Shahabad and S. Parganas and 61(SFT) for Champaran.

Site :- (District). Muzaffarpur, Bhagalpur, Purnea, Gaya, Patna, Shahabad, S. Parganas and Champaran.

Type :- 'M'.

Object :—Type A : To study the response of Mustard to different levels of N, P_2O_5 and K_2O applied individually and in combination.

1. BASAL CONDITIONS:

(i) (a) to (c) N.A. (ii) As per results. (iii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments :

Control=No manure,

N=22·4 Kg/ha. of N,

P=22·4 Kg/ha. of P_2O_5,

K=22·4 Kg/ha. of K_2O,

NP=22·4 Kg/ha. of N+22·4 Kg/ha. of P_2O_5,

NK=22·4 Kg/ha. of N+22·4 Kg/ha. of K_2O,

PK=22·4 Kg/ha. of P_2O_5+22·4 Kg/ha. of K_2O and

NPK=22·4 Kg/ha. of N+22·4 Kg/ha. of P_2O_5+22·4 Kg/ha. of K_2O.

N applied as A/S, P_2O_5 as Super and K_2O as Mur. Pot.

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 a *rabi* cereal, 8 on cash crop, 4 on an oilseed crop and 3 on a legumenous 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) 1/98·8 ha. (b) 1/197·7 ha. (iv) Yes.

4. GENERAL :

(i) to (vii) N.A.

5. RESULTS:

District	Year	Soil class	No. of trials	Control mean Kg/ha.	Av. response of cane in Kg/ha. N	P	K	S.E.	NP	NK	PK	NPK	S.E.
Muzaffarpur	1960	Alluvial	4	540	260	120	100	24·0	50	60	40	—	22·0
Champaran	1961	,,	2	200	110	80	20	6·0	—20	30	10	40	4·0
Purnea	1960	Other alluvial	6	970	210	190	80	20·0	50	—	30	20	18·0
	1961	Alluvial	8	640	160	120	40	22·0	10	10	10	30	19 0
Bhagalpur	1960	,,	2	520	110	60	100	25·0	90	—40	—10	—50	39 0
Gaya	1960	,,	4	880	180	130	40	18·0	—40	—	30	—	24·0
	1961	,,	4	500	220	250	120	11·0	10	40	—	—20	13 0
Patna	1960	Other alluvial	3	810	140	120	10	23·0	—30	—20	—	—	14 0
	1961	Alluvial	6	1120	370	120	40	35·0	30	—10	—20	60	46·0
Shahabad	1960	,,	2	760	230	150	50	71·0	30	—	10	50	40·0
	1961	,,	2	680	200	120	180	96·0	240	—30	20	200	104·0
S. Parganas	1960	Red	4	550	110	70	40	23·0	—10	—	20	40	16·0
	1961	,,	5	770	160	110	50	9·0	—20	10	—20	50	6 0

Crop :- Mustard.

Ref :- Bh. 60, 61(SFT), for Purnea, Gaya, Patna, Shahabad and S. Parganas and 60(SFT) for Muzaffarpur and Bhagalpur.

Site :- Purnea, Gaya, Patna, Shahabad, S-Parganas, Muzaffarpur and Bhagalpur.

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) As per results. (iii) to (x) N.A.

2. TREATMENTS:

8 manurial treatments :

Control=No manure,

n_1=22·4 Kg/ha. of N as A/S,

n_2=44·8 Kg/ha. of N as A/S,

n_1'=22·4 Kg/ha. of N as Urea,

n_2'=44·8 Kg/ha. of N as Urea,

n_1''=22·4 Kg/ha. of N as A/S/N,

n_2''=44·8 Kg/ha. of N as A/S/N,

n_1'''=22·4 Kg/ha. of N as C/A/N and

n_2'''=44·8 Kg/ha. of N as C/A/N.

3. DESIGN:

Same as in type A on page No. 829.

4. GENERAL:

(i) to (vii) N.A.

5. RESULTS:

District	Year	Soil class	No. of trials	Control mean in Kg/ha.	Av. response of Mustard in Kg/ha. n_1	n_1'	n_1''	n_1'''	n_2	n_2'	n_2''	n_2'''	S.E. of response
Muzaffarpur	1960	Alluvial	1	530	110	20	340	220	390	200	480	570	N.A.
Purnea	1960	Other alluvial	4	810	180	240	120	110	340	400	290	180	40·0
	1961	,,	7	590	130	170	90	120	340	320	230	420	31·0
Bhagalpur	1960	Alluvial	2	470	100	280	140	170	230	400	130	210	51·0
Gaya	1960	,,	4	840	180	100	100	100	300	230	140	180	28·0
	1960	,,	2	650	310	200	220	140	290	100	290	290	180·0
	1961	,,	4	550	260	290	220	160	520	500	400	280	27·0
Patna	1960	Other alluvial	2	1000	120	270	150	—	200	320	200	—	35·0
	1961	,,	5	1160	590	400	340	550	630	730	470	900	65·0
Shahabad	1960	Alluvial	2	760	490	170	520	310	650	500	520	440	119·0
	1961	,,	2	590	310	210	350	220	460	460	420	460	29·0
S-Parganas	1960	Red	2	970	100	190	80	80	320	300	150	140	49·0
	1961	,,	8	770	200	190	170	210	280	340	240	290	25.0

Crop :- Mustard (*Rabi*).

Ref :- Bh. 62, 63, 64, 65(SFT) for Purnea, 62(SFT) for Muzaffarpur and S-Parganas and 63(SFT) for Monghyr and Champaran.

Site :- (District) : Purnea, Muzaffarpur, S-Parganas, Monghyr and Champaran.

Type :- 'M'.

Object :—Type A_1 : To study the response curves of important cereal, cash and oilseed crops to Nitrogen applied singly and in combination with other nutrients.

1. BASAL CONDITIONS:

(i) (a) to (c) N.A. (ii) Red for S-Parganas and alluvial for others. (iii) to (vi) N.A. (vii) Unirrigated, (viii) to (x) N.A.

2. TREATMENTS:

8 manurial treatments :

O=Control (no manure),

N_1=25 Kg/ha. of N,

N_2=50 Kg/ha. of N,

P_1=25 Kg/ha. of P_2O_5,

N_1P_1=25 Kg/ha. of N+25 Kg/ha. of P_2O_5,

N_2P_1=50 Kg/ha. of N+25 Kg/ha. of P_2O_5,

N_2P_2=50 Kg/ha. of N+50 Kg/ha. of P_2O_5 and

$N_2P_2K_1$=50 Kg/ha. of N+50 Kg/ha. of P_2O_5+25 Kg/ha. of K_2O.

N applied as A/S, P_2O_5 as Super and K_2O as Mur. Pot.

3. DESIGN:

A selected district is divided into four agriculturally homogenous zones based on climate, soil, cropping pattern etc. In each zone one block is selected at random. A block normally consists of a group of 50 - 100 villages. In each block 36 experiments are conducted in a year of which 11 are of type A_1, 11 of type A_2, 11 of type A_3 and 3 are of type C. The eleven experiments under type A_1, A_2 and A_3 are distributed as 3 on a *kharif* cereal, 3 on a *rabi* cereal, 3 on a cash crop and 2 on oil seed. All the three type—C experiments are conducted on a legume crop. For the purpose of conducting the A_1, A_2 and A_3 experiments 11 villages are randomly selected in each block and in each village 3 experiments one each of type A_1, A_2 and A_3 are laid out. For conducting the three type—C trials three villages are randomly selected in each block.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of Mustard. (iv) (a) 1962—66 for Purnea, 1962 only for Muzaffarpur and S-Parganas and 1963 only for Monghyr and Champaran. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

Purnea

62(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of Mustard in Kg/ha.	86	132	52	213	363	352	467	42·5

Control mean=308 Kg/ha ; No. of trials=4

63(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of Mustard in Kg/ha.	127	264	120	281	235	415	448	65·7

Control mean=496 Kg/ha. ; No. of trials=2

64(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of Mustard in Kg/ha.	342	187	114	137	284	283	362	114·1

Control mean=713 Kg/ha. ; No. of trials=6

65(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of Mustard in Kg/ha.	197	282	113	249	416	444	486	43·1

Control mean=578 Kg/ha. ; No. of trials=4

Muzaffarpur

62(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of Mustard in Kg/ha.	627	282	75	594	645	645	708	74·1

Control mean=663 Kg/ha. ; No. of trials=2

S-Parganas

62(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of Mustard in Kg/ha.	131	212	68	257	332	460	702	29·7

Control mean=462Kg/ha. ; No. of trials=2

Monghyr

63(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of Mustard in Kg/ha.	227	109	69	208	259	302	383	15·8

Control mean=532 Kg/ha. ; No. of trials=4

Champaran

63(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of Mustard in Kg/ha.	21	—58	104	6	43	35	236	148·5

Control mean=968 Kg/ha. ; No. of trials=4

Crop :- Mustard (*Rabi*).

Ref :- Bh. 62, 64(SFT) for Gaya ; 64, 65(SFT) for Shahabad ; 62, 63, 64, 65(SFT) for Monghyr ; 64, 65(SFT) for Muzaffarpur and 62(SFT) for Patna.

Site :- (District) : Gaya, Shahabad, Monghyr, Muzaffarpur and Patna.

Type :- 'M'.

Object :—Type A_1 : To study the response curves of important cereal, cash and oilseed crops to Nitrogen applied singly and in combination with other nutrients.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Alluvial. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments :

O=Control (no manure),
N_1 35 Kg/ha. of N,
N_2=70 Kg/ha. of N,
P_1=25 Kg/ha. af P_2O_5,
N_1P_1=35 Kg/ha. of N+25 Kg/ha. of P_2O_5,
N_2P_1=70 Kg/ha. of N+25 Kg/ha. of P_2O_5,
N_2P_2=70 Kg/ha. of N+50 Kg/ha. of P_2O_5 and
$N_2P_2K_1$=70 Kg/ha. of N+50 Kg/ha. of P_2O_5+25 Kg/ha. of K_2O.

N applied as A/S, P_2O_5 as Super and K_2O as Mur. Pot.

3. DESIGN :

Same as in type A_1 unirrigated on page No. 831.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of Mustard. (iv) (a) 1962—66 (63, 65 N.A.) for Gaya, 1964—66 for Shahabad, 1962—65 for Monghyr, 1964—66 for Muzaffarpur, 1962 only for Patna. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

Gaya

62(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of Mustard in Kg/ha.	372	774	205	434	801	855	930	29·2

Control mean=792 Kg/ha. ; No. of trials=4

64(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of Mustard in Kg/ha.	45	86	132	172	230	230	270	19·2

Control mean=363 Kg/ha. ; No. of trials=2

Shahabad

64(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of Mustard in Kg/ha.	149	183	91	144	184	218	253	41·3

Control mean=426 Kg/ha. ; No. of trials=2

65(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of Mustard in Kg/ha.	163	374	77	274	397	434	473	36·1

Control mean=735 Kg/ha. ; No. of trials=2

Monghyr

62(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of Mustard in Kg/ha.	237	417	132	504	736	911	1090	41·8

Control mean=553 Kg/ha. ; No. of trials=4

63(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of Mustard in Kg/ha.	204	340	84	277	398	513	578	30·7

Control mean=495 Kg/ha. ; No. of trials=4

64(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of Mustard in Kg/ha.	495	680	47	610	928	1233	1447	76·3

Control mean=887 Kg/ha. ; No. of trials=2

65(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of Mustard in Kg/ha.	333	671	164	734	957	1189	1382	90·9

Control mean=787 Kg/ha. ; No. of trials=2

Muzaffarpur

64(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of Mustard in Kg/ha.	107	145	65	187	342	388	442	19·9

Control mean=519 Kg/ha. ; No. of trials=4

65(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of Mustard in Kg/ha.	117	164	70	210	415	456	538	7·3

Control mean=583 Kg/ha. ; No. of trials=2

Patna

62(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of Mustard in Kg/ha.	212	368	137	258	426	604	794	37·7

Control mean=646 Kg/ha. ; No. of trials=2

Crop :- Mustard (*Rabi*).

Ref :- Bh. 63, 64, 65(SFT) for Muzaffarpur ; 62, 64(SFT) for Gaya ; 62, 63, 64, 65(SFT) for Monghyr ; 63(SFT) for Champaran ; 64, 65(SFT) for Shahabad and 62(SFT) for Patna.

Site :- (District) : Muzaffarpur, Gaya, Monghyr, Champaran, Shahabad and Patna.

Type :- 'M'.

Object :—Type A_2 : To study the response curves of important cereal, cash and oilseed crops to phosphorus applied singly and in combination with other nutrients.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Alluvial. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments :

O=Control (no manure),
N_1=35 Kg/ha. of N,
P_1=25 Kg/ha. of P_2O_5,
P_2=50 Kg/ha. of P_2O_5,
N_1P_1=35 Kg/ha. of N+25 Kg/ha. of P_2O_5,
N_1P_2=35 Kg/ha. of N+50 Kg/ha. of P_2O_5,
N_2P_2=70 Kg/ha. of N+50 Kg/ha. of P_2O_5 and
$N_2P_2K_2$=70 Kg/ha. of N+50 Kg/ha. of P_2O_5+50 Kg/ha. of K_2O.

N applied as A/S, P_2O_5 as Super and K_2O as Mur. Pot.

3. DESIGN :

Same as in type A_1 on page No. 831

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of seed. (iv) (a) 1963—66 for Muzaffarpur, 1962—66 (63 and 65 N.A.) for Gaya, 62—65 for Monghyr, 1963 only for Champaran, 1964—66 for Shahabad and 1962 only for Patna. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

Muzaffarpur

63(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of seed in Kg/ha.	132	55	80	138	152	279	316	20·3

Control mean=657 Kg/ha. ; No. of trials=4

64(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of seed in Kg/ha.	80	34	77	138	170	256	377	20·2

Control mean=496 Kg/ha. ; No. of trials=4

65(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of seed in Kg/ha.	116	46	81	174	197	313	606	0·7

Control mean=491 Kg/ha. ; No. of trials=2

Gaya

62(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of seed in Kg/ha.	375	69	190	438	441	877	968	40·0

Control mean=703 Kg/ha. ; No. of trials=4

64(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of seed in Kg/ha.	46	17	92	161	201	224	356	14·0

Control mean=386 Kg/ha. ; No. of trials=2

Monghyr

62(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of seed in Kg/ha.	265	120	288	418	524	784	1084	56·7

Control mean= 435 Kg/ha. ; No. of trials=4

63(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of seed in Kg/ha.	202	80	202	237	309	475	627	51 8

Control mean=495 Kg/ha. ; No. of trials=3

64(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of seed in Kg/ha.	126	27	80	219	243	288	725	30·5

Control mean=726 Kg/ha. ; No. of trials=2

65(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of seed in Kg/ha.	163	40	87	240	496	1055	1330	106·4

Control mean=723 Kg/ha. ; No. of trials=2

Champaran

63(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of seed in Kg/ha.	185	171	157	298	292	321	511	82·0

Control mean=1050 Kg/ha. ; No. of trials=4

Shahabad

64(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of seed in Kg/ha.	201	127	215	161	144	218	219	54·7

Control mean=426 Kg/ha.; No. of trials=2

65(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of seed in Kg/ha.	261	47	181	281	287	473	503	52·8

Control mean=781 Kg/ha. ; No. of trials=2

Patna

62(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of seed in Kg/ha.	244	57	143	385	415	645	840	76·6

Control mean=669 Kg/ha. ; No. of trials=2

Crop :- Mustard (*Rabi*).

Ref :- Bh. 62, 63, 64, 65(SFT) for Purnea ; 62(SFT) for Champaran, Muzaffarpur and S. Parganas.

Site :- (District) : Purnea, Champaran, Muzaffarpur and S. Parganas.

Type :- 'M'.

Object :—Type A_2 : To study the response curves of important cereal, cash and oilseed crops to phosphorus applied singly and in combination with other nutrients.

1. BASAL CONDITIONS:

(i) (a) to (c) N.A. (ii) Other alluvial for Purnea, alluvial for Champaran and Muzaffarpur and red for S-Parganas. (iii) to (vi) N.A. (vii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS:

8 manurial treatments :

O=Control (no manure),

N_1=25 Kg/ha. of N,

P_1=25 Kg/ha. of P_2O_5,

P_2=50 Kg/ha. of P_2O_5,

N_1P_1=25 Kg/ha. of N+25 Kg/ha. of P_2O_5,

N_1P_2=25 Kg/ha. of N+50 Kg/ha. of P_2O_5,

N_2P_2=50 Kg/ha. of N+50 Kg/ha. of P_2O_5 and

$N_2P_2K_2$=50 Kg/ha. of N+50 Kg/ha. of P_2O_5+50 Kg/ha. of K_2O.

N applied as A/S, P_2O_5 as Super and K_2O as Mur. Pot.

3. DESIGN :

Same as in type A_1 on page No. 831

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of seed. (iv) (a) 1962—66 for Purnea and 62 only for Champaran, Muzaffarpur and S.-Parganas. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

Purnea

62(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of seed in Kg/ha.	74	61	103	190	213	288	317	34·7

Control mean=2097 Kg/ha ; No. of trials=4

63(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of seed in Kg/ha.	156	97	264	213	340	317	363	92 2

Control mean=570 Kg/ha. ; No. of trials=2

64(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of seed in Kg/ha.	133	40	55	180	232	333	415	25·8

Control mean=662 Kg/ha. ; No. of trials=6

65(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of seed in Kg/ha.	209	61	122	270	319	457	530	8 9

Control mean=508 Kg/ha. ; No. of trials=4

Champaran

62(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of seed in Kg/ha.	344	219	299	397	593	680	772	134·0

Control mean=968 Kg/ha.; No. of trials=2

Muzaffarpur

62(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of seed in Kg/ha.	491	34	75	432	473	503	662	8·9

Control mean=771 Kg/ha.; No. of trials=2

S-Parganas

62(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of seed in Kg/ha.	149	57	126	206	241	182	552	82·1

Control mean=508 Kg/ha.; No. of trials=2

Crop :- Mustard. **Ref :- Bh. 62(SFT) for Muzaffarpur ; 62, 63, 64, 65(SFT) for Purnea ; 62(SFT) for S-Parganas ; 63(SFT) for Champaran and 64(SFT) for Monghyr.**

Site :- (District) : Muzaffarpur, Purnea, S-Parganas, Champaran and Monghyr. **Type :- 'M'.**

Object :—Type A_2 : To study the response curves of important cereal, cash and oilseed crops to Potash applied singly and in combination with other nutrients.

1. BASAL CONDITIONS:

(i) (a) to (c) N.A. (ii) Red for S-parganas, alluvial for all others. (iii) to (vi) N.A. (vii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS:

8 manurial treatments :

O=Control (no manure),

N_1=25 Kg/ha. of N,

K_1=25 Kg/ha. of K_2O,

K_2=50 Kg/ha. of K_2O,

N_1K_1=25 Kg/ha. of N+25 Kg/ha. of K_2O,

N_1K_2=25 Kg/ha. of N+50 Kg/ha. of K_2O,

N_2K_2=50 Kg/ha. of N+50 Kg/ha. of K_2O and

$N_1P_1K_1$=25 Kg/ha. of N+25 Kg/ha. of P_2O_5+25 Kg/ha. of K_2O.

N applied as A/S, P_2O_5 as Super and K_2O as Mur. Pot.

3. DESIGN :

Same as in type A_1 on page No. 831

4. GENERAL :

(i) and (*ii*) N.A. (iii) Yield of Mustard. (iv) (a) 1962 only for Muzaffarpur ; 1962—66 for Purnea ; 1962 only for S.-Parganas ; 1963 only for Champaran ; 1964 only for Monghyr. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

Muzaffarpur

62(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of seed in Kg/ha.	323	133	196	258	324	363	277	78·8

Control mean=749 Kg/ha. ; No. of trials=2

Purnea

62(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of seed in Kg/ha.	80	58	156	237	254	294	345	42·2

Control mean=308 Kg/ha. ; No. of trials=4

63(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of seed in Kg/ha.	114	22	74	161	229	281	230	45·8

Control mean=438 Kg/ha. ; No. of trials=2

64(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of seed in Kg/ha.	182	45	101	201	242	359	280	11·9

Control mean=565 Kg/ha. ; No. of trials=6

65(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of seed in Kg/ha.	209	37	110	247	285	461	326	16·9

Control mean=490 Kg/ha. ; No. of trials=4

S-Parganas

62(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of seed in Kg/ha.	125	81	91	137	171	218	495	38·3

Control mean=473 Kg/ha. ; No. of trials=2

Champaran

63(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of seed in Kg/ha.	188	12	161	167	302	365	190	68·3

Control mean=956 Kg/ha. ; No. of trials=4

Monghyr

64(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of seed in Kg/ha.	254	34	86	251	279	309	294	41·8

Control mean=449 Kg/ha. ; No. of trials=4.

Crop :- Mustard (*Rabi*).

Ref :- Bh. 62(SFT) for Champaran ; 62, 63, 64, 65(SFT) for Monghyr ; 62, 64(SFT) for Gaya ; 62(SFT) for Patna ; 64, 65(SFT) for Muzaffarpur and Shahabad.

Site :- (District) : Champaran, Monghyr, Gaya, Patna, Muzaffarpur and Shahabad.

Type :- 'M'.

Object :—Type A_2: To study the response curves of important cereal, cash and oilseed crops to Potash applied singly and in combination with other nutrients.

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:

8 manurial treatments:

O=Control (no manure),

N_1=35 Kg/ha. of N,

K_1=25 Kg/ha. of K_2O,

K_2=50 Kg/ha. of K_2O,

N_1K_1=35 Kg/ha. of N+25 Kg/ha. of K_2O,

N_1K_2=35 Kg/ha. of N+50 Kg/ha. of K_2O,

N_2K_2=70 Kg/ha. of N+50 Kg/ha. of K_2O and

$N_1P_1K_1$=35 Kg/ha. of N+25 Kg/ha. of P_2O_5+25 Kg/ha. of K_2O.

N applied as A/S, P_2O_5 as Super and K_2O as Mur. Pot.

3. DESIGN :

Same as in type A_1 on page No. 831

4. GENERAL:

(i) and (ii) N.A. (iii) Yield of seed. (iv) (a) 1962 only for Champaran ; 1962—65 for Monghyr ; 1962—66 (1963, 65 N.A.) for Gaya ; 1962 only for Patna ; 1964—66 for Muzaffarpur and Shahabad. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

Champaran

62(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of seed in Kg/ha.	368	150	249	432	501	581	690	54·1

Control mean=864 Kg/ha. ; No. of trials=2

Monghyr

62(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of seed in Kg/ha.	246	80	152	346	458	666	870	53·8

Control mean=432 Kg/ha. ; No. of trials=4

63(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of seed in Kg/ha.	265	55	138	333	407	542	464	42·3

Control mean=521 Kg/ha. ; No. of trials=4

64(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of seed in Kg/ha.	114	45	90	160	236	300	323	18·8

Control mean=703 Kg/ha. ; No. of trials=2

65(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of seed in Kg/ha.	104	57	151	384	530	856	606	77·4

Control mean=724 Kg/ha. ; No. of trials=2

Gaya

62(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of seed in Kg/ha.	297	60	106	441	456	795	488	46·3

Control mean=619 Kg/ha. ; No. of trials=4

64(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of seed in Kg/ha.	134	47	75	156	139	203	225	27·4

Control mean=334 Kg/ha. ; No. of trials=2

Patna

62(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of seed in Kg/ha.	178	41	91	225	272	318	623	17·0

Control mean=662 Kg/ha. ; No. of trials=2

Muzaffarpur

64(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of seed in Kg/ha.	89	26	54	124	180	243	272	22·0

Control mean=440 Kg/ha. ; No. of trials=5

65(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of seed in Kg/ha.	122	29	99	175	191	372	331	6·2

Control mean=450 Kg/ha. ; No. of trials=2

Shahabad

64(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of seed in Kg/ha.	114	103	69	150	132	160	149	25·3

Control mean=438 Kg/ha. ; No. of trials=2

65(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of seed in Kg/ha.	229	41	99	206	269	405	398	47·1

Control mean=775 Kg/ha. ; No. of trials=2

Crop :- Mustard (*Rabi*). **Ref :- Bh. 65(63).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'CM'.**

Object :—To determine the suitable spacing, seed rate and their interaction with fertilizers application on Mustard crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Dhaincha* for G.M. (c) Nil. (ii) Sandy loam. (iii) 19.10.65. (iv) (a) 3 ploughings. (b) Drilling behind the plough. (c) and (d) As per treatments. (e) —. (v) Nil. (vi) BR—13. (vii) Unirrigated. (viii) As per treatments. (ix) N.A. (x) 6 to 10.2.66.

2. TREATMENTS :

Main-plot treatments :

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

(1) 3 spacings between rows : S_1=30, S_2=37·5 and S_3=45 cm.

(2) 3 seedrates : R_1=4·5, R_2=5·6 and R_3=6·7 Kg/ha.

(3) 3 doses of fertilizers : F_0=No fertilizer, F_1=22·5 Kg/ha. of N as A/S+16·7 Kg/ha. of P_2O_5 as Mur. Pot. and F_2=45 Kg/ha. of N as A/S+33·5 Kg/ha. of P_2O_5 as Super +33·5 Kg/ha. of K_2O as Mur. Pot.

Sub-plot treatments :

2 interculturings : I_1=1, I_2=2 interculturings.

3. DESIGN :

(i) Split-plot confd. (ii) (a) 2 sub-plots/main-plot ; 3 blocks/replication, 9 main-plots/block. (b) Nil. (iii) 2. (iv) (a) 9·44 m.×4·57 m. (b) 8·83 m.×4·57 m. (v) 30 cm. on either side along length. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield, no. of branches, no. of pods/plant and no. of seeds/pod. (iv) (a) 1964—65 (Expt. for 1964 N.A.). (b) N.A. (c) No. (v) to (vii) Nil.

5. RESULTS :

(i) 129 Kg/ha. (ii) (a) 44·9 Kg/ha. (b) 26·2 Kg/ha. (iii) Main effects of R and F are highly significant. (iv) Av. yield of seed in Kg/ha.

	R_1	R_2	R_3	F_0	F_1	F_2	I_1	I_2	Mean
S_1	137	115	158	95	131	184	137	136	137
S_2	108	94	149	72	122	157	123	111	117
S_3	131	116	150	85	134	178	136	129	132
Mean	125	108	152	84	129	173	132	125	129
I_1	131	111	153	91	131	173			
I_2	119	105	152	76	127	173			
F_0	84	66	101						
F_1	116	104	166						
F_2	175	154	190						

C.D. for R or F marginal means=21·8 Kg/ha.

Crop :- Mustard (*Rabi*). **Ref :- Bh. 62(136).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'D'.**

Object :—To find out the comparative efficacy of different insecticides against aphids on Mustard crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Groundnut. (c) 22·5 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (ii) Sandy loam. (iii) 3.11.62. (iv) (a) 3—4 ploughings. (b) Dibbling. (c) 15 Kg/ha. (d) 23 cm. between rows. (e) —. (v) 22·5 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (vi) Local. (vii) Unirrigated. (viii) Weedings. (ix) N.A. (x) 5.3.63.

2. TREATMENTS :

6 insecticidal treatments : T_0=Control, T_1=Gamma BHC at 2·8 Kg., T_2=Endrin at 1·1 Kg., T_3=Folidol at 3·6 Kg., T_4=Menuzon (PP 175) at 7·3 Kg. and T_5=Nicotinee sulphate at 1·1 Kg.

Solutions were prepared in 455 lit. of water and applied on 4.2.63.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) and (b) 50·58 sq. m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Mustard aphids and control measures as per treatments. (iii) Total population of aphids before treats., total population of aphids after 48 hrs. treatments. (iv) (a) 1962 only. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 26·9 degree. (ii) 2·4 degree. (iii) Treatment differences are highly significant. (iv) Av. percentage of the population of aphids after 48 hrs. of Treatments applied.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Mean angle	90·0	19·1	14·1	11·0	10·6	16·9

C.D.=3·6 degree.

Crop :- Mustard (*Rabi*). **Ref :- Bh. 65(24).**

Site :- Sabour Village (Sabour c.f.). **Type :- 'D'.**

Object :—To find out the comparative efficacies of different insecticides in different no. of sprays against Mustard aphids.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) Nil. (iv) Local. (v) (a) 2—3 ploughings. (b) Line sowing. (c) 10 Kg/ha. (d) 21 cm. between rows. (e) —. (vi) 10.11.65. (vii) Unirrigated. (viii) Weedings. (ix) N.A. (x) 12.4.66.

2. TREATMENTS :

7 insecticidal treatments : T_0=Control, T_1=Gamma BHC 0·05 % spray, T_2=Endrine 0·02 % spray, T_3=Folidol 0·02 % spray, T_4=Menazon (PP 175) at 0·2 Kg., T_5=Nicotine Sulphate 0·04 % spray and T_6=Dimecron 0·02 % spray.

Solution prepared in 1120 lit. of water.

3. DESIGN :

(i) R.B.D., 7, 5. (ii) N.A. (iii) (a) and (b) N.A. (iv) Yes.

4. GENERAL :

(i) Good. (ii) Attack of mustard aphids. (iii) Percentage of mortality of aphids. (iv) (a) 1965—only. (b) No. (c) Nil. (v) Patna. (vi) and (vii) Nil.

5. RESULTS :

(i) 74·8 degree. (ii) 10·0 degree. (iii) Treatment differences are highly significant. (iv) Mean angle of mortality in degree.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	C.D.=13·0 degree.
Mean Angle	20·9	85·6	76·8	82·8	90·0	82·5	85·0	

———

Crop :- Soyabean (*Kharif*). **Ref :- Bh. 60(228).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object : – To find out the responses of Soyabean to liming.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Red loam. (iii) 9.7.60. (iv) (a) 3 ploughings. (b) Line sowing. (c) 12 Kg/ha. (d) 20 cm. between rows. (e) —. (v) N.A. (vi) Local. (vii) Unirrigated. (viii) 2 weedings. (ix) N.A. (x) 25.11.60.

2. TREATMENTS :

4 insecticidal treatments : T_0=Control, T_1=4035 Kg/ha. of lime, T_2=11·2 Kg/ha. of N as A/S for legume and 45 Kg/ha. of N as A/S for other crops+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. and T_3=T_1+T_2.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 5. (iv) (a) and (b) 20·24 sq. m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1960 only. (b) Yes. (c) Nil. (v) Netarhat. (vi) and (vii) Nil.

5. RESULTS:

(i) 2488 Kg/ha. (ii) 390·3 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of soyabean in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	
Av. yield	1919	2760	2438	2835	C.D.=537·9 Kg/ha.

Crop :- Rai (*Rabi*). **Ref :- Bh. 64(275).**

Site :- Agri. Res. Instt., Dholi. **Type :- 'M'.**

Object :—To determine the optimum doses of fertilizers for Rai crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Calcarious loam. (iii) 28.10.64. (iv) (a) 2 ploughings. (b) Drilling. (c) 7 Kg/ha. (d) 60 cm. between rows. (e) —. (v) Nil. (vi) BR—13. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 26.2.65 to 5.3.65.

2. TREATMENTS:

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

(1) 3 levels of N as A/S : N_0=0, N_1=22·5 and N_2=45 Kg/ha.

(2) 3 levels of P_2O_5 as Super : P_0=0, P_1=16·8, and P_2=33·5 Kg/ha.

(3) 3 levels of K_2O as Mur. Pot.: K_0=0, K_1=16·8 and K_2=33·5 Kg/ha.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 27. (b) N.A. (iii) 1. (iv) (a) 13·71 m.×4·27 m. (b) 13·10 m.×3·05 m. (v) 61 cm.×121 cm. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Aphids attack and spraying of 0·02% of folidol. (iii) Yield, no. of branches and plant height (iv) (a) 1964 only. (b) No. (c) N.A. (v) Purnea. (vi) and (vii) Nil.

5. RESULTS :

(i) 525 Kg/ha. (ii) 44·9 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of seed in Kg/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	342	440	534	446	327	542	438
N_1	442	688	480	607	474	530	537
N_2	633	695	471	571	594	634	600
Mean	472	608	495	541	465	569	525
K_0	621	626	377				
K_1	444	438	513				
K_2	352	759	594				

Crop :- Rai (*Rabi*). **Ref :- Bh. 65(201).**

Site :- Agri. Res. Instt., Dholi. **Type :- 'M'.**

Object :—To determine the optimum doses of fertilizers for Rai crop.

1. BASAL CONDITIONS :

(i) (a) Maize—Rai. (b) Maize. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur. Pot. (ii) Sandy loam. (iii) 29.10.65. (iv) (a) 3—4 ploughings. (b) Line sowing. (c) 4 Kg/ha. (d) 50 cm. between rows. (e) —. (v) 67·5 Kg/ha. of N as A/S+11·5 Kg/ha. of P_2O_5 as Super. (vi) BR—13. (vii) Irrigated. (viii) Weeding and hoeing. (ix) —. (x) 1.3.66 and 2.3.66.

2. TREATMENTS:

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

(1) 3 levels of N as A/S: N_0=0, N_1=22·5 and N_2=45·0 Kg/ha.

(2) 3 levels of P_2O_5 as Super: P_0=0, P_1=16·8 and P_2=33·6 Kg/ha.

(3) 3 levels of K_2O as Mur. Pot. : K_0=0, K_1=16·8 and K_2=33·6 Kg/ha.

3. DESIGN:

(i) Fact. in R.B.D. (ii) (a) 27. (b) N.A. (iii) 2. (iv) (a) and (b) 13·11 m.×3·05 m. (vi) Yes.

4. GENERAL .

(i) Good. (ii) Nil. (iii) Yield of seed. (iv) (a) and (b) —. (c) N.A. (v) to (vii) Nil.

5. RESULTS :

(i) 483 Kg/ha. (ii) 291·7 Kg/ha. (iii) None of the effects is significant. (ii) Av. yield of seed in Kg/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	414	422	714	655	475	420	517
N_1	453	440	409	467	456	379	434
N_2	436	494	563	561	489	443	498
Mean	434	452	562	561	473	414	483
K_0	426	448	809				
K_1	457	531	431				
K_2	420	376	445				

Crop :- Rai (*Rabi*). **Ref .- Bh. 64(249).**

Site :- Agri. Res. Instt., Sabour. **Type 'CM'.**

Object :—To determine suitable spacing, seed rate and their interaction with fertilizer application.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Maize. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) (a) Sandy loam. (iii) 29.10.64. (iv) (a) 3—4 ploughings. (b) Drilling method. (c) and (d) As per treatments. (e) Nil. (v) As per treatments. (vi) BR—13. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 17.2.65, 20.2.65, 21.2.65, 25.2.65.

2. TREATMENTS :

Main-plot treatments :

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

(1) 3 spacings between rows : S_1=30·5, S_2=38·1 and S_3=45·7 cm.

(2) 3 seed rates : R_1=4·5, R_2=5·6 and R_3=6·7 Kg/ha.

(3) 3 doses of manure : F_0=0, F_1=22·4 Kg/ha. of N as A/S+16·8 Kg/ha. of P_2O_5 as Super+16·8 Kg/ha. of K_2O as Mur. Pot. and F_2=45 Kg/ha. of N as A/S+33·6 Kg/ha. of P_2O_5 as Super+33·6 Kg/ha. of K_2O as Mur. Pot.

Sub-plot treatments :

2 interculturings : I_1=1, I_2=2 interculturings.

3. DESIGN :

(i) Split-plot. (ii) (a) 27 main-plots/replication ; 2 sub-plots/main-plot. (b) 50·90 m.×9·45 m. (iii) 1. (iv) (a) 9·45 m.×4·57 m. (b) 8·80 m.×4·57 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination, growth, flowering, stand of maturity and seed yield. (iv) (a) 1964. b) Yes. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

(i) 213 Kg/ha. (ii) (a) 109·9 Kg/ha. (b) 39·1 Kg/ha. (iii) Main effect of R is significant. (iv) Av. yield of seed in Kg/ha.

	R_1	R_2	R_3	F_0	F_1	F_2	I_1	I_2	Mean
S_1	105	137	306	161	212	175	192	174	183
S_2	128	238	266	163	227	242	217	205	211
S_3	146	298	295	262	208	268	230	263	246
Mean	126	224	289	195	216	228	213	214	213
I_1	128	226	284	206	209	224			
I_2	124	223	293	185	223	233			
F_0	87	220	279						
F_1	164	201	282						
F_2	128	251	307						

C.D. for R marginal means=84·6 Kg/ha.

Crop :- Niger (*Rabi*). **Ref :- Bh. 60(231).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object :—To find out the response of Niger to liming.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (iii) Red loam. (iii) 12.10.60. (iv) (a) 3 ploughings. (b) Line sowing. (c) 22 Kg/ha. (d) 25 cm. between rows. (e) —. (v) As per treatments. (vi) Local. (vii) Unirrigated. (viii) 2 weedings. (ix) N.A. (x) 18.1.61.

2. TREATMENTS :

4 manurial treatments : T_0 =Control, T_1=4035 Kg/ha. of lime, T_2=11·2 Kg/ha. of N as A/S for legumes and 45 Kg/ha. of N for other crops+45 Kg/ha. of P_2O_5 as Super+45 Kg/ha. of K_2O as Mur Pot. and $T_3=T_1+T_2$.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 5. (iv) (a) and (b) 20·24 sq. m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1960 (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 52 Kg/ha. (ii) 9·4 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of surguja in Kg/ha.

Treatment	T_0	T_1	T_2	T_3
Av. yield	29	43	55	81

C.D.=12 9 Kg/ha.

Crop :- Niger. **Ref :- Bh. 60, 61 (SFT) for Ranchi and Hazaribagh**

Site :- (District) : Ranchi and Hazaribagh. **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) Red. (iii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments :

O=Control (no manure),

n_1=22·4 Kg/ha. of N as A/S,

n_2=44·8 Kg/ha. of N as A/S,

n_1'=22·4 Kg/ha. of N as Urea,

n_2'=44·8 Kg/ha. of N as Urea,

n_1''=22·4 Kg/ha. of N as A/S/N,

n_2''=44·8 Kg/ha. of N as A/S/N,

n_1'''=22·4 Kg/ha. of N as C/A/N and

n_2'''=44·8 Kg/ha. of N as C/A/N.

3. DESIGN :

Same as in type A on page No. 830.

4. GENERAL :

(i) to (vii) N.A.

5. RESULTS :

District	Year	No. of trials	Control mean	n_1	n_1'	n_1''	n_1'''	n_2	n_2'	n_2''	n_2'''	S.E.
Ranchi	1960	2	120	90	160	120	120	120	130	180	210	20·0
	1961	2	370	200	170	150	190	340	260	330	350	25·0
		2	130	90	—	60	60	110	—	90	110	9·0
Hazaribagh	1960	2	200	60	60	130	110	110	120	180	160	42·0
	1961	2	390	90	30	—	—	170	140	—	—	51·0

Crop :- Niger (*Kharif*). **Ref :- Bh. 65(SFT).**

Site :- (District) : Hazaribagh. **Type :- 'M'.**

Object :—Type A_2 : To study the response curves of important cereal, cash and oilseed crops to phosphorus applied singly and in combination with other nutrients.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Red. (iii) to (vi) N.A. (vii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS :

Same as in type A_2 on page No. 835.

3. DESIGN :

Same as in type A_1 on page No. 831.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of seed. (iv) (a) 1965 only. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

Hazaribagh

65(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S E.
Av. response of seed in Kg/ha.	297	14	33	363	427	671	680	44·4

Control mean=459 Kg/ha. ; No. of trials=5

Crop :- Niger. **Ref :- Bh. 60, 61(SFT) for Ranchi ; 61(SFT) for Hazaribagh.**

Site :- (District) : Ranchi and Hazaribagh. **Type :- 'M'.**

Object :—Type A : To study the response of Niger to different levels of N, P_2O_5 and K_2O applied individually and in combination.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Red. (iii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments :

O=Control (no manure),
N=22·4 Kg/ha. of N,
P=22·4 Kg/ha. of P_2O_5,
K=22·4 Kg/ha. of K_2O,
NP=22·4 Kg/ha. of N+22·4 Kg/ha. of P_2O_5,
NK=22·4 Kg/ha. of N+22·4 Kg/ha. of K_2O,
PK=22·4 Kg/ha. of P_2O_5+22·4 Kg/ha. of K_2O and
NPK=22·4 Kg/ha. of N+22·4 Kg/ha. of P_2O_5+22·4 Kg/ha. of K_2O.

N applied as A/S, P_2O_5 as Super and K_2O as Mur. Pot.

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 a *rabi* cereal, 8 on cash crop, 4 on an oilseed crop and 3 on a legumenous 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) 1/98·8 ha. (b) 1/197·7 ha. (iv) Yes.

4. GENERAL :

(i) to (vii) N.A.

5. RESULTS :

Ranchi

60(SFT)

Treatment	N	P	K	S.E.	NP	NK	PK	NPK	S.E.
Av. response of Niger in Kg/ha.	100	140	50	70·0	—60	—120	—90	60	53·0

Control mean=620 Kg/ha. ; No. of trials=2

61(SFT)

Treatment	N	P	K	S.E.	NP	NK	PK	NPK	S.E.
Av. response of Niger in Kg/ha.	120	80	40	20·0	—10	—	—	—	15·0

Control mean=270 Kg/ha. ; No. of trials=4.

Hazaribagh

61(SFT)

Treatment	N	P	K	S.E.	NP	NK	PK	NPK	S.E.
Av. response of Niger in Kg/ha.	100	120	40	13·0	—	20	—	10	9·0

Control mean=210 Kg/ha. ; No. of trials=3

Crop :- Niger. **Ref :- Bh. 63(SFT) for Ranchi and 62, 63, 64 and 65(SFT) for Hazaribagh.**

Site :- (District) : Ranchi, Hazaribagh. **Type :- 'M'.**

Object :—Type A_1 : To study the response curve of important cereal, oilseed and cash crops to nitrogen applied singly and in combination.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Red and yellow. (iii) to (vi) N.A. (vii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments :

O=Control (no manure),
N_1=35 Kg/ha. of N,
N_2=70 Kg/ha. of N,
P_1=25 Kg/ha. of P_2O_5,
N_1P_1=35 Kg/ha. of N+25 Kg/ha. of P_2O_5,
N_2P_1=70 Kg/ha. of N+25 Kg/ha. of P_2O_5,
N_2P_2=70 Kg/ha. of N+50 Kg/ha. of P_2O_5 and
$N_2P_2K_1$=70 Kg/ha. of N+50 Kg/ha. of P_2O_5+25 Kg/ha. of K_2O.

N applied as A/S, P_2O_5 as Super and K_2O as Mur. Pot.

3. DESIGN:

Same as in type A_1 unirrigated on page No. 831.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1963 for Ranchi, 62 to 65 for Hazaribagh. (b) and (c) Nil. (v) to (vii) N.A.

5. RESULTS:

Ranchi

63(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of Niger in Kg/ha.	58	108	16	28	91	70	120	4·4

Control mean=97 Kg/ha. ; No. of trial=2

Hazaribagh

62(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of Niger in Kg/ha.	54	132	30	113	294	288	346	22·8

Control mean=216 Kg/ha. ; No. of trials=4

63(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of Niger in Kg/ha.	138	231	87	194	275	356	458	37·3

Control mean=426 ; No. of trials=6

64(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of Niger in Kg/ha.	90	275	24	375	486	651	687	82·6

Control mean=670 Kg/ha. ; No of trials=6

65(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of Niger in Kg/ha.	226	359	21	271	441	530	599	26·4

Control mean=504 Kg/ha. : No. of trials=5

———

Crop :- Niger (*Rabi*). **Ref :- Bh. 62(SFT).**

Site :- (District) : Hazaribagh. **Type :- 'M'.**

Object :—Type A_2 : To study the response curves of important cereal, oilseed and cash crops to nitrogen applied singly and in combination.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Red and yellow. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments :

O=Control (no manure),

N_1=35 Kg/ha. of N,

N_2=70 Kg/ha. of N,

P_1=25 Kg/ha. of P_2O_5,

N_1P_1=35 Kg/ha. of N+25 Kg/ha. of P_2O_5,

N_2P_1=70 Kg/ha. of N+25 Kg/ha. of P_2O_5,

N_2P_2=70 Kg/ha. of N+50 Kg/ha. of P_2O_5 and

$N_2P_2K_1$=70 Kg/ha. of N+50 Kg/ha. of P_2O_5+25 Kg/ha. of K_2O.

N applied as A/S, P_2O_5 as Super and K_2O as Mur. Pot.

3. DESIGN :

Same as in type A_1 unirrigated on page No. 831.

4. GENERAL :

(i) to (iii) N.A. (iv) 1962 only. (v) to (vii) N.A.

5. RESULTS :

62(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of Niger in Kg/ha.	370	509	461	691	738	1003	1026	72·0

Control mean=633 Kg/ha. ; No. of trials=2

———

Crop :- Niger (*Rabi*). **Ref :- Bh. 62(SFT).**

Site :- (District) : Hazaribagh. **Type :- 'M'.**

Object :—Type A_2 : To study the response curves of important cereal, cash and oilseed crops to phosphorus applied singly and in combination with other nutrients.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Red. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments :

O=Control (no manure),

N_1= 25 Kg/ha. of N,

P_1=25 Kg/ha. of P_2O_5,

P_2=50 Kg/ha. of P_2O_5,

N_1P_1=25 Kg/ha. of N+25 Kg/ha. of P_2O_5,

N_1P_2=25 Kg/ha. of N+50 Kg/ha. of P_2O_5,

N_2P_2=50 Kg/ha. of N+50 Kg/ha. of P_2O_5 and

$N_2P_2K_2$=50 Kg/ha. of N+50 Kg/ha. of P_2O_5+50 Kg/ha. of K_2O.

N applied as A/S, P_2O_5 as Super and K_2O as Mur. Pot.

3. DESIGN:

A selected district is divided into four agriculturally homogeneous zones based on climate, soil, cropping pattern etc. In each zone one block is selected at random. A block normally consists of a group of 50—100 villages. In each block 36 experiments are conducted in a year of which 11 are of type A_1, 11 of type A_2, 11 of type A_3 and 3 are of type C. The eleven experiments under type A_1, A_2 and A_3 are distributed as 3 on a kharif cereal, 3 on a rabi cereal, 3 on a cash crop and 2 on an oilseed. All the three type-C experiments are conducted on a legume crop. For the purpose of conducting the A_1, A_2 and A_3 experiments 11 villages are randomly selected in each block and in each village 3 experiments one each of type A_1, A_2 and A_3 are laid out. For conducting the three type—C trials three villages are randomly selected in each block.

4. GENERAL:

(i) and (ii) N.A. (iii) Yield of seed. (iv) 1962—only. (v) to (vii) Nil.

5. RESULTS:

Hazaribagh

62(SFT)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of seed in Kg/ha.	392	462	731	639	852	985	1026	63·1

Control mean=651 Kg/ha. ; No. of trials=2.

Crop :- Niger (*Rabi*). **Ref :- Bh. 62, 63, 64(SFT) for Hazaribagh and 63(SFT) for Ranchi.**

Site :- (District) : Hazaribagh and Ranchi. **Type :- 'M'.**

Object: —Type A_2: To study the response curves of important cereal, cash and oilseed crops to phosphorus applied singly and in combination with other nutrients.

1. BASAL CONDITIONS:

(i) (a) to (c) N.A. (ii) Red. (iii) to (vi) N A. (vii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS:

8 manurial treatments:

O=Control (no manure),

N_1=25 Kg/ha. of N,

P_1=25 Kg/ha. of P_2O_5,

P_2=50 Kg/ha. of P_2O_5,

N_1P_1=25 Kg/ha. of N+25 Kg/ha. of P_2O_5,

N_1P_2=25 Kg/ha. of N+50 Kg/ha. of P_2O_5,

N_2P_2=50 Kg/ha. of N+50 Kg/ha. of P_2O_5 and

$N_2P_2K_2$=50 Kg/ha. of N+50 Kg/ha. of P_2O_5+50 Kg/ha. of K_2O.

N applied as A/S, P_2O_5 as Super and K_2O as Mur. Pot.

3. DESIGN:

Same as in Type A_2 on page No. 853.

4. GENERAL

(i) and (ii) N.A. (iii) Yield of seed. (iv) (a) 1962—64 for Hazaribagh and 1963 only for Ranchi. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

Hazaribagh

62(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of seed in Kg/ha.	71	30	62	100	174	174	224	19·1

Control mean=164 Kg/ha. ; No. of trials=4

63(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of seed in Kg/ha.	117	40	117	242	270	384	485	49·4

Control mean=410 Kg/ha. ; No. of trials=6

64(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of seed in Kg/ha.	330	157	237	486	608	799	931	40·2

Control mean=571 Kg/ha. ; No. of trials=6

Ranchi

63(SFT)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_2$	S.E.
Av. response of seed in Kg/ha.	47	23	41	17	58	92	120	8·4

Control mean=120 Kg/ha. ; No. of trials=2

Crop :- Niger. **Ref :- Bh. 62(SFT).**

Site :- (District) : Hazaribagh. **Type :- 'M'.**

Object :—Type A_3 : To study the response curves of important cereal, cash and oilseed crops to Potash applied singly and in combination with other nutrients.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Red. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments :

O=Control (no manure),
N_1=35 Kg/ha. of N,
K_1=25 Kg/ha. of K_2O,
K_2=50 Kg/ha. of K_2O,
N_1K_1=35 Kg/ha. of N+25 Kg/ha. of K_2O,
N_1K_2=35 Kg/ha. of N+50 Kg/ha. of K_2O,
N_2K_2=70 Kg/ha. of N+50 Kg/ha. of K_2O, and
$N_1P_1K_1$=35 Kg/ha. of N+25 Kg/ha. of P_2O_5+25 Kg/ha. of K_2O.

N applied as A/S, P_2O_5 as Super and K_2O as Mur. Pot.

3. DESIGN :

Same as in type A_2 on page No 853.

4. GENERAL:

(i) and (ii) N.A. (iii) Yield of niger. (iv) 1962 only. (v) to (vii) Nil.

5. RESULTS :

Hazaribagh

62(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of Niger in Kg/ha.	237	134	229	313	327	540	623	43·4

Control mean=451 Kg/ha. ; No. of trials=4.

Crop :- Niger. **Ref :- Bh. 62, 63, 64, 65(SFT) for Hazaribagh and 63(SFT) for Ranchi.**

Site :- (District) : Hazaribagh and Ranchi. **Type :- 'M'.**

Object :—Type A_2 : To study the response curves of important cereal, cash and oilseed crops to Potash applied singly and in combination with other nutrients.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Red. (iii) to (vi) N.A. (vii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments :

O=Control (no manure),

N_1=25 Kg/ha. of N,

K_1=25 Kg/ha. of K_2O,

K_2=50 Kg/ha. of K_2O,

N_1K_1=25 Kg/ha. of N+25 Kg/ha. of K_2O,

N_1K_2=25 Kg/ha. of N+50 Kg/ha. of K_2O,

N_2K_2=50 Kg/ha. of N+50 Kg/ha. of K_2O,

$N_1P_1K_1$=25 Kg/ha. of N+25 Kg/ha. of P_2O_5+25 Kg/ha. of K_2O.

N applied as A/S, P_2O_5 as Super and K_2O as Mur. Pot.

3. DESIGN :

Same as in type A_2 on page No. 854.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of niger. (iv) (a) 1962—55 for Hazaribagh and 1963 only for Ranchi. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

Hazaribagh

62(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of Niger in Kg/ha.	13	0·0	8	16	32	23	28	12·6

Control mean=34 Kg/ha. ; No. of trials=2

63(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of Niger in Kg/ha.	104	35	122	217	230	406	384	36·8

Control mean=374 Kg/ha. ; No. of trials=6

64(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of Niger in Kg/ha.	341	95	135	466	460	665	665	61·1

Control mean=463 Kg/ha. ; No. of trials=6

65(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_2K_2	$N_1P_1K_1$	S.E.
Av. response of Niger in Kg/ha.	383	—28	—4	383	362	542	486	47·4

Control mean=445 Kg/ha. ; No. of trials=5

Ranchi

62(SFT)

Treatment	N_1	K_1	K_2	N_1K_1	N_1K_2	N_1K_2	$N_1P_1K_1$	S.E.
Av. response of Niger in Kg/ha.	46	16	5	40	63	85	119	19·0

Control mean=115 Kg/ha. ; No. of trials=2

Crop :- Niger. **Ref :- Bh. 65(55).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'CM'.**

Object :—To find out the optimum manurial cum spacing requirements of the crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Red loam. (iii) As per treatments. (iv) (a) 2 ploughings. (b) As per treatments. (c) 7 Kg/ha. (d) 24 cm. between rows. (e) —. (v) Nil. (vi) N—5. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 31.10.65 to 8.11.65.

2. TREATMENTS:

Main-plot treatments :

All combinations of (1) and (2)

(1) 5 dates of sowing : D_1=6th July, D_2=1st Aug., D_3=16th Aug., D_4=1st Sep. and D_5=16th Sep.
(2) 2 methods of sowing : M_1=Broadcasting and M_2=Line sowing.

Sub-plot treatments :

5 doses of manuring : N_0=No manure, N_1=11·2 Kg/ha. of N as A/S, N_2=22·5 Kg/ha. of N as A/S, N_3=22·5 Kg/ha. of N as A/S+22·5 Kg/ha. of P_2O_5 as Super, N_4=22·5 Kg/ha. of N as A/S+22·5 Kg/ha. of P_2O_5 as Super+11·2 Kg/ha. of K_2O as Mur. Pot.

3. DESIGN

(i) Split-plot. (ii) (a) 10 main-plots/replication ; 5 sub-plots/main-plot. (iii) 3. (iv) (a) 8·06 m.×2·89 m. (b) 7·61 m.×2·43 m. (v) 45 cm.×46 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of niger. (iv) (a) 1964—65 (Expt. for 65 N.A.) (b) No. (c) N.A. (v) to (vii) Nil.

5. RESULTS:

(i) 48 Kg/ha. (ii) (a) 22·7 Kg/ha. (b) 6·8 Kg/ha. (iii) Main-effect of D is significant and that of N is highly significant. (iv) Av. yield of niger in Kg/ha.

	M_1	M_2	N_0	N_1	N_2	N_3	N_4	Mean
D_1	36	41	29	33	38	44	49	39
D_2	64	56	45	50	60	69	77	60
D_3	47	45	29	41	45	52	62	46
D_4	51	44	34	42	45	52	62	47
D_5	56	36	36	38	45	51	60	46
Mean	51	44	35	41	47	54	62	48
N_0	38	32						
N_1	43	38						
N_2	50	44						
N_3	56	51						
N_4	67	57						

C.D. for D marginal means=12·3 Kg/ha.

C.D. for N marginal means=3·0 Kg/ha.

Crop :- Onion *(Rabi)*. **Ref :- Bh. 60(199).**

Site :- Patna City (Patna c.f.). **Type :- 'D'.**

Object :—To test the efficacy of different spraying of fungicides in controlling the disease of Onion.

1. BASAL CONDTIONS:

(i) (a) Nil. (b) Potato. (c) 89·7 Kg/ha. of N as A/S+56·0 Kg/ha. of P_2O_5 as Super+33·6 Kg/ha. of K_2O as Mur. Pot. (ii) Clayey loam. (iii) 22·2 Kg/ha. of N as A/S+33·6 Kg/ha. of P_2O_5 as Super. (iv) Patna white. (v) (a) 2—3 ploughings. (b) Transplanting. (c) 10 Kg/ha. (d) 15 cm.×10 cm. (e) 1—2. (vi) 10.3.60. (vii) Irrigated. (viii) Weeding. (ix) N.A. (x) 26.5.60.

2. TREATMENTS:

4 fungicidal treatments : T_0=Control (no spraying), T_1=Bordeaux mixture (6 : 6 : 50), T_2=Wettable Sulphur at 2·25 Kg in 1123 lit. of water/ha. and T_3=Dithane Z—78 at 0·68 Kg in 1123 lit. of water/ha.

3 sprayings on 23.4.60, 9.5.60 and 24.5.60.

3. DESIGN :

(i) R.B.D., 4, 6. (ii) Plots selected randomly from diseased area. (iii) (a) 7·92 m.×4·57 m. (b) 7·62 m.× 3·96 m. (iv) Yes.

4. GENERAL :

(i) Good. (ii) Purple leaf spot, control measure as per treatments. (iii) Disease intensity % and yield of onion. (iv) (a) 1960—61 (Treatments modified in 1961). (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 301·9 Q/ha. (ii) 19·4 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of Onion bulb in Q/ha.

Treatment	T_0	T_1	T_2	T_3
Av. yield	294·5	303·5	310·2	299·5

Crop :- Onion (*Rabi*). **Ref :- Bh. 61(219).**

Site :- Patna City (Patna c.f.). **Type :- 'D'.**

Object : -To test the efficacy of different sprayings of fungicides in controlling the disease on Onion.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Potato. (c) 89·7 Kg/ha. of N as A/S+56·0 Kg/ha. of P_2O_5 as Super+33 6 Kg/ha. of K_2O as Mur. Pot. (ii) Clayey loam. (iii) 22·2 Kg/ha. of N as A/S+33·6 Kg/ha. of P_2O_5 as Super. (iv) Patna white. (v) (a) 2—3 ploughings. (b) Transplanting. (c) 10 Kg/ha. (d) 15 cm.×10 cm. (e) 1—2. (vi) 21.2.61. (vii) Irrigated. (viii) Weeding. (ix) N.A. (x) 14.5.61.

2. TREATMENTS :

5 fungicidal treatments : T_0=Control, T_1=Bordeaux mixture (4 : 6 : 50), T_2=Wettable Sulphur at 2·2 Kg. in 1123 lit. of water/ha., T_3=Dithane Z—78 at 0·7 Kg in 1123 lit. of water/ha. and T_4=Control (water spray).

3 sprayings on 1.4.61, 16.4.61, 1.5 61.

3. DESIGN :

(i) R.B.D., 5, 6. (ii) Plots selected randomly from diseased area (iii) (a) 9·14 m.×3·35 m. (b) 8·84 m.× 2·74 m. (iv) Yes.

4. GENERAL :

(i) Good. (ii) Purple leaf spot, control measures as per treatments. (iii) Disease intensity in % and yield. (iv) (a) 1960—61 (Treatments are modified in 1961). (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

Yield

(i) 223·3 Q/ha. (ii) 1·40 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of Onion bulb in Q/ha.

Treatment	T_0	T_1	T_2	T_3	T_4
Av. yield	222·8	224·1	224·3	222·1	223·3

Infestation

(i) 29·5 degree. (ii) 3·1 degree. (iii) Treatment differences are not significant. (iv) Mean infestation in degree.

Treatment	T_0	T_1	T_2	T_3	T_4
Mean angle	29·9	29·4	28·8	28·8	30·5

Crop :- Onion (*Rabi*). **Ref :- Bh. 61(204), 62(167).**

Site :- Agri. Res. Instt., Patna. **Type :- 'D'.**

Object :—To test the efficacy of different spraying of fungicides in controlling the disease of Onion.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Patna. (c) 89·7 Kg/ha. of N as A/S+56·0 Kg/ha. of P_2O_5 as Super+33·6 Kg/ha. of K_2O as Mur. Pot. (ii) Clay loam. (iii) 28.12.61/16.3.62 ; 28.11.62/8.2.63. (iv) (a) 2—3 ploughings. (b) Transplanting. (c) 9 Kg/ha. (d) 15 cm.×10 cm. (e) 1—2. (v) 22·5 Kg/ha. of N as A/S+33·6 Kg/ha. of P_2O_5 as Super. (vi) Patna white. (vii) Irrigated. (viii) Weeding. (ix) N.A. (x) 5.6.62 ; 22.5.63.

2. TREATMENTS :

5 fungicidal treatments : T_0=Control, T_1=Bordeaux mixture (6 : 6 : 50) in 1123 lit. of water/ha., T_2=Wettable Super at 5·60 Kg. in 1123 lit. of water/ha., T_3=Diathane Z—78 at 1·7 Kg. in 1123 lit. of water/ha. and T_4=Control (only water spray).

Sprayings on 19.4.62, 5, 18.5.62 ; 21.3.63, 11, 26.4.63.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) 7·77 m.×28·60 m. ; 3·05 m.×10·67 m. (iii) 6. (iv) (a) 7·77 m.×5·64 m. ; 3 05 m. ×2·13 m. (b) 7·77 m.×5·18 m. ; 3·05 m.×1·83 m. (v) 23 cm. ; 15 cm. along length. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Purple leaf spot, control measures as per treatments. (iii) Germination count, height of plant and yield. (iv) (a) 1961—64 (Treatments modified in 1963 and Expt. 1964 is N.A.). (b) No. (c) Results of combined analysis is presented under 5. Results. (v) No. (vi) Nil. (vii) Error variances are heterogeneous and Treatments × Years interaction is present.

5. RESULTS :

Yield

Pooled results

(i) 147·4 Q/ha. (ii) 44·8 Q/ha. (based on 4 d.f. made up of Treatments × Years interaction). (iii) Treatment differences are not significant. (iv) Av. yield of Onion bulb in Q/ha.

Treatment	T_0	T_1	T_2	T_3	T_4
Av. yield	122 8	162·8	161·1	163·2	126·8

Individual years results

Treatment	T_0	T_1	T_2	T_3	T_4	Sig.	G.M.	S.E./plot
Year 1961	77·7	95·3	89·2	100·3	82·8	*	89·1	12·4
1962	167·9	230·3	233·0	226·2	170·7	**	205·6	23·7
Pooled	122·8	162·8	161·1	163·2	126·8	N.S.	147·4	44·8

Infestation

61(204)

(i) 44·6 degree. (ii) 9·3 degree. (iii) Treatment differences are highly significant. (iv) Mean infestation in degree.

Treatment	T_0	T_1	T_2	T_3	T_4
Mean angle	56·6	32·5	40·0	45·8	48·3

C.D.=11·2 degree.

62(157)

(i) 54·0 degree. (ii) 8·1 degree. (ii) Treatment differences are highly significant. (iv) Mean infestation in degree.

Treatment	T_0	T_1	T_2	T_3	T_4
Mean angle	65·8	47·5	50·0	48·3	58·3

C.D.=9·8 degree.

Crop :- Onion (*Rabi*). **Ref :- Bh. 63(206).**

Site :- Agri. Res. Instt., Patna. **Type :- 'D'.**

Object :—To test the efficacy of different fungicides in controlling the disease on Onion.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Potato. (c) 89·7 Kg/ha. of N as A/S+56·0 Kg/ha. of P_2O_5 as Super+33·6 Kg/ha. of K_2O as Mur. Pot. (ii) Clayey loam. (iii) 24.11.63/4.2.64. (iv) (a) 2—3 ploughings. (b) Transplanting. (c) 9 Kg/ha. (d) 15 cm.×10 cm. (e) 1—2. (v) 22·5 Kg/ha. of N as A/S+33·6 Kg/ha. of P_2O_5 as Super. (vi) Patna white. (vii) Irrigated. (viii) Weeding. (ix) N.A. (x) 18.5.64.

2. TREATMENTS :

5 fungicidal treatments : T_0=Control (no spray), T_1=Bordeaux mixture (6 : 6 : 50) in 1123 lit. of water/ha., T_2=Wettable Sulphur at 2·20 Kg. in 1123 lit. of water/ha., T_3=Dithane Z—78 at 0·67 Kg. in 1123 lit. of water/ha. and T_4=Control (spray with water alone).

Foliar spray on 1, 16.4.64 and 7.5.64.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) 3·05 m.×10·67 m. (iii) 6. (iv) (a) 3·05 m.×2·13 m. (b) 3·05 m.×1·83 m. (v) 15 cm. along length. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Purple leaf spot, control measures as per treatments. (iii) Germination count, height of plant and yield. (iv) (a) 1961—64 (Treatments are modified in 1963 and Expt. 1964 is N.A.). (b) No. (c) Nil. (v) No. (vi) and (vii) Nil.

5. RESULTS :

Yield

(i) 154·6 Q/ha. (ii) 10·5 Q/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of Onion bulb in Q/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	
Av. yield	130·8	179·5	154·7	161·5	146·3	C.D.=12 7 Q/ha.

Infestation data

(i) 31·7 degree. (ii) 4·41 degree. (iii) Treatment differences are highly significant. (iv) Mean infestation in degree.

Treatment	T_0	T_1	T_2	T_3	T_4	
Mean angle	39·64	24·25	30·94	30·03	33·84	C.D.=5·31 degree.

Crop : Grass. **Ref :- Bh. 62(271).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object : —To study the assessment of seed production in Andropogongayanuo grass under different systems of management.

1. BASAL CONDITIONS :

(i) Land acquired in 60. 22·5 Kg/ha. of N as A/S++22·5 Kg/ha. of P_2O_5 as Super. (ii) Red loam. (iii) By root slips. (iv) Andropogongayanuo. (v) 21 to 23.8.61, Transplant of root slips. (vi) One year. (vii) Nil. (viii) Hoeing after each cutting. (ix) Nil. (x) Unirrigated. (xi) N.A. (xii) 6.8.62 to 28.1.63.

2. TREATMENTS:

6 manurial treatments: T_1=One cut in the end of July, T_2=T_1+61 Kg/ha. of N as Urea, T_3=T_1+61 Kg/ha of N as Urea+48 Kg/ha. of P_2O_5 as Super, T_4=Cut 4 times during growing season+61 Kg/ha. of N as Urea, T_5=Cut 2 times during growing season+61 Kg/ha. of N as Urea and T_6=No cut+61 Kg/ha. of N as Urea.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) 3·05 m.×3·05 m. (b)—. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of fodder. (iv) (a) 1962—65 (modified from 1963). (b) No. (c) Nil. (v) No. (vi) and (vii) Nil.

5. RESULTS :

(i) 157·0 Q/ha. (ii) 29·9 Q/ha. (iii) Treatment differences a re not significant. (iv) Av. yield of fodder in Q/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	129·3	163·2	186·0	162·0	156·6	144·8

Crop :- Grass. **Ref :- Bh. 62(272).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object :—To study the harbage growth of *chlorisgayana* under different cutting system.

1. BASAL CONDITIONS :

(i) Land acquired in 60. 22·5 Kg/ha. of N as A/S+22·5 Kg/ha. of P_2O_5 as Super. (ii) Red loam. (iii) By root slips. (iv) *Chlorisgayana*. (v) 16.10.58. (vi) One year. (vii) Nil. (viii) Hoeing after each cutting. (ix) Nil. (x) Unirrigated. (xi) N.A. (xii) 19.7.62 and 6.8.62.

2. TREATMENTS :

7 manurial treatments: T_1=One cut in the end of July (Control), T_2=T_1+28·1 Kg/ha. of N as Urea, T_3=T_1+28·1 Kg/ha. of N as Urea+22·5 Kg/ha. of P_2O_5 as Super, T_4=4 times cut during growth season+28·1 Kg/ha. of N as Urea, T_5=2 times cut during growth season+28·1 Kg/ha. of N as Urea, T_6=No cut+28·1 Kg/ha. of N as Urea aad T_7=4 times cut during growing season+28·1 Kg/ha. of N as Urea applied during July+28·1 Kg/ha. of N as Urea applied during Sept, 62.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 3·05 m.×3·05 m. (b) —. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of fodder. (iv) (a) 1962—only. (b) and (c) Nil. (v) No. (vi) and (vii) Nil.

5. RESULTS :

(i) 57·3 Q ha. (ii) 21·1 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of fodder in Q/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Av. yield	47·0	73·2	52·4	78·6	56·4	28·1	65·2

Crop :- Grass. **Ref :- Bh. 63(274), 64(298), 65(133).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object :—To study the assessment of seed production in the *Napiar* Grass under different systems of management.

1 BASAL CONDITIONS :

(i) Land acquired in 60. 22·5 Kg/ha. of N as A/S+22·5 Kg/ha. of P_2O_5 as Super. (ii) Red loam. (iii) By root slips. (iv) Pennisetum—Polysla chyon. (v) 24 to 28.8.61, transplanting of root slips. (vi) One year. (vii) Nil. (viii) Hoeing after each cutting. (ix) Nil. (x) Unirrigated. (xi) N.A. (xii) 1.8.63 and 10.1.64 ; 16.7.64, 2 8.64 and 21.1.65 ; 17.7.65, 3.8.65 and 18.1.66.

2. TREATMENTS:

6 manurial treatments : T_0=One cut by the end of July or the beginning of August (Control), T_1=T_0+28·1 Kg/ha. of N as A/S, T_2=T_0+28·1 Kg/ha. of N as A/S+22·5 Kg/ha. of P_2O_5 as Super, T_3=3 times cut during growing season+28·1 Kg/ha. of N as A/S, T_4=2 times cut during growing season+28·1 Kg/ha. of N as A/S and T_5=No cut+28·1 Kg/ha. of N as A/S.

3. DESIGN:

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) N.A. (b) —. (v) Nil. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Yield of fodder. (iv) (a) 1963—65. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

63(274)

(i) 151·2 Q/ha. (ii) 21·29 Q/ha. (iii) Treatment di ferences are highly significant. (iv) Av. yield of fodder in Q/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	
Av. yield	116·5	187·7	192·6	85·1	118·2	207·4	C.D.=25·3 Q/ha.

64(298)

(i) 143·0 Q/ha. (ii) 27·0 Q/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of fodder in Q/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	
Av. yield	129·0	168·0	170·6	86·0	117·8	186·3.	C.D.=32·1 Q/ha.

65(133)

(i) 154·9 Q/ha. (ii) 23·1 Q/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of fodder in Q/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	
Av. yield	120·9	185·4	190·9	105·3	96·7	230·2	C.D.=27·4 Q/ha.

Crop :- Grass. **Ref :- Bh. 63(275), 64(299), 65(134).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object : —To study the assessment of seeds production in Andropogongayanue Grass under different systems of management.

1 BASAL CONDITIONS :

(i) Land acquired in 60. 22·5 Kg/ha of N as A/S+22·5 Kg/ha. of P_2O_5 as Super. (ii) Red loam. (iii) By root slips (iv) *Andropogon gyanue* (v) 21 to 23.8 61, transplanting of root slips. (vi) One year. (vii) Nil. (viii) Hoeing after each cutting. (ix) Nil. (x) Unirrigated. (xi) N.A. (x) 1.8.63, 2.1.64 : 17.764 and 25 1 65 ; 1 7 65, 3 8.65 and 19.1 66.

2. TREATMENTS :

6 manurial treatments : T_0=Control—one cut in the end of July or beginning of August, T_1=T_0+28 1 Kg ha of N as A/S, T_2=T_0+28 1 Kg/ha. of N as A/S+22 5 Kg/ha. of P_2O_5 as Super, T_3=4 times cut during growing season+28·1 Kg/ha. of N as A/S, T_4=2 times cut during growing season+28·1 Kg/ha. of N as A/S and T_5=No cut+28·1 Kg/ha of N as A/S.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) 3 05 m.×3·05 m. (b) —. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of fodder. (iv) (a) 1963—65. (b) N.A (c) Nil. (v) to (vii) Nil.

5. REIULIS :

3,7;

(i) 213·3 Q ha. (ii) 45·5 Q/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of fodder in Q/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	
Av. yield	219 0	231 1	252 2	93·6	135·3	348·9	C.D.=54 0 Q/ha.

,4))),

(i) 223 0 Q/ha (ii) 62 6 Q/ha. (iii) Treatment differences are significant. (iv) Av. yield of fodder in Q/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	
Av. yield	282·2	233·4	246·3	103·5	130·8	342·2	C.D.=74·3 Q/ha.

65(134)

(i) 194·6 Q/ha. (ii) 46·2 Q/ha. (iij) Treatment differeaces are highly significant. (iv) Av. yield of fodder in Q/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	
Av. yield	225·3	267·0	286·2	109·7	123·6	155·9	C.D.=54·8 Q/ha.

Crop :- Grass. **Ref :- Bh. 65(135).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'M'.**

Object :—To perform the studies on the herbage growth of spear Grass in mixture with legume.

1. BASAL CONDITIONS :

(i, Manuring-cum varietial trial on grass. (ii) Red-loam. (iii) By seeds. (iv) Mixture trial (spear). (v) 20 6 65, Broadcasting the seed (vi) —. (vii) 22·5 Kg/ha. of N as A/S+33·8 Kg/ha. of P_2O_5 as Super. (viii) Heoing after each cutting. (ix) Nil. (x) Unirrigated. (xi) N.A. (xii) 8/9.1.66.

2.. TREATMENTS :

8 manurial treatments : T_1=Spear grass alone, T_2=T_1+45 Kg/ha. of N as A/S, T_3=T_1+*Sgracils*. T_4=T_3+45 Kg/ha. of N as A/S, T_5=T_1+*Shumiles*, T_6=T_1+*Shumiles*+45 Kg/ha. of N as A/S T_7=T_1+*Centrosema* and T_8=T_1+*Centrosema*+45 Kg/ha. of N as A/S.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 3·05 m.×6·10 m. (b) —. (v) Nil. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Yield of fodder. (iv) (a) 1965—only. (b) and (c) Nil. (v) No. (vi) and (vii) Nil.

5. RESULTS:

(i) 21·8 Q/ha. (ii) 10·5 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of fodder in Q/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Av. yield	16·8	21·6	32·2	22·2	14·8	19·1	25·5	22·2

———

Crop :- Grass. **Ref :- Bh. 61(287), 63(272).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'MV'.**

Object :—To test the effect of different levels of N and P on the yield of four top strains of Pennisetum Pedecellatum.

1. BASAL CONDITIONS :

(i) Land acquired in 60. 22·4 Kg/ha. of N+22·4 Kg/ha. of P_2O_5 as Super manuring every year. (ii) Red loam. (iii) Seed only. (iv) As per treatments. (v) 5 to 7.6.61 ; sowing of seeds in line. (vi) —. (vii) 22·4 Kg/ha. of N as A/S+22·4 Kg/ha. of P_2O_5 as Super. (viii) Hoeing after each cutting. (ix) Nil. (x) Unirrigated. (xi) N.A. (xii) 27 to 31.10.61 and 1.11·61 ; 7.9.63 and 27.10.63.

2. TREATMENTS :

Main-plot treatments :

4 top strains : V_1=T—3, V_2=T—6, V_3=T—13 and V_4=T—14.

Sub-plot treatments :

All combinations of (1) and (2)

(1) 4 levels of N as A/S : N_0=0, N_1=22·5, N_2=45·0 and N_3=67·5 Kg/ha.

(2) 2 levels of P_2O_5 as Super : P_0=0 and P_1=33·5 Kg/ha.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication; 8 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 3·05 m.× 3·05 m. (b) —. (v) No. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of fodder. (iv) (a) 1961—63 (Treatment changed in 62). (b) N.A. (c) Nil. (v) No. (vi) and (vii) Nil.

5. RESULTS :

61(287)

(i) 232·6 Q/ha. (ii) (a) 73·9 Q/ha. (b) 58·2 Q/ha. (iii) Main effects of V, N and P are highly significant and interaction N×P is highly significant. (iv) Av. yield of fodder in Q/ha.

	N_0	N_1	N_2	N_3	P_0	P_1	Mean
V_1	190·2	187·1	258·4	366·3	217·3	283·7	250·5
V_2	127·4	165 8	199·3	291·3	168·2	223·7	196 0
V_3	103·0	173·7	242 6	310·8	181·9	233·1	207·5
V_4	148 7	206·0	337·1	413·2	234·7	317·9	276·3
Mean	142·3	183·2	259·3	345·4	200·6	264·6	232·6
P_0	133·5	173·1	204·2	291·3			
P_1	151·1	193·2	314·5	399·5			

C D. for V marginal means=41·8 Q/ha.

C.D. for N marginal means=29·0 Q/ha.

C D. for P marginal means=20·5 Q/ha.

C.D. for the body of N×P table=41·0 Q/ha.

53(.72)

(i) 67·4 Q/ha. (ii) (a) 23·9 Q/ha. (b) 16·9 Q/ha. (iii) Main effects of N and P are highly significant and that of V is significant. (iv) Av. yield of fodder in Q/ha.

	N_0	N_1	N_2	N_3	P_0	P_1	Mean
V_1	41 7	65 4	70·4	86 8	61·9	70·3	66·1
V_2	33·5	50 0	60·5	78·0	49·0	62·0	55·5
V_3	42·2	56·7	74·7	95·8	61 1	73·6	67·3
V_4	43·9	64·0	94·0	120 8	71·4	90·0	80·7
Mean	40·3	59 0	74 9	95·4	60 8	74·0	67·4
P_0	37·2	54·1	67·9	84·1			
P_1	43·5	63 9	81·8	106·7			

C.D. for V marginal means=13·5 Q/ha.

C.D. for N marginal means=8·4 Q/ha.

C D for P marginal means=5·9 Q/ha.

Crop :- Grass. **Ref :- Bh. 62(268).**

Site :- Agri. Res, Instt , Kanke. **Type :- 'MV'.**

Object :—To test the effect of different levels of N and P on the yield of four top strains of Pennisetum Pedecelletum.

1. BASAL CONDITIONS :

(i) Land acquired in 60 ; 22·5 Kg/ha. of N as A/S+22·5 Kg/ha. of P_2O_5 as Super every year. (ii) Red loam. (iii) Seed only (iv) As per treatments. (v) 5 to 7.6 61 ; sowing of seed in line. (vi) —. (vii) 22·5 Kg/ha. of N as A/S+22·5 Kg/ha of P_2O_5 as Super. (viii) Hoeing after each cutting. (ix) Nil. (x) Unirrigated. (xi) N A. (xii) 27 and 29 8.62.

2. TREATMENTS:

Main-plot treatments:

3 top strains: V_1=T—3, V_2=T—6 and V_3=T—13.

Sub-plot treatments:

All combinations of (1) and (2)

(1) 4 levels of N as A/S: N_0=0, N_1=22·5, N_2=45 and N_3=67·5 Kg/ha.

(2) 2 levels of P_2O_5 as Super: P_0=0 and P_1=33·5 Kg/ha.

3. DESIGN:

(i) Split-plot. (ii) (a) 3 main-plots/replication; 8 sub-plots/main-plot. (b) N.A. (iii) 4. (vi) (a) Net plot size 3·05 m.×3·05 m. (b) —. (v) Nil. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Yield of fodder. (iv) (a) 1961—63 (treatments modified in 62). (b) and (c) Nil. (v) No. (vi) and (vii) Nil.

5. RESULTS:

(i) 196·1 Q/ha. (ii) (a) 52·1 Q/ha. (b) 36·4 Q/ha. (iii) Main effects of N and P are highly significant. Interactions N×P and V×N are highly significant. (iv) Av. yield of fodder in Q/ha.

	N_0	N_1	N_2	N_3	P_0	P_1	Mean
V_1	102·1	237·2	247·2	208·9	208·9	188·8	198·9
V_2	137·7	238·5	245·9	196·2	216·0	193·2	204·6
V_3	196·8	177·4	162·3	202·9	194·0	175·7	184·9
Mean	145·6	217·7	218·5	202·7	206·3	185·9	196·1
P_0	181·4	192·1	237·2	214·5			
P_1	109·7	243·2	199·8	190·8			

C.D. for N marginal means=21·0 Q/ha.
C.D. for P marginal means=14·8 Q/ha.
C.D. for V means at the same level of N=44·5 Q/ha.
C.D. for N means at the same level of V=36·3 Q/ha.
C.D. for the body of N×P table=25·7 Q/ha.

Crop :- Grass. **Ref :- Bh. 61(251), 62(218).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'MV'.**

Object :—To evolve suitable pasture production schedule of grass legume combination providing high tonnage of forage yield all the years round on the acid upland of Chhotanagpur under manured and unmanured condition of soil.

1. BASAL CONDITIONS:

(i) N.A. (ii) Laterite. (iii) Planted through rooted slips. (iv) As per treatments. (v) Transplanted on 10 and 11.8.61. (vi) N.A. (vii) 11·2 Kg/ha. of N as A/S. (viii) Weedings. (ix) Nil. (x) Unirrigated. (xi) N.A. (xii) 16.1.62; 16.1.63.

2. TREATMENTS :

All combinations of (1) and (2)

(1) strips in one direction

4 doses of manure : T_0=Control, T_1=45 Kg/ha. of P_2O_5 as Super, T_2=26·9 Q/ha. of lime and $T_3=T_1+T_2$.

(2) strips in perpendicular direction

4 varieties of grasses : V_1=Pennisetum polystachyon+P. phoseoloids, V_2=Pennisetum polystachyon +centrosema Pubesious, V_3=Pennisetum polystachyon+Calapogonium Mucunoides and V_4=Pennisetum polystachyon+Stylosenthes gracilis.

3. DESIGN :

(i) Strip-plot. (ii) (a) 16. (b) 12·19 m.×3·66 m. (iii) 4. (iv) (a) 5·49 m.×7·32 m. (b) 3·66 m.×2·74 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of fodder. (iv) (a) 1961—62. (b) N.A. (c) Nil. (v) No. (vi) Nil. (vii) Legume has not been considered for analysis as data for legume is not available.

5. RESULTS :

61(257)

(i) 13·9 Q/ha. (ii) (a) 7·1 Q ha. (b) 10 7 Q/ha. (c) 8·5 Q/ha. (iii) None of the effects is significant. (iv) Av. yield of fodder in Q/ha.

	T_0	T_1	T_2	T_3	Mean
V_1	8 5	7·6	17·5	4 8	9·6
V_2	14 7	15·2	13 3	11·0	13·5
V_3	17·5	9·9	13·8	17·2	14·6
V_4	17·5	22 0	19·2	12 1	17 7
Mean	14 5	13·7	15·9	11·3	13·9

62(218)

(i) 45·8 Q/ha. (ii) (a) 28·2 Q/ha. (b) 18·4 Q/ha. (c) 20·9 Q/ha. (iii) None of the effects is significant. (iv) Av. yield of fodder in Q/ha.

	T_0	T_1	T_2	T_3	Mean
V_1	50 9	36·2	39·6	32·8	39 9
V_2	58 8	53 1	48·6	40 7	50·3
V_3	39 6	41 6	50·9	41 8	45 2
V_4	56·5	41 8	55 4	37·3	47·8
Mean	51·4	44·9	48·6	38 2	45·8

Crop :- Grass. **Ref :- Bh. 62(266), 63(265).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'MV'.**

Object :—To evolve suitable pasture production schedule of Grass, legume mixture combination providing high tonnage of forage yield all the year round on the up land of Chhota Nagpur under manured condition.

1. BASAL CONDITIONS:

(i) Always grass in this area. No manuring before. (ii) Red loam (iii) Root slips and cuttings. (iv) As per treatments. (v) 12.8.60 ; Transplanting in lines. (vi) One year old root slips. (vii) Nil. (viii) Hoeing after each cuttings. (ix) Nil. (x) Unirrigated. (xi) N.A. (xii) 19.10.62 ; 17.7.63, 12.9.63 and 5.11.63.

2. TREATMENTS :

Same as in expt. No : 61(251), 62(218) on page No. 867.

3. DESIGN :

(i) Strip-plot. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 3·66 m.×2·74 m. (b) —. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of fodder. (iv) (a) 1960—63 (Expt. for 60 and 61 N.A.). (b) N.A. (c) Nil. (v) No. (vi) Nil. (vii) Legume has hot been considered for analysis as data for legume is not available.

5. RESULTS :

62(266)

(i) 67·0 Q/ha. (ii) (a) 17·8 Q/ha. (b) 19·2 Q/ha. (c) 9·9 Q/ha. (iii) Main effects of V and T are significant. (iv) Av. yield of fodder in Q/ha.

	V_1	V_2	V_3	V_3	Mean
T_0	66·1	49·7	51·4	64·8	58·0
T_1	91·0	65·6	70·4	90·2	79·3
T_2	73·5	57·2	47·3	65·3	60·8
T_3	78·5	71·5	58·7	71·0	69·9
Mean	77·3	61·0	56·9	72·8	67·0

C.D. for V marginal means=14·3 Q/ha.
C.D. for T marginal means=15·3 Q/ha.

63(265)

(i) 186·6 Q/ha. (ii) (a) 26·9 Q/ha. (b) 28·3 Q/ha. (c) 14·6 Q/ha. (iii) Interaction V×T is significant. (iv) Av. yield of fodder in Q/ha.

	V_1	V_2	V_3	V_4	Mean
T_0	169·1	160·8	173·1	180·9	171·0
T_1	207·8	189·3	177·4	223·9	199·6
T_2	198·2	191·7	164·2	174·1	182·0
T_3	216·4	191·6	173·8	193·3	193·8
Mean	197·9	183·4	172·1	193·0	186·6

Crop :- Grass. **Ref :- Bh. 61(286), 62(267), 63(266).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'MV'.**

Object :—To evolve suitable pasture production schedule of Grass legume combination providing high tonnage of forage yield all the year round under manured and unmanured conditions of soil.

1. BASAL CONDITIONS :

(i) Always grass crop in this area, no manure previous to 1960. (ii) Red loam. (iii) Root slips and cuttings. (iv) As per treatments. (v) Transplanted on 13.8.60. (vi) One year old root slips. (vii) Nil. (viii) Hoeing after each cutting. (ix) Nil. (x) Unirrigated. (xi) N.A. (xii) 11.9.61 and 16.1.62 ; 9.8.62 to 18.10.62 ; 18.7.63.

2. TREATMENTS :

All combinations of (1) and (2)

(1) Strips in one direction:

4 varieties : V_1=Penpur×Pen. Typhoiduem+Kudju, V_2=Penpur×Pen. Typhoiduem+Centro, V_3=Penpur×Pen. Typhoiduem+Calpo and V_4=Penpur×Pen. Typhoiduem+Stylo.

(2) Strips in perpendicular direction :

4 doses of fertility : T_0=Control, T_1=45 Kg/ha. of P_2O_5, T_2=26·9 Q/ha. of lime and $T_3=T_1+T_2$.

3 DESIGN :

(i) Strip-plot (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 3·66 m.×2·74 m. (b) Nil. (v) Nil. (vi) Yes.

4 GENERAL :

(i) Good. (ii) Nil. (iii) Yield of fodder. (iv) (a) 1961–63. (b) N.A. (c) Nil. (v) to (vii) Nil.

5 RESULTS:

61 286)

(i) 281·4 Q/ha. (ii) (a) 100·5 Q/ha. (b) 37 9 Q/ha. (c) 69·0 Q/ha. (iii) Main effects of V and T are highly significant (iv) Av. yield of fodder in Q/ha.

Treatment	V_1	V_2	V_3	V_4	Mean
T_0	182·0	170·7	278·2	122·1	188·3
T_1	294·0	295 1	331·3	237·5	289·5
T_2	314 4	244·2	290·6	236·3	271·4
T_3	3[illegible]9·8	4[illegible]0 2	375·4	360 7	376·5
Mean	275·1	292·6	318·9	239·2	281·4

C.D. for V marginal means=80·4 Q/ha.

C.D. for T marginal means=30·3 Q/ha.

62(267)

(i) 172·9 Q ha (ii) (a) 59 7 Q ha. (b) 34 8 Q/ha. (c) 32·3 Q/ha. (iii) Main effect of V alone is significant. (iv) Av yield of fodder in Q/ha.

	V_1	V_2	V_3	V_4	Mean
T_0	173·2	142·1	149·6	124·6	147 4
T_1	177·0	168·3	148·3	132·1	156·4
T_2	168·3	173 2	154·6	184 5	170·1
T_3	250·5	213·1	211·9	194·4	217 5
Mean	192 3	174 2	166·1	158 9	172·9

C D. for V marginal means=47·7 Q/ha.

63(266)

(i) 35 8 Q ha (ii) (a) 13 0 Q ha. (b) 13 0 Q/ha. (c) 11·9 Q ha. (iii) Main effect of V alone is highly signi. cant. (iv) Av. yield of fodder in Q/ha.

	V_1	V_2	V_3	V_4	Mean
T_0	23·2	31 9	26·8	15·0	24·9
T_1	28 7	24 3	27·4	18 7	24 8
T_2	29 3	41·1	36·1	39·9	36·6
T_3	69·2	56·1	58 6	43·0	56 7
Mean	37·6	39 1	37·2	29 1	35 8

C D. for V marginal means=10 4 Q ha.

Crop :- Grass. **Ref :- Bh. 62(265), 63(264).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'MV'.**

Object :—To evolve suitable pasture production schedule of Grass, legume combination providing high tonnage of forage yield all the year round under manured and unmanured conditions of soil.

1. BASAL CONDITIONS:

(i) Always grass crop in this area. No manuring previous to 60. (ii) Red loam. (iii) By root slips and cuttings. (iv) As per treatments. (v) 10.8.60 ; Transplanting in lines. (vi) One year old root slips. (vii) Nil. (viii) Hoeing after each cutting. (ix) Nil. (x) Unirrigated. (xi) and (xii) N.A.

2. TREATMENTS and 3. DESIGN :

Same as in Expt. No. 61(286), 62(267), 63(266) on page No. 869.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Yield of fodder. (iv) (a) 1960—63 (data for 60 and 61 N.A.) (b) N.A. (c) Nil. (v) No. (vi) and (vii) Nil.

5. RESULTS:

62(265)

(i) 151·6 Q/ha. (ii) (a) 45·9 Q/ha. (b) 126·3 Q/ha. (c) 43·4 Q/ha. (iii) None of the effects is significant. (iv) Av. yield of fodder in Q/ha.

	V_1	V_2	V_3	V_4	Mean
T_0	147·5	126·0	139·4	125·2	134·5
T_1	186·2	148·4	186·3	132·9	163·4
T_2	159·9	129·4	144·1	156·9	147·6
T_3	197·4	143·5	162·9	139·0	160·7
Mean	172·7	136·8	158·2	138·5	151·6

63(264)

(i) 243·1 Q/ha. (ii) (a) 68·9 Q/ha. (b) 222·8 Q/ha. (c) 60·8 Q/ha. (iii) None of the effects is significant. (iv) Av. yield of fodder in Q/ha.

	V_1	V_2	V_3	V_4	Mean
T_0	222·4	156·9	195·1	206·3	195·2
T_1	309·1	217·8	249·2	210·6	246·7
T_2	268·2	259·0	265·1	258·4	262·7
T_3	322·0	314·1	220·9	214·4	267·8
Mean	280·4	236·9	232·5	222·4	243·1

Crop :- Grass. **Ref :- Bh. 60(251). 61(256), 62(223), 63(268), 64(293), 65(130).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'C'.**

Object :—To prolong the vegetative phase of Grass to obtain green fodder in winter.

1. BASAL CONDITIONS:

(i) Land was acquired in 1960 and previous to this year, it was fallow field so no operation and no manure was applied. (ii) Red loam. (iii) Root slips and cuttings. (iv) Pennesetum Polyslachyn. (v) 7 7.60 ; Transplanting of root slips. (vi) —. (vii) 11·2 Kg/ha. of N as A/S after clipping for 60 and 61 and 22·5 Kg/ha. of N as Urea+22·5 Kg/ha. of P_2O_5 as Super for other years. (viii) Weeding for 60 and 61 and hoeing after each cutting for others. (ix) Nil. (x) Unirrigated. (xi) —. (xii) N.A. for 60 to 62 ; 3.1.64 ; 9.1.65 ; 9.1.66.

2. TREATMENTS :

All combinations of (1) and (2)+one control (No clipping)

(1) 4 dates of clipping: D_1=15th September, D_2=30th September, D_3=15th Oct. and D_4=30th Oct.
(2) 2 heights : H_1=15·2 and H_2=30·5 cm.

3. DESIGN:

(i) Fact. in R.B D. (ii) (a) 9. (b) 24 40 m.×3·05 m. (iii) 4. (iv) (a) and (b) 2·44 m.×3·05 m. (v) Nil. (vi) Yes

4. GENERAL:

(i) Good (ii) Nil (iii) Yield of fodder. (iv) (a) 1960–65. (b) N.A. (c) Nil. (v) No. (vi) Nil. (vii) Treatment D_4H failed in the year 1962, hence this experiment has been analysed as simple R.B D.

5. RESULTS:

60(251)

(i 84·9 Q/ha. (ii) 18·5 Q/ha. (iii) Main effects of D, H and Control *vs.* others is highly significant. Interaction D×H is significant. (iv) Av. yield of fodder in Q/ha.

Control=39·6 Q/ha.

	D_1	D_2	D_3	D_4	Mean
H_1	17·5	33·2	94·0	99·8	61·2
H_2	58·7	124 2	161·6	135·7	120 0
Mean	38 1	78·7	127 8	117 7	90·6

C.D. for D marginal means=19·1 Q/ha.
C.D. for H marginal means=13·5 Q/ha.
C.D. for the body of D×H table=27·0 Q/ha.
C.D. for control *vs.* others=20·3 Q/ha.

61(256)

(i) 253·9 Q/ha. (ii) 36·2 Q/ha. (iii) Main effect of D is highly significant. Interaction D×H is significant. (iv) Av. yield of fodder in Q/ha.

Control=223·3 Q/ha.

	D_1	D_2	D_3	D_4	Mean
H_1	207·8	257·0	334·7	262·2	265·4
H_2	246·0	278·0	274·1	202·4	250·1
Mean	226·9	267·5	304·4	232·3	257·8

C.D. for D marginal means=37·4 Q/ha.
C.D. for the body of D×H table=52·8 Q/ha.

62(223)

(i) 22·1 Q/ha. (ii) 5·9 Q/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of fodder in Q/ha.

Treatment	C	D_1H_1	D_1H_2	D_2H_1	D_2H_2	D_3H_1	D_3H_2	D_4H_1
Av. yield	21·8	53·7	11·8	30·2	5·7	26·9	2·9	23·5

C.D. =8·7 Q/ha.

63(268)

(i) 89·8 Q/ha. (ii) 21·2 Q/ha. (iii) Main effect of H and control *vs.* others are highly significant. (iv) Av. yield of fodder in Q/ha.

Control=145·3 Q/ha.

	D_1	D_2	D_3	D_4	Mean
H_1	68·9	73·9	78·9	55·4	69·3
H_2	99·1	92·4	108·3	85·7	96·4
Mean	84·0	83·1	93·6	73·5	82·8

C.D. for H marginal means=15·4 Q/ha.
C D. for control *vs.* others=23·4 Q/ha.

64(293)

(i) 98·7 Q/ha. (ii) 33·0 Q/ha. (iii) Only the effect of control *vs.* others is significant. (iv) Av. yield of fodder in Q/ha.

Control=64·4 Q/ha.

	D_1	D_2	D_3	D_4	Mean
H_1	96·8	91·1	129·9	111·3	107·3
H_2	80·4	91 5	112·8	110·5	98·8
Mean	88·6	91·3	121·4	110·9	103·0

C.D. for control *vs.* others=36·1 Q/ha.

65(130)

(i) 311·3 Q/ha. (ii) 88·6 Q/ha. (iii) None of the effects is significant. (iv) Av. yield of fodder in Q/ha.

Control=268·7 Q/ha.

	D_1	D_2	D_3	D_4	Mean
H_1	306·5	295·6	377·9	330·9	327·7
H_2	288·1	346·7	282·2	304·8	305·4
Mean	297·3	321·1	330·0	317·9	316·6

Crop :- Grass. **Ref :- Bh. 60(248), 61(253), 62(220), 63(270), 64(295).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'C'.**

Object :—To prolong the vegetative phase of the Grass to obtain green fodder during winter under different dates of cutting.

1. BASAL CONDITIONS :

(i) Land was acquired in 60 and previous to this year it was fallow. (ii) Red loam. (iii) Root slips and cutting. (iv) Chloris gayana. (v) 7.7.60, sown behind the plough. (vi) N.A. (vii) 11·2 Kg/ha. of N as A/S+ 11·2 Kg/ha. of Super for 60 to 62 and 22·5 Kg/ha. of N as Urea+22·5 Kg/ha. of P_2O_5 as Super for others. (viii) Weeding and hoeing. (ix) Nil. (x) Unirrigated. (xi) N.A. (xii) N.A. for 60 to 62 ; 30.6.63 and 5.1.64 ; 26.7.64 and 18.1.65.

2. TREATMENTS and 3. DESIGN :

Same as in Expt. No. 60(251), 61(256), 63(268), 64(293), 65(130) on page No. 871.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of fodder. (iv) (a) 1960—64. (b) N.A. (c) Nil. (v) No. (vi) and (vii) Nil.

5. RESULTS :

60(248)

(i) 61·9 Q/ha. (ii) 35·0 Q/ha. (iii) Main effects of D and H are significant. (iv) Av. yield of fodder in Q/ha.

Control=37·3 Q/ha.

	D_1	D_2	D_3	D_4	Mean
H_1	24·4	35·0	73·9	59·4	48·2
H_2	29·7	121·1	95·2	80·8	81·7
Mean	27·0	78·1	84·6	70·1	64·9

C.D. for D marginal means=36·1 Q/ha.
C.D. for H marginal means=24·3 Q/ha.

61(253)

(i) 213·8 Q/ha. (ii) 116·3 Q/ha. (iii) None of the effects is significant. (iv) Av. yield of fodder in Q/ha.

Control=223·7 Q/ha.

	D_1	D_2	D_3	D_4	Mean
H_1	172·3	175·2	199·2	271·2	204·5
H_2	155·1	289·1	227·8	210·3	220·6
Mean	163·7	232·2	213·5	240·7	212·5

62(220)

(i) 100·5 Q/ha. (ii) 40·8 Q/ha. (iii) None of the effects is significant. (iv) Av. yield of fodder in Q/ha.

Control=98·3 Q/ha.

	D_1	D_2	D_3	D_4	Mean
H_1	75·4	86·9	114·3	110·5	96·8
H_2	90·5	124·2	89·9	115·0	104·9
Mean	83·0	105·5	102·1	112·8	100·8

63(270)

(i) 41·4 Q/ha. (ii) 14·19 Q/ha. (iii) Effect of 'control vs. others' is highly significant. (iv) Av. yield of fodder in Q/ha.

Control=91·4 Q/ha.

	D_1	D_2	D_3	D_4	Mean
H_1	48·4	23·6	32·0	33.9	34·5
H_2	32·0	30·9	36·6	43·8	35·8
Mean	40·2	27·2	34·3	38·9	35·1

C.D. for 'control vs. others'=15·5 Q/ha.

64(295)

(i) 63·5 Q/ha. (ii) 37·9 Q/ha. (iii) None of the effects is signtficant. (iv) Av. yield of fodder in Q/ha.

Control=66·7 Q/ha.

	D_1	D_2	D_3	D_4	Mean
H_1	86·1	37·5	84·7	63·4	67·9
H_2	44·9	28·3	71·6	88·1	58·3
Mean	65·5	32·9	78·2	75·8	63·1

Crop :- Grass. **Ref :- Bh. 60(250), 61(255), 62(222), 63(267), 64(292), 65(129).**

Site .- Agri. Res. Instt., Kanke. **Type :- 'C'.**

Object :—To prolong the vegetative phase of Grasses to obtain green fodder in winter.

1. BASAL CONDITIONS :

(i) Land was acquired in 60 and previous to this year, it was fallow, so no operation and no manure was applied. (ii) Laterite. (iii) Root slips and cuttings. (iv) Andropogon gavamus. (v) 6.7.60. (vi) —. (vii) 11·2 Kg/ha. of N as A/S after clipping for 60 to 62; 22·5 Kg/ha. of N as Urea+22·5 Kg/ha. of P_2O_5 as Super for other years. (viii) Weedings for 60 to 62; Hoeing after each cutting for others. (ix) Nil. (x) Unirrigated. (xi) N.A. (xii) N.A. for 60 to 62; 1.7.63 and 2.1.64; 26.7.64 and 7.1.65; N.A.

2. TREATMENTS and 3. DESIGN :

Same as in Expt. Nos. 60(251), 61(256), 62(223), 63(268), 64(293), 65(130) and presented on page No. 872.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of fodder. (iv) (a) 1960-64. (b) N.A. (c) Nil. (v) No. (vi) Nil. (vii) Treatment D_4H_2 failed in 62, hence the experiment for 62 has been analysed as simple R.B.D.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of fodder. (iv) (a) 1960—64. (b) N.A. (c) Nil. (v) No. (vi) Nil. (vii) Treatment D_4H_2 failed in 62, hence the experiment for 62 has been analysed as simple R.B.D.

5. RESULTS:

60(250)

(i) 22·4 Q/ha. (ii) 13 63 Q/ha. (iii) Main effects of D and H are highly significant. Control *vs.* others is significant. (iv) Av. yield of fodder in Q/ha.

Control=7·8 Q/ha.

	D_1	D_2	D_3	D_4	Mean
H_1	2·0	14·9	8·3	22·9	12·0
H_2	20·6	57·1	28·9	38·9	36·4
Mean	11·3	36·0	18·6	30·9	24·2

C.D. for D marginal means=14·1 Q/ha.
C.D. for H marginal means=9·9 Q/ha.
C.D. for control *vs.* others=14·9 Q/ha.

61(255)

(i) 221·0 Q/ha. (ii) 107·2 Q/ha. (iii) None of the effects is significant. (iv) Av. yield of fodder in Q/ha.

Control=274·7 Q/ha.

	D_1	D_2	D_3	D_4	Mean
H_1	162·0	176·8	201·4	274·1	203·5
H_2	167·3	287·9	233·0	211·6	225·0
Mean	164·6	232·3	217·2	242·9	214·3

62(222)

(i) 31·5 Q/ha. (ii) 12·94 Q/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of fodder in Q/ha.

Treatment	C	D_1H_1	D_1H_2	D_2H_1	D_2H_2	D_3H_1	D_3H_2	D_4H_1
Av. yield	38·6	63·8	23·5	36·9	8·4	25·2	25·2	30·2

C.D.=19·03 Q/ha.

63(267)

(i) 132·3 Q/ha. (ii) 23·2 Q/ha. (iii) Main effect of D and interaction D×H are highly significant. (iv) Av. yield of fodder in Q/ha.

Control=112·5 Q/ha.

	D_1	D_2	D_3	D_4	Mean
H_1	128·5	127·6	141·1	132·7	132·5
H_2	92·4	84·8	93·2	271·0	137·1
Mean	110·4	106·2	117·1	205·3	134·8

C.D. for D marginal means=23·9 Q/ha.
C.D. for the body of D×H table=33·9 Q/ha.

64(292)

(i) 166·0 Q/ha. (ii) 31·0 Q/ha. (iii) Effect of 'control *vs.* others' is highly significant and that of D is significant. (iv) Av. yield of fodder in Q/ha.

Control=321·6 Q/ha.

	D_1	D_2	D_3	D_4	Mean
H_1	165·4	127·6	117·6	131·0	135·4
H_2	166·3	194·0	141·1	129·3	157 7
Mean	165·9	160·8	129·9	130·2	146·5

C.D. for 'control *vs.* other'=33·9 Q/ha.
C.D. for D marginal means=32·0 Q/ha.

65(129)

(i) 341·2 Q/ha. (ii) 55·5 Q/ha. (iii) Main effect of D alone is significant. (iv) Av. yield of fodder in Q/ha.

Control=369·5 Q/ha.

	D_1	D_2	D_3	D_4	Mean
H_1	303·2	305·7	371·2	409·7	347·4
H_2	281·3	341·0	370·4	319·0	327·9
Mean	292·3	323·3	370·8	364·3	337·7

C.D. for D marginal means=57·3 Q/ha.

Crop :- Grass. **Ref :- Bh. 61(252), 62(219), 63(269), 64(294).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'C'.**

Object :—To prolong the vegetative phase of the Grass to obtain green fodder during winter under different dates of cutting.

1. BASAL CONDITIONS:

(i) Land was acquired in 60 and previous to this year it was fallow field, so no operation and no manure was applied. (ii) Red loam. (iii) Root slips and cutting. (iv) Pennisetum oriental. (v) Transplanting on 7.8.60. (vi) –. (vii) 11·2 Kg/ha. of N as A/S applied after clipping for 61 and 62; 22·5 Kg/ha. of N as Urea+22·5 Kg/ha. of P_2O_5 as Super for other years. (viii) Weeding for 61 and 62; hoeing after each cutting for other years. (ix) Nil. (x) Unirrigated. (xi) N.A. (xii) N.A.; 7.1.63; 30.6.63 and 4.1.64; 26.7.64 and 13.1·65.

2. TREATMENTS and 3. DESIGN:

Same as in Expt. No. 60(251), 61(256), 62(223), 63(268), 64(293), 65(130) and presented on page No. 871.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Yield of fodder. (iv) (a) 1960—64 (Experiment failed in 1960). (b) N.A. (c) Nil. (v) No. (vi) and (vii) Nil.

5. RESULTS :

61(252)

(i) 93·4 Q/ha. (ii) 22·3 Q/ha. (iii) Main effect of D alone is significant. (iv) Av. yield of fodder in Q/ha.

Control=82·6 Q/ha.

	D_1	D_2	D_3	D_4	Mean
H_1	84·1	103·0	82·9	116·8	99·2
H_2	87·6	103·6	73·7	96·7	90·4
Mean	85·8	108·3	78·3	106·8	94·8

C.D. for D marginal means=23·1 Q/ha.

62(219)

(i) 32·0 Q/ha. (ii) 13·0 Q/ha. (iii) None of the effects is significant. (iv) Av. yield of fodder in Q/ha.

Control=21·5 Q/ha.

	D_1	D_2	D_3	D_4	Mean
H_1	43·7	36·9	27·1	30·2	34·5
H_2	32·2	36·9	28·2	31·1	32·1
Mean	37·9	36·9	27·7	30·6	33·3

63(269)

(i) 46·0 Q/ha. (ii) 13·3 Q/ha. (iii) None of the effects is significant. (iv) Av. yield of fodder in Q/ha.

Control=57·9 Q/ha.

	D_1	D_2	D_3	D_4	Mean
H_1	45·3	47·0	35·3	45 3	43·2
H_2	42·0	48·7	38·5	53·7	45·7
Mean	43·7	47·9	36·9	49·5	44·5

64(294)

(i) 121·6½Q/ha. (ii) 24·6 Q/ha. (iii) Main effect of D alone is significant. (iv) Av. yield of fodder in Q/ha.

Control=115·9 Q/ha.

	D_1	D_2	D_3	D_4	Mean
H_1	144·4	95·7	101·9	117·6	114·9
H_2	155·4	130·8	129·7	103·0	129·7
Mean	149·9	113·3	115·8	110·3	122·3

C.D. for D marginal means=25·4 Q/ha.

Crop .- Grass. **Ref :- Bh. 60(249), 61(254), 62(221), 63(271), 64(296), 65(131).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'C'.**

Object :—To prolong the vegetative phase of Grasses to obtain green fodder in winter.

1. BASAL CONDITIONS :

(i) Land was acquired in 60, previous to this year it was fallow, so no operation and no manure was applied. (ii) Red loam. (iii) Root slips and cuttings. (iv) Brachiaria prizantha. (v) 8.7.60. (vi) —. (vii) 11·2 Kg/ha. of N as A/S applied after clipping for 60 to 62 and 22·5 Kg/ha. of N+22·5 Kg/ha. of P_2O_5 as Super for others. (viii) Weeding for 60 to 62 ; hoeing after each cutting for others. (ix) Nil. (x) Un-irrigated. (xi) N.A. (xii) N.A. for 60 to 62 ; 30.6.63 ; 26.7.64 and 10, 11.1.65 ; 18.7.65 and 9.1.66.

2. TREATMENTS and 3. DESIGN :

Same as in the Expts. No. 60(251), 61(256), 62(223), 63(268), 64(293), 65(130) on page No. 861.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of fodder. (iv) (a) 1960—65. (b) N.A. (c) Nil. (v) No. (vi) and (vii) Nil.

5. RESULTS :

60(249)

(i) 15·1 Q/ha. (ii) 5·7 Q/ha. (iii) Main effects of D and H are highly significant. Control *vs.* others is significant. (iv) Av. yield of fodder in Q/ha.

Control=8·1 Q/ha.

	D_1	D_2	D_3	D_4	Mean
H_1	6·2	7·6	14·5	14·5	10·7
H_2	15·2	16·8	25·9	27·4	21·3
Mean	10·7	12·2	20·2	20·9	16·0

C.D. for D marginal means=5·9 Q/ha.
C.D for H marginal means=4·1 Q/ha.
C.D. for control *vs.* others=6·2 Q/ha.

61(254)

(i) 268·4 Q/ha. (ii) 80·3 Q/ha. (iii) None of the effects is significant. (iv) Av. yield of fodder in Q/ha.

Control=226 7 Q/ha.

	D_1	D_2	D_3	D_4	Mean
H_1	188·2	263 1	329·8	257·5	255·4
H_2	217·6	301 7	283·4	364·0	291·7
Mean	202·9	282·4	298 2	310·8	273·6

62(221)

(i) 268·0 Q/ha. (ii) 47·3 Q/ha. (iii) Interaction D×H alone is significant. (iv) Av. yield of fodder in Q/ha.

Control=304·0 Q/ha.

	D_1	D_2	D_3	D_4	Mean
H_1	295·6	293 9	228·4	255·3	268·3
H_2	246·2	195·8	248·9	344·0	258 7
Mean	270·9	244·9	238·7	299·7	263·5

C.D. for the body of D×H table=69·03 Q/ha.

63(271)

(i) 65·0 Q/ha. (ii) 16·6 Q/ha. (iii) Effect of control *vs.* others alone is significant. (iv) Av. yield of fodder in Q/ha.

Control=163·9 Q/ha.

	D_1	D_2	D_3	D_4	Mean
H_1	55·2	43·4	46·5	42·3	46·2
H_2	62·1	56·4	64·0	51·1	58·4
Mean	58·7	49 9	55·2	46·7	52·6

C.D. for control *vs.* others=18·21 Q/ha.

64(295)

(i) 103·3 Q/ha. (ii) 21·8 Q/ha. (iii) Effect of control *vs.* others alone is highly significant. (iv) Av. yield of fodder in Q/ha.

Control=158·9 Q/ha.

	D_1	D_2	D_3	D_4	Mean
H_1	90·7	99·8	112·0	105·2	101·9
H_1	94·5	112·4	97·2	104·4	102·1
Mean	92·6	106·1	104·6	104·8	102·0

C.D. for control *vs.* others=23·8 Q/ha.

65(131)

(i) 245·2 Q/ha. (ii) 50·7 Q/ha. (iii) Effect of control *vs.* others alone is highly significant. (iv) Av. yield of fodder in Q/ha.

Control=325·8 Q/ha.

	D_1	D_2	D_3	D_4	Mean
H_1	238·5	228·4	279·7	246·9	248·4
H_2	221·1	234·3	204·1	227·6	221·9
Mean	230·1	231·4	241·9	237·2	235·1

C.D. for control *vs.* others=55·5 Q/ha.

Crop :- Pennisetum Pedicillatum (Grass) (*Kharif*). **Ref :- Bh. 60(244).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'C'.**

Object :—To find out the best age and height suitable at forage cut to obtain maximum forage and seed yield.

1. BASAL CONDITIONS :

(i) Grass. (ii) Laterite. (iii) Planting through rooted slips. (iv) T—14. (v) Planted in the year 1959 (July), behind the plough. (vi) —. (vii) 11·2 Kg/ha. of N as A/S+11·2 Kg/ha. of P_2O_5 as phosphate. (viii) 1 weeding and hoeing. (ix) —. (x) Unirrigated. (xi) —. (xii) As per treatments.

2. TREATMENTS :

Main-plot treatments :

6 ages of cutting : T_1=60, T_2=70, T_3=80, T_4=90, T_5=100 and T_6=110 days.

Sub-plot treatments :

3 heights of cutting : H_1=7·6, H_2=15·2 and H_3=30·5 cm.

3. DESIGN :

(i) Split-plot. (ii) (a) 6 main-plots/replication ; 3 sub-plots/main-plot. (b) —. (iii) 4. (iv) (a) and (b) 3·66 m ×2·74 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Seed and fodder yield. (iv) (a) 1960—only. (b) Yes. (c) Nil.. (v) to (vii) Nil.

5. RESULTS :

(i) 99 Q/ha. (ii) (a) 31·9 Q/ha. (b) 27·1 Q/ha. (iii) Main effect of T and H are highly significant. (iv) Av. yield of grass in Q/ha.

	T_1	T_2	T_3	T_4	T_5	T_6	Mean
H_1	36	77	73	172	190	187	122
H_2	21	47	75	125	167	164	100
H_3	10	30	20	85	198	159	74
Mean	22	51	56	127	168	167	99

C.D. for T marginal means=27·6 Q/ha.
C.D. for H marginal means=15·9 Q/ha.

Crop :- Grass. **Ref :- Bh. 63(180).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'D'.**

Object :—To evaluate the effect of gibralic acid as a spray in improving yield of Grass on a basal spray of indole acitic acid.

1. BASAL CONDITIONS :

(i) N.A. (ii) Sandy loam. (iii) Root slips and cuttings. (iv) T—14. (v) 28.6.63, line sowing and 30·5 cm. spacing between rows. (vi) N.A. (vii) 11·2 Kg/ha. of N as A/S+11·2 Kg/ha. of P_2O_5 as Super+ 11·2 Kg/ha. of K_2O as Mur. Pot. (viii) Weeding and hoeing. (ix) Nil. (x) Unirrigated. (xi) 97·9 cm. (xii) 14.12.63.

2. TREATMENTS :

5 spraying treatments : T_0=Control, T_1=I A.A. 50+G.A. 10 P.P.M., T_2=I.A.A. 50+G.A. 20 P.P.M., T_3= I.A.A. 100+G.A. 10 P.P.M. and T_4=I.A.A. 100+G.A. 20 P.P.M.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (iii) 6. (iv) (a) 3·66 m.×2·44 m. (b) Nil. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of fodder. (iv) (a) 1963—only. (b) and (c) Nil. (v) to (vii) Nil.

5. RESULTS:

(i) 156·7 Q/ha. (ii) 60·8 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of fodder in Q/ha.

Treatment	T_0	T_1	T_2	T_3	T_4
Av. yield	159·8	143·4	181·7	178·5	120·0

Crop :- Pennisetum Pedicillatum Fodder crop (*Kharif*). **Ref :- Bh. 61(170), 62(145).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'D'.**

Object :—To evaluate the effect of gibralic acid as a spray in improving yield of pennicillatum on a basal spray of indole acetic acid.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Wheat. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) 19.6.61 ; 21.6.62. (iv) (a) 2 ploughings. (b) Line sowing. (c) 9 Kg/ha. (d) 31 cm. (e) Nil. (v) 11·2 Kg/ha. of N as A/S+11·2 Kg/ha. of P_2O_5 as Super+11·2 Kg/ha. of K_2O as Mur. Pot. (vi) T-10 A. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) 142 cm. ; 78 cm. (x) 12.10.61 and 24.12.61 ; 30.11.62.

2. TREATMENTS :

5 spraying treatments : T_0=Control, T_1=50 p.p.m. of I.A.A.+2 p.p.m. of G.A., T_2=50 p.p.m. of I.A.A.+ 5 p.p.m. of G.A., T_3=100 p.p.m. of I.A.A.+2 p.p. m. of G.A. and T_4=100 p.p.m. of I.A.A.+5 p.p.m. of G.A.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) 16·15 m.×4·27 m. (iii) 4. (vi) (a) 4·27 m.×3·35 m. (b) 3·66 m.×2·74 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of fodder. (iv) (a) 1961—63 (Expt. for 63 N A.). (b) Yes. (c) Nil. (v) No. (vi) Nil. (vii) Error variances are heterogeneous and Treatment×Years interaction is absent. Hence individual years results presented.

5. RESULTS:

61(170)

(i) 722·3 Q/ha. (ii) 186·8 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of fodder in Q/ha.

Treatment	T_0	T_1	T_2	T_3	T_4
Av. yield	740·9	693·7	828·4	684·4	664·1

62(145)

(i) 158·9 Q/ha. (ii) 53·8 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grass in Q/ha.

Treatment	T_0	T_1	T_2	T_3	T_4
Av. yield	121·2	162·6	172·5	131·0	207·1

Crop :- Mango. **Ref :- Bh. 63(245), 65(45).**

Site :- Hort. Garden, Agri. Res. Instt., Sabour. **Type :- 'M'.**

Object :—To find out the effect of micronutrient on the precocity yield and fruit quality.

1. BASAL CONDITIONS :

(i) 25 years , 27 years old orchard. (ii) Sandy loam. (iii) Nil. (iv) Samar holista. (v) Square method with 10·67 m.×10·67 m. (vi) 3 years. (vii) Nil. (viii) Weeding and hoeing. (ix) Nil. (x) Unirrigated. (xi) N.A. (xii) Mid. June 64 ; Mid. June 66.

2. TREATMENTS :

12 micronutrient treatments : T_0=Control, T_1=Zn+Mn+Bo+Cu+Fe (spray), T_2=Zn, T_3=Mn, T_4=Bo, T_5=Cu, T_6=Fe, T_7=Mn+Bo+Cu+Fe, T_8=Zn+Bo+Cu+Fe, T_9=Zn+Mn+Cu+Fe, T_{10}=Zn+Mn+Bo+Fe and T_{11}=Zn+Mn+Bo+Cu.

Doses of treatments are not available.

3. DESIGN:

(i) R.B.D. (ii) (a) 12. (b) —. (iii) 2. (iv) (a) —. (b) 1. (v) —. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Growth, flowering, girth, no. of fruits, weight of fruits, quality of fruits. (iv) 1963—65. (v) No. (vi) Nil. (vii) 1964 was the off year as there was no flowering.

5. RESULTS :

63(245)

(i) 395 fruits/tree. (ii) 124·8 fruits/tree. (iii) Treatment differences are not significant. (iv) Av. number of fruits per tree.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. no.	390	403	227	524	265	482

Treatment	T_6	T_7	T_8	T_9	T_{10}	T_{11}
Av. no.	380	460	393	312	438	468

65(45)

(i) 5 fruits/tree. (ii) 2·4 fruits/tree. (iii) Treatment differences are not significant. (iv) Av. number of fruits per tree.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. no.	8	6	7	2	3	7

Treatment	T_6	T_7	T_8	T_9	T_{10}	T_{11}
Av. no.	7	7	3	7	1	6

65(45)

(i) 1·1 Kg/tree. (ii) 0·6 Kg/tree. (iii) Treatment differences are not significant. (iv) Av. yield of fruits per tree.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. yield	1·6	1.6	1·4	0·1	0·6	1·6
Treatment	T_6	T_7	T_8	T_9	T_{10}	T_{11}
Av. yield	1·7	1·4	0·6	0·8	0·2	1·4

Crop :- Mango. **Ref :- Bh. 60(313),**

Site :- Farm Orchard, Agri. Res. Instt., Kanke. **Type :- 'C'.**

Object :—To see the effect of prunning on the infestation of *Apsylla Cisteliata* and to device a control measure.

1. BASAL CONDITIONS :

(i) 10 years old orchard. (ii) (a) Red loam. (b) —. (iii) Graphting. (iv) Malda. (v) June, 50. (vi) One year. (vii) Compost at 10 Kg/tree. (viii) —. (ix) Nil. (x) Irrigated. (xi) N.A. (xii) Nov., 60.

2. TREATMENTS :

4 dates of pruning: T_0=Control (not prunned), T_1=1.11.60, T_2=15.11.60 and T_3=30.11.60.

Procedure: Those trees having infestation of Apsylla cistellata were drastically prunned so as to distroy the galls together with the nymphs inside it at three different dates to find out the actual time of prunning suitable for controlling the pest.

4. GENERAL:

(i) Good. (ii) Infestation of Apsylla cistellata, control measure as per treatments. (iii) % of infestation. (iv) (a) Nil. (b) and (c) Nil. (v) to (vii) Nil.

5 RESULTS :

(i) 20·0 degree. (ii) 10·2 degree. (iii) Treatment differences are highly significant. (iv) Mean infestation of Apsylla Cistellata in degree.

Treatment	T_0	T_1	T_2	T_3
Mean angle	49·0	7·9	7·6	15·4

C.D.=14·1 degree.

Crop :- Mango. **Ref :- Bh. 61(271), 62(245), 63(244), 65(44).**

Site :- Hort. Garden, Agri. Res. Instt., Sabour. **Type :- 'IM'.**

Object :—To fine out the effect of irrigation and manuring on the yield of Mango.

1. BASAL CONDITIONS :

(i) 25 years ; 26 years ; 27 years ; 28 years old orchard. (ii) Sandy loam (iii) Nil. (iv) Bambai (Sultanbagh). (v) N.A. (vi) 3 years. (vii) 0·8 Kg/tree. of N as A/S+0·2 Kg/tree of P_2O_5 as Super+ 0·8 Kg/tree. (viii) Weeding and hoeing. (ix) Nil. (x) As per treatments. (xi) N.A. (xii) 1st week of June 62 ; 1st week of June 63 ; 1st week of June 64 ; 1st week of June 66.

2. TREATMENTS :

Main-plot treatments :

3 irrigation intervals : I_0=No irrigation, I_1=One month interval and I_2=Two months interval.

Sub-plot treatments :

3 doses of manure: M_0=No manure, M_1=0·8 Kg/tree of N as A/S+0·2 Kg/tree of P_2O_5 as Super+ 0·8 Kg/tree of K_2O as Mur. Pot. and M_2=1·2 Kg/tree of N as A/S+0·3 Kg/tree of P_2O_5 as Super+1·3 Kg/tree of K_2O as Mur. Pot.

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) 1. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Flowering, no. of fruits harvested. (iv) 1961—65 (expt. in 1964 N.A.). (v) No. (vi) and (vii) Nil.

5. RESULTS :

61(271)

Number of fruits/tree

(i) 631 fruits/tree. (ii) (a) 323·9 fruits/tree. (b) 225·8 fruits/tree. (iii) None of the effects is significant. (iv) Av. number of fruits per tree.

	I_0	I_1	I_2	Mean
M_0	590	564	572	575
M_1	591	916	458	655
M_2	509	800	683	664
Mean	563	760	571	631

62(245)

(i) 92 fruits/tree. (ii) (a) 96·4 fruits/tree. (b) 94·8 fruits/tree. (iii) None of the effects is significant. (iv) Av. number of fruits/per tree.

	I_0	I_1	I_2	Mean
M_0	71	97	82	83
M_1	22	74	169	88
M_2	72	161	78	104
Mean	55	111	110	92

63(244)

(i) 146 fruits/tree. (ii) (a) 192·3 fruits/tree. (b) 99·2 fruits/tree. (iii) None of the effects is significant. (iv) Av. number of fruits per tree.

	I_0	I_1	I_2	Mean
M_0	147	175	145	156
M_1	131	166	64	120
M_2	188	144	157	163
Mean	155	162	122	146

65(44)

(i) 65 fruits/tree. (ii) (a) 48·7 fruits/tree. (b) 71·9 fruits/tree. (iii) None of the effects is significant. (iv) Av. number of fruits per tree.

	I_0	I_1	I_2	Mean
M_0	61	51	35	49
M_1	164	64	58	95
M_2	71	60	20	50
Mean	98	58	37	65

Yield data

63(244)

(i) 34·0 Kg/tree. (ii) (a) 54·3 Kg/tree. (b) 20·3 Kg/tree. (iii) None of the effects is significant. (iv) Av. yield of fruit in Kg/tree.

	I_0	I_1	I_2	Mean
M_0	27·4	41·2	32·0	33·5
M_1	49·9	40·4	13·4	34·5
M_2	37·6	30·5	33·9	34·0
Mean	38·3	37·4	26·4	34·0

65(44)

(i) 11·7 Kg/tree. (ii) (a) 7·2 Kg/tree. (b) 12·2 Kg/tree. (iii) Main effect of I is significant. (iv) Av. yield of fruit in Kg/tree.

	I_0	I_1	I_2	Mean
M_0	10·9	9·8	6·2	9·0
M_1	32·4	11·9	9·9	18·1
M_2	11·6	9·3	3·5	8·1
Mean	18·3	10·3	6·5	11·7

C.D. for I marginal means=7·2 Kg/tree.

Crop :- Mango. **Ref :- Bh. 61(317).**

Site :- Farm orchard, Agri. Res. Instt., Kanke. **Type :- 'D'.**

Object :—To see the combination efficacy of ovicids in killing the eggs of Apsylla cistillata.

1. BASAL CONDITIONS :

(i) 11 years old orchard. (ii) Red loam. (iii) Graphting. (iv) Malda. (v) June, 50. (vi) One year. (vii) Compost at 10 Kg/tree. (viii) —. (ix) Nil. (x) Irrigated. (xi) N.A. (xii) Nov., 1961.

2. TREATMENTS :

5 insecticidal treatments : T_0=Control, T_1=0·45 Kg. Ovicide in 9 litres of water, T_2=0·45 Kg. selenen in 45 litres of water, T_3=80 c.c. of Metasystox in 100 litres of water and T_4=80 c.c. Folidol in 100 litres of water.

Procedure : Those twigs were selected which had at least 4 to 5 infested leaves. The results were judged at counting the number of eggs alive and dead in two leaves in each replications. There were 10 twigs in each replication.

Date of treatments : 19.6.61.

3. DESIGN:

(i) R B.D. (ii) (a) 5. (b) —. (iii) 5. (iv) 1. (v) —. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Eggs of Apsylla cistellata, control measure as per treatments. (iii) No. of alive and dead eggs. (iv) (a) 1961—only. (b) and (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 63·3 degree. (ii) 9·8 degree. (iii) Treatment differences are highly significant. (iv) Mean % of dead eggs in degrees.

Treatment	T_0	T_1	T_2	T_3	T_4
Mean angle	35·6	77·8	82·3	49·1	72·0

C.D.=13·2 degree.

Crop :- Mango. **Ref :- Bh. 63(305).**

Site :- Farm Orchard, Agri. Res. Instt., Kanke. **Type :- 'D'.**

Object :—To know the comperative efficacy of different insecticides treatments to check the gall formation.

1. BASAL CONDITIONS :

(i) 10 years old orchard. (ii) Red loam. (iii) Graphting. (iv) Malda. (v) June, 1953. (vi) One year. (vii) Compost at 10 Kg/tree. (viii) and (ix) Nil. (x) Irrigated. (xi) —. (xii) Nov., 1963.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 6 insecticidal treatments : T_0=Control, T_1=0·04 % of Folidol spray, T_2=0·04 % of Endrine spray, T_3=0·125 % of Pyro+DDT spray, T_4=0·033 % of Basudin spray and T_5=0·04 % of Metasystox spray.

(b) No. of applications : A_1=10 in 1st set at 3 days interval, A_2=6 in 2nd set at 5 days interval and A_3=4 in 3rd set at 7 days interval.

Date of spray : 14.10.63.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 18. (b) N.A. (iii) 4. (iv) 1. (v) —. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Mango gall pest, control measure as per treatments. (iii) % of infestation. (iv) (a) 1963 only. (b) and (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 27·5 degree. (ii) 18·1 degree. (iii) Main effect of T alone is significant. (iv) Mean infestation in degree.

	T_0	T_1	T_2	T_3	T_4	T_5	Mean
A_1	50·0	21 9	34 5	16·6	14·7	37·0	29·1
A_2	61 6	23 5	22·5	20·4	20·4	24·8	28 9
A_3	22 7	33·4	20·7	25·2	27·2	17·7	24·5
Mean	44 8	26·3	25·9	20 7	20·7	26·5	27·5

C.D. for T marginal means=14·8 degree.

Crop :- Mango. **Ref :- Bh. 62(181).**

Site :- Bikhanpur, Muzaffarpur. **Type :- 'D'.**

Object :—To find out the efficacy of Endrine against D.D.T to control Mango hoppers.

1. BASAL CONDITIONS :

(i) —. (ii) Sandy. (iii) Grafting. (iv) Mixed. (v) 15—16 years old, grafting method. (vi) One year. (vii) Nil. (viii) Summer ploughing. (ix) Nil. (x) Unirrigated. (xi) —. (xii) 10, 17, 24.5.63.

2. TREATMENTS :

5 insecticidal treatments : T_0=Control, T_1=D.D.T. at 0·125 %, T_2=Endrine at 0·01 %, T_3=Endrine at 0·02 % and T_4=Endrine at 0·04 %.

Insecticides applied by spraying on 9.3.62 in 100 litres of water/ha.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) One. (v) —. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of Mango hoppers, control measure as per treatments. (iii) Germination and maturity count, no of mango hoppers before treatment and after treatment effect. (iv) (a) 1962—only. (b) and (c) Nil. (v) Sabour, Patna. (vi) and (vii) Nil.

5. RESULTS :

(i) 28·5 degree. (ii) 2·4 degree. (iii) Treatment differences are highly significant. (iv) Mean infestation in degree.

Treatment	T_0	T_1	T_2	T_3	T_4
Mean angle	90·0	14·3	15·1	12·6	10·7

C.D.=3·6 degree.

Crop :- Mango. **Ref :- Bh. 63(287), 64(313).**

Site :- Agri. Res. Instt., Patna. **Type :- 'D'.**

Object :- To find out the efficacy of Endrin against D.D.T. to control Mango hopper.

1. BASAL CONDITIONS :

(i) 25 years old ; 26 years old. (ii) Clay. (iii) Transplanting. (iv) Malda. (v) 25 years old tree ; 26 years old tree. (vi) 3 years. (vii) 25 Kg/ha. of compost. (viii) and (ix) Nil. (x) Unirrigated. (xi) N.A. (x) 12.6.63 ; 18.6.64.

2. TREATMENTS :

5 insecticidal treatments : T_0=Control, T_1=0·125 % of DDT, T_2=0·01 % of Endrin, T_3=0·02 % of Endrin T_4=0·04 % of Endrin

Treatment dates : 6.3.63 ; 20.3.64.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) —. (iii) 4. (iv) (a) — (b) 1. (v) — (vi) Ye

4. GENERAL :

(i) Good. (ii) Mango hopper, control measure as per treatments. (iii) Population of hoppers. (iv) 1962—63. (v) Sabour. (vi) and (vii) Nil

5. RESULTS :

63(287)

(i) 37·6 degree. (ii) 2·5 degree. (iii) Treatment differences are highly significant. (iv) Mean infestation in degree.

Treatment	T_0	T_1	T_2	T_3	T_4	
Mean angle	90·0	21·4	38·2	21·2	17·4	C.D.=3·9 degree.

64(313)

(i) 29·6 degree. (ii) 18·4 degree. (iii) Treatment differences are highly significant. (iv) Mean infestation in degree.

Treatment	T_0	T_1	T_2	T_3	T_4	
Mean angle	69·4	18·9	26·8	19·3	13·8	C.D.=28·3 degree.

Crop :- Mango. **Ref :- Bh. 60(314), 61(319).**

Site :- Piska Mango Orchard, Ranchi. **Type :- 'D'.**

Object :—To see the comparative efficacy of different insecticides against Mango gall at the time of hatching of eggs.

1. BASAL CONDITIONS :

(i) 15 years old ; 16 years old. (ii) Red loam. (iii) Graphting. (iv) Malda. (v) June, 1945. (vi) One year. (vii) Compost at 10 Kg/tree. (viii) and (ix) Nil. (x) Irrigated. (xi) —. (xii) Nov., 1960 ;Nov., 1961.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 6 insecticidal treatments : T_0=Control, T_1=Endrine at 0·45 Kg. in 230 litres of water, T_2=Folidol at E 605 at 40 c.c. in 165 litres of water, T_3=Basedin at 20 E.C. 0·45 Kg. in 275 litres of water, T_4=Dieldrex at 18 E.C. 0·45 Kg. in 180 litres of water and T_5=D.D.T.+pyrocolloid at 0·45 Kg. in 180 litres of water.

(2) No. of spraying : S_1=One spraying, S_2=Two sprayings and S_3=Three sprayings.

Date of treatments : 5.6.60, 5.10.60, 16.10.60 and 26.10.60.

(One, two, and three sprayings at 10 days interval).

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) —. (iii) 3. (iv) 1. (v) —. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Mango gall, control measure as per treatments. (iii) % of infestation ; no. of galls per ten twings. (iv) (a) 1960—61. (b) Nil. (v) No. (vi) Nil. (vii) The data for 1961 had been supplied in number of galls/10 twings and the same is analysed after making square root transformation and presented under 5. Results.

5. RESULTS :

Infestation data

60(314)

(i) 57·2 degree. (ii) 14·9 degree. (iii) None of the effects is significant. (iv) Mean infestation in degree.

	T_0	T_1	T_2	T_3	T_4	T_5	Mean
S_1	70·3	52·3	51·2	37·4	45·3	50·4	51·2
S_2	66·1	62·1	51·5	69·1	54·2	41·4	57·4
S_3	73·0	66·0	60·1	62·1	50·4	62·3	63·1
Mean	71·5	60·1	54·3	56·2	50·0	51·3	57·2

61(319)

(i) 10·2 degree. (ii) 2·4 degree. (iii) None of the effects is significant. (iv) Av. number of galls after transformation.

	T_0	T_1	T_2	T_3	T_4	T_5	Mean
S_1	12·1	8·8	9·4	8·3	9·7	9·9	9·7
S_2	11·7	10·1	11·3	8·8	10·5	12·1	10·7
S_3	10·2	8·5	8·8	9·5	10·9	12·8	10·1
Mean	11·3	9·1	9·8	8·9	10·4	11·6	10·2

Crop :- Mango. **Ref :- Bh. 61(318).**

Site :- Piska Orchard, Ranchi. **Type :- 'D'.**

Object :—To see the comparative efficacy of different insecticedes in killing the adult psyllids at the time of emergence from gall.

1. BASAL CONDITIONS :

(i) 16 years old orchard. (ii) Red loam. (iii) Graphting. (iv) Malda. (v) June, 1945. (vi) One year. (vii) Compost at 10 Kg/tree. (viii) and (ix) Nil. (x) Irrigated. (xi) —. (xii) Nov., 1961.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 6 insecticidal treatments : T_0=Control, T_1=Endrine 0·45 Kg. in 230 litres of water, T_2=Folidol E 605 40 c.c. in 165 litres of water, T_3=Basudin 20 E.C. 0·45 Kg. in 275 litres of water, T_4=D.D.T. 0·45 Kg. in 180 litres of water with 50 grams of pyre and T_5=Meta systok 40 c.c. in 165 litres of water.

(2) 3 sprayings: S_1=One spraying, S_2=Two sprayings at 10 days interval, S_3=Three srayings at 10 days interval.

Date of sprayings : S_1=8.9.61, S_2=17.3.61, 8.3.61 and S_3=27.3.61.

3. DESIGN:

(i) Fact. in R.B.D. (ii) (a) 18. (b) —. (iii) 3. (iv) 1. (v) —. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Mango gall pest, control measure as per treatments. (iii) % of infestation. (iv) (a) 1961 only. (b) and (c) Nil. (v) to (vii) Nil.

5. RESULTS:

(i) 59·9 degree. (ii) 19·7 degree. (iii) None of the effects is significant. (iv) Mean infestation of mango in degree.

	T_0	T_1	T_2	T_3	T_4	T_5	Mean
S_1	58·0	46·6	71·2	42·6	65·2	51·4	55·8
S_2	59·3	56·4	58·1	81·3	78·0	69·3	67·1
S_3	68·3	42·4	45·3	62·3	72·5	49·2	56·7
Mean	61·9	48·5	58·2	62·1	71·9	56·6	59·9

Crop :- Mango. **Ref :- Bh. 62(279).**

Site :- Orchard of Ratu Maharaja, Ranchi. **Type :- 'D'.**

Object :—To know the efficacy of different insecticides of different levels of treatments in preventing the egg laying by Apsyllacislallata on the new flashes of Mango trees.

1. BASAL CONDITIONS:

(i) 17 years old orchard. (ii) Red loam. (iii) Graphting. (iv) Malda. (v) June, 1945. (vi) One year. (vii) Compost at 10 Kg/tree. (viii) and (ix) Nil. (x) Irrigated. (xi) —. (xii) Nov., 1962.

2. TREATMENTS:

All combinations of (1) and (2) plus control

(1) 5 insecticidal treatments: T_1=Endrin 20 EC 0·45 Kg/ha. in 227 litres of water spray, T_2=Folidol E 605 40 c.c. in 102 litres of water spray, T_3=Basedin 20 EC 0·45 Kg/ha. in 272 litres of water spray, T_4=(DDT+Pyrocolloid)—(0·45 Kg/ha.+ 0·05 Kg/ha.) in 182 litres of water spray and T_5=Melasystox 40 c.c. in 102 litres of water spray.

(2) No. of sprayings: S_1=One spraying on 9.3.62, S_2=Two sprayings on 9.3.62 and 16.3.62, S_3=Three sprayings on 9.3.62, 16.3.62 and 24.3.62.

Procedure: Those twigs were selected had appreciable no. of new flashes in them. Sprayings were made at the time of emergence of adult prylled from the gall. The observation were taken in counting eggs infested in 10 random sample of twigs in each replication.

3. DESIGN:

(i) Fact. in R.B.D. (ii) (a) 16. (b) —. (iii) 3. (iv) 1. (v) —. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Mango gall pest, control measure as per treatments. (iii) % of infestation. (iv) (a) 1962 only. (b) and (c) Nil.

5. RESULTS:

(i) 35·8 degree. (ii) 13·4 degree. (iii) Main effect of S and Extra vs. others are highly significant. Interaction S×T is significant. (iv) Mean infestation in degree.

Control=78·1 degree.

	T_1	T_2	T_3	T_4	T_5	Mean
S_1	15·5	55·6	55·3	41·3	31·8	41·3
S_2	34·2	32·5	18·2	42·4	37·8	33·0
S_3	32·2	13·6	17·2	30·2	29·6	24·6
Mean	27·3	34·0	30·2	38·0	35·4	33·0

C.D. for S marginal means=12·9 degree.

C.D. for Extra *vs.* others =16·3 degree.

C.D. for the body of table=22·3 degree.

Crop :- Mango. **Ref :- Bh. 60(133).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'D'.**

Object :—To find out the effect of new insecticides as compared with D.D.T. spray.

1. BASAL CONDITIONS :

(i) Compost at 25 Kg/pit every year. (ii) Loam. (iii) Transplanting. (iv) Malda. (v) 50 years ago, usual practices of planting of mango plants with the spacing of 10·67 metres from plant to plant. (vi) 2 years. (vii) Compost at 25 Kg/pit. (viii) and (ix) Nil. (x) Unirrigated. (xi) 114 cm. (xii) 12.7.61, 15.7.61, 20.7.61 and 10.8.61.

2. TREATMENTS :

A insecticidal treatments: T_0=Control, T_1=D.D.T. 0·125 % in 39·4 litres/tree, T_2=Malathion 0·062 % in 36·4 litres/tree and T_3=Endrin 0·04 % in 36·4 litres/tree.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) Nil. (iii) 7. (iv) 1. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Mango hoppers, control measure as per treatments. (iii) Population of hoppers. (iv) (a) 1960—only. (v) to (vii) Nil.

5. RESULTS:

(i) 41 hoppers/plant. (ii) 10·1 hoppers/plant. (iii) Treatment differences are highly significant. (iv) Av. number of hoppers per plant.

Treatment	T_0	T_1	T_2	T_3
Av. number	91	26	29	17

C.D.=11·4 hoppers/plant.

Crop :- Mango. **Ref :- Eh. 61(159), 62(137), 63(154).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'D'.**

Object :—To find out the effect of new insecticides as compared to D.D.T. spray.

1. BASAL CONDITIONS:

(i) 25 Kg/tree of compost every year. (ii) Loam. (iii) Transplanting. (iv) Malda. (v) 50 years ago, usual practices of planting of Mango plants at 10·1 metres distance from plant to plant. (vi) 2 years. (vii) 25 Kg/tree of compost. (viii) and (ix) Nil. (x) Unirrigated. (xi) 113 cm.; 106 cm.; 98 cm. (xii) 5.6.62; 6.6.63; 8.6.64.

2. TREATMENTS:

5 insecticidal treatments: T_0=Control, T_1=0·125 % D.D.T. in 36·4 lit./tree, T_2=0·01 % Endrine in 36·4 lit./tree, T_3=0·02 % Endrin in 36·4 lit./tree, and T_4=0·04 % Endrin in 36·4 lit./tree.

Time of spray : 14.3.62 ; 29.3.63 ; N.A.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) —. (iii) 4. (iv) (a) —. (b) 1. (v) Nil.

4. GENERAL :

(i) Good. (ii) Mango hopper control measures as per treatments. (iii) Population of Mango hopper before treatments and after 48 hours of the treatments. (iv) 1961—63. (v) No. (vi) and (vii) Nil.

5. RESULTS:

61(159)

(i) 26·8 degree. (ii) 4·0 degree. (iii) Treatment differences are highly significant. (iv) Mean infestation in degree.

Treatment	T_0	T_1	T_2	T_3	T_4	
Mean angle	90·0	14·4	16·8	7·2	5·6	C.D.=5·5 degree.

62(137)

(i) 39·3 degree. (ii) 2·7 degree. (iii) Treatment differences are highly significant. (iv) Mean infestation in degree.

Treatment	T_0	T_1	T_2	T_3	T_4	
Mean angle	90·0	30·6	36·3	21·4	18·3	C.D.=3·7 degree.

63(154)

(i) 59·5 degree. (ii) 4·4 degree. (iii) Treatment differences are not significant. (iv) Mean infestation in degree.

Treatment	T_0	T_1	T_2	T_3	T_4
Mean angle	59·5	54·9	57·1	61·7	64·1

Crop :- Mango. **Ref :- Bh. 62(248), 63(248), 64(274).**

Site :- Hort. Garden, Agri. Res. Instt., Sabour. **Type :- 'D'.**

Object :—To study the effect of harmones for the control of pre-harvest drop of Mango.

1. BASAL CONDITIONS :

(i) 25 years old ; 26 years old ; 27 years old. (ii) Sandy loam. (iii) Nil. (iv) Langra. (v) March, 62 to 64 ; square method (4·57 m.×4·57 m.). (vi) 3 years. (vii) Nil. (viii) Weeding and hoeing. (ix) Nil. (x) Unirrigated. (xi) N.A. (xii) Mid. of June, 62 to 64.

2. TREATMENTS :

6 harmonal treatments : T_0=Control, T_1=Weekly irrigation with 182 litres of water, T_2=Spraying of N.A.A. at 10 P.P.M. every week, T_3=Spraying of 2, 4-D at 7.5 P.P.M. every first night, T_4=Spraying of 2, 4-D at 15 P.P.M. every week and T_5=Water spray every week.

Method : Spraying will begin when natural drop of fruits is over.

3. DESIGN :

(i) R.B.D. (ii) 6. (iii) 2 ; 2 ; 3. (iv) N.A. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Flowering and fruiting. (iv) 1962—65 (Expt. failed in 1965). (v) No. (vi) Nil. (vii) No regular fruiting in 1965 so expt. could not be done in 1965. The data of number of fruits/tree had been analysed after log transformation and results are presented under 5. Results.

5. RESULTS :

62(248)

(i) 2·2 degree. (ii) 0·3 degree. (iii) Treatment differences are not significant. (iv) Av. number of fruits after log transformation.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. no.	2·0	2·3	2·1	2·3	2·2	2·1

63(248)

(i) 1·7 degree. (ii) 0·8 degree. (iii) Treatment differences are not significant. (iv) Av. number of fruits after log transformation.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. no.	2·0	2·0	1·4	1·3	2·3	1·4

64(274)

(i) 1·9 degree. (ii) 0·22 degree. (iii) Treatment differences are not significant. (iv) Av. number of fruits after log transformation.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. no.	1·8	1·8	2·2	1·9	1·7	2·0

Crop :- Litchi. **Ref :- Bh. 61(272), 62(246), 63(246), 64(272).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'M'.**

Object :—To ascertain the response of N, K and Ca in combination on the yield and quality of Litchi.

1. BASAL CONDITIONS :

(i) N.A. (ii) Sandy loam. (iii) Nil. (iv) Purbi. (v) Layed out in June, square system (6·10 m.×6·10 m.). (vi) 3 years. (vii) As per treatments. (viii) Weeding and hoeing. (ix) Nil. (x) Unirrigated. (xi) N.A. (xii) 1st week of May, 62 to 65.

2. TREATMENTS :

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

(1) 2 levels of N as A/S : N_1=1·1 and N_2=2·3 Kg/ha.

(2) 2 levels of K as Pot. Sul. : K_1=0 and K_2=1·1 Kg/tree.

(3) 2 levels of Ca as lime : C_1=18·1 and C_2=27·2 Kg/tree.

3. DESIGN:

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 1. (v) Nil. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Weight and number of fruits. (iv) 1961—65 (Expt. for 1965 is rejected). (v) No. (vi) and (vii) Nil.

5. RESULTS:

Yield data

61(272)

(i) 33·9 Kg/tree. (ii) 8·5 Kg/tree. (iii) Main effect of N alone is highly significant. (iv) Av. yield of Litchi in Kg/tree.

	K_1	K_2	C_1	C_2	Mean
N_1	30·7	26·8	29·5	28·0	28·8
N_2	34·8	43·4	36·9	41·3	39·1
Mean	32·8	35·1	33·2	34·7	33·9
C_1	30·5	35·8			
C_2	35·0	34·4			

C.D. for N marginal means=6·1 Kg/tree.

62(246)

(i) 44·4 Kg/tree. (ii) 23·8 Kg/tree. (iii) None of the effects is significant. (iv) Av. yield of Litchi in Kg/tree.

	K_1	K_2	C_1	C_2	Mean
N_1	35·0	51·3	48·0	38·2	43·1
N_2	47·3	44·2	40·7	50·8	45·7
Mean	41·1	47·7	44·3	44·5	44·4
C_1	41·2	47·4			
C_2	41·0	48·0			

63(246)

(i) 25·0 Kg/tree. (ii) 18·0 Kg/tree. (iii) Main effect of C alone is significant. (iv) Av. yield of Litchi in Kg/tree.

	K_1	K_2	C_1	C_2	Mean
N_1	21·6	28·9	18·7	31·8	25·2
N_2	25·2	24·2	17·8	31·6	24·7
Mean	23·4	26·5	18·2	31·7	25·0
C_1	15·3	21·1			
C_2	31·5	31·9			

C.D. for C marginal means=12·7 Kg/tree.

64(272)

(i) 58·3 Kg/tree. (ii) 36·7 Kg/tree. (iii) None of effects is significant. (iv) Av. yield of Litchi in Kg/tree.

	K_1	K_2	C_1	C_2	Mean
N_1	54·2	64·9	55·4	63·6	59·5
N_2	58·1	55·9	51·9	62·1	57·0
Mean	56·1	60·4	53·7	62·8	58·3
C_2	51·6	55·8			
C_2	60·7	65·0			

Number of fruits per tree

62(246)

(*i*) 2102 fruits/tree. (ii) 1285·9 fruits/tree. (iii) None of the effects is significant. (iv) Av. number of fruits per tree.

	K_1	K_2	C_1	C_2	Mean
N_1	1534	2565	2186	1914	2050
N_2	2306	2005	2099	2211	2155
Mean	1920	2285	2142	2062	2102
C_1	1848	2437			
C_2	1992	2133			

63(246)

(i) 1123 fruits/tree. (ii) 823·1 fruits/tree. (iii) None of the effects significant. (iv) Av. number of fruits per tree.

	K_1	K_2	C_1	C_2	Mean
N_1	1062	1267	927	1402	1165
N_2	1133	1031	795	1369	1082
Mean	1098	1149	861	1386	1123
C_1	718	934			
C_2	1458	1314			

64(272)

(i) 2943 fruits/tree. (ii) 1683·2 fruits/tree. (iii) None of the effects is significant. (iv) Av. number o fruits per tree.

	K_1	K_2	C_1	C_2	Mean
N_1	2891	2876	3001	2766	2883
N_2	2945	3061	2707	3298	3003
Mean	2918	2969	2854	3032	2943
C_1	2828	2880			
C_2	3007	3058			

Crop :- Litchi. **Ref :- Bh. 62(247), 63(247), 64(273), 65(47).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'C'.**

Object :—To see the effect of harmones for the control of pre-harvest crop of Litchi.

1. BASAL CONDITIONS:

(i) N.A. (ii) Sandy loam. (iii) Nil. (iv) Purbi. (v) In March 62, 63, 64 and 65, square method (9·14 m.×9·14 m.). (vi) 3 years. (vii) Nil. (viii) Weeding and hoeing. (ix) Nil. (x) Irrigated for 62 and unirrigated for others. (xi) N.A. (xii) 5.6.62 ; 14 to 25.5.63 ; 20 to 25.5.64 ; 5 and 7.6.65.

2. TREATMENTS:

6 harmone treatments: T_0=Control, T_1=Weekly irrigated with 182 lit. of water, T_2=Spraying of 10 ppm of N.A.A. every fortnightly, T_3=Spraying of 75 ppm of 2—45—T every week, T_4=Spraying of 25 ppm of 2—4—D every weekly and T_5=Water spray every weekly.

3. DESIGN:

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4 for 65 and 3 for others. (iv) (a) N.A. (b) 1. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Flowering and fruiting. (iv) (a) 1962—65. (b) and (c) N.A. (v) No. (vi) Nil. (vii) Error variances are heterogeneous and Treatments × Years interaction is absent. Hence individual years results are presented under 5. Results.

5. RESULTS :

62(247)

(i) 663 fruits/tree. (ii) 392 fruits/tree. (iii) Treatment differences are not significant. (iv) Av. number of fruits/tree.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. no. of fruits	715	465	1080	867	500	352

63(247)

(i) 1169 fruits/tree. (ii) 735 fruits/tree. (iii) Treatment differences are not significant. (iv) Av. number of fruits/tree.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. no. of fruits	1069	756	1379	978	1236	1596

64(273)

(i) 264 fruits/tree. (ii) 222 fruits/tree. (iii) Treatment differences are not significant. (iv) Av. number of fruits/tree.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. no. of fruits	296	260	318	221	299	191

65(47)

(i) 1502 fruits/tree. (ii) 815 fruits/tree. (iii) Treatment differences are not significant. (iv) Av. number of fruits/tree.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. no. of fruits	1260	1656	1326	1913	1668	1187

Crop :- Litchi. **Ref :- Bh. 65(51).**

Site :- Baria Orchard, Motihari. **Type :- 'C'.**

Object :—To control Litchi mite by removing affected leaves twigs by prunning.

1. BASAL CONDITIONS:

(i) (a) 30 years old orchard. (ii) Clayey loam. (iii) N.A. (iv) Dehra Rose, Bedana, China. (v) Planting in 1942, Square method (6·1 m.×6·1 m.). (vi) 2 years. (vii) 738 Q/ha. of cowdung. (viii) Weeding and hoeing. (ix) Nil. (x) Irrigated. (xi) N.A. (xii) End of May to Mid-June.

2. TREATMENTS:

7 times of removal of twigs by prunning: T_0=Control (no removal), T_1=May, T_2=June, T_3=July, T_4=Aug., T_5=May+July and T_6=June+Aug.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 3. (iv) 10 twigs/treatment. (v) Nil. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Litchi mite, control measure as per treatments. (iii) % infestation. (iv) (a) 1965—only. (b) and (c) Nil. (v) to (vii) Nil.

5. RESULTS:

(i) 46·5 degree. (ii) 1·0 degree. (iii) Treatment differences are highly significant. (iv) Mean infestation. in degree.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6
Mean angle	90·0	47 4	45·9	42·8	39·7	32·0	27·8

C.D.=1·3 degree.

———

Crop :- Litchi. **Site :- Bh. 61(320).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'D'.**

Object :—To know the comparative efficacy of different insecticides on the killing of bugs.

1. BASAL CONDITIONS:

(i) 15 years old orchard. (ii) Red loam. (b) —. (iii) Transplanting. (iv) N.A. (v) June, 45. (vi) 1 year. (vii) Compost at 7 Kg/tree. (viii) Weedings. (ix) Nil. (x) Irrigated. (xi) N.A. (xii) Mid. of June, 61.

2. TREATMENTS :

5 insecticidal treatments: T_0=Control (no treatment), T_1=Endrin 20 E.C. - 0·04 %, T_2=Folidol E—605—0·04 %, T_3=Basudin 20 EC—0·02 % and T_4=DDT+Pyrocolloid—0·125 %.

Insecticides sprayed on 4.9.61.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) —. (iii) 2. (iv) 1. (v) —. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of Litchi bug, control measure as per treatments. (iii) Mortality of bugs. (iv) (a) 1961—only. (b) and (c) Nil. (v) No. (vi) and (vii) Nil.

5. RESULTS:

Percentage of mortality

(i) 47·3 degree. (ii) 6·9 degree. (iii) Treatment differences are highly significant (iv) Av. percentage of mortality in degree.

Treatment	T_0	T_1	T_2	T_3	T_4	
Mean angle	20·8	51·4	59·1	41·5	63·8	C.D.=19·3 degree.

Crop :- Litchi. **Ref :- Bh. 65(52).**

Site :- Baria Orchard, Motihari. **Type :- 'D'.**

Object :—To control the Litchi mite on Litchi by spraying the insecticides.

1. BASAL CONDITIONS:

(i) 30 years old orchard. (ii) Clayey loam. (iii) Gutty. (iv) Dehra Rose, Bedana and China. (v) Planting in 1942, square method (6·1 m.×6·1 m.). (vi) 2 years. (vii) 738 Q/ha. of Cowdung. (viii) Weeding and hoeing. (ix) Nil. (x) Irrigated. (xi) N.A. (xii) End of May to Mid—June, 65.

2. TREATMENTS:

6 insecticidal treatments : T_1=Malathion 0·04 %, T_2=Parathion 0·04 %, T_3=Micowet sulf 0·04 %, T_4=Mico 999 0·04 %, T_5=Basudin 0·04 % and T_6=Alur 338 0·50 %,

3. DESIGN:

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 3. (iv) One. (v) Nil. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Litchimite, control measure as per treatments. (lii) Percentage of infestation. (iv) (a) 1965. (b) and (c) Nil. (v) to (vii) Nil.

5. RESULTS:

(i) 57·4 degree. (ii) 1·6 degree. (iii) Treatment difierences are highly significant. (iv) Mean infestation in degree.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	
Mean infestation	46·6	53·8	65·0	63·6	56·9	58·2	C.D.=2·0 degree.

Crop :- Litchi. **Ref :- Bh. 60(315).**

Site :- Nilachal Kuthi, Ratu Road, Ranchi. **Type :- 'D'.**

Object :—To know the comparative efficacy of different insecticides on the killing of bugs.

1. BASAL CONDITIONS:

(i) 10 years old orchard. (ii) Red loam. (iii) Transplanting. (iv) —. (v) July, 50. (vi) One year. (vii) Compost at 5 Kg/tree. (viii) Weedings. (ix) Nil. (x) Irrigated. (xi) N.A. (xii) June, 60.

2. TREATMENTS:

5 insecticidal treatments : T_0=Control (no treatment), T_1=Endrin 20 E.C.—0·04 % spray, T_2=Folidol E—605—0·04 %, T_3=Basudin 20 E.C.—0·02 %, T_4=DDT+Pyrocolloid—0·125 %

Insecticides were sprayed on 19.9.60.

3. DESIGN:

(i) R.B.D. (ii) (a) 5. (b) —. (iii) 3. (iv) 1. (v) —. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Attack of Litchi bug, control measures as per treatments. (iii) Yield of litchi/plot. no. of bugs before and after treatments. (iv) (a) 1961—only. (b) and (c) Nil. (v) No. (vi) and (vii) Nil.

5. RESULTS:

(i) 5 bugs. (ii) 3·8 bugs. (iii) Treatment differences are highly significant. (iv) Av. number of bugs.

Treatment	T_0	T_1	T_2	T_3	T_4
Av. number	19	0	2	2	1

C.D. = 7·2 bugs.

———

Crop :- Wheat, Barley, Gram and Peas (*Rabi*). **Ref :- Bh. 62(102).**

Site :- Agri. Res. Instt., Dholi. **Type :- 'X'.**

Object:—To find out suitable mixture of such varieties of Wheat and Gram, Barley and Gram, as well as Barley and Peas, which may be ready for harvest at the same time when grown in mixture.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Maige. (c) 44·8 Kg/ha. of N+44·8 Kg/ha. of P_2O_5. (ii) Sandy loam. (iii) 1.11.62. (iv) (a) 5 ploughings. (b) Behind the plough in rows 25·4 cm. apart cereal and legume mixed in the ratio of 3 : 1. (c) 92·2 Kg/ha. (d) Rows 25·4 cm. apart. (e) Nil. (v) 44 8 Kg/ha. of N as A/S+44·8 Kg/ha. of P_2O_5 as Super application in furrows. (vi) As per treatments. (vii) Irrigated. (viii) Weeding. (ix) N.A. (x) T_1 on 23.3.63, T_2 on 24.3.63, T_3+T_4 on 7.3.63 T_5 and T_6 on 16.3.63 and 23.3.63.

2. TREATMENTS:

6 mixed cropping treatments: T_1=Wheat NP 799 and gram NP 58, T_2=Wheat NP 835 and gram NP 58, T_3=Barley No 117 and Peas BR 2, T_4=Barley No 21 and Peas BR 2, T_5= Barley No 117 and gram NP 58 and T_6=Barley No 21 and gram NP 58.

3. DESIGN:

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (v) (a) and (b) 8·25 m.×6·11 m. (v) Nil. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Germination, flowering, maturity, population count, effective no of branches, height of plant, length of earhead, no. of grains/ear head, weight of 1000 grains and yield. (b) Yes. (c) Nil. (v) Sabour and Dholi. (vi) and (vii) Nil.

5. RESULTS:

(i) 280 Rs/ha. (ii) 70·7 Rs/ha. (iii) Treatment differences are significant. (iv) Av. value of produce in Rs/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6
Av. produce	666	602	751	821	678	658

C.D. = 106·5 Rs/ha.

———

Crop :- Wheat, Barley, Gram and Peas (*Rabi*). **Ref :- Bh. 63(139).**

Site :- Govt. Farm, Seikhpura, Agri. Res. Instt., Patna. **Type :- 'X'.**

Object : —To find out suitable mixture of such varieties of Wheat and Gram, Barley and Gram as well as Barley and Peas which may be ready for harvest at the same time when grown in mixture.

1. BASAL CONDITIONS :

(i) (a) to (c) Nil. (ii) Clayee loam. (iii) 12.12.63. (iv) (a) 5 ploughings. (b) Behind the plough. (c) 92 Kg/ha cereal and legume mixed in the ratio of 3 : 1. (d) 25·4 cm. (e) Nil. (v) 44·8 Kg/ha. of N as A/S+ 44·8 Kg/ha. of P_2O_5 as Super. (vi) As per treatments. (vii) Irrigated. (viii) Four weedings. (ix) N.A. (x) 10, 12, 13, 14.4.64.

2. TREATMENTS :

6 mixed cropping treatments: T_1=Wheat NP 799+Gram BR—17, T_2=Wheat NP 835+Gram BR—17, T_3=Barley No. 17+Peas BR—2, T_4=Barley No. 21+Peas BR—2, T_5=Barley No. 117+Gram BR—17 and T_6=Barley NP 21+Gram BR—17.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 5·80 m.×12·52 m. (b) 5·50 m.×12·22 m. (v) 15 cm.× 15 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination, flowering, maturity, No. of tiller/plant, height of plant, and yield, (iv) (a) 1963—only. (b) and (c) Nil. (v) Sabour, Saharsa, Purnea and Dholi. (vi) and (vii) Nil.

5. RESULTS :

(i) 766 Rs/ha. (ii) 123·3 Rs/ha. (iii) Treatment differences are not significant. (iv) Av. value of produce in Rs/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6
Av. produce	784	669	723	841	837	743

——

Crop :- Wheat, Barley, Gram and Pea (*Rabi*). **Ref :- Bh. 63(123).**

Site :- District Agri. Farm, Purnea. **Type :- 'X'.**

Object : - To find out suitable mixture of such varieties of Barley and Pea, Wheat and Gram, as well as Barley and Gram which may be ready for harvest at the same time when grown in mixture.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar* for fodder. (c) Nil. (ii) Sandy loam. (iii) 19.11.63. (iv) 4 Behar ploughings, 5 tyne cultivator once. (b) Behind the plough. (c) Legume 46 Kg/ha., cereals at 69 Kg/ha. (d) Rows 25·4 cm. apart. (e) Nil. (v) 44·8 Kg/ha. of N as A/S+44·8 Kg/ha. of P_2O_5 as Super. (vi) As per treatments. (vii) Unirrigated. (viii) Weeding by *khurpi* (ix) 35·8 cm. (x) 10.3.64, 15.3.64, 18.3.64, 10.4.64, 30.4.64.

2. TREATMENTS :

6 mixed cropping treatments: T_1=Wheat NP 799+Gram BR—17, T_2=Wheat NP 835+Gram BR—17, T_3=Barley BR 117+Peas BR—2, T_4=Barley NP 21+Peas BR—2, T_5=Barley BR 117+Gram BR—17 and T_6=Barley NP 21+Gram BR—17.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) and (b) 10·06 m.×6·70 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of cut-worm. (iii) Germination, flowering, maturity, height of plant, tiller count, length of earhead and yield. (iv) (a) 1963—only. (b) and (c) Nil. (v) Sabour, Saharsa, Sheikhpura and Dholi. (vi) and (vii) Nil.

5. RESULTS :

(i) 1198 Rs/ha. (ii) 146·0 Rs/ha. (iii) Treatment differences are highly significant. (iv) Av. value of produce in Rs/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6
Av. produce	1102	630	1184	1229	1449	1053

Crop .- Wheat, Barley, Gram, Pea (*Rabi*). **Ref :- Bh. 63(128).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'X'.**

Object :—To find out the suitable mixture of such varieties of Wheat, Gram, Barley and Pea which may be ready for harvest at the same time when grown in mixture.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Moong*. (c) Nil. (ii) Sandy loam. (iii) 11.11.63. (iv) (a) 5 ploughings. (b) Behind the plough. (c) 92·2 Kg/ha., cereal and legumes in the ratio 3: 1. (d) Rows 25·4 cm. apart. (e) Nil. (v) 44·8 Kg/ha. of N as A/S+44·8 Kg/ha. of P_2O_5 as Super. (vi) As per treatments. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 5.4.64.

2. TREATMENTS :

6 mixed cropping treatments : T_1=Wheat NP 799+Gram BR—17, T_2=Wheat NP 835+Gram BR—17, T_3=Barley No. 117+Peas BR —2, T_4=Barley NP 21+Peas BR 2, T_5=Barley 117+Gram BR 17 and T_6=Barley NP 21+Gram BR 17.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) and (b) 10·06 m.×6·70 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Plant population, height and tiller count, length of earhead and yield. (iv) (a) 1961—63 (data not clear for 1961 and 62, so rejected). (b) and (c) Nil. (v) Saharsa, Seikhpura, Purnea and Dholi. (vi) and (vii) Nil.

5. RESULTS :

(i) 591 Rs/ha. (ii) 98·30 Rs/ha. (iii) Treatment differences are not significant. (iv) Av. value of produce in Rs/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6
Av. produce	578	586	550	615	630	591

Crop :- Wheat, Barley, Gram and Pea. **Ref :- Bh. 63(124).**

Site :- Dist. Agri. Farm, Saharsha. **Type :- 'X'.**

Object :—To find out suitable mixture of varieties of Wheat and Gram; Barley+Gram, as well as Barley+Pea which may be ready for harvest at the same time when grown in mixture.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) Nil. (ii) Sandy loam. (iii) 26.11.63. (iv) (a) 4—5 ploughings by mold board plough. (b) Behind the plough. (c) 69 Kg/ha. for cereal, 23 Kg/ha. for legume. (d) Rows 25·4 cm. apart. (e) N.A. (v) 44·8 Kg/ha. of N as A/S+44·8 Kg/ha. of P_2O_5 as Super. (vi) As per treatments. (vii) Irrigated. (viii) Weeding by hand. (ix) N.A. (x) Wheat NP 799—26.3.64, Gram—2.4.64, Wheat NP 835 on 29.3.64, Barley No. 117—25.3.64

2. TREATMENTS:

6 insecticidal treatments : Wheat NP 799+Gram BR—17, T_2=Wheat NP 835+Gram BR—17, T_3=Barley 117+Pea BR 2, T_4=Barley N.P. 21+Pea BR 2, T_5=Barley 117+Gram BR 17 and T_6=Barley N.P. 21+Gram BR 17.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) and (b) 10·06 m.×6·71 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Rust attack. (iii) Germination, flowering, maturity population-count, tiller count, height of plant, no. of earhead and yield. (iv) (a) 1963—only. (b) and (c) Nil. (v) Sabour, Seikhpura, Purnea and Dholi. (vi) and (vii) Nil.

5. RESULTS:

(i) 1468 Rs/ha. (ii) 253·5 Rs/ha. (iii) Treatment differences are not significant. (iv) Av. value of produce in Rs/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6
Av. produce	1678	1513	1439	1303	1491	1382

Crop :- Wheat and Gram (*Rabi*). **Ref :- Bh. 63(130).**

Site :- Naya Dumka Farm, Dumka. **Type :- 'X'.**

Object :—To find out the best method of sowing Wheat and Gram mixture.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Moong*. (c) Nil. (ii) Clay. (iii) 25.11.63. (iv) (a) 4 ploughings. (b) As per treatments. (c) Wheat—11·5 Kg/ha., Gram—34·6 Kg/ha. (d) Rows 25·4 cm. apart. (e) Nil. (v) For T_1 to T_5—44·8 Kg/ha. of N and 44·8 Kg/ha. of P_2O_5 and for T_6 and T_7 44·8 Kg/ha. of P_2O_5. (vi) Wheat—NP 798 Gram—ST 4. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 25.3.64 forWheat and 3.4.64 for Gram.

2. TREATMENTS :

7 mixed cropping treatments : T_1=Wheat and Gram in alternate rows, T_2=Wheat and Gram mixed in line, T_3=Wheat broadcast, T_4=Wheat and Gram broadcast, T_5=Wheat in line, T_6=Wheat in line and T_7=Gram broadcast.

3. DESIGN :

(i) R.B.D. (*ii*) (a) 7. (b) N.A. (iii) 4. (iv) (a) 10·88 m.×5·40 m. (b) 10·38 m.×4·89 m. (v) 25 cm.× 25 cm. (iv) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Wheat : effective no. of tillers, height of plant, yield of grain, Gram : effective no. of branches. (iv) (a) 1961—63 (Expt. for 61 was rejected. Expt. for 62—N.A.). (b) Yes. (c) Nil. (v) Sabour, Purnea, Saharsa, Kanke, Latehar, Sapaya and Musheri. (vi) Replication 1 and 2 failed as there were no pod formation in maize. (vii) This expt. could not be conducted in 62.

5. RESULTS :

(i) 352 Rs/ha. (ii) 56·0 Rs/ha. (iii) Treatment differences are not significant. (iv) Av. value of produce in Rs/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Av. produce	541	444	534	436	716	105	88

Crop :- Wheat and Gram (*Rabi*). **Ref :- Bh. 62(98), 63(132).**

Site :- Agri. Res. Instt., Kanke. **Type :- 'X'.**

Object :—To find out the best method of sowing Wheat and Gram mixture.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize ; Gundali. (c) 44·8 Kg/ha. of N as A/S+44·8 Kg/ha. of P_2O_5 as Super ; Nil. (ii) Clayee. (iii) 3.11.62 and 4 11.62 ; 24.11 63. (iv) (a) 4—6 ploughings ; 4 ploughings. (b) As per treatments. (c) Wheat—89·66 Kg/ha. and Wheat+Gram 3 : 1 ratio, Gram 67·2 Kg/ha. ; Wheat and Gram in 3 : 1 ratio. (d) 25·4 cm. row to row. (e) Nil. (v) For wheat+Gram mixture and Wheat alone 44·8 Kg/ha. of N A/S+44·8 Kg/ha. of P_2O_5 as Super ; for pure Gram 44·8 Kg/ha. of P_2O_5. (vi) N.P. 798 for Wheat, STU (Gram). (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 27.3.63 and 4.4.63 ; 15.4.64.

2. TREATMENTS :

7 mixed cropping treatments : T_1=Wheat+Gram in alternate row, T_2=Wheat+Gram—mixed in the same line, T_3=Wheat broadcast, T_4=Wheat and Gram broadcast, T_5=Wheat in line, T_6=Gram in line and T_7=Gram broadcast.

3. DESIGN:

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) and (b) 9·15 m.×5·48 m. ; 12·19 m.×5·48 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Stand count, No. of tiller, branches, height of plant, length of earheads ; No. of grain earhead and yield of grain. (iv) (a) 1961—63 (61 Gram failed hence rejected). (b) No. (c) The results of combined analysis are given under 5. Results. (v) Sabour, Purnea, Dumka, Saharsa, Latehar, Sapaya, Musheri. (vi) Nil. (vii) Error variances are homogeneous and Treatments×Years interaction is absent.

5. TREATMENTS :

Pooled results

(i) 509·0 Rs/ha. (ii) 158·7 Rs/ha. (based on 42 d.f. made up of pooled error and Treatments×Years interaction). (iii) Treatment differences are highly significant. (iv) Av. value of produce in Rs/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7	
Av. produce	657	718	627	601	784	109	69	C.D.=226·6 Rs/ha.

Individual results

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7	Sig.	G.M.	S.E./plot
Year										
1962	626	704	586	476	735	74	58	**	466	119·6
1963	687	731	668	725	832	145	79	**	538	112·9
Pooled	657	718	627	601	784	109	69	**	509	158·7

Crop :- Wheat and Gram (*Rabi*). **Ref :- Bh. 61(142), 62(100), 63(134).**

Site :- Agri. Farm, Latehar. **Type :- 'X'.**

Object :—To find out best method of sowing Wheat and Gram mixture.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 44·8 Kg/ha. of N+44·8 Kg/ha. of P_2O_5. (ii) Clayee. (iii) 29.11.61. (iv) (a) 4—6 *deshi* ploughings. (b) As per treatments. (c) Wheat—57·5 Kg/ha. ; Gram—34·5 Kg/ha. (d) Rows 25·4 cm. apart. (e) Nil. (v) For gram 44·8 Kg/ha. of P_2O_5, for Wheat and Gram mixture 44·8 Kg/ha. of N+44·8 Kg/ha. of P_2O_5. (vi) Wheat—NP 798, Gram—S Γ 4. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 5.4.62 ; 10.4.63 ; 19.3.64.

2. TREATMENTS :

7 mixed cropping treatments: T_1=Wheat and Gram in alternate rows, T_2=Wheat and Gram mixed in the same row, T_3=Wheat broadcast, T_4=Wheat and Gram broadcasted, T_5=Wheat in line, T_6=Gram in line and T_7=Gram broadcast.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 6·72 m.×6·11 m. ; 7·94 m.×6·72 m. for 62 and 63. (b) 6·72 m.×6·11 m. ; 6·72 m.×6·11 m. for 62 and 63. (v) Nil ; 61 cm.×30 cm. for 62 and 63. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain and their monetary return. (iv) (a) 1961 – 63. (b) Yes. (c) Results of combined analysis are presented under 5. Results. (v) Sabour, Dumka, Saharsa, Sepaya, Musheri, Purnea and Kanke. (vii) Nil. (vii) Error variances are homogeneous and Treatments × Years interaction is present.

5. RESULTS :

Pooled results :

(i) 457·0 Rs/ha. (ii) 167·1 Rs/ha. (based on 12 d.f. made up of Treatments × Years interaction). (iii) Treatment differences are ghly significant. (iv) Av. value of produce in Rs/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Av. produce	564	591	584	565	601	161	131

C.D.=252·2 Rs/ha.

Individual results

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7	Sig.	G.M.	S.E./plot
Year										
1961	472	541	519	529	593	177	188	**	431	84·6
1962	651	696	737	773	722	178	79	**	548	82·1
1963	569	536	497	394	487	127	125	**	391	56·0
Pooled	564	591	584	565	601	161	131	**	457	167·1

Crop :- Wheat and Gram (*Rabi*). **Ref :- Bh. 61(145), 62(104), 63(137).**

Site :- Musheri Farm, Musheri. **Type :- 'X'.**

Object :—To find out the best method of sowing for Wheat and Gram mixture.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) 44·8 Kg/ha. of N+44·8 Kg/ha. of P_2O_5. (ii) Sandy. (iii) 14.11.61 ; 10.11.62 13.11.63. (iv) (a) 4—6 *deshi* ploughings. (b) As per treatments. (c) Wheat—57·5 Kg/ha., Gram—34·5 Kg/ha. (d) Rows 25·4 cm. apart. (e) Nil. (v) For Wheat and Gram—44·8 Kg/ha. of N+44·8 Kg/ha. of P_2O_5, (vi) Wheat—NP 798, Gram—ST—4. (vii) Unirrigated ; Irrigated for 62 and 63. (viii) Weeding and hoeing. (ix) N.A. (x) 3, 4, 14.4.62 ; 17, 18.4.63 ; 13, 14.4.64.

2. TREATMENTS:

7 mixed cropping treatments: T_1=Wheat and Gram in alternate rows, T_2=Wheat and Gram in the same time behind the plough, T_3=Wheat broadcasted, T_4=Wheat and Gram broadcasted, T_5=Wheat in lines, T_6=Gram in lines and T_7=Gram broadcasted.

3. DESIGN:

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 13·72 m ×4·88 m. ; 9·14 m.×7·32 m. ; 10·97 m.×7·47 m. (b) 13·72 m.×4·88 m. ; 9·14 m.×7·32 m. ; 10·05 m.×6·71 m. (v) Nil ; Nil ; 45 cm.×38 cm. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Yield of grain and their monetary return. (iv) (a) 1951—53. (b) No. (c) Results of combined analysis are presented under 5. Results. (v) Sabour, Dumka, Saharsa, Sepaya, Latehar, Purnea and Kanke. (vi) Gram failed in treatments T_2 and T_4 for 61 and 62. (vii) Error variances are heterogeneous and Treatments×Years interaction is present

5. RESULTS:

Pooled results

(i) 762 Rs/ha. (ii) 573·3 Rs/ha. (based on 12 d.f. made up of Treatments×Years interaction). (iii) Treatment differences are not significant. (iv) Av. value of produce in Rs/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Av. produce	823	878	949	1010	957	376	344

Individual results

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7	Sig.	G.M.	S.E./plot
Year										
1961	788	1005	1085	973	1117	267	275	**	787	87·2
1962	1198	1288	1524	1645	1412	455	368	**	1127	53·9
1963	483	341	238	411	342	406	388	**	373	45·5
Pooled	823	878	949	1010	957	376	344	N.S.	762	573·3

Crop :- Wheat and Gram. **Ref :- Bh. 63(131).**

Site :- District Farm, Purnea. **Type :- 'X'.**

Object:—To find out the best method of sowing for Wheat Gram mixture.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) 44·8 Kg/ha. of P_2O_5 as Super and 44·8 Kg/ha. of N as Urea. (ii) Sandy loam. (iii) 7.11.63. (iv) (a) 4 ploughings with *deshi* plough. (b) As per treatments. (c) 90 Kg/ha. (Weat) 60 Kg/ha. (Gram). (d) Rows 25·4 cm. apart. (e) Nil. (v) 44·8 Kg/ha. of N as A/S+44·8 Kg/ha. of P_2O_5 as Super. (vi) NP 798 for Wheat, ST 4 for Gram. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 15.4.64 (Wheat) 30.4.64 (Gram).

2. TREATMENTS :

7 mixed croping treatments : T_1=Wheat+Gram in alternate rows, T_2=Wheat+Gram mixed in the same line behind the plough, T_3=Wheat in rows and Gram broadcast, T_4=Wheat+Gram broadcast, T_5=Wheat in lines, T_6=Gram in line and T_7=Gram broadcast.

3. DESIGN :

(i) R.B.D. (ii) 7. (b) N.A. (iii) 4. (iv) (a) and (b) 10·06 m.×3·36 m. (v) Nil. (vi) Yes.

4. GENERAL:

(i) Good growth of Gram. (ii) Nil. (iii) Height of plant, no. of tillers and branch, length of earhead no. of grain/earhead and yield of grain and straw. (iv) (a) 1961 – 63 (Data for 61 and 62 was not clear so rejected). (b) No. (c) Nil. (v) Sabour, Dumka, Saharsa, Kanke, Latehar, Sepaya, Musheri. (vi) and (vii) Nil.

5. RESULTS :

(i) 420 Rs/ha. (ii) 106·7 Rs/ha. (iii) Treatment differences are highly significant. (iv) Av. value of produce in Rs/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7	
Av. produce	374	678	509	501	530	160	185	C.D.=158·6 Rs/ha.

Crop :- Wheat and Gram. **Ref :- Bh. 63(127).**

Site :- Agri. Res. Instt., Sabour. **Type :- 'X'.**

Object :—To find out the best method of sowing for Wheat and Gram mixture.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Moong.* (c) Nil. (ii) Sandy loam. (iii) 15.11.63. (iv) Two ploughings with tractor, two with *deshi* plough. (b) As per treatments. (c) Wheat 90 Kg/ha. Gram: 60 Kg/ha. (d) 25·4 cm. apart. (e) Nil. (v) 44·8 Kg/ha. of N+44·8 Kg/ha. of P_2O_5. (vi) NP—798 (Wheat) ST 4 (Gram). (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 1.4.64 to 2.4.64.

2. TREATMENTS :

7 mixed cropping treatments: T_1=Wheat and gram in alternate rows, T_2=Wheat and gram mixed in line, T_3=Wheat broadcast, T_4=Wheat and gram broadcast, T_5=Wheat in line, T_6=Wheat in line and T_7=Gram broadcast.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) and (b) 10·06 m.×6·70 m. (v) Nil. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Stand count, height and tiller count, no. of branches, no. of pods, yield of grain and straw both in case of wheat and gram. (iv) (a) 1961—63 (data for 61 and 62—not clear so rejected). (b) Yes. (c) Nil. (v) Purnea, Dumka, Saharsa, Kanke, Latehar, Sepaya and Musheri. (vi) and (vii) Nil.

5. RESULTS :

(i) 590 Rs/ha. (ii) 140·7 Rs/ha. (iii) Treatment differences are highly significant. (iv) Av. value of produce in Rs/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7	
Av. produce	640	692	502	813	685	387	412	C.D.=209·0 Rs/ha.

Crop :- Wheat and Gram (*Rabi*). **Ref :- Bh. 62(95), 63(125).**

Site :- District Agri. Farm, Saharsa. **Type :- 'X'.**

Object :—To find out the best method of sowing for Wheat and Gram mixture.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) Nil. (ii) Sandy loam. (iii) 8.11.62 ; 14.11.63. (iv) (a) 4—5 ploughings by mold board plough. (b) Behind the plough. (c) Wheat—69 Kg/ha., Gram—35 Kg/ha. (d) Rows 25 cm. apart. (e) Nil. (v) 44·8 Kg/ha. of N as A/S+44·8 Kg/ha. of P_2O_5 as Super. (vi) Wheat NP—799, Gram—BR—17. (vii) Irrigated. (viii) Weeding by hand. (ix) N.A. (x) Wheat—6.3.63, Gram—13.4.63; Wheat—21.3.64, Gram—31.3.64.

2. TREATMENTS:

7 mixed cropping treatments : T_1=Wheat and Gram in alternate row, T_2=Wheat and Gram mixed in the same line behind the plough, T_3=Wheat broadcasted only, T_4=Wheat in rows and Gram broadcated, T_5=Wheat in lines, T_6=Gram in lines and T_7=Gram broadcasted only.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) and (b) 10·08 m.×6·72 m. (v) Nil. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Attack of rust. (iii) Yield of grain and monetary return. (iv) (a) 1961 - 63 (data not clear for 61, so rejected). (b) Yes. (c) The results of the combined analysis are presented under 5. Results. (v) Sabour, Dumka, Purnea, Sepaya and Kanke. (vi) Nil. (vii) Error variances are heterogeneous and Treatments × Years interaction is present.

5. RESULTS :

Pooled results

(i) 1038 Rs/ha. (ii) 568·6 Rs/ha. (based on 6 d.f. made up of Treatments × Years interaction). (iii) Treatment differences are not significant. (iv) Av. value of produce in Rs/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T
Av. produce	1195	1258	1338	1366	1212	538	360

Individual results

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7	Sig.	G.M.	S.E./plot
Year										
1962	934	905	981	850	882	583	347	**	783	146·3
1963	1455	1610	1694	1882	1542	492	373	**	1293	339·5
Pooled	1195	1258	1338	1366	1212	538	360	N.S.	1038	568·6

Crop :- Wheat and Gram (*Rabi*). **Ref :- Bh. 61(146), 62(105), 63(138).**

Site :- Sepaya Farm, Sepaya. **Type :- 'X'.**

Object :—To find out the best method of sowing for Wheat and Gram mixture.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Maize. (c) 44·8 Kg/ha. of N+44·8 Kg/ha. of P_2O_5. (ii) Sandy loam. (iii) 14.11.61; 9.12.62 ; 14.11.63. (iv) (a) 4—6 *deshi* ploughings. (b) As per treatments. (c) Wheat—57·5 Kg/ha. ; Gram 34·5 Kg/ha. (d) Rows 25·4 cm. apart. (e) Nil. (v) For Wheat and Gram 44·8 Kg/ha. of N+44·8 Kg/ha. of P_2O_5, for Gram 44·8 Kg/ha. of P_2O_5. (vi) Gram—ST—4, Wheat—NP—798. (vii) Unirrigated ; Irrigated Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 5 to 20.4.62 ; 19.4.63 ; 30.3.64 and 10.4.64.

2. TREATMENTS :

Same as in Expt. No. 61(145), 62(104), 63(137) at Musheri presented on page No. 905.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 10·99 m.×7·33 m. (b) 10·08 m.×6·72 m. (v) 45 cm.× 30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain and their monetary retun. (iv) (a) 1961—63. (b) Yes. (c) Results of combined analysis have been presented under 5. Results. (v) Sabour, Purnea, Saharsa, Musheri, Latehar and KanKe. (vi) Nil. (vii) Error variances are heterogeneous and Treatments × Years interaction is present.

5. RESULTS:

Pooled results

(i) 466·0 Rs/ha. (ii) 471·0 Rs/ha. (based on 12 d.f. made up of Treatments × years interaction). (iii) Treatment differences are not significant. (iv) Av. value of produce in Rs/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Av. produce	487	646	501	464	697	276	194

Individual results

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7	Sig.	G M.	S.E./plot
Year										
1961	870	1092	687	553	1092	55	42	**	628	120·4
1962	296	443	393	370	486	424	309	**	389	53·5
1963	294	404	423	469	512	350	232	**	383	58·4
Pooled	487	646	501	464	697	276	194	N.S.	466	471·0

Crop :- Wheat, Gram and Linseed (*Rabi*). **Ref :- Bh. 65(61).**

Site :- Barh Farm, Barh (Patna). **Type :- 'X'.**

Object :—To find out suitable mixture with Linseed under rain fed condition.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Old gangatic alluvium. (iii) 22.11.65. (iv) (a) 3 ploughings. (b) Harrowing. (c) 15 Kg/ha. for linseed, 50 Kg/ha. for Gram, 100 Kg/ha. for Wheat. (d) Rows 20 cm. apart. (e)—. (v) N as A/S at 22·5 Kg/ha.+P_2O_5 as Super at 22·5 Kg/ha. (vi) P 142—Linseed, BR—77 (Gram), NP 835 for Wheat. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) —. (x) 18.4.66.

2. TREATMENTS :

9 mixed cropping treatments : T_1=Wheat alone, T_2=Gram alone, T_3=Linseed alone, T_4=One row linseed and one row Wheat, T_5=One row linseed and three rows Wheat, T_6=Three rows linseed and three rows Wheat, T_7=One row linseed and one row gram, T_8=One row linseed and three rows gram and T_9=Three rows linseed, three rows gram.

3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 5·93 m.×7·76 m. (b) 5·48 m.×7·31 m. (v) 45 cm.×45 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Rust in linseed. (iii) Yield of grain and monetary retun. (iv) (a) 1965 only. (b) No. (c) Nil. (v) No. (vi) and (vii) Nil.

5. RESULTS :

(i) 798 Rs/ha. (ii) 342·2 Rs/ha. (iii) Treatment differences are highly significant. (iv) Av. value of produce in Rs/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9
Av. produce	1103	1595	236	640	686	628	455	711	1127

C.D.=499· 4Rs/ha.

Crop :- Wheat and Rai (*Rabi*). **Ref :- Bh. 64(276), 65(49).**

Site :- Agri. Res. Instt., Dholi. **Type :- 'X'.**

Object :—To find out the suitability of mixing Mustard with other major crop Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) 112·5 Kg/ha. of N as A/S+67 Kg/ha. of P_2O_5 as Super+33·5 Kg/ha. of K_2O as Mur. Pot. (ii) Calcarious loam. (iii) 31.10.64 ; 7.12.65 and 8.12.65. (iv) (a) 3 ploughings. (b) Drilling. (c) Wheat—67 Kg/ha., Rai—7 Kg/ha. (d) Rows 23 cm. apart. (e) —. (v) 22·5 Kg/ha. of N+22·5 Kg/ha. of P_2O_5+22·5 Kg/ha. of K_2O. (vi) Rai—BR—13, Wheat—NP—798 ; NP—835. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 3.3.65 and 22.3.65 ; 10.3.66.

2. TREATMENTS :

5 mixed cropping treatments : T_1=Wheat alone, T_2=Mustard alone, T_3=6 rows of wheat and one row of mustard, T_4=9 rows of wheat and one row of mustard and T_5=12 rows of Wheat and one row of mustard.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 13·71 m.×3·66 m. (b) 13·10 m.×3·20 m. (v) 30 cm.× 23 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Aphids attack, 0·02 % folidol spray. (iii) Yield of grain and their monetary return. (iv) (a) 1964—65. (b) No. (c) Results of combined analysis have been presented under 5. Results. (v) No. (vi) Nil. (vii) Error variances are heterogeneous and Treatments×Years interaction is present.

5. RESULTS :

Pooled results

(i) 586·0 Rs/ha. (ii) 242·0 Rs/ha. (based on 4 d.f. made up of Treatments×Years interaction). (iii) Treatment differences are not significant. (iv) Av. value of produce in Rs/ha.

Treatment	T_1	T_2	T_3	T_4	T_5
Av. produce	677	402	522	636	693

Individual results

Treatment	T_1	T_2	T_3	T_4	T_5	Sig.	G.M.	S.E./plot
Year								
1964	939	477	707	872	943	*	787	230·95
1965	415	327	338	400	443	N.S.	384	115·29
Pooled	677	402	522	636	693	N.S.	586	242·0

Crop :- Arhar and Other crops (*Kharif*). **Ref :- Bh. 61(135), 62(96).**

Site :- Agri. Res. Instt., Dholi. **Type :- 'X'.**

Object :—To find out a suitable mixed cropping pattern.

1. BASAL CONDITIONS

(i) (a) to (c) N.A. ; Nil. (ii) N.A. ; sandy loam. (iii) 28, 29.6.61 ; 17.6.62. (iv) (a) N.A. ; 5 *deshi* ploughings. (b) Behind the plough. (c) to (e) N.A. (v) N.A. (vi) N.A. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 18.11.61 to 8.5.62 ; 28.9.62 to 2.5.63.

2. TREATMENTS:

7 mixed cropping treatments : T_1=Arhar alone, T_2=Arhar+Groundnut, T_3=Arhar+Ginger, T_4=Arhar+Kalai, T_5=Arhar+Castor, T_6=Arhar+Turmeric and T_7=Arhar+Maize.

3. DESIGN:

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 9·22 m.×7·32 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil ; Stem borer attack in Maize, 20 % endrin spray. (iii) Yield of grain and monetary return. (iv) (a) 1961—62. (b) Yes. (c) Results of combined analysis have been presented under 5. Results. (v) No. (vi) Nil. (vii) Error variances are heterogeneous and Treatments × Years interaction is present.

5. RESULTS :

Pooled results

(i) 1004 Rs/ha. (ii) 431·9 Rs/ha. (based on 6 d.f. made up of Treatments × Years interaction). (iii) Treatment differences not are significant. (iv) Av. value of produce in Rs/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Av. yield	943	942	1163	852	1036	1107	982

Individual results

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7	Sig.	G.M.	S.E./plot
Year 1961	1038	963	1214	1003	1460	1102	968	**	1107	122·8
1962	848	920	1112	701	613	1111	997	**	900	57·9
Pooled	943	942	1163	852	1036	1107	982	N.S.	1004	431·9

Crop :- Mustard, Bean and Cucurbit (*Rabi*). **Ref :- Bh. 62(162).**

Site :- Agri. Res. Instt., Patna. **Type :- 'X'.**

Object :—To assess the comparative efficacy of various insecticides in controlling the Aphids on *Rabi* crops.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) 45 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam. (iii) 15.10.62. (iv) (a) 3—4 ploughings with *deshi* plough. (b) Broadcasting. (c) 3·75 Kg/ha. (d) Nil. (e) —. (v) Nil. (vi) Local. (vii) Irrigated. (viii) Weeding. (ix) N.A. (x) 25.3.63.

2. TREATMENTS :

6 insecticidal treatments : T_0=Control, T_1=0·04 % of Endrin, T_2=0·04 % of Folidol, T_3=Menazone, T_4=Nicotine sulphur and T_5=BHC.

Time—20.11.62.

Method—Foliar spray.

3. DESIGN :

(i) R B.D. (ii) (a) 6. (b) 202·32 sq. meters (iii) 4. (iv) (a) and(b) 33 7 sq. meters. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of aphids, control measure taken as per treatments. (iii) Germination, maturity count, height of plants, population of aphids per wing. (iv) (a) 1962—64. (b) Yes. (c) Nil. (v) Sabour and Dholi. (vi) and (vii) Nil.

5. RESULTS:

(i) 38·2 degree. (ii) 8·2 degree. (iii) Treatment differences are highly significant. (iv) Mean angle in degrees.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6
Mean angle	30·4	26 5	22·4	47·4	47·9	54·4

C.D.=12·3 degree.

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Crop \ Type	M	MV	C	CV	CM	CMV	I	V	IM	IMV	IC	ICV	ICM	D	X
Paddy	1	61	62	91	113	114	120	—	127	—	—	—	—	144	—
Wheat	189	262	265	280	293	—	298	—	305	310	311	—	—	312	—
Barley	335	—	—	338	339	—	339	—	—	—	—	—	—	343	—
Jowar	345	—	346	—	—	—	—	—	—	—	—	—	—	—	—
Maize	347	401	408	429	—	—	—	439	442	444	—	—	—	446	—
Marua	465	—	467	—	—	—	—	—	—	—	—	—	—	470	—
Gundali	471	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Gram	473	—	482	—	485	—	—	—	—	—	—	—	—	487	—
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Bhindi	532	535	—	—	—	—	—	—	—	—	—	—	—	—	—
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Potato	542	562	—	564	—		565	—	—	—	—	—	—	569	—
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Bittergaurd	—	—	—	—	—	—	—	—	—	—	—	—	—	579	—
Toria	583	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sugarcane	583	—	648	668	677	—	68		685	693	—	699	699	702	—
Cotton	734	—	740	—	740	—	—	—	—	—	—	—	—	744	—
Jute	754	766	770	772	—	—	—	—	—	—	—	—	—	773	—
Mester	—	—	—	—	—	—	—	—	—	—	—	—	—	778	—
Groundnut	778	—	788	—	789	—	—	—	794	—	—	—	—	795	—
Til	806	—	811	—	—	—	—	—	—	—	—	—	—	—	—
Castor	812	—	—	818	—	—	—	—	—	—	—	—	—	821	—
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Mustard	826	—	—	—	843	—	—	—	—	—	—	—	—	844	—
Soyabeen	845	—	—	—	847	—	—	—	—	—	—	—	—	—	—
Niger	848	—	—	—	857	—	—	—	—	—	—	—	—	—	—
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Grass	861	865	871	—	—	—	—	—	—	—	—	—	—	881	—
Mango	883	—	884	—	—	—	—	—	884	—	—	—	—	886	—
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