NATIONAL INDEX

OF

AGRICULTURAL

FIELD

EXPERIMENTS

VOL. 9 PART 3

MYSORE

1960—65

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FOREWORD

The I. C. A. R. has adopted the 'Co-ordinated approach' to crop improvement as its 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 gaps 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 conducted 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 conclusions drawn from 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 this work.

I hope that the present series will be followed by periodical publications of similar compendia for later years in order that the availability 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 12,000 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 two 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 contains 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 experiments conducted only for one year, and also those conducted for more than one year but were continuing beyond 1965, the results of individual experiments have been presented

The work under the scheme was carried out at the Institute of Agriculturale Research Statistics. Collection of data from different research stations, their scrutiny and preliminary analysis were carried out in successive periods under the charges of Shri T.P. Abraham, Assistant Statistical Adviser, now Joint Director, Central Statistical Organisation ; Dr. B.N. Tyagi, Senior Statistician, Now Joint Director of Agriculture (Statistics), Uttar Pradesh and Shri M.G. Sardana, Senior Statistician, now Officer-on-Special Duty, Central Statistical Organisation. Shri O.P. Kathuria, Junior Statistician, now Statistician in Indian Agricultural Research Institute was also associated.

Preparation of material for inclusion in the third series of compendia volumes and their printing was carried out under the guidance of Shri K.S. Krishnan, Senior Statistician. Shri R.K. Khosla and Shri P.N. Soni, Junior Statisticians, were responsible for the actual working of the scheme till October 1973 and thereafter respectively.

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. The tabulation of the large volume of data involved was facilitated by the assistance rendered by the staff of the computer centre located at the Institute. S/Shri P.P Rao M.P. Saksena, M.L. Sahni, A. K. Mukherjee, S. L. Garg, R.K. Jain, H.C. Jain, G.V.S R. Krishna, J.K. Kapoor, D.K. Gulati, D.P. Singh, Mahender Singh, Kuldip Singh and S.S. Kutaula, statistical staff of the Institute deserve mention for the careful and painstaking work in the analysis of data, combination of results of similar experiments and proof reading of the compendia volumes.

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-operation 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,
June 1, 1974

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. Instt. 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 2. 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 numbers have 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 cultivators' 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 operations 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 such 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.

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 sativam* Lamk, *Triticum aestivum* L.	Gaum ; Ghehu	Gam	Gaham	Godumalu	Kothumai	Gothambu	Godhi	Gahu	Ghahu	Gehon	Kanak
3	Jowar	*Andropogon sorghum*	—	Jowar	Juara	Jonna	Cholam	Cholam	Jola	Jowari Jondhla	Jowari Juar	Jowar; Jaur	Jowar
4	Maize	*Zea mays* L.	Gom dhan	Bhutta	Macca	Makka-Jonna	Makka-cholam	Cholam Makka-holam	Musukina Jola	Makka	Makkai	Makka	Makki, Makayee
5	Bajra	*Pennisetum typhoides*	—	Bajra	Bajra	Sajja	Kambu	Kambu	Sajje	Bajri	Bajri	Bajra	Bajra
6	Ragi	*Fleusine coracana Gaertn*	—	Marwa	Mandia	Ragi ; Chodi	Keppai ; Ragi	Muthari ; Ragi	Ragi	Nagli ; Nachni	Nagli ; Bauto	Ragi ; Mandika ; Marwah	Mandhuka ; Mandhal
7	Tenai	*Setaria italica Beauv*	—	Kaon	Kanghu ; Kangam ; Kora	Korra	Tenai	Thena	Navane	Kang ; Rala	Kang	Kakum	Kangni
8	Tur	*Cajanus cajan* Milsp. ; *Cajanus indicus* sprengl.	Arhar	Arahar	Harad	Kandulu	Thuvarai	Thuvaran payaru	Thogari	Tur	Tuver	Arhar	Harhar, Arhar
9	Gram	*Cicer arietinum* L.	Butmah	Chola	Boot	Senagalu	Kadalai, Sundal Kadalai	Kadala	Kadale	Harbara	Chana	Chana	Chhole ; Chana
10	Green Gram (Mung)	*Phaseolus aureus* Roxb	Magumah	Sonamug	Mung	Pachape-salu	Pachai-payru Pasipayaru	Cerupa-yaru Payaru	Hesaru	Mug	Mag	Moong	Moong ; Mug
11	Sugarcane	*Saccharum officinarum* L.	Kuhiar	Akh	—	Cheruku	Karumbu	Karimbu	Kabbu	Oos	Sherdi	Ganna ; Kamad ; Naishakar	Kamad ; Ganna ; Eakh
12	Cotton	*Gossypium spp.*	Kapah	Karpas ; Tula	Kapa	Pratti	Paruthi	Paruthi	Hatti	Kapus	Kapas	Kapas	Kapah
13	Tobacco	*Nicotiana tabacum* L.	Dhopat	Tamak	Uanpatra	Pogaku	Pugayilai	Pukayila	Hoge Sappu	Tambaku	Tamaku	Tambaku	Tamaku Tambaku

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
14	Groundnut	*Arachis hypogaea* L.	China badam	Cheena badam	China-badam	Nelashanga	Nilakadalai	Nilak-kadala	Kadale kayi	Bhuimug	Bhoising ; Magafali	Mungphali	Mungfali
15	Caster	*Ricinus communis* L.	Eri	Rehri	Jada	Amudalu	Amanakku	Avanakku	Haralu	Erandi	Diveli Erando	Rehri	Arind ; Harind ; Rind
16	Chillies	*Capsicum frutescens* L.	Jalakya	Lanka; Marich	Lanka	Mirapakaya	Milakai	Mulaku	Menasina kayi	Mirchi	Marcha	Lalmirich	Lalmirch
17	Cardmum	*Elettaria cardamomum* Maton	Elachi	Chota elach	Gujurati	Yelak-kayalu	Ealakai	Elam	Yalakki	Veldode	Elaichi Elchi	Elachi	Illaichi
18	Pepper	*Piper nigrum* L.	Jaluk	Golmiarch	Galmirach	Miriyalu	Milagu	Kuru Mulaku	Kare menasu	Miri	Mari	Kalimirich	Kalimirich
19	Paragrass	*Brachiaria munica* ; *Penicum purpurascens* Raddi	Para ghah	Nardul	Ghara ghasa	Enumugaddi	Neerpul	—	Mauritius hullu	Para gavat	Para ghas	Para ghas	Para ghah
20	Citrus	*Citrus sinensis* Osbeck	Malta ; Mozambique	Mosambi	Mitha kamala	Battayi	Sathugudi; Cheeni	Madura naranga	Sathkudi	Mosambi	Mosambi	Malta Mausmee	Malta
21	Coffee	*Coffea aralica* L.	Coffee	Kafi	Kofi	Coffee	Kappi	Coffee	Kafi	Kafi	Kafi	Coffee	Kofi
22	Arecanut	*Arecca Catechu* L.	Tamol	Supari	Gua	Poka	Kamuhu ; Pakku	Kavungu	Adike	Supari	Supari	Supari	Supar
23	Coconut	*Cocos nucyera* L.	Narikol	Narikol	Madia	Kabbera	Thennai	Thengu	Thengina kayi	Naral	Nalieri	Narial	Naryal, Narel
24	Cashewnut	*Aracardium occidentab*	Kaju	Kaju badam	Lanka amba	Jeedima midi	Mundiri	Kasu mave	Godambi	Kaju	Kaju	Kaju	Khaja

CONTENTS

MYSORE

(Salient features of experimentation)

The general information regarding the agro-climatic regions, extent of irrigation, normal cropping pattern, etc. of the State of Mysore has been furnished in the first and the second series of the National Index of Agricultural Field Experiments already published for the periods 1948-53 and 1954-59 respectively.

This volume includes the results of 1149 experiments conducted during the period 1960-65, besides experiments belonging to All India Co-ordinated Agronomic Experiments Scheme of I.C.A.R., as against 1293 experiments for the period 1954-59 and 565 for the period 1948-53. The consolidated results of the experiments conducted for more than one year and concluded during the period 1960-65 numbering 676 and forming 249 groups, have been presented with crop-wise and type-wise distribution in Table 1 below :

TABLE-I

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

(Crop-wise and type-wise)

Crop \ Type	M	MV	C	CV	CM	CMV	I	IM	IC	D	X	Total
Paddy	28(91)	2(5)	17(39)	9(22)	6(19)	—	1(3)	—	—	3(7)	—	66(186)
Jowar	25(71)	—	3(13)	2(7)	3(6)	—	—	—	—	—	—	33(97)
Wheat	12(31)	—	2(4)	—	2(6)	—	—	—	—	—	—	16(41)
Bajra	—	—	1(3)	—	—	—	—	—	—	1(3)	—	2(6)
Maize	—	1(2)	—	—	—	—	—	2(5)	—	—	—	3(7)
Ragi	5(10)	—	4(8)	—	—	1(2)	—	—	—	—	—	10(20)
Korra	2(4)	—	—	—	—	—	—	—	—	—	—	2(4)
Sugarcane	14(36)	—	4(10)	—	6(14)	—	1(2)	2(4)	—	1(2)	—	28(68)
Cotton	18(47)	—	4(8)	—	5(12)	—	—	—	1(2)	4(12)	—	32(81)
Tobacco	3(7)	—	2(5)	—	—	—	—	—	—	3(8)	—	8(20)
Groundnut	10(25)	—	4(9)	1(5)	—	—	—	—	—	2(4)	—	17(43)
Castor	1(3)	—	—	—	—	—	—	—	—	—	—	1(3)
Grass	1(3)	—	2(6)	—	—	—	—	—	—	—	—	3(9)
Citrus	1(3)	—	1(4)	—	—	—	—	—	—	—	—	2(7)
Coffee	9(32)	—	4(9)	—	2(6)	—	—	—	—	3(11)	—	18(58)
Arecanut	3(10)	—	—	—	—	—	—	—	—	3(10)	—	6(20)
Mixed cropping	—	—	—	—	—	—	—	—	—	—	2(6)	2(6)
Total	132(373)	3(7)	48(118)	12(34)	24(63)	1(2)	2(5)	4(9)	1(2)	20(57)	2(6)	249(676)

N.B Figures in the bracket indicate total number of experiments in the crop.

The results of the experiments conducted for only one year during the period under report and also those of the experiments which are continued beyond 1965, numbering 460 have been presented. The distribution of all experiments, according to crop and type of treatments is furnished in Table 2 below :

TABLE 2

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

Crop \ Type	M	MV	C	CV	CM	CMV	I	IM	IC	ICV	D	X	R	Total
Paddy	122	8	40	25	21	2	4	—	—	—	15	—	—	237
Wheat	41	—	5	1	6	—	—	4	—	—	—	—	—	57
Jowar	95	2	23	7	9	1	—	1	—	4	7	—	—	149
Bajra	—	—	3	—	—	2	—	—	—	—	3	—	—	8
Maize	—	4	—	1	—	2	—	8	—	—	—	—	—	75
Ragi	18	—	10	—	—	2	—	—	—	—	1	—	—	31
Korra	6	—	—	—	—	—	—	—	—	—	—	—	—	6
Gram	—	—	—	1	—	—	—	3	—	—	—	—	—	4
G. Gram	—	—	1	—	—	—	—	—	—	—	—	—	—	1
Tur	—	—	—	—	—	—	—	—	—	—	2	—	—	2
Sugarcane	59	1	14	1	17	—	4	10	—	—	10	—	—	116
Cotton	70	—	16	3	21	—	3	2	4	—	36	—	—	155
Tobacco	16	—	7	—	—	—	—	—	—	—	8	—	—	31
G. Nut	30	—	18	5	—	—	1	—	—	—	5	—	—	59
Castor	3	—	—	—	—	—	—	—	—	—	—	—	—	3
Grass	5	1	6	4	—	—	—	—	—	—	—	—	—	16
Cardamom	—	—	5	—	—	—	—	—	—	—	7	—	—	12
Pepper	—	—	1	—	—	—	—	—	—	—	—	—	—	1
Chillies	1	1	—	—	—	—	—	—	—	—	—	—	—	2
Citrus	3	—	31	—	—	—	—	4	4	—	6	—	—	48
Coffee	78	—	14	—	16	—	—	2	—	—	20	—	—	130
Cashewnut	—	—	9	—	—	—	—	4	—	—	—	—	—	13
Arecanut	11	—	11	—	—	—	—	—	—	—	—	—	—	22
Coconut	—	—	—	—	2	—	—	—	—	—	—	—	—	2
X	—	—	—	—	—	—	—	—	—	—	—	20	—	20
R	—	—	—	—	—	—	—	—	—	—	—	—	9	9
Total	558	17	214	48	92	9	12	38	8	4	120	20	9	1149

Out of the total number of experiments reported for the period 1960-65, about 21 per cent were conducted on Paddy crop, about 14 per cent each on Cotton and Jowar and about 11 per cent on each of the two crops Sugarcane and Coffee. The remaining experiments were spread over a variety of crops, important of these being Wheat, Ragi, Groundnut, Tobacco and Citrus.

Manurial experiments accounted for about 49 per cent of the total number of experiments, while those relating to cultural practices and control of 'Diseases and Pests' accounted for about 19 per cent and 10 per cent respectively. Experiments with irrigational treatments and those with varietal treatments constituted each about 7 per cent of the total number of experiments conducted.

The principal crops of the state are Paddy. Jowar, Maize. Ragi, Cotton and Groundnut. Bajra and pulses also eover large areas. Cash crops like Sugarcane, Tobacco, Chillies and plantation crops like Coffee, Cashewnut, Coconut and Arecanut are also grown in some parts of the state, but they occupy relatively small ,areas. The salient feature of experimentation on important crops are given below :

Paddy :—Paddy covered 1059* thousand hectares i.e. about 10 per cent of the total cropped area. Out of the 237 experiments, 186 experiments forming 66 groups were concluded during the period under report. Experiments were conducted under irrigated as well as rainfed conditions. Varieties like G. E. B. 24, S. R. 26 B, S- 661, S-1092 and Co-14 were mostly used for experiments conducted under irrigated condition, while A-200 (late) M. G. L.-5, P.T.B. 9, P. T. B. -10, K. B.-356, M-141, M-14, Co-14 and Co-25 were the varieties grown on which experiments were conducted under rainfed conditions. The net plot size adopted for experiments varied from 11.6 sp. meters to 85.6 sp. metres.

Randomised Block Design was commonly adopted for experimentation. Out of 237 experiments, in as many as 158 experiments, this desigen was used. Split-plot, Corfounded and Latin Square desigens were adopted in 44, 24 ond 9 experiments respectively. In respet of 2 experiments Strip-plot Design was adopted. The experiments laid out sn different designs had replications ranging from 2 to 6 for Randomised block as well as Split-plot designs and 1 or 2 for Confounded design.

About 65 per cent of the total number of experiments, were of manurial type or had manure as one of the factors. The levels of N, P and K tried on these experiments ranged between 0 and 100.8 Kg/ha. 0 and 74.1 Kg/ha. and 0 and 67.2 Kg/ha. respectively. Besides these,results of experiments with different cultural practices like, methods of planting, plant and row spacings, seed rates. irrigational practices and of those on conrol the pests and diseases have been included in the present volume.

Jowar ;- Jowar covered 2843* thousand hectares i. e. 26.3 per cent of the total cropped area. Out of 149 experiments, 97 experiments forming 33 groups were concluded during the period under report. About 72 per cent of the exeriments were conducted under rainfed condition. Varieties like M-35-1, Nandyal, Fulgar white, EM-4-1-4 and D-340 were tried on experiments under rainfed condition. Co-9, M-312 and D-40 were the varieties commonly used in experiments conducted under irrigated condition. The net-plot area varied from 20.3 sp. meters to 23.3 sq meters.

Randomised Block Design was generally adopted for experimentation. About 117 experiments were laid out in this design. Split-plot Confounded and Latin-square designs were adopted in the case of 13. 11 and 8 experiments respectively. 2 to 12 replications were used in the case of experiments laid out in Randomised Block Design while 2 to 6 and 1 or 2 replications were used in the cases of Split-plot and Confounded designs respectively.

Manurial experiments accounted for 64 per cent of the total number of experiments. In these experiments levels of N, P and K tried varied between 0 to 89.6 Kg/ha., 0 to 112.6 Kg/ha. and 0 to 67.2 Kg/ha. respectively. Beside these, result of euperiments with different cultural practices like methods of sowing, plant and row spacing etc., irrigational practices and of those on control of disease and pests have been included in this volume.

Ragi : —Ragi covered 931* thousand hectares accounting for 9.2 per cent of the total cropped area. Out of 31 experiments, 20 experiments forming 10 groups, were concluded during the period under report, Most of the experiments were conducted under rainfed conditions. M 22 and Poorna varieties were commonly used. The net-plot size varied from 20.4 to 179.6 square meters. 21 experiments were conducted in Randomised Block Design and the

remaining 10 experiments were distributed equally between Split-plot and Confounded designs. 3 to 6 replications were normally used in experiments laid out in Randomised Block Design, except in one experiment where as many as 12 replications were adopted. In Split-plot and Confounded designs 2 to 6 and only 2 replications were used respectively. About 6 per cent of the total number of experiments conducted on this crop were of manurial type. The levels of N tried varied from 0 to 89·6 Kg/ha. while that of P and K ranged between 0 to 44·8 Kg/ha.

Cotton :— Cotton covered 980* thousand hectare accounted for 9·1 percent of the total cropped area. Out of 155 experiments, 81 experiments forming 32 groups were concluded during the period under report. As many as 119 experiments were conducted under rainfed conditions. M.A-5, Jayadhar Western, and Suyodhar where the varieties mostly used in experiments conducted under rain-fed conditions, while Laxmi variety was commonly used in experiments under irrigated and rainfed conditions. The net-plot size varied from 7·29 to 201·3 square meters. In 93 experiments Randomised Block Design was adopted. Split-plot, Confounded and Latin square designs were used in 29, 20 and 4 experiments respectively. The experiments laid out in different designs had replications ranging between 3 and 8, 2 and 4 and 1 and 4 for Randomised Block, Split-plot and Confounded designs respectively. About 60 per cent of the experiments were of manurial type or had manure as one of the factors applied. The levels of N, P and K tried in these experiments varied between 0 and 112·1 Kg/ha. In cultural experiments seed rate, spacing between rows and plants etc. were the important practices tested.

Sugarcane :—Sugarcane covered 79* thousand hectares accounting for about 0·73 per cent of the total cropped area. 68 experiments forming 28 groups were concluded during the period under report. All the 116 experiments on this crop were conducted under irrigated conditions. Co—419 was the variety used. The net-plot size varied between 19·17 and 100·10 Sq. meters. 92, 17 and 8 experiments were conducted in Randomised Block, Split-plot and Confounded designs respectively. The experiments laid out in different designs had replications ranging between 2 and 6, 2 and 4 and 1 and 2 for Randomised Block, Split-plot and Confounded designs respectively. About 75 per cent of the experiments were of manurial type or had manure as one of the factors applied. The levels of N, P and K tried in these experiments varied between 0 to 336·2, 0 to 168·1 and 0 to 252·0 Kg/ha. In cultural experiments dates of sowing, seed rates, and spacings were some of the important treatments tried. Results of the experiments with irrigational practices and those on control of Pests and Diseases have been included in this volume.

Groundnut :—Groundnut covered 871* thousand hectares i.e. 8·2 per cent of the total cropped area. 43 experiments out of 59 experiments forming 17 groups were concluded during the period under report. As many as 36 experiments were conducted under rainfed conditions Spanish improved and M.G.—10 were the varieties used in experiments conducted under rainfed conditions, while T.M.V.—2 variety was tried in experiments under irrigated conditions. The net-plot size varied from 9·48 to183· 96 sq. meters. 37, 12 and 8 experiments were conducted in Randomised Block. Latin square and Split-plot designs and the remaining 2 on Confounded Design. About 54 per cent of the total number of experiments were of purely manurial type. Levels of N, P and K tried in those experiments varied between 0 to 130·2, 0 to 390·6 and 0 to 224·3 Kg/ha. respectively. In cultural experiments inter-row and plant spacings and dates of sowing were the important factors tried.

Coffee :—Coffee is an important plantation crop grown in the state on which 130 experiments were reported. 58 experiments forming 18 groups were concluded during the period under report. About 3/4th of the experiments were conducted under rainfed conditions. 85 and 40 experiments were conducted under Randomised Block and Latin Square Designs while split-plot design was adopted for 5 experiments. About 62 per cent of the total number of

experiments were of manurial type. The levels of N, P and K tried in these experiments varied between 0 to 139·4, 0 to 50·4 and 0 to 67·2 Kg/ha. In cultural experiments, digging, spacings, mulching and prunnings were the factors tried.

Arecanut :—Out of 22 experiments reported for this crop, 11 were of manurial type and the remaining 11 of cultural type. 12, 7 and 3 experiments were conducted under Randomised Block, Split-plot and confounded designs respectively. In manurial experiments levels of N, P and K varied from 0 to 67·2, 0 to 89·7 and 0 to 112·1 Kg/ha. Spacings and intercropping with Green manure crops were the factors tried in cultural experiments.

Cashewnut :—9 out of 13 experiments reported on this crop were of cultural type. Only Randomised Block Design was adopted in all the experiments. Training the plants and methods of propagation were the factors tried in experiments.

Coconut :—2 cultural-cum-manurial type of experiments were reported on this crop. Rondomised Block Design with 3 replications was adopted in the experiments.

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

1. Agricultural Research Station, Alnavar.

A. General Information :

(i) In Dharwar taluka of Dharwar district, with Lat.-17°N/Long.-75° E./Alt.-564 m. Small paddy terraces of varying slopes. (ii) It represents Malnad tract. (iii) Established in 1948. (iv) Paddy-Sugarcane is the normal cropping pattern. (v) To study the possibilities of improving the yield of sugarcane crop in the malnad tract where the crop is taken as a rainfed crop with one or two irrigations.

B. Normal Rainfall :

Jan.	Feb.	March	April	May	June	
0·1	0·1	0·3	4·0	11·8	19·7	
July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
47·9	20·5	9·5	18·1	2·3	0·6	134·9

(Av. monthly rainfall in cm., based on the data for the last 14 years).

C. Irrigation and Drainage Facilities :

(i) (a) Irrigation facilities are available since 1948. (b) By well and a small tank. (ii) Proper drainage system exists.

D. Soil type and Soil analysis :

(i) Red to medium black soil to a depth of 12·5 to 15 cm. and structure coarse to medium. (ii) Chemical analysis : pH. 6·76 ; Calcium carbonate ($CaCO_3$)—2·0% ; Organic carbon-1·13% ; Total N-0·114% ; available P_2O_5-4·91 mgms./100 gm. ; Total soluble salts-0·042%. (iii) Mechanical analysis : N.A.

E. No. of Experiments :

Sugarcane—4 ; Total=4.

2. Agricultural Research Station, Arbhavi.

A. General Information :

(i) In Gokak taluka of Belgaum district, with Lat.-16° N/Long-74·5° E./Alt.-585 m. The topography of the experimental area is flat and even. (ii) Penunisular India, northern parts of Mysore, Ghataprabha left bank canal. (iii) Established in January, 1959. (iv) Experiments on Maize crop in *Kharif* followed by a general crop in *Rabi*. (v) Agronomical study on Maize is the main programme of research.

B. Normal Rainfall :

Jan.	Feb.	March	April	May	June	
—	0·3	1·0	1·3	8·9	3·6	
July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
11·3	5·8	9·8	8·3	3·6	1·8	55·7

(Av. monthly rainfall in cm., based on the data for the period 1957-65).

C. Irrigation and Drainage Facilities :

(i) (a) and (b) Irrigation facilities are available from the starting of the scheme. (ii) Open drainage system.

D. Soil type and Soil analysis :

(i) Broad soil types—Black sandy loam ; Depth—60 cm. ; Colour—Medium black ; Structure—Sandy loam. (ii) Chemical analysis : Nitrogen—0·056% ; Phosphorus—0·173% ; Potash—0·38% ; pH.—8·4.

(iii) Mechanical analysis :

Depth	2·5—30 cm.	30—60 cm.
Clay%	38·36	30·36
Silt%	8·80	7·80
Coarse Sand%	30·64	45·64
Fine Sand%	13·86	10·36

E. No. of Experiments :

Wheat—4, Jowar—5, Maize—12, Gram—3, Sugarcane—10, Cotton—4 ; Total=38.

3. Coconut Research Station, Arsikere.

A. General Information :

...strict, nearest Rly. Stn., Arsikere with Lat.-13° 18′ N./Long.-76° 15′ E./ Alt.-... general topography of the experimental area is levelled to general slope with ...on of 1·52 to 3·08 m. (ii) It represents rainfed tract. (iii) Established in 1953. (iv) Perrennial crops. (v) Concentrated on Coconut crop.

B. Normal Rainfall :

Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
0·2	0·2	0·2	3·9	10·4	2·7	5·9	6·2	12·1	15·9	3·4	3·4	64·5

(Av. monthly rainfall in cm., based on the data for the period 1962-71).

C. Irrigation and Drainage Facilities :

(i) (a) and (b) One well, irrigation since 1960. Another well from 1969. (ii) Yes, natural drainage.

D. Soil type and Soil analysis :

(i) Red as well as medium black. (ii) Chemical analysis and (iii) Mechanical analysis : N.A.

E. No. of Experiments :

Coconut—2 ; Total=2.

4. Agricultural Research Station, Bagalkot.

A. General Information :

(i) In Bagalkot taluka of Bijapur district, with Lat.-16° N/Long.-76° E./Alt.-538 m. The topography of the experimental area is good. (ii) Eastern dry tract. (iii) Established in 1951. (iv) *Suyodhar* Cotton, Groundnut, Sataria. (v) Agronomical and weedicidal experiments on *Suyodhar* Cotton, Groundnut, *Jowar* and Setaria.

B. Normal Rainfall :

Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
—	0·4	0·4	1·1	3·9	9·3	7·8	18·4	11·1	13·9	0·4	9·5	76·2

(Av. monthly rainfall in cm., based on the data for the period 1963-65).

C. Irrigation and Drainage Facilities :

(i) (a) and (b) Dry tract. (ii) Nil.

D. Soil type and Soil analysis :

(i) Broad soil types : Depth—Surface 30 cm. ; Colour—Black soil ; Structure—Black soil. (ii) Chemical analysis : pH.—9·3 ; total soluble salt—0·41% ; Organic Carbon—0·31% ; available P_2O_5—1·8 Kg/ha. ; available K_2O—47 Kg/ha. (iii) Mechanical analysis : N.A.

E. No. of experiments :

Jowar—11, Bajra—1, Cotton—7, Mixed cropping—2, Rotational—1 ; Total=22.

5. Regional Sorghum Research Station, Bailhongal.

A. General Information :

(i) In Bailhongal taluka of Belgaum district, with Lat.-16·0° N/Long.-75·5° E./Alt.-680 m. above m.s.l. The farm is situated on an elevated area, has got general slope towards eastern sides. (There is a Nala running on the northern side of the farm area). (ii) Transition tract. (iii) Established in 1947-48. (iv) First year : *Kharif* Jowar ; 2nd year : Groundnut in *Kharif* and Wheat or Gram in *Rabi* season. (v) Agronomical and varietal experiments on Groundnut and *Jowar* etc.

B. Normal Rainfall :

Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
—	0·2	0·6	3·4	9·1	8·8	16·0	10·0	10·4	14·3	3·1	0 4	76·3

(Av. monthly rainfall in cm., based on the data for the period 1964–65).

C. Irrigation and Drainage Facilities :

(i) and (ii) Nil.

D. Soil type and Soil analysis :

(i) Broad soil types : Medium black soil varying from 45 to 115 cm. depth ; Light red mixture—15 to 23 cm. ; Colour—Medium black and light red mixture. (ii) Chemical analysis and (iii) Mechanical analysis : Information—N.A.

E. No. of Experiments :

Groundnut—1 ; Total=1.

6 Agricultural Research Station, Bailhongal.

A. General Information :

(i) to (iii) Same as for Regional Sorghum Research Station, Bailhongal. (iv) (a) Double cropping. (b) Mixed and overlapping cropping. (v) Mainly Agronomic trials are laid out. In the plant breeding type of research this acts as a testing centre to Regional Research Station, Dharwar.

B. Normal Rainfall :

Same as for Regional Sorghum Research Station, Bailhongal.

C. Irrigation and Drainage Facilities :

(i) (a) and (b) No irrigation facilities are available. (ii) Yes, there is a proper drainage system.

D. Soil type and Soil analysis :

(i) Broad soil type and (ii) Chemical analysis as below :

Sl. No.	Name of the block	Soil type	pH.	E.C.	O.C.%	P_2O_5 Kg/ha.	K_2O Kg/ha.
1.	A	—	—	—	—	—	—
2.	B	Medium to deep black	7·8	0·52	0·73	96	706
3.	C	Medium black mixed with lime nodules	7·8	0·34	0·74	85	717
4.	D	Deep black	7·7	0·42	0·68	67	583
5.	E	Medium to deep black	7·6	0·40	0·84	98	572
6.	F	Medium black mixed with lime nodules	7·9	0·36	0·63	103	605
7.	G	Medium to light	7·7	0·30	0·69	90	594
8.	H	Light losse	7·3	0·55	0·81	112	785
9.	I	Light shallow	6·7	0·65	0·71	47	672
10.	J	Light losse to compact	6·9	0·55	0·73	35	773
11.	K	Medium black to light	7·5	0·40	0·90	83	717
12.	L	Karl to light	6·7	0·62	0·61	24	94
13.	M	Light losse to compact	7·7	0·50	0·63	26	762
14.	N	Light compact	6·4	0·85	0·62	54	740

(iii) Mechanical analysis : N.A.

E. No. of Experiments :

Wheat—10 ; Jowar—10, Groundnut—3, Mixed cropping—1 ; Total=24.

7. Central Coffee Research Institute, Balehnnur.

A. General Information :

(i) In Koppa taluka of Chikmagalur district, 101 km. from Kadur Rly. Stn., on Bangalore Poona Line with Lat.-13° 22′ N/Long.-75° 28′ E./Alt.-830 to 915 m. above m.s.l. The topography of the experimental area is hilly and undulating with rolling to gently slopping lands capes. (ii) Malnad tract. (iii) Established in 1925. (iv) Coffee as perennial crop. (v) Soil chemistry, Agricultural chemistry, Agronomical, Botanical, Plant Pathological, Physiological experiments on Coffee.

B. Normal Rainfall :

Jan.		Feb.		March		April		May		June		July		Aug.		Sept		Oct.		Nov.		Dec.		Total
1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	
—	—	—	0·5	0·4	1·1	5·3	9·4	3·6	12·4	10·9	18·1	55·5	40·7	52·5	33·5	9·1	10·2	19·0	13·8	4·7	0·9	1·7	0·2	303·5

(Av. fortnightly rainfall in cm., based on the data for the period 1960-64).

C. Irrigation and Drainage Facilities :

(i) (a) Yes, irrigation facilities are available since 1961-62. (b) N.A. (ii) Yes, proper drainage system exists.

D. Soil type and Soil analysis :

(i) Broad soil types : Order-orisols ; Depth-Deep to very deep. Colour—Redish brown to dark red ; Structure—Moderately granular. (ii) Chemical analysis : Nitrgen-0·2 to 0·3% : Org. Carbon-about 3% ; Cation exch. Cap.-6 to 10 m. e./100gm. (soil); Sesquiorides-20 to 30% ; Total P_2O_5 0·04 to 0·10% ; Total K_2O 0·3 to 0.6%; Total MgO-0·1 to 0·2% ; Total CaO 0.1 to 0·3%. (iii) Mechanical analysis : Silty clay loam.

E. No. of Experiments :

Coffee-106; Total=106

8. Soil Conservation Research, Demonstration & Training centre, Bellary

A. General Information :

(i) In Bellary taluka of Bellary district, main Office 4.8 Km., farm. 10 Km. from Bellary Jn. with Lat.-15·09° N/Long-76·51° E./Alt-445 M. above m.s.l. The topography of the experimental area is plain, deep black soils upto 2% slope. (ii) Arid and semi-arid deep black soils. (iii) Established in 1954. (iv) Rainfed and irrigated Cotton, Jowar, Safflower, Bengal gram etc, in *Rabi* season. (v) Soil and water management in all aspects.

B. Normal Rainfall :

Jan.		Feb.		March		April		May		June		July	
1	2	1	2	1	2	1	2	1	2	1	2	1	2
—	—	—	—	0.2	2.5	16.3	19.0	22.1	33.6	17.7	26.3	13.2	20.7

Aug.		Sept.		Oct.		Nov.		Dec.		Total
1	2	1	2	1	2	1	2	1	2	
17.9	21.1	31.4	59.9	42.3	63.8	27.3	2.3	44.4	22.3	504.3

(Av. fortnightly rainfall in cm., based on the data for the period 1960-64).

C. Irrigation and Drainage Facilities :

(i) (a) & (b) : Available from 1968 *Rabi* onwards. (ii) Natural surface drainage exists.

D. Soil type and Soil analysis :

(i) Depth-(Up to 150cm.) : Colour-Very dark grey to black ; Structure-Poor, Angular blocky. (ii) Chemical analysis :

Depth in cm.	pH. 1 : 10	Water Soluble salts ppm of soil				Water soluble Boron ppm.	Avl. P_2O_5 ppm. (Olsen's)	Avl. Mo. ppm.	Total P_2O_5 %	$CaCO_3$ %
		CO_3	HCO_3	Cl	SO_4					
0— 30 cm	9·20	66	863	14	Tr.	0·70	2·1	0·135	0 052	12 48
30— 60 cm.	9·30	93	997	23	Tr.	1·26	1·9	0 233	0·052	13·45
60— 90 cm.	8·30	84	909	89	36	2·83	2·3	0·550	0·057	13 90
90—120 cm.	8·55	Tr.	366	447	679	2 83	4 6	0 646	0·066	14·77
120—150 cm.	8·80	Tr.	488	536	392	3.28	7·4	0·670	0·070	21·14

Note :—Total Nitrogen ranges from 0·20% to 0·30%. Organic Carbon fro m 0 15 to 0·50% Exchangable Potassium ranges from 0·59 me/100 gm. to 0·72 me/100 gm. soil and Ex. Na from 0 30 to even 9·57 me/100 gm soil. Total exchange capacity remains 1 me/gm. of clay throughout the profile.

*(iii) Mechanical analysis :

Depth in cm.	Moisture	% Constituents Coarse sand	Fine sand	Silt	Clay
0-30	5.21	10·87	10·08	13·50	47·50
30-60	5·92	8·21	8·51	13·75	51·00
60-90	6·36	5·19	7·77	11·87	53·13
90-120	6·35	3·13	6·50	13·12	55·00
120-150	6·62	3·04	6·40	7·00	56·00

*Sampless corresponding to the profile analysed for the chemical constituents.

E. No. of Experiments :

Jowar-10, Korra-4, Green gram-1, Cotton-17, Mixed cropping-2 ; Total=34

9. Agricultural Reaearch Station, Bijapur.

A. General Information :

(i) In Bijapur taluka of Bijapur district, 9.6 km. from Bijapur R. S. with Lat.-16°-60′, N/Long.—75°-46′ E/Alt.—592.5 m. above m.s.l. The general slop of the farm area is to the north-east. In this direction the average slop is about 1.37 percent. In other directions, the slop varies from 1.10 to 2.5 percent. The farm area has been contour bounded. (ii) Northern Arid tract of Mysore State. The climate can be said to be sub-tropical with well defined seasons. Annual average rainfall is about 54 cm. which is very uncertain and erractic. Maximum temperature reaches about 41°C during May and minimum goes to 13°C during December. (iii) Established in 1933. (iv) System of cropping is mainly rainfed. Rainfall during *Kharif* season i.e. June to August is very low and hence very small area is put under groundnut, bajra, greengram and green manure crops. Most of the rainfall is received during Sept.-Oct. and hence *Rabi Jowar*, wheat, and gram are grown on a large scale. *Jowar*-Gram and *Jowar*-Wheat-Gram are the usual rotations. Cotton has been introduced very recently. (v) Agronomy and Plant Breeding (mainly varietal yield trails),

B. Normal Rainfall :

Jan.		Feb.		March		April		May		June		July	
1	2	1	2	1	2	1	2	1	2	1	2	1	2
—	—	—	0.6	—	1.1	3.8	0.7	1.6	4.1	3.5	4.9	2.5	6.0

Aug.		Sept.		Oct.		Nov.		Dec.		Total
1	2	1	2	1	2	1	2	1	2	
3.3	4.2	6.9	13·8	7.0	4.3	2.0	0.3	0.7	0.1	71.4

(Av. fortnightly rainfall in cm., based on the data for the period 1964-65).

C. Irrigation and Drainage Facilities :

(i)(a) and (b) : No large scale irrigation facilities exist. However a small area of about 0.4 to 0.8 ha. is given protective irrigation from a well constructed in 1960 for drinking water. (ii) This problem does not exist on the farm. However excess water flow out through waste-weirs provided at suitable points as per contour plan.

D. Soil type and Soil analysis :

(i) Broad soil type (1) Medium Black (2) Limy; Depth (Agricultural)—(1) 1.5 to 1.8 m. —(2) 0.9 to 1.2 m., Colour—Black; Structure—Clayey

(ii) Chemical analysis :

Item of analysis	Medium Black soil		Limy soil	
	0-23 cm.	23-45 cm.	0-23 cm.	23-45 cm.
pH.	8.73	8.90	8.23	8.35
T.S.S. (mhos/cm.) E.C.M.	0.66(N)	0.7(N)	0.41(N)	0.35(N)
Organic carbon (%)	0.54(M)	0.60(M)	0.50(M)	0.38(L)
CaO (%)	1.21	1.18	1.69	1.77
Available N(%)	0.0021	0.0018	0.0034	0.0056
Available P_2O_5 (Kg/ha.)	2.46(L)	8.4(M)	1.9(L)	Traces to 1.7(L)
Available K_2O_5 (Kg/ha.)	270.8(M)	375.4(H)	451.6(H)	397.9(H)

L=Low; M=Medium; N=Normal; H=High.

(iii) Mechanical Analysis : N.A.

E. No. of Experiments :

Wheat—10, *Jowar*—26, *Bajra*—7, Gram—1, Groundnut—4 ; Total=48.

10. Coffee Research Station, Chethally.

A. General Information :

(i) In Somwarpet taluka of Coorg distt, 113.4 km. from Mysore Rly. Stn,. with Lat.—12°-30′ N/Long.—75°-80′ E/Alt.—914 m. The topography of the experimental area is gently sloping hilly region. (ii) Coorg—hilly region. (iii) Established in 1947. (iv) Coffee under multi shade as perennial crop. (v) Research on agronomical aspects and diseases of coffee.

B. Normal Rainfall

Jan.		Feb.		March		April		May		June		July		Aug.		Sept.		Oct.		Nov.		Dec.		Total
1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	
7.8	10.0	—	1·0	0.1	1.7	4.9	8.6	5.8	13 6	10.6	12.7	48.6	25.7	36.0	12.2	4.7	5.4	8 6	10.5	3.9	0.4	10.3	0.1	285.2

(Av. monthly rainfall in cm., based on the data for the period 1960-64)

C. Irrigation and Drainage Facilities :

(i) (a) and (b) No irrigation facilities. (ii) Yes, proper drainage system exists.

D. Soil type and Soil analysis :

(i) Board soil type—Sandy loam; Depth—deep; colour—Dark brown to black. (ii) Chemical analysis : pH. 7.0 ; Organic carbon %—2.7 ; Av. P_2O_5—7.8 Kg/ha. ; Av. K_2O—325 Kg/ha. (iii) Mechanical analysis :—N.A.

E. No of Experiments :

Coffee—24; Total=24.

11. Regional Fruit/Species Research Station, Chethalli.

A. General Information :

(i) In Coorg district, nearest Rly. Stn., is Mysore with Lat.-12° 30′/Long.-75° 80′/Alt. 3,100 M. above m.s.l. Levels to gentle slope. (ii) Sub-tropical area. Moderately high humidity during rainy days. (iii) Established in 1947. (iv Planted perennial crops viz., Citrus,

Mango, Sapota, Pineapple and other fruit crops. (v) (a) Citrus : Rootstock trial ; N, P and K trials ; Irrigational trials : Cultural trials : Weedicide trials ; Fungicide trials for Powdery mildew ; Shade and Pineapple mulching experiments ; Collection of important species and varieties (b) Pineapple : spacing-cum-fertilizer trials. (c) Paddy : Spacing-cum-fertilizer trials. (d) Species : Manurial trials ; Micronutrient trials ; varietal collection. (e) Fruits : Collection of different fruit crops.

B. Normal Rainfall :

Same as for Coffee Research Station, Chethalli.

C. Irrigation and Drainage Facilities :

(i) (a) Since 1947. (b) River (Pumped out of 35 HP motor). (ii) Yes ; there is a proper drainage system.

D. Soil type and Soil analysis :

(i) Broad soil type : Cley Loam with plenty of organic matter ; colour, black ; Structure fine ; Depth 50 cm.

(ii) Chemical analysis :

	Layer	*Layer*
	0 to 23 cm.	23 to 45 cm.
	N 0·173627-2287%	0·1736-2113%
	P_2O_5 0·0810-·0112%	0·0009-·0109%
	K_2O 0·0127-·0716%	0·0130-·0633%

(iii) Mechanical analysis : Fine to coarse with plenty of organic matters.

E. No. of Experiments :

Cardmom-5, Pepper-1, Citrus-19 ; Total=25.

12 Agricultural Research Station, Dhadesaugar.

A. General Information to *D. Soil type and Soil analysis* :

Details N. A.

E No. of Experiments :

Paddy 2, *Jowar* 2, Sugarcane-1, Cotton-1 ; Total=6.

13. Agricultural Research Station /Agri. College Farm, Dharwar.

A. General Information :

(i) In Dharwar taluka of Dharwar district, Lat. 15·27° N/Long.-76·6° E/Alt.-782 M. The lands of the central portion of the farm area are in level and uniform in its characters. The lands at the frings of the central area are undulating and low lying and soil conservation measures have been undertaken to check soil erosion, (ii) Transition tract of Dharwar division. (iii) Established in 1904. (iv) *Kharif jowar* followed by cotton. (v) Programme of research is to evolve a variety of '*Desi*' cotton superior to *Suyadhar* in yield and ginning percentage besides being resistant to wilt disease and agronomic expts.

B. Normal Rainfall :

Jan	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
—	—	0·1	5·0	10·8	9.4	18·7	10·4	10·2	16·5	3·5	0·8	85·4

(Av. fortnightly rainfall in cm., based on the data for the period 1950-70).

C. Irrigation and Drainage Facilities :

(i) (a) & (b) : Nil (ii) Natural drainage system exists.

D. Soil type and Soil analysis .

(i) Medium black soil 0·91 m. to 1·07 m. deep while clayey and reddish black soils are 0·61 m. to 0·76 m. deep and porous. (ii) Chemical analysis : pH. 7·3 ; available P_2O_5- 24·1% : Ca O_4-6 26% ; total N- 0·083%. (iii) Mechanical analysis : Sand-5·6% ; silt-9·3%; clay-62·5% and moisture-8·20%.

E. No. of Experiments :

Paddy-5, wheat-9, *Jowar*-21, Maize-3, Cotton-38, Groundnut-19, Grass 16, Chillies-1, Mixedcropping-7, Rotational-1 ; Total=120.

14. Agricultural Research Station, Gadag.

A. General Information :

(i) In Gadag taluka of Dharwar district, nearest R. S. Gadag with Lat.-15° 25′ N/Long.-75°38′ E/Alt.-649 m. The topography of the experimental area is fairly flat lands. (ii) Medium black soils. (iii) Established in 1957. (iv) Cotton rotated with *Jowar*, G. Nut and Wheat. (v) Breeding and Agronomic aspects of cotton cultivation.

B. Normal Rainfall :

Jan.		Feb.		March		April		May		June		
1	2	1	2	1	2	1	2	1	2	1	2	
—	—	—	0 5	—	1.3	1.7	5.1	2.0	6,6	4.8	4.9	
July		Aug.		Sept.		Oct.		Nov.		Dec.		Total
1	2	1	2	1	2	1	2	1	2	1	2	
2.4	5 1	3 8	3.8	5.1	11.7	8.5	5.5	0.5	—	2.1	—	75.4

(Av. fortnightly rainfall in cm., based on the data for the period 1960-64).

C. Irrigation and Drainage Facilities :

(i) & (ii) No.

D. Soil type and Soil analysis :

(i) Depth-1 52 m. to 3·05 m. · Colour-Medium black ; Structure-Clayey. (ii) Chemical analysis :—

	0-15 cm.	15 45 cm.	45-60 cm.
pH.	8·1	8·4	8·5
Total N%	0·035	0·028	0·016
Available P_2O_5	2·72	2·60	1·85
Exchangable CaO	23·74	20·25	25·54
Humus%	0·049	0·061	0.065
Organic C%	0·79	0·80	0·78
Total soluble salts.	0·258	0·298	0·267
(iii) Mechanical analysis :			
Stones%	13·89	19·38	21·09
Sand%	5·99	7·12	6·40
Silt%	13·07	9·75	11·85
Clay%	55·25	64·12	54·00
Moisture%	9·10	8·68	9,11

E. No. of Experiments

Cotton-30 Rotational-1 ; Total=31

15. Agricultural Research Station/Regional Sugarcane Res. Stn., Gangavati.

A. General Information :

(i) In Gangavati taluka of Raichur district, 35 Km. from Ginigera R.S. with Lat.-15°-15'-40" N/Long.-76°-31'-45" E. The soils are typical medium black soil swith a depth ranging from 45 cm. to 90 cm. The soils are alkaline in nature with clay content from 40 to 55 percent. The soils crack heavily in summer. Most of the area is levelled. (ii) It represents southern peninsular T. B. P. Tract. (iii) Established in 1956. (iv) *Kharif* :—Hybrid Maize, Hybrid *Jowar*, Hybrid *Bajra*, Setaria K-221-1 purna, Ragi H. R 35 and Paddy. *Rabi* :—Mexican wheat, Bengal gram, chaffe sufflower A 300, Bajra HB-1 D 174, Jower CHS-1. Transplanted Ragi, purna setaria, Cotton, *Laxmi* Sugarcane Co 419. (v) (a) Thomas Phosphate Trial. (b) Manure-cum Spacing-cum-Seed with Co. 740 & 997. (c) Deteriorated V/s Non-deteriorated seed material. (d) Role of F. Y. M. & Oil Cake on Sugarcane manuring. (e) Replacement of organic manure with inorganic manure. (f) Effect of different phosphatic fetilizer and their relative efficiency in yield and quality of cane.

B. Normal Rainfall :

Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
—	—	—	4·3	23·0	39·4	85·4	87·0	137.1	90·0	15 0	15·2	496·4

(Av. monthly rainfall in cm., based on the data for the period 1960-65)

C. Irrigation and Drainage Facilities :

(i) (a) & (b) : Yes, Since 1956. (ii) Yes, proper drainage system exists.

D. Soil type and Soil analysis :

(i) Depth 45 to 90 cm.; Clour-B.C. Soil; Structure- 40 to 35% Clay soils, crack heavily in summer. (ii) Chemical analysis and (iii) Mechanical analysis : N.A.

E. No. of Experiments :

Wheat-6, *Jowar* 4, Sugarcane-15, Cotton-2, Groundnut-6 ; Total=33.

16. Horticultural Farm, Gonicoppal.

A. General Information :

(i) In Virajpet taluka of Coorg distt., 90 Km. from Mysore Rly Stn. with Lat.—12°N/ Long.—75°E/Alt.—884 M. above m.s.l. Gentle sloping towards North-west. (ii) Malnad tract. (iii) Established in 1954 (iv) Perennial crop, variety Coorg Orange start bearing from 6 to 10 years. (v) Survey and assessment of the extent of damage of the die-back disease on Coorg orange working out various measures by field studies.

B. Normal Rainfall :

Jan.		Feb.		March		April		May		June		July	
1	2	1	2	1	2	1	2	1	2	1	2	1	2
0.4	—	—	1.1	—	1.1	4.0	5.2	6.5	14.6	15.0	21.4	79.3	24.0

Aug.		Sept.		Oct.		Nov.		Dec.		Total
1	2	1	2	1	2	1	2	1	2	
31.3	10.7	7.3	9.8	7.2	11.3	3.0	1.4	1.6	0.2	256.4

(Av. fortnightly rainfall in cm., based on the data for the period 1960-65).

C. Irrigation and Drainage Facilities :

(i) (a) and (b) Yes, since 1954, sprinkler have been made available since 1968. (ii) Yes, proper drainage system exists.

D. Soil type and Soil analysis :

(i) Broad soil type.

Depth in cm.	Description	pH.
0— 23	Black loam	6.0
23— 61	Dark Grey sandy loam.	6.5
61— 97	Reddish loam sandy brown.	5.5
97—108	Blue Black concretions.	4.0
108—115	Laterised soil loamy.	4.2

(ii) Chemical analysis :

Depth	0—23 cm.	23—45 cm.	45—70 cm.
Moisture (on airdry basis)	0.7100	2.7575	2.8925
Loss on Ignition.	9.0420	8.1930	8.3510
SiO_2	76.9336	76.3820	73.9264
Al_2O_3	9.2441	11.0913	13.5762
Fe_2O_3	5.2328	6.0022	6.7281
CaO	0.1895	0.1666	0.1607
MgO	0.1524	0.1248	0.1154
Total P_2O_5	0.1106	0.1016	0.0600
Total K_2O	0.0168	0.0137	0.0105
Available P_2O_5	0.0051	0.0041	0.0037
Available K_2O_5	0.0061	0.0057	0.0047
Organic carbon	1.5890	0.8586	0.5562
Nitrogen	0.1078	0.0734	0.0562
C/N	15.1200	12.0200	10.2100

(iii) Mechanical anaylsis :

Depth	0—23 cm	23—45 cm	45—70 cm.
Coarse sand	36.170	34.300	31.890
Fine sand	22.920	10.280	19.360
Silt	9.200	9.003	8.569
Clay	30.680	35.970	40 150
Water holding capacity	50.200	52.950	63.400
pH.	6.4	6.3	6.5
Taxture	Sand clay loam.	Sand clay loam.	Sandy clay

E. No. of Experiments :

Citrus—29 ; Total=29.

17. Agricultural Research Station, Hagari

A. General Information :

(i) In Bellary Distt., Rly. Stn. Hagari with Lat.—15°-10'/Long.—77°—04'E/Alt.—413.3 M. Eastern block of the farm has a maximum of 1% slope from east to west while the western block is fairly levelled. (ii) The research station is located in the heart of a typical arid zone of south central India with annual rainfall of 537 m.m. and soil type being medium black to heavy black cotton soils. (iii) Established in 1906. (iv) *Kharif* : (June-Sept.) If sufficient soil soaking heavy rains are received the following crops are grown (1) Setaria (2) Bajra (3) Cotton. But such heavy rains are normally rare and late *Kharif* rains of 'August-Sept.' are made use of to grow mixed crop of cotton : setaria in 1 : 2 ratio while Bajra is grown as a pure crop. (v) *Rabi* : Sept.-February. The following pure crops are grown :

Grains—*Jowar* and Wheat ; Fibre—Cotton ; Oil Seeds—Sufflower and Linseed ; Pulse—Bengalgram ; Condiments—Corriander.

(v) Varietal and Agronomic trial on Setaria, *Jowar*, Sufflowar, *Bajra* and Cotton.

B. Normal Rainfall :

Jan.		Feb.		March		April		May		June		July		Aug.		Sept.		Oct.		Nov.		Dec.		Total
1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	
—	—	—	0.2	0.1	0.1	1.1	1.6	1.4	4.9	3.0	1.9	1.4	4.0	2.1	4.4	1.9	10.1	8.3	4.4	1.5	0.4	0.9	—	53.1

(Av. fortnightly rainfall in cm. based on the data for the period 1952-71).

C. Irrigation and Drainage Facilities :

(i) (a) Yes, All total 5 wells fitted with electric motor pumpset, 2 wells existed before 1932, 3 more new cement ring wells suited for sprinkler irrigation have been commissioned with year 1971. (b) Sprinkler irrigation system. (ii) The irrigated lands (garden lands of Western block) being fairly levelled drainage facilities lacking in times of heavy rainfall.

D. Soil type and Soil analysis :

(i) Block cotton type of soil, 30 to 200 cm. in depth and Blocky in structure. (ii) Chemical anyalysis and (iii) Mechanical analysis : As below

(Analysed in 1962-63)

Profile ptt. No.	Depth in cm.	pH.	T.S.S.	Coarse Sand %	Fine Sand %	Silt %	Clay %	Loss of solution	Organic carbon	Available P_2O_5	Available K_2O	Remarks
1. Profile Samole	0-30	7·8	1·3	8·760	16·061	14·500	46·275	10·00	0·663	Trace	500	
2.	30-61	7·8	1·1	8·860	21·518	12·250	43·50	9·91	0·307	0·6	500	
3.	61-91	7·9	1·4	8·970	27·844	14·000	37·500	8·52	0·600	Trace	465	
4. Western Block	91-122	7·9	1·3	6·518	47·754	13·475	30·750	6·920	0·429	0·9	500	
5.	122-160	7·9	1·0	10·614	60·755	6·750	16·250	3·410	0·312	2·4	500	
6.	160-170	8·2	0·3	35·649	55·296	2·900	3·900	1·155	0·117	1·5	475	
7.	0-30	8·1	1·2	7·800	17·250	17·550	43·20	10·159	0·468	0·9	210	
8.	30-61	8·2	0·85	8·177	17·690	12·625	46·375	11·350	0·429	2·1	290	
9. Eastern Block	61-91	7·8	5·85	6·368	9·680	13·475	55·155	12·551	0·507	1·5	90	
10.	91-122	7·8	5·00	4·901	8·280	13·700	59·625	9·670	0·312	1·5	237	
11.	122-152	7·7	7·4	3·339	7·250	17·375	56·375	11·950	0·390	0·9	500	
12.	152-208	7·9	4·6	4·163	13·430	11·825	59·625	10·345	0·195	3·0	335	

SOME SINGLE VALUES HAGARI OF SOILS

Samples from profile section

Single Values	Deep Black soil in 30 cm.	0-30 cm.	30-60 cm.	60-90 cm.	90-120 cm.
Maximum water-holding capacity.	63·1	52·2	54·9	64·4	54·9
Apparent specific gravity.	1·29	1·37	1·37	1·37	1·42
Real specific gravity.	2·35	2·18	2·17	2·22	2·32
Pore space	66·5	52·2	54·0	57·0	55·1
Volume expansion.	22·1	26·2	28·6	38·7	30·7

E. No. of Experiments :

Jowar—2, Cotton—4 ; Total=6.

18. Agricultural Research Station/Agricultural College Farm, Hallal.

A. General Information :

(i) In Bangalore-north taluka of Bangalore district, 6.5 Km. from Bangalore City Rly. Stn. with Lat.—13°N/Long.—77-37°E/Alt.—899 m. Most of the rainfed area is suituated at an elevated place and the plots are slopy towards north i.e. (South to North). (ii) It represents Sami-dry tract. (iii) Established in 1904. (iv) (a) Single crop under rainfed area mainly in *Kharif* seasons. (b) Double crop under irrigated areas. (v) Research problems taken on Ragi, Sugarcane, Oilseeds, Paddy, in all aspects as decided by the Research Council.

B. Normal Rainfall :

Jan.		Feb.		March		April		May		June		July		Ang.		Sept.		Oct.		Nov.		Dec.		Total
1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	
0.5	—	0.4	—	—	0.8	3·7	2.3	4.1	5.3	3.3	3.7	2.3	8.2	4.1	8.1	9.1	9.6	10.5	6.0	5·2	2.0	1.2	0.2	90.6

(Av. monthly rainfall in cm., based on the data for the period 1960—64).

C. Irrigation and Drainage Facilities :

(i) (a) and (b) Available for only a part of the area (5.7 ha.) (ii) Yes, Proper drainage system exists.

D. Soil type and soil analysis :

(i) Broad soil types—Dryland Wet land.

Depth—	0.91 m.	1.52 m.
Colour—	Red	Ash
Structure—	Sandy loam	Alluvial

(ii) Chemical analysis :

	Dry Land	Wet Land
(a) Exchangable basis	Fairly well supplied	Fairly well supplied
(b) Soluable salts	Low	Low
(c) Organic matter	Low	Medium high
(d) Phophoric acid	poor	—do—
(e) Available Potash	Fairly well supplied	Fairly well supplied

(iii) Mechanical analysis :—N.A.

E. No. of Experiments :

Paddy—21, Ragi—26, Groundnut—4, Chillies—1, Mixed Cropping—2, Total=54.

19. Arecanut Research Station, Hirehally.

A. General Information to *D. Soil type and Soil analysis* :

Details—N.A.

E. No. of Experiments :

Arecanut—1 ; Total=1.

20. Agricultural Research Station, Hiriyur.

A. General Information ;

(i) In Hiriyur taluka of Chitradurga district, 40 Km. from Chitradurga R.S. with Lat.—13° 57′ 32″ N/Long.—76° 37′ 38″ E/Alt.—610 M. (ii) Dry and Wet tract. (iii) Established in 1916. (iv) Paddy—Sugarcane ; Paddy—Paddy. ; Paddy—Ragi ; Cotton—Rabi Jowar ; Cotton—Tur ; *Rabi*—Jowar—Castor, Paddy—Groundnut. (v) Agronomic experiments on Castor, Ragi, Sugarcane and Coconut.

B. Normal Rainfall :

Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
0·5	2·4	22·3	37·3	70·5	32·7	71·6	37·8	67·3	144·6	24·3	28·7	540·0

(Av. monthly rainfall in mm. based on the data for the period 1960-64).

C. Irrigation and Drainage Facilities :

(i) (a) and (b) : Yes, since 1916 irrigation facilities are available. (ii) Yes, proper drainage system exists.

D. Soil type and Soil analysis :

(i) Broad soil type—Red soils, DBC soils, and laterite soils ; Depth—Shallow, deep and medium soils ; Colour—Red and Black ; Structure—Loose, sticky and compact. (ii) Chemical analysis : pH.—7.4 to 9.5 ; T.S. (ppm)—210 to 3010. (iii) Mechanical analysis : N.A.

E. No. of Experments :

Paddy—3, Ragi—5, Sugarcane—6 ; Total=14.

21. Tabacco Research Station, Hunsur.

A. General Information :

(i) In Hunsur Taluka of Mysore District, 23 Km. from Krishna Raja Nagara Rly. Stn. and 45 Km. from Mysore Rly. Stn. with Lat.—12°-17′-55″N/Long.—76°-17′-35E/Att. 826 M. above m.s.l. It is situated on the side of the hillock, sloping to the west and is hence terraced consequently all the main plots are longer (North-South direction) than broad. (ii) It represents Semi-Malnad tract mostly under rainfed conditions with small trees and open scrab and dense scrab in many regions. The soils are mostly light, sandy to gravelly in texture, reddish to light brown in colour and with poor fertility. (iii) Established in 1957. (iv) Normally two crops in an year are cultivated under rainfed conditions. The first cropping period is from April to September and the Second period is from October to January. Main crops are *Beedi* tobacco, late Ragi (Hine ragi), Horse gram, Corriander, Bengalgram and Niger. (v) Programme of work include Agronomical, Botanical and Pathological Research on flue cured Virginia, burley and *Beedi* tobacco.

B. Normal Rainfall :

Jan.		Feb.		March		April		May		June			
1	2	1	2	1	2	1	2	1	2	1	2		
0.1	0.4	0.7	—	0.1	1.6	2.6	5.6	6.0	7.1	2.5	3.0		
July		**Aug.**		**Sept.**		**Oct.**		**Nov.**		**Dec.**		**Total**	
1	2	1	2	1	2	1	2	1	2	1	2		
10.4	4.9	6.4	2.3	2.3	3.2	7.9	5.4	2.9	0.7	3.4	0.1	79.6	

C. Irrigation and Drainage Facilities :

(i) (a) and (b) : An underground source of water had been located in 1967. It is hoped that after proper binding and deepening of the region, sufficient water will be available for irrigation in the near future. (ii) Ordinary surface drainage is available in all the plots. A few fields having poor sub-soil drainage were provided with artificial under ground rubble drainage system during 59-60 which are working satisfactorily so far.

D. Soil type and Soil analysis :

(i) Broad soil types : Light ; Depth—30 to 91 cm. : Colour—Reddish mostly ; Structure—Gravelly and sandy. (ii) Chemical analysis and (iii) Mechanical analysis—Details N.A.

E. No. of Experiments :

Tobacco—6 ; Total=6.

22. Regional Research Station/Sugarcane Research Station/Agricultural Research Station, Mandya.

A. General Information :

(i) In Mandya taluka of Mandya distt., 11 Km. from Mandya R.S. with Lat.—12°-58'-13" N/Long.—76°-49'-36" E/Alt.—698 M. 1st Category-High level shallow red soil. IInd-category-intermediate reddish yellow medium soil. IIIrd-category-low lying grayish. (ii) Red soils tract. (iii) Established in 1931-32. (iv) 1. Paddy, (Experiments) ; 2. paddy (General) ; 3. Ragi Expts ; 4. Ragi (General) ; 5. Sugarcane (Expts.) Ratoon ; General, Hybrid maize, Horsegram, Cotton, Fodder. Banana, Coconut, Groundnut, Sunhemp, Wheat, Barley etc. (v) Agronomic experiments on several crops.

B. Normal Rainfall :

Jan.		Feb.		March		April		May		June		
1	2	1	2	1	2	1	2	1	2	1	2	
—	—	1.1	5.3	—	8·5	29.5	58.5	56.5	67.7	32.5	25.3	
July		**Aug.**		**Sept.**		**Oct.**		**Nov.**		**Dec.**		**Total**
1	2	1	2	1	2	1	2	1	2	1	2	
23.3	23.2	24.8	42.6	59.0	46.9	100.3	139.3	49.9	4.2	24.5	0.7	823.8

(Av. monthly rainfall in cm, the period on which the data based, is not available).

C. Irrigation and Drainage Facilities :

(i) (a) Since 1932-33. Irrigation facilities are available. (b) N.A. (ii) Crossed drainage system is existing.

D. Soil type and Soil analysis :

(i) Broad soil types : High level-shallow red soil ; Reddish yellow for medium soil, for low lying grayish black clay soils, Sandy loam to granular in structure.

(ii) Chemical analysis :

(a) Category I : Water table 91 cm. topography gentle to sharp slope.

	pH.	Total soluble Salt	Calcium carbonate	Exchange Calcium	Hom-us %	Avail-able P_2O_5 (Kg/ha.)	Avail-able K_2O (Kg/ha.)	Total N	Organic carbonates	C.N. ratio
0-25 cm.	6.4	0.2	0.6	14	0.74	22	94	0.051	0.60	11.7
25-50 cm.	6.2	0.25	0·8	15.75	0.51	18.8	170.3	0.039	0.28	7.21

(b) Category II : water table 75 cm. topography gentle slope.

0-30 cm.	6.0	0.20	0.40	7.25	0.3	4.5	304.9	0.056	0.60	10.7
30-50 cm:	6.1	0.20	0.5	13.5	0.16	14.8	107.6	0.049	0.54	11.2

(c) Category III : water table 91 cm. topography flat.

0 23 cm.	8.0	0.30	0.4	19.15	0.63	19.9	349.7	0.065	0.61	7.85
23-55 cm.	7.8	0.30	2.5	19.75	0.42	13.4	421.4	0.044	0.31	7.50

(iii) Mechanical anaylsis : Coarse sand—40.90% ; Fine sand —34.00% ; Silt—4.60% ; Clay—17.75%.

E. No. of Experiments :

Sugarcane—71, Castor—3 ; Total=74.

23. Paddy Breeding Station/Agricultural Research Station, Mangalore.

A. General Information :

(i) In Mangalore taluka of South Kanara distt., 4 Km. from Mangalore R.S. with Lat.—13°N/Long.—75° E/Alt.—30 M. Most of the experiments are laid out in low lying double crop land and few of the experiments in top lands. (ii) West coast of Mysore State. (iii) Established in 1945. (iv) Paddy-paddy-paddy (3 crops sequence. (v) Agronomic, Entomological, Plant Breeding studies etc.

B. Normal Rainfall :

Jan.		Feb.		March		April		May		June		
1	2	1	2	1	2	1	2	1	1	1	2	
—	—	—	1·5	0·5	0·6	2·1	2·0	3·2	21·3	36·1	34·2	
July		**Aug.**		**Sept.**		**Oct.**		**Nov.**		**Dec.**		**Total**
1	2	1	2	1	2	1	2	1	2	1	2	
48·7	56·4	52·7	33·4	22·5	28·6	8·3	19·2	4·2	0·7	1·4	1·4	378·9

(Av. fortnightly rainfall in cm., based on the data for the period 1960-64).

C. Irrigation and Drainage Facilities :

(i) (a) and (b) : 5 (Small and shallow) tanks constructed in 1959. (ii) Channels round about the fields.

D. Soil type and Soil anylysis :

(i) Broad soil types-Sandy loam ; Depth—30 to 45 cm. ; Colour—Red ; Structure-Latritic.

(ii) Chemical analysis :

Contituents	*Percent*	*Constituents*	*Percent*
Loss on ignition	7·88	Soda N	0·122
Insoluble	72·14	Sulphuric acid	0·118
Iron oxide F_2O	7·37	Moisture	1·5
Alumina Al_2O_3	11·57	Nitrogen	0·10
Lime CaO	0·064	Available K_2O	0·019
Magnesia	0·055	Available P_2O_5	0·006
Total Potash K_2O	0·198	pH. Value	5·6
Tolal P_2O_5	0·129		

(iii) Mechanical analysis :

Clay	24·5%
Silt	19·7%
Fine sand	7·4%
Coarse sand	47·8%
Acid soluble	0·6%

E. No. of Experiments :

Paddy—87 ; Total=87.

24. Cardamom Research Station, Mudigere.

A. General Information :

(i) In Mudigere taluka of Chikkamagalur distt., 72 Km. from Kadur R.S. with Lat. 13·12° N/Long. 75·63°E/Alt. 945 M. Hill slopes and bed of the valleys. (Hanal). (ii) Malnad tract. (Hilly tract). (iii) Established in 1957. (iv) Only perennial crops, since this was a Cardamom Research Station. (v) (a) Establishing transmissson of *'Katte'* through the insect *Pontalonia nigronervosa*. (b) To study whether the disease is transmitted through seed. (c)

C. Evaluation of eradication of diseased plants and replanting with healthy seedlings as a method of control. (d) Survey of the Cardamom area in Chikkamagalur Distt. with a view to assess the role of weather and disease as factors threatening the Cardamom plantations.

B. Normal Rainfall :

Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
—	0·6	1·9	8·2	22·5	43·3	118·1	58·0	20·3	28·9	6·0	2·7	310·6

(Av. monthly rainfall in cm., based on the data for the period 1960-64).

C. Irrigation and Drainage facilities :

(i) (a) and (b) No irrigation facilities are available. (ii) N.A.

D. Soil type and Soil analysis :

(i) Broad soil types—Red and lateritic types ; Depth-very deep ; Colour—Yellowish-red to red : Structure—Single grain to granular. (ii) Chemical analysis : N.A. (iii) Mechanical analysis : Sand—56% ; Silt—28·5% ; Clay—15%, (Average).

E. No. of Experiments :

Cardamom—7 ; Total=7.

25. Agricultural Research Station, Mugad.

A. General Information :

(i) In Dharwar taluka of Dharwar distt., nearest R.S., Mugad with Lat.—16-65° N/Long. —74·50° E/Alt.—701 M. The trials were laid out on low lands. (ii) Drilled paddy tract of Malnad region. (iii) Established in 1923. (iv) Paddy is taken as rainfed drilled crop. (v) Botanical, Agronomical experiments on paddy.

B. Normal Rainfall :

Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
—	0·1	0·9	3·8	15·1	13·4	33·3	18·1	13·4	9·6	1·4	1·2	110·3

(Av. monthly rainfall in cm., based on the data for the period June 1959 to May 1966).

C. Irrigation and Drainage Facilities :

(i) No irrigation facilities are available. The irrigation tank situated by the side of the farm is under the control of village panchayat. (ii) Drainage system is not existed at present.

D. Soil type and Soil analysis :

(i) Broad soil type : Depth—15 to 73 cm ; Colour—light red to medium black ; Structure —Sandy loam to sandy clay. (ii) Chemical analysis and (iii) Mechanical analysis. N.A.

E. No. of Experiments :

Paddy—21 ; Total=21.

26. I.S.A. Farm, Munirabad.

A. General Information to D. Soil type and Soil analysis.

Details N.A.

E. No. of Experiments ;

Sugarcane —1 ; Total=1.

27. Agricultural Research Station, Nagenahalli.

A. General Information :

(i) In Mysore taluka of Mysore distt., nearest R.S. Nagenahally with Lat.—12°—12′ N/ Long.—76° —42′ E/Alt. 762 M. Level tract of the channel area. (ii) Sandy loam soils of *Cauveri* Basin. (iii) Established in 1917. (iv) *Kharif* paddy, Pulses, Paddy (Sum). (v) (a) Agronomical trials on paddy. (b) University Uniform Veritial trials. (c) Nucleus seed production.

B. Normal Rainfall :

Jan.	Feb.	March	April	May	June	
1·7	0·8	2·5	6·5	12·3	4·2	
July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
6·0	4·0	6·5	—	12·8	2·2	59·5

(Av. monthly rainfall in cm., based on the data for the period 1960-63).

C. Irrigation and Drainage Facilities :

(i) (a) Irrigation facilities made available from K.R. Dam since 1924. (b) By tapping undergreund water through Bore Wells. (ii) Open drainage system provided in the entire experimental area.

D. Soil type and Soil analysis :

(i) Board soil type—Sandy loam to gravelly ; 30 to 60 cm. in depth and Red to grey in colour ; Structure—Well drained (loose). (ii) Chemical analysis : Organic matter—0.491 to 0·810 ; Soil pH.—4·8 to 5·6 ; Texture-pore light. (iii) Mechanical analysis: Clay—48·50 % ; Silt—10·10 ; Sand(F and C)—39·50.

E. No. of Experiments :

Paddy—54 ; Total=54.

28. Agricultural Research Station, Nargund.

A. General Information :

(i) In Nargund taluka of Dharwar distt., 38 Km. from Annigeri R.S. with Lat.—15·40° N/Long.—75·40° E/Alt. 808 M. above M.S.L. The experimental farm is undulating and sloping towards North to South, across which the contour bunds have been maintained. The soils are medium to light in colour and represents the typical *Karl* soil. (ii) Transitional tract. (iii) Established in 1946. (iv) Cotton, Wheat, *Jowar*. (v) Research on Reclamation of Alkaline soils.

B. Normal Rainfall :

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

(Av. fortnightly rainfall in cm., based on the data for the period 1960—64).

C. Irrigation and Drainage Facilities :

(i) (a) and (b) ; From the year 1968—69 the light irrigational programme will be started from the farm ponds. (ii) No.

D. Soil type and Soil analysis :

(i) Broad soil types : Depth—Medium ; Colour—Medium to Light black ; Structure-Upper layer fine texture but below 15 cm. salt *kankar* layer horizones. (ii) Chemical analysis : pH.—9—10 ; Total soluble salts—0·2 to 0·6 % Ex. Calcium 21 to 29 m.e. % ; Ex. Sodium 8 to 12 m.e. % ; Clay—40 to 50 % ; Moisture equivalent—40 to 50 % ; Lime Reserve—40 to 50 % ; Sodium saturation—20 to 25 % ; Organic carbon 0·44 % ; Available P_2O_5—0·004 to 0·015 %. (iii) Mechanical analysis : N.A.

E. No. of Experiments :

Wheat—17, *Jowar*—11, Cotton—15, Rotational—2 ; Total=45.

29. Agricultural Research Station, Nipani.

A. General Information :

(i) In Chikodi taluka of Belgaum distt., nearest R.S. Chikodi Road. with Lat.—18·2° N/Long—74·20' E/Alt.—610·8 M. The topography of experimental area have 0·5 to 1·0 % slope. (ii) Semi-arid tract. (iii) Established in 1938. (iv) Tobacco (Main), *Jowar* and Gr. Nut (Single Crop). (v) All India Co-ordinated Research Project on *Bidi* Tobacco on Breeding, Agronomy and Entomological aspects.

B. Normal Rainfall :

Average rainfall for a year is 77·5 cm. distributed in 10 months. (Av. of 36 years).

C. Irrigation and Drainage Facilities :

(i) (a) and (b) : Irrigation facility is available only for raising nursery and experiments on Irrigational trials. (*ii*) Fairly good.

D. Soil type and Soil analysis :

(i) Broad soil type : Medium Black, Sandy soils and Red soils with 2·44 m. depth. (ii) Chemical analysis : Chlorides—44 to 114 p.p.m. ; $CaCo_3$—1 to 7·5 % ; Organic Corbon—0·82 to 0·99 % ; P_2O_5—7·29 p.p.m. ; K_2O—70 to 300 p.p.m. (iii) Mechanical analysis : Sand 40 to 52 % : Silt—30 to 35 % ; Clay—16 to 27 %.

E. No. of Experiments :

Tobacco—25 ; Total=25.

30. Agricultural Research Station, Ponnampet.

A. General Information :

(i) In Virajpet taluka of Coorg distt., with Lat.—12°N/Long.—76° E/Alt.—865 M. above M.S.L. The topography of the station is undulating with hills and valleys. The farm is situated in a cup like basin sorrounded by elevated ground alround the central basin. (ii) Mountains heavy rainfall tract. (iii) Established in 1951. (iv) Only one crop of paddy is raised in *Kharif* season solely as a rainfed crop supplemented with tank irrigation. Sometimes, if there is sufficient soil moisture, a green manure crop like *kolanji* or Sesbevia species is raised during pre-monsoon showers. Generally, paddy after paddy is the rotation in vogue. (v) Agronomical and selection work on paddy.

B. Normal Rainfall :

Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
—	0·9	2·0	4·8	10·8	39·5	94·1	55·9	11·5	17·0	8·9	2·9	248·3

(Av. monthly rainfall in cm., based on the data for the period 1959-65).

C. Irrigation and Drainage Facilities :

(i) (a) and (b) : There are 3 tanks from which water is drawn for irrigating paddy crop of *Kharif* season whenever rains fail. One diseal engine pump set is provided to one of the tanks. Since the tanks have limited supply of water in summer, second crop of paddy cannot be raised except in a few cents area. (ii) There is no good drainage in one of the *3* blocks. Drains have been opened.

D. Soil type ann Soil analysis :

(i) Broad soil type : Mostly sandy to sandy loam ; colour-brownish grey to light saffron ; depth – 15 cm. to 23 cm.

(ii) Chemical analysis :

Sample No.	724	725	726	727	728	729	Optimum Nutrients-
Identification	Block I upper portion	Block II lower portion	B. II	B. II	B. III upper portion	B. III lower portion	necessary in Kg/ha.
Active Nitrage	(Immediately available to plants).						
	Trace	Trace	Trace	Trace	44·8	Nil	89·6
Ammonia	Trace	Trace	Trace	Trace	Trace	Trace	89·6
Phosphorus	Trace	Trace	2·2	2·2	2·2	Trace	22·2
Potash	26·9	26·9	35·9	26·9	26·9	26·9	89·6
Calcium	89·6	100·8	89·6	89.6	672	1120	89·6
pH.	5·9	5·9	6·0	5·9	6·0	5·9	
Phosphorus.	(Slowly available to plants).						
Reserve	33·3	33·3	22·2	15·7	15·7	44·8	
Potash	44·8	44·8	44·8	26·9	44·8	44·8	

(pH. and Calcium seen to be optimum for normal growth).

(iii) Mechanical analysis : N.A.

E. No. of Experiments :

paddy—20 ; Total=20.

31. Agricultural Research Station, Raichur.

A. General Information :

(i) In Raichur taluka of Raichur distt., 3·2 Km. from Raichur R.S. with Lat.—16·12° N/Long.—77·4°E/Alt. 390 M. The farm area consists of two types of soils viz. red soil and black soil. The area is laid out into different square plots of convenient size, considering the slope of the land. All the plots are fairly levelled. (ii) Dry tract of Mysore state. (iii) Established in 1932. (iv) Major crops grown : *Rabi Jowar, Kharif, Jowar,* Cotton, Groundnut, Pigeon pea, Safflower etc. (v) Mainly dry farming research.

B. Normal Rainfall :

Jan.		Feb.		March		April		May		June														
1	2	1	2	1	2	1	2	1	2	1	2													
—	—	—	0·1	1·9	—	2·6	0·2	1·6	1·2	3·2	7·3													
July		Aug.		Sept.		Oct.		Nov.		Dec.		Total												
1	2	1	2	1	2	1	2	1	2	1	2													
3·4	7·8	4·8	9·6	9·6	13·7	7·0	6·8	0·5	0·5	2·1	—	83·9												

(Av. fortnightly rainfall in cm., based on the data for the period 1960-64).

C. Irrigation and Drainage facilities :

(i) (a) and (b) : Irrigated area is only about 1 ha. as compared to the total area of 60 ha. Very shortly irrigation facilities will be available for the areas. (ii) All the plots are provided with open drains.

D. Soil type and soil analysis :

(i) Broad soil types (a) Red soil ; (b) Black soil ; Depth—91 to 122 cm. ; Colour—Red ; (ii) Chemical analysis : (a) Red soil—Org. carbon 0·645% ; (b) Black soil—0·456%. (iii) Mechanical analysis : (a) Red soil—Coarse sand 59·34 ; Fine sand-30.00 ; Silt and clay—9·33 ; Black soil : Coarse sand—11·04 ; Fine sand 27·25 ; Silt and clay—56·31.

E. *No. of Experiments* :

Jowar—7, Groundnut—2 Mixed cropping—6 ; Total=15.

32. Minor Research Station, Ranisbennur.

A. General Informotion :

(i) In Ranisbennur Taluka of Dharwar district, 1·6 Km. from Ranisbennur R.S. with Lat.—14·37°N/Long—75·37°E/Alt.—592 M. The land is sloping towards East and North. (ii) Dry tract. (iii) Established in April, 1964. (iv) *Kharif* :—Cotton alone or mixed with G. Nut or G. Nut alone. *Jowar* mixed with Tur and Horse gram. *Rabi*:—*Jowar* alone and gram mixed. (v) Agronomic Research work Testing centre.

B. Normal Rainfall :

Jan.		Feb.		March		April		May		June		
1	2	1	2	1	2	1	2	1	2	1	2	
—	—	—	—	—	4·9	29·8	19·9	48·8	51·9	5·5	36·0	
July		Aug.		Sept.		Oct.		Nov.		Dec.		Total
1	2	1	2	1	2	1	2	1	2	1	2	
49·2	62·4	25·9	29·6	26·9	41·0	102·4	73·0	20·3	2·4	4·7	0·4	635·0

(Av. fortnightly rainfall in cm. based on the data for the period 1960-64).

C. Irrigation and Drainage Facilities :

(i) (a) and (b) Facilities are not available. (ii) No proper drainage system exists.

D. Soil type and Soil analysis :

(i) Broad soil type : N.A. (ii) Chemical analysis :

Depth	pH.	N%	C%	CN (Ratio)	Orga matter	Total Sol. salt %	Av. N in Kg/ha.	Av. P_2O_5 in Kg/ha.
0—23 cm.	8·4	0·070	0·780	11·1	1·358	0·300	382·9	2·46
23—45 cm.	8·4	0·056	0·838	14·9	1·459	0·125	484·4	2·46
45—61 cm.	8·4	0·045	0·799	17·8	1·391	0·200	414·2	2·80

(iii) Mechanical analysis :

Depth	Coarse sand	Fine sand	Silt	Clay
0—23 cm.	6%	20%	15·8%	43·5%
23—45 cm.	6%	20%	14·7%	35·5%
45—61 cm.	4%	25%	12·5%	33·7%

E. No. of Experiments :

Cotton—1 ; Total=1.

33. Agricultural Research Station, Sankeswar.

A. General Information :

(i) In Belgaum distt., nearest railway station, Ghataprabha. (ii) Lift irrigation tract of Belgaum distt. (iii) Establisaed in 1959. (iv) N.A. (v) Agronomic and manurial experiments as per technical Programme.

B. Normal Rainfall :

11·2 cm. (Av. from 1st July to 15 July).

C. Irrigation and Drainage Facilities :

(i) (a) Rain fed area. (b) Lift irrigation (about 2 ha.). (ii) Nil.

D. Soil type and soil analysis :

(i) Medium black and light red soil with 61 and 91 cm. depth. (ii) Chemical analysis ; pH.—8·0 to 8·3 ; Electrical Conductivity—0·25 to 0·69 mmhos/cm. ; Organic Carbon—0·34 to 0·44% ; Available P_2O_5-10·8 to 22·4 Kg/ha. ; Available K_2O-44·8 Kg/ha. (iii) Mechanical analysis : N.A.

E. No. of Experiments :

Sugarcane—5 ; Total=8.

34. Agricultural Research Station, Saundatti.

A. General Information :

(i) In saundatti Taluka of Belgam District, 54·4 Km. from Dharwar R.S. with Lat. 15·5° N/Long. 75·5° E/Alt.—N.A. Due to the formation of counter bunds, the topography is flat. (ii) It reppresents Dry tract. (iii) Established in 1947. (iv) (1) *Kharif* Jowar. (2) Groundnut. (3) Cotton (Laxmi) ; (4) Wheat ; (5) *Bajra* ; (6) Gram—Safflower ; (7) *Rabi* Jowar. (v) Agronomical.

B. Normal Rainfall :

Jan.		Feb.		March		Aprial		May		June	
1	2	1	2	1	2	1	2	1	2	1	2
—	—	—	0·1	0·3	0·9	4·7	2·0	3·8	6·6	1·6	3·3

July		Aug.		Sept.		Act.		Nov.		Dec.		Total
1	2	1	2	1	2	1	2	1	2	1	2	72·5
7·1	4·3	4·6	5·0	5·0	7·4	9·4	4·3	0·9	0·4	0·7	0·1	

(Av. fortnightly rainfall in cm. based on the data for the period 1960-64).

C. Irrigation and Drainage Facilities :

(i) (a) and (b) : No irrigation facilities. (ii) No Proper drainage system exists.

D. Soil type and Soil analysis :

(i) Depth—1·52to 1·83 M. ; Colour—Black ; Structure—Clay loams. (iii) Chemical analysis : pH.—8·4 ; T.S.S.—126 PPM ; Org. Carbon—90·87 % ; N—0·038 % ; Av. P_2O_5 ; 0·004 % ; K_2O—0·014 % ; C.E.C. 63·63 M.E./100 gm. ; Exca. gm. ME/100 gm. ; Exng. 8·5 ME/100 gm. (iii) Mechanical analysis : (year of analysis 1966) Sand—20·5 % ; Silt—20·6 % ; Clay—50·7 %.

E. No. of Experiments :

Wheat—6, *Jowar*—25, Cotton—6, Groundnut—9 Rotational—4 ; Total=50.

35. Agricultural Research Station, Sirsi.

A. General Information :

(i) In Sirsi taluka of N. Kanara Distt., with Lat.—14° 35' 13" N/Long.—74° 21' 26" E/Alt.—550 to 600 M. above m.s.l. It is a low hilly vally area slopping towards last on one side and towards west on other side. (ii) Malanad tract. (iii) Established in 1961. (iv) Pepper is cultivated mixed with Areca by trailing pepper vines on each and every 7—8 years old Areca palms. Cardamom and Banana are also grown mixed along with the above crops, on small scale basis in almost all existing Areca gardens. (v) Varietal and Agronomic experiments on Pepper, Cardmom and Banana.

B. Normal Rainfall :

200 to 230 cm.

(Av. of 15 years, fortnightly rainfall data is not available).

C. Irrigation and Drainage facilities .

(i) (a) and (b) No irrigation facilities. (ii) Natural drains opened in all over the lowleying area.

D. Soil type and Soil analysis :

(i) Broad soil types—Loamy to clayey soils with Depth—91 to 152 cm. of Colour Red. (ii) Chemical analysis and (iii) Mechanical analysis : N.A.

E. No. of Experiments :

Paddy—11 ; Total=11.

36. Agriculture Research Station, Siruguppa.

A. General Information :

(i) In Siruguppa taluka of Bellary distt, 37 Km. from Adoni (Andhra) and 58 Km. from Bellary (Mysore) with Lat.—15° 18' N /Long—76° 54' E/Alt.—381 M. Flat area of 46 Ha. situated at an elevation of 381 M. from the mean sea level. The experimental area is 2·4 Km. east of Siruguppa village and to the South of Adoni—Siruguppa Road at the 38 Km. stone. (ii) Peninsular zone of Deep black soils. (iii) Established in 1937, (iv) West lands : Paddy—paddy or Sugarcane ; Dry Cum Wet Land : *Jowar*—Cotton ; Navane—Cotton ; *Bajra*—Cotton *Jowar*—Wheat ; *Ragi—Jowar*. (v) Agronomic experiments on above crops.

B Normal Rainfall :

Jan.	Feb.	March	April	May	June	July	Aug	Sept.	Oct.	Nov.	Dec.	Total
—	0·7	1·1	2·9	6·4	8·4	15·0	13·9	15·4	8·9	1·6	0·9	75·2

(Av. monthly rainfall in cm. based on the data for the period 1960-64).

C. Irrigation and Drainage Facilities :

(i) (a) and (b) Yes, irrigation facilities are available since 1955. (ii) Moderate.

D. Soil type and soil analysis

(i) Broad soil type : Soils are deep and high in clay ; Depth—2·13 to 2·44 m. ; Colour—Deep black ; Structure—Fine clay with high water holding capacity and low permealsidity. (ii) Chemical analysis : pH.-1·8 ; Total Sol salts-0·67% ; Exch. Ca-19·3 Me% ; Exch. Mg. 10·70 Me% ; Organic Carbon-1·19% ; Available P_2O_5-3·0 Kg/ha. ; Available K_2O-45·2 Kg/ha. ; $CaCo_3$-13·3% ; Total N-0·027% ; C.EC.-54·7. (iii) Mechanical analysis : Coarse sand-9·97% ; Fine sand-11·4% ; Silt-12·9% ; Clay-49·8% .

E. No. of Experiments :

Paddy—13, Wheat—1, Jowar—15, Korra—2, Tur=2, Sugarcane—3, Cotton—28, Total=64.

37. Regional Arecanut Research Station, Thirthahally.

A. General Information :

(i) In Thirthahalli taluka of Shimoga distt. ; 64·4 Km. from Shimoga, with Lat.-13° 41′ 42″ N/Long.-75° 14′ 30″ E /Alt.-628 M. Experimental area is located in the narrow valley. The hills are covered with shurbs and bushes. At Kuruvalli Farm the experimental plot is laid on a table land by the side of river Tunga. (ii) Malnad tract. (iii) Established in Dec. 1952. (iv) Areca bulk garden and raising nursery seedlings. (v) Improving the yield and quality arecanut in this tract by : (a) Raising and distributing quality arecanut seedlings. (b) Evolving suitable manurial, cultural and irrigational schedules. (c) Evolving control measures against pests and diseases and (d) Investigating any other problems of importance to this region.

B. Normal Rainfall :

Jan.		Feb.		March		April		May		June		
1	2	1	2	1	2	1	2	1	2	1	2	
—	—	—	0·3	0·2	0·4	1·2	1·5	2·6	12·2	10·3	26·1	

July		Aug.		Sept.		Oct.		Nov.		Dec.		
1	2	1	2	1	2	1	2	1	2	1	2	Total
63·1	37·1	54·6	30·4	7·4	9·5	8·6	8·2	2·8	0·7	2·0	0·3	279·5

(Av. fortnightly rainfall in cm. based on the data for period 1960-64).

C. Irrigation and Drainage Facilities :

(i) (a) At the head of the velley in which the garden is laid their is one tank which is the main source of irrigation at the Main farm. These facilities are available since the inception of farm. (b) By lift irrigation from the river Tunga at the Kuruvalli Farm. (ii) N.A.

D. Soil type and soil analysis :

(i) Broad soil types : Laterites and Latritic. Soil is deep with a laterite sub-stratum. Deep red to brown in colour. Soils highly leached poor in basc. Bite hard and gravelly. (ii) Chemical analysis and (iii) Mechanical analysis : N.A.

E. No. of Experiments :

Arecanut—20 ; Total = 20.

38. Central Cashewnut Research Station, Ullal

A. General Information :

(i) In Mangalore taluka of South Kanara distt., 2·5 Km. from Ullal Rly. Stn. with Lat.-13° N/Long.-75° E/Alt.-14·7 m. The area is mostly undulating and sloping from South to North. (ii) High rainfall coastal region. (iii) Established in 1953. (iv) Cashew-entire. (v) It includes improvement of cashew crop through agronomical, botanical and horticultural investigations and survey of the different cashew growing tracts in the Mysore State to collect, identify and determine the different aspects of pests and diseases affecting cashew and to conduct trials to find out suitable remedial measures.

B. Normal Rainfall :

Jan.		Feb.		March.		April		May		June		
1	2	1	2	1	2	1	2	1	2	1	2	
—	2·1	—	1·5	0·1	1·2	1·9	2·3	6·2	34·0	35·9	33·9	

July		Aug.		Sept.		Oct.		Nov.		Dec.		
1	2	1	2	1	2	1	2	1	2	1	2	Total
49·3	55·4	51·4	31·9	22·4	30·4	9·8	19·3	2·9	1·1	1·9	5·9	400·8

(Av. fortnightly rainfall in cm. based on data for the period 1960-64).

C. Irrigation and Drainage Facilities :

(i) (a) and (b) No irrigation facilities. (ii) Yes, proper drainage system exists.

D. Soil type and soil analysis :

(i) Broad soil types : Depth—30 to 60 cm. ; Colour—Red brown ; Structure—Porous.

(ii) Chemical analysis : Year in which analysis was done-1964.

	pH.	Total soluble salt in E.C. mm'hos/cm.		Organic carbon in percent	Available Phosphorus Kg/ha.	Available Potash Kg/ha.
Top soil						
10 cm.	6·07	0·51	CGI	0·94	2·0	93·4
Sub. soil						
10 cm.	6·15	0·16	CGI	0·74	1·7	90·7

(iii) Mechanical analysis : N.A.

E. No. of Experiments :

Cashewnut—13 ; Total=13.

39. Arecanut Research Station, Vittal.

A. General Information :

(i) In South Kanara district nearest Rly. Stn. Mangalore with Lat 12·25°N/Long 75.42E/Alt. 200 m. The experimental area is on terraces and level fields made at the foot of hillocks. (ii) It represents—Semi Malnad tract. (iii) Established in—1956. (iv) Arecanut, Cashew & Cacao. (v) Fundamental and applied Research on Arecanut and applied Research on Cashew and Cacao.

B. Normal Rainfall :

Jan.		Feb.		March		April		May		June		July	
1	2	1	2	1	2	1	2	1	2	1	2	1	2
0·1	—	—	—	—	—	1·2	3.4	3.1	11·5	34·7	60·3	70·0	80·4

Aug.		Sept.		Oct.		Nov.		Dec.		
1	2	1	2	1	2	1	2	1	2	Total
47·3	30·6	18·7	16·4	8·6	5·9	6·1	4·7	0·4	0·2	402·6

(Av. fortnightly rainfall in cm. based on the data for the period 1967-71).

C. Irrigation and Drainage Facilities :

(i) (a) Yes, Since 1956. (b) A river is flowing through the Farm ; water is pumped from it for irrigation purpose. (ii) Yes, proper drainage system.

D. Soil type and Soil analysis :

(i) Broad soil type-Laterite deep upto 2 m ; Red or Brown structure in colour. Laterite mixed with sand alluvium & gravel. (ii) Chemical analysis (Year of analysis 1959) pH. 5·1 to 6·1 Total N%=0·02 to 0·06 ; Total P_2O_5%0·021 to 0·06 ; Total K_2O% 0·01 to 0·04 ; Org. carbon=0·22 to 1·05. (iii) Mechanical analysis (Year of analysis 1966) Loss on solution=0·77% ; Clay=38·32% : Silt=9·56% ; Sand=51·21%.

E. No. of Experiments.

Arecanut—1 ; Total=1.

EXPERIMENTAL DATA

Crop :- Paddy (*Kharif*). **Ref :- Ms. 60(122), 61(98).**

Site :- Agri. Res. Stn., Dhadesaugar. **Type :- 'M'.**

Object :—To compare the performance of bulky organic manures and artificial fertilizers on Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy—Paddy. (b) Paddy. (c) N.A. (ii) Sandy loam. (iii) 7 to 9.7.60 ; 1st week of July, 1961. (iv) (a) Ploughing and puddling. (b) Transplanting. (c) Nil. (d) 20 cm.×20 cm. (e) 2 to 3. (v) Nil. (vi) H.R. 19 (early). (vii) Irrigated. (viii) 3 to 4 weedings with Japaneese weeder. (ix) 51 cm. ; 43 cm. (x) 14 to 17.10.1960 ; 1st week of Oct., 1961.

2. TREATMENTS :

All combinations of (1) and (2)+2 extra treatments.

(1) 4 sources of 56 Kg/ha. of N : S_1=G.M, S_2=F.Y.M. S_3=G.N. C and S_4=A/S.

(2) 2 levels of P_2O_5: P_0=0 and P_1=28 Kg/ha.

E_0=Control (2 plots) and E_1=28 Kg/ha. of P_2O_5 (2 plots).

3. DESIGN :

(i) Fact, in R.B.D. (ii) (a) 12. (b) N.A. (iii) 2. (iv) (a) and (b) 10·1 m.×8.5 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Leaf top drying and stem borer attack were noticed. Spraying with folidol. (iii) Yield of grain. (iv) (a) 1960—1961. (b) No. (c) Results of combined analysis given under 5. (v) and (vi) Nil. (vii) Error variances are homogeneous and Treatments×years interaction is absent.

5. RESULTS :

(i) 2394 Kg/ha. (ii) 128·5 Kg/ha. [based on 31 d. f. made up of pooled error and Treatments×years interaction]. (iii) Main effects of S and interaction P×S are highly significant. (iv) Av. yield of grain in Kg/ha.

E_0=1214 Kg/ha. and E_1=1610 Kg/ha.

	S_1	S_2	S_3	S_4	Mean
P_0	3137	1866	2087	3094	2726
P_1	3250	1948	2972	2761	2733
Mean	3193	1907	2889	2927	2729

C.D. for S marginal means =131·2 Kg/ha.

C.D. for the body of P×S table=185·5 Kg/ha.

Years	P_0	P_1	Sig.	S_1	S_2	S_3	S_4	Sig.	G.M.	S.E./plot
1960	2877	2877	N.S.	3468	1859	2952	3227	**	2877	397·0
1961	2576	2589	N.S.	2919	1955	2827	2628	N.S.	2582	470·0
Pooled	2726	2733	N.S.	3193	1907	2889	2927	**	2729	128·5

Crop :- Paddy (*Kharif*). **Ref :- Ms. 60(132), 61(111), 62(113), 63(52).**

Site :- Agri. College Farm, Dharwar. **Type :. 'M'.**

Object :—To find out the suitable methods of application of N and P fertilizers for drilled Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy — Paddy. (b) Paddy. (c) N.A. (ii) Alluvial soil for 60(132) and greyish clay loam for 61, 62 and 63. (iii) 24, 25.5.1960 ; 5.6.1961 ; 1.6.1962 ; 29.5.63. (iv) (a) Ploughing and harrowing. (b) Drilling. (c) N.A. (d) 30 cm. between rows. (e) N.A. (v) Nil. (vi) A—200 (late). (vii) Unirrigated. (viii) Weedings for 60 (132) and 63 (52) and weeding+Interculturing for 61 (111) and 62 (113). (ix) 53 cm. ; N.A. for 61, 62 and 63. (x) 29.11.1960 ; 28.11.61 ; 22.11.62 ; 26/27.11.1963.

2. TREATMENTS :

All the combinations of (1) and (2)+a control.

(1) 2 levels of fertilisers : L_1=33·6 Kg/ha. of N as A/S+22·4 Kg/ha. of P_2O_5 as Super and L_2=50·4 Kg/ha. of N as A/S+33·6 Kg/ha. of P_2O_5 as Super.

(2) 6 methods of placement of fertilisers : M_1=Broadcast before sowing, M_2=Drilling both ways before sowing, M_3=Placing 4 cm. deeper than seed M_4=Application by seed cum fertilisers drill in the same line, M_5=5 cm. away and 5 cm. deep from the seed line and M_6=Inserting pellets made out of fertilisers and mud every 30 cm. apart along the crop line at thinning.

3. DESIGN :

(i) Fact in R.B.D. (ii) (a) 13. (b) N.A. (iii) 4. (iv) (a) 9·1 m.×6·1 m. (b) 6·1 m.×4·6 m. for 60 ; 7·6 m.×4.8 m. for 61, 62 and 63. (v) 1·5 m.×1·5 m. for 60 (132) and 76 cm.×65 cm. for 61, 62 and 63. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of grain. (iv) (a) 1960—1963. (b) No. (c) Results of combined analysis given under 5. (v) and (vi) Nil. (vii) Error variances are heterogeneous and Treatments×years interaction is present.

5. RESULTS :

(i) 3006 Kg/ha. (ii) 626·7 Kg/ha. (based on 36 d.f. made up of Treatments×years interaction). (iii) Control vs. others is highly significant. (iv) Av. yield of grain in Kg/ha.

Control=2449 Kg/ha.

	M_1	M_2	M_3	M_4	M_5	M_6	Mean
L_1	2847	2933	2918	3121	3096	3014	2988
L_2	2897	3122	3095	3204	3108	3270	3116
Mean	2872	3028	3006	3162	3102	3142	3052

C.D. for control vs. others=331·0 Kg/ha.

Years	M_1	M_2	M_3	M_4	M_5	M_6	Sig.
1961	2969	3774	3300	3541	3799	3390	*
1962	2923	2905	3211	3558	2856	2856	*
1963	3006	3010	2930	2983	3154	3475	N.S.
1964	2590	2423	2586	2563	2597	2846	N.S.
Pooled	2872	3028	3006	3162	3102	3142	N.S.

L_1	L_2	Sig.	G.M.	S.E./plot
3329	3596	N.S.	3419	616·8
3121	2982	N.S.	3032	490·1
2926	3260	**	3030	371·6
2577	2626	N.S.	2542	273·0
2988	3116	N.S.	3006	626·7

Crop :- Paddy (*Kharif*). **Ref :- Ms. 64(85).**

Site :- Agri. College Farm, Dharwar. **Type :- 'M'.**

Object :—To find out suitable method and kind of fertilizer for application to drilled Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy-Paddy. (b) Paddy. (c) Nil. (ii) Alluvial. (iii) 10.6.64. (iv) (a) Ploughing, clad crushing, 9 weedding and harrowing. (b) Drilling. (c) 67 Kg/ha. (d) 30 cm. between rows. (e) N.A. (v) 9·8 C.L./ha. of F.Y.M. (vi) A-200 (late). (vii) Unirrigated. (viii) Weeding. (ix) 86 cm. (x) 25.11.69.

2. TREATMENTS :

All combinations of (1) and (2) with 32·1 Kg/ha. of P_2O_5 as super and a control.

(1) 4 sources of 44·5 Kg/ha. of N : S_1=A/S, S_2=Urea, S_3=C/A/N and S_4=A/S/N.

(2) 4 methods of placement of fertilizers: M_1=Full dose 13 cm. deep by plough sole a week before sowing, M_2=½ (N+P) by seed cum fertilizer drill in the same time where the seed is sown and ½ (N+P) by broadcasting between the times 5 weeks after sowing, M_3=½ (N+P) pallets prepared out of mud and fertilizers every 30 cm. apart along one side at sowing+½ (N+P) 5 cm. away and 5cm. deep from the crop line 5 weeks after sowing and M_4= Full dose applied with seed cum fertilizer drill at sowing.

3. DESIGN:

(i) Fact. in R.B.D. (ii) (a) 17. (b) N.A. (iii) 4. (iv) 9·1 m.×4·9 m. (b) 7·6 m.×4·3 m. (v) 76 cm.× 30 cm. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1964-N.A. (b) No (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1989 Kg/ha. (ii) 115 5 Kg/ha. (iii) Main effects of M and interaction M×S are highly significant. (iv) Av. yield of grain in Kg/ha.

	M_1	M_2	M_3	M_4	Mean
S_1	2089	1933	2536	2297	2214
S_2	1665	2113	2646	1662	2022
S_3	1903	1998	1997	1690	1897
S_4	1437	2031	1972	2243	1921
Mean	1774	2019	2288	1973	2014

C.D. for M marginal means=82·2 Kg/ha.
C.D. for body of table =164·4 Kg/ha.

Crop :- Paddy (*Kharif*). **Ref :- Ms. 62(54).**

Site :- Agri. Res. Stn., Hebbal. **Type :- 'M'.**

Object :—To compose the effect of Nitrophosphate processed by O.D.D.A. and P.E.C. method with Super at different levels of N on the growth and yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) Clay Loam. (iii) 10.8.60. (iv) (a) 3 ploughings and puddling. (b) Transplanting. (c) 34 Kg/ha. (d) 25 cm.×15 cm. (e) 2. (v) Nil. (vi) S-317 Paddy. (vii) Irrigated. (viii) 2 weedings. (ix) 65 cm. (x) 16.11.62.

2. TREATMENTS :

All combinations of (1), (2) and (3)+4 extra treatments.

(1) 3 sources of fertilizers : S_1=Super and A/S, S_2=Nitrophos. processed by O.D.D.A. and S_3=Nitrophos. processed by P.E.C.

(2) 3 levels of fertilizers : L_1=13·4 Kg/ha. of N+118 Kg/ha. of P_2O_5, L_2=2 L_1 and L_3=4 L_1

(3) 3 methods of placements of fertilizers : M_1=Broadcast, M_2=6 cm. between the soil and M_3=By pallet method.

T_0=Control, T_1=13·4 Kg/ha. of N, T_2=26·9 Kg/ha. of N and T_3=53·9 Kg/ha. of N as A/S.

3. DESIGN :

(i) 3^3 confd.+4 extra treatments in each block. (ii) (a) 13 Plots/block, 3 blocks/replication. (b) 9·1 m.× 35·7 m. (iii) 2. (iv) (a) 9·1 m.×2·7 m. (b) 8·7 m.×2·3 m. (v) 23 cm.×23 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Grain yield. (iv) (a) to (c) N.A. (v) Margalox and Nagenahally. (vi) and (vii) Nil.

5. RESULTS :

(i) 2912 Kg/ha. (ii) 432·4 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	L_1	L_2	L_3	M_1	M_2	M_3	Mean
S_1	2724	2924	2724	2543	3024	2805	2791
S_2	2655	2857	3243	2681	3197	2877	2918
S_3	2993	2774	3430	3343	2931	2943	3066
Mean	2791	2852	3131	2856	3051	2875	2925
M_1	2412	2950	3205				
M_2	3152	2898	3102				
M_3	2808	2707	3090				

Crop :- Paddy (*Kharif*). **Ref :- Ms. 62(55).**

Site :- Agri. Res. Stn., Hebbal. **Type :- 'M'.**

Object :—To study the effect of forsed Mg. phos. on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) Clay loam. (iii) 10.8.62. (iv) (a) 3 ploughings. (b) Transplanting. (c) 34 Kg/ha. (d) 25 cm.×15 cm. (e) 2. (v) 33·6 Kg/ha. of N. (vi) China-2. (vii) Irrigated. (viii) 2 weedings. (ix) 65 cm. (x) 16.11.62.

2. TREATMENTS :

All combinations of (1) and (2)+a control.

(1) 2 sources of P_2O_5 : S_1=Super and S_2=Mg. phos.

(2) 2 levels of P_2O_5 : P_1=33·6 and P_2=50·4 Kg/ha.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 9·1 m.×7·6 m. (b) 8·7 m.×7·2 m. (v) 23 cm. ×23 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Grain yield. (iv) (a) to (c) N.A. (v) to (vii) Nil.

5. RESULTS :

(i) 3581 Kg/ha. (ii) 523·9 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

Control=3431 Kg/ha.

	S_1	S_2	Mean
P_1	3738	3495	3616
P_2	3596	3648	3622
Mean	3666	3572	3619

Crop :- Paddy (*Kharif*). **Ref :- Ms. 61(59).**

Site :- Agri. Res. Stn., Hebbal. **Type :- 'M'.**

Object : - To find out the optimum combination of N, P and K for Paddy on long duration variety S. 661.

1. BASAL CONDITIONS :

(i) (a) Paddy-Paddy. (b) Paddy. (c) As per treatments. (ii) Clay loam. (iii) 26.6.61, 2.8.61. (iv) (a) 3 ploughings and puddling. (d) Transplanting. (c) 45 Kg/ha. (d) 23 cm.×15 cm. (e) 2 to 3. (v) Sesbania at 494·2 Kg/ha.+50·2 Q/ha. of compost. (vi) S. 661 (long duration). (vii) Irrigated. (viii) 2 rotary weedings and 3 hand weedings. (ix) 84 cm. (x) 18.12.61.

2. TREATMENTS :

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

(i) 3 levels of N as A/S : N_0=0. N_1=33·6 and N_2=67·2 Kg/ha.

(2) 3 levels of P_2O_5 as Super : P_0=0, P_1=33·6 and P_2=67·2 Kg/ha.

(3) 3 levels of K_2O as Mur. Pot. : K_0=0, K_1=33·6 and K_2=67·2 Kg/ha.

½ dose of N, all P and K applied as transplanting, the other ½ dose of N is applied at first hand weeding.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 27. (b) 41·1 m.×38·4 m. (iii) 2. (iv) (a) 14·6 m.×4·1 m. (b) 14·2 m.×3·7 m. (v) 23 cm.×23 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Grain weight. (iv) (a) 1959 to 1961. (b) Yes. (c) Nil. (v) and (vi) Nil. (vii) Date for 1960 is N.A. at the Res. Stn. ;

5. RESULTS :

(i) 3959 Kg/ha. (ii) 330·8 Kg/ha. (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	3412	3456	3480	3332	3336	3680	3449
N_1	4069	3912	4065	3816	4102	4128	4015
N_2	4138	4510	4590	4452	4345	4441	4413
Mean	3873	3959	4045	3867	3928	4083	3959
K_0	3960	3881	3759				
K_1	3789	3839	4155				
K_2	3870	4158	4221				

C.D. for N marginal means=226·7 Kg/ha.

Crop :- Paddy (*Rabi*). **Ref :- Ms. 61(62).**

Site :- Agri. Res. Stn., Hebbal. **Type :- 'M'.**

Object :—To find the optimum combination of N, P and K for Paddy on wet lands for medium duration variety S. 317.

1. BASAL CONDITIONS :

(i) Paddy after Paddy. (b) Paddy. (c) 75·3 Q/ha. of compost. (ii) Clay loam. (iii) 4·2·61. (iv) (a) 3 ploughings. (b) Transplanting. (c) 45 Kg/ha. (d) 30 cm.×23 cm. (e) 1. (v) 5604 Kg/ha. of G.L.+ 75·3 Q/ha. of compost. (vi) S. 317 (medium). (vii) Irrigated. (viii) 2 intercultivation. (ix) 204 cm. (x) 20.5.61.

2. TREATMENTS :

Same as in expt. no. 61 (59) on page 5.

3. DESIGN:

(i) Fact. in R.B.D. (ii) (a) 27. (b) 37·5 m.×14·6 m. (iii) 2. (iv) (a) 14·6 m.×4·2 m. (b) 14·3 m.×3·9 m. (v) 15 cm.×15 cm. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Yield of grain. (iv) (a) 1958 to 1961. (b) Yes. (c) Nil. (v) and (vi) Nil. (vii) Date for 1960 in N.A. at the Res. Stn. ;

5. RESULTS :

(i) 3981 Kg/ha. (ii) 489·6 Kg/ha. (iii) Main effects of N, P and interaction N×P are highly significant. (iv) Av. yield of grain in Kg/ha.

	N_0	N_1	N_2	K_0	K_1	K_2	Mean
P_0	3632	3665	4549	4149	3562	4135	3949
P_1	3531	4036	3369	3764	3598	3574	3645
P_2	3492	4299	5261	4520	4229	4303	4350
Mean	3552	4000	4393	4144	3796	4004	3981
K_0	3676	4121	4636				
K_1	3385	3710	4294				
K_2	3594	4160	4249				

C.D. for N or P marginal means=335·5 Kg/ha.
C.D. for body of N×P table =581·1 Kg/ha.

Crop :- Paddy (*Rabi*). **Ref :- Ms. 61(61).**

Site :- Agri. Res. Stn. Hebbal. **Type :- 'M'.**

Object :—To find out the best Nitrogeneous fertilizers for *Rabi* Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) Clay loam. (iii) 4.1.61/17.2.61. (iv) (a) 3 ploughings. (b) Transplanting. (c) 45 Kg/ha. (d) 25 cm.×15 cm. (e) 3. (v) 224·2 Kg/ha. of Super applied before transplanting. (vi) S. 705. (vii) Irrigated. (viii) 2 interculturings. (ix) 20 cm. (x) 3.6.61.

2. TREATMENTS :

5 sources of 33·6 Kg/ha. of N : S_1=A/S, S_2=C/A/N, S_3=A/S/N, S_4=A/C and S_5=Urea.
Fertilizers applied in two equal doses at planting and one month after planting.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) 41·2 m.×9·2 m, (iii) 4. (iv) (a) and (b) 9·1 m.×8·2 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Fair, (ii) Nil. (iii) Yield of grain. (iv) (a) 1958-1961. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Data for 1960 is N.A. at the Res. Stn.

5. RESULTS :

(i) 3071 Kg/ha. (ii) 278·7 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	S_1	S_2	S_3	S_4	S_5
Av. yield	3127	3061	2848	3072	3245

———

Crop :- Paddy (*Kharif*). **Ref :- Ms. 61(58).**

Site :- Agri. Rea. Stn. Hebbal. **Type :- 'M'.**

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

1. BASAL CONDITIONS :

(i) (a) Paddy after Paddy. (b) Paddy. (c) 33·6 Kg/ha. of N. (ii) Clay loam. (iii) 20.6.61/21.7.61. (iv) (a) 3 ploughings and puddling. (b) Transplanted. (c) 45 Kg/ha. (d) 23 cm.×15 cm. (e) 2 to 3. (v) 224·2 Kg/ha. of Super. (vi) S. 1092 (Long duration). (vii) Irrigated. (viii) Gap filling and 3 weedings. (ix) 84 cm. (x) 26-12-61.

2. TREATMENTS :

Same as expt. no. 61 (61) on page 7.

3. DESIGN :

(i) Latin square. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 10·1 ×8·1 m. (b) 9·6 m.×7·6 m. (v) 23 cm.× 23 cm. (vi) Yes.

4. GENERAL :

(i) Fair- (ii) Nil. (iii) Wt. of grain yield. (iv) (a) 1959 to 1961. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Data for 1960 is N.A. at the Res. Stn.

5. RESULTS :

(i) 4013 Kg/ha. (ii) 282·8 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	S_1	S_2	S_3	S_4	S_5
Av. yield	4084	3861	4311	3914	3894

———

Crop :- Paddy (*Kharif*). **Ref :- Ms. 65(52).**

Site :- Agri. Res. Stn.; Hiriyur. **Type :- 'M'.**

Object :—To determine the effect of micronutrients application and to study the relatives merits of the two methods of application in soil and foliar application.

1. BASAL CONDITIONS :

(i) (a) S. Cané-Paddy-Hybrid Maize. (b) Hybrid Maize. (c) F.Y.M. at 24.7 Kg/ha., 89·6 Kg/ha. of N+44·8. Kg/ha. of P_2O_5+44·8 Kg/ha. of K_2O (ii) Redloam. (iii) 10.8.65. (iv) (a) 3 ploughing, one harrowing. (c) 49 Kg/ha. (d) 23 cm.×15 cm. (e) 3. (v) 24·7 C.L./ha. of F.Y.M. (vi) S-317 (medium). (vii) Irrigated. (viii) Passed Japanese weedes twice 2 hand weedings. (ix) 17 cm. (x) 29.11.65.

2. TREATMENTS:

16 manurial treatments : T_0=Control, T_1=Water spray, T_2=33·6 Kg/ha. of N+33·6 Kg/ha. of P_2O_5,+33·6 Kg/ha. of K_2O, T_3=T_2+56·0 Kg/ha. of Mn. Sul., T_4=T_2+28·0 Kg/ha. of Zn. Sul., T_5=T_2+28 0 K/ha. of Cu. Sul., T_6=T_2+Borax at 16·8 Kg/ha., T_7=T_2+Sodium Molybdate at 1.1 Kg/ha., T_8=T_2+Mn. Sul.+Zn. Sul.+Cu. Sul.+Borax+Sodium Molybdate in the above proportions, T_9=T_2+water spray, T_{10}=T_2+Mn. Sul. spray at 16·8 Kg/ha., T_{11}= T_2+Zn. Sul. spray at 11·2 Kg/ha., T_{12}=T_2+Cu. Sul. Spray at 11·2 Kg/ha., T_{13}=T_2+Borax spray at 5·6 Kg/ha., T_{14}=T_2+Sodium Moly bdate spray at 0·6 Kg/ha. and T_{15}=T_2+Mn. Sul.+Zn. Sul.+Cu. Sul.+Borax+Sodium Molybdate sprayed in the above proportions.

T_9 to T_{15} applied to the soil.

3. DESIGN :

(i) R.B.D. (ii) (a) 16. (b) 80·5 m.×10·1 m. (iii) 3. (iv) (a) 10·1 m.×5·0 m. (b) 9·1 m.×4·1 m. (v) 3 rows. (vi) Yes.

4. GENERAL :

(i) Lodged. (ii) Stem borer and leaf spot. wettable Sulpher and Folidol sprayed. (vi) Grain yield. (iv) (a) to (c) No. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 2522 Kg/ha. (ii) 826·5 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	2348	2018	2835	2879	2436	2436	2259	2790

Treatment	T_8	T_9	T_{10}	T_{11}	T_{12}	T_{13}	T_{14}	T_{15}
Av. yield	2259	2879	2436	2082	2392	2436	3278	2569

Crop :- Paddy (*Kharif*). **Ref :- Ms. 65(53).**

Site :- Agri. Res. Stn., Hiriyur. **Type :- 'M'.**

Object :— To fix up a optimum dose of N, P and K for Paddy crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 67·2 Kg/ha. of N+33·6 Kg/ha. of P_2O_5+33·6 Kg/ha. of K_2O. (ii) Red loam. (iii) 27.6.65. (iv) (a) 3 ploughings 2 harrowings. (b) Line planting. (c) 49 Kg/ha. (d) 23 cm.×15 cm. (e) N.A. (v) 24·7 Kg/ha. of F.Y.M. (vi) S—661 (late). (vii) Irrigated. (viii) Passed Japanese weeder once 2 hand weedings. (ix) 18 cm. (x) 11.12.65.

2. TREATMENTS :

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

(1) 3 levels of N : N_1=33·6, N_2=67·2 and N_3=100·8 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.

3. DESIGN :

(i) 3^3 coufd. (ii) 9 plots/block ; 3 blocks/replication. (b) 90·5 cm.×15·1 cm. (iii) 2. (iv) (a) 10·1 m.× 5·0 cm. (b) 9·1 m.×4·1 m. (v) 4 rows. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Stem borer—endrin sprayed. (iii) Yield of grain. (iv) (a) to (c) No. (v) to (vii) Nil.

5. RESULTS :

(i) 4410 Kg/ha. (ii) 843·8 Kg/ha. (iii) Main effect of N is significant. P effect 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_1	3451	4214	4334	3655	4259	4086	4000
N_2	3709	4893	4694	4183	4631	4481	4432
N_3	3957	4911	5528	4942	4534	4920	4799
Mean	3706	4673	4852	4260	4475	4495	4410
K_0	3518	4889	4374				
K_1	3762	4241	5421				
K_2	3837	4889	4760				

C.D. for N or P marginal means=533·9 Kg/ha.

Crop :- Paddy (*Rabi*). **Ref :- Ms. 65(49).**

Site :- Agri. Res. Stn., Hiriyar. **Type :- 'M'.**

Object : – To find out the performance of different fertilizers in split doses with different levels of N.

1. BASAL CONDITIONS :

(i) (a) Paddy-Sugarcane. (b) Hybrid Maize. (c) 89 Kg/ha. of N+44·8 Kg/ha. of P_2O_5+44·8 Kg/ha. of K_2O (ii) Red loam. (iii) 10.8.65. (iv) (a) 3 ploughings, 1 cultivator and 1 harrowing. (b) Line transplanting. (c) 49 Kg/ha. (d) 23 cm.×15 cm. (e) 3. (v) 24·7 C.L./ha. of F.Y.M. (vi) S-317 (medium duration). (vii) Irrigated. (viii) Twice Passing Japanese weeder 2 hand weedings. (ix) 18 cm. (x) 27.11.65.

2. TREATMENTS :

Main-plot treatments :

3 levels of N : N_1=33·6, N_2=67·2 and N_3=100.8 Kg/ha.

Sub-plot treatments :

6 sources of N : S_1=C/A/N, S_2=A/S/N, S_3=Urea, S_4=Sodium Nitrate, S_5=A/C and S_6=A/S.

Sub-sub-plot treatments :

2 lines of application : T_1=Full dose at planting and T_2=Half at planting+half at tillering.

3. DESIGN :

(i) Split-split plot. (ii) (a) 3 main-plots/replication ; 6 sub-plots/main-plot, 2 sub-sub-plots/sub-plot. (b) 120·7 m.×13·7 m. (iii) 2. (iv) (a) 10·1 m.×4·6 m. (b) 9·1 m.×3·7 m. (v) 4 rows. (vi) Yes.

4. GENERAL :

(i) Lodged. (ii) Stem borer and leaf spot, sprayed with wettable sulphur and Folidol. (iii) Grain and fodder yield. (iv) (a) to (c) No. (v) to (vii) Nil.

5. RESULTS :

(i) 3299 Kg/ha. (ii) (a) 3550·8 Kg/ha. (b) 747·0 Kg/ha. (c) 590·3 Kg/ha. (iii) Main effect of Tis highly significant. (iv) Av. yield of grain in Kg/ha.

	S_1	S_2	S_3	S_4	S_5	S_6	T_1	T_2	Mean
N_1	3049	2974	3348	2698	2511	3094	2581	3311	2946
N_2	2511	3781	3221	2922	3923	3049	3054	3415	3235
N_3	3527	3834	3692	3632	3886	3729	3336	4098	3717
Mean	3029	3530	3420	3084	3440	3291	2990	3608	3299
T_1	2939	3149	3104	2934	3109	2705			
T_2	3119	3911	3737	3234	3771	3876			

C.D. for T marginal means=292·3 Kg/ha.

Crop :- Paddy (*First crop*). **Ref :- Ms. 60(58), 61(36).**

Site :- Paddy Breeding Stn., Mangalor. **Type :- 'M'.**

Object :— To find out the efficiency of different nitrogeneous fertilizers on Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy-Paddy, G.M. (b) G.M. (c) Nil. (ii) Laterite, loamy. (iii) 20.6.60 ; 21.6.61. (iv) (a) 4 to 6 ploughings. (b) Transplanting. (c) N.A. ; 18 Kg/ha. (d) 20 cm.×20 cm. ; 25 cm.×20 cm. (e) 3 to 4. (v) G M. at 5600 Kg/ha.+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. for 60(58) G.L. at 1345 Kg/ha.+34 Kg/ha. of P_2O_5 as Super+27·3 Kg/ha. of K_2O as Mur. Pot. for 61(36). (v) M.G.L. 5 (medium). (vii) Unirrigated. (viii) 1 weeding. (ix) 181 cm. ; 547 cm. (x) 14.10.60 ; 26.9.61.

2. TREATMENTS :

7 sources of 33·6 Kg/ha. of N : S_0=Control (No N), S_1=A/S, S_2=C/A/N, S_3=A/C, S_4=Urea, S_5=A/C/N S_6=C/N.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) 53·3 m.×7·6 m. (iii) 4. (iv) (a) 7·6 m.×7·6 m. (b) 7·4 m.×7·4 m. (v) 10 cm. ×10 cm. (vi) Yes.

4. GENERAL :

(i) Fair ; good. (ii) Attack of helminthosporium ; Mild attack of gallfly and Helminthosporuim. (iii) Grain yield. (iv) (a) 1956 to 1961. (b) No. (c) Nil. (v) and (vi) Nil. (vii) As the error variances are heterogeneous and Treatments×years interaction is absent, results of the individual experiments are presented below.

5. RESULTS :

60(58)

(i) 2576 Kg/ha. (ii) 152·7 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	S_6
Av. yield	2691	2550	2617	2582	2597	2612	2386

61(36)

(i) 2648 Kg/ha. (ii) 122·8 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	S_6
Av. yield	2656	2691	2580	2617	2617	2646	2726

Crop :- Paddy (*1st crop*). **Ref :- Ms. 63(10), 64(2), 65(29).**

Site :- Paddy Breeding Stn., Mangalor. **Type :- 'M'.**

Object :— To compare the efficiency of niterogeneous fertilizers in single crop land on Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy-Paddy. (b) Paddy. (c) Nil. (ii) Laterite loamy in texture. (iii) 25.5.63/6.7.63 ; 13.7.64/12.6.64 ; 9.6.65/22.7.65. (iv) (a) 5 to 6 ploughings, puddling and levelling. (b) Transplanting. (c) 18 Kg/ha. for 63(10) and 64(2) and 37 Kg/ha. for 65(29). (d) 25 cm. × 23 cm. ; 25 cm. × 20 cm. ; 20 cm. × 20 cm. (e) 3. (v) G.L. at 79 Q/ha. + 34 Kg/ha. of P_2O_5 as Super + 27·3 Kg/ha. of K_2O as Mur. Pot. for 63(10) and 64(2) ; N.A. (vi) M.G.L. 2 (medium). (vii) Unirrigated. (viii) Nil ; Hand weeding. (ix) 264 cm ; 234 cm. ; 228 cm. (x) 9.10.62 ; 20.10.64 ; 10.10.65.

2. TREATMENTS :

7 manurial treatments : T_0=Control, T_1=37·1 Kg/ha. of N as A/S, T_2=74·1 Kg/ha. of N as A/S, T_3=37·1 Kg/ha. of N as Urea, T_4=74·1 Kg/ha. of N as Urea, T_5=37·1 Kg/ha. of N as C/A/N and T_6=74·1 Kg/ha. of N as C/A/N.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 9·1 m. × 7·9 m. (b) 8·9 m. × 7·7 m. ; 8·7 m. × 7·5 m. ; 9·1 m. × 7·9 m. (v) 10 cm. × 10 cm. ; 20 cm. × 20 cm. ; Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1963 to 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 absent.

5. RESULTS :

(i) 2926 Kg/ha. (ii) 272·5 Kg/ha. (based on 66 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	2618	3032	2947	2780	3104	2919	3079

C.D. = 222·2 Kg/ha.

Years	T_0	T_1	T_2	T_3	T_4	T_5	T_6	Sig.	G.M.	S.E./plot
1963	2763	2948	2832	2810	2911	2886	2962	N.S.	2874	237·5
1964	3249	3832	3665	3528	3790	3631	3764	*	3636	365·3
1965	1841	2318	2343	2001	2611	2241	2510	**	2267	215·3
Pooled	2618	3032	2947	2780	3104	2919	3079	**	2926	272·5

Crop :- Paddy. **Ref :- Ms. 60(68), 61(40), 62(29).**

Site :- Paddy Breeding Stn., Mangalore. **Type :- 'M'.**

Object :—To compare the efficiency of Mg. phos. with super.

1. BASAL CONDITIONS :

(i) (a) Paddy, G.M. (b) Paddy. (c) N.A. (ii) Laterite, loamy in texture. (iii) 5.11.60 ; 14.10.61 ; 9.11.62. (iv) (a) 5 to 6 ploughings. (b) Transplanting. (c) 18 Kg/ha. (d) 25 cm.×20 cm. (e) 3 to 4. (v) G.M. at 56 Q/ha.+N at 33·6 Kg/ha.+P_2O_5 at 33·6 Kg/ha. for 60(68) ; G.L. at 29·6 Q/ha.+28·4 Kg/ha. of K_2O as Mur. Pot.+15·8 Kg/ha. of N as A/s for 61(90) and G.L. at 79 Q/ha.+27·3 Q/ha. of K_2O as Mur. Pot.+17·3 Kg/ha. of N as A/S for 62(29). (vi) C.O. 14 (medium). (vii) Unirrigated for 60(68) ; irrigated for 61(90) and 62(29). (viii) 1 weeding. (ix) 36·7 cm. ; 45 cm. ; 40 cm. (x) 14.2.61 ; 3.2.62 ; 13.2.63.

2. TREATMENTS :

All combinations of (1) and (2)+1 control

(1) 2 sources of P_2O_5 : S_1=Super and S_2=Mg. Phos.

(2) 2 levels of P_2O_5 : P_1=33·6 and P_2=50·4 Kg/ha.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) 30·5 m.×7·62 m. (iii) 6. (iv) 6·10 m.×7·62 m. (b) 5·9 m.×7·4 m. (v) 10 cm.×10 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Attack of stem borer. (iii) Tiller counts, and grain yield. (iv) (a) 1960—1962. (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(68)

(i) 2120 Kg/ha. (ii) 130·9 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

Control=2087 Kg/ha.

	S_1	S_2	Mean
P_1	2157	2093	2125
P_2	2121	2144	2132
Mean	2139	2118	2128

61(40)

(i) 2163 Kg/ha. (ii) 178·8 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

Control=2140 Kg/ha.

	S_1	S_2	Mean
P_1	2165	2063	2114
P_2	2170	2277	2224
Mean	2167	2170	2169

62(29)

(i) 2191 Kg/ha. (ii) 324·4 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

Control=2329 Kg/ha.

	S_1	S_2	Mean
P_1	2078	2039	2058
P_2	2267	2242	2254
Mean	2172	2140	2156

Crop :- Paddy (*Kharif*). **Ref :- Ms. 63(19).**

Site :- Paddy Breeding Stn., Mangalore. **Type :- 'M'.**

Object :—To study whether rock phosphate is effective as a phosphatic fertiliser on Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy after paddy. (b) Paddy. (c) G.L. at 7907 Kg/ha.+34 Kg/ha. of P_2O_5 as super+28·4 Kg/ha. of K_2O as Mur.. Pot.+22·8 Kg/ha. of N as A/s. (ii) Laterite loamy in texture. (iii) 27.6.63. (iv) (a) 5 ploughings. (b) Transplanting. (c) 18 Kg/ha. (d) 25 cm.×20 cm. (e) 3. (v) G.L. at 7907 Kg/ha.+ 11·4 Kg/ha. of N as A/s+28·4 Kg/ha. of K_2O as Mur. Pot. (vi) M.T.U.3. (170 days). (vii) Unirrigated. (viii) 1 intercultivation. (ix) 322 cm,. (x) 21.10.63.

2. TREATMENTS :

All combinations of (1) and (2)+a control

(1) 2 sources of P_2O_5 : S_1=Super and S_2=Rock. phos.

(2) 2 levels of P_2O_5 : P_1=37·0 and P_2=74·1 Kg/ha.

3. DESIGN :

(i) L. sq. (ii) (a) 5. (b) 30·5 m.×6·1 m, (iii) 5. (iv) (a) 6·1 m.×6·1 m. (b) 5·9 m.×5·9 m. 10 cm.×10 cm. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Attack of cane (Gallfly) noticed—No control measures taken. (iii) Gain and straw yield. (iv) (a) 1963 only. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 3286 Kg/ha. (ii) 259·2 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

Control=3211 Kg/ha.

	S_1	S_2	Mean
P_1	3225	3369	3297
P_2	3293	3334	3313
Mean	3259	3352	3305

Crop :- Paddy. **Ref :- Ms. 62(27), 63(17), 64(7), 65(28).**

Site :- Paddy Breeding Stn., Mangalore. Type :- 'M'.

Object :—To compare the effect of organic and inorganic manures separately and in combination on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy after Paddy. (b) Paddy. (c) N.A. (ii) Laterite loamy in texture. (iii) 18.11.62 ; 6.11.63 ; 25.8.64 ; 11.11.64 ; 6.8.65/13.11.65. (iv) (a) 5 to 6 ploughings. (b) Transplanting. (c) 18 Kg/ha. (d) 25cm.× 20 cm. for 62(27), 63(17) and 64(7) ; 20 cm.×20 cm. for 65(28). (e) 3. (v) Nil. (vi) CO.25. (vii) Irrigated. (viii) Hand weeding. (ix) 40 cm., 42 cm., 28 cm., 93 cm. (x) 25.2.63 ; 19.2.64 ; 3.3.65 ; 2.3.66.

2. TREATMENTS

10 manurial treatments : T_1=Control, T_2=F.Y.M. at 19.8 C.L./ha., T_3=Inorganic manure equivalent to 19·8 C.L./ha of F.Y.M., T_4=19·8 C.L./ha of F.Y.M.+33·6 Kg/ha of N P and K mixture as inorganic mixture, T_5=N.P.K. equivalent to 19.8 C.L./ha of F.Y.M.+33·6 Kg/ha. of N, P and K as inorganic manure, T_6=9·9 C.L./ha of F.Y.M.+NPK equivalent to 9·88 C.L./ha. of F.Y.M.+33·6 Kg/ha. NPK as inorganic manure, T_7=4·9 C.L./ha. of F.Y.M.+NPK equivalent to 14·8 C.L./ha. of F.Y.M.+33·6 Kg/ha. of NPK as inorganic manure, T_8=33·6 Kg/ha. of NPK as inorganic manure, T_9=NPK equivalent to 5600 Kg/ha. of G.L. as inorganic manure+33·6 Kg/ha. of NPK as inorganic and T_{10}=5600 Kg/ha. of G.L.+33·6 Kg/ha. of NPK as inorganic manure.

3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) 6·1 m.×6·7 m ; 6·1 m.×7 6 m. ; 6·1 m.×6·7 m. ;6·7m.× 6.1 m. (b) 5·9 m.×6·5 m ; 5·9 m.×7·4 m ; 5·7 m.×6·30 m ; 6·7 m.×6·1 m. (v) 10 cm.×10 cm. for 62 and 63 ; 20 cm.×20 cm. for 64 and Nil for 65. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Severe attack of stem borer, No. control measures taken. (iii) Tiller count, and grain yield. (iv) (a) 1962 to 1965. (b) Yes. (c) Results of combined analysis given under 5. (v) and (vi) Nil. (vii) As the error variances are heterogeneous and Treatments×years interaction is absent, results of the individual experiments are presented below.

5. RESULTS :

62(27)

(i) 2351 Kg/ha. (ii) 377·5 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	T_6	T_7	T_8	T_9	T_{10}
Av. yield	1716	1871	2896	2298	2852	2721	2414	2403	2047	2289

C.D.=547·8 Kg/ha.

63(17)

(i) 2436 Kg/ha. (ii) 388·0 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	T_8	T_9	T_{10}
Av. yield	1986	2265	2916	2521	2754	2600	2505	2485	2352	2372

64(7)

(i) 2975 Kg/ha. (ii) 598·6 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	T_6	T_7	T_8	T_9	T_{10}
Av. yield	2460	2628	2691	3160	3434	3288	2954	3181	2973	2985

65(28)

(i) 2578 Kg/ha. (ii) 375·6 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	T_9	T_{10}
Av. yield	1977	2019	2983	2297	3352	2994	2882	2276	2560	2441

C.D.=545·0 Kg/ha.

Crop :- Paddy (*1st crop*). **Ref :- Ms. 64(3), 65(31).**

Site :- Paddy Breeding Stn., Mangalore. **Type :- 'M'.**

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

1. BASAL CONDITIONS :

(i) (a) Paddy after Paddy. (b) Paddy. (c) Nil. Sandy soil. (iii) 21-5-64/26-6-64 ; 26.6.64/23-6-65. (iv) (a) 5 to 6 ploughings and puddling. (b) Transplanting. (c) 18 Kg/ha., 37 Kg/ha. (d) 25 cm.×20 cm., 20 cm.× 20 cm. (e) N.A. ; 3. (v) G.L. at 2471/Kg/ha.+34 Kg/ha. of P_2O_5 as super+27·3 Kg/ha. of K_2O as Mur. Pot.+11·4 Kg/ha of N as A/S for 64(3). Nil for 65(31). (vi) M.G.L—5 (medium). (vii) Unirrigated. (viii) Hand weeding. (ix) 234 cm., 253 cm. (x) 25-9-64, 22-9-65.

2. TREATMENTS :

8 manurial treatments : T_0=0, T_1=Borax at 6·2 Kg/ha., T_2=Mn. Sul. at 56·8 Kg/ha., T_3=Zn. Sul. at 17·3 Kg/ha., T_4=Mg. Sul. at 17·3 Kg/ha., T_5=Fe. Sul. at 29·6 Kg/ha., T_6=Cu. Sul. at 19·8 Kg/ha. and T_7=Combination of all above.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 6·1 m.×2·4 m. (b) 5·7 m.×2·0 m. (v) 20 cm.× 20 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) (iii) Tiller counts ; Ht. measurements and grain yield. (iv) (a) 1964—1966. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS:

64(3)

(i) 3459 Kg/ha. (ii) 228·0 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
Av. yield	3436	3404	3579	3308	3492	3522	3328	3605

65(31)

(i) 2310 Kg/ha. (ii) 158·6 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	2282	2278	2321	2275	2369	2291	2330	2334

Crop :- Paddy (*First crop*). **Ref :- Ms. 61(35),62(24), 63(18).**

Site :- Paddy Breeding Stn., Mangalore. **Type :- 'M'.**

Objeci: – To compare the efficiency of nitrophosphate processed by ODDA and PEC process and to study the method of application.

1. BASAL CONDITIONS:

(i) (a) Paddy-Paddy, G.M. (b) G.M., Kohngi, Paddy. (c) N.A. (ii) Laterite loamy in texture. (iii) 22.6.61 ; 29, 30.6.62 ; 11.6.63. (iv) (a) 2 ploughings. (b) Transplanting. (c) 18 Kg/ha. (d) 25 cm.×23 cm. in 61(35), 25 cm. ×20 cm. for other, (e) 3. (v) G.M. at 2965 Kg/ha. in 61(35), G.M. at 7907 Kg/ha. in 62(24), G.M. at 7907 Kg/ha. and 28·4 Kg/ha. of K_2O as Mur. Pot. in 63(18). (vi) PTB-10. (vii) Unirrigated. (viii) Weeding and intercultivation. (ix) 547 cm., 356 cm., 322 cm. (x) 18.9.1961, 21.9.1962, 14.9.1963.

2. TREATMENTS :

All combinations of (1), (2) and (3)+4 extra treatments

(1) 3 sources of fertilizers: S_1=Super+A/S, S_2=Nitrophosphate processed by ODDA and S_3=Nitro phosphate processed by PEC.

(2) 3 levels of fertilizers: L_1=13·4 Kg/ha. of N as A/S+11·8 Kg/ha. of P_2O_5 as Super, L_2=2 L, and L_3=4 L_1.

(3) 3 methods of placement of fertilizers : M_1=Broadcast, M_2=6 cm. below the soil and M_3=By pallet method.

T_0=Control, T_1=13·4 Kg/ha. of N as A/S. T_2=2 T_1, and T_3=4 T_1.

3. DESIGN :

(i) 3^3 confd. (ii) (a) 13 plots/block, 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 4·9 m.×4·9 m. (b) 4·7 m.×4·7 m. (v) 10 cm.×10 cm. (vi) Yes.

4. GENERAL:

(i) Fair. (ii) Moderate attack of Kane and leaf roller noticed, controlled by spraying Paramer. (iii) Yield of grain. (iv) (a) 1961-1963. (b) No. (c) Results of combined analysis given under 5. (v) and (vi) Nil. (vii) The treatments in which the roots of the seedlings were applied in the soluton of the fertilizers, heavy mortility of the seedlings were noticed in 62(24). Error variances are homogeneous and Treatments×years interaction is absent.

5. RESULTS :

(i) 2234 Kg/ha. (ii) 292·1 Kg/ha. (based on 126 d.f. made up of pooled error. (iii) M effect is highly significant. Interactions L×M and S×M are significant. Extra treatments among themselves are highly significant. (iv) Av. yield of grain in Kg/ha.

T_0=2020, T_1=2264, T_2=2367 and T_3=2443 Kg/ha.

	S_1	S_2	S_3	M_1	M_2	M_3	Mean
L_1	2274	2135	2155	2100	2132	2332	2188
L_2	2290	2299	2247	2268	2196	2372	2279
L_3	2228	2190	2138	2321	1921	2314	2185
Mean	2264	2208	2180	2230	2083	2339	2217
M_1	2369	2230	2090				
M_2	1970	2077	2203				
M_3	2453	2317	2248				

C.D. for M marginal means =110·2 Kg/ha.
C.D. for body of L×M or S×M table =190·8 Kg/ha.
C.D. for extra treatment means =190·8 Kg/ha.

Years	L_1	L_2	L_3	Sig.	S_1	S_2	S_3	Sig.
1961	1999	2049	1946	N.S.	2007	2044	1944	N.S.
1962	2425	2496	2335	N.S.	2386	2428	2442	N.S.
1963	2140	2291	2276	N.S.	2398	2153	2156	*
Pooled	2188	2279	2186	N.S.	2264	2208	2181	N.S.

M_1	M_2	M_3	Sig.	G.M.	S.E./plot
1987	1940	2068	N.S.	2018	234·2
2595	2114	2546	**	2454	302·6
2108	2196	2403	*	2232	330·9
2230	2088	2339	**	2219	292·1

Crop :- Paddy (*First crop*). **Ref :- Ms. 60(59), 61(33), 62(25).**

Site :- paddy Breeding Stn., Mangalore. **Type :- 'M'.**

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

1. BASAL CONDITIONS :

(i) (a) Paddy, Paddy, G.M. (b) Kolingi (G.M.) ; G.M. ; G.M. and black gram. (c) Nil. (ii) Laterite, loamy in texture. (iii) 16.6.60 ; 14.6.61 ; 14.6.62. (iv) (a) 3 to 5 ploughings. (b) Transplanting. (c) 18 Kg/ha. (d) 20 cm. × 20 cm. for 60(59) ; 25 cm. × 23 cm. for 61(33), 62(25). (e) 3 to 4. (v) 5600 Q/ha. of G.M. for 60(59) ; G.L. at 2965 Q/ha. for 61(33) and G.M at 7907 Q/ha. for 62(65). (vi) M.T.U. 20(medium) for 60 and 61 ; M.G.L. 5 (medium) for 62. (vii) Unirrigated. (viii) One hand weeding. (ix) 181 cm. ; 547 cm. ; 356 cm. (x) N.A. ; 10.10.61 ; 2.9.62.

2. TREATMENTS :

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

(1) 3 levels of N as A/s : N_0=0, N_1=33·6 and N_2=67·2 Kg/ha,

(2) 3 levels of P_2O_5 as Super : P_0=0, P_1=33·6 and P_2=67·2 Kg/ha.

(3) 3 levels of K_2O as Mur. Pot. : K_0=0, K_1=33·6 and K_2=67·2 Kg/ha.

½ dose of N, all P and K applied at transplanting and other ½ dose of N applied at first hand weeding.

3. DESIGN :

(i) 3^3 confd. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) 43·8 m. × 4·9 m. (iv) (a) 4·9 m. × 4·9 m. (b) 4·7 m. × 4·7 m. (v) 10 cm. × 10 cm. (vi) Yes.

4. GENERAL :

(i) Good (ii) Incidence of kane, leaf roller ; mild attack of gallfly ; Mild attack of piricularia. (iii) Yield of grain and Tiller count (iv) (a) 1959 to 62. (b) No. (c) Results of combined analysis are presented under 5. Results. (v) and (vi) Nil. (vii) Expt. no 59 (150) also taken into consideration while giving the pooled results. Error variances are heterogeneous and Treatments × years interaction in present.

5. RESULTS :

(i) 2041 Kg/ha. (ii) 414·6 is present (based on 42 d.f. made up of Treatments × years interaction. (iii) Main effects of N and K 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	2157	2347	2137	2131	2181	2329	2214
N_1	2138	1976	2119	1856	2232	2146	2078
N_2	1914	1745	1836	1674	1746	2075	1832
Mean	2070	2023	2031	1887	2053	2183	2041
K_0	1953	1871	1837				
K_1	1999	2018	2142				
K_2	2257	2179	2114				

C.D. for N or K means=139 5 Kg/ha.

Years	N_0	N_1	N_2	Sig.	P_0	P_1	P_2	Sig.
1960	2438	2332	1934	**	2317	2214	2174	**
1961	2316	2288	1879	**	2206	2202	2075	N.S.
1962	2512	2575	2550	N.S.	2577	2533	2527	N.S.
Pooled	2422	2398	2121	**	2367	2316	2259	N.S.

Years	K_0	K_1	K_2	Sig.	G.M.	S.E./plot
1960	1971	2249	2484	N.S.	2235	414·0
1961	1991	2166	2327	**	2161	222·6
1962	2481	2546	2610	N.S.	2546	201·0
Pooled	2148	2320	2474	**	2041	414·6

Crop :- Paddy (*Kharif*). **Ref :- Ms. 60(57), 61(34).**

Site :- Paddy Breeding Stn., Mangalore. **Type :- 'M'.**

Object :— To find out the most suitable stages for the application of nitrogeneous fertilizers.

1. BASAL CONDITIONS :

(i) (a) Paddy, G.M. (b) G.M. (c) Nil. (ii) Laterite, loamy in texture. (iii) 29.6.60 ; 9.7.61. (iv) (a) 6 ploughings. (b) Transplanting. (c) 18 Kg/ha. (d) 20 cm.×20 cm. (e) 4. (x) G.M. at 5600 Kg/ha.+33·6 Kg/ha. of P_2O_5 as Super+33·6 Kg/ha. of K_2O as Mur. Pot. (vi) IPTB-9. (vii) Unirrigated. (viii) 1 weeding and interculturing. (ix) 181 cm. ; 588 cm. (x) 14.10.60 ; 3.11.61.

2. TREATMENTS :

6 times of application of 33·6 Kg/ha. of N as A/S : T_0=Control, T_1=At planting. T_2=3 weeks after planting, T_3=Half 3 weeks after planting+half at shoot blade stage, T_4=$\frac{2}{3}$ at planting+$\frac{1}{3}$rd 3 weeks after planting and T_5=$\frac{1}{3}$rd at planting+$\frac{1}{3}$rd 3 weeks after planting+$\frac{1}{3}$ at shoot blade stage.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 4·9 m.×4·9 m. (b) 4·7 m.×4·7 m. (v) 10 cm.×10 cm. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Some attack of gallfly sprayed with Paramar. (iii) Yield of grain. (iv) (a) 1959 to 1962. (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:

(i) 1532 Kg/ha. (ii) 157·1 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	1466	1570	1525	1550	1494	1586

Years	T_0	T_1	T_2	T_3	T_4	T_5	Sig	G.M.	S.E./plot
1960	2168	2307	2280	2223	2158	2346	N.S.	2247	175·1
1961	765	832	770	876	830	825	N.S.	816	149·3
Pooled	1466	1570	1525	1550	1494	1586	N.S.	1532	157·1

Crop :- Paddy (*1st crop*). **Ref :- Ms. 64(4), 65(32).**

Site :- Paddy Breeding Stn., Mangalore. **Type :- 'M'.**

Object :— To find out the effect of lime on the uptake of nutrients.

1. BASAL CONDITIONS :

(i) (a) Paddy, Paddy, G.M. ; Paddy after Paddy. (b) G.M., Paddy. (c) Nil. (ii) Laterite, loamy in texture (1964) ; Sandy soil (1965). (iii) 9.6.1964/4.7.1964 ; 2.6.1965/28.6.1965. (iv) (a) 5 to 6 ploughings, pudding and levelling ; 5 planting and puddling. (b) Transplanting. (c) 18 Kg/ha. ; 37 Kg/ha. (d) 25 cm. × 20 cm. 20 cm. × 20 cm. (e) 3. (v) G.L. at 2471 Kg/ha. + 61·8 Kg/ha. of K_2O as Mur. Pot. (1964). 33·6 Kg/ha. each of N, P and K, N given in 3 split doses in 1965. (vi) P.T.B.-10 (early) (vii) Unirrigated. (viii) Nil (1964), hand weeding and top dressing (1965). (ix) 254 cm ; 163 cm. (x) 23.9.1964 ; 14.9.65.

2. TREATMENTS :

All combinations of (1) and (2).

(1) 2 levels of fertilizers : F_0=0 and F_1=37·0 Kg/ha. of P_2O_5 as Super + 49·4 Kg/ha. of N as A/S.

(2) 5 levels of lime : L_0=0, L_1=2471 Kg/ha. of lime, L_2=4942 Kg/ha. of lime, L_3=2471 Kg/ha. of Dalomite and L_4=4942 Kg/ha. of Dalomite.

All manures applied at planting.

3. DESIGN :

(i) Fact in R.B.D. (ii) (a) 10. (b) 24·4 m. × 24·4 m. ; N.A. (iii) 4. (iv) (a) 12·2 m. × 4·9 m. (1964) ; 12·2 m. × 4·9 m. (1965). (b) 11·8 m. × 4·5 m. (1964) ; 12·2 m. × 4·9 m. (1965). (v) 20 cm. × 20 cm. (vi) Yes.

4. GENERAL :

(i) Good ; Fair. (ii) Not much, Nil. (iii) Tillercount, hight measurements, grain and straw yield. (iv) (a) 1964 to 66. (b) No. (c) As under 5 results. (v) to (vii) Nil.

5. RESULTS :

64(4)

(i) 3833 Kg/ha. (ii) 251·1 Kg/ha. (iv) None of effects is significant. (iv) Av. yield of grain in Kg/ha.

	L_0	L_1	L_2	L_3	L_4	Mean
F_0	3554	3834	3919	3862	3694	3765
F_1	3972	4014	3862	3824	3839	3902
Mean	3763	3924	3890	3843	3746	3833

65(32)

(i) 295 Kg/ha. (ii) 269·5 Rg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	L_0	L_1	L_2	L_3	L_4	Mean
F_0	2871	2720	3203	2869	2820	2897
F_1	3138	3023	3019	2905	2940	3005
Mean	3004	2872	3111	2887	2880	2951

Crop :- Paddy (*Rabi*). **Ref :- Ms. 60(69).**

Site :- Paddy Breeding Stn., Mangalore. **Type :- 'M'.**

Object :—To find out the most suitable stages for the application of nitrogeneous fertilizers.

1. BASAL CONDITIONS :

(i) (a) Paddy, Paddy. (b) Paddy. (c) G.M. at 5604 Kg/ha.+34 Kg/ha. of P_2O_5 as super+33·6 Kg/ha. of N as A/s+28 Kg/ha. of K_2O as Mur. Pot. (ii) Laterite, loamy in texture. (iii) 11-11-60. (iv) (a) 5 ploughings. (b) Planted in lines. (c) N.A. (d) 20 cm. between and within lines. (e) 3. (v) F.Y.M. at 11208 Kg/ha., N as per treatments, P_2O_5 and K_2O at 33·6 Kg/ha each. (vi) M.G.L.—6 (about 130 days). (vii) Irrigated. (viii) 1 rotary weeding. (ix) 37 cm. (x) 15-2-61.

2. TREATMENTS :

6 manurial treatments : M_0=0, M_1=29·8 Kg/ha. of N applied at planting, M_2=29·8 Kg/ha. of N applied 3 weeks after planting, M_3=29·8 Kg/ha. of N applied in 2 doses half at planting and half at shot blade stage M_4=21·5 Kg/ha. of N at planting+10·8 Kg/ha. of N 3 weeks after planting and M_5=10·8 Kg/ha. of N at planting×10·8 Kg/ha. of N 3 weeks after planting+10·8 Kg/ha. of N at shot blade stage.

N applied as A/S.

3. DESIGN :

(i) R.B.D. (i) (a) 6. (b) 21·9 m.×3·7 m. (iii) 4. (iv) (a) 3·7 m.×3·7 m. (b) 3·5 m.×3·5 m. (v) 10 cm.×10 cm. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Leaf roller at the flowering stage—controlled by dusting with gamaxine. (iii) Tiller counts, height of plants, grain and straw weight. (iv) (a) 1959—62 (Treatments modified every year). (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 856 Kg/ha. (ii) 74·8 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
Av. yield	674	818	954	939	854	896

CD=112·7 Kg/ha.

Crop :- Paddy (*IInd crop*). **Ref :- Ms. 61(41).**

Site :- Paddy Breeding, Stn., Mangalore. **Type :- 'M'.**

Object : To find out the most suitable time of application of nitrogeneous fertilizers.

1. BASAL CONDITIONS :

(i) (a) Paddy—Paddy—G.M. (b) Paddy. (c) G.L. at 2965 Kg/ha.+34 Kg/ha. of N as super+28·4 Kg/ha. of K_2O as Mur. Pot. (ii) Laterite, loamy in texture. (iii) 3-11-61. (iv) (a) 6 ploughings. (b) Transplanting. (c) 18 Kg/ha. (d) 25 cm.×20 cm. (e) 3. (v) G.L. at 2965 Kg/ha.+34 Kg/ha. of N as super+28·4 Kg/ha. of K_2O as Mur. Pot. (vi) M.G.L—6 (medium). (vii) Unirrigated. (viii) 1 weeding and 1 interculturing. (ix) 45 cm. (x) 8-2-62.

2. TREATMENTS :

6 manurial treatments : M_0=Control, M_1=29·8 Kg/ha. of N applied at planting, M_2=29·8 Kg/ha. of N applied 3 weeks after planting, M_3=29·8 Kg/ha. of N applied in 2 doses half at planting and half at shot blade stage, M_4=21·5 Kg/ha. of N applied at planting +9·9 Kg/ha. of N 3 weeks after planting and M_5=9·9 Kg/ha. of N applied at planting+9·9 Kg/ha. of N 3 weeks after planting+9·9 Kg/ha. of N at shot blade stage.

N applied as A/S.

3. DESIGN :

Same as in expt. no 60(69) on page 20.

4. GENERAL :

(i) Good. (ii) Moderate attack of 'sterm borer' sprayed with paramar. (iii) Grain weights and tiller counts. (iv) (a) 1959—1961, (modified every year). (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2027 Kg/ha. (ii) 199·5 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
Av. yield	1927	2005	2062	2064	2087	2020

Crop :- Paddy (*IInd crop*). **Ref :- Ms. 62(68).**

Site :- Paddy Breeding Stn., Mangalore. **Type :- 'M'.**

Object :—To determine the most effective time of application of nitrogenous fertilizer.

1. BASAL CONDITIONS :

(i) (a) Paddy after paddy. (b) Paddy. (c) G.L. at 7907 Kg/ha.+super at 212·5 Kg/ha.+Mur. pot. at 56·8 Kg/ha.+urea at 24·7 Kg/ha.+A/S at 113·7 Kg/ha. (ii) Laterite, loamy in texture. (iii) 16.11.62. (iv) (a) ploughiug 5 to 6 rounds—puddling and levelling. (b) Transplanting. (c) 18 Kg/ha. (d) 25 cm.×20 cm. (e) 3. (v) G.L. at 7907 Kg/ha.+super at 212·5 Kg/ha.+Mur. pot. at 56·8 Kg/ha. (vi) M.G.L.—6. (long). (vii) Irrigated. (viii) Nil. (ix) 40 cm. (x) 2-2-63.

2. TREATMENTS :

6 times of application of 34·6 Kg/ha. of N as A/S : T_1=0, T_2=at planting, T_3=3 weeks after planting, T_4=half 3 weeks after planting+half at shot blade stage, T_5=2/3rd at planting+⅓rd 3 weeks after planting and T_6=⅓rd at planting+⅓rd 3 weeks after planting +⅓rd at shot blade stage.

3. DESIGN:

Same as in expt. no. 60(69) on page 20.

4. GENERAL :

(i) Fair. (ii) Not much. (iii) Tiller counts, grain and straw weight. (iv) (a) 1959–62 (modified every year). (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2106 Kg/ha. (ii) 138·5 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	2009	2133	2183	2091	2143	2080

Crop :- Paddy (*Kharif*). **Ref :- Ms: 60(160).**

Site :- Agri. Rrs. Stn., Mangalore. **Type :- 'M'.**

Object :—To find the effect of N and P with and without G.M. on the yield of paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) As per treatments. (ii) Light red to medium black. (iii) 30-5-60. (iv) (a) Ploughing and harrowings. (b) Drilling. (c) 67 Kg/ha. (d) 30 cm., between rows. (e) N.A. (v) 33·6 Q/ha. of F.Y.M. before sowing. (vi) M 141 (late). (vii) Unirrigated. (viii) Weeding and interculturing. (ix) 92 cm. in whole year. (x) 29-11-60.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 manurial treatments : M_0=Control, M_1=16·8 Kg/ha. of N as A/S+35·9 Kg/ha. of P_2O_5 as super and M_2=33·6 Kg/ha. of N as A/S+35·9 Kg/ha. of P_2O_5 as super.

(2) 2 G.M. treatments : G_0=No. G.M. and G_1=33·6 Q/ha. of G.M. (sannhemp).

All the manures applied before sowing.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 6. (b) 36·6 m.×6·7 m. (iii) 4. (iv) (a) 6·7 m.×6·1 m. (b) 4·6 m. × 3·7 m. (v) 107 cm.×122 cm. (vi) Yes.

4, GENERAL :

(i) Normal. (ii) Nil. (iii) Plant height, grain yield and no. of tillere. (iv) (a) 1958—1960. (b) Yes (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 3458 Kg/ha. (ii) 383·6 Kg/ha. (iii) Main effect of M alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	M_0	M_1	M_2	Mean
G_0	2984	3322	3933	3413
G_1	3052	3255	4204	3504
Mean	3018	3288	4068	3458

C.D. for M marginal means=408·7 Kg/ha.

Crop :- Paddy (*Kharif*). **Ref -: Ms. 60(162).**

Site :- Agri. Res. Stn., Mugad. **Type :- 'M'.**

Object :— To study the effect of Complesal fertilizer on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) As per treatments. (ii) Light red to medium black. (iii) 27.5.60. (iv) (a) Ploughings and horrowings. (b) Drilling. (c) 67 Kg/ha. (d) 30 cm. between rows. (e) N.A. (v) 33·6 Q/ha. of F.Y.M. before sowing. (vi) M-141. (vii) Unirrigated. (viii) Weeding and interculturing. (ix) 92 cm. in whole year. (x) 30.11.60.

2. TREATMENTS :

8 manurial treatments : M_0=Control, M_1=168·1 Kg/ha. of complesal at planting, M_2=168·1 Kg/ha. of complesal ½ at planting and ½ one month after, M_3=168·1 Kg/ha. of A/S at palnting, M_4=168·1 Kg/ha. of A/S ½ at planting ½ one month after, M_5=84·1 Kg/ha. of A/S at planting+112·1 Kg/ha. of C/N one month after planting, M_6=84·1 Kg/ha. of A/S at planting+84·1 Kg/ha. of C/A/N one month after planting and M_7=168·1 Kg/ha. of A/S+201·8 Kg/ha. of Super ½ at planting and ½ after one menth.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) 36·6 m.×6·1 m. (iii) 4. (iv) (a) 6·1 m.×4·6 m. (b) 4·6 m.×3·4 m. (v) 76 cm. ×61 cm. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Plant height, fertile tiller and graid yield. (iv) (a) 1959-61 (Taeatments were modified in 1961). (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 3653 Kg/ha. (ii) 724·5 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	2885	3847	3255	3625	4217	3699	3477	4217

Crop :- Paddy (*Kharif*). **Ref :- Ms. 61(151).**

Site :- Agri. Res. Stn., Mugad. **Type :- 'M',**

Object :— To study the effect of complesal fertilizers on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) As per treatments. (ii) Light red to medium black. (iii) 14.6.61. (iv) (a) Ploughings and harrowings. (b) Drilling. (c) 67 Kg/ha. (d) 30 cm.betwecn rows. (e) N.A. (v) 12·4 C.L./ha. of F.Y.M. (vi) M-141 (late). (vii) Unirrigated. (viii) Weeding and interculturing. (ix) 140 cm. in whole pear. (x) 6.12.61.

2. TREATMENTS and DESIGN :

Same as in expt. no. 60(162) on page 23. 201·8 Kg/ha. of Super was applied to treatments M_3 to M_6 at sowing.

4. GENERAL :

(i) Normal. (ii) Light attack of blue beetles in the month of Aug. and folidol was spraped twice. (iii) Plant height, fertile tillers and grain yield. (iv) (a) 1959-1961 (modified in 61). (b) and (c) N.A. (v) Nil. (vi) Due to flood some portion of the crops were damaged on 16.7.61. (vii) Nil.

5. RESULTS :

(i) 2916 Kg/ha. (ii) 700·3 Kg/ha. (iii) The 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	M_7
Av. yield	2221	2815	2889	2592	2666	2740	3257	4146

C.D.=1030·0 Kg/ha.

Crop :- Paddy **Ref :- Ms. 62(138), 63(151), 64(111), 65(108).**

Site :- Agri. Res. Stn., Mugad. **Type :- 'M'.**

Object :— To study the effect of organic and inorganic manures on the yield of drilled Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 12·4 C.L./ha. of F.Y.M.+33·6 Kg/ha. of N+33·6 Kg/ha. of P_2O_5 for 62(138), As per treatments for others. (c) Light red to medium black. (iii) 13.6.62 ; 11.5.63 ; 3.6.64 ; 2.6.65. (iv) (a) Ploughing, harrowing, clod crushing and grubbing. (b) Drilling. (c) 67 Kg/ha. (d) 30 cm. between rows. (e) N.A. (v) Nil. (vi) M-114 (late). (vii) Unirrigated. (viii) Interculturing and weeding. (ix) 97 cm., n whole year ; 84 cm. ; 114 cm ; 104 cm. (x) 2.12.62 ; 25.11.63 : 5.11.64 ; 17.12.65.

2. TREATMENTS :

10 manurial treatments : M_0=Control (no manure), M_1=33·6 Kg/ha. of N+22·4 Kg/ha. of P_2O_5, M_2= 12·4 C.L./ha. of F.Y.M., M_3=Inorganic manures equivalent to 12·4 C.L./ha. of F.Y.M., M_4=M_1+12·4 C.L./ha. of F.Y.M., M_5=M_1+NPK equivalent to 12·4 C.L./ha. of F.Y.M., M_6=M_1+6·2 C.L /ha. of F.Y.M.+NPK equivalent to 6·2 C.L./ha. of F.Y.M., M_7=M_1+3·1 C.L./ha. of F.Y.M.+NPK equivalent to 9·3 C.L./ha. of F.Y.M..M_8=M_1+NPK equivalent to 56 Q/ha. of G.L. and M_9=56 Q/ha. of G.L.

P_2O_5 as Super, K_2O as Mur. Pot. and F.Y.M. were applied before sowing, N as A/S was applied in 3 doses: at sowing, at planting (40 to 45 days after sowing) and before flowering. *Sannhemp* was applied as G.M. at planting.

3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) 36·6 m.×11·0 m. (iii) 4. (iv) (a) 11·0 m.×3·7 m. (b) 8·0 m.×2·4 m. (v) 103 cm.×61 cm (vi) Yes.

4. GENERAL :

i) Due to insufficient moisture germination was not satisfactory and so gap filling was done on 6,7.72 by dibbling for 62(138). Satisfactory for others. (ii) Light attack of blue beetles and the same was controlled by spraying Folidol for 62(138). Nil for others. (iii) Plant ht., No of tillers and grain yield. (iv) (a) 1962-65. (b) No. (c) Nil. (v) and (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 :

62(138)

2937 Kg/ha. (ii) 255·0 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	M_9
Av. yield	2486	3010	2498	3057	2782	3091	3000	3180	3262	3000

C.D.=370·0 Kg/ha.

63(151)

(i) 4571 Kg/ha. (ii) 520·3 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	M_9
Av. yield	3520	5021	3883	4348	4245	5337	4452	5228	5021	4659

C.D.=755·0 Kg/ha.

64(111)

(i) 3495 Kg/ha. (ii) 287·4 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	M_9
Av. yield	2623	3717	2965	3592	3501	4208	3375	3729	3535	3706

C.D.=417·1 Kg/ha.

65(108)

(i) 2942 Kg/ha. (ii) 443·0 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	M_9
Av. yield	2338	3022	2110	3250	2566	3421	2851	3364	3649	2851

C.D.=642·9 Kg/ha.

Crop :- Paddy (*Kharif*). **Ref ;- Ms. 60(161), 61(150), 62(136).**

Tite :- Agri. Res. Stn., Mugad. **Type :- 'M'.**

Object :— To find out the Nitrogeneous fertilizers for Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) As per treatments. (ii) Light red to medium black. (iii) 29.5.60 ; 10.6.51; 12.6.62. (iv) (a) Ploughing and harrowing. (b) Drilling. (c) 67 Kg/ha. (d) 30 cm. between rows. (e) N.A. (v) Nil in 60(161) and 62(186). 33·6 Q/ha. of F.Y.M.+35·9 Kg/ha. of P_2O_5 applied before sowing in 61(150). (vi) M-14 (late). (vii) Unirrigated. (viii) Weeding and interculturing. (ix) 92 cm., 140 cm. 97 cm. (x) 21.11.60 ; 5.12.61 ; 2.12.62.

2. TREATMENTS :

7 sources of N at 33·6 Kg/ha. : S_0=Control, S_1=A/S, S_2=C/A/N, S_3=A/C, S_4=Urea, S_5=A/S/N, and S_6=C/N.

F.Y.M. was applied to S_3 plots as A/C was not available. All the manures applied at planting.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) 51·2 m.×10·4 m. (iii) 4. (iv) (a) 10·4 m.×7·3 m. (b) 8·5 m.×4·9 m. (v) 91 cm.×122 cm. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Attack of blue beetles during Aug. and Sept. and folidol was sprayed in 62(136). (iii) Yield of grain. (iv) (a) 1959-62. (b) No. (c) Results of combined analysis are presented under 5. Results. (v) Nil. (vi) Plants were washed away due to floods on 16.7.61. Gap filling was done for 61(150). The season was quite abnormal. No moisture at the time of germination and rain during the year was 97 cm. against an average of 121 cm. for 62(136). (vii) Results of expt. no 59(7) are also taken into account while giving the Pooled results. Error variances are homogeneous Treatments×years interaction is present.

5. RESULTS:

(i) 3331 Kg/ha. (ii) 461·9 Kg/ha. (based on 18 d.f. made up of Treatments × years interaction. (iii) Treatment differences are significant. (iv) Av. yield of grain in Kg/ha.

Treatmen	S_0	S_1	S_2	S_3	S^4	S_5	S_6
Av. yield	3296	3352	3468	3326	3475	3550	2848

C.D.=343·1 Kg/ha.

	S_0	S_1	S_2	S_3	S_4	S_5	S_6	Sig.	G.M.	S.E./plot
1960	3323	3378	3814	3024	3324	3787	2534	**	3312	282·9
1961	2802	2701	2565	2782	2646	2891	2454	N.S.	2692	273·2
1962	3600	3981	4008	3954	4171	3872	3081	**	3810	312·8
Pooled	3242	3353	3462	3253	3380	3517	2690	**	3271	

Crop :- Paddy (*Kharif*). **Ref :- Ms. 62(s50), 63(150), 64(109)**

Site :- Agri. Res. Stn., Mugad. **Type :- 'M'.**

Object :—To find out the optimum dose of N, P and K for drilled paddy.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Paddy. (c) 5 Q/ha F.Y.M.+33·6 Kg/ha. of N+35·8 Kg/ha. of P_2O_5. (ii) Clay loam. (iii) 31-5-62, 11-5-63. (iv) (a) Ploughing, harrowing and clod crushing. (b) By seed drill. (c) 67 Kg/ha. (d) 30 cm. between rows. (e) N.A. (v) 56 Q/ha. of F.Y.M. (vi) M 141 (late). (vii) Unirrigated. (viii) Interculturing, weeding and gap. filling. (ix) 97 cm., 84 cm., 113 cm. (x) 2-12-62 ; 25-11-63 ; 3-12-64.

2. TREATMENTS :

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

(1) 3 levels of N as A/S : N_0=0, N_1=33·6 and N_2=67·2 Kg/ha
(2) 3 levels of P_2O_5 as super., P_0=0, P_1=33·6 and P_2=67·2 Kg/ha.
(3) 3 leves of K_2O as Mur. Pot. : K_0=0, K_1=33·6 and K_2=67·2 Kg/ha.

3. DESIGN :

(i) 3^3 confd. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A. (iii) 1. (iv) (a) 13·37 m. × 4·89 m. (b) 10·97 m. × 3·69 m. (v) 120 cm. × 60 cm. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of grain. (iv) (a) 1962—1964. (b) No. (c) Results of combined analysis are presented under 5 Results. (v) Nil. (vi) The season was abnormal due to insufficient rainfall in 62(150). (viii) Error variances are homogeneous and Treatments × years interaction is absent.

5. RESULTS :

(i) 3690 Kg/ha, (ii) 369·9 Kg/ha. (based on 54 d.f. made up of Treatments × years interaction and pooled error. (iii) Main effect of N is highly significant. Interaction P × N is significant. (iv) Av. yield of grain in Kg/ha.

	N_0	N_1	N_2	K_0	K_1	K_2	Mean
P_0	3371	3367	4174	3569	3878	3465	3637
P_1	3457	3863	3925	3860	3633	3752	3748
P_2	3186	3835	4037	3687	3709	3663	3686
Mean	3338	3688	4045	3705	3740	3626	3690
K_0	3250	3680	4186				
K_1	3444	3779	3997				
K_2	3320	3606	3953				

C.D. for N marginal means=211·5 Kg/ha.
C.D. for body of N×P table=366·3 Kg/ha.

	N_0	N_1	N_2	Sig.	P_0	P_1	P_2	Sig.
1962	3110	3283	3343	N.S,	3104	3371	3261	N.S.
1963	4169	4669	5090	**	4666	4655	4607	N.S.
1964	2735	3115	3704	**	3142	3220	3192	N.S.
Pooled	3338	3689	4046	**	3637	3749	3687	N.S.

K_0	K_1	K_2	Sig.	G.M.	S.E./plot
3245	3222	3269	N.S.	3245	224·6
4682	4791	4455	N.S.	4643	446·0
3189	3209	3156	N.S.	3185	401·3
3705	3741	3627	N.S.	3691	369·9

Crop :- Paddy (*Kharif*). **Ref :- Ms. 61(153), 62(137), 63(152)**

Site :- Agri. Res. Stn., Mugad. **Type :- 'M'.**

Object :—To study the effect of Mg. phos. Vs super on the yield of drilled Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 12·35 C.L./ha. of F.Y.M.+33·6 Kg/ha. of N+33·6 Kg/ha. of P_2O_5. (ii) Light red to medium black. (iii) 13-6-61; 12-6-62; 11-5-63. (iv) (a) Ploughing and harrowing. (b) Drilling. (c) 67 Kg/ha. (d) 30 cm. between rows. (e) N.A. (v) 12·35 C.L./ha. of F.Y.M.+33·6 Kg/ha. of N in 2 doses at sowing and at planting. (vi) A 200 (late) for 61(153) and 63(152), M 141 (late) for 62(137). (vii) Unirrigated. (viii) Interculturing and weeding. (ix) 140 cm., 97 cm; 84 cm. (x) 6-12-61 ; 2-12-62 ; 1-12-63.

2. TREATMENTS :

All combinatioas of (1) and (2)+a control

(1) 2 sources of P_2O_5 : S_1=Super and S_2=Magnesium phosphate

(2) 2 levels of P_2O_5 : P_1=33·6 and P_2=50·4 Kg/ha. fertilisers applied at sowing.

3. DESIGN :

(i) L. sq. (ii) (a) 5. (b) 30·48 m.×6·71 m. (iii) 5. (iv) (a) 6·71 m.×6·10 m. (b) 5·49 m.×4·88 m. (v) 61 cm.×61 cm. (vi) Yes.

4. GENERAL :

(i) Germination was not satisfactory due to insufficient moisture, gap. filling was done on 6-7-62 by dibbling in 62(137). Normal for others. (ii) Light attack of blue beetle controlled by spraying with folidol. (iii) Yield of grain and tiller counts. (iv) (a) 1961—1963. (b) No. (c) Results of combined analysis are presented under 5. Results. (v) Nil. (vi) Season was abnormal due to insufficient rains. (vii) Error variances are homogeneous. Treatments × years interaction is absent.

5. RESULTS :

(i) 3613 Kg/ha. (ii) 355·8 Kg/ha. (based on 44 d.f, made up of Treatments × years interactlon and pooled error). (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

Control=3586 Kg/ha.

	S_1	S_2	Mean
P_1	3698	3462	3580
P_2	3654	3666	3660
Mean	3676	3564	3620

Years	P_1	P_2	Sig	S_1	S_2	Sig.	G.M.	S.E./plot
1961	2716	2716	N.S.	2782	2649	N.S.	2729	392·6
1962	3597	3649	N.S.	3682	3563	N.S.	3571	398·2
1963	4428	4615	N.S.	4564	4480	N.S.	4541	259·4
Pooled	3580	3660	N.S.	3676	3564	N.S.	3613	355·8

Drop :- Paddy (*Kharif*). **Ref :- Ms. 61(152), 62(149), 63(153)**

Site :- Agri. Res. Stn., Mugad. **Type :- 'M'.**

Object : To compare the effect of Nitrophosphate by ODDA and PEC Process at different levels and methods of applications on paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) As per treatments. (ii) Light red to medium black for '61 and '63 ; clay loam for '62. (iii) 17.6.61 ; 28.6.62 ; 24.5.63. (iv) (a) Ploughing and harrowing. (b) Drilling. (c) 67 Kg/ha. (d) 30 cm. between rows. (e) N.A. (v) 12.35 C.L./ha. of F.Y.M. before sowing for 61(152) and 63(153) and 56 Q/ha. of F.Y.M. for 62(149). (vi) A—200 (late). (vii) Unirrigated. (viii) Interculturing and weeding. (ix) 140 cm., 97 cm., 84 cm (x) 5.12.61 ; 12.12.62, 2.12.63.

2. TREATMENTS :

All combinations of (1), (2) and (3)+4 extra treatments

(1) 3 manurial treatments : T_1=13·5 Kg/ha. of N+11·8 Kg/ha. of P., T_2=26·9 Kg/ha. of N+23·5 Kg/ha. of P and T_3=53·8 Kg/ha. of N+47·1 Kg/ha. of P.

(2) 3 Types of fertilizers : F_1=P as super+N as A/S, F_2=ODDA and F_3=PEC.

(3) Methods of placement : M_1=Broadcast M_2=6 cms. below seed and M_3=Band placement.

(4) Extra Treatment : N_0=0 ; N_1=13·5 ; N_2=26·9 and N_3=53·8 Kg/ha. of N as A/S.

3. DESIGN :

(i) 3^3 confd. with 4 extra treatments. (ii) (a) 13 plots/block ; 3 blocks/replication. (b) N.A. (iii) 1. (iv) (a) 5·49 m.×4·88 m. (b) 4·88 m.×4·27 m. (v) 30 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of grain. (iv) (a) 1961 to 1963. (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

(i) 3046 Kg/ha. (ii) 438·8 Kg/ha. (based on 54 d.f. made up of pooled error and Treatments × years interaction). (iii) Effects of F and T are highly significant. (iv) Av. yield of grain in Kg/ha. N_0=2640, N_1=2910, N_2=2933 and N_3=3644 Kg/ha.

	M_1	M_2	M_3	T_1	T_2	T_3	Mean
F_1	3199	3161	3421	2938	3355	3488	3260
F_2	2839	2939	2788	2773	2751	3042	2855
F_3	3035	2806	3290	2764	3054	3313	3044
Mean	3025	2969	3166	2825	3053	3281	3053
T_1	2881	2775	2819				
T_2	2933	2957	3270				
T_3	3259	3174	3410				

C.D. for F or T marginal means=238·9 Kg/ha.

Years	F_1	F_2	F_3	Sig.	M_1	M_2	M_3	Sig.
1961	3272	2739	3030	*	3005	2836	3200	N.S.
1962	2680	1949	2151	**	2046	2217	2518	N.S.
1963	3830	3878	3951	N.S.	4024	3855	3781	N.S.
Pooled	3260	2855	3044	**	3025	2969	3166	N.S.

T_1	T_2	T_3	Sig.	N_1	N_2	N_3		Sig.	G.M.	S.E./plot
2933	2763	3345	**	2617	2837	2691	3417	*	2976	332.2
1907	2301	2572	**	1593	1676	2109	3226	**	2226	385·9
3636	4097	3927	N.S.	3709	4218	4000	4290	N.S.	3938	476·6
2825	3053	3281	**	2640	2910	2933	3644	N.S.	3046	438·8

Crop :- Paddy (*Kharif*). **Ref :- Ms. 65(23)**

Site :- Agri. Res. Stn., Nagwhally. **Type :- 'M'.**

Object :—To study the response of paddy crop. to high doses of N, P and K.

1. BASAL CONDITIONS :

(i) (a) Paddy, G.M. paddy. (b) Paddy. (c) N.A. (ii) Sandy loam. (iii) 22.6.65/28.7.65. (iv) (a) Summer ploughing, incorporation of G.M. by ploughing and puddling. (b) Transplanting. (c) 49 Kg/ha. (d) 20 cm. × 20 cm. (e) N.A. (v) G.M. at 5600 Kg/ha. (vi) S 1092 late. (vii) Irrigated. (viii) Hand weeding, working with T.P.C. weeder, top dressing A/S. (ix) 29 cm. (x) 11.1.66.

2. TREATMENTS :

15 manurial treatments : T_0=Control, T_1=33·6 Kg/ha. of N+22·4 Kg/ha. of P_2O_5+22·4 Kg/ha. of K_2O, T_2=44·8 Kg/ha. of N+33·6 Kg/ha. of P_2O_5+33·6 Kg/ha. of K_2O, T_3=44·8 Kg/ha. of N+44·8 Kg/ha. of P_2O_5+44·8 Kg/ha. of K_2O, T_4=50·4 Kg/ha. of N+39·2 Kg/ha. of P_2O_5+39·2 Kg/ha. of K_2O, T_5=60·4 Kg/ha. of N+50·4 Kg/ha of P_2O_5+50·4 Kg/ha. of K_2O, T_6=56·0 Kg/ha. of N+44·8 Kg/ha of P_2O_5+44·8 Kg/ha. of K_2O, T_7=56·0 Kg/ha. of N+56·0 Kg/ha. of P_2O_5+56·0 Kg/ha. of K_2O, T_8=61·6 Kg/ha. of N+50·4 Kg/ha. of P_2O_5+50·4 Kg/ha. of K_2O, T_9=61·6 Kg/ha. of N+61·6 Kg/ha. of P_2O_5+61·6 Kg/ha. of K_2O, T_{10}=67·2 Kg/ha. of N+44·8 Kg/ha. of P_2O_5+44·8 Kg/ha. of K_2O, T_{11}=67·2 Kg/ha. of N+50·4 Kg/ha. of P_2O_5+50·4 Kg/ha. of K_2O, T_{12}=67·2 Kg/ha. of N+56·0 Kg/ha. of P_2O_5+56·0 Kg/ha of K_2O, T_{13}=67·2 Kg/ha. of N+61·6 Kg/ha. of P_2O_5+61·6 Kg/ha. of K_0 and T_{14}=67·2 Kg/ha. of N+67·2 Kg/ha. of P_2O_5+67·2 Kg/ha. of K_2O.

3. DESIGN :

(i) R.B.D. (ii) (a) 15. (b) N.A. (iii) 2. (iv) (a) 9·14 m.×3·66 m. (b) 8·23 m.×2·74 m. (v) 2 rows on each side.

4. GENERAL :

(i) Fair. (ii) Considerable incidence of stem borer folidol spray given. (iii) Yield of grain. (iv) (a) to (c) No. (v) N.A. (vi) to (vii) Nil.

5. RESULTS :

(i) 1623 Kg/ha. (ii) 284·4 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	1373	1838	1772	1705	1418	1772	2259	1772
	T_8	T_9	T_{10}	T_{11}	T_{12}	T_{13}	T_{14}	
	1971	1262	1351	1661	1462	1351	1373	

Crop :- Paddy (*Kharif*). **Ref :- Ms. 65(20):**

Site :- Agri. Res. Stn., Nagenhally. **Type :- 'M'.**

Object :— To study the effect of basic slag in combination with organic wastes on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy-Paddy. (b) Paddy. (c) N.A. (ii) Sandy loam. (iii) 13.8.65/11.9.65. (iv) (a) Summer ploughing, serving green manures crop. Puddling. (b) Transplanting. (c) 49·4 Kg/ha. (d) 20 cm.×20 cm. (e) N.A. (v) Nil. (vi) S-1092 (late). (vii) Irrigated. (viii) Hand weeding, working T.P.C. weeder and top dressing with A/S. (ix) 24·8 cm. (x) 8.1.66.

2. TREATMENTS :

6 manurial treatments : T_0=Control, T_1=Basic slag at 30 Kg/ha. of P_2O_5, T_2=Water Hyacinth at 40 Kg/ha. of N, T_3=T_1+T_2, T_4=44 Kg/ha. of N as A/S and T_5=T_1+T_4.

3. DESIGN:

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 2. (iv) (a) N.A. (b) 9·1 m.×4·6 m. (v) 2 rows on either side. (vi) Yes.

4. GENERAL

(i) Fair-Not lodged. (ii) Considerable incidence of stem borer folidol sprayed. (iii) Grain yield. (iv) (a) 1965 only. (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1286 Kg/ha. (ii) 289·6 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	1304	1256	1148	1483	885	1638

Crop :- Paddy (*Kharif*). **Ref :- Ms. 65(26):**

Site :- Agri. Res. Stn., Nagenhally. **Type :- 'M'.**

Object :— Utilisation of blue green Algal and control of Algal weeds.

1. BASAL CONDITIONS :

(i) (a) No. (b) Paddy. (c) N.A. (ii) Red sandy loam. (iii) 22.6.65/9.8.65. (iv) (a) 4 ploughings, puddling and levelling. (b) Transplanting. (c) 49·4 Kg/ha. (d) 20 cm.×20 cm. (e) N.A. (v) Nil. (vi) S-1092 (long). (vii) Irrigated. (viii) Hand weeding, working J.P.C. weeder. (ix) 29·0 cm. (x) N.A.

2. TREATMENTS :

6 manurial treatments : T_0=Control (No manure), T_1=Partial soil sterilization (Rabbing), T_2=T_1+Algal. T_3=Fertilizer mixture (lime 1000 Kg/ha.+20 Kg/ha. of P_2O_5+0·28 Kg/ha. of sod. Molybdate, T_4=Rabbing+20 Kg/ha. of N as A/S+Algal, and T_5=20 Kg/ha. of N as A/S.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 8·1 m.×6·1 m. (b) 7·1 m.×5·1 m. (v) and (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Stem borer-sprayed Helmonthosporiums. (iii) Yield of grain. (iv) (a) to (c) No. (v) No. (vi) and (vii) Nil.

5. RESULTS :

(i) 2125 Kg/ha. (ii) 362·8 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	2276	2129	1932	2240	2082	2093

Crop :- Paddy (*Kharif*) **Ref :- Ms. 61(19), 62(18), 63(8).**

Site :- Agri. Res., Stn., Nagenhally. **Type :- 'M'.**

Object :— Testing the effect of nitrophosphate complex fertilizers, produced by O.D.D.A. and P.E.C. process and the different methods of application of the fertilizers on Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy-Paddy. (b) Paddy. (c) 3923 Kg/ha. of G.M.+11208 Kg/ha. of F.Y.M.+33·6 Kg/ha. of N+33·6 Kg/ha. of P_2O_5 for 61(19) ; 22·4 Kg/ha. of P_2O_5 for 62(18) and G.L. 5600 Kg/ha. for 63(5). (ii) Sandy loam. (iii) 18.7.61/17.8.61 ; 4.7.62/31.7.62 ; 18.7.63. (iv) (a) 1 to 4 ploughings, 2 puddlings and levelling. (b) Transplanting. (c) —. (d) 23 cm.×23 cm. (e) 2 to 3. (v) As per treatments. (vi) S-701 (late) for 61(19), and S-665 (mid late) for 62(18) and 63(5). (vii) Irrigated. (viii) Passing J.P.C. and hand weeding (ix) 51 cm. ; 47 cm. ;36 cm. (x) 18.12.61 ; 18.10.62 : 26.12.63.

2. TREATMENT:

All combinations of (1), (2) and (3)+4 extra treatments.

(1) 3 sources of fertilizers : S_1=Super+A/S, S_2=Nitrophosphate processed by O.D.D.A. and S_3= Nitrophosphate processed by P.E.C.

(2) 3 levels of fertilizers : L_1=13·4 Kg/ha. of N as A/S+11·8 Kg/ha. of P_2O_5 as Super, L_2=2 L_1 and L_3=4 L_1.

(3) 3 methods of placement of fertilizers : M_1=Broadcast, M_2=6 cm. below the soil and M_3=by pallet method.

T_0=Control, T_1=13·4 Kg/ha. of N as A/S, T_2=2 T_1 and T_3=4 T_1.

3. DESIGN:

(i) 3^3 confd.+4 extra treatments. (ii) (a) 18 plots/block, 3 blocks/replication. (b) N.A. (iii) 2, (iv) (a) 12·3 m.×3·7 m.; 8·0 m.×4·6 m ; 16·6 m.×3·7 m. for m_1, 11·1 m.×3·7 m. for M_2 and 6·6 m.×3·7 m. for M_3 for 63(8). (b) 11·4 m.×2·7 m. ; 7·0 m.×3·7 m. 15·9 sq. for 63(8). (v) 46 cm.×46 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain and Tiller counts. (iv) (a) 1961 to 1963. (b) No. (c) Results of combined analysis are presented under 5. Results. (v) Mangalor. (vi) Nil. (vii) Error variances are homogeneous and Treatments×years interaction is absent.

5. RESULTS :

(i) 2777 Q/ha. (ii) 386·1 Kg/ea. (iii) Effect due to extra tecatments is significant. Main effect of M and L are highly significant and due to S and interaction L×S are significant. (iv) Av. yield of grain in Kg/ha.

T_0=2520, T_1=2593, T_2=1524 and T_3=2912 Kg/ha

	L_1	L_2	L_3	S_1	S_2	S_3	Mean
M_1	2604	2934	2988	3027	2818	2680	2842
M_2	2962	2947	3116	3194	2974	2857	3008
M_3	2464	2718	2824	2693	2620	2690	2667
Mean	2677	2866	2975	2971	2804	2742	2839
S_1	2832	3161	2921				
S_2	2428	2943	3041				
S_3	2770	2495	2962				

C.D. for T means or body of L×S table=236·4 Kg/ha.
C·D. for M or L means =136·4 Kg/ha.

Years	M_1	M_2	M_3	Sig.	L_1	L_2	L_3	Sig.
1961	28·5	3207	2800	*	2799	3048	2994	N.S.
1962	2649	2619	2303	**	2411	2474	2689	N.S.
1963	3041	3199	2900	*	2821	3076	3243	**
Pooled	2842	3008	2667	**	2677	2866	2975	**

S_1	S_2	S_3	Sig.	T_1	T_2	T_3	T_4	Sig.	G.M.	S.E./plot
3137	2977	2729	*	2126	2445	2232	3136	N.A.	2805	454·9
2642	2456	2476	N.S.	2456	2382	2229	2490	N.A.	2484	356·0
3138	2980	3023	N.S.	2979	2953	3111	3111	N.A.	3044	337·0
2972	2804	2742	*	2520	2593	2524	2912	*	2777	

Crop :- Paddy (*Kharif*). **Ref :- Ms. 60(170), 61(163), 62(143).**

Site :- Agri. Res. Stn., Nagenhally, **Type :- 'M'.**

Object :— To study the influence of top dressing of N in split dose on Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) G.M. (c) N.A. (ii) Red sandy loam. (iii) 14.7.60/6.8.60 ; 26.6.61/26.7.61 ; 11.7.62/2.8.62. (iv) (a) 4 ploughings+1 puddling. (b) Transplanting. (c) 22·4 Kg/ha. (d) 23 cm.×23 cm. (e) 2 to 3. (v) 56 Q/ha. of G.M.+11·2 Q/ha. of F.Y.M. for 60 and 61 ; Nil. (vi) SR.-26 B. (vii) Irrigated. (viii) Passing J.P.C. and hand weeding. (ix) 33 cm. ; 42 cm. ; 37 cm. (x) 26.11.60 ; 29.11.61 ; 19.11.62.

2. TREATMENTS :

5 methods of application of N : T_1=$\frac{1}{2}$ at planting+$\frac{1}{2}$ at weeding, T_2=8·4 Kg. at planting+16·8 Kg. at 6 weeks+8·4 Kg. 12 weeks after planting, T_3=In 6 equal doses of 5·6 Kg. each at an interval of 3 weeks, T_4=In one full dose at planting and T_5=In one full dose at flowering.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 3·9 m.×9·8 m. (b) 3·0 m.×8·0 m. (v) 46 cm.×92 cm. (vi) Yes.

4. GENERAL ;

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1960 to 1962. (b) Yes. (c) Nil. (v) and (vi) Nil. (vii) As the error variances are heterogeneous and Treatments×years interaction is absent, results of the individual experiments are presented below.

5. RESULTS :

60(170)

(i) 3188 Kg/ha. (ii) 337·5 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
Av. yield	2934	3422	3373	3130	3081

61(163)

(i) 3911 Kg/ha. (ii) 703·3 Kg/ha. (iv) 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	3575	3995	3994	4100	3890

62(143)

(i) 2485 Kg/ha. (ii) 1223·9 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	2703	2841	2471	2379	2031

Crop :- Paddy (*Kharif*). **Ref :- Ms. 62(16), 64(105).**

Site :- Agri. Res. Stn., Nagenhally. **Type :- 'M'.**

Object :—To study the role of organic manure comparring with the inorganic manure on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy ; bulk crop. (c) 3362 to 4483 Kg/ha. of G.M.+44·8 Kg/ha. of N as A/S+22·4 Kg/ha. of P_2O_5 as super for 62(16) and 36·3 Kg/ha. of N+22·4 Kg/ha. of P_2O_5+56 Q/ha. of F.Y.M. for 64(105). (ii) Sandy loam. (iii) 4.7.62/30.7.62 ; 16.7.64/17.9.64. (iv) (a) 4 ploughings. (b) Transplanting. (c) N.A. (d) 23 cm ×23 cm. (e) 2 to 3. (v) Nil. (vi) S.661 (late) : S.1092 (long). (vii) Irrigated. (viii) Passing Japanees rotary weeder and hand weeding. (x) 47 cm. ; 55 cm. (x) 12.12.62 ; 10.1.65.

2. TREATMENTS :

10 manurial treatments : T_1=Control ; T_2=67·3 Q/ha. of F.Y.M., T_3=Inorganic manure equivalent to 67·3 Q/ha. of F.Y M., T_4=67·3 Q/ha. of F.Y.M.+33·6 Kg/ha. of N as A/S+22·4 Kg/ha. of P_2O_5 as super, T_5=N equivalent to 67·3 Q/ha. of F.Y.M.+33·6 Kg/ha. of N as A/S+22·4 Kg/ha. of P_2O_5 as super, T_6=33·8 Q/ha. of F.Y.M+N equivalent to 33·8 Q/ha. of F.Y.M.+33·6 Kg/ha. of N as A/S+22·4 Kg/ha. of P_2O_5 as super, T_7=16·8 Q/ha. of F.Y.M.+N equivalent to 50·4 Q/ha. of F.Y.M. +33·6 Kg/ha. of N as A/S+22·4 Kg/ha. of P_2O_5 as super, T_8=33·6 Kg/ha. of N as A/S+22·4 Kg/ha. of P_2O_5 as super, T_9=N equivalent to 56·0 Q/ha. of G.M. +33·6 Kg/ha. of N as A/S+22·4 Kg/ha. of P_2O_5 as super and T_{10}=56·0 Q/ha. of G.M.+33·6 Kg/ha. of N as A/S+22·4 Kg/ha. of P_2O_5 as super.

3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) 9·1 m.×3·4 m ; 3·7 m.×9·1 m. (b) 8·2 m.×2·5 m ; 3.7 m.×9 1 m. (v) 46 cm.×46 cm. ; Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1962– 65 (Not conducted in 63 and modified in 65). (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 :

(i) 1729 Kg/ha. (ii) 368·3 Kg/ha. (based on 63 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_1	T_2	T_3	T_4	T_5
Av. yield	1420	1415	1669	1628	1795
	T_6	T_7	T_8	T_9	T_{10}
	1897	1781	1683	1996	2009

C.D.=368·1 Kg/ha.

	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9	T_{10}	Sig.	G.M.	S.E./plot
1962	1528	1657	2056	1899	2237	2270	2037	1794	2493	2435	**	2041	312·5
1964	1312	1173	1282	1358	1354	1524	1524	1572	1499	1583	N.S.	1418	412·3
Mean	1420	1415	1669	1628	1795	1897	1781	1683	1996	2009	N.S.	1729	368·3

Crop :- Paddy (*Kharif*). **Ref :- Ms. 61(161), 62(19), 63(9).**

Site :- Agri. Res. Stn., Nagenhally. **Type :- 'M'.**

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

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Paddy. (c) As per treatments. (ii) Sandy loam. (iii) 16.8.61/NA ; N.A./30.7.62 ; 18.7.63/12.8.63. (iv) (a) 2 to 4 ploughings. (b) Transplanting. (c) N.A. (d) 23 cm.×23 cm. (e) 2 to 3. (v) Nil for 61(161) and 62(19). G.L. at 5604 Kg/ha. applied at first puddling, incorporated by ploughing in wet conditions. (vi) S. 661 (late). (vii) Irrigated. (viii) Hand weeding and passing Japanese weeder. (ix) 51 cms., 47 cm., 36 cm. (x) 18.12.61 ; 12.12.62 ; 21.12.63.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of lime : L_0=0, L_1=280 and L_2=560 Kg/ha.

(2) 2 levels of manures : M_0=0 and M_1=33·6 Kg/ha. of N as A/S+22·4 Kg/ha. of P_2O_5 as super.

All fertilisers applied at planting

3. DESIGN:

(i) L. sq. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) 9·2 m.×3·2 m., 9·1 m.×3·4 m., 8·5 m.×3·5 m. (b) 8·2 m.×2·7 M., 8·2 m × 2·5 m., 7·5 m×2·6 m. (v) 46 cm.×23 cm., 46 cm.×46 cm., 46 cm.×46 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. folidol sprayed as a precautionery measure. (iii) Yield of grain. (iv) (a) 1961—63. (b) No. (c) Results of combined analysis and presented under 5 Results. (v) Mangalore. Ponnempat. (vi) Nil. (vii) Error variances are heterogeneous, Treatments×years interaction is present.

5. RESULTS :

(i) 2482 Kg/ha. (ii) 982·0 Kg/ha. (based on 10 d.f. made up of Treatments×years interaction). (ii) Main effect of M is highly significant. (iv) Av. yield of grain in Kg/ha.

	L_0	L_1	L_2	Mean
M_1	2082	2226	2211	2173
M_2	2770	2694	2907	2790
Mean	2426	2460	2559	2482

C.D. for M marginal means=421·0 Kg/ha.

Years	L_0	L_1	L_2	Sig.	M_1	M_2	Sig.	G.M.	S.E./plot
1961	2694	2768	3064	N.S.	2165	3519	**	2842	727·7
1962	2144	2086	2131	*	1932	2308	*	2120	398·3
1963	2441	2526	2484	N.S.	2423	2544	N.S.	2484	314·0
Pooled	2426	2460	2559	N.S.	2173	2790	**	2482	982·0

Crop :- Paddy (*Kharif*). **Ref :- Ms. 64(104), 65(25).**

Site :- Agri. Res. Stn., Nagenhally. **Type :- 'M'.**

Object :—To study the effect of foliar spray of urea on the growth and yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy, Paddy. (b) G.M. at 56 Q/ha., Paddy. (c) 33·6 Kg/ha. of N+22·4 Kg/ha. of P_2O_5; N.A. (ii) Red loam. (iii) 28.7.64/29.8.64 ; 26.7.65/31.8,65. (iv) (a) Ploughings and puddling. (b) Transplanting. (c) 22 Kg/ha., 49 Kg/ha. (d) 23 cm.×23 cm.. 20 cm.×2υ)m. (e) 3. (v) Nil. (vi) S 1092 (late). (vii) Irrigated. (viii) Hand weeding and passing Japanese paddy cultivator. (ix) 57 cm., 27·7 cm. (x) 7.1.65 ; 8.1.96.

2. TREATMENTS :

5 manurial treatments : T_0=Control, T_1=Soil application of 33·6 Kg/ha. of N as A/S at planting T_2= Soil application of 33·6 Kg/ha. of N as urea at planting, T_3=Foliar spray of 16·8 Kg/ha. N as urea and T_4=Foliar spray of 33·6 Kg/ha. of N as urea.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5 ; 4. (iv) (a) 6·1 m.×3·1 m., N.A. (b) 5·2 m.×2·2 m., 6·1 m.× 3·0 m. (v) 46 cm.×46 cm., N.A. (vi) Yes.

4. GENERAL

(i) Satisfactory. (ii) Nil. (iii) Yield of grain. (iv) (a) 1964—65. No. (c) Nil. (v) and (vi) Nil. (vii) Error variances are heterogeneous and Treatments×years interaction is absent.

5. RESULTS :

64(104)

(i) 2037 Kg/ha. (ii) 580·0 Kg/ha. (ii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4
Mean yield	1883	2104	2473	1698	2028

65(25)

(i) 1464 Kg/ha. (ii) 268·1 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
Mean yield	1144	1601	1601	1386	1588

Crop :- Paddy (*Kharif*). **Ref :- Ms. 60(77)**

Site :- Agri. Res. Stn., Nagerhally. **Type :- 'M'.**

Object :—To find out the effects of different G.M. on the yield Paddy.

1. BASAL CONDITIONS:

(i) (a) Paddy–paddy. (b) Paddy. (c) N.A. (ii) Sandy loam. (iii) 20-6-60. (iv) (a) 2 ploughings. (b) Transplanting. (c) 18 Kg/ha (d) 25 cm.×23 cm. (e) 2 to 3. (v) Nil. (iv) S.R. 26 B. (vii) Irrigated. (viii) Passing Japanese weeder and hand weeding. (ix) 33 cm. (x) 22-11-60.

3. TREATMENTS:

7 green manurial treatments : T_0=Control, T_1=Sesbania, T_2=Honge leaf, T_3=Glyricidia, T_4=Sannhemp, T_5=Cowpea, and T_6=Horse gram
G.M. applied at 6725 Kg/ha.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 1/247·10 ha. (b) 6·4 m.×3·1 m. (v) and (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of stem borer folidol was sprayed. (iii) Grain yield. (iv) (a) 1959–61 (modified in 1961). (b) Yes. (c) N.A. (iv) (a) N.A. (b) Nil. (vi) Spell of draught during July and August 1960. (vii) Nil.

5. RESULTS :

(i) 3512 Kg/ha. (ii) 381·1 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
Av. yield	2558	3138	4185	4069	3255	3952	3429

C.D.=566·2 Kg/ha.

———

Crop :- Paddy (*Kharif*). **Ref :- Ms. 61(158).**

Site :- Agri. Res. Stn., Nagenahally. **Type :- 'M'.**

Object :— To find the effects of G.M. on Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy after Paddy. (b) Paddy. (c) As per treatments. (ii) Sandy loam. (iii) 18.7.61/17.8.61. (iv) (a) 2 ploughings. (b) Transplanting. (c) 18 Kg/ha. (d) 25 cm. × 23 cm. (e) 2 to 3. (v) Nil. (vi) S.R. 26 B. (vii) Irrigated. (viii) Passing Japanese weeder and hand weeding. (ix) 51 cm. (x) 18.12.61.

2. TREATMENTS :

7 G.M. crops : T_0=Control, T_1=Sesbania, T_2=Honge leaf, T_3=Glyricidia, T_4=Sunnhemp, T_5=Cowpea and T_6=Horse gram.

G.M. applied at 56 Q/ha.

3. DESIGN

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) and (b) 6·4 m. × 3·0 m. (v) and (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1959-61 (modified in 1961). (b) Yes. (c) N.A. (v) to (vii) Nil.

5 RESULTS :

(i) 3860 Kg/ha. (ii) 599·4 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	2689	3458	4226	4482	3714	3842	4611

C.D.=890·6 Kg/ha.

———

Crop :- Paddy (*Kharif*) **Ref :- Ms. 60(75).**

Site :- Agri. Res. Stn., Nagenhally. **Type :- 'M'.**

Object :— To find the optimum combination of N, P and K for Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy-Paddy. (b) Paddy. (c) As per treatments. (ii) Sandy loam. (iii) 20.6.60. (iv) (a) 4 ploughings. (b) Transplanting. (c) 18 Kg/ha. (d) 25 cm.×23 cm. (e) 2 to 3. (v) G.M. at 5600 Kg/ha.+Compost at 5600 Kg/ha. (vi) 3-701 (5½) months. (vii) Irrigated. (viii) Passing Japanese weeder and hand weeding. (ix) 33 cm. (x) 2.12.60.

2. TREATMENTS :

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

(1) 3 levels af N as A/s : N_0=0, N_1=33·6 and N_2=67·2 Kg/ha.

(2) 3 levels of P_2O_5 as Super : P_0=0, P_1=33·6 and P_2=67·2 Kg/ha.

(3) 3 levels of K_2O as Mur. Pot. : K_0=0, K_1=33·6 and K_2=67·2 Kg/ha.

N applied in to doses at planting and 40 days after planting P and K applied in one dose at planting.

3. DESIGN :

(i) 3^3 Confd. (ii) (a) 9 plots/block, 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 1/164·7 ha. (b) 9·1 m.×3 0 m. (v) and (vi) Yes.

4. GENERAL:

(i) Satisfactory. (ii) Attack of stem borer, folidol was sprayed. (iii) Grain yield. (iv) (a) 1957-1960. (b) Yes. (c) Nil. (v) (a) Magad and Mangalore. (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 4171 Kg/ha. (ii) 569·9 Kg/ha. (iii) Main effect of N is highly significant and that of 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	3526	3824	3553	3553	3906	3444	3634
N_1	3987	4312	4422	4584	4095	4042	4240
N_2	4041	4532	5343	4829	4286	4801	4639
Mean	3851	4223	4439	4322	4096	4096	4171
K_0	4015	4204	4747				
K_1	3688	4422	4147				
K_2	3851	4042	4394				

C.D. for N or P marginal means=394·0 Kg/ha.

Crop :- Paddy (*Kharif*). **Ref :- Ms. 60(74).**

Site :- Agri. Res. Stn., Nagenhally. **Type :- 'M'.**

Object :— To find the merits of different Nitrogeneous fertilizers.

1. BASAL CONDITIONS :

(i) (a) Paddy followed by Paddy with an intervening green manure crop. (b) Paddy. (c) As per treatments. (ii) Sandy loam soil. (iii) 25.7.60. (iv) (a) 4 ploughings. (b) Transplanting. (c) —, (d) 25 cm.×23 cm. (e) 2 to 3. (v) G.M. at 5604 Kg/ha. (vi) S-701. (vii) Irrigated. (viii) 2 weedings by Japanese weeder and 2 hand weedings. (ix) 33 cm. (x) 9.12.60.

2. TREATMENT :

7 Sources of 33·6 Kg/ha. of N : S_0=0, S_1=A/S, S_2=C/A/N, S_3=A/C, S_4=Urea, S_5=A/S/N and S_6=C/N.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 1/164·7 ha. (b) 9·1 m.×3·0 m. (v) and (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Case worm and stem borer mild attack conrolled by spraying folidol. (iii) Grain yield. (iv) (a) 1958-1960. (b) No. (c) Nil. (v) (a) Mugad and Mangalore. (b) N.A. (vi) Long spells of draught during, July, August, 60. (vii) Nil.

5. RESULTS :

(i) 3388 Kg/ha. (ii) 635·3 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of grain in Kg/ha.

Treatment	S_0	S_1	S_2	S_3	S_4	S_5	S_6
Av. yield	2287	3865	3458	3621	3255	3702	3580

C.D.=944·0 Kg/ha.

Crop :- Paddy (*Kharif*). **Ref :- Ms. 60(76).**

Site :- Agri. Res. Stn., Nagenhally. **Type :- 'M'.**

Object :— To compare the relative merits of complexal, A/S and other fertilizers and to find the suitable time of application.

1. BASAL CONDITIONS:

(i) (a) Paddy-Paddy. (b) Paddy. (c) As per treatments. (ii) Sandy loam. (iii) 20.6.60. (iv) (a) 4 ploughings. (b) Transplanting. (c) 18 Kg/ha. (d) 25 cm.×23 cm. (e) —. (v) G.M. at 5604 Kg/ha.+compost at 5604 Kg/ha. (vi) S-701. (vii) Irrigated. (viii) Passing Japanese weeder and hand weeding. (ix) 33 cm. (x) 9.12.60.

2. TREATMENTS :

8 manurial treatments : T_0=Control, T_1=168·1 Kg/ha. of complesal at planting, T_2=168·1 Kg/ha. of complesal, half at planting+half one month after planting, T_3=168·1 Kg/ha. of A/S at planting, T_4=168·1 Kg/ha. of A/S, half and planting+half one month after planting, T_5=84·0 Kg/ha. of A/S at planting+112·1 Kg/ha. of C/N one month after planting, T_6=84·0 Kg/ha. of A/S+84·0 Kg/ha. of C/A/N at planting and T_7=168·1 Kg/ha. of A/S+201·8 Kg/ha. of Super, half at planting+half one month after planting.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 1/164·7 ha. (b) 9·1 m.×3·0 m. (v) and (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Stem borer-folidol was sprayed. (iii) Grain yield. (iv) (a) 1958-1960. (b) Yes. (c) Nil. (v) (a) Mangalore and Mugad. (b) Nil. (vi) Long spell of draught during July and August 1960. (vii) Nil.

5. RESULTS :

(i) 3744 Kg/ha. (ii) 388·6 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	3092	3784	3824	3744	3906	3734	3702	4151

Crop :- Paddy (*Kharif*). **Ref :- Ms. 62(14).**

Site :- Agri. Res. Stn., Nagenhally. **Type :- 'M'.**

Object :—To find out the best time of application of N for Paddy crop.

1. BASAL CONDITIONS :

(i) (a) Paddy—G.M. (b) G.M. (c) 22·4 Kg/ha. of P_2O_5 applied at the time of green manure sowing. (ii) Sandy loam. (iii) 11·7.1962/14.8.1962. (iv) (a) 4 ploughings. (b) Transplanting. (c) —. (d) 23 cm.×23 cm. (e) 2 to 3. (v) 725 Kg/ha. of G.M.+22·4 Kg/ha. of P_2O_5+22·4 Kg/ha. of N. (vii) S R.26.B (medium). (viii) Irrigated. (viii) 2 weedings, (ix) 37 cm, (x) 23.11.1962.

2. TREATMENTS :

4 times of application of 22·4 Kg/ha. of N as top-dressing : T_1=15—20 days after transplanting, T_2=33 days before heading, T_3=18 days before heading and T_4=Before flowering.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) 9·1 m.×13·8 m. (iii) 9. (iv) (a) 9·1 m.×3·4 m. (b) 8·2 m.×2·5 m. (v) 46 cm. ×46 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil—spraying of folidol was taken as a precautionary measure. (iii) Yield of grain. (iv) (a) 1962 only. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2832 Kg/ha. (ii) 428·3 Kg/ha. (iii) Treatment differences are not significant. (iv) Av yield of in Kg/ha.

Treatment	T_1	T_2	T_3	T_4
Av. yield	2866	3094	2802	2562

Crop :- Paddy (*Kharif*). **Ref :- Ms. 64(11), 65(21).**

Site :- Agri. Res. Stn., Nagenhally. **Type :- 'M'.**

Object :—To study the effect of different Phosphatic Fertilisers on Paddy in comparison with super.

1. BASAL CONDITIONS :

(i) (a) Paddy paddy. (b) Paddy. (c) 56 Q/ha. of F.Y.M.+33·6 Kg/ha. of N as A/S+22·4 Kg/ha. of P_2O_5 as super for 64(11), 56 Q/ha. of G.M. for 65(21). (ii) Sandy loam. (iii) 5.7.64/17, 18.8.64 ; 11.8.65/ 10.9.65 (iv) (a) 3 ploughings and puddling. (b) Transplanting. (c) —. (d) 25 cm.×23 cm ; 20 cm.× 20 cm. (e) N.A. (v) 56 Q/ha. of G.M. (vi) B.741 (late) ; V 749 (late). (vii) Irrigated. (viii) Weeding. (ix) 55 cm. ; 24·8 cm. (x) 4.1.65 ; 3.1.66.

2. TREATMENTS :

All combinations of (1) and (2)+2 extra treatments

(1) 8 sources of P_2O_5 : S_1=Super, S_2=Rock. Phos. (100 mesh), S_3=Rock Phos. (300 mesh), S_4=Thomas slag, S_5=Fused Mg. Phos., S_6=Steamed bone meal, S_7=Nitrophos. (ODDA) and S_8=Nitrophos. (PEC).

(2) 2 levels of P_2O_5 : P_1=37·1 and P_2=74·1 Kg/ha.

E_0=Control (3 plots) and E_1=49·4 Kg/ha. of N as A/S

3. DESIGN:

(i) Fact. in R.B.D. (ii) (a) 20. (b) N.A. (iii) 3. (iv) 7·3 m.×7·3 m. (b) 6·3 m.×6·3 m. (v) and (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Attack of thrips, stem borer and blast combined spray of blitox and folidol for 55(21). (iii) Yield of grain. (iv) (a) 1964–65. (b) Yes. (c) Nil. (v) and (vi) Nil. (vii) Error variances are heterogeneous and treatments×years interaction is absent.

5. RESULTS :

64(11)

(i) 3421 Kg/ha. (ii) 626·6 Kg/ha. (iii) Main effect of S is significant E_0 Vs. E_1 is highly significant. (iv) Av. yield of grain in Kg/ha.

E_0=2774 and E_1=4226 Kg/ha.

	S_1	S_2	S_3	S_4	S_5	S_6	S_7	S_8	Mean
P_1	3778	4162	3885	4077	3010	3479	3970	2583	3618
P_2	4077	3650	2753	2732	3266	3778	3629	3052	3367
Mean	3927	3906	3319	3404	3138	3628	3799	2817	3492

C.D. for S marginal means=732·4 Kg/ha.
C.D. for E_0 Vs. E_1 =845·8 Kg/ha.

65(21)

(i) 2257 Kg/ha. (ii) 393·2 Kg/ha. (iii) Main effect of S and E_0 Vs. E_1 are significant. (iv) Av. yield of grain in Kg/ha.

E_0=1929 and E_1=2553 Kg/ha.

	S_1	S_2	S_3	S_4	S_5	S_6	S_7	S_8	Mean
P_1	2092	2655	2698	2621	2459	2220	2331	1784	2357
P_2	2314	2570	2698	2100	2040	2271	1912	2032	2242
Mean	2203	2612	2698	2360	2249	2245	2121	1908	2300

C.D. for S marginal means=459·6 Kg/ha.
C.D. for E_0 vs. E_1 =530·8 Kg/ha.

Crop :- Paddy. **Ref :- Ms. 62(176), 63(175), 64(130).**

Site :- Agri. Res. Stn., Pannampet. **Type :- 'M'.**

Object :— To find out the optimum doses of N, P and K for Paddy under local conditions.

1, BASAL CONDITIONS :

(i) (a) Paddy-Paddy. (b) Paddy. (c) As per treatments. (ii) Sandy loam. (iii) 4.6.62 for 62; N.A. for others. (iv) (a) Ploughing, puddling and levelling. (b) Transplanting. (c) 448 Kg/ha. mursey. (d) 23 cm.×23 cm. (e) 2. (v) 22·5 C.L./ha. of F.Y.M. at planting. (vi) Andrew Sail (medium). (vii) Unirrigated. (viii) 3 weedings. (ix) 286 cm. (x) 27.11.62; N.A. for others.

2. TREATMENTS :

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

(1) 2 levels of N : N_1=33·6 and N_2=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.

3. DESIGN :

(i) $3^2 \times 2$ Fact. confd. (ii) (a) 6 plots/block ; 3 blocks/replication. (b) 14·6 m. × 23·8 m. (iii) 4. (iv) (a) 4·9 m. × 4·0 m. (b) 4·6 m. × 3·7 m. (v) 15 cm. × 15 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of grain. (iv) (a) 1962-1964 (modified in 65). (b) Yes. (c) Results of combined analysis given under 5. (v) N.A. (vi) Nil. (vii) Error variance are heterogeneous and interaction of treatments in the N × P, N × K table with years are present and in the table P × K with years is absent.

5. RESULTS :

(i) 2023 Kg/ha. (ii) 381·7 Kg/ha. (18 d.f. made up interaction of treatments components N,P,K, N × P, N × K with years) (iii) Main effect of N is highly significant and that of 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_1	1853	1984	2001	1936	1941	1961	1946
N_2	1998	2182	2122	2100	2152	2050	2101
Mean	1925	2083	2062	2018	2046	2005	2023

62(176)

	P_0	P_1	P_2	Mean
K_0	3325	3392	3258	3325
K_1	3053	3732	3598	3461
K_2	3120	3325	3392	3279
Mean	3166	3483	3416	3355

S.E. of P or K marginal means = 82·2 Kg/ha.

63(175)

	P_0	P_1	P_2	Mean
K_0	2209	2440	2476	2375
K_1	2356	2468	2310	2378
K_2	2332	2436	2483	2417
Mean	2299	2448	2423	2390

S.E of P or K marginal means = 83·6 Kg/ha.

64(130)

	P_0	P_1	P_2	Mean
K_0	353	267	445	355
K_1	222	378	300	300
K_2	358	309	293	320
Mean	311	318	346	325

S.E. of P or K marginal means = 28·9 Kg/ha.

Years	N_1	N_2	Sig.	G.M.	S.E./plot
1962	3182	3528	**	3355	402·8
1963	2328	2452	N.S.	2390	409·7
1964	328	322	N.S.	325	141·6
Pooled	1946	2101	**	2023	381·7

Crop :- Paddy (*Kharif*). **Ref :- Ms. 61(197), 62(178).**

Site :- Agri. Res. Stn., Ponnampet. **Type :- 'M'.**

Object :— To compare the efficacy of nitrophosphate processed by O.D.D.A. and P.E.C. process.

1. BASAL CONDITIONS :

(i) (a) Paddy after Paddy. (b) Paddy. (c) 22·5 C.L./ha. of F.Y.M.+2800 Kg/ha. of G.M.+168 Kg/ha. of A/S+168 Kg/ha. of Super. (ii) Sandy clay. (iii) 20.6.61/10.8.61 ; 4.6.62/5.7.62' (iv) (a) Digging, levelling and ploughing. (b) Transplanting. (c) 448 Kg/ha. (d) 23 cm.×23 cm. (e) 2. (v) 22·5 C.L./ha. of F.Y.M. (vi) K.B. 356. (vii) Unirrigated. (viii) 3 weedings (ix) 379 cm. ; 286 cm. (x) 30.12.61 ; 25.12.62.

2. TREATMENTS :

All combinations of (1), (2) and (3)+4 extra treatments in each block.

(1) 3 levels of fertilizers : P_1=Super, P_2=Nitrophosphate ODDA and P_3=Nitrophosphate PEC.

(2) 3 levels of N and P : L_1=13·4 Kg/ha. of N+11·8 Kg/ha. of P_2O_5, L_2= 2 L_1 and L_3=4 L_1

(3) 3 methods of application : M_1=Broadcast, M_2=Roots of seedlings dipped in slush and M_3= Pallet application.

T_0=0, T_1=13·4 T_2=26·8 and T_3=53·6 Kg/ha. of N in each block.

3. DESIGN :

(i) 3^3+4 confd. (ii) (a) 13 plots/block ; 3 blocks/replication. (b) N.A. (iii) 2. (iv) 3·7 m ×3·7 m. (b) 3·4 m.×3·4 m. (v) 15 cm.×15 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Grain spot (mild) folidol sprayed. (iii) Yield of grain. (iv) 1961-1962. (b) Yes- (c) Results of combined analysis given under 5. (v) and (vi) Nil. (vii) Error variance are homogeneous and Treatments×years interaction is absent.

5. RESULTS :

(i) 2205 Kg/ha. (ii) 465·4 Kg/ha. (based on 106 d.f. made up of pooled error and interaction of various components of Treatments×years. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

T_0=2125, T_1=2382, T_2=2256 and T_3=2344 Kg/ha.

	L_1	L_2	L_3	P_1	P_2	P_3	Mean
M_1	2226	2150	2184	2057	2348	2154	2187
M_2	2155	2096	2247	1991	2171	2336	2166
M_3	2256	2007	2239	2095	2272	2133	2167
Mean	2212	2084	2223	2048	2264	2208	2173
P_1	2259	1974	1910				
P_2	2306	2129	2356				
P_3	2071	2150	2403				

	M_1	M_2	M_3	Sig.	L_1	L_2	L_3	Sig.
1961	2569	2502	2631	N.S.	2477	2516	2710	N.S.
1962	1804	1830	1703	N.S.	1947	1653	1737	N.S.
Pooled	2187	2166	2167	N.S.	2212	2084	2223	N.S.

P_1	P_2	P_3	Sig.	T_0	T_1	T_2	T_3	Sig.	G.M.	S.E./plot
2463	2597	2643	N.S	2465	2853	2356	2802	N.S.	2584	401·9
1633	1930	1773	N.S.	1785	1911	2155	1886	N.S.	1827	508·9
2048	2264	2208	N.S.	2125	2382	2256	2344	N.S.	2205	465·4

Crop :- Paddy (*Kharif*). **Ref :- Ms. 62(177), 63(176), 64(131), 65(6).**

Site :- Agri. Res. Stn,, Ponnampet. **Type :- 'M'.**

Object : To study the efficacy of coffee husk as manure for Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy after Paddy. (b) Paddy. (c) Nil. (ii) Sandy loam. (iii) 25.5.62/11.7.62 ; 12.6.63/8.8.63 ; 30.6.64/28.7.64 ; N.A./13.7.65. (iv) (a) 2 dry ploughings and 2 diggings. (b) 40 days old seedlings transplanted. (c) 448 Kg/ha. for nursery. (d) 23 cm. × 23 cm. (e) 2. (v) Nil. (vi) K.B. 356 (late). (vii) Unirrigated. (viii) 3 hand weedings. (ix) 286 cm. ; 191 cm. ; 322 cm. 149 cm. (x) 5.12.62 ; 24.12.63 ; 8,1.65 ; 22.12.65.

2. TREATMENTS :

3 manurial treatments : T_0=Control, T_1=Coffee husk to supply 33·6 Kg/ha. of N+11·8 Kg/ha. of P_2O_5+42 Kg/ha. of K_2O and T_2=33·6 Kg/ha. of N as A/S+11·8 Kg/ha. of P_2O_5 as super +42 Kg/ha. of K_2O as Mur. Pot.

3. DESIGN :

(i) R.B D, (ii) (a) 3. (b) 20·6 m. × 6·9 m. (iii) 6. (iv) (a) 6·9 m. × 6·9 m. (b) 6·4 m. × 5·4 m. (v) 23 cm. × 23 cm. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil for 63 (197). Severe attack of helminthosporium. Sprayed bordeux mixture once after flowering for 63 (176). Slight neck infection sprayed with blitox solution for 64, 65. (iii) Grain yield, (iv) (a) 1962-1965. (b) Yes. (c) Nil. (v) anp (vi) Nil. (vii) Error variance are heterogeneous and Treatments × years interaction is absent.

5. RESULTS :

62(177)

(i) 4542 Kg/ha. (ii) 775·9 Kg/ha. (iii) Treatment difference are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2
Av. yield	4595	4310	4721

63(176)

(i) 3569 Kg/ha. (ii) 673·4 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	3607	3530	3570

64(131)

(i) 3527 Kg/ha. (iii) 483·1 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	3310	3489	3782

65(6)

(i) 1345 Kg/ha. (ii) 251·4 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	1209	1355	1470

Crop :- Paddy (*Kharif*). **Ref :- Ms. 64(132), 65(9).**

Site :- Agri. Res., Ponnampet. **Type :- 'M'.**

Object :— To study the effect of Lime on Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy-Paddy. (b) Paddy, (c) 22·5 C.L./ha. of F.Y.M.+280 Kg/ha. of G.M.+168 Kg/ha. of A/S +224 Kg/ha. of Super for 64 (132). As per tratments for 65 (9). (ii) Sandy loam. (iii) 30.6.64/27.7.64 ; 11.6.65/20.7.65. (iv) (a) 2 deep ploughings, 2 diggings and levelling. (b) Transplanting. (c) 45 Kg/ha. (d) 23 cm.×23 cm. (e) 2. (v) Nil ; 22 C.L./ha. of F.Y.M. (vii) K.B. 356 (late). (vii) Unirrigaed (viii) 2 hand weedings. (ix) 222 cm. ; 149·4 cm. (x) 3.1.65 ; 23.12.65.

2. TREATMENTS :

6 manurial treatments : T_0=No manure, T_1=280 Kg/ha. of lime, T_2=560 Kg/ha. of lime, T_3=280 Kg/ha. of lime+33·6 Kg/ha. of N+33·6 Kg/ha. of P_2O_5, T_4=560 Kg/ha. of lime+33·6 33·6 Kg/ha. of N+33·6 Kg/ha. of P_2O_5 and T_5=33·6 Kg/ha. of N+33·6 Kg/ha. of P_2O_5.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) 41·1 m.×4·1 m. (iii) 3. (iv) (a) 6·9 m.×4·1 m. (b) 6·4 m.×3·7 m. (v) 23 cm. ×23 cm. (vi) Yes.

4. GENERAL :

(i) Slight lodging. (ii) Heavy blast and neck infection in 64 (132). Mitox and cosan syrayed in 65 (9). (iii) Plant ht. and yield and of grain. (iv) (a) 1964-1966. (b) Ycs. (c) Nil. (v) and (vi) Nil.

5. RESULTS :

64(132)

(i) 2961 Kg/ha. (ii) 610·0 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	2350	2543	3460	2563	3266	3582

65(9)

(i) 1912 Kg/ha. (ii) 273·6 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grrin iu Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. yield	1582	1925	2037	1808	2113	2006

Crop :- Paddy (*Kharif*). **Ref :- Ms. 60(192), 61(196).**

Site :- Agri. Res. Stn., Ponnampet. **Type :- 'M'.**

Object :—To study the effect of different nitrogeneous fertilizers on Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy—Paddy. (b) Paddy. (c) As per treatments. (ii) Sandy clay. (iii) 31.5.60/3.8.60 ; 6.6.61/5.8.61. (iv) (a) 4 ploughings and levelling. (b) Transplanting. (c) 45 Kg/ha. for nursery sowing. (d) 23 cm. × 23 cm. (e) 2. (v) 22·5 C.L./ha. of F.Y.M.+2800 Kg/ha. of G.M. (vi) K.B. 356 (late). (vii) Unirrigated. (viii) 3 hand weedings. (ix) 183 cm. ; 379 cm. (x) 30.12.60 ; 30.12.61.

2. TREATMENTS :

6 sources of 33·6 Kg/ha. of N : S_0=Control, S_1=A/S, S_2=A/C, S_3=Urea, S_4=A/S/N and S_5=C/N.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) 62·2 m. × 5·3 m. (iii) 4. (iv) (a) 10·1 m. × 5·0 m. (b) 9·8 m. × 4·7 m. (v) 15 cm. × 15 cm. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Mild incidence of grain spot. (iii) Yield of grain. (iv) (a) 1959 to 1961, (modified in 1960). (b) Yes. (c) Nil. (v) and (vi) Nil. (vii) Error variances are heterogeneous and Treatments × years interaction is absent

5. RESULTS :

60 (192)

(i) 2320 K.ha. (ii) 539·2 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	S_5
Av. yield	2115	2263	2706	2558	1919	2361

61(196)

(i) 2146 Kg/ha. (ii) 211·5 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	1919	2066	2484	1869	2361	2177

C.D. = 318·8 Kg/ha

Crop :- Paddy (*Kharif*). **Ref :- Ms. 62(179), 64(133), 65(7).**

Site :- Agri. Res. Stn., Ponnampet. **Type :- 'M'.**

Object: —To study the effect of F.Y.M. on Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy—Paddy. (b) Paddy. (c) 22·5 C.L/ha. of F.Y.M.+2800 Kg/ha. of G.M.+168 Kg/ha. of A/S +168 Kg/ha. of super for 62(179). As per treatments for 64(133) and 65(7). (ii) Sandy clay. (iii) 25-5-62/29-6-62 ; 2-6-64/13-7-64 ; 19-6-65/26-7-65. (iv) (a) 2 ploughings and two diggings. (b) Transplanting. (c) 45 Kg/ha. (for nursery). (d) 23 cm. × 23 cm. for 62(179) and 64(133) ; 25 cm. × 25 cm. for 65(7). (e) 2 for 62(179) and 64(133) ; 3 to 4 65(7). (v) Nil. (vi) S 67. (vii) Unirrigated. (viii) 3 hand weedings for 62(179) and 64(133) 2 hand weedings and passing cultivator for 65(7). (iv) 286 cm. ; 322 cm. ; 149 cm. (x) 5-12-62 ; 22-11-64 ; 19-12.65.

2. TREATMENTS :

10 manurial treatments : T_0=No manure, T_1=20 C.L/ha. of F.Y.M., T_2=Inorganic manure equivalent to 20 C.L./ha. of F.Y.M., T_3=20 C.L./ha. of F.Y.M.+33·6 Kg/ha. NPK as inorganic manure, T_4=NPK equivalent to 20 C.L./ha. of F.Y.M.+33·6 Kg/ha. NPK as inorganic manure, T_5=10 C.L./ha. of F.Y.M.+NPK equivalent to 10 C.L./ha. of F.Y.M.+33·6 Kg/ha. of NPK as inorganic manure, T_6=5 C.L./ha. of F.Y.M.+NPK equivalent to 15 C.L./ha. of F.Y.M.+33·6 Kg/ha. of NPK as inorganic manure, T_7=33·6 Kg/ha. NPK as inorganic manure, T_8=NPK equivalent to 5600 Kg/ha. of G.M.+33·6 Kg/ha. of NPK as inorganic manure and T_9=5600 Kg/ha. of G.M.+33·6 Kg/ha of NPK as inorganic manure.

3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) 7·0 m.×5·8 m. for 62(179) and 64(133), 63·6 m.×5·4 m. for 65(7). (iii) 3 (iv) (a) 7·0 m.×5·2 m for 62(179) and 64(133) ; 6·4 m.×5·7 m. for 65(7). (b) 6·4 m.×4·6 m. for 62(179) and 64(133), 6 m.×5 m. for 65(7). (v) and. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Leaf blast noticed-sprayed with copper fungicide. (iii) Yield of grain. (iv) (a) 1962–1965 (failed in 1963). (b) No. (c) Results of combined analysis are presented under 5 Resnlts. (v) and (vi) Nil. (vii) Error variances are homogeneous and Treatments×years interaction is present.

5. RESULTS :

(i) 1615 Kg/ha. (i)) 598·4 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
Mean yield	1791	2047	1334	1786	1296	1668	1629	1754	1335	1508

Years	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
1962	2092	1937	1085	1472	930	1239	1575	1549	930	775	**	1358	387·3
1964	1554	2045	744	1580	790	1431	1420	1761	1250	1245	*	1382	371·8
1965	1728	2160	2172	2306	2169	2334	1891	1951	1824	2504	N.S.	2104	317·0
Pooled	1791	2047	1334	1786	1296	1668	1629	1754	1335	1508	N.S.	1615	598·4

Crop :- Paddy (*Kharif*). **Ref :- Ms. 65(8).**

Site : Agri. Res. Stn., Ponnampet. **Type :- 'M'.**

Object :—To find out the optimum dose of NPK for Paddy under long condition.

1. BASAL CONDITION :

(i) (a) Paddy–Paddy. (b) Paddy. (c) As per treatments. (ii) Sandy loam. (iii) 29-6-65/2-8-65. (iv) (a) 2 ploughings and 2 diggings. (b) Transplanting. (c) —. (d) 25 cm.×25 cm. (e) 3 to 4. (v) 22.2. C.L./ha. of F.Y.M. (vi) Andrew soil. (vii) Rainfed. (viii) 2 hand weedings. (ix) 149·4 cm. (x) 7.12.65.

2. TREATMENTS:

15 manurial treatments : T_0=Control (no manure) T_1=33·6 Kg/ha. of N+22·4 Kg/ha. of P_2O_5+22·4 Kg/ha. of K_2O, T_2=44·8 Kg/ha. of N+33·6 Kg/ha. of P_2O_5+33·6 Kg/ha. of K_2O, T_3=50·4 Kg/ha. of N+39·2 Kg/ha. of P_2O_5+39·2 Kg/ha. of K_2O, T_4=56·0 Kg/ha. N+44·8 Kg/ha. of P_2O_5+44·8 Kg/ha. of K_2O, T_5=61·6 Kg/ha. of N+50·4 Kg/ha. of P_2O_5+50·4 Kg/ha. of K_2O, T_6=67·2 Kg/ha. of N+44·8 Kg/ha. of P_2O_5+44·8 Kg/ha. of K_2O, T_7=67·2 Kg/ha. of N+50·4 Kg/ha. of P_2O_5+50·4 Kg/ha. of K_2O, T_8=67·2 Kg/ha. of N+56·0 Kg/ha. of P_2O_5+56·0 Kg/ha. of K_2O, T_9=67·2 Kg/ha. of N+61·6 Kg/ha. of P_2O_5+61·6 Kg/ha. of K_2O, T_{10}=44·8 Kg/ha. of N+44·8 Kg/ha. of P_2O_5+44·8 Kg/ha. of K_2O, T_{11}=50·4 Kg/ha. of N+50·4 Kg/ha. of P_2O_5+50·4 Kg/ha. of K_2O, T_{12}=56·0 Kg/ha. of N+56·0 Kg/ha. of P_2O_5+56·0 Kg/ha. of K_2O, T_{13}=61·6 Kg/ha. of N+61·6 Kg/ha. of P_2O_5+61·6 Kg/ha. of K_2O and T_{14}=67·2 Kg/ha. of N+67·2 Kg/ha. of P_2O_5+67·2 Kg/ha. of K_2O.

3. DESIGN

(i) R.B D. (ii) (a) 15. (b) 43·9 m.×10·8 m. (iii) 2. (iv) (a) 10·4 m.×2·9 m. (b) 10·0 m.×2·5 m. (v) and (vi) Yes.

4. GENERAL:

(i) Fair. (ii) Severe neck infection noticed. Blast—Blotox and Gosan sprayed to control blast. (iii) Yield af grain. (iv) (a) 1965 (b) No. (c) Nil. (v) N.A. (vi) Nil. (vii) Nil.

5. RESULTS:

(i) 2901 Kg/ha. (ii) 1050 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatments	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Mean yield	3512	3026	2824	3408	3006	2814	2236	3206

	T_8	T_9	T_{10}	T_{11}	T_{12}	T_{13}	T_{14}
	2956	2034	3340	2670	3122	2942	2420

Crop :- Paddy (*Kharif*) **Ref :- Ms. 62(285), 63(220), 64(186), 65(110).**

Site :- Agri. Res. Stn., Sirsi. **Type :- 'M'.**

Object :—Organic vs. inorganic manurial trial.

1. BASAL CONDITIONS .

(i) (a) Paddy—Paddy. (b) Paddy. (c) 12·4 C.L./ha. of F.Y.M.+33·6 Kg/ha. of N+22·4 Kg/ha. of P_2O_5. (ii) Laterite soil and sandy loam. (iii) N.A. ; 7-8-63 ; 13-7-64 ; 30-7-65. (iv) (a) 4 ploughings with iron plough. (b) Line sowing. (c) N.A. (d) 20 cm.×20 cm. (e) 4 to 6. (v) 20 C.L./ha. of F.Y.M. by broadcast. (vi) T. 141(165days). (vii) Unirrigated. (viii) Weeding. (iv) N.A. ; 229 cm., 295 cm., 241 cm. (x) N.A. ; 4-12-63 ; 25-11-64 ; 25-11-65.

2. TREATMENTS :

10 manurial treatments : T_0=Control, T_1=20 C.L./ha. of F.Y.M., T_2=Inorganic manure equivalent to 20 C.L./ha. T_3=20 C.L./ha. of F.Y.M.+33·6 Kg/ha. NPK. as inorganic manure, T_4=NPK equivalent to 20 C.L./ha. of F.Y.M.+33.6 Kg/ha. of NPK as inorganic manure, T_5=10 C.L./ha. of F.Y.M.+NPK equivalent to 10 C.L./ha. of F.Y.M.+33·6 Kg/ha. of NPK as inorganic manure, T_6=5 C.L./ha. of F.Y.M+NPK equivalent to 15 C.L./ha. of F.Y.M.+33·6 Kg/ha. of NPK as inorganic manure, T_7=33·6 Kg/ha. NPK as inorganic manure. T_8=NPK equivalent to 5600 Kg/ha. as green manure+33·6 Kg/ha. of NPK as inorganic manure and T_9=5600 Kg/ha. of G.M. +33·6 Kg/ha. NPK as inorganic manure.

3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 3. (iv) (a) 7·6 m.×4·0 m. (b) 7·2 m.×3·6 m. (v) 21 cm.×20 cm. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil, slightly attacked by blast, spraying with folidol in 65(110). (iii) Yield of grain. (iv) (a) 1962—1965. (b) No. (c) Results of combined analysis given under 5. Results. (v) and (vi) Nil. (vii) Error variances are heterogeneous and treatments×years interaction is present.

5. RESULTS :

(i) 3470 Kg/ha. (ii) 1740·3 Kg/ha.(based on 27 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	2370	3020	3471	3494	4029	3544	4197	3504	3566	3508

Years	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
1962	1205	1528	3071	2518	3718	2805	2796	2412	2892	2305	**	2525	349·2
1963	2635	4284	1780	3424	4300	2919	4440	4238	2978	3115	**	3411	591·0
1964	2787	3589	4371	4312	2859	4260	3975	3993	4148	4392	**	3869	488·9
1965	2852	2680	4661	3722	5238	4193	5577	3372	4247	4220	**	4076	321·6
Pooled	2370	3020	3471	3494	4029	3544	4197	3504	3566	3508	N.S.	3470	1740·3

Crop :- Paddy (*Kharif*). **Ref :- Ms. 65(111).**

Site :- Agri. Res. Stn., Sirsi. **Type :- 'M'.**

Object :--To study the comparative merits of existing and new types of phosphatic fertilizers in the acidic soil regions.

1. BASAL CONDITIONS :

(i) (a) Paddy after Paddy. (b) Paddy. (c) 12·4 C.L./ha. of F.Y.M.+33·6 kg/ha. of N+22·4 kg/ha. of P_2O_5. (ii) Sandy loam of laterite soil. (iii) 6.8.65. (iv) (a) 4 ploughings and levellings. (b) Line planting. (c) N.A. (d) 20 cm.×20 cm. (e) 4 to 6. (v) Nil. (vi) T—141. (vii) Unirrigated. (viii) Interculturing and weeding. (ix) 24 cm. (x) 29.11.65.

2. TREATMENTS :

All combinations of (1) and (2)+2 extra treatments :

(1) 2 levels of P_2O_5 : P_1=37·1 and P_2=74·2 kg/ha.

(2) 8 sources of P_2O_5 : S_1=Super, S_2=Rock Phos. (100 mesh), S_3=Rock Phos. (300 mesh), S_4=Thomas slag, S_5=Fused Mg. Phos., S_6=Steamed bone meal, S_7=Multiflorinate Phos. and S_8=Deflorinated Phos.

T_0=Control and T_1=A/S at 49·4 kg/ha.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 18. (b) N.A. (iii) 2. (iv) (a) and (b) 4·9 m×6·1 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Slightly attacked by blast. Spraying with folidol. (iii) Yield of grain. (iv) (a) to (c) No. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 3154 kg/ha. (ii) 570·6 kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in kg/ha.

T_0=2847 and T_1=3246 kg/ha.

	S_1	S_2	S_3	S_4	S_5	S_6	S_7	S_8	Mean
P_1	2939	3191	2779	2863	3023	3913	2734	3443	3111
P_2	2490	3712	3443	2368	3796	3334	3124	3527	3224
Mean	2715	3451	3111	2616	3409	3623	2929	3485	3167

Crop :- Paddy (*Kharif*). **Ref :- Ms. 60(91), 61(73).**

Site :- Agri. Res. Stn., Sirugappa. **Type :- 'M'.**

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

1. BASAL CONDITIONS :

(i) (a) Paddy—Paddy. (b) Paddy. (c) 125·5 Q/ha. of F.Y.M.+5604 kg/ha. of G.L.+44·8 kg/ha. of N +44·8 kg/ha. of P_2O_5. (ii) Black cotton soil. (iii) 5.8.60 ; N.A. (iv) (a) 2 victory ploughings and levelling. (b) Transplanting. (c) N.A. (d) 23 cm. × 23 cm. (e) 2. (v) 125·5 Q/ha. of F.Y.M. for 60(91) 7·41 C.L./ha. of F.Y.M.+5604 kg/ha. of G.M. for 61(73). (vi) G.E.B. 24 (medium). (vii) Irrigated. (viii) 2 weedings. (ix) 49 cm.; 32 cm. (x) 15 and 16.12.60 ; 19 and 20.12.61.

2. TREATMENTS :

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

(1) 3 levels of N : N_0=0, N_1=33·6 and N_2=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.

3. DESIGN :

(i) 3^3 partially Confd. (ii) (a) 9 plots/block, 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 1/198 ha. (b) 1/247 ha. (v) Yes. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil ; seedlings dipped in Folidol for 61(73). (iii) Yield of grain. (iv) (a) 1960—1961. (b) No. (c) Results of combined analysis are given under 5. Results. (v) to (vii) Nil.

5. RESULTS :

(i) 3142 kg/ha. (ii) 563 0 kg/ha. [62 d.f. made up of pooled error and Treatments × years interaction]. (iii) Main effects of N is highly significant and that of 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	2472	2736	2764	2726	2742	2503	2657
N_1	3109	3296	3434	3389	3081	3369	3280
N_2	3198	3735	3535	3399	3488	3580	3489
Mean	2926	3256	3244	3172	3104	3151	3142
K_0	2885	3165	3466				
K_1	3082	3214	30 5				
K_2	2811	3289	3252				

C.D. for N or P marginal means=265·4 Kg/ha.

Years	N_0	N_1	N_2	Sig.	P_0	P_1	P_2	Sig.
1960	2276	2895	3091	**	2587	2886	2790	N.S.
1961	3038	3664	3888	**	3266	3625	3699	N.S.
Pooled	2657	3280	3489	**	2926	3256	3244	*

K_0	K_1	K_2	Sig.	G. M.	S.E./plot
2896	2565	2802	N.S.	2754	653·1
3448	3643	3500	N.S.	3530	506·6
3172	3104	3151	N.S.	3142	563·0

Crop :- Paddy. **Ref :- Ms. 61(260), 62(261), 63(40).**

Site :- Agri. Res. Stn., Sirugappa. **Type :- 'M'.**

Object :—To test the efficiency of Mg. Phos. in place of Super on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy after Paddy. (b) Paddy. (c) N.A. (ii) Medium deep black soil. (iii) 31.7.61 ; 19.7.62 27.7.63. (iv) (a) Ploughing and puddling for 61 and 62 and 2 ploughings and 1 levelling for 63(40). (b) Transplanting. (c) 49·4 kg/ha. (d) 20·3 cm.×20·3 cm. for 61 and 62 ; 23 cm.×23 cm. for 63. (e) 3. (v) 49·4 C.L./ha. of F.Y.M.+12350 kg/ha. of G.L. for 61(260) ; Nil ; 49·4 C.L./ha. of F.Y.M.+5604 kg/ha. sasbania (G.M,) for 63(40). (vi) G.E.B. 24. (vii) Irrigated. (viii) Weeding and interculturing. (ix) 41·8 cm. ; 46·8 cm. ; 44 cm. (x) 4.12.61 ; 29.11.62 ; 24.12.63.

2. TREATMENTS :

5 manurial treatments : T_0=Control, T_1=33·6 kg/ha. of P_2O_5 as Super, T_2=50·4 kg/ha. of P_2O_5 as Super, T_3=33·6 kg/ha. of Mg. Phos. and T_4=50·4 kg/ha- of Mg. Phos.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) 15·1 m.×3·4 m. ; 1¼ cent ; 1/164·7 ha. (b) 11·1 m.× 2·7 m. ; 1 cent ; 1/247·1 ha. (v) and (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Tiller counts and yield of grain. (iv) (a) 1961 to 1963. (b) No. (c) Nil. (v) and (vi) Nil. (vii) As the error variances are heterogeneous and Treatments×years interactioa is absent. The results of the individual experiments are presented below.

5. RESULTS :

61(260)

(i) 4146 kg/ha. (ii) 294·9 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
Av. yield	3750	4211	4352	4208	4211

C.D. =355·2 kg/ha.

62(261)

(i) 4321 kg/ha. (ii) 465·5 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
Av. yield	4036	4555	4313	4302	4397

63(40)

(i) 3099 kg/ha. (ii) 278·1 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	2994	3054	3222	3124	3104

Crop :- Paddy. **Ref :- Ms. 60(97), 61(72).**

Site :- Agri. Res. Stn., Sirugappa. **Type :- 'M'.**

Object :—To find out the optium dose of N for Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy—Paddy. (b) Paddy. (c) 125·5 Q/na. of F.Y.M.+5604 Kg/ha. of G.L.+44·8 Kg/ha. of N+ 44·8 Kg/ha. of P_2O_5. (ii) Deep black soil. (iii) 3.2.60 ; 11.2.61/16.5.61. (iv) (a) 2 ploughings. (b) Transplanting. (c) N.A. (d) 23 cm.×23 cm. (e) 2. (v) 125·5 Q/ha. of F.Y.M.+5604 Kg/ha. of G.L.+ 44·8 Kg/ha. of P_2O_5 for 60(97) and 125·5 Q/ha. of F.Y.M.+44·8 Kg/ha. of P_2O_5 for 61(72). (vi) CO. 13 ; N.A. (vii) Irrigated. (viii) 1 weeding. (ix) 7 cm. ; 11 cm. (x) 9.5.60 ; N.A.

2. TREATMENTS :

4 levels of N : T_0=0, T_1=22·4, T_2=44·8 and T_3=67·2 Kg/ha.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 5. (iv) (a) 1,197·7 ha., 10·4 m.×7·9 m. (b) 1/329·4 ha. ; 1/247·0 ha. (v) 2 rows on either side. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iiii) Yield of grain. (iv) (a) 1958 to 1961. (b) No. (c) Results of combined analysis are presented under 5. Results. (v) and (vi) Nil. (vii) Results of 58(61) and 59(65) are also taken into consideration. Error variances are homogeneous and Treatments×years interaction is present.

5. RESULTS :

(i) 2086 Kg/ha. (ii) 607·0 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	1947	2049	2192	2154

Years	T_0	T_1	T_2	T_3	Sig.	G.M.	S.E./plot
1960	1797	1746	2348	2293	*	2046	343·5
1961	2364	2348	2004	1757	N.S.	2118	389·0
Pooled	2080	2047	2176	2025	N.S.	2082	607·3

Crop :- Paddy (*Kharif*). **Ref :- Ms. 61(255), 62(256), 63(42), 64(34), 65(4).**

Site :- Agri. Res. Stn., Sirugappa. **Type :- 'M'.**

Object :—To study the effect of F.Y.M. on Paddy crop.

1. BASAL CONDITIONS :

(i) (a) Paddy—Paddy. (b) Paddy. (c) 12·4 Q/ha. of F.Y.M.+5600 Kg/ha. of G.L.+44·8 Kg/ha. of N+44·8 Kg/ha. of P_2O_5. (ii) Deep black soil. (iii) 18, 19.8.61 ; 16.7.62 ; 31.7.63 ; 21.7.64 ; 23.7.65. (iv) (a) 2 ploughings with victory plough. (b) Transplanting. (c) 49·4 Kg/ha. for 61, 62 and 65 and 18 to 22 Kg/ha. for 63 and 64. (d) 23 cm.×23 cm. (e) —. (v) Nil. (vi) G.E.B.—24 (late). (vii) Irrigated. (vii) Weeding and interculturing. (ix) 41·8 cm. ; 52·7 cm. ; 44 cm , 48 cm. ; 15·1 cm. (x) 22.12.61 ; 14.12.62 ; 16.12.63 ; 21.12.64 ; 30.12.65.

2. TREATMENTS:

6 manurial treatments : T_0=Control, T_1=24·7 C.L./ha. of F.Y.M, T_2=49·4 C.L./ha. of F.Y.M., T_3= 22·4 Kg/ha. of N+P_2O_5 and K_2O equal to 49·4 C.L./ha. of F.Y.M., T_4=22·4 Kg/ha. of N+P_2O_5 and K_2O equal to 24·7 C.L./ha. of F.Y.M. and T_5=NPK equal to 24·7 C.L./ha. of F.Y.M.+24·7 C.L./ha. of F.Y.M.

3. DESIGN :

(i) R.B.D. (ii)(a) 6. (b) N.A. (iii) 6. (iv) (a) 1/197·7 ha. (b) 1/247·1 ha. (v) 2 rows on either side. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield data. (iv) (a) 1961 to 1965. (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 :

(i) 1761 Kg/ha. (ii) 504·1 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	1535	1527	1701	1847	1670	2288

C.D.=271·5 Kg/ha.

Years	T_0	T_1	T_2	T_3	T_4	T_5	Sig.	G.M.	S.E./plot
1961	1751	1598	1766	2055	2383	2419	**	1995	339·4
1962	2051	2088	2268	2667	2109	3038	**	2370	456·9
1963	1217	1196	1313	1432	1157	1816	*	1355	317·5
1964	1322	1372	1620	1688	1380	2562	**	1657	548·9
1965	1334	1383	1538	1392	1319	1605	N.S.	1429	276·3
Pooled	1535	1527	1701	1847	1670	2288	**	1761	504·1

Crop :- Paddy (*Kharif*). **Ref -: Ms. 60(98).**

Site :- Agri. Res. Stn., Sirugappa. **Type -: 'M'.**

Object :—To find out the effect of different nitrogeneous fertilizers on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy—G.M. (b) Paddy. (c) 125·5 Q/ha. of F.Y.M.+5604 Kg/ha. of G.L.+44·8 Kg/ha. of N+ 44 8 Kg/ha. of P_2O_5. (ii) Black clayey soil. (iii) 28.7.60. (iv) (a) N.A. (b) Japanees method of transplanting. (c) N.A. (d) 23 cm.×23 cm. (e) 21. (v) 125·5 Q/ha. of F.Y.M.+5604 Kg/ha. of G L.+ 44·8 Kg/ha. of P_2O_5 as super. (vi) G.E.B. 24. (vii) Irrigated. (viii) 1 weeding with Japanese weeds. (ix) 49 cm. (x) 5 and 6.12.60.

2. TREATMENTS :

7 sources of N : S_0=0, S_1=A/S, S_2=Urea, S_3=A/C, S_4=A/S/N, S_5=C/A/N and S_6=C/N.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 1/164·7/ha. (b) 1/247·1/ha. (v) and (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of grain. (iv) (a) 1959—1960. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2828 Kg/ha. (ii) 318·4 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	S_6
Av. yield	2522	3054	2998	2662	3082	2914	2563

———

Crop :- Paddy (*Kharif*). **Ref :- Ms. 60 and 61(M.A.E.).**

Site :- M.A.E. Centre, Mercara. **Type :- 'M'.**

Object :—Type V : To study the effect of different times of application of N on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Heavy loam. (iii) N.A ; 3.6 61/15.7.61. (iv) (a) N.A. (b) Broadcasting. (c) 22 Kg/ha. (d) 25 cm.×25 cm. (e) 2. (v) Nil. (vi) BAM—3—P.S. (225 days). (vii) Unirrigated. (viii) 2 weedings and 1 intercultivation. (ix) N.A. (x) N A., 25.1.62.

2. TREATMENTS :

All combinations of (1) and (2)+a control

(1) 2 sources of 44·8 Kg/ha. of N : S_1=A/S and S_2=Urea

(2) 7 times of application of N : T_1=Full dose before planting, T_2=Full dose at planting, T_3=Full dose at tillering, T_4=$\frac{1}{2}$ before planting+$\frac{1}{2}$ at tillering, T_5=$\frac{1}{2}$ at planting+$\frac{1}{2}$ at tillering, T_6=$\frac{1}{2}$ before planting+$\frac{1}{2}$ at tillering+$\frac{1}{2}$ at flowering and T_7=$\frac{1}{3}$ at planting+$\frac{1}{3}$ at tillering+$\frac{1}{3}$ at flowering.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 15. (b) N.A. (iii) 3. (iv) (a) and (b) N.A. (v) and (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1959—1961. (b) N.A. (c) Nil. (v) Shimoga. (vi) and (vii) Nil.

5. RESULTS:

1960

(i) 2447 Kg/ha. (ii) 155·2 Kg/ha. (iii) Main effect of T alone is significant. (iv) Av. yield of grain in Kg/ha.

Control=2370 Kg/ha.

	T_1	T_2	T_3	T_4	T_5	T_6	T_7	Mean
S_1	2546	2177	2269	2582	2481	2490	2426	2424
S_2	2426	2518	2250	2416	2453	2647	2665	2482
Mean	2486	2347	2259	2499	2467	2568	2546	2453

C.D. for T marginal means=183·6 Kg/ha.

1961

(i) 2954 Kg/ha. (ii) 337·3 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

Control=3099 Kg/ha.

	T_1	T_2	T_3	T_4	T_5	T_6	T_7	Mean
S_1	3210	3154	2868	3090	2997	3016	2841	3025
S_2	2933	3007	2278	3210	2739	2859	3007	2862
	3072	3080	2573	3150	2868	2938	2924	2944

Crop :- Paddy (*Kharif*). **Ref :- Ms. 61, 62, 63 (M.A.E.).**

Site :- M.A.E. Centre, Shimoga. **Type :- 'M'.**

Object :—Type (ix) : To study the effect of Nitrophosphate on Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (ii) Light red sandy loam. (iii) 24/25.9.61 ; 19/20.7.62 ; N.A. (iv)(a) Ploughing, puddling and levelling, (b) Transplanting. (c) 13·3 Kg/ha. ; 13·3 to 16·8 Kg/ha. ; N.A (d) 20·3 cm.×17·8 cm. ; 22·5 cm.×20·3 cm. ; N.A. (v) F.Y.M. at 5600 Kg/ha. ; 28·3 Kg/plot of Compost to all plots ; N.A. (v) S—701 (180 days). (vii) Irrigated. (viii) Weeding. (ix) N.A. (x) 4, 8, 14, 15.1.1962 ; 28 and 29.11.62 ; N.A.

2. TREATMENTS :

All combinations of (1), (2) and (3)+4 extra treatments in each block.

(i) 3 types of phosphates : P_1=Super phosphate, P_2=ODDA-Nitro phosphate and P_3=PEC Nitro phosphate.

(ii) 3 leveles of P_2O_5 : L_1=11·7, L_2=23·4 and L_3=46·8 Kg/ha.

(iii) 3 methods of application :—M_1=Applied at puddling by broadcasting, M_2=applied at planting (6·4 cm. below seed) and M_3=immediately after planting (Band placement 6·35 cm. away from seed)

Extra treatment : E_0=0, E_1=13·4, E_2=26·8 and E_3=53·6 Kg/ha. of N.

3. DESIGN :

(i) 3^3 confd. with 4 additional treatments. (ii) (a) 13. (b) N.A. (iii) 2. (iv) 4·9 m. × 10.1 m. ; 5·0 m. × 10·3 m. ; N.A. (b) 4·5 m. × 9·0 m. ; 4·5 m × 9·0 m. ; N.A. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Below normal. (ii) Heavy attack of stem borer and to some extent blast. Fytolan and folidol were sprayed for 61 ; N.A. for others. (iii) Grain and straw yield. (iv) (a) 1961 to 1963. (b) Yes. (c) Nil. (v) to. (vii) Nil.

5. RESULTS :

1961

(i) 1150 Kg/ha. (ii) 310·0 Kg/ha. (iii) Main effect of L is highly significant. Main effects of M and N are significant. (iv) Av. yield of grain in Kg/ha.

N_0=756, N_1=1014, N_2=996, and N_3=1328 Kg/ha.

	P_1	P_2	P_3	L_1	L_2	L_3	Mean
M_1	1227	1153	1180	959	1190	1411	1187
M_2	1033	1070	1051	913	1061	1180	1051
M_3	1613	1355	1172	1152	1365	1624	1380
Mean	1291	1193	1134	1008	1205	1405	1206
L_1	950	1023	1051				
L_2	1310	1227	1079				
L_3	1614	1328	1273				

C.D. for L or M marginal means=208·9 Kg/ha.

C.D. for N marginal means=361·8 Kg/ha.

1962

(i) 2262 Kg/ha. (ii) 372·8 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

N_0=2393, N_1=2152, N_2=2297and N_3=2122 Kg/ha.

	P_1	P_2	P_3	L_1	L_2	L_3	Mean
M_1	2134	2063	2280	2174	2181	2123	2159
M_2	2190	2029	2530	2224	2217	2309	2250
M_3	2617	2294	2312	2290	2299	2634	2408
Mean	2314	2129	2374	2229	2232	2355	2272
L_1	2337	2086	2265				
L_2	2325	1984	2388				
L_3	2279	2318	2468				

1963

(i) 1445 Kg/ha. (ii) 200·5 Kg/ha. (iii) Interaction P × M alone is significant. (iv) Av. yield of grain in Kg/ha.

N_0=1520, N_1=1420, N_2=1387, and N_3=1560 Kg/ha.

	P_0	P_1	P_2	L_1	L_2	L_3	Mean
M_1	1446	1286	1406	1383	1352	1401	1379
M_2	1325	1320	1608	1464	1400	1389	1418
M_3	1484	1608	1415	1458	1463	1586	1502
Mean	1418	1405	1476	1435	1405	1459	1433
L_1	1415	1427	1463				
L_2	1377	1349	1490				
L_3	1462	1438	1476				

C.D. for the body of P × M table=234·1 Kg/ha.

Crop :- Paddy (*Kharif*) **Ref :- Ms. 62,63, 65(M.A.E.).**

Site :- M.A.E. Centre, Shimoga. **Type :- 'M'.**

Object :—Type V (a) : To study the effect of method of application of N on Paddy.

1. BASAL CONDITIONS :

(i) Nil. (b) Paddy. (c) 56 Q/ha. of compost+28Kg/ha. of N. (ii) Red soil. (iii) 25.7.62 ; 28.7.63 ; 13.8.65.(iv) (a) 3 ploughings and 2 puddlings. (b) Line planting. (c) 13 to 17 Kg/ha. (d) 20 cm.×20 cm. (e) N.A. (v) Municipal compost at 5604 Kg/ha.+34 Kg/ha. of P_2O_5 as super ; Nil for 65. (vi) S. 701 (180 days). (vii) Irrigated. (viii) 2 hand weeding and passing rotary weeder. (ix) N.A. (x) 9/12.12.62 ; 13.12.63 ; 26.12 65.

2. TREATMENTS :

All combinations of (1) and (2)+a control.

(i) 3 levels of N : N_1=33·6, N_2=50·4 and N_3=67·2 Kg/ha.

(ii) 4 methods of application : M_1=Broadcast just before last puddling and in corporated in the soil (subsurface application). M_2=Broadcast at planting. M_3=Broadcast ½at planting+½ about one month after planting and M_4=Application in the form of pallets about 3 weeks after planting.

3. DESIGN :

(i) R.B.D. (ii) (a) 13. (b) N.A. (iii) 4. (iv) (a) 10·1 m.×5·0 m. (b) 9·1 m×4.1 m. (v) 46 cm.×46 cm. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A.(iii) Yield of grain. (iv) (a) 1962—1965 (N.A. for 64). (b) N.A.(c) Nil. (v) Virajpet. (vi) N.A. (vii) Nil.

5. RESULTS :

1962.

(i) 3502 Kg/ha. (ii) 404·9 Kg/ha. (iii) Main effect of N and control vs. others are highly significant. (iv) Av. yield of grain in Kg/ha.

Control=2230 Kg/ha.

	M_1	M_2	M_3	M_4	Mean
N_1	3536	3145	3635	2906	3306
N_2	3575	3707	3737	3468	3622
N_3	4001	4052	3871	3666	3897
Mean	3704	3635	3748	3347	3608

C.D for N marginal means=288·9 Kg/ha.
C.D for control vs. others=425·4 Kg/ha.

1963.

(i) 3244 Kg/ha. (ii) 360·6 Kg/ha. (iii) Main effect of N and control vs. others are highly significant. (iv) Av. yield of grain in Kg/ha.

Control=2302 Kg/ha.

	M_1	M_2	M_3	M_4	Mean
N_1	3128	3130	3227	2924	3102
N_2	3388	3359	3229	3423	3337
N_3	3443	3513	3588	3563	3527
Mean	3303	3334	3348	3303	3322

C.D for N marginal means=257·5 Kg/ha.
C.D for control vs. others=378·9 Kg/ha.

1965.

(i) 3080 Kg/ha. (ii) and (iii) N.A. (iv) Av. yield of grain in Kg/ha.

Control=2215 Kg/ha.

Treatment	M_1	M_2	M_3	M_4	N_1	N_2	N_3
Mean yield	3073	2703	3272	3562	2978	3157	3322

Crop :- Paddy (*Kharif*). **Ref :- Ms. 60, 61, 62, 63(M.A.E.).**

Site :- M.A.E. Centre, Shimoga **Type :- 'M'.**

Object : –Type II : To study the effect of different levels of N, P, K and F.Y.M. on the yield of Paddy.

1. BASAL CONDITIONS

(i) (a) Nil. (b) and (c) N.A. (ii) Red sandy loam. (iii) 14/15.7.1960 ; 5/6.8.1961 ; 18.7.1962; 18.7.1963. (iv) (a) 2 puddlings with plough and levelling. (b) Line planting. (c) 20 Kg/ha. (d) 20 cm.×15 cm. (e) N.A. (v) N.A. (vi) S—701 (180 days duration). (vii) Irrigated. (viii) 2 weedings for 60 ; N.A. for others. (ix) N.A. (x) 21.11.60 and 1.12.60 ; 8/9.12.1961 ; 10 to 12.12.1962 ; 8 12.1963.

2. TREATMENTS :

All combinations of (1), (2), (3) and (4)

(1) 3 levels of N as A/S : N_0=0, N_1=33·6 and N_2=67·2 Kg/ha.

(2) 3 levels of P_2O_5 as Super . P_0=0, P_1=33·6 and P_2=67·2 Kg/ha.

(3) 3 levels of K_2O as Mur. Pot. : K_0=0, K_1=33·6 and K_2=67·2 Kg/ha.

(4) 2 levels of F.Y.M. : F_0=0 and F_1=5604 Kg/ha.

A/S broadcast at planting, Super at final puddling and Mur. Pot. broadcast at planting.

3. DESIGN :

(i) $3^3 \times 2$ Confd. (ii) (a) 9 plots/block ; 6 blocks/replication. (b) N.A. (iii) 1. (iv) (a) 10·1 m. × 5 5 m. for 60 ; 10·1 m. × 4·9 m. for 61 ; 10·0 m. × 5·1 m. for 62; N.A. for 63. (b) 9·1 m. × 4·5 m. for 60, 61; 9·1 m. × 4·2 m. for 62 ; N.A. for 63. (v) 48 cm. × 51 cm. for 60 ; 48 cm. × 20 cm. for 61 ; 46 cm. × 39 cm. for 62 ; N.A. for 63. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Stem borer attack in all plots and folidol sprayed for 60 ; N.A. for others. (ii) Yield of grain and straw. (iv) (a) 1959 contd. (b) N.A. (c) Nil. (v) N.A. (vi) Heavy rains at the end of October was harmful for fertilization and seed setting for 60 ; N.A. for others. (vii) Nil.

5. RESULTS :

1960

(i) 2788 Kg/ha. (ii) 398·4 Kg/ha. (iii) Main effects of N, P and F are highly significant. (iv) Av. yield of grain in Kg/ha.

	N_0	N_1	N_2	P_0	P_1	P_2	K_0	K_1	K_2	Mean
F_0	2038	2555	2647	1798	2675	2766	2536	2490	2213	2413
F_1	2896	3283	3311	2914	3329	3246	3062	3163	3264	3163
Mean	2467	2919	2979	2356	3002	3006	2799	2826	2738	2788
K_0	2546	2961	2890	2398	2878	3121				
K_1	2416	2887	3175	2453	3108	2917				
K_2	2439	2908	2871	2216	3019	2980				
P_0	2177	2490	2402							
P_1	2536	3154	3316							
P_2	2688	3113	3218							

C.D. for N or P marginal means = 274·1 Kg/ha.
C.D. for F marginal means = 223·7 Kg/ha.

1961

(i) 2171 Kg/ha. (ii) 292·5 Kg/ha. (iii) Main effects of N and K and interaction F × K are highly significant. (iv) Av. yield of grain in Kg/ha.

	N_0	N_1	N_2	P_0	P_1	P_2	K_0	K_1	K_2	Mean
F_0	1817	2084	2462	2278	1937	2148	2444	1771	2148	2121
F_1	1865	2268	2530	2186	2225	2253	2216	2231	2216	2221
Mean	1841	2176	2496	2232	2081	2201	2330	2001	2182	2171
K_0	1900	2315	2776	2527	2103	2361				
K_1	1697	2038	2269	1964	1965	2075				
K_2	1927	2176	2443	2205	2175	2167				
P_0	1918	2177	2601							
P_1	1697	2167	2379							
P_2	1909	2185	2509							

C.D. for N or K marginal means = 201·2 Kg/ha.
C.D. for body of F × K table = 348·4 Kg/ha.

1962

(i) 3438 Kg/ha. (ii) 296·2 Kg/ha. (iii) Main effects of N and P are highly significant. (iv) Av. yield of grain in Kg/ha.

	N_0	N_1	N_2	P_0	P_1	P_2	K_0	K_1	K_2	Mean
F_0	2874	3405	3649	3189	3229	3510	3424	3122	3381	3309
F_1	3139	3690	3870	3204	3722	3773	3472	3657	3570	3566
Mean	3006	3547	3760	3197	3475	3642	3449	3390	3476	3438
K_0	3029	3557	3760	3404	3425	3516				
K_1	2914	3432	3823	3076	3406	3686				
K_2	3077	3654	3696	3109	3595	3722				
P_0	2841	3188	3561							
P_1	2990	3587	3848							
P_2	3188	3867	3870							

C.D. for N or P marginal means=203·7 Kg/ha.

1963

(i) 2636 Kg/ha. (ii) 257·8 Kg/ha. (iii) Main effects of N and P are highly significant. (iv) Av. yield of grain in Kg/ha.

	N_0	N_1	N_2	P_0	P_1	P_2	K_0	K_1	K_2	Mean
F_0	2046	2718	3124	2533	2531	2824	2649	2570	2669	2629
F_1	2078	2692	3156	2318	2709	2899	2538	2750	2638	2642
Mean	2062	2705	3140	2426	2620	2861	2593	2660	2654	2636
K_0	2002	2690	3088	2389	2540	2851				
K_1	2102	2678	3199	2493	2625	2861				
K_2	2082	2746	3133	2396	2694	2871				
P_0	2011	2445	2821							
P_1	2050	2662	3147							
P_2	2124	3037	3453							

C.D. for N or P marginal means=177·3 Kg/ha.

Crop :- Paddy (*Kharif*). **Ref :- Ms. 62, 63, 64(M.A.E.).**

Site :- M.A.E. Centre, Virajpet. **Type :- 'M'.**

Object :—Type II : To study the effect of different levels of N, P, K and F.Y.M. on the yield of Paddy.

1. BASAL CONDITIONS:

(i) (a) to (c) N.A. (ii) Light loam. (iii) 21.6.62/4 to 6.8.1962 ; 5.8.1963 ; 6.8.1964. (iv) (a) to (e) N.A. (v) N.A. (vi) PS—1 (180 days). (vii) Unirrigated. (viii) and (ix) N.A. (x) 5.1.1963 ; 19,1.1964 ; 6.1.1965.

2. TREATMENTS:

All combinations of (1), (2), (3) and (4)

(1) 3 levels of N as A/S : N_0=0, N_1=33·6 and N_2=67·2 Kg/ha.

(2) 3 levels of P_2O_5 as Super : P_0=0, P_1=33·6 and P_2=67·2 Kg/ha.

(3) 3 levels of K_2O as Mur. Pot. : K_0=0, K_1=33·6 and K_2=67·2 Kg/ha.

(4) 2 levels of F.Y.M. : F_0=0 and F_1=56·4 Kg/ha.

3. DESIGN:

(i) 3^3×2 Confd. (ii) (a) 9 plots/block ; 6 blocks/replication. (b) N.A. (iii) 1. (iv) (a) 10·1 m.×5·1 m. for 62 ; N.A. for others. (b) 6·4 m.×4·1 m. for 62 ; N.A. for others. (v) 35 cm.×51 cm. for 62 ; N.A. for others. (vi) Yes.

4. GENERAL:

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1962—contd. (b) N.A. (c) Nil. (v) N.A. (vi) and (vii) Nil.

5. RESULTS:

1962

(i) 2396 Kg/ha. (ii) 196·4 Kg/ha. (iii) Main effects of N, P, K are highly significant. Interaction N×P and F×K are significant. (iv) Av. yield of grain in Kg/ha.

	N_0	N_1	N_2	P_0	P_1	P_2	K_0	K_1	K_2	Mean
F_0	2085	2302	2518	2071	2427	2406	2078	2371	2455	2301
F_1	2276	2608	2595	2357	2528	2584	2462	2511	2497	2490
Mean	2176	2455	2556	2214	2478	2495	2270	2441	2476	2396
K_0	2082	2380	2349	2019	2370	2422				
K_1	2186	2401	2736	2364	2490	2469				
K_2	2260	2584	2584	2260	2574	2594				
P_0	2139	2275	2228							
P_1	2270	2532	2631							
P_2	2118	2558	2809							

C.D. for N, P or K marginal means=135·2 Kg/ha.

C.D. for body of N×P table =234·0 Kg/ha.

C.D. for body of F×K table =191·1 Kg/ha.

1963

(i) 2573 Kg/ha. (ii) 260·6 Kg/ha. (iii) Main effects of F, N, P are highly significant and that of K is significant. (iv) Av. yield of grain in Kg/ha.

	N_0	N_1	N_2	P_0	P_1	P_2	K_0	K_1	K_2	Mean
F_0	2037	2552	2614	2129	2598	2475	2245	2475	2483	2401
F_1	2560	2875	2798	2545	2813	2875	2606	2898	2729	2744
Mean	2298	2714	2706	2337	2706	2675	2425	2687	2606	2573
K_0	2260	2583	2433	2133	2594	2548				
K_1	2410	2791	2860	2491	2848	2721				
K_2	2225	2767	2825	2387	2675	2756				
P_0	2168	2398	2445							
P_1	2479	2791	2848							
P_2	2248	2952	2825							

C.D. for N, P or K marginal means=179·4 Kg/ha.
C.D. for F marginal means =146·3 Kg/ha.

1964

(i) 2972 Kg/ha. (ii) 198·1 Kg/ha (iii) Main effects of N and P are highly significant. (iv) Av. yield of grain in Kg/ha.

	N_0	N_1	N_2	P_0	P_1	P_2	K_0	K_1	K_2	Mean
F_0	2545	2806	2914	2445	2906	2914	2683	2768	2814	2755
F_1	3014	3245	3306	3014	3237	3314	3252	3173	3137	3188
Mean	2779	3026	3110	2729	3072	3114	2968	2972	2976	2972
K_0	2860	2941	3102	2687	3114	3102				
K_1	2768	2964	3183	2825	3068	3022				
K_2	2710	3172	3045	2676	3033	3218				
P_0	2549	2814	2825							
P_1	2940	3068	3206							
P_2	2849	3195	3298							

C.D. for N or P marginal means = 136·2 Kg/ha.

Crop :- Paddy (*Kharif*). **Ref :- Ms. 62 to 65 (M.A.E.).**

Site :- M.A.E. Centre, Virajpet. **Type :- 'M'.**

Object :—Type V (a) : To study the effect of method of application of N on Paddy.

1 BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) Red soil. (ii) 6.7.62/13 to 17.8.62 ; 7.7.63/10 8.63 to 17.8.63 , 25.8.64 , 9.7.65/17.8 65. (iv) (a) 5 ploughings. (b) Broadcast. (c) 28 Kg/ha. (d) 25 cm. × 25 cm, (e) 3 to 4 (v) 34 Kg/ha of P_2O_5 as Super. (vi) Mambiliya; Ambia ; Mb-319 ; N.A. (vii) Unirrigated (viii) 1 to 3 weedings. (ix) N.A. (x) 27, 28.12.62; 21, 22.12 63; 10.1 65; 17, 18.1.66.

2. TREATMENTS :

All combinations of (1) and (2) +a control.

(1) 3 levels of N : N_1=33·6, N_2=50·4 and N_3=67·2 Kg/ha.

(2) 4 methods of application : M_1=Broadcast just before last puddling and in corporated in the soil (Sub surface application) M_2=Broadcast at planting, M_3=Broadcast $\frac{1}{2}$ at planting + $\frac{1}{2}$ about one month after planting and M_4=Application the form of pellets about 3 weeks after planting.

3: DESIGN :

(i) R.B.D. (ii) (a) 13. (b) N.A. (iii) 4. (iv) (a) 10·2 m. × 5·1 m. (b) 8·9 m. × 4·1 m. (v) 64 cm. × 51 cm. (vi) Yes.

4. GENERAL :

(i) and) (ii) N.A. (iii) Yield of grain, (iv) (a) 1962—1966. (b) N.A. (c) Nil. (v) Shimoga. (vi) N.A. (vii) Nil.

5. RESULTS :

1962

(i) 2506 Kg/ha. (ii) 276·5 Kg/ha. (iii) control vs. others alone is highly significant. (iv) Av. yield of grain in Kg/ha.

Control=2040 Kg/ha.

	M_1	M_2	M_3	M_4	Mean
N_1	2205	2464	2480	2691	2460
N_2	2542	2629	2409	2534	2528
N_3	2425	2629	2754	2778	2646
Mean	2391	2574	2548	2668	2545

C.D. for Control vs. others=290.5 Kg/ha.

1963

(i) 1966 Kg/ha. (ii) 222.2 Kg/ha. (iii) None of the effects is significant (iv) Av. yield of grain in Kg/ha.

Control=1781 Kg/ha.

	M_1	M_2	M_3	M_4	Mean
N_1	1937	1954	1989	2248	2032
N_2	1972	1816	2058	1885	1933
N_3	1989	1885	2058	1989	1980
Mean	1966	1885	2035	2041	1982

1964

(i) 2887 Kg/ha. (ii) 261·0 Kg/ha. (iii) "Control vs. others" is highly significant Main effect of M is significant. (iv) Av. yield of grain in Kg/ha.

Control=2479 Kg/ha.

	M_1	M_2	M_3	M_4	Mean
N_1	2693	2765	2889	2996	2836
N_2	2765	2800	3228	2872	2916
N_3	2872	2979	2979	3210	3010
Mean	2777	2848	3032	3026	2921

C. D. for M marginal means=215·1 Kg/ha.

C. D. for Control vs. others =274·2 Kg/ha.

1965

(i) 2421 Kg/ha. (ii) and (iii) N.A. (iv) Av. yield of grain in Kg/ha.

Control=2356 Kg/ha.

Treatment	M_1	M_2	M_3	M_4	N_1	N_2	N_3
Av. yield	2535	2287	2459	2425	2299	2451	2529

Crop :- Paddy (*Kharif*). **Ref :- Ms. 63 and 65(M.A.E.).**

Site :- M.A.E. Centre, Virajpet. **Type :- 'M'.**

Object :—Type XI . To study the effect of method of application of micronutrients on Paddy.

1. BASAL CONDITIONS :
(i) (a) Nil. (b) Paddy. (c) G. L. at 33.6 Q/ha. (ii) Light loam. (iii) 29.8 1963 ; 9.7,65/24.8.65. (iv) (a) 4 ploughings ; 6 ploughings. (b) Broadcast. (c) 28 Kg/ha. (d) 25 cm. × 25 cm. (e) 3 to 4. (v) N.A (vi) Mambiliya. (vii) Unirrigated. (viii) 2 weedings ; 5 weedings. (ix) N A. (x) 12,1.1964 ; 22.1.66.

2, TREATMENTS
All combinations of (1) and (2) +3 extra treatments.
(1) 6 sources of micronutrients : S_1=Mn. Sul. ; S_2=Zn. Sul. ; S_3=Cu. Sul. ; S_4=Borax ; S_5=Soduim Molybdate and $S_6=S_1+S_2+S_3+S_4+S_5$.
(2) 2 Methods of application : M_1=Soil application and M_2=Foliar spray.
Extra treatments : To=Control, T_1=35 Kg/ha. each of N, P_2O_5 and K_2O and T_2= Spartin at 395 Kg/ha.

T_1 is also applied to 12 plots receiving micronutrients and to T_2 plot optimum dose of each micronutrients for the two methods has been tried. T_1 and T_2 applied to soil

3. DESIGN :
(i) R.B.D. (ii) (a) 15. (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) 1963—1966. (b) N.A. (c) Nil. (v) Nil. (vi) N.A.

5. RESULTS :

1963

(i) 1955 Kg/ha. (ii) N.A. (iii) 'Control vs. others' and 'T_0 vs. T_1' are highly significant. (iv) Av. yield of grain in Kg/ha.

T_0=1499 Kg/ha., T_1=1987 Kg/ha. and T_2=1935 Kg/ha.

	S_1	S_2	S_3	S_4	S_5	S_6	Mean
M_1	1917	1900	1952	2006	1987	2092	1976
M_2	1813	2162	2144	2074	1865	1988	2008
Mean	1865	2031	2048	2040	1926	2040	1992

65(MAE)

(i) 2120 Kg/ha. (ii) N.A. (iii) Main effect of S is significant. (iv) Av. yield of grain in Kg/ha.

To=1462 Kg/ha. T_1=2134 Kg/ha. and T_2=2099 Kg/ha.

	S_1	S_2	S_3	S_4	S_5	S_6	Mean
M_1	2168	2323	2254	2151	1980	2100	2163
M_2	2048	2409	2374	2117	2031	2151	2188
Mean	2108	2366	2314	2134	2006	2126	2176

C.D. for S marginal means=224 Kg/ha.

C.D. for M marginal means=212 Kg/ha.

Crop :- Paddy (*Rabi*).

Ref :- Ms. 62 (SFT) for Mysore ; 62, 63 (SFT) for N. Kanara and 63, 64 (SFT) for S. Kanara.

Site :- (District) : Mysore, N. Kanara and S. Kanara. **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) Laterite for S. Kanara and N. Kanara and Red sandy for Mysore. (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 =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 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 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) to (iii) N.A. (iv) (a) 1962—only for Mysore ; 1962 to 1963 for N. Kanara and 1963 to 1964 for S. Kanara. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

Mysore

62(S.F.T.)

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.	1192	941	483	803	985	796	1,93	164·5

Control yield=2423 Kg/ha. ; No. of trials=4.

N. Kanara

62(S.F.T.)

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.	441	603	293	567	692	681	862	56·5

Control yield=2006 Kg/ha. ; No. of trials=8.

63(S.F.T.)

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.	384	660	196	694	864	988	1087	66·7

Control yield=2001 Kg/ha. ; No. of trials=9.

S. Kanara

63(S.F.T.)

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 .n Kg/ha.	257	415	341	515	763	865	1084	91·8

Control yield=1272 Kg/ha. ; No. of trials=8.

64(S.F.T.)

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.	293	666	272	454	585	1086	1346	181·3

Control yield=1334 Kg/ha. ; No. of trials=3.

Crop :- Paddy (*Kharif*).

Ref :- Ms. 63(SFT) for N. Kanara, and Hassan ; 62(SFT) for Banglore ; 65 (SFT) for Bellary ; 63, 64 (SFT) for Chikmagalur and Mysore ; 64, 65(SFT) for Mandya.

Site :- (District) : Banglore. Bellary Chikmagalur, Hassan, Mandya, Mysore, and N. Kanara.

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) Laterite for N. Kanara ; loamy for Chikmagalur ; red loamy for Banglore and red sandy for others. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS and 3. DESIGN :

Same as in type A_1 (Rabi) on page 65.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1962 to 1966 [1963 to 1965 N.A.] for Banglore ; 1965—only for Bellary ; 1963 to 1964 for Chikmagalur ; 1964 to 1966 for Mandya ; 1963 to 1966 [1965 N.A. for Mysore and 1964 and 1965 N.A. for Hassan and N. Kanara] for others. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

N. Kanara

63(S.F.T.)

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.	327	416	223	514	652	813	850	77·7

Control yield=3124 Kg/ha. ; No. of trials=3.

Banglore

62(S.F.T.)

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 gr...n in Kg/ha.	716	1199	92	530	1315	1315	1500	179·6

Control yield=1590 Kg/ha. ; No. of trials=2.

Bellary

65(S.F.T.)

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.	590	803	468	863	1082	1225	1237	86·3

Control yield=2746 Kg/ha. ; No. of trials=8.

Chikmagalur

63(S.F.T.)

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.	425	1156	98	938	1354	2233	2757	155·9

Control yield=1532 Kg/ha. ; No. of trials=5.

64(S.F.T.)

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.	500	819	585	1216	1518	1994	2390	124·9

Control yield=2059 Kg/ha. ; No. of trials=33.

Mysore

63(S.F.T.)

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.	352	494	236	494	454	704	1047	112·0

Control yield=2183 Kg/ha. ; No. of trials=10.

64(S.F.T.)

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.	494	1660	1300	786	1032	1254	1515	174·6

Control yield=3772 Kg/ha. ; No. of trials=13.

Hassan

63(S.F.T.)

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.	463	644	437	223	915	994	1155	237·6

Control yield=2392 Kg/ha. ; No. of trials=4.

Mandya

64(S.F.T.)

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.	345	617	345	49	74	642	988	275·9

Control yield=5436 Kg/ha. ; No. of trials=3.

65(S.F.T.)

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.	283	500	300	766	833	1166	1433	78·1

Control yield=3899 Kg/ha. ; No. of trials=6.

Crop :- Paddy (*Kharif*).

Ref :- Ms. 63, 64 (SFT) for Belgaum and Shimoga; 63(SFT) for Chikmagalur and Hassan ; 63. 64, 65 (SFT) for N. Kanara and 64 (SFT) for S. Kanara.

Site :- (District) . Belgaum, Chikmagalur, Hassan, N. Kanara, Shimoga and S. Kanara.

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) Deep black for Belgaum ; Red loamy for Chikmagalur ; Laterite for N. Kanara and S. Kanara and Red sandy 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 (Rabi) on page 65.

4. GENERAL:

(i) to (iii) N.A. (iv) (a) 1963 to 1964 for Balgaum and Shimoga ; 1963— only for Chikmagalur and Hassan ; 1963 to 1966 for N. Kanara ; 1964—only for S. Kanara. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

Belgaum

63(S.F.T.)

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	471	224	364	487	557	595	44·4

Control yield=2081 Kg/ha. ; No. of trials=7.

64(S.F.T.)

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.	324	668	94	384	757	791	892	93·1

Control yield=2121 Kg/ha. ; No. of trials=5.

Chikmagalur

63(S.F.T.)

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.	434	747	284	816	1159	1920	2676	97·1

Control yield=2022 Kg/ha. ; No. of trials=18.

Hassan

63(S.F.T.)

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.	236	285	329	442	434	653	792	109·5

Control yield=1600 Kg/ha. ; No. of trials=8.

N. Kanara

63(S.F.T.)

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.	290	759	330	677	774	1182	1315	97·8

Control yield=3270 Kg/ha. ; No. of trials=13.

64(S.F.T.)

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	640	330	730	970	1270	1500	49·0

Control yield=3260 Kg/ha. ; No. of trials=30.

65(S.F.T.)

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.	299	506	231	600	891	1162	1372	43·9

Control yield=2840 Kg/ha. ; No. of trials=25.

Shimoga

63(S.F.T.)

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.	121	233	126	381	318	468	575	28·7

Control yield=2727 Kg/ha. ; No. of trials=14.

64(S.F.T.)

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.	843	856	762	1730	2141	2271	3543	559·8

Control yield=3123 Kg/ha. ; No. of trials=2.

S. Kanara
64(S.F.T.)

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.	575	875	395	810	833	996	1218	297·7

Control yield=1251 Kg/ha. ; No. of trials=2.

Crop :- Paddy (*Rabi*). **Ref :- Ms. 62 (SFT) for Mysore ; 62, 63 (SFT) for N. Kanara and 63, 64 (SFT) for S. Kanara.**

Site :- (District) : Mysore, N. Kanara and S. Kanara. **Type :- 'M';**

Object :—Type A_2—To study response curves of important cereal, cash and oilseed crops to Phosphorus applied singly in combination with other nutrients.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Laterite for N. Kanara and S. Kanara ; Red sandy for others. (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=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
$N_2P_2K_2$=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 (*rabi*) on page 65.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1962 to 1964 [1963, 1964 N.A. for Mysore, 1964 N.A. for N. Kanara] for Mysore and N. Kanara ; 1963 to 1964 for S. Kanara. (b) N.A. (c) Nil. (v) to (vii) N.A.

5 RESULTS :

Mysore
62(S.F.T.)

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.	1473	837	1168	1428	1460	1116	968	67·8

Control yield=2464 Kg/ha ; No. of trials=3.

N. Kanara
62(S.F.T.)

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.	405	260	312	492	562	663	797	59·0

Control yield=1956 Kg/ha. ; No, of trials=8.

63(S.F.T.)

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.	309	164	240	442	523	852	939	69·6

Control yield=1923 Kg/ha. ; No. of trials=9.

S. Kanara

63(S.F.T.)

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.	186	190	374	433	489	841	1038	78·5

Control yield=1378 Kg/ha. ; No. of trials=10.

64(S.F.T.)

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.	493	349	546	475	808	1143	1400	107·3

Control yield=1464 Kg/ha ; No. of trials=6.

Crop :- Paddy (*Kharif*).

Ref :- Ms. 62(SFT) for Banglore ; 65 (SFT) for Bellary and Mandya ; 63, 64 (SFT) for Chikmagalur & Mysore ; 63 (SFT) for Hassan and N. Kanara and 64 (SFT) for Shimoga and S. Kanara.

Site :- (District) : Banglore, Bellary, Chikmagalur, Hassan, Mandya, Mysore, N. Kanara, Shimoga and S. Kanara.

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 loamy for Banglore ; loamy for Chikmagalur ; laterite for N. Kanara and S. Kanara and red sandy for others. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS and 3. DESIGN :

Same as in type A_1 (Rabi) on page 70.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1962 to 1966 [1963 to 1965 N.A. for Banglore 1962, 1965 N.A. for Mysore] for Banglore and Mysore ; 1965—only for Bellary ; 1963 to 1964 for Chikmagalur ; 1963—only for Hassan and N. Kanara ; 1965 to 1966 for Mandya ; 1964—only for others. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

N Kanara
Bellary
65(S.F.T.)

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.	698	575	636	1030	1071	1389	1424	69·8

Control yield=2604 Kg/ha.; No. of trials=3.

Banglore

62(S.F.T.)

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.	399	322	738	576	983	738	1368	159·6

Control yield= 2290 Kg/ha. ; No. of trials=3.

Chikmagalur

63(S.F.T.)

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.	807	378	1367	1251	1845	2421	3475	353·4

Control yield=1416 Kg ha. ; No. of trials=3.

64(S F.T.)

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	572	819	841	1021	1620	1869	88·1

Control yield=1354 Kg/ha. ; No. of trials=11.

Hassan

63(S.F.T.)

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.	389	371	492	481	723	855	1104	142·7

Control yield=1971 Kg/ha. ; No. of trials=5.

Mandya

65(S.F.T.)

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	425	608	849	1016	1262	1708	70·4

Control yield=3899 Kg/ha ; No. of trials=9.

Mysore

63(S.F.T.)

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	248	309	363	349	544	914	115·3

Control yield=2250 Kg/ha ; No. of trials=10.

64(S.F.T.)

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.	646	471	722	910	999	1196	1852	196·6

Control yield=3753 Kg/ha ; No. of trials=13.

N. Kanara

63(S.F.T.)

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	118	263	223	442	600	706	50·5

Control yield=2857 Kg/ha. ; No. of trials=4.

Shimoga

64(S.F.T.)

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.	1491	1685	1563	2149	2445	2682	3860	529·1

Control yield=2600 Kg/ha. ; No. of triais=3.

S. Kanara

64 (S.F.T.)

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	144	44	341	301	494	838	197·4

Control yield=1387 Kg/ha. ; No. of trials=3.

Crop :. Paddy (*Kharif*).

Ref :- Ms. 63, 64 (SFT) for Belgaum ; 63 (SFT) for Chikmagalur & Shimoga and Hassan and 63, 64, 65(SFT) for N. Kanara.

Site :- (District) : Belgaum, Chikmagalur, Hassan, N. Kanara and Shimoga.

Type :- 'M'.

Object :—Type A_2—To study the response curves of important cereal, cash and oilseed crops to Phosphorus applied singly and in cambination with other nutrients.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Deep black for Belgaum ; Red loamy for Chikmagalur ; Laterite for N. Kanara and Red sandy for others. (iii) to (vi) N.A. (vii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS : and 3. DESIGN : -

Same as in type A_2 (Rabi) on page 70.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1963 to 1964 for Belgaum and Hassan [1964 for Hassan N.A] ; 1963—only for Chikmagalur and Shimoga and 1963 to 1966 for N. Kanara. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

Belgaum

63(S.F.T.)

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.	343	147	173	318	369	608	761	71·6

Control yield=299 Kg/ha. ; No. of trials=7.

64(S.F.T.)

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.	325	128	144	359	359	699	717	90·3

Control yield=1942 Kg/ha ; No. of trials=5.

Chikmagalur

63(S.F.T.)

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.	516	346	650	845	1193	1935	2698	113·5

Control yield=2283 Kg/ha ; No. of trials=16.

Hassan

63(S.F.T.)

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.	134	179	268	615	548	840	1153	98·9

Control yield=1625 Kg/ha ; No. of trials=8.

N.Kanara

63(S.F.T.)

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.	296	146	290	538	664	1127	1294	47·7

Control yield=3361 Kg/ha ; No. of trials=13.

64(S.F.T.)

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.	362	235	389	690	849	1245	1466	46·9

Control yield= 3509 Kg/ha. ; No. of trials=30.

65(S.F.T.)

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.	352	276	416	754	965	1277	1488	49·3

Control yield=2760 Kg/ha. ; No. of trials=26.

Shimoga

63(S.F.T.)

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.	151	117	217	315	365	463	559	24·7

Control yield=2542 Kg/ha ; No. of trials=14.

Crop :- Paddy (*Rabi*).

Ref :- Ms. 62(SFT) for Mysore ; 62,63, (SFT) for N. Kanara and 63, 64 (SFT) for S. Kanara.

Site :- (District) : Mysore, N. Kanara, and S. Kanara.

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) Laterite for N. Kanara and S. Kanara and Red sandy for Mysore (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=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
N applied as A/S, P_2O_5 as Super and K_2O as Mur. Pot.

3. DESIGN :

Same as in type A_1 (*Rabi*) on page 65.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1962— only for Mysore ; 1962, 1963 for N. Kanara and 1963 to 1964 for S. Kanara. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

Mysore

62(S.F.T.)

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.	803	658	812	1099	1944	756	1372	156·5

Control yield=2083 Kg/ha ; No. of trials=4.

N. Kanara

62(S.F.T.)

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	157	120	504	483	683	716	44·2

Control yield=1577 Kg/ha ; No. of trials=8.

63(S.F.T.)

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	173	243	607	695	883	934	92·5

Control yield=2170 Kg/ha ; No. of trials=9.

S. Kanara

63(S.F.T.)

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:	309	249	238	403	477	588	675	58·8

Control yield=1120 Kg/ha ; No. of trials=9.

64(S.F.T.)

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.	294	244	201	374	504	643	569	101·5

Control yield=1098 Kg/ha ; No. of trials=4.

Crop :- Paddy (*Kharif*).

Ref :- Ms. 62, (SFT) for Banglore ; 65 (SFT) for Bellary and Mandya ; 63, 64 (SFT) for Chikmagalur and Mysore ; 63 (SFT) for Hassan, and N. Kanara and 64 (SFT) for Shimoga.

Site :- (District) : Banglore, Bellary, Chikmagalur, Hassan, Mandya, Mysore, N. Kanara and Shimoga.

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 loamy for Banglore ; Loamy for Chikmagalur ; Laterite for N. Kanara and Red sandy for others. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2 TREATMENTS : and 3. DESIGN :

Same as in type A_3 (Rabi)on page 75.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1962 to 1966 [1963 to 1965 N.A.] for Banglore ; 1965—only for Bellary ; 1963, 1964 for Chikmagalur ; 1963 to 1966 [1964 and 1965 N.A. for Hassan and N. Kanara and 1965 N.A. for Mysore] for Hassan, Mysore and N. Kanara 1965 to 1966 for Mandya and 1964-only for Shimoga. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

Banglore

62(S F.T.)

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.	707	—23	184	714	392	807	430	153·3

Control yield=1990 Kg/ha. ; No. of trials=3.

Bellary

65(S.F.T.)

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.	681	276	423	849	876	1257	1100	86·0

Control yield=2560 Kg/ha. ; No. of trials=8.

Chikmagalur

63(S.F.T.)

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.	189	—49	444	864	897	2635	1696	172·0

Control yield=1581 Kg/ha. ; No. of trials=4.

54(S.F.T.)

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.	520	467	674	919	1261	1822	2306	118·4

Control yield=1910 Kg/ha. ; No. of trials=22.

Hassan

63(S.F.T.)

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	22	186	389	314	620	547	104·6

Control yield=2088 Kg/ha ; No. of trials=5.

Mandya

65(S.F.T.)

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.	908	975	1050	1133	1554	1991	1295	127·3

Control yield=3866 Kg/ha ; No. of trials=8.

Mysore

63(S.F.T.)

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.	433	9	175	262	341	413	855	118·6

Control yield=2333 Kg/ha ; No. of trials=10.

64(S.F.T.)

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.	737	545	784	1131	1082	1063	1801	205·4

Control yield=3557 Kg/ha ; No. of trials=13.

N. Kanara

63(S.F.T.)

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.	470	240	448	560	582	851	772	145·0

Control yield=3726 Kg/ha ; No. of trials=4.

Shimoga

64(S.F.T.)

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.	1877	48	1031	1549	1226	1932	2188	634·1

Control yield=3120 Kg/ha ; No. of trials=3.

Crop :- Paddy (*Kharif*).

Ref :- Ms. 63, 64 (SFT) for Belgaum, 63 (SFT) for Hassan, Chikmagalur and Shimoga 64(SFT) for Mandya and S. Kanara ; 63, 64, 65, (SFT) for N. Kanara.

Site :- (District) : Belgaum, Chikmagalur, Hassan, Mandya, N. Kanara, Shimoga & S. Kanara.

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) Deep black for Belgaum ; Red loamy for Chikmagalur ; Laterite for N. Kanara and S. Kanara ; Red sandy for others. (iii) to (vi) N.A. (vii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS : and 3. DESIGN:

Same as in type A_3 (Rabi) on page 75.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1963 to 1964 for Belgaum ; 1963—only for Chikmagalur, Shimoga and Hassan 1964—only for Mandya and S. Kanara ; 1963 to 1966 for N. Kanara. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

Belgaum

63(S.F.T.)

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.	316	124	149	405	393	572	687	83·4

Control yield=2335 Kg/ha ; No. of trials=7.

64(S.F.T)

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.	419	169	177	392	400	743	528	135·9

Control yield=2313 Kg/ha ; No of trials=5.

Chikmagalur

63(S.F.T.)

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.	438	437	684	879	1166	1978	1921	147·3

Control yield=2226 Kg/ha. ; No. of trials=14.

Hassan

63(S.F.T.)

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.	179	202	313	492	493	638	986	71·5

Control yield=1599 Kg/ha. ; No. of trials=8.

Mandya

64(S.F.T.)

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	444	444	395	370	444	741	253·3

Control yield=6671 Kg/ha. ; No. of trials=2.

N. Kanara

63(S.F.T.)

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.	393	136	278	619	747	984	1157	49·3

Control yield=3218 Kg/ha. ; No. of trials=14.

64(S.F.T.)

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	170	290	510	660	950	870	32·0

Control yield=3350 Kg/ha. ; No. of trials=30.

65(S.F.T.)

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.	336	170	267	538	684	999	1153	45·2

Control yield=2640 Kg/ha. ; No. of trials=26.

Shimoga

63(S.F.T.)

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.	174	135	288	350	395	494	556	29·6

Control yield=2713 Kg/ha ; No. of trials=14.

S. Kanara

64 (S.F.T.)

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.	428	220	376	533	513	683	703	112·2

Control yield=1078 Kg/ha ; No. of trials=3.

Crop :- Paddy (*Kharif*). **Ref :- Ms. 64(64).**

Site :- Agri. Res. Stn., Hebbal. **Type :- 'MV'.**

Object :—To find out suitable variety, optimum dose and the time of application of fertilizer to summer Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy—Paddy. (b) Paddy. (c) Nil. (ii) Clay loam. (iii) 12 and 13 2.1964. (iv) (a) Ploughing and puddling. (b) Transplanting. (c) —. (d) 25 cm.×25 cm. (e) 2. (v) 24·7 C.L./ha. of F.Y.M.+ 44·8 Kg/ha. of P_2O_5+44·8 Kg/ha. of K_2O. (vi) As per treatments. (vii) Irrigated. (viii) Weeding. (ix) N.A. (x) May, June, 1964.

2. TREATMENTS :

Main-plot treatments

All combinations of (1) and (2) with control (2 plots)

(1) 4 levels of N : N_1=33 6, N_2=67·2, N_3=100·9 and N_4=134·5 Kg/ha.

(2) 4 times of application of N : T_1=A transplanting, T_2=70 % at transplanting, 20% one month after and 10% at flowering, T_3=half, At transplantings+half one month after transplanting, T_4=Half at transplanting+¼th one month after and ¼th at flowering.

Sub-plot treatments :

3 varieties : V_1=S—2 2 2 2, V_2=T—65 and V_3=H—1043.

3. DESIGN :

(i) Split-plot. (ii) (a) 18 main-plots/replication, 3 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 6·1 m.×3·1 m. (b) 5·1 m.×2·0 m. (v) 51 cm.×51 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) In secticides and fungicides were sprayed as preventive measure. (iii) Yield of grain. (iv) (a) to (c) NO. (v) to (vii) Nil.

5. RESULTS :

(i) 5101 Kg/ha. (ii) (a) 1097·2 Kg/ha. (b) 723·4 Kg/ha. (iii) V effect and control vs. treatments are highly significant. T effect and interaction V×N are significant. (iv) Av. yield of grain in Kg/ha.

Control mean=4328 Kg/ha.

	N_1	N_2	N_3	N_4	T_1	T_2	T_3	T_4	Mean
V_1	4346	4991	5132	4940	4630	5079	4928	4772	4852
V_2	5289	5365	5896	5905	5536	5440	5604	5875	5614
V_3	5176	5517	5094	4713	4897	5132	5257	5214	5125
Mean	4937	5291	5374	5186	5021	5217	5263	5287	5197
T_1	5062	4746	4912	5364					
T_2	4981	5606	5748	4533					
T_3	5135	5360	5399	5158					
T_4	4570	5452	5438	5689					

C.D. for T marginal means =525·4 Kg/ha.
C.D. for V marginal means =294·6 Kg/ha.
C.D. for V means at the same level of N=589·2 Kg/ha.
C.D. for N means at the same level of V=712·4 Kg/ha.
C.D. for control vs. others =557·4 Kg/ha.

Crop :- Paddy (*Kharif*). **Ref :- Ms. 64(65).**

Site :- Agri. Res. Stn., Hebbal. **Type :- 'MV'.**

Object : –To find out suitable variety, optimum dose and time of application of fertilizer to Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy–Paddy. (b) Paddy. (c) Nil. (ii) Clay loam. (iii) 8.7.64/12 and 13.8.64. (iv)(a) Ploughing and puddling. (b) Transplanting. (c) —. (d) 25 cm.×25 cm. (e) 2. (v) 24.7 C.L./ha. of F.Y.M.+ 44·8 Kg/ha. of P_2O_5+44·8 Kg/ha. of K_2O. (vi) As per treatments. (vii) Irrigated. (viii) Weeding. (ix) N.A. (x) 29.12.64.

2. TREATMENTS and 3. DESIGN :

Same as in expt. no. 64(64)) on page 80.

4. GENERAL :

(i) Fair. (ii) Affected by blast. (iii) Yield of grain. (iv) (a) to (c) No. (v) to (vii) Nil.

5. RESULTS :

(i) 3279 Kg/ha. (ii) (a) 657·8 Kg/ha. (b) 830·4 Kg/ha. (iii) Main effects of T is significant. Main effects of N, V and interaction V×N are highly significant. (iv) Av. yield of grain in Kg/ha.

	N_1	N_2	N_3	N_4	T_1	T_2	T_3	T_4	Mean
V_1	3484	3061	2739	2356	2686	2859	2875	3220	2910
V_2	4850	4896	4898	5540	4551	4936	5204	5493	5046
V_3	2509	1916	1807	1323	1880	1838	1799	2038	1889
Mean	3614	3291	3148	3073	3039	3211	3293	3584	3282
T_1	3588	3197	2553	2818					
T_2	3634	3154	3102	2954					
T_3	3530	3070	3366	3204					
T_4	3705	3745	3571	3316					

C.D. for N or T marginal means =315·0 Kg/ha.
C.D. for V marginal means =338·2 Kg/ha.
C.D. for V means at the same level of N=676·3 Kg/ha.
C.D. for N means at the same level of V=635·8 Kg/ha,

Crop :- Paddy (*Ist crop*). **Ref :- Ms. 62(26).**

Site :- Paddy Breeding Stn , Mangalore. **Type :- 'MV'.**

Object : – To find out the varietal response to increased levels of N.

1. BASAL CONDITIONS :

(i) (a) Paddy—Paddy – Kolingi. (b) Kolingi. (c) Nil. (ii) Laterite, loamy in texture. (iii) 20.6.62. (iv) (a) 6 ploughings, 3 puddlings and levelling. (b) Transplanting. (c) 18 Kg/ha. (d) 25 cm.×23 cm. (e) 3. (v) G.L. at 568 Q/ha.+34 Kg/ha. of P_2O_5 as Super+28·4 Kg/ha. of K_2O as Mur. Pot. with A/S top dressing (vi) As per treatments. (vii) Unirrigated. (viii) Nil. (ix) 356 cm. (x) 13.9.62 ; 3/10/62 and 8.10.62.

2. TREATMENTS :

Main-plot treatments

4 levels of N as A/S : N_1=22·2, N_2=44·5, N_3=66·7 and N_4=89·0 Kg/ha.

Sub-plot treatments :

5 varieties : V_1=MGL—1 (medium), V_2=MGL—5 (medium), V_3=PTB—9 (medium), V_4=PTB—10 (short) and V_5=MTU—3 (medium).

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication, 5 sub-plots/main-plot. (b) 33·5 m.×9·1 m. (iii) 4. (iv) (a) and (b) 7·9 m.×1·6 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Incidence of blast disease seen on V_2 controlled by spraying Fytolan. (iii) Grain and straw yield. (iv) (a) 1962 -63 (Treatments were modified in 1963). (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2618 Kg/ha. (ii) (a) 445·4 Kg/ha. (b) 395·0 Kg/ha. (iii) Main effect of V is highly significant. (iv) Av. yield of grain in Kg/ha.

	V_1	V_2	V_3	V_4	V_5	Mean
N_1	1955	2493	3005	2671	2183	2461
N_2	2416	2716	3180	2852	2300	2693
N_3	2590	2587	3291	2664	2148	2656
N_4	2570	2792	3198	2624	2117	2660
Mean	2383	2647	3168	2703	2187	2618

C.D. for V marginal means=281·0 Kg/ha.

Crop :- Paddy (*Ist crop*). **Ref :- Ms. 63(14).**

Site :- Paddy Breeding Stn., Mangalore. **Type :- 'MV'.**

Object :—To study the varietal response to the increased levels of N.

1. BASAL CONDITIONS :

(i) (a) Paddy—paddy,—G.M. (b) G.M. (c) Nil. (ii) Laterite loamy in texture. (iii) 16.5.63/9.6.63. (iv) (a) Ploughings 5 to 6 rounds and levelling. (b) Transplanting. (c) 18 Kg/ha. (d) 25 cm.×23 cm. (e) 3. (v) G.L. at 56·8 Q/ha.+34 Kg/ha. of P_2O_5 as super+28·4 Kg/ha. of K_2O as Mur. Pot. (vi) As per treatments. (vii) Rainfed. (viii) 1 intercultivation. (ix) 264 cm. (x) 17.9.63 to 3.10.63.

2. TREATMENTS :

Main-plot treatments :

4 levels of N as A/S : N_1=22·2, N_2=44·5, N_3=66·7 and N_4=100·1 Kg/ha.

Sub-plot treatments :

5 varieties : V_1=MGL—2 (medium), V_2=MGL—5 (medium), V_3=PTB—9 (medium), V_4=PTB—10 (short) and V_5=MTU—3 (medium).

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication, 5 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) and (b) 7·92 m.×1·83 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) All varieties except PTB-10 had fair stand. (ii) 'blast observed' with early staged and was controlled by dusting time ceresan dust. (iii) Tiller counts, grain and straw yield. (iv) (a) 1962—1963 (treatments were modified in 1963). (b) No. (c) Nil. (v) to (vii) Nil.

SULTS :

289 K/ha. (ii) (a) 374·8 Kg/ha. (b) 340·3 Kg/ha. (iii) V effect alone is highly significant. (iv) Av. of grain in Kg/ha.

	V_1	V_2	V_3	V_4	V_5	Mean
N_1	3827	3086	3119	2738	3186	3191
N_2	4033	3120	3302	2967	3152	3315
N_3	4218	3200	3379	2891	3236	3385
N_4	3981	3000	3398	2865	3086	3266
Mean	4015	3102	3300	2865	3165	3289

C.D. for V marginal means=242·1 Kg/ha.

Crop :- Paddy. **Ref :- Ms. 63(15), 64(8).**

Site :- Paddy Breeding Stn., Mangalore. **Type- 'MV'.**

Object :—To study the varietal response to increased levels of N.

1. BASAL CONDITIONS :

(i) (a) Paddy—G.M.—Paddy. (b) Paddy. (c) G.L. at 56·8 Q/ha.+34 Kg/ha. of P_2O_5 as Super+ 28 4 Kg/ha. of K_2O as Mur. Pot.+11·4 Kg/ha. of N as Urea+22·7 Kg/ha. of N as A/S. (ii) Laterite loamy in texture. (iii) 16.10.63 ; 17 9.64./28.10.64. (iv) (a) 5 to 6 ploughings, puddling and levelling. (b) Transplanting. (c) 18 Kg/ha. (d) 25 cm.×20 cm. (e) N.A. (v) G.L at 56·8 Q/ha.+34 Kg/ha. of P_2O_5 as Super+28·4 Kg/ha. of K_2O as Mur. Pot 63(15).F.Y.M. at 123·6 Q/ha.+34 Kg/ha.ot P_2O_5 as Super+28·4 Kg/ha. K_2O as Mur.Pot+Top dressing with N for 64(8). (vi) As per treatments. (vii) Irrigated. (viii) 1 intercultivation. (ix) 41 cm. ;28 cm. (x) 9, 17 and 31. 1. 64 ; 23. 1. 65 ; 9. 2. 65 and 4. 3. 65.

2. TREATMENTS :

Strips in one direction :
4 levels of N as A/S : N_0=0, N_1=24.7, N_2=49·4 and N_3=73·1 Kg/ha.
Strips in perpendicular direction :
3 varieties : V_1=M.G. L—7 (medium), V_2=PTB—20 (short) and V_3=CO—25 (long duration).

3. DESIGN :

(i) Strip-plot. (ii) (a) 4 strips in one direction ; 3 strips in perpendicular direction. (b) N.A. (iii) 4. (iv) (a) and (b) 9·1 m.×3·1 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Early incidence of leaf-roller which was controlled by spraying folidol. (iii) Yield of grain. (iv) (a) 1963—1964. (b) No. (c) Nil. (v) to (vi) Nil. (vii) Error variances are heterogeneous and Treatments×years interaction is absent.

5. RESULTS ;

63(15).

(i) 2905 Kg/ha. (ii) (a) 466·0 Kg/ha. (b) 484·7 Kg/ha. (c) 111·6 Kg/ha. (iii) V effect is highly significant. (iv) Av. yield of grain in Kg/ha.

	N_0	N_1	N_2	N_3	Mean
V_1	2939	2847	2913	2852	2888
V_2	2340	2444	2139	2406	2332
V_3	3065	3721	3513	3677	3494
Mean	2782	3004	2855	2978	2905

C. D for V marginal means=419·4 Kg/ha.

64(8).

(i) 358·1 Kg/ha. (ii) (a) 501·2 Kg/ha. (b) 170·2 Kg/ha. (c) 235·0 Kg/ha. (iii) Main effects of N, V and interaction N×V are significant. (iv) Av. yield of grain in Kg/ha.

	N_0	N_1	N_2	N_3	Mean
V_1	2847	3209	3418	2860	3084
V_2	3117	3886	4398	4598	4000
V_3	3141	3645	4011	3862	3665
Mean	3035	3580	3943	3773	3583

C.D for N marginal means =462·9 Kg/ha.
C.D for V marginal means =104·1 Kg/ha.
C.D for V means at the same level of N=156·0 Kg/ha.
C.D for N means at the same level of V=245·5 24/ha.

Crop :- Paddy (*Rabi*). **Ref :- Ms. 65(33).**

Site :- Agri. Res. Stn., Mangalore. **Type 'MV'.**

Object :—To study the varietal response to increased levels of N during second crop.

1. BASAL CONDITIONS :

(i) (a) Paddy— Paddy. (b) Paddy. (c) N.A. (ii) Sandy soil. (iii) 23.9.65/4.11.65. (iv) (a) 5 ploughings and puddling. (b) Transplanting. (c) 37 Kg/ha. (d) 20 cm.×20 cm. (e) 3. (v) 50 Q/ha.of F.Y.M. (vi) As per treatments. (vii) Irrigated. (viii) Hand weeding. (ix) 334·4 cm. (x) 27.1.66.

2. TREATMENTS :

Main-plot treatments :

4 levels of N : N_0=0, N_1=24·7, N_2=49·4 and N_3=74·1 Kg/ha.

***Sub-plot treatments* :**

3 varieties : V_1=C_0 25, V_2=MGL—7 and V_3=P.T.B.—20.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) and (b) 9·1 m.×3·1 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of grain. (iv) (a) to (c) No. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 2324 Kg/ha. (ii) (a) 372·2 Kg/ha. (b) 302·4 Kg/ha. (iii) Main effect of V is highly significant. Interaction N×V is significant. (iv) Av. yield of grain in Kg/ha.

	N_0	N_1	N_2	N_3	Mean
V_1	2145	2164	2328	2938	2394
V_2	2153	1874	2087	2099	2053
V_3	2573	2577	2573	2375	2525
Mean	2290	2205	2329	2471	2324

C.D for V marginal means =220·7 Kg/ha.
C.D for V means at the same level of N=441·4 Kg/ha.
C.D for N means at the same level of N =563·8 Kg/ha.

Crop :- Paddy (*Kharif*) **Ref :- Ms. 65 (10)**

Site :- Agri. res. stn Ponempet. **Type 'M'.**

Object :—To find and the maximum dose of N and the best variety at which the paddy crop will be free from blast.

1. BASAL CONDITIONS :

(i) (a) Paddy after Paddy. (b) Paddy. (c) N.A. (ii) Sandy loam (iii) 17.6.65/22.7.65. (iv) (a) 2 ploughings and levelling. (b) Transplanting. (c) —. (d) 25 cm. × 25 cm. (e) 2 to 4. (v) 22·4 Kg/ha. of Super +67·2 Kg/ha. of Potassium Chloride+22·2 C.L./ha. of F.Y.M.+106·4 Q/ha. of G.L. (vi) As per treatments. (vii) Unirrigated. (viii) 2 hand weedings. (ix) 149·4 cm. (x) 22.12.65.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 5 varieties : V_1=Andrew soil, V_2=P.S. 1, V_3=K.B. 356, V_4=M.B. 319 and V_5=S. 67.

(2) 4 levels of N : N_1=22·4, N_2=33·6, N_3=50·4 and N_4=67·2 Kg/ha.

Seedlings were dropped in blitox solution before transplanting.

3. DESIGN :

(i) Fact in R.B.D. (ii) (a) 20. (b) 32·8 m. × 20·1 m. (iii) 3, (iv) (a) 6·9 m. × 5·0 m. (b) 6·4 m. × 4·6 m. (v) and (vi) Yes.

4. GENERAL :

(i) Lodging in some of the Plots. (ii) Slight neck infection noticed. Blast-sprayed with blitox. (iii) Yield of grain. (iv) (a) to (c) No. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1428 Kg/ha. (ii) 446·3 Kg/ha. (iii) Main effect of V is highly significant. (iv) Av. yield of grain in Kg/ha.

	V_1	V_2	V_3	V_4	V_5	Mean
N_1	1854	1155	1006	1394	1867	1455
N_2	1597	1358	1052	1280	1622	1382
N_3	1988	1052	1269	1222	1665	1439
N_4	1732	1082	1269	1246	1850	1436
Mean	1793	1162	1149	1285	1751	1428

C.D. for V marginal means=369·0 Kg/ha.

Crop :- Paddy (*Kharif*). **Ref :- Ms. 63(48).**

Site :- Agri. Res. Stn., Hebbal. **Type :- 'M'.**

Object :—To study the effect of drilling vs. Broadcasting vs. Transplanting on Paddy.

1. BASAL CONDITIONS :

(i) (a) Ragi, Groundnut or Caster—Paddy. (b) Groundnut. (c) 49 C.L./ha. of F.Y.M. (ii) Red sandy soil. (iii) 17.7.63/20.8.63. (iv) (a) 2 ploughings and 2 harrowings. (b) As per treatments. (c) to (e) N.A. (v) 8·9 Kg/ha. of N as A/S+7·9 Kg/ha. of P_2O_5 as Super. (vi) S-661. (vii) Irrigated. (viii) Weeding and gap filling. (ix) 60 cm. (x) 11,12.11.63, 4.12.63.

2. TREATMENTS :

3 methods of sowing : M_1=Drilling, M_2=Broadcasting and M_3=Transplanting.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) 12·8 m.×9·5 m. (iii) 8. (iv) (a) and (b) 9·5 m.×4·3 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) More lodgings were found in broadcasted plots. (ii) Nil. (iii) Grain and straw yield. (iv) (a) to (c) No. (v) to (vii) Nil.

5. RESULTS :

(i) 2025 Kg/ha. (ii) 344 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of grain in Kg/ha.

Treatment	M_1	M_2	M_3
Av. yield	2263	1651	2162

C.D.=357·8 Kg/ha.

Crop :- Paddy (*Kharif*). **Ref :- Ms. 61(56), 62(48).**

Site :- Agri. Res. Stn., Hebbal. **Type :- 'C'.**

Object :—To find out optimum spacing for transplanted Paddy.

1. BASAL CONDITIONS :

Paddy– Paddy. (b) Paddy. (c) 75·3 Q/ha. of Compost for 61(56) and G.M. at 2242 Kg/ha.+22·4 Kg/ha. of N as Urea+33·6 Kg/ha. of P_2O_5+11·2 Kg/ha. of N for 62(48). (ii) Clay loam. (iii) 27.6.61/1.8.61 ; 10.7.62. (iv) (a) 3 ploughings and puddling. (b) Transplanting. (c) 34 Kg/ha. (d) As per treatments. (e) 3. (v) Sesbania G.M. at 2242.Kg/ha.+22·4 Kg/ha. of N as Urea+35·9 Kg/ha. of P_2O_5 as Super+ 11·2 Kg/ha. of N as A/S. (vi) S. 199. (vii) Irrigated. (viii) 2 weedings. (ix) N.A. ; 67 cm. (x) 11.12.61 ; 16.12.61.

2. TREATMENTS :

4 spacing treatments : S_1=25 cm.×15 cm., S_2=25 cm.×20 cm., S_3=25 cm.×25 cm, and S_4=25 cm. ×30 cm.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. ; 32·9 m.×13·7 m. (iii) 4 ; 6. (iv) (a) 10·1 m.×10·1 m. ; 8·2 m.×13·7 m. (b) 10·1 m.×10·1 m. ; 7·6 m.×13·1 m. (v) Nil ; 30 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1961 to 1962. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Error variances are heterogeneous and Treatments×years interaction is absent. Results of the individual experiments are presented below.

5. RESULTS :

61(56)

(i) 3950 Kg/ha. (ii) 55·9 Kg/ha. (iii) Treatment differences are highly siguificant. (iv) Av. yield of grain in Kg/ha.

Treatment	S_1	S_2	S_3	S_4
Av. yield	3990	4058	3921	3833

C.D.=89·4 Kg/ha.

62(48)

(i) 3786 Kg/ha. (ii) 484·5 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatments	S_1	S_2	S_3	S_4
Av. yield	3706	3686	3861	3891

Crop :- Paddy (*First crop*). **Ref :- Ms. 60(52), 61(20).**

Site :- Paddy Breeding Stn., Mangalore. **Type :- 'C'.**

Object :—To find out the optimum spacing and role of interculture on Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy—G.M. (b) G.M. (c) Nil. (ii) Laterite, loamy in texture. (iii) 8.7.60; 3.7.61. (iv) (a) 4—6 ploughings. (b) Transplanting. (c) 67 Kg/ha. (d) As per treatments. (e) 2—4. (v) G.M. at 5604 Kg/ha.+N, P and K each at 33·6 Kg/ha. in 60(52), G.L. at 2965 Kg/ha.+34 Kg/ha. of P_2O_5 as Super +28·4 Kg/ha. of K_2O as Mur. Pot.+11·4 Kg/ha. of N as Urea+22·7 Kg/ha. of N as A/S top-dressed. (vi) MGL—1. (vii) Unirrigated. (vii) 2 weedings. (ix) 181 cm.; 531 cm. (v) 23.10.60 ; 26.10.61.

2. TREATMENTS :

All combinations of (1) and (2)+an extra treatments.

(1) 4 spacings : S_1=20 cm.×10 cm., S_2=20 cm.×20 cm., S_3=25 cm.×10 cm. and S_4=25 cm.×25 cm.

(2) 2 levels of interculturings : I_0=0 and I_1=interculturings (exact no. of intercultures is N.A.)

Extra treatment : E=Bulk planting by Ryots method.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) and (b) 4·2 m.×3·2 m.for 60(52), 4·1 m.×3·1 m. for 61(20). (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Mild attack of blast and moderate incidence of gall-fly. Spraying with 'paramar' and dusting with ceresan dust in 61(20). (iii) Yield of grain. (iv) (a) 1959—1961 (modified in 1960). (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 :

(i) 2528 Kg/ha. (ii) 247·4 Kg/ha. [based on 56 d.f. made up of Treatments×years interaction and pooled error]. (iii) E vs. others is highly significant. (iv) Av. yield of grain in Kg/ha.

E=2295 Kg/ha.

	S_1	S_2	S_3	S_4	Mean
I_0	2486	2418	2739	2440	2521
I_1	2528	2593	2670	2580	2593
Mean	2507	2506	2704	2510	2557

C.D. for E vs. others=186·8 Kg/ha.

Years	S_1	S_2	S_3	S_4	Sig	I_0	I_1	Sig.	G.M.	S.E./plot
1960	2397	2320	2511	2258	N.S.	2339	2404	N.S.	2345	210·1
1961	2616	2692	2898	2762	N.S.	2703	2782	N.S.	2710	279·7
Pooled	2507	2506	2704	2510	N.S.	2521	2593	N.S.	2528	247·4

Crop :- Paddy (*First Crop*). **Ref :- Ms. 60(48), 61(25).**

Site :- Paddy Breeding Stn., Mangalore. **Type :- 'C'.**

Object: —To find out maximum spacing and role of interculturing on the yield of Paddy.

1. BASAL CONDITIONS:

(i) (a) Paddy—Paddy and G.M. (b) G.M. (c) Nil. (ii) Laterite, loamy in texture. (iii) 9/10.6.60 ; 6.7.61. (iv) (a) 4 to 5 ploughings. (b) Transplanting. (c) 67 Kg/ha. for 60(48) ; Nil. (d) As per treatments. (e) 2 to 4. (v) F.Y.M. at 56 Q/ha.+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. for 60(48) and G.L. at 29 Q/ha.+34 Kg/ha. of P_2O_5 as Super+28·0 Kg/ha. of K_2O as Mur. Pot.+11·4 Kg/ha. of N as Urea+22·7 Kg/ha. of N as A/S top dressed for 61(25). (vi) P.T.B. 9 (late). (vii) Unirrigated. (viii) 2 weedings ; Nil. (ix) 181 cm. ; 547 cm. (x) 7.10.60 ; 18.10.61.

2. TREATMENTS :

Same as in expt. no. 60(52) on page 87.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 9. (b) N.A ; 4·1 m×29·9 m. (iii) 4. (iv) (a) and (b) 6·2 m×3·2 m ; 3·1 m×4·1 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil ; Attack of gall-fly and leaf-roller. (iii) Grain yield. (iv) 1959—1961 (modified in 1960) (b) No. (c) Nil. (v) and (vi) Nil. (vii) As the error variances are heterogeneous and Treatments×years interaction is absent, results of the individual experiments are presented below.

5. RESULTS :

60(48)

(i) 2643 Kg/ha. (ii) 264·7 Kg/ha. (iii) E vs. other is highly significant. (iv) Av. yield of grain in Kg/ha.

E=2207 Kg/ha.

	S_1	S_2	S_3	S_4	Mean
I_0	2585	2869	2743	2496	2673
I_1	2520	2879	2567	2916	2720
Mean	2552	2874	2655	2706	2697

C.D for E vs. others=89·8 Kg/ha.

61(25).

(i) 2629 Kg/ha. (ii) 401·3 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

E=2720 Kg/ha.

	S_1	S_2	S_3	S_4	Mean
I_0	2656	2515	2785	2474	2607
I_1	2550	2819	2790	2352	2628
Mean	2603	2667	2788	2413	2618

Crop :- Paddy (*First Crop*). **Ref :- Ms 60(49), 61(22):**

Site :- Paddy Breeding Stn., Mangalore. **Type 'C'.**

Object :—To find out optimum spacing and role of interculture on Paddy.

1. BASAL CONDITIONS :

(*i*) (a) Nil. (b) G.M.—Paddy. (c) N.A. (*ii*) *Laterite loamy in texture.* (*iii*) 22.6.60 ; 29.6.61. (iv) (a) 4 ploughings. (b) Transplanting. (c) 67 Kg/ha. (d) As per treatments. (e) 2 to 4. (v) FYM at 56 Q/ha. +N, P and K each at 33·6 Kg/ha. for 60(49) ; G.L. at 296 Q/ha.+34 Kg/ha. of P_2O_5 as Super+28·4 Kg/ha. of K_2O as Mur. Pot.+11·4 Kg/ha. of N as Urea+22·7 Kg/ha. of N as A/S top dressed for 61(22). (vi) MGL—3. (vii) Unirrigated. (viii) 2 weedings. (ix) 288 cm. ; 181 cm. (x) 31.10.60 ; 6.11.61.

2. TREATMENTS :

Same as in expt. no. 60(52) on page 87.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) 4·2 m.×3·2 m. for 60(49), 4·1 m.×3·5 m. for 61(22). (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of stemborer. (iii) Yield of grain. (iv) (a) 1959—1961 (modified in 1960). (b) No. (e) Results of combined analysis are presented under 5. Results. (v) and (vi) Nil. (vii) Error variances are homogeneous and Treaments×Years interaction is absent.

5. RESULTS:

(i) 1651 Kg/ha. (ii) 237·5 Kg/ha. [based on 56 d.f. made up of Treatments×Years interaction and pooled error]. (iii) Main effect of S is significant. E vs. others is highly significant. (iv) Av. yield of grain in Kg/ha.

E=1349 Kg/ha.

	S_1	S_2	S_3	S_4	Mean
I_0	1544	1666	1630	1724	1641
I_1	1605	1646	1786	1911	1737
Mean	1574	1656	1708	1818	1689

C.D. for S marginal means=169·0 Kg/ha.

C.D. for E vs. others =179·3 Kg/ha.

Years	S_1	S_2	S_3	S_4	Sig	I_0	I_1	Sig.	G.M.	S.E./plot
1960	1514	1626	1727	1784	N.S.	1701	1624	N.S.	1623	270·0
1961	1636	1686	1689	1851	N.S.	1581	1850	**	1679	199·8
Pooled	1575	1656	1708	1818	*	1641	1737	N.S.	1651	237·5

Crop :- Paddy (*First Crop*). **Ref :- Ms. 60(50), 61(24).**

Site :- Paddy Breeding Stn., Mangalore. **Type :- 'C'.**

Object :—To find the optimum spacing and role of interculturing on the yield of Paddy.

1. BASAL CONDITIONS :—

(i) (a) Paddy—Sweet potato ; Paddy—G.M. (b) Sweet potato ; G.M. (c) 56 Kg/ha of Lime+91 Kg/ha. of P_2O_5 as Super ; Nil. (ii) Laterite loamy in texture. (iii) 27.6.60 ; 9.6.61. (iv) (a) 4 to 6 ploughings. (b) Transplanting. (c) 67 Kg/ha. (d) As per treatments. (e) 2 to 4. (v) G.L at 44·8 Q/ha.+N, P and K each at 33·6 Kg/ha. for 60(50), G.L. at 29·6 Q/ha.+34 Kg/ha. of P_2O_5 as Super+28·4 Kg/ha of K_2O as Mur. Pot+11·4 Kg/ha. of N as Urea+22·7 Kg/ha. of N as A/S for 61(24). (vi) MTU—3. (vii) Unirrigated. (viii) Weeding. (ix) 181 cm.; 588 cm. (x) 12.10.60 ; 20.10.61.

2. TREATMENTS :

Same as in expt no 60(52) on page 87.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) and (b) 6·2 m.×3·2 m. for 60(50), 4·1 m.× 3·1 m. for 61(24). (v) Nil (vi) Yes.

4. GENERAL :

(i) Good. (ii) Moderate attack of 'Kane' controlled by spraying with Paramer for 61(24). (iii) Yield of grain. (iv) (a) 1959—1961 (modified in 1960). (b) No. (c) Results of combined analysis given under 5. Results. (v) and (vi) Nil. (vii) Error variances are homogeneous and Treatments×years interaction is absent.

5. RESULTS :

(i) 2829 Kg/ha. (ii) 331·2 Kg/ha. [based on 56 d.f. made up of Treatments×Years interaction and pooled error]. (iii) Main effect of S is significant. E vs. others is significant. (iv) Av. yield of grain in Kg/ha.

E=2593 Kg/ha.

	S_1	S_2	S_3	S_4	Mean
I_0	2924	2976	2680	2792	2843
I_1	2858	3104	2722	2812	2874
Mean	2891	3040	2701	2802	2858

C.D. for S marginal means=235·7 Kg/ha.
C.D. for E vs. others =250·0 Kg/ha.

Years	S_1	S_2	S_3	S_4	Sig.	I_0	I_1	Sig.	G.M.	S.E./plot
1960	2650	2927	2594	2706	N.S.	2700	2738	N.S.	2683	361·7
1961	3132	3153	2808	2898	N.S.	2986	3010	N.S.	2975	297·5
Pooled	2891	3040	2701	2802	*	2843	2874	N.S.	2829	331·2

Crop :- Paddy. **Ref :- Ms. 60(53), 61(21).**

Site :- Paddy Breeding Stn., Mangalore. **Type :- 'C'.**

Object :—To find out the maximum spacing and role of interculture on Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy—G.M. (b) Kolingi. (c) Nil. (ii) Laterite, loamy in texture. (iii) 12.7.60 for 60(53) and 30.6.61 for 61(21). (iv) (a) 6 ploughings. (b) Transplanting. (c) 67 Kg/ha. (d) As per treatments. (e) 4 for 60(53) and 2 to 3 for 61(21). (v) G.M. at 56 Q/ha.+22·4 Kg/ha. of N as A/S+22·4 Kg/ha. of P_2O_5 as Super+33·6 Kg/ha. of K_2O as Mur. Pot. for 60(53) and G.L. at 29 Q/ha.+34 Kg/ha. of P_2O_5 as Super+28·4 Kg/ha. of K_2O as Mur. Pot.+11·4 Kg/ha. of N as Urea+22·7 Kg/ha. of N as A/S top dressed for 61(21). (vi) M.G.L. (medium). (vii) Unirrigated. (viii) 2 weeding for 60(53) and Nil for 61(21). (ix) 181·0 cm. for 60(53) and 547 cm. for 61(21). (x) 18.10.60 for 60(53) and 6.10.61 for 61(21).

2. TREATMENTS :

Same as in expt. no. 60(52) on page 87.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) and (b) 3·2 m.×3·2 m.; 3·1 m.×4·1 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Early attack of kane', spraying folidol for 60 and attack of gall-fly for 61. (iii) Tiller counts and grain yield. (iv) (a) 1959—1961 (59 N.A). (b) No. (c) Nil. (v) Nil. (vi) The crop suffered on account of draught during flowering stage for 60(53) and heavy rainfall was rather determined to the crop causing severe shedding for 61(21). (vii) Error variances are heterogeneous and Treatments×years interaction is absent, results of individual experiments are presented below.

5. RESULTS :

60(53)

(i) 2066 Kg/ha. (ii) 413·5 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

E=2218 Kg/ha.

	S_1	S_2	S_3	S_4	Mean
I_0	1688	1953	1866	2150	1914
I_1	1924	2197	2029	2572	2180
Mean	1806	2075	1948	2361	2047

61(21)

(i) 2600 Kg/ha. (ii) 243·2 Kg/ha. (iii) Main effect of S alone is significant. (iv) Av. yield of grain in Kg/ha.

E=2426 Kg/ha.

	S_1	S_2	S_2	S_4	Mean
I_0	2189	2646	2671	2780	2572
I_1	2560	2886	2580	2659	2671
Mean	2374	2765	2625	2720	2622

C.D. for S marginal means=250·9 Kg/ha.

Crop :- Paddy (*Ist crop*). **Ref :- Ms. 60(51), 61(23).**

Site :- Paddy Breeding Stn., Mangalore. **Type :- 'C'.**

Object :—To study the effect of optimum spacing and interculture on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (e) Paddy—paddy, G.M. (b) N.A. (c) Nil. (ii) Laterite, loamy in texture. (iii) 23.6.60 ; 5.6.61. (iv) (a) 4 ploughings. (b) Transplanting. (c) 67 Kg/ha. ; N.A. (d) As per treatments. (e) 2 to 4. (v) G.M. at 56 Q/ha.+33·6 Kg/ha. of N as 33·6 Kg/ha. of P_2O_5 as Super+33·6 Kg/ha. of K_2O as Mur. Pot. for 60(51) and G.L. at 56·8 Q/ha. of P_2O_5 as Super+28·3 Kg/ha. of K_2O as Mur. Pot.+22·7 Kg/ha. of N as A/S for 61(23). (vi) M.G.L.S. (vii) Unirrigated. (viii) 2 weedings ; Nil. (ix) 181 cm. ; 547 cm. (x) 27.9.60 ; 1.10.61.

2. TREATMENTS :

Same as in expt. no. 60(52) on page 87.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 9. (b) N.A. ; 4·1 m.×29·9 m. (iii) 4. (iv) (a) and (b) 4·2 m.×3·2 m. ; 3·1 m. ×4·1 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Leaf roller attack ; Mild attack of Helminthosprorium. (iii) Yield of grain. (iv) (a) 1959 to 1961 (modified in 1960). (b) No. (c) Nil. (v) and (vi) Nil. (vii) As the variances are heterogeneous and the Treatments×years interaction is absent, results of individual experiments are presented below.

5. RESULTS :

60(51)

(i) 2808 Kg/ha. (ii) 420·1 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

E=2646 Kg/ha.

	S_1	S_2	S_3	S_4	Mean
I_0	2973	2619	2943	2577	2778
I_1	2637	3025	2849	3005	2879
Mean	2805	2822	2896	2791	2828

61(23)

(i) 2344 Kg/ha. (ii) 175·2 Kg/ha. (iii) (S×I) interaction is higly significant. (iv) Av. yield of grain in Kg/ha.

E=2303 Kg/ha.

	S_1	S_2	S_3	S_4	Mean
I_0	2609	2206	2339	2258	2353
I_1	2179	2439	2370	2389	2344
Mean	2394	2322	2355	2323	2349

C.D. for the body of S×I table=255·7 Kg/ha.

Crop :- Paddy (*2nd crop*). **Ref :- Ms. 60(61), 61(27).**

Site :- Paddy Breeding, Stn., Mangalore. **Type :- 'C'.**

Object :—To find the optimum spacing and role of interculturing on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy—G.M. (b) G.M. (c) Same as in 1·5. (ii) Laterite loamy in texture. (iii) 4.10.60 ; 7.10.61. (iv) (a) 5—6 ploughings. (b) Transplanting. (c) N.A. (d) As per treatments. (e) 4. (v) G.L. at 56 Q/ha.+N, P and K each at 33·6 Kg/ha. for 60(61) ; G.L. at 29·6 Q/ha.+Kg/ha. of P_2O_5 as Super+ 28·4 Kg/ha. of K_2O as Mur. Pot.+11·4 Kg/ha. of N as Urea+22·7 Kg/ha. of N as A/S top dressed in 61(27). (vi) PTB—20. (vii) Unirrigated. (viii) Weeding. (ix) 37 cm.; 45 cm. (x) 9.1.61 ; 6.1.62.

2. TREATMENTS :

Same as in expt no 60(52) on page 87.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) and (b) 4·1 m.×3·1 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Early attack of cane worms controlled by spraying Endrex in 60(61). Attack of leaf roller—sprayed with 'paramar'. (iii) Yield of grain. (iv) (a) 1960—1961. (b) No. (c) Results of combined analysis given under 5. Results. (v) and (vi) Nil. (vii) Tillers were nearly double in treatments with wider spacing in 61(27). Error variances are homogeneous and Treatments×years interaction is absent.

5. RESULTS :

(i) 3084 Kg/ha. (ii) 263·7 Ks/ha. (based on 56 d. f. made up of treatmenrs×years interaction and pooled error). (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

E=3212 Kg/ha.

	S_1	S_2	S_3	S_4	Mean
I_0	3192	3028	2952	3104	3069
I_1	3046	3042	3134	3046	3067
Mean	3119	3035	3043	3075	3068

Years	S_1	S_2	S_3	S_4	Sig.	I_0	I_1	Sig.	G.M.	S.E./plot
1960	2866	2642	2792	2902	N.S.	2802	2797	N.S.	2794	216·2
1961	3376	3427	3294	3248	N.S.	3335	3338	N.S.	3375	303·9
Pooled	3119	3035	3043	3075	N.S.	3069	3067	N.S.	3084	263·7

Crop :- Paddy (*2nd crop*). **Ref :- Ms. 60(64), 61(29).**

Site :- Paddy Breeding Stn., Mangalore. **Type :- 'C'.**

Object :—To find out the role of interculture and optimum spacing on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy—Paddy, G.M. (b) Paddy. (c) As under basal manuring. (ii) Laterite loamy in texture. (iii) 10.11.60 ; 23.11.61. (iv) (a) 5 to 6 ploughings. (b) Transplanting. (c) N.A. (d) As per treatments. (e) 4. (v) G.L. at 5604 Kg/ha.+N, P and K each at 33·6 Kg/ha, for 60(64) ; G.L. at 2965 Kg/ha. of P_2O_5 as Super+28·4 Kg/ha. of K_2O as Mur. pot.+11·4 Kg/ha. of N as Urea+22·7 Kg/ha. of N as A/S top dressed. (vi) CO 25 (late). (vii) Unirrigated. (viii) Weeding. (ix) 37 cm.; 45 cm. (x) 10.2.61; 21.2.62.

2. TREATMENTS :

Same as in expt no. 60(52) on page 87.

3. DESIGN ;

(i) Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) and (b) 4·1 m.×3·1 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Moderate attack of stem borer. (iii) Grain yield. (iv) (a) 1959—1961 (modified in 1960). (b) No. (c) Results of combined analysis given under 5. Results. (v) and (vi) Nil. (vii) Error variances are homogeneous and Treatments × years interaction is absent.

5. RESULTS :

(i) 2375 Kg/ha. (ii) 303·9 Kg/ha. (based on 56 d.f. made up of treatments × years interaction and pooled error.) (iii) Main effect of S is highly significant. (iv) Av. yield of grain in Kg/ha.

E=2400 Kg/ha.

	S_1	S_2	S_3	S_4	Mean
I_0	2388	2443	2436	2136	2351
I_1	2720	2279	2382	2196	2394
Mean	2554	2361	2409	2166	2372

C.D. for S marginal means=216·3 Kg/ha.

Years	S_1	S_2	S_3	S_4	Sig.	I_0	I_1	Sig.	G.M.	S.E /plot
1960	2535	2392	2386	2319	N.S.	2376	2440	N.S,	2427	266·8
1961	2573	2329	2432	2014	*	2326	2349	N.S.	2324	337·0
Pooled	2554	2361	2409	2166	N.S.	2351	2394	N.S.	2375	303·9

Crop :- Paddy (*2nd crop*). **Ref :- Ms. 60(63), 61(28).**

Site :- Paddy Breeding Stn., Mangalore. **Type :- 'C'.**

Object :— To study the role of interculture and optimum spacing on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy, G.M. (b) Paddy. (c) G.M. at 5604 Kg/ha.+34 Kg/ha. of P_2O_5 as Super+28 Kg/ha. of K_2O as Mur. Pot.+33·6 Kg/ha. of N as A/S for 60(63) and G L. at 2965Kg/ha.+34 Kg/ha. of P_2O_5 as Super+28·4 Kg/ha. of K_2O as Mur. Pot.+11·4 Kg/ha. of N as Urea+22·7 Kg/ha. of N as A/S top dressed for 61(28). (ii) Laterite, Loamy in texture. (iii) 29.10.60 ; 12.10.61. (iv) (a) 5 to 6 ploughings. (b) Transplanting. (c) N.A. (d) As per treatments. (e) 2 to 4. (v) Same as in [i(c)] above. (iv) CO. 14 (medium). (vii) Irrigated. (viii) Rotary weedings. (ix) 37 cm.; 45 cm. (v) 15.2.61 ; 3.2.62.

2. TREATMENTS :

Same as in expt no. 60(52) on page 87.

3. DESIGN :

(i) Fact. in R.B.D. (ii) 9. (b) N.A., 4·1 m.×29·9 m (iii) 4. (iv) (a) and (b) 3·1 m.×4·1 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Attack of stem borer and leaf roller attack. (iii) Tiller counts and grain yield. (iv) (a) 1959 to 1961 (modified in 1960). (b) No. (c) Nil. (v) and (vi) Nil. (vii) As the variances are heterogeneous and Treatments × Years interaction is absent, results of individual experiments are presented below :

5. RESULTS :

60(63)

(i) 2064 Kg/ha. (ii) 458·4 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

E=2016 Kg/ha.

	S_1	S_2	S_3	S_4	Mean
I_0	2301	2091	2295	2022	2177
I_1	1897	1893	2206	1879	1969
Mean	2099	1992	2250	1950	2070

61(28)

(i) 1859 Kg/ha. (ii) 302·9 Kg/ha. (ii) S effect is highly significant. (iv) Av. yield of grain in Kg/ha.

E=2111 Kg/ha.

	S_1	S_2	S_3	S_4	Mean
I_0	2187	1530	1843	1453	1753
I_1	2076	1675	2076	1779	1902
Mean	2131	1602	1959	1616	1827

C.D. for S marginal means=312·6 Kg/ha.

Crop :- Paddy (*2nd crop*). **Ref :- Ms. 60(62), 61(26).**

Site :- Paddy Breeding Stn., Mangalore. **Type :- 'C'.**

Object :— To study the role of interculture and optimum spacing on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy, G.M. (b) Paddy. (c) G.M. at 56 Q/ha.+34 Kg/ha. of P_2O_5 as Super+28 Kg/ha. of K_2O as Mur. Pot.+38·6 Kg/ha. of N as A/S for 60(62) and G.L. at 29 Q/ha.+34 Kg/ha. of P_2O_5 as Super+28·4 Kg/ha. of K_2O as Mur. Pot.+11·4 Kg/ha. of N as Urea+22·7 Kg/ha. of N as A/S top dressed for 61(26). (ii) Laterite, loamy in texture. (iii) 31.10.60 ; 24.10.61. (iv) (a) 5 ploughings+2 levellings. (b) Transplanting. (c) N.A. (d) As per treatments. (e) 2 to 3. (v) Same as in [(i) (c)] above. (vi) M.G.L.—7. (vii) Unirrigated ; irrigated. (viii) 2 rotary weedings ; Nil. (ix) 37cm. ; 45 cm. (x) 2.?.61 ; 22.1.62.

2. TREATMENTS :

Same as in expt no. 60(52) on page 87.

3. DESIGN :

(i) Fact. in R.B.D. (ii) 9. (b) N.A. ; 4·1 m.×29·9 m. (iii) 4. (iv) (a) and (b) 3·1 m.×4·1 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of leaf roller and stem borer. (iii) Tiller count and grain yield. (iv) (a) 1659 to 1961 (treatments modified in 60). (b) No. (c) Nil. (v) and (vi) Nil. (vii) As the variances are heterogeneous and Treatments × Years interaction is absent, results of individual experiments are presented below.

5. RESULTS :

60(62)

(i) 3205 Kg/ha. (ii) 464·7 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

E=3343 Kg/ea.

	S_1	S_2	S_3	S_4	Mean
I_0	3168	3361	3232	2936	3174
I_1	2834	3333	3499	3138	3201
Mean	3001	3347	3366	3037	3188

61(26)

(i) 2534 Kg/ha. (ii) 288·3 Kg/ha. (iii) Main effect of S is highly significant. (iv) Av. yield of grain in Kg/ha.

E=2582 Kg/ha.

	S_1	S_2	S_3	S_4	Mean
I_0	2582	2451	2629	2157	2455
I_1	2901	2538	2721	2246	2602
Mean	2742	2494	2675	2202	2528

C.D. for S marginal means=297·4 Kg/ha.

Crop :- Paddy (*Kharif*). **Ref :- Ms. 60(169), 61(162), 62(141).**

Site :- Agri. Res. Stn., Nagenhally. **Type :- 'C'.**

Object : –To study the effect of different methods of planting on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy–G.M. (b) N.A. (c) G.M. @ 28 Kg/ha. (ii) Red sandy loam. (iii) 8.7.60/7.8.60 ; 26.6.61/28.7.61 ; 11.7.62/3.8.62. (iv) (a) 4 ploughings, 2 puddlings and levelling. (b) Transplanting. (c) 28 Kg/ha. (d) As per treatments. (e) 2 to 3. (v) 45 to 55 Q/ha. of G.M.+22·4 Kg/ha. of P_2O_5 to G.M. 22·4 Kg/ha. of N at planting+11·2 Kg/ha. of N as top dressing applied as A/S. (vi) S. 1092 for 60(169) and SR. 26 B (medium). (vii) Irrigated. (viii) Japanese weeder at an interval of 3 weeks and 1 or 2 hand weeding. (ix) 33 cm.; 42 cm.; 37 cm. (x) 28.12.60 ; 29.11.61 ; 19.11.62.

2. TREATMENTS :

3 methods of planting of seedlings : T_1=In the form of equilateral triangle of side 20 cm:, T_2=In the form of square of side 20 cm., and T_3=In the form of rectangle of sides 20 cm. × 18 cm.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) For T_1 and T_2 : 2·1 m.×8·5 m.; for T_3 : 2·4×8·5 m. (b) For T_1 and T_2 : 1·8 m.×8·1 m.; for T_3 : 2·0×8·1 m. (v) 1 row on all sides. (vi) Yes.

4. GENERAL ;

(i) Satisfactory. (ii) Nil. (iii) Yield of grain. (iv) (a) 1260 to 1952. (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 :

(i) 3811 Kg/ha. (ii) 665·6 Kg/ha. [based on 34 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
Av. yield	4098	3606	3728

C.D.=383·4 Kg/ha.

	T_1	T_2	T_3	Sig.	G.M.	S.E./plot
1960	3915	3280	3296	*	3497	344·2
1961	5109	4331	4802	N.S.	4747	701·3
1962	3270	3208	3087	N,S.	3188	600·8
Pooled	4098	3606	3728	*	3811	565·5

Crop :- Paddy (*Kharif*). **Ref :- Ms. 60(171), 62(151).**

Site :- Agri. Res. Stn., Nagenahally. **Type :- 'C'.**

Object :—To find out the optimum spacing and seedling/hole for Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy—G.M. ; Nil. (b) G.M. (c) 22·4 Kg/ha. of P_2O_5. (ii) Red sandy loam. (iii) 14.7.60/6.8.60 ; 11.7.62/3.8.62. (iv) (a) 4 ploughings, 1 puddling and levelling. (b) Transplanting. (c) 22 Kg/ha. (d) As per treatments. (v) 11 Q/ha. of F.Y.M. for 60(171) 56 to 67 Q/ha. of G.M.+22·4 Kg/ha. of P_2O_5 to G.M. at Sowing+22·4 Kg/ha. of N at sowing+11·2 Kg/ha. of N as top dressing. (vi) SR. 26 B (Medium), (vii) Irrigated. (ix) Passing Jap. Paddy cultivator and 2 hand weedings. (ix) 33 cm., 37 cm. (x) 27.11.60 ; 27.11.62.

2. TREATMENTS :

Main-Plot treatments :

5 spacings : M_1=15 cm.×15 cm., M_2=15 cm.×23 cm., M_3=15 cm.×30 cm., M_4=23 cm.×23 cm. and M_5=30 cm.×30 cm.

Sub-Plot treatments :

3 seedlings/hole : S_1=1, S_2=2 and S_3=3.

3. DESIGN :

(i) Split-plot. (ii) (a) 5 main plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 9·1 m.×1·0 m. (b) 8·2 m.×1·0 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Mild attack of stem borer. (iii) Yield of grain and tiller counts. (iv) (a) 1960 to 1962 (Not conducted in 1961). (b) Yes. (c) Results of combined analysis are presented under 5. Results. (v) and (vi) Nil. (vii) Main-plot as well as sub-plot error variances are homogeneous and main and sub-plot Treatments × years interactions are absent

5. RESULTS:

(i) 2730 Kg/ha. (ii) (a) 868·1 Kg/ha. (b) 506·7 Kg/ha. [based on 70 d.f. made up of pooled error and treatments×years interaction]. (iii) Main effect of M is highly significant. (iv) Av. yield of grain in Kg/ha.

	M_1	M_2	M_3	M_4	M_5	Mean
S_1	2782	2549	2845	2273	3201	2730
S_2	2344	2732	2326	2403	3314	2624
S_3	2805	2801	2843	2180	3546	2835
Mean	2644	2694	2672	2286	3354	2730

C.D. for M marginal means=517·2 Kg/ha.

Years	M_1	M_2	M_3	M_4	M_5	Sig.	S_1	S_2	S_3	Sig.	G.M.
1960	2293	2522	2621	2352	2578	N.S.	2348	2435	2637	N.S.	2473
1962	2995	2866	2723	2219	4129	**	3112	2814	3033	N.S.	2986
Pooled	2644	2694	2672	2286	3354	**	2730	2624	2835	N.S.	2730

S.E./main-plot	S.E./Sub-plot
966·1	444·5
757·6	562·1
868·1	506·7

Crop :- Paddy (*Kharif*). **Ms. 62(13), 63(1), 64(14).**

Site :- Agri. Res. Stn., Nagenhalli. **Type :- 'C'.**

Object :— To study the number and proper time, to pass Japanese paddy cultivator, required for Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy after G.M. (b) G.M. (c) 22·4 Kg/ha. of P_2O_5 at the time of G.M. sowing. (ii) Sandy loam. (iii) 10.7.62/6.8.62 ; 30.5.63/10.7.63 ; 7.7.64/27.8.64. (iv) (a) 4 to 5 ploughings. (b) Transplanting. (c) —. (d) 23 cm.×23 cm. (e) 2 to 3. (v) 67 Q/ha. of G.M.+22·4 Kg/ha. of P_2O_5 as Super+6·7 Kg/ha. of N+ 11·2 Kg/ha. of N top dressed for 62 (13) ; 67 Q/ha. of G.M.+22·4 Kg/ha. of N as A/S for 63(1) ; G.L. at 56 Q/ha.+33·6 Kg/ha. of N+22·4 Kg/ha. of P_2O_5 for 64(14). (vi) S.R. 26 B (mdium). (vii) Irrigated. (viii) As per treatments. (ix) 44 cm. ; 31 cm. ; 55 cm, (x) 23.11.62 ; 24.11.63 ; 9.12.64.

2. TREATMENTS :

4 no. of cultivations : T_1=3, T_2=4, T_3=5 and T_4=6 times.
Cultivation done with Japanese paddy cultivator at an interval of 10 days starting from the date of planting.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4 for 62 (13) and 63 (1); 5 for 64 (14). (iv) (a) 8·0 m.×3·4 m.; 10·3 m.×3·2 m. ; 9·6 m.×3·7 m. (b) 7·1 m.×2·5 m. ; 9·1 m.×2·7 m. ; 8·7 m.×2·7 m. (v) and (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil for 62 (13) ; Mild incidence of stem borer for 63(1) and 64(14). Serious attack of 'Helminthosporium' Folidol sprayed for 62(13) and 63(1). Fytolan and folidol sprayed for 64(14). (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) Error variances are homogeneous and Treatments × years interaction is absent.

5. RESULTS :

(i) 3463 Kg/ha. (ii) 534·4 Kg/ha. (based on 36 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
Mean yield	3645	3535	3197	3475

Years	T_1	T_2	T_3	T_4	Sig.	G.M.	S.E./plot
1962	3445	3301	3091	3143	N.S.	3244	601·5
1963	3594	3119	2622	3142	N.S.	3119	555·2
1964	3847	4055	3741	4007	N.S.	3912	513·0
Pooled	3645	3535	3197	3475	N.S.	3463	534·4

Crop :- Paddy. **Ref :-Ms. 62(12), 63(2), 64(15).**

Site :- Agri. Res. Stn., Nagerhally. **Type :- 'C'.**

Object :— To find out the number of intercultivations required to the paddy crop with J.P.C. and to find out the suitable time to pass J.P.C. during the growth period.

1. BASAL CONDITIONS :

(i) (a) Paddy after G.M. (b) G.M. (c) 22·4 Kg/ha. of P_2O_5 for 62 (12) and 63(2) Nil for 64(15). (ii) Sandy loam. (iii) 15-7-62/10-8-62 ; 30-5-63/10-7-63; 7-7-64/27-8-64. (iv) 64 to 5 ploughings, (b) Transplanting. (c) —. (d) 23 cm. × 23 cm. for 62 (12) and 63 (2) ; 23 cm. × 15 cm for 64 (15). (e) 2 to 3. (v) G.M. at 67 Q/ha. + 22·4 Kg/ha. of P_2O_5 as Super + 6·7 Kg/ha. of N top dressed for 62(12). 67 Q/ha. of G.M. + 22·4 Kg/ha. of N as A/S for ; 63(2) ; G.M. at 56 Q/ha. + 33·6 Kg/ha. of N + 22·4 Kg/ha. of P_2O_5. (vi) S.1092. (vii) Irrigated. (viii) As per treatments. (ix) 43 cm. ; 37 cm. ; 55 cm. (x) 16.12.62 ; 16.12.63 ; 4.1.65.

2. TREATMENTS :

Same as in expt. no. 62 (13) on page 98.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4 for 62 (12) and 63 (2) ; 5 for 64(15). (iv) (a) 9·1 m. × 3·4 m. ; 10·3 m. × 3·2 m. ; 7·8 × 4·1 m. (b) 8·2 m. × 2·5 m. ; 9·1 m. × 2·7 m. ; 6·9 m. × 3·2 m. (v) and (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil for 62(12). Mild incidence of stem borer for 63(2). Attack of Helminthosporium and blast for 64 (15). (iii) Yield of grain. (iv) (a) 1962-64. (b) No. (c) Results of combined analysis are presented under 5. Results. Folidol sprayed for 62(12) and 63(2) Fytolan and folidol sprayed for 64(15). (v) and (vi) Nil. (vii) Error variances are homogeneous and Treatments × years interaction is absent.

5. RESULTS :

(i) 2200 Kg/ha. (ii) 372·1 Kg/ha. (based on 36 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
Mean yield	2129	2359	2158	2155

Years	T_1	T_2	T_3	T_4	Sig.	G.M.	S.E./plot
1962	2370	2423	2576	2446	N.S.	2454	387·3
1963	1058	1318	1101	1100	N.S.	1144	324·4
1964	2794	3140	2668	2766	N.S.	2842	431·6
Pooled	2129	2359	2158	2155	N.S.	2200	372·1

Crop :- Paddy (*Kharif*). **Ref :- Ms. 60 (263), 61(254), 62(255).**

Site :- Agri. Res. Stn., Sirsi. **Type :- 'C'.**

Object :— To study the effect of interculture on paddy crop in mid-land.

1. BASAL CONDITIONS :

(i) (a) Paddy after Paddy. (b) Paddy. (c) 12·4 C.L./ha. of F.Y.M.+33·6 Kg/ha. of N+22·4 Kg/ha. of P_2O_5. (ii) Sandy loam, laterite soil. (iii) N.A. for 60 and 61 ; 16.7.62. (iv) (a) 4 ploughings and levelling. (b) Line planting. (c) N.A. (d) 23·3 cm.×20·3 cm. (e) 4 to 6. (v) 12·4 C.L./ha. of F.Y.M. by broadcasting+33·6 Kg/ha. of N as A/S+22·4 Kg/ha. of P_2O_5 as Super. (vi) W.H.-1690. (vii) Unirrigated. (viii) As per treatments. (ix) N.A. for 60 and 61 ; 26.11.62.

2. TREATMENTS :

T_0=Control (No weeding, No interculturing, No stirring), T_1=Removing weeds by hands (15, 30, 45 and 60 days after planting) T_2=Stirring the soil by kergat hoe (4 times) and T_3=Interculturing by Rotory hoe.

3 . DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 8 for 60(263) and 61 (254) and 6 for 62 (255). (iv) (a) and (b) N.A. (v) and (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Tiller counts and grain yield. (iv) 1960 to 62. (b) Yes. (c) Results of combined analysis given under 5. Results (v) N.A. (vi) Nil. (vii) Error variances are heterogeneous and Treatments × years interaction is absent. Results of the individual experiments are presented below.

5. RESULTS :

60(263)

(i) 3025 Kg/ha: (ii) 224·3 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	3001	3115	2946	3036

61(254)

(i) 3924 Kg/ha. (ii) 760·9 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	3710	4326	3799	3861

62(255)

(i) 3111 Kg/ha. (ii) 224·8 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1	T_2	T_3
Av. yield	3043	3349	3099	2954

C.D.=276·6 Kg/ha.

Crop :- Paddy. **Ref :- Ms. 60(262), 61(253), 62(254).**

Site :- Agri. Res. Stn., Sirsi. **Type :- 'C'.**

Object :— To find out the effect of interculture on Paddy crop in low land.

1. BASAL CONDITIONS :

(i) (a) Paddy after Paddy. (b) Paddy. (c) 12·4 C.L./ha. of F.Y.M.+33·6 Kg/ha. of N+22·4 Kg/ha. of P_2O_5. (ii) Laterite sandy loam. (iii) N.A. for 60 (262) and 61 (253) ; 16.7.62. (iv) (a) 4 ploughings with iron plough and levelling. (b) Line planting. (c) N.A. (d) 20 cm.×20 cm. (e) 4 to 6. (v) 12·4 C.L./ha. of F.Y.M.+33·6 Kg/ha. of N+22·4 Kg/ha. of P_2O_5. (vi) W.H. 1690 (170 to 175 days). (vii) Unirrigated. (viii) As per treatments. (ix) 292 cm. ; N.A. ; 294 cm. (x) N.A. ; N.A. ; 28.11.62.

2. TREATMENTS :

4 cultural treatments : T_0=Control (No weeding, no interculture ; no stirring), T_1=Removing weeds by hand (15, 30, 45 and 60 days after planting), T_2=Stirring the soil in Keryat hoe-4 times and T_3=Interculturing by rotary hoe.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 8 for 60 and 61 ; 6 for 62. (iv) (a) and (b) N.A. (v) and (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1960-62. (b) Yes. (c) Results of combined analysis given under 5. Results. (v) and (vi) Nil. (vii) Error variances are heterogeneous and Treatments×years interaction is absent.

5. RESULTS :

60(262)

(i) 3438 Kg/ha. (ii) 229·8 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
Mean yield	3575	3468	3369	3340

61(253)

(i) 5248 Kg/ha. (ii) 937·1 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
Mean yield	5158	5201	5344	5289

63(254)

(i) 3502 Kg/ha. (ii) 384·4 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
Mean yirld	3434	3462	3591	3519

Crop :- Paddy. **Ref :- Ms. 61(63).**

Site :- Agri. Res. Stn., Hebbal. **Type :- 'CV'.**

Object :—To study the effect of the time of sowing on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy—Paddy. (b) Paddy. (c) 33·6 Kg/ha. of N as A/S in split doses and 33·6 Kg/ha. of P_2O_5 as single or double Super at the time of planting. (ii) Clay loam. (iii) As per treatments. (iv) (a) 3 to 4 ploughings. (b) Transplanting. (c) 23 to 38 Kg/ha. (d) 23 cm. × 23 cm. (e) 3. (v) 33·6 Kg/ha. of N as A/S applied in split doses + 35·9 Kg/ha. of P_2O_5 as Super at the time of planting. (vi) As per treatments. (vii) Irrigated. (viii) 3 weedings. (ix) N.A. (x) N.A.

2. TREATMENTS :

Main plot treatments :

5 dates of sowing : D_1=10.6.1961, D_2=17.6.1961, D_3=5.7.1961, D_4=15.7.1961 and D_5=7.8.1961.

Sub-plot treatments :

5 varieties : V_1=S—749, V_2=S—661, V_3=S—317, V_4=S—1092 and V_5=SR—26—B.

3. DESIGN :

(i) Split-plot. (ii) (a) 5 main-plots/replication, 5 sub-plots/main-plot. (b) N.A. (iii) 5. (iv) and (b) 10·1 m. × 1·1 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Grain yield. (iv) (a) to (c) No. (v) to (vii) Nil.

5. RESULTS :

(i) 3173 Kg/ha. (ii) (a) 172·3 Kg/ha. (b) 176·9 Kg/ha. (iii) Main effects of D, V and interaction D × 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	3615	3716	3590	2737	1983	3128
V_2	5072	4846	4017	2988	1707	3726
V_3	2134	1883	2008	1305	1356	1737
V_4	4846	3992	3917	2686	1532	3395
V_5	4645	4494	4670	3214	2385	3882
Mean	4062	3786	3640	2586	1793	3173

C.D. for D marginal means = 103·2 Kg/ha.
C.D. for V marginal means = 99·6 Kg/ha.
C.D. for V means at the same level of D = 223·0 Kg/ha.
C.D. for D means at the same level of V = 224·5 Kg/ha.

Crop :- Paddy (*IInd crop*). **Ref :- Ms. 60(65), 61(39), 62(30).**

Site :- Paddy Breeding Stn., Mangalore. **Type :- 'CV'.**

Object :—To find out the effect of topping on grain yield,

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) Laterite, loamy in texture. (iii) 28.10.60 ; 21.10.61 ; 28.10.62. (iv) (a) 5 to 6 ploughings, puddling and levelling. (b) Transplanting. (c) 18 Kg/ha. (d) 20 cm.×20 cm. ; 25 cm.×23 cm. ; 25 cm.×20 cm. (e) —. (v) G.L. at 56 Q/ha.+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. for 60(65) ; G.L. at 29 Q/ha.+34 Kg/ha. of P_2O_5 as super+28·4 Kg/ha. of K_2O as Mur. Pot.+45·4 Kg/ha. of N as A/S for 61(39) and G.L. at 56 Q/ha.+34 Kg/ha. of P_2O_5 as super+28·4 Kg/ha. of K_2O as Mur. Pot.+45·5 Kg/ha. of N as urea for 62(30). (vi) As per treatment. (vii) Unirrigated for 60(65) and irrigated for 61 and 62. (viii) Nil. (ix) 37 cm., 45 cm., 40 cm. (x) 11.1. 61/28.1.61 ; 11.1.62 ; 10.1.63/28.1.63.

2. TREATMENTS :

Main-plot treatments :

2 varieties : V_1=G.E.B. 24 and V_2=M.G.L. 7.

Sub-plot treatments :

3 cultural treatments : T_1=No topping at any stage, T_2=Topping upto 15 cm. when one month old and T_3=Topping whenever rank growth is seen.

3. DESIGN :

(i) Split-Plot. (ii) (a) 2 main-plots/replication and 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) and (b) 6·1 m.×3·1 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of leaf roller ; attack of stem borer ; attack of blast and leaf roller. (iii) Grain yield. (iv) (a) 1960—1962. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Sub-plot error variances are heterogeneous, hence the results of individual years are presented under 5. Results.

5. RESULTS :

60(65)

(i) 2279 Kg/ha. (ii) (a) 205·3 Kg/ha. (b) 416·6 Kg/ha. (iii) V effect is significant. (iv) Av. yield of grain in Kg/ha.

	T_1	T_2	T_3	Mean
V_1	2386	2506	2302	2398
V_2	1893	2416	2169	2159
Mean	2140	2461	2236	2279

C.D. for V marginal means=266·7 Kg/ha.

61(39)

(i) 2271 Kg/ha. (ii) (a) 589·5 Kg/ha. (b) 198·3 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	T_1	T_2	T_3	Mean
V_1	2258	2562	2351	2390
V_2	2137	2232	2087	2152
Mean	2198	2397	2219	2271

62(30)

(i) 2078 Kg/ha. (ii) (a) 370·3 Kg/ha. (b) 364·9 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	T_1	T_2	T_3	Mean
V_1	2146	2061	1800	2002
V_2	2443	1966	2053	2154
Mean	2294	2013	1926	2078

Crop :- Paddy (*Ist crop*). **Ref :- Ms. 60(54), 61(18).**

Site :- Paddy Breeding Stn., Mangalore. **Type :- 'CV'.**

Object :—To compare the performance of seedlings raised according to Japanese and local method.

1. BASAL CONDITIONS :

(i) (a) Paddy—Paddy, G.M. (b) G.M. (c) Nil. (ii) Laterite, loamy in texture. (iii) 16.6.60 ; 19.6.61. (a) 4 to 5 ploughings. (b) Transplanting. (c) N.A. (d) 20 cm.×20 cm. (e) 3. (v) G,M. at 56 Q/ha.+ 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. for 60(54) and G.L. at 49·4 Q/ha.+34 Kg/ha. of P_2O_5 as super+11·4 Kg/ha. of N as A/S+28·4 Kg/ha. of K_2O as Mur. Pot. for 61(18). (vi) As per treatments. (vii) Unirrigated. (viii) 1 weeding ; 2 intercultivations. (ix) 181 cm. ; N.A. (x) 27.9.60/3.10.60 /21.10.60 ; 1, 12, 20.10.61.

2. TREATMENTS :

Main-plot treatments :

3 varieties : V_1=M.G.L. 5, V_2=P.T.B. 9 and V_3=M.G.L. 3.

Sub-plot treatments :

2 method of raising seedlings : M_1=Japanese and M_2=Local.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plot/replication ; 2 sub-plot/main plot. (b) N.A. (iii) 4. (iv) (a) 6·2 m.×4·0 m. 6·2 m.×4·4 m. (b) 6·2 m.×4·0 m. ; 6·1 m.×4·3 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Fair ; good. (ii) Mild attack of leaf roller ; moderate attack of kane. (iii) Yield of grain. (iv) (a) 1959 to 1961. (b) No. (c) Nil. (v) and (vi) Nil. (vii) As the sub-plot error, variances are heterogeneous hence individual results are presented below.

5. RESULTS :

60(54)

(i) 2639 Kg/ha. (ii) (a) 348·5 Kg/ha. (b) 384·0 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	V_1	V_2	V_3	Mean
M_1	2785	2416	2726	2642
M_2	2740	2291	2847	2626
Mean	2762	2354	2786	2634

61(18)

(I) 2483 Kg/ha. (ii) (a) 199·7. (b) 176·2 Kg/ha. (iii) Only the interaction V×M. is significant. (iv) Av. yield of grain in Kg/ha.

	V_1	V_2	V_3	Mean
M_1	2795	2394	2328	2506
M_2	2465	2288	2628	2460
Mean	2630	2341	2478	2483

C.D. for M means at the same level of V=281·8 Kg/ha.
C.D. for V means at the same level of M=314·4 Kg/ha.

Crop :- Paddy (*IInd crop*). **Ref :- Ms. 63(16), 65(35).**

Site :- Paddy Breeding Stn., Mangalore. **Type :- 'CV'.**

Object :—Ta compare the performance of seedlings raised according to Japanese method with that of those raised according to local method.

1. BASAL CONDITIONS :

(i) (a) Paddy, kolingi, Paddy. (b) Paddy. (c) N.A. (ii) Sandy soil. (iii) 20.10.63, 31.10.65. (iv) (a) 5 to 6 ploughings and puddlings. (b) Transplanting. (c) 18 Kg/ha. ; 37 Kg/ha. (d) 25 cm.×20 cm., 20 cm.× 20 cm. (e) 3. (v) G.L at 5683 Kg/ha.+34 Kg/ha. of P_2O_5+28·4 Kg/ha. of K_2O+11·4 Kg/ha. of N for 63(16). N, P and K each at 33·6 Kg/ha. for 65(35). (vi) As per treatments. (vii) Irrigated. (viii) 1 weeding or intercultivation. (ix) 42 cm., 35 cm. (x) 8, 15, 17.1.64 ; 3, 25.1.66 : 6, 22.2.66.

2. TREATMENTS :

Main-plot treatments :

5 varieties : V_1=MGL--6, V_2=MGL—7, V_3=CO—14, V_4=CO—25 and V_5=PTB—20.

Sub-plot treatments :

2 methods of raising the seedlings : M_1=Local and M_2=Japanese method.

3. DESIGN :

(i) Split-plot. (ii) (a) 5 main-plots/replication, 2 sub-plots/main-plot. (b) N.A. (iii) 4, 6. (iv) (a) and (b) 6·1 m.×2·4 m. ; 3·7 m.×2·4 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Severe stem borer attack in early stages controlled by spraying with folidol. (iii) Grain and straw yield. (iv) (a) 1963—1965 (treatments changed in 64). (b) No. (c) Nil. (v) N.A. (vi) Nil. (vii) As the sub-plot error variances are heterogeneous, individual results are presented below.

5. RESULTS :

63(16)

(i) 2432 Kg/ha. (ii) (a) 177·9 Kg/ha. (b) 152·4 Kg/ha. (iii) Main effect of V and interaction V×M are highly significant. (iv) Av. yield of grain in Kg/ha.

	V_1	V_2	V_3	V_4	V_5	Mean
M_1	2420	2215	2457	2482	2679	2451
M_2	2715	2566	2410	1759	2615	2413
Mean	2567	2391	2434	2121	2647	2432

C.D. for V marginal means =193·9 Kg/ha.
C.D. for M means at the same level of V =105·0 Kg/ha.
C.D. for V means a tthe same level of M =252·7 Kg/ha.

5(35)

(i) 2740 Kg/ha. (ii) (a) 371·3 Kg/ha. (b) 229·3 Kg/ha. (iii) Main effect of V is significant. (iv) Av. yield of grain in Kg/ha.

	V_1	V_2	V_3	V_4	V_5	Mean
M_1	2626	2499	2620	3302	2657	2741
M_2	2758	2618	2628	2988	2702	2739
Mean	2692	2558	2624	3145	2680	2740

C.D. for V marginal means=316·2 Kg/ha.

Crop :- Paddy (*IInd crop*). **Ref :- Ms. 64(9).**

Site :- Paddy Breeding Stn., Mangalore. **Type :- 'V'.**

Object :— To compare the performance of seedlings raised according to Japanese method with that of those raised according to local method.

1. BASAL CONDITIONS :

(i) (a) Paddy, Kolingi, Paddy. (b) Paddy. (c) G.L. at 5683 Kg/ha.+34 Kg/ha. of P_2O_5 as Super+28·4 Kg/ha. of K_2O as Pot. Sul.+11·4 Kg/ha. of N as Urea+22·7 Kg/ha. of N as A/S. (ii) Lateriate, leamy in texture. (iii) M,=10.10.64 and 26.9.64. (iv) (a) 5 to 6 ploughings, puddling and levelling. (b) to (e) As per treatments according to Japanese and local method as the case may be (Details N.A.) (v) G.L. at 56·8 Q/ha.+34 Kg/ha. of P_2O_5 as Super+28·4 Kg/ha. of K_2O as Mur. Pot.+20·5 Kg/ha. of N as urea. (vi) as per treatments. (vii) Irrigated. (viii) 1 weeding with ratory weeder. (ix) 28 cm. (x) 7-2-65 ; 4-3-65.

2. TREATMENTS :

Main-plot treatments :

4 varieties : V_1=M.G.L.—6, V_2=M.G.L.—7, V_3=P.T.B.—20 and V_4=CO—14.

Sub-plot treatments :

2 methods of raising the seedlings : M_1=Japanese and M_2=Local method.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication; 2 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) and (b) 3·7 m.×3·1 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) No serious pests and diseases. (iii) Tiller counts, height measurements grain and straw weight. (iv) (a) 1963-64 (modified in 64). (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 3029 Kg/ha. (ii) (a) 573·0 Kg/ha. (b) 270·6 Kg/ha. (iii) Main effect of M is significant. (iv) Av. yield of grain in Kg/ha.

	V_1	V_2	V_3	V_4	Mean
M_1	3397	3057	3238	2848	3105
M_2	3159	2818	2981	2731	2922
Mean	3278	2938	3110	2790	3029

C.D. for V marginal means=498·4 Kg/ha.

Crop :- Paddy (*IInd Crop*). **Ref :- Ms. 60(67), 61(38).**

Site :- Paddy Breeding Stn., Mangalore. **Type :- 'CV'.**

Object :— To compare the performance of seedlings raised from heavy seeds with those from light seeds.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) Laterite, loamy in texture. (iii) 3-11-60 ; 21-10-61. (iv) (a) 5-6 ploughings. (b) Transplanting. (c) 18 Kg/ha. (d) 20 cm. × 20 cm. in 60 (97) ; 25 cm. × 23 cm. in 61 (28). (e) 3. (v) F.Y.M. at 112·0 Q/ha. +N, P and K each at 33·6 Kg/ha. for 60 (67), G.L. at 29·6 Q/ha. +34 Kg/ha. of P_2O_5 +28·4 Kg/ha. of K_2O +11·4 Kg/ha. of N for 61 (38). (vi) As per treatments. (vii) Unirrigated. (viii) 1 weeding. (ix) 31 cm., 44 cm. (x) 28-1-61, 11. 17-1-62.

2. TREATMENTS :

Main-plot treatments :

2 varieties : V_1=M.G.L.—7 and V_2=P.T.B.—20.

Sub-plot treatments :

2 types of seedlings : T_1=Seedlings raised from heavy seeds and T_2=Seedlings raised from light seeds.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 Main-plots/replication, 2 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) and (b) 4·3 m. × 1·2 m. for 60 (67), 3·0 m. × 1·8 m. for 61(38). (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Severe attack of leaf roller controlled by dusting with gammaxine in 60 (67). Moderate attack of stem borer and leaf spot. Sprayed with 'Paramor' and 'Fytolan' in 61(38). (iii) Yield of grain. (iv) (a) 1960-61. (b) No. (c) Results of combined analysis are presented under 5. Results. (v) and (vi) Nil. (vii) Main-plot error variances are homogeneous and Treatments × years interaction absent. Sub-plot error variances are homogeneous and Treatments × years interaction is absent.

5. RESULTS :

(i) 2813 Kg/ha. (ii) (a) 353·9 Kg/ha. (based on 11 d.f. made up of pooled error and Treatments × years interaction). (b) 637·2 Kg/ha. (based on 2 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	Mean
T_1	2682	2930	2806
T_2	2700	2939	2820
Mean	2691	2934	2813

C.D. for V marginal means=224·9 Kg/ha.

Years	V_1	V_2	Sig.	T_1	T_2	Sig.	G.M.	S.E./Main-plot	S.E./Sub-plot
1960	2228	2368	N.S.	2398	2198	N.S.	2298	374·6	332·9
1961	3154	3501	N.S.	3214	3441	N.S.	3327	330·8	260·0
Pooled	2691	2934	*	2806	2820	N.S.	2813	353·9	637·2

Crop :- Paddy (*Ist Crop*). **Ref :- Ms. 61(31).**

Site :- Paddy Breeding Stn., Mangalore. **Type :- 'CV'.**

Object :— To compare the performance of seedlings raised from light and heavy seeds on Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy, Paddy, G.M. (b) G.M. (c) Nil. (ii) Laterite, Loamy in texture. (iii) 10.6.61. (iv) (a) 5 ploughings. (b) Transplanting. (c) 18 Kg/ha. (d) 25 cm.×23 cm. (e) —. (v) G.L. at 1344 Kg/ha.+ 37·9 Kg/ha. of P_2O_5 as Super+28·4 Kg/ha. of K_2O as Mur. Pot.+11.4 Kg/ha. of N as Urea+22·7 Kg/ha. of N as A/S top dressed. (vi) As per treatments. (vii) Unirrigated. (viii) Nil. (ix) 547 cm. (x) 5.10.61.

2. TREATMENTS :

Main-plot treatments :

2 varieties : V_1=PTB—9 (Late.) and V_2=MGL—5 (medium).

Sub-plot treatments :

2 types of seeds T_1=Heavy seed and T_2=Light seeds.

3. DESIGN :

(i) Split plot. (ii) (a) 2 main-plots/replication ; 2 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) and (b) 3·1 m.×1·8 m. (v) Nil. (vii) Yes.

4. GENERAL :

(i) Good. (ii) Mild attack of 'gallfly' notied. Sprayed with Paramar' to check the spread. (iii) Grain yield. (iv) (a) 1959-61. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Expt. not conducted in 1960.

5. RESULTS :

(i) 2770 Kg/ha. (ii) (a) 616·2 Kg/ha. (b) 179·4 Kg/ha. (iii) None of the effect is Significant. (iv) Av. yield of grain in Kg/ha.

	V_1	V_2	Mean
T_1	2846	2676	2761
T_2	2858	2700	2779
Mean	2852	2686	2770

Crop :- Paddy (*1st Crop*). **Ref :- Ms. 60(56), 61(32).**

Site :- Paddy Breeding Stn., Mangalore. **Type :- 'CV'.**

Object :— To compare the performance of aged seedlings vs. young seedlings.

1. BASAL CONDITIONS :

(i) (a) Paddy-G.M. (b) *Sesbania* (G.M.). (c) Nil. (ii) Laterite. loamy in texture. (iii) 12.7.60 ; 18.6.61. (iv) (a) 4 to 6 ploughings. (b) Trar splanting. (c) 18 Kg/ha. (d) 20 cm.×20 cm. for 60(56), 25 cm.×23 cm. for 61 (32). (e) 4. (v) G.M. at 56 Q/ha.+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. (vi) As per treatments. (vii) Unirrigated. (viii) 1 hand: weeding. (ix) 181 cm., N.A. (x) 22.10.60 ; 2.10.61.

2. TREATMENTS :

Main-plot treatments :

2 varieties : V_1=MGL—1 and V_2=MGL—5.

Sub-plot treatments :

2 types of seedlings : T_1=Aged and T_2=Young seedlings.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication, 2 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) and (b) 4·8 m.×1·1 m. for 60 (56) ; 3·1 m.×1·8 m. for 61 (32). (vi) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of leaf roller controlled by spraying folidol in 60 (56). Attack of Gallfly spraying with 'Paramar' in 61 (32). (iii) Yield of grain. (iv) (a) 1959-1961 (59 N.A.) (b) No. (c) Results of combined analysis are presented under 5. Results. (v) N.A. (vi) Nil. (vii) Main-plot as well as sub-plot error variance are homogeneous and Treatments×years interaction are absent.

5. RESULTS :

(i) 2216 Kg/ha. (ii) (a) 411·9 Kg/ha. (based on 11 d.f. made up of pooled error and Treatments×years interaction). (b) 367·5 Kg/ha. (based on 22 d.f. made up of pooled error and Treatments×years interaction). (iii) Main effects of V and T are highly significant. (iv) Av. yield of grain in Kg/ha.

	V_1	V_2	Mean
T_1	2205	1661	1933
T_2	2611	2388	2500
Mean	2408	2024	2216

C.D. for V marginal means=261·7 Kg/ha.
C.D. for T marginal means=220·0 Kg/ha.

Years	V_1	V_2	Sig.	S·E./mains plot	T_1	T_2	Sig.	G.M.	S.E./sub-plot
1960	2269	1840	**	256·7	1689	2420	**	2054	270·1
1961	2548	2210	N.S.	550·4	2177	2580	*	2379	389·3
Pooled	2408	2025	**	411·9	1933	2500	**	2216	367·5

—=—

Crop :- Paddy (*IInd crop*). **Ref :- Ms. 60(61), 61(37).**

Site :- Paddy Breeding Stn., Mangalore. **Type :- 'CV'.**

Object :—To compare the performance of aged seedlings with young seedlings.

1. BASAL CONDITIONS :

(i) (a) Paddy, G.M., Paddy. (b) Paddy. (c) G.M. at 56 Q/ha.+34 Kg/ha. of P_2O_5+33·6 Kg/ha. of N +28 Kg/ha. of K_2O for 60(61) G.L. at 29·6 Q/ha.+11·4 Kg/ha. of N+34 Kg/ha. of P_2O_5+28·4 Kg/ha. of K_2O for 61(37). (ii) Laterite, loamy in texture. (iii) 3.11.60 ; N.A. (iv) (a) 5 to 6 ploughings. (b) Transplanting. (c) 18 Kg/ha. (d) 20 cm.×20 cm. ; 25 cm.×23 cm. (e) 3. (v) G.L. at 56 Q/ha.+ N, P and K each at 33·6 Kg/ha. for 60(61). G.L. at 29·6 Q/ha.+34 Kg/ha. of P_2O_5+11·4 Kg/ha. of N as A/S for 61(37). (vi) As per treatments. (vii) Unirrigated. (viii) 1 weeding. (ix) 37 cm., 45 cm. (x) 21.1.61 ; 11.1.62.

2. TREATMENTS :

Main-plot treatments :

2 varieties : V_1=MGL—6 and V_2=GEB—24.

Sub-plot treatments :

2 types of seedlings : T_1=Aged and T_2=Young seedlings.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main plots/replication, 2 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) and (b) 4·3 m.×1·8 m. ; 3·1 m.×1·8 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Fair. T_1 lodged in 61(37) a fortnight before harvest. (ii) Heavy attack of leaf roller at later stage. Controlled by dusting gammaxene in 60(61) Attack of stem borer sprayed with endrex in 61(37). (iii) Yield of grain. (iv) (a) 1959 (Ist crop) –1961. (b) No. (c) Results of combined analysis given under 5. Results. (v) N.A. (vi) Nil. (vii) In 1959 varieties were different. Main-plot error variances are heterogeneous and treatments × years interaction is present. Sub-plot error variances are homogeneous, and treatments × years interaction is absent.

5. RESULTS :

(i) 2281 Kg/ha. (ii) (a) 3013·7 Kg/ha. (based on 1 d.f. made up Treatments × years interaction). (b) 304·0 Kg/ha. (based on 22 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.

	V_1	V_2	Mean
T_1	2256	2213	2234
T_2	2212	2444	2328
Mean	2234	2328	2281

Years	V_1	V_2	Sig.	T_1	T_2	Sig.	G.M.	S.E./main-plot	S.E./sub-plot
1960	1444	2408	**	2204	1648	**	1926	421·0	274·8
1961	3024	2248	**	2265	3008	**	2636	139·0	330·8
Pooled	2234	2328	N.S.	2234	2328	N.S.	2281	3013·7	304·0

Crop :- Paddy (*Ist crop*). **Ref :- Ms. 60(46), 62(23), 63(12).**

Site :- Paddy Breeding Stn., Mangalore. **Type :- 'CV'.**

Object : –To compare the method of early drilling with late transplanting during the first crop season in double crop land.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Kolingi (G.M.) ; Paddy ; Sesbania (G.M.). (c) Nil. (ii) Laterite, loamy in texture. (iii) 15, 16.7.60 ; 9.7.62 ; 11.7.63. (iv) (a) 5 to 6 ploughings. (b) As per treatments. (c) 67 Kg/ha., 18 Kg/ha., N.A. (d) 20 cm. × 20 cm. ; 25 cm. × 23 cm. (e) –. (v) 56 Q/ha. of F.Y.M.+56 Q/ha. of G.M.+22·4 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. for 60(46) ; F.Y.M. at 61·7 Q/ha.+34 Kg/ha. of P_2O_5 as super+28·4 Kg/ha. of K_2O as Mur. Pot.+11·0 Kg/ha. of N as A/S for 62(23) and 61·7 Q/ha. of F.Y.M.+34 Kg/ha of P_2O_5 as super+28·4 Kg/ha. of K_2O as Mur. Pot. for 63(12). (vi) As per treatments. (vii) Unirrigated. (viii) 1 weeding and 1 intercultivation. (ix) 181 cm. ; 356 cm. ; 564 cm. (x) 9.9.60 and 11.10.60 ; 28.9·62 and 5.10.62 ; 12, 17 and 30.9.63.

2. TREATMENTS :

Main-plot treatments :

3 varieties : V_1=MGL—5, V_2=PTB—9 and V_3=PTB—20.

Sub-plot treatments :

2 methods of sowing : M_1=Drilling and M_2=Transplanting.

Drilling on 20.5.60 ; 26.4.62 and 10.5.63 respectively.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication, ; 2 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) and (b) 6·1 m.×7·6 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of grain. (iv) (a) 1960 (1st crop) to 1963 (expt. not conducted in 61). (b) No. (c) Nil. (v) Nil. (vi) Severe damage by birds in PTB—28 plots for 63(12). (vii) Sub-plot error variances are heterogenous. Individual results are given below.

5. RESULTS :

60(46)

(i) 1793 Kg/ha. (ii) (a) 295·0 Kg/ha. (b) 261·5 Kg/ha. (iii) Main effects of V and M are highly significant. (iv) Av. yield of grain in Kg/ha.

	V_1	V_2	V_3	Mea
M_1	2497	2349	1536	2127
M_2	1507	1995	874	1459
Mean	2002	2172	1205	1793

C.D. for V marginal means =360·9 Kg/ha.
C.D. for M marginal means =241·6 Kg/ha.

62(23)

(i) 1247 Kg/ha. (ii) (a) 250·6 Kg/ha. (b) 108·6 Kg/ha. (iii) Main effects of V and M are highly significant. (iv) Av. yield of grain an Kg/ha.

	V_1	V_2	V_3	Mean
M_1	1516	782	1799	1366
M_2	1398	385	1601	1128
Mean	1457	584	1700	1247

C.D. for V marginal means=306·6 Kg/ha.
C.D. for M marginal means=100·2 Kg/ha.

63(12)

(i) 1471 Kg/ha. (ii) (a) 110·4 Kg/ha. (b) 265·4 Kg/ha. (iii) Main effects of V and M are highly Interaction V×M is significant. (iv) Av. yield of grain in Kg/ha.

	V_1	V_2	V_3	Mean
M_1	2085	207	1068	1120
M_2	2342	1197	1926	1822
Mean	2214	702	1497	1471

C.D. for V marginal means =135.1 Kg/ha.
C.D. for M marginal means =245·0 Kg/ha.
C.D. for M means at the same level of V=424·6 Kg/ha.
C.D. for V means at the same level of M=332·9 Kg/ha.

Crop :- Paddy (*Ist crop*). **Ref :- Ms. 60(55), 61(30), 62(21).**

Site :- Paddy Breeding Stn., Mangalore. **Type :- 'CV'.**

Object :—To study the effect of topping paddy plants on grain yield.

1. BASAL CONDITIONS :

(i) (a) Paddy – Paddy, G.M. (b) Kolingi (G.M). (c) Nil. (ii) Laterite, loamy in texture. (iii) 26.6.60, 17.6.61, 16.6.62. (iv) (a) 5 to 6 ploughings. (b) Transplanting, (c) 18 Kg/ha. (d) 20 cm. × 20 cm. in 60(55), 25 cm. × 23 cm. for others. (e) 4. (v) G.M. at 56 Q/ha. + 67·2 Kg/ha. of N + 33·6 Kg/ha. of P_2O_5 + 33·6 Kg/ha. of K_2O for 60(55), G.L at 59·3 Q/ha. + 34 Kg/ha. of P_2O_5 + 28·4 Kg/ha. of Mur. Pot. + 45·4 Kg/ha. of N for others. (vi) As per treatments. (vii) Unirrigated. (viii) 1 weeding. (ix) 181 cm., 547 cm., 256 cm. (x) 6.10.60 ; 2, 13.10.61 ; 4, 5.10.62.

2. TREATMENTS :

Main-plot treatments :

2 varieties : V_1 = MGL—5 and V_2 = PTB - 9.

Sub-plot treatments :

3 cultural treatments : T_1 = Not topped at any stage, T_2 = Topped at a height of 15 cm. one month after planting and T_3 = Topped only when rank growth is observed.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) and (b) 6·2 m. × 4·4 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. Lodging occured in 62(21). (ii) Leaf roller became severe at vegetative stage controlled by spraying with folidol in 60(55). Attack of 'kane' in 61(30). (iii) Yield of grain. (iv) (a) 1960–1962. (b) No. (c) Results of combined analysis given under 5. Results. (v) and (vi) Nil. (vii) Main-plot as well as sub-plot error variances are homogeneous and Treatments × years interactions are present.

5. RESULTS :

(i) 2551 Kg/ha. (ii) (a) 800·9 Kg/ha. (based on 2 d.f. made up of Treatments × years interaction). (b) 648·0 Kg/ha. (based on 8 d.f. made up of Treatments × years interaction). (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	T_1	T_2	T_3	Mean
V_1	2846	2709	2364	2640
V_2	2628	2465	2292	2462
Mean	2737	2587	2328	2551

Years	V_1	V_2	Sig.	S.E./main-plot	T_1	T_2	T_3	Sig.	G.M.	S.E./Sub-plot
1960	2501	2624	N.S.	388·0	2490	2650	2546	N.S.	2562	204·6
1961	2463	1937	*	465·0	2470	2142	1988	*	2200	327·7
1962	2956	2825	N.S.	127·0	3252	2968	2451	*	2891	172·5
Pooled	2640	2462	N.S.	800 9	2737	2587	2328	N.S.	2551	648·0

Crop :- Paddy (*Ist crop*). **Ref :- Ms. 60(47), 62(22), 63(11).**

Site :- Paddy Breeding Stn., Mangalore. **Type :- 'CV'.**

Object :—To study the effect of early drilling vs. late transplanting in single crop land.

1. BASAL CONDITIONS :

(i) (a) Paddy - G.M. (b) G.M. (c) Nil. (ii) Laterite, loamy in texture. (iii) 15, 16.7.60 ; 17.7.62 ; 11.7.63. (iv) (a) 5 to 6 ploughings. (b) As per treatments. (c) 67 Kg/ha. for 60(47), 18 Kg/ha. for 62(22). (d) 20 cm. × 25 cm. for 60(47); 25 cm. × 23 cm. for 62(22). (e) 3. (v) 56 Q/ha. of F.Y.M.+56 Q/ha. of G.M.+22·4 Kg/ha. of N+33·6 Kg/ha. of P_2O_5+33·6 Kg/ha. of K_2O in 60(47) ; F.Y.M. at 61 Q/ha.+34 Kg/ha. of P_2O_5+28·4 Kg/ha. of K_2O+11·4 Kg/ha. of N for 62(22) and 63(11). (vi) As per treatments. (vii) Unirrigated. (viii) Weeding and interculturing. (ix) 181 cm.; 356 cm.; 264 cm. (x) 11.8.60; 22.8.60 ; 12, 20.10.62 ; 6, 24, 30.9.63.

2. TREATMENTS :

Main-plot treatments :

3 varieties : V_1=MGL—5, V_2=PTB—9 and V_3=PTB—28

Sub-plot treatments :

2 methods of sowing : M_1=Drilling and M_2=Transplanting.

Drilling on 20.5.60, 7.6.62 and 4.5.63 respectively.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 2 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) and (b) 7·6 m. × 6·1 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of grain. (iv) (a) 1960—1963 (Not conducted in 1961). (b) No. (c) Results of combined analysis given under 5. Results. (v) N.A. (vi) Nil. (vii) Main-plot as well as sub-plot error variances are homogeneous and Treatments × years interactions are present.

5. RESULTS :

(i) 1564 Kg/ha. (ii) (a) 1501·4 Kg/ha. (based on 4 d.f. made up of Treatments × years interaction). (b) 718·0 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.

	V_1	V_2	V_3	Mean
M_1	1654	810	1718	1394
M_2	1891	1258	2057	1735
Mean	1772	1034	1888	1564

Years	V_1	V_2	V_3	Sig	S.E./main-Plot	M_1	M_2	Sig.	S.E./Sub-plot
1960	1038	1153	1392	N.S.	325·4	926	1464	**	180·5
1962	1344	916	1742	**	215·4	1233	1434	**	140·6
1963	2936	1033	2530	**	110·4	2024	2309	**	171·6
Pooled	1772	1034	1888	N.S.	1501·4	1394	1735	N.S.	718·0

Crop :- Paddy (*Kharif*). **Ref :- Ms. 64(31).**

Site :- Agri. Res. Stn., Hebbal. **Type :- 'CM'.**

Object :— To study the effect of N_2 and plant spacing on the yield of Taichung—65 variety of Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy-Paddy. (b) Paddy. (c) 12·4 C.L./ha. of F.Y.M.+33·6 Kg/ha. of N+33·6 Kg/ha. of P_2O_5. (ii) Red sandy soil. (iii) 20 and 30.7 64. (iv) (a) 3 ploughings. (b) Transplanting. (c) and (d) As per treatments. (e) 3. (v) 125·6 Q/ha. of Compost+37·7 Q/ha. of G.L. applied with soil prior to transplanting. (vi) T. 65. (vii) Irrigated. (viii) 2 weedings. (ix) 89 cm. (x) 2nd fortnight of Dec. 64.

2. TREATMENTS :

Main-plot treatments :

4 manurial treatments : M_0=0, M_1=67·2 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., M_2=2 M_1 and M_3=3 M_1.

Sub-Plot treatments :

4 spacings : S_1=23 cm.×23 cm., S_2=15 cm.×23 cm., S_3=15 cm.×15 cm. and S_4=10 cm.×15 cm.

Half dose of N and full dose of P_2O_5 and K_2O were applied on 27.7.1964 and half dose of N applied on 7.9.1964.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication, 4 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a) 10·0 m. ×10·0 m. (b) 9·1 m.×9·1 m. (v) 46 cm.×46 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Pests were controlled by spraying folidol twice and one spray of Brodeaux mixture. (iii) Grain yield. (iv) (a) to (c) No. (v) to (vii) Nil.

5. RESULTS :

(i) 915 Kg/ha. (ii) (a) 276·2 Kg/ha. (b) 110·6 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	M_0	M_1	M_2	M_3	Mean
S_1	1009	793	776	1179	939
S_2	986	698	743	1076	876
S_3	1007	933	919	1109	992
S_4	937	742	742	989	852
Mean	985	792	795	1088	915

Crop :- Paddy. **Ref :- Ms. 60(25), 61(60), 62(47), 63(33).**

Site :- Agri. Res. Stn., Hebbal. **Type :- 'CM'.**

Object :— To find out the advantages of line sowing over broadcasting with and without green manuring.

1. BASAL CONDITIONS:

(i) (a) Paddy after Paddy for 61 (60) and 63 (33); Nil. (b) Paddy. (c) Different nitrogeneous fertilizers @ 33·6 Kg/ha. for 60 (25); Nil ; Nil ; 12·4 C.L./ha. of F.Y.M.+22·4 Q/ha. of G.M.+35·9 Kg/ha. of P_2O_5 as Super+33·6 Kg/ha. of N as A/S for 63(33). (ii) Clay loam for 60, 61 and 62; N.A. (iii) 27.6.60 ; 27.6.61 ; 7.6.62 ; 12.6.63. (iv) (a) 2 to 3 ploughings. (b) As per treatments. (c) N.A. (d) 15 cm. between rows. (e) —. (v) 24·7 C.L./ha. of F.Y.M.+16·8 Kg/ha. of N as A/S+35·9 Kg/ha. of P_2O_5 as Super for 60 (25) ; 12·4 C.L./ha. of Compost+16·8 Kg/ha. of N as A/S+35·9 Kg/ha. of P_2O_5 as Super for 61(60) ; 19·8 C.L /ha. of Compost+16·8 Kg/ha. of N as A/S+35·9 Kg/ha. of P_2O_5 as super for 62 (47) and 19·8 C.L./ha. of Compost+15·7 Kg/ha. of N as A/S+31·4 Kg/ha. of P_2O_5 as Super for 63. (vi) H -320 (late). (vii) Irrigated. (viii) Passing cultivator and weeding for 60 (25); weeding. (ix) 52 cm. ; N.A. ; 67 cm. ; N.A. (x) 3.1.61 ; 29.12.61 ; 3.1.63 ; 6.1.64.

2. TREATMENTS :

3 cultural manurial treatments : T_1=line sowing by seed drill with 23 cm. between lines, T_2=Broadcasting and T_3=Line sowing and sowing sannhemp in between the line by the same seed drill.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) 30·2 m.×10·0 m. ; 38·4 m.×15·9 m. ; 28·9 m.×6·9 m. ; 43·9 m.×13·7 m. (iii) 5 for 60, 61 and 62, and 6 for 63 (33). (iv) (a) 10·0 m.×10·0 m. ; 12·8 m.×15·9 m. ; 9·6 m.×6·9 m. ; 14·6 m.×13·7 m. (b) 9·5 m.×10·0 m.; 12·2 m.×15·2 m. ; 9·1 m.×6·4 m.; 14·0 m. ×13·1 m. (v) 9 rows left alround. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Tiller counts and grain yield. (iv) (a) 1960 to 1963. (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 :

(i) 2639 Kg/ha. (ii) 529·1 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_1	T_2	T_3
Av. yield	2571	2622	2723

Years	T_1	T_2	T_3	Sig.	G.M.	S.E./plot
1960	1556	2126	2147	N.S.	1943	384·1
1961	2593	2392	2395	N.S.	2460	418·8
1962	3249	3220	3229	N.S.	3233	800·2
1963	2834	2730	3056	N.S.	2874	463·9
Pooled	2571	2622	2723	N.S.	2639	529·1

Crop :- Paddy (*Ist Crop*). **Ref :- Ms. 64(49).**

Site :- Paddy Breeding Stn., Mangalore. **Type :- 'CM'.**

Object : To compare the effect of drilling with heavy manuring Vs transplanting with normal manuring.

1. BASAL CONDITIONS :

(i) (a) Paddy, Paddy, G.M. (b) G.M. (c) Nil. (ii) Laterite with loamy in texture. (iii) 13.5 64. (iv) (a) 5 ploughings and levelling. (b) Drilling. (c) 86 Kg/ha. (d) 20 cm. between rows (e) N.A. for drilling. (a) Ploughing and puddling 5 rounds. (b) Transplanting, (c) —. (d) 20 cm.×20cm. (e) 2 for transplanting. (v) As per treatments. (vi) PTB-9 (Medium). (vii) Unirrigaied. (viii) Weeding in drilled plots and interculturing in transplanted plots. (ix) 254 cm. (x) 11.10.64.

2. TREATMENTS :

4 cultural-cum-manurial treatments : M_1=Drilling with heavy manuring, M_2=M_1+top dressing with G.L.M. at 5683 Kg/ha., M_3=Transplanting with normal manuring and M_4=Transplanting with heavy manuring.

Heavy manuring : F.Y.M. at 247 Q/ha.+59·3 Kg/ha. of P_2O_5 as Super+61·8 Kg/ha. of K_2O as Mur. Pot. +burnt earth at 49·4 Q/ha.+59·3 Kg/ha. of N as A/S.

Narmal manuring : G.L.M. at 56·8 Q/ha.+34 Kg/ha. of P_2O_5 as Super+24·8 Kg/ha. of K_2O as Mur. Pot. +29·6 Kg/ha. of N as A/S.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) and (b) 6·1 m.×7·6 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Germination was found rather poor in all drilled plots due to lack of moistures. (ii) Mild attack of leaf roller and sprayed with folidol. (iii) Grain and straw yield. (iv) (a) to (c) No. (v) to (vii) Nil.

5. RESULTS :

(i) 3534 Kg/ha. (ii) 209·5 Kg/ha. (iis) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	M_1	M_2	M_3	M_4
Av. yield	2852	2738	4162	4384

C D.=257·8 Kg/ha.

Crop :- Paddy **Ref :- Ms. 61(42), 62(20), 63(11), 64(1), 65(27).**

Site :- Paddy Breeding Stn., Mangalore. **Type :- 'CM'.**

Object :—To find the residual effect of digging, if any, in the Chineese, Jap. and local method of Paddy cultivation.

1. BASAL CONDITIONS :

(i) (a) Paddy–G.M. (b) G.M. (c) Nil. (ii) Laterite, loamy in texture. (iii) N.A./7.7.61; N.A./24.7.62; 10.6.63/22.7.63 ; 21.7.64/16.6.64 ; 22.5.65/24.6.65. (iv) (a) 5 ploughings. (b) Transplanting. (c) —. (d) 25 cm.×23 cm. (e) 2 to 3. (v) Inorganic fertilisers and bulky manures applied. (vi) PTB–9 , M.G.L—1. (vii) Unirrigated. (viii) Nil for 61(42), 62(20) and 64(1) Intercultivation for 63(11) ; hand weeding for 65(27). (ix) 531 cm.; 356 cm.; 264 cm.; 234 cm.; 254 cm. (x) 4.11.61 ; 4.11.62 ; 28.10.63 ; 5.11.64 ; 21.10.65.

2. TREATMENTS ;

3 cultural cum manurial treatments :

	T_1=Local improved method	T_2=Jap. method	T_3=Chineese method
Basal dressing	56·0 Q/ha. of G.L.	67·2 Q/ha. of G.L.+14·8 C.L/ha. of F.Y.M.	Digging upto 46 cm. and mixing the layer in 3 layers with 502·1 Q/ha. of F.Y.M.
At. planting	33·6 Kg/ha. of P_2O_5 as Super+33·6 Kg/ha. of K_2O as Mur. Pot.+22·4 Kg/ha. of N as A/S.	17·9 Kg/ha. of P_2O_5 as Super+22·4 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.+44·8 Kg/ha. of N as A/S.
Top dressing	11·2 Kg/ha. of N as A/S at germination.	17·9 Kg/ha. of P_2O_5 as Super+22·4 Kg/ha. of N as A/S at germination.	44·8 Kg/ha. of N as A/S one month after planting +44·8 Kg/ha. of N as A/S at flowering.

The above treatments were applied in 1959.

3. DESIGN :

(i) (a) R.B.D. (b) 3. (ii) 27·4 m.×9·1 m. (iii) 6. (iv) (a) and (b) 9·1 m.×9·1 m. (v) Yes. (iv) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Moderate attack, of 'gallfly' and leaf roller sprayed with 'paramar for 61(42). Attack of gallfly sprayed with folidol for 62(20) ; Nil for other years. (iii) Yield of grain years. (iv) (a) 1961 – 1965. (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 :

(i) 2430 Kg/ha. (ii) 429·0 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_1	T_2	T_3
Mean yield	2345	2323	2622

C.D.=255·4 Kg/ha.

Yeas	T_1	T_2	T_3	Sig.	G.M.	S.E./plot
1961	1512	1570	1804	* *	1629	116·3
1962	1333	1493	2044	* *	1623	233·3
1963	1892	1811	2211	* *	1971	134·9
1964	3759	3469	3508	N.S.	3579	200 9
1965	3229	3273	3544	N.S.	3349	382·5
Pooled	2345	2323	2622	*	2430	429·0

Crop :- Paddy **Ref :- Ms. 65(105), 65(106), 65(107).**

Site :- Agri. Res. Stn., Mugad. **Type :- 'CM'.**

Object :—To find out the best level of NPK that would give maximum yield with the best hybrids of Mysore state with different seed rates.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) Clay loam. (iii) 9.6.65. (iv) (a) Ploughing, clad crushing, harrowing and grubbing. (b) Drilling with seed drill. (c) As per treatments. (d) 30 cm. between rows. (e) —. (v) 12.4.CL/ha. of F.Y.M. (vi) A—S 1944 for 65(105): B. S—2222 for 65(106) and C—Y 4 for 65(107). (vii) Unirrigated. (viii) Weeding, interculturing, roguing and manuring. (ix) 104 cm. (x) 24.12.65.

2. TRETMENTS :

Main-plot treatments :

3 levels of manures : M_1=44·8 Kg/ha. of N+22·4 Kg/ha. of P_2O_5+22·4 Kg/ha. of K_2O, M_2=67·2 Kg/ha. of N+33·6 Kg/ha. of P_2O_5+33·6 Kg/ha. of K_2O and M_3=89·6 Kg/ha. of N+44·8 Kg/ha. of P_2O_5+44·8 Kg/ha. of K_2O.

Sub-plot treatments :

3 seed rates : S_1=67, S_2=90 and S_3=112 Kg/ha.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) 7·3 m. × 6·1 m. (b) 6·1 m. × 4·9 m. (v) 4 rows alround. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Blue beetle affected—sprayed with folidol. (iii) Yield of grain. (iv) (a) 1965. (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

5. RESULTS:

65(105)

(i) 3699 Kg/ha. (ii) (a) 352·3 Kg/ha. (b) 331·6 Kg/ha. (iii) Interaction M×S is significant. (iv) Av. yield of grain in Kg/ha.

	S_1	S_2	S_3	Mean
M_1	3363	3531	4625	3840
M_2	2606	4120	3615	3447
M_3	3615	4204	3615	3811
Mean	3195	3952	3952	3699

C.D. for S means at the same level of M=811·5 Kg/ha.
C.D. for M means at the same level of S=870·5 Kg/ha.

65(106)

(i) 3727 Kg/ha. (ii) (a) 637·9 Kg/ha. (b) 462·3 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	S_1	S_2	S_3	Mean
M_1	2943	4625	4709	4092
M_2	2606	3784	3952	3447
M_3	3531	3447	3952	3643
Mean	3027	3952	4204	3727

65(107)

(i) 4326 Kg/ha. (ii) (a) 453·4 Kg/ha. (b) 389·6 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	S_1	S_2	S_3	Mean
M_1	3531	4709	4961	4400
M_2	3868	4204	4793	4288
M_3	4036	4297	4540	4291
Mean	3812	4403	4765	4326

Crop :- Paddy. **Ref :- Ms. 60(168), 61(160), 62(15).**

Site :- Agri. Res. Stn., Nagenhally. **Type :- 'CM'.**

Object :- To study the comparative effects of Jhackersey, Japaneese, Chinees and local improved methods on Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) N.A. (c) N.A. for 60(168) and 61(160) and 22·4 Kg/ha. of P_2O_5 for 62(15). (ii) Red loam. (iii) 14.7.60/7.8.60 ; 18.7.61/17.8.61 ; 11.7.62/7.8.62. (iv) (a) 5 ploughings. (b) Transplanting. (c) N.A. (d) and (e) As per treatments. (v) Nil. (vi) SR. 26 B. (medium). (vii) Irrigated. (viii) Passing Jap. paddy cultivator 15 days after planting+hand weeding 30 days after planting. (ix) 33 cm. ; 51 cm. ; 37 cm. (x) 29.11.60 ; 18.12.61 ; 19.11.62.

2. TREATMENTS :

4 methods of cultivation : T_1=Jhackersey : 67·2 Q/ha. G.M.+33·6 Kg/ha. of N in 3 doses with a spacing of 23 cm.×23 cm. and 1 seedling/hole, T_2=Japanese : 67·2 Q/ha. G.M.+112 Kg/ha of A/S and 112 Kg/ha. Super at planting and 112 Kg/ha. of A/S one month after planting with a spacing of 23 cm.×23 cm. and 3 seedlings/hole. T_3=Chinese : 500 Q/ha. Compost+112 Kg/ha. N in 4 doses+44·8 Kg/ha. of N+44·8 Kg/ha. of P_2Q_5 in one dose at planting with a spacing of 15 cm.×15 cm. with 2 seedlings/hole and T_4=Local improved : 67·2 Q/ha. of G.M.+33·6 Kg/ha. of N in 3 doses+22·4 Kg/ha. P_2O_5 in one dose at planting with a spacing of 20 cm.× 20 cm. and 3·4 seedlings/hole.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) and (b) Varies from treatment to treatment. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1960 to 1962. (b) No. (c) Results of combined analysis given under 5. Results. (v) and (vi) Nil. (vii) Error variances are heterogeneous and Treatments ×years interaction is present.

5. RESULTS :

(i) 3494 Kg/3a. (ii) 954·4 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 :	3375	3685	3473	3442

Years	T_1	T_2	T_3	T_4	Sig.	G.M.	S.E./plot
1960	3730	4078	3655	3301	N.S.	3691	770·0
1961	4167	4603	4447	3919	N.S.	4284	435·8
1962	2227	2374	2316	3107	**	2506	416·0
Pooled	3375	3685	3473	3442	N.S.	3494	954·4

Crop :- Paddy (*Kharif*). **Ref :- Ms. 63(4), 64(13).**

Site :- Agri. Res. Stn., Nagenhally. **Type :- 'CM'.**

Object :—To study the optimum dose of manure and spacing required for short duration variety of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) G.M. (c) 22·4 Kg/ha. of P_2O_5 as Super ; Nil. (ii) Red sandy loam. (iii) 15.7.63 ; 29.7.64/5.9.64. (iv) (a) 3 to 5 ploughings. (b) Transplanting. (c) —. (d) As per treatments. (e) 1. (v) 56·0 Q/ha. of G.M. (vi) CH_2 (early). (vii) Irrigated. (viii) Passing of J.P.C. (ix) 31 cm. ; 53 cm. (x) 5.12.63 ; 4.12.64.

2. TREATMENTS :

Same as in exp.. no. 63(3) given below.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 9 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 7·3 m.×3·7 m. (b) 3·7 m.×2·4 m. (v) and (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Incidence of stem borer in 63(4). Folidol sprayed. Blitex and folidol sprayed as a precautionery measure in 64(13). (iii) Yield of grain. (iv (a) 1963 to 1964. (b) No. (c) Results of combined analysis given under 5. Results. (v) and (vi) Nil. (vii) Main as well as sub-plot error variances are homogeneous and interaction of treatments with years is absent in both.

5. RESULTS :

(i) 2270 Kg/ha. (ii) (a) 1362·5 Kg/ha. [based on 5 d.f. made up of pooled error and interaction of S× years]. (b) 521·2 Kg/ha. [based on 76 d.f. made up of pooled error and interactions of N, P, N×P, N×S, P×S with years]. (iii) Interaction P×S alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	P_1	P_2	P_3	S_1	S_2	Mean
N_1	2629	2312	2102	2556	2140	2348
N_2	2345	2363	1943	2337	2097	2217
N_3	2182	2175	2378	2416	2073	2245
Mean	2385	2283	2141	2436	2103	2270
S_1	2779	2374	2156			
S_2	1991	2193	2126			

C.D. for P means at the same level of S=346·5 Kg/ha.
C.D. for S means at the same level of P=722·8 Kg/ha.

Years	S_1	S_2	Sig.	G.M.	S.E./Main/plot
1963	2505	1981	N.S.	2243	1943·6
1964	2368	2226	N.S.	2297	609·1
Pooled	2436	2103	N.S.	2270	1362·5

Years	N_1	N_2	N_3	Sig.	P_1	P_2	P_3	Sig.	G.M.	S.E./plot
1963	2300	2235	2194	N.S.	2287	2326	2116	N.S.	2243	644·6
1964	2396	2199	2296	N.S.	2484	2241	2166	N.S.	2297	448·1
Pooled	2348	2217	2245	N.S.	2385	2283	2141	N.S.	2270	521·2

Crop :- Paddy (*Kharif*). **Ref :- Ms. 63(3), 64(12).**

Site :- Agri. Res. Stn., Nagenhally. **Type :- 'CM'.**

Object :—To study the optimum dose of manure and spacing required for medium duration variety of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) G.M. (c) 22·4 Kg/ha. of P_2O_5 as Super ; Nil. (ii) Red sandy loam (iii) 15.7.63 ; 14.7.64/7.9.64. (iv) (a) 3 to 5 ploughings. (b) Transplanting. (c) —. (d) As per treatments. (e) 1. (v) 56·0 Q/ha. of G.M. (vi) S.R. 26 B (medium). (vii) Irrigated. (viii) Passing J.P.C. (ix) 31 cm. ; 55 cm. (x) 5.12.63 ; 26.12.64.

2. TREATMENTS :

Main-plot treatments :

2 spacing : S_1=15 cm.×23 cm. and S_2=23 cm.×23 cm.

Sub-plot treatments :

(1) 3 levels of N as A/S : N_1=33·6, N_2=50·4 and N_3=67·2 kg/ha.

(2) 3 levels of P_2O_5 as Super : P_1=22·4, P_2=33·6 and P_3=44·8 Kg/ha.

P_2O_5 applied in one dose at planting and N applied in two equal doses 1st at the time of planting and 2nd top dressed one month after.

3. DESIGN

(i) Split-plot. (li) (a) 2 main-plots/replication ; 9 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 8·4 m. ×3·6 m. ; 8·7 m.×3·2 m. (b) 6·7m.×3·4 m. ; 8·2 m.×2·7 m. (v) Yes. (vi) Yes.

4. GENERAL INFORMATION :

(i) Satisfactory. (ii) Incidence of stem borer in 63(3). Incidence of stem borer and mild attack of Helmin thosphorium in 64(12). Spraying with Folidol. (iii) Yield of grain. (iv) (a) 1963—1964. (b) No. (c) Results of combined analysis given under 5. Results. (v) Nil. (vi) Nil. (vii) Main as well as sub-plot error variances are homogeneous and Treatments×years interaction is absent in both.

5. RESULTS :

(i) 2678 Kg/ha. (a) 1174·1 Kg/ha. (based on 5 d.f. made up of pooled error and interaction of S×Years). (b) 453·5 Kg/ha. (based on 76 d.f. made up of pooled error and interaction of Treatment components N, P, N×P, N×S, P×S with years). (iii) Interaction N×S alone is significant. (iv) Av. yield of grain in Kg/ha.

	P_1	P_2	P_3	S_1	S_2	Mean
N_1	2698	2582	2897	2436	3016	2726
N_2	2633	2737	2714	2686	2703	2695
N_3	2700	2703	2440	2577	2652	2614
Mean	2677	2674	2684	2566	2790	2678
S_1	2650	2524	2524			
S_2	2704	2823	2843			

C.D. for N means at the same level of S=299·4 Kg/ha.

C.D. for S means at the same level of N=627·2 Kg/ha.

Years	S_1	S_2	Sig.	G.M.	S.E./main plot
1963	2748	3268	N.S.	3008	695·3
1964	2385	2313	N.S.	2349	1334·2
Pooled	2566	2790	N.S.	2678	1174·1

Years	N_1	N_2	N_3	Sig.	P_1	P_2	P_3	Sig.	G.M.	S.E./sub-plot
1963	3092	3028	2904	N.S.	2968	2959	3097	N.S.	3008	498·4
1964	2360	2362	2325	N.S.	2387	2389	2271	N.S.	2349	479·3
Pooled	2726	2695	2614	N.S.	2677	2674	2684	N.S.	2678	453·5

Crop :- Paddy (*Kharif*). **Ref :- Ms. 60(MAE).**

Site :- MAE Centre, Mercara. **Type :- 'CM'.**

Object :—Type VII To study the effect of different cultural practices and manures on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Heavy loam. (iii) As per treatments. (iv) (a) 6 ploughings and final levelling. (b) Broadcast. (c) 22 Kg/ha. (d) and (e) As per treatments. (v) 56 Q/ha. of F.Y.M. (vi) B A.M.—3 (7½ months duration). (vii) Irrigated. (viii) Weeding and interculturing by rotary weeder. (ix) 394 cm. (x) 18.1.61 to 23.1.61.

2. TREATMENTS :

Main-plot treatments :

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

(1) 3 dates of planting: D_1=1.7.1960, D_2=16.7.1960 and D_3=1.8.1960.

(2) No. of seedling per hole : R_1=2, R_2=4 and R_3=6 seedlings/hole.

(3) 3 spacings : S_1=15 cm. × 15 cm., S_2=20 cm. × 20 cm. and S_3=25 cm. × 25 cm.

Sub-plot treatments :

All combinations of (1) and (2)

(1) 2 levels of N as A/S : N_0=0 and N_1=44·8 Kg/ha.

(2) 2 levels of P_2O_5 : P_0=0 and P_1=44·8 Kg/ha.

3. DESIGN

(i) Split-plot Confd. (ii) (a) 9 main-plots/block ; 3 blocks/replication and 4 sub-plots/main-plot. (b) N.A (iii) 1. (iv) (a) 10·1 m × 5·0 m. (b) 9·3 m. × 4·3 m. for S_1, 8·9 m. × 4·1 m. for S_2 and 8·9 m. × 4·1 m. for S_3. (v) N.A. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) to (c) No. (v) and (vi) N.A. (vii) Nil.

5. RESULTS :

(i) 3443 Kg/ha. (ii) (a) 995·2 Kg/ha. (b) 345·9 Kg/ha. (iii) Main effect of N, P are highly significant. Interactions S × N, D × N, S × P and D × S × P are significant. (iv) Av. yield of grain in Kg/ha.

	D_1	D_2	D_3	R_1	R_2	R_3	S_1	S_2	S_3	P_0	P_1	Mean
N_0	3874	3846	3191	3652	3588	3671	3615	3754	3542	3717	3557	3637
N_1	3246	3625	2878	3394	3200	3156	3016	3302	3432	3357	3143	3250
Mean	3560	3735	3034	3523	3394	3713	3315	3528	3487	3537	3350	3443
P_0	3726	3781	3104	3560	3551	3500	3505	3625	3481			
P_1	3395	3689	2965	3486	3237	3326	3125	3431	3493			
S_1	3366	3542	3037	3874	3348	2723						
S_2	3422	4077	3084	3661	3274	3649						
S_3	3892	3586	2982	3034	3560	3867						
R_1	3477	3837	3255									
R_2	3311	3957	2913									
R_3	3892	3411	2935									

C.D. for N or P marginal means =135·2 Kg/ha.

C.D. for N or P means at the same level of D or S =234·0 Kg/ha.

C.D. for D or S means at the same level of N or P=595·9 Kg/ha.

Crop :- Paddy (*Kharif*). **Ref :- Ms. 63(7).**

Site :- Agri. Res. Stn., Nagenhally. **Type :- 'CMV',**

Object :— To study the effect of early, normal and late planting on indica-Japanica Hybrids under the usual and heavy manuring.

1. BASAL CONDITIONS :

(i) (a) Paddy after Paddy. (b) G.M. (c) 22·4 Kg/ha. of P_2O_5 as Super. (ii) Red sandy loam. (iii) As per treatments. (iv) (a) 5 ploughings. (b) As per treatments. (c) —. (d) 23 cm.×23 cm. (e) 1. (v) 56·0 Q/ha. of G.M. (vi) As per treatments. (vii) Irrigated. (viii) 2 hand weedings and passing J.P.C. cultivater once. (ix) 37 cm. (x) As per treatments.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2).

(1) 3 methods of planting : P_1=Early, P_2=Normal and P_3=Late planting.

(2) 2 levels of manuring : M_1=heavy and M_2=usual manuring.

Sub-plot treatments :

3 varieties : V_1=S—1904, V_2=S—2222 and V_3=S—1092.

Other details N.A.

3. DESIGN :

(i) Split-plot. (ii) (a) 6 main-plots/replication, 3 sub-plots/main-plot. (b) 9·1 m.×57·6 m. (iii) 4. (iv) (a) 9·1 m.×3·2 m. (b) 8·2 m.×2·7 m. (v) and (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Insect pests-sprayed folidol as a precautionary measure. (iii) Yield of grain. (iv) (a) to (c) No. (v) to (vii) Nil.

5. RESULTS :

(i) 2525 Kg/ha. (ii) (a) 532·6 Kg/ha. (b) 579·8 Kg/ha. (iii) Main effects of P and V are highly significant and interaction P×V is highly significant. (iv) Av. yield of grain in Kg/ha.

	P_1	P_2	P_3	V_1	V_2	V_3	Mean
M_1	2479	2690	2245	1611	3088	2714	2471
M_2	2692	2849	2193	1656	3098	2981	2578
Mean	2586	2770	2219	1634	3093	2848	2525
V_1	861	2385	1655				
V_2	3761	2947	2570				
V_3	3134	2977	2432				

C.D. for P marginal means =322·2 Kg/ha.
C.D. for V marginal means =338·3 Kg/ha.
C.D. for V means at the same level of P=585·9 Kg/ha.
C.D. for P means at the same level of V=575·8 Kg/ha.

Crop :- Paddy (*Rabi*). **Ref :- Ms. 64(32).**

Site :- Agri. Res. Stn., Hebbal. **Type :- 'CMV'.**

Object :—To study the optimum spacing and dose of application of fertilizers to different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy after Paddy. (b) Paddy. (c) Compost at 49·4 C.L./ha. (ii) Grey soil. (iii) 20 to 22-2-64. (iv) (a) 4 ploughings. (b) Transplanting. (c) 15 Kg/ha. (d) As per treatments. (e) 2. (v) Compost at 49 4 C.L./ha.+44 8 Kg/ha. of P_2O_5+44·8 Kg/ha. of K_2O. (vi) As per treatments. (viii) Irrigated. (viii) 3 weedings by rotary weeder and one hand weeding. (ix) N.A. (x) 26 and 27.5.64.

2. TREATMENTS :

Main-plot treatments :

4 levels of N as A/S : N_0=0, N_1=33·6, N_2=67·2 and N_3=100·9 Kg/ha.

Sub-plot treatments :

All combinations of (1) and (2).

(1) 4 spacings : S_1=23 cm.×15 cm., S_2=23 cm.×23 cm., S_3=23 cm.×30 cm. and S_4=30 cm.×30 cm.

(2) 2 varieties: V_1=S—1043 and V_2=China 10.

N applied in two equal doses at planting and 40 days after planting.

3. DESIGN:

(i) Split-plot. (ii) (a) 4 main-plots/replication, 8 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 4·6 m.× 4·6 m. (b) 3·7 m.×3·7 (v) 46 cm.×46 cm. (vi) Yes.

4. GENERAL :

(i) Fair, lodging in N_3 plots. (ii) Nil. (iii) Yield of grain. (iv) (a) 1964-65. (b) No. (c) Nil. (v) and (vii) Nil.

5. RESULTS :

(i) 4189 Kg/ha. (ii) (a) 1070·3 Kg/ha. (b) 388·2 Kg/ha. (iii) N effect is significant. Main effect of V and S are highly significant. Interaction V×S is significant. (iv) Av. yield of grain in Kg/ha.

	S_1	S_2	S_3	S_4	N_0	N_1	N_2	N_3	Mean
V_1	4208	4121	3711	3460	3270	4086	4215	3931	3875
V_2	4593	4507	4516	4399	3917	4471	4890	4737	4504
Mean	4401	4314	4114	3929	3593	4278	4552	4334	4189
N_0	3712	3632	3631	3399					
N_1	4541	4383	4182	4.06					
N_2	4792	4584	4588	4246					
N_3	4560	4655	4054	4067					

C.D. for N marginal means =605·3 Kg/ha.
C.D. for S marginal means =193·2 Kg/ha.
C.D. for V marginal means =136·6 Kg/ha.
C.D. for the body of V×S table=273·2 Kg/ha.

Crop :- Paddy (*Kharif*). **Ref :- Ms. 65(22).**

Site :- Agri. Res. Stn., Nagenhally. **Type :- 'P'.**

Object :— To study the effect of drying for about 10 days at peak tillering stage on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy, G.M., Paddy. (b) Paddy. (c) 56·0 Q/ha. of G.M.+33·6 Kg/ha. of N+22·4 Kg/ha. of P_2O_5. (ii) Sandy loam. (iii) 22.6.65/28.7.65. (iv) (a) Ploughing, in corporation of G.M. by ploughing and puddling. (b) Transplanting. (c) 49 Kg/ha. (d) 20 cm.×20 cm. (e) N.A. (v) 56·0 Q/ha. of G.M.+ 67·2 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. (vi) S. 1092 late. (vii) Irrigated. (viii) Hand weeding and working J.P.C. weeder. (ix) 29 cm. (x) 20.12.65.

2. TREATMENTS :

4 irrigational treatments : T_1=Control (usual irrigation), T_2=Continuous irrigation+surface drying for 10 days at peak tillering stage, T_3=Keeping water depth of 5·1 cm. and T_4= Keeping soil saturated (No standing water).

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 3. (iv) (a) 8·3 m.×4·3 m. (b) 7·6 m.×3·4 m. (v) 2 rows on each side. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Yield of grain. (iv) (a) to (c) No. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 3076 Kg/ha. (ii) 205·8 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
Av. yield	3467	3583	3130	2123

C.D.=411·0 Kg/ha.

Crop :- Paddy (*Kharif*). **Ref :- Ms. 60(167), 61(159), 62(17).**

Site :- Agri. Res. Stn., Nagenhally. **Type :- 'I'.**

Object :— To find the effect of different intervals of irrigation on Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy-Paddy. (b) G.M. (c) 28·0 Kg/ha. of N for 60 (167) ; 22·4 Kg/ha. of P_2O_5 for 61 and 62. (ii) Red sandy loam. (iii) 14.10.60/5.8.60 ; 26.6.61/26.7.61 ; 11.7.62/2.8.62. (iv) (a) 3 to 4 ploughings, 1 puddling and leveling. (b) Transplanting. (c) 22 Kg/ha. (d) 25 cm.×23 cm. (e) 2 to 3. (v) G.M. 45 to 56 Q/ha.+22·4 Kg/ha. of P_2O_5 to G.M. at sowing+110 Q/ha. of F.Y.M.+33·6 Kg/ha. of N in 2 doses for 60(167) and 61(159) ; 672 Q/ha. of G.M.+22·4 Kg/ha. of P_2O_5+33·6 Kg/ha. of N as A/S+11·2 Kg/ha. of N as top dressing for 62(17). (vi) S.R. 26 B (medium). (vii) As per treatments. (viii) 2 hand weedings. (ix) 33 cm. ; 51 cm. ; 37 cm. (x) 25.11.60 ; 18.11.61 ; 9.11.62.

2. TREATMENTS :

5 irrigational treatments : I_1=Irrigation daily, I_2=Water changed daily, I_3=Irrigation at an interval of 4 days, I_4=Irrigation at an interval of 8 days and I_5=Irrigation as and when necessary to keep the soil moist.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. for 60 and 61 ; 17·8 m.×9·1 m. for 62. (iii) 4. (iv) (a) 3·9 m.×9·8 m. ; 3·9 m.×9·8 m. ; 9·1 m.×3·6 m. (b) 3·3 m.×8·9 m. ; 3·0 m.×8·0 m. ; 8·2 m.×2·8 m. (v) 25 cm.×46 cm ; 46 cm.×92 cm. ; 46 cm.×36 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Spraying of folidol ; Nil ; Attack of stem borer. (iii) Yield of grain. (iv) (a) 1960 to 62. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Error variances are heterogeneous and Treatments×years interaction is absent, results of the individual experiments are presented below.

5. RESULTS :

60(167)

(i) 3601 Kg/ha. (ii) 604·7 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	I_1	I_2	I_3	I_4	I_5
Av. yield	3864	3694	3312	3100	4034

61(159)

(i) 4899 Kg/ha. (ii) 310·4 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	I_1	I_2	I_3	I_4	I_5
Av. yield	4836	4836	5256	4521	5046

62(17)

(i) 4069 Kg/ha. (ii) 335·6 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of grain in Kg/ha.

Treatment	I_1	I_2	I_3	I_4	I_5
Av. yield	4329	4263	3986	3573	4193

C.D.=517·1 Kg/ha.

Crop :- Paddy (*Kharif*). **Ref :- Ms. 63(32).**

Site :- Agri. College, Hebbal. **Type :- 'D'.**

Object :—To find out efficiency and advantages of weedicides in controlling weeds in paddy fields.

1. BASAL CONDITIONS :

(i) (a) Paddy after Paddy. (b) Paddy. (c) 12·35 C.L./ha. of F.Y.M.+22·4 Q/ha. of G.M.+33·6 Kg/ha. of N as A/S+35·9 Kg/ha. of P_2O_5 as Super. (ii) (a) and (b) N.A. (iii) 27.8.63. (iv) (a) Ploughing twice-puddling twice and passing plank harrow once. (b) Transplanting, (c) 34 Kg/ha. (e) 25 cm. between rows. (v) 62 Q/ha. of F.Y.M.+16·8 Q/ha. of G.M.+44·5 Kg/ha. of A/S+79·1 Kg/ha. of Super. (vi) S. 661. (vii) Irrigated. (viii) As per treatments. (ix) N.A. (x) 8.1.64.

2. TREATMENTS :

5 spraying treatments : T_0=Control, T_1=Passing rotary weeder only, T_2=One spraying with stanvac F.34, T_3=2 spraying with stanvac F.34 and T_4=3 spraying with stanvac F.34.

Ist spraying was done 30 days after transplanting and 2nd and. 3rd sprays were done at an interval of 20 days.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 10·1 m.×10·1 m. (b) 9·5 m.×9·5 m. (v) 30 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Good, (ii) Mild attack of stem borer and Helminthosporium were observed. (iii) Yield of grain. (iv) (a) 1963 to 1964. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Expt. failed in 1964.

5. RESULTS :

(i) 4248 Kg/ha. (ii) 513 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	4242	4368	4130	4368	4130

Crop :- Paddy **Ref :- Ms. 60(26), 61(157).**

Site :- Agri. Res. Stn., Hebbal. **Type :- 'D'.**

Object :—To find the effect of chemical methods (by spraying herbicide) Vs. mechanical methods of controlling weeds of Paddy crops.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 9·9 C.L./ha. of F.Y.M.+33·6 Kg/ha. of N as A/S+28 Kg/ha. of P_2O_5 as Super for 60(27); Nil for 61(57). (ii) Clay loam. (iii) 15.12.60/N.A.; 20.6.61/21.7.61. (iv) (a) Ploughing and puddling. (b) Transplanting. (c) 34 Kg/ha. (d) 25 cm.×15 cm. (e) 3. (v) 9·9 C.L./ha. of Compost +39·2 Kg/ha, of N as Urea+28 Kg/ha. of P_2O_5 as Super for 60(26); Sesbania at 2242 Kg/ha.+22·4 Kg/ha. of N as A/S+44·8 Kg/ha. of Super for 61(57). (vi) S—8317 (medium); S—1032 (long duration). (vii) Irrigated. (viii) As per treatments. (ix) 10 cm.; N.A. (x) 23.5.61 ; 27.12.61.

2. TREATMENTS :

5 chemical and mechanical treatments : T_1=Hand weeding once in 20 days, T_2=Rotary weeding once in 20 days, $T_3=T_1+T_2$, T_4=Spraying 2, 4—D (1·25% soln. exact quantity N.A.)+stirring and T_5=Spraying only.

In plots where spraying was carried on water was drained off 4 days prior to spraying and water was unpoured 3 days after spraying.

In plots of spraying and stirring weeds the plots are stirred 24 hrs. after spraying by a locally prepared brush.

In T_1, T_2 and T_3 weedings started one month after planting.

3. DESIGN :

(i) R.B.D., L. sq. (ii) (a) 5. (b) 50·3 m.×7·9 m.; 41·5 m.×10·1 m. (iii) 4, 5. (iv) (a) 7·9 m.×10·1 m. (b) 7·6 m.×9·8 m. ; 7·5 m.×9·6 m. (v) 15 cm.×15 cm. ; 23 cm.×23 cm. (vi) Yes.

4. GENERAL :

(i) Normal uniform flowering was observed in all plots except 2-4-D treated plots for 60(26); healthy for 61(57). (ii) Light neck rot disease was observed in 60(26) ; nil for 61(57). (iii) No. and length of tiller and yield of grain. (iv) (a) 1960 to 1961. (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 :

(i) 3715 Kg/ha. (ii) 354·1 Kg/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 grain in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5
Av. yield	4201	3864	3920	3235	3353

C.D.=355·3 Kg/ha.

Years	T_1	T_2	T_3	T_4	T_5	Sig.	G.M.	S.E./plot
1960	3394	3251	3177	2392	2521	*	2947	437·5
1961	4846	4354	4515	3909	4019	**	4329	282·2
Pooled	4201	3864	3920	3235	3353	**	3715	354·1

Crop :- Paddy (*II crop*). **Ref :- Ms. 63(51).**

Site :- Paddy Breeding Stn., Mangalore. **Type :- 'D'.**

Object :—To study the effect of spraying different insecticides in controlling Paddy stem borer.

1. BASAL CONDITIONS :

(i) (a) Paddy after Paddy. (b) Paddy, (c) G.L. at 55·8 Q/ha.+34 Kg/ha. of P_2O_5 as Super+28·4 Kg/ha. of K_2O as Mur. Pot+11·4 Kg/ha. of N as A/S. (ii) (a) and (b) Laterite, loamy in texture. (iii) 27.9.63/ 2.11.63, (iv) (a) 5 ploughings and puddlings. (b) Transplanting. (c) —. (d) 20 cm.×20 cm. (e) 2. (v) C.M. at 113 Q/ha.+34 Kg/ha. of P_2O_5 as Super+28·4 Kg/ha. of K_2O as Mur. Pot.+11·4 Kg/ha. of N as A/S. (vi) MGL—7 (medium). (vii) Irrigated. (viii) Interculturing. (ix) 52 cm. (x) 24.1.64.

2. TREATMENTS :

8 insecticidal treatments : T_0—Control, T_1=Demecron 0·02% 3·4 C.C., T_2=Endrin 0·05% 33·9 CC, T_3= Folidol 0·05% 13·5 CC, T_4=Paramar 0·05% 13·5 CC, T_5=Rogor 0·05% 17·0 CC, T_6=Sevin 0 05% 8 grams and T_7=G. Simathion 0·075% 20 CC.

All insecticides were dissolved in 13·6 litres of water. 2 sprayings of each insecticide on 23.11.1963 and 18.12.1960.

Top dressing with 11·4 Kg/ha. of N as A/S on 27.11.1963., 2nd top dressing at the same rate at the time of short blade.

3. DESIGN :

(i) R.B.D. (ii) (a) 8 (b) N A. (iii) 5. (iv) (a) and (b) 6·1 m.×6·7 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Sprayed as for treatments. (iii) Grain weight. (iv) (a) 1966 (modified every year). (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2991 Kg/ha. (ii) 148·6 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	2941	2869	2915	3239	3225	2881	2825	3033

C.D.=192·4 Kg/ha.

———

Crop :- Paddy (*II crop*). **Ref :- Ms. 64(48).**

Site :- Paddy Breeding Stn., Mangalore. **Type :- 'D'.**

Object :—To study the effect of spraying different insecticides in controlling Paddy stem borer.

1. BASAL CONDITIONS :

(i) (a) Paddy-Paddy. (b) Paddy. (c) G.L. at 56·8 Q/ha.+34 Kg/ha. of P_2O_5 as Super+28·4 Kg/ha. of K_2O as Mur. Pot.+34 Kg/ha. of N as A/S. (ii) (a) and (b) Laterite, loamy in texture. (iii) 6.10.64/ 10.11.64. (iv) (a) Ploughing and puddling 5 rounds. (b) Transplanting. (c) —. (d) 20 cm.×20 cm. (e) 2. (v) C.M. at 11·7 Q/ha.+34 Kg/ha. of P_2O_5 as Super+28·4 Kg/ha. of K_2O as Mur. Pot.+30 Kg/ha. of N as A/S. (vi) MGL—7 (medium). (vii) Irrigated. (viii) 1 interculturing. (ix) 48 cm. (x) 24 2.65.

2. TREATMENTS :

10 insecticidal treatments : T_1=Control, T_2=Anthio –40·7 CC., T_3=Demecron E.C. 100–3·4 CC., T_4= Demecron (wettable powder) 3 packets, T_5=Endrin 16·9 CC., T_6=Folidol 7·3 CC., T_7=Paramar 6·8 CC., T_8=Rogor 8·5 CC., T_9=Sevin 3 packets and T_{10}=Sumathion 6·8 CC.

All insecticides were dissolved in 6·8 litres of water. 2 sprayings of each insecticide on 24.11.1964 and 31.12.1964.

3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (ii) 3 (iv) (a) and (b) 7·6 m.×4·9 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) As per treatments. (iii) Grain and straw weight. (iv) (a) 1963—contd (modified in 1964). (b) No. (c) Nil. (v) to (vii) Nil.

3. RESULTS :

(i) 2648 Kg/ha. (ii) 247·8 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ .

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9	T_{10}
Av. yield	2448	2533	2725	2701	3044	2491	2500	2498	2766	2770

———

Crop :- Paddy (*Rabi*). **Ref :- Ms. 65(34).**

Site :- Agri. Res. Stn., Mangalore. **Type :- 'D'.**

Object :— To study the effect of spraying different insecticides in controlling Paddy stem borer.

1. BASAL CONDITIONS :

(i) (a) Paddy after Paddy. (b) Paddy. (c) N.A. (ii) Sandy soil. (iii) 8.9.65/22.10.65. (iv) (a) 5 ploughings and puddling. (b) Transplanting. (c) 37 Kg/ha. (d) 20 cm.×20 cm. (e) 3. (v) N, P, and K @ 33·6 Kg/ha. each. (vi) MGL-7. (vii) Irrigated. (viii) Hand weeding. (ix) 44·7 cm. (x) 2.2.66.

2. TREATMENTS :

10 insecticidal treatments : T_0=Control, T_1=B.H.C. grannules (dust 7). T_2=Roger (spray) grannules, T_3= Endrin grannules. T_4=Heptachlose (spray) grannules, T_5=Folithion EC 0·05% 4·5 cc/4·5 liters of water, T_6=Tria-thion 11·3/4·5 liters of water, T_7=Dimecron 2·5/4·5 liters of water, T_8=Thiodon 0·15% 11·4/4·5 liters of water and T_9=Malathion 0·1% 9·0/4·5 liters of water.

3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) and (b) 6·1 m.×6·1 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) As per treatments. (iii) Yield of grain. (iv) (a) 1963-66. (modified every year) (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 2795 Kg/ha. (ii) 272·8 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	2745	2807	2963	2734	2783	2828	2702	2727	3142	2520

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Crop :- Paddy (*Kharif*). **Ref :- Ms. 62(9), 63(6).**

Site :- Agri. Res. Stn., Nagenhally. **Type :- 'D'.**

Object :— To study the effect of Irradiation on Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy—Paddy. (b) G.M. (c) 22·4 Kg/ha. of P_2O_5. (ii) Sandy loam. (iii) 30.5.62/12.8.62 ; 29.5.63,1.7.63. (iv) (a) 4 to 5 ploughings. (b) Transplanting. (c) —. (d) 23 cm.×23 cm. (e) 1. (v) 33 6 Q/ha. of G.M.+33·6 Kg/ha. of N as A/S+22·4 Kg/ha. of P_2O_5 as Super at transplanting and 33·6 Kg/ha. of N as top-dressing. (vi) S. 661 (late). (vii) Irrigated. (viii) 2 hand weedings. (ix) 48 cm. ; 37 cm. (x) 21.12.62 ; 11.12.63.

2. TREATMENTS :

5 radio irradiation treatments : T_0=Control, T_1=Intensity of $2·5\times10^{12}$ NP/cm^2 exposed for 1 second, T_2= Intensity of $2·5\times10^{12}$ NP/cm^2 exposed for 2 seconds, T_3=Intensity of $2·5\times10^{12}$ NP/cm^2 exposed for 3 seconds and T_4=Intensity of $7·5\times10^{12}$ NP/cm^2 exposed for 1 second.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 10·3 m.×1·8 m. ; 8·7 m.×1·8 m. (b) 9·4 m.×0·9 m. ; 8·2 m.×1·4 m. (v) and (vii) Yes.

4. GENERAL :

(i) Good. (ii) Nil ; spraying of folidol was taken as a precautionary measure. (iii) Yield of grain. (iv) (a) 1962-63. (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 :

(i) 1784 Kg/ha. (ii) 318·4 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_0	T_1	T_2	T_3	T_4
Mean yield	1625	1907	1650	1740	2000

Years	T_0	T_1	T_2	T_3	T_4	Sig.	G.M.	S.E./plot
1962	682	1005	732	1150	1141	*	942	236 0
1963	2568	2809	2567	2331	2858	N.S.	2627	354·4
Pooled	1625	1907	1650	1740	2000	N.S.	1784	318·4

Caop :- Paddy (*Kharif*). **Ref :- Ms. 62(10).**

Site :- Agri. Res. Stn., Nagenhally. **Type :- 'D'.**

Object :— To study the effect of irradiation on the variety S. 1092 of Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy-GM-Paddy. (b) G.M. (c) 22·4 Kg/ha. of P_2O_5 (ii) Sandy loam. (iii) 30.5.62/12.8.62, (iv) (a) 4 ploughings puddling. (b) Transplanting. (c) —. (d) 23 cm.×23 cm. (e) 1. (v) 33·6 Q/ha. of G.M.+ 33·6 Kg/ha. of N as A/S+22·4 Kg/ha. of P_2O_5 as Super at transplanting and 33·6 Kg/ha. of N as A/S top-dressed. (vi) S. 1092. (vii) Irrigated. (viii) 2 hand weeding. (ix) 48 cm. (x) 21.12.62.

2. TREATMENTS :

8 radio irradiation treatments : T_0=Control (no irradiations), T_1=Intensity $5{\cdot}5\times10^{12}$ NP/cm² exposed for 1 sec., T_2=Intensity $5{\cdot}5\times10^{12}$ NP/cm² exposed for 2 sec., T_3=Intensity $7{\cdot}5\times10^{12}$ NP/cm² exposed for 0 (Instantaneous), T_4=Intensity $7{\cdot}5\times10^{12}$ NP/cm² exposed for 1 sec., T_5=Intensity $7{\cdot}5\times10^{12}$ NP/cm² exposed for 2 sec., T_6=Intensity $7{\cdot}5\times10^{12}$ NP/cm² exposed for 3 sec. and T_7=Intensity $7{\cdot}5\times10^{12}$ NP/cm² exposed for 4 sec.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 10·3 m.×1·8 m. (b) 9·4 m.×0·9 m. (v) 46 cm.×46 cm (vi) Yes.

4, GENERAL :

(i) Good. (ii) Nil, spraying of folidol was taken as a precautionary measure. (iii) Yield of grain. (iv) (a) 1962-63. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1413 Kg/ha. (ii) 471·4 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	1359	1570	1447	1785	1379	869	1402	1492

Crop :- Paddy (*Kharif*). **Ref :- Ms. 63(5).**

Site :- Agri. Res. Stn., Nagenhalli. **Type :- 'D'.**

Object :— To study the effect of irradiation on paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy-G.M.-Paddy. (b) G.M. (c) 22·4 Kg/ha. of P_2O_5 as Super. (ii) Red sandy loam. (iii) 29.5.63/ 1.7.63. (iv) (a) 5 ploughings. (b) Transplanting. (c) —. (d) 23 cm.×23 cm. (e) 1. (v) 33·6 Q/ha. of G.M.+33·6 Kg/ha. of N as A/S+22·4 Kg/ha. of P_2O_5 as Super at planting. (vi) S. 1092. (vi) Irrigated. (viii) 2 hand weedings and passing Japanese paddy cultivator, (ix) 37 cm. (x) 11.12.63.

2. TREATMENTS :

9 radio irradiation treatments : T_0=Control (no irradiation), T_1=Intensity $2{\cdot}5\times10^{12}$ NP/cm² exposed for 1 sec., T_2=Intensity $2{\cdot}5\times10^{12}$ NP/cm² exposed for 2 sec., T_2=Intensity $7{\cdot}5\times10^{12}$ NP/cm² exposed for 0 (Instantaneous), T_3=$7{\cdot}5\times10^{12}$ NP/cm² exposed for 1 sec., T_4=Intensity $7{\cdot}5\times10^{12}$ NP/cm² exposed for 2sec., T_5= Intensity $7{\cdot}5\times10^{12}$ NP/cm² exposed for 3 sec., T_6=Intensity $7{\cdot}5\times10^{12}$ NP/cm² exposed for 4 sec. and T_8=Intensity $7{\cdot}5\times10^{12}$ NP/cm² exposed for 5 sec.

3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 8·7 m.×1·8 m. (b) 8·2 m.×1·4 m. (v) 23 cm.×23 cm. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil ; Folidol was sprayed as a precautionary measure. (iii) Yield of grain. (iv) (a) 1962-63 (modified in 63). (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2692 Kg/ha. (ii) 665·9 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	3230	2865	2865	2755	2280	2500	2437	2936	2846

Crep :- Paddy (*Kharif*). **Ref :- Ms. 65(11).**

Site :- Agri. Res. Stn., Ponnempet. **Type :- 'D'.**

Object :—To find out the efficacy of different fungicides in controlling blast disease on Paddy.

1. BASAL CONDITIONS:

(a) Paddy—Paddy. (b) Paddy. (c) F.Y.M. at 22·2 C.L./ha.+A/S at 168 Kg/ha.+Super at 224 Kg/ha.+18 Q/ha. of G.L. (ii) Sandy loam. (iii) 20.6.65/21.7.65. (iv) (a) 2 dry ploughings, 4 ploughings in puddle and the levelling. (b) Transplanting. (c) - (d) 25 cm.×25 cm. (e) 3 to 4. (v) 168 Kg/ha. of A/S in two doses+224 Kg/ha. of Super. (vi) K.B. 356 (late). (vii) Unirrigated. (viii) 2 hand weedings. (ix) 149 4 cm. (x) 29.12.65.

2. TREATMENTS :

5 fungicidal treatments :

T_0=Control, T_1=Bordeaux, T_2=Mercury dust, T_3=Sulphur, and T_4=Blotox. Spraying murcury once, dropping seedlings in treatments before planting, 3 times spraying in the vegetative stages in the fields and spraying twice after reading stage with different treatments.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) 19 m.×7 m. (iii) 5. (iv) (a) 4 m.×7 m. (b) 3 m.×6 m. (v) and (vi) Yes.

4. GENERAL :

(i) Slight lodging in all treatments. (ii) Sever blast disease, control measure as per treatments. (iii) Yield of grain. (iv) (a) 1965—N.A. (b) Yes. (c) Nil. (v) N.A. (vi) Nil. (vii) N.A.

5, RESULTS :

(i) 2701 Kg/ha. (ii) 1036 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	2073	2518	2610	3483	2820

Crop :- Paddy (*Kharif*). **Ref :- Ms. 65(12).**

Site :- Agri. Res. Stn., Ponnempet. **Type :- 'D'.**

Object :—To study the efficacy of different fungicides and antibiotics in controlling blast disease.

1. BASAL CONDITIONS:

(i) (a) Paddy—Paddy. (b) Paddy. (c) F.Y.M. at 22·2 C.L./ha.+168 Kg/ha. of A/S in 2 doses +22·2 Kg/ha. Super in one dose+G.L. at 28 Q/ha. (ii) Sandy loam. (iii) 19.7.95/6.9.65. (iv) (a) 2 dry ploughings, 4 ploughings in puddle and levelling. (b) Transplanting. (c) —. (d) 25 cm.×25 cm. (e) 3 to 4. (v) 22·2 CL/ha. of F.Y.M.+A/S at 168 Kg/ha.+Super at 224 Kg/ha. (vi) P—S 1 1 (medium late). (vii) Unirrigated. (viii) 2 hand weedings. (ix) 169·4 cm. (x) 10.1.66.

2. TREATMENTS :

6 fungicidal treatments : T_0=Control, T_1=Blas, T_2=Knickel Chloride, T_3=Mercury Copper, T_4=Kasumin, and T_5=Breston.

3 sprays in the field in vegetative stage and twice after heading stage.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) 41 m.×6 m. (iii) 4. (iv) (a) 7 m.×6 m. (b) 6 m.×5 m. (v) and (vi) Yes.

4. GENERAL :

(i) Fair. (ii) The crop was heavily affected with stem borer and chaffy earheads and slight neck infection. (iij) Yield of grain. (tv) (a) 1965—N.A. (b) No. (c) Nil. (v) and (vi) N.A. (vii) Nil.

5. RESULTS :

(i) 1485 Kg/ha. (ii) 341 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	1266	1447	1577	1635	1587	1400

Crop :- Paddy (*Kharif*). **e f :- Ms. 62(11), 63(31), 64(10).**

Site :- Agri. Res. stn., Nagenhally. **Type :- 'D.'**

Object :—To control seed infection by chemical means and to study its effect on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) G.M.—Paddy. (b) G.M. (c) 22·5 Kg/ha. of P_2O_5 as Super. (ii) Red sandy loam. (iii) 31.5.62/6.7.62 ; 29.5.36/28.6.63 ; 6.6.64/13.7.64. [iv) (a) 3 to 5 ploughings. (b) Transplanting. (c) --. (d) 23 cm. ×23 cm. ; 25 cm.×23 cm. for 63 and 64. (e) 2 to 3 ; N.A. (v) 56 Q to 67 Q/ha. of G.M.+33·6 Kg/ha. of N as A/S for 62(11) 56 Q/ha. of G.M.+22·4 Kg/ha. of N as A/S for 63(31) and 56 Q/ha. of G.M.+22·4 Kg/ha. of N.+22·4 Kg/ha. of P_2O_5+11·2 Kg/ha. of N top dressed for 64(10). (vi) C.H—2 ; CL—2 (early) ; S.10 92. (vii) Irrigated. (viii) As per treatments. (ix) 11 cm. ; 17 cm. ; 57 cm. (x) 1.10.62 ; 8.10.63 ; 17 and 18.12.64.

2. TREATMENTS :

T_1=Usual method (passing the Japaneese weeder and hand weeding. Jap weeder once in 15 days. Hand weeding 30 days after), T_2=Spraying 2—4—D [2·2 Kg in 562 litres/ha. of water 5 and 30 days after planting], T_3=Spraying as well as interculturing, T_4=Spraying as well as interculturing and hand weeding and T_5=Spraying 2—4—D and irrigation once in 5 days, but 25 days after Ist spraying.

3. DESIGN:

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 8·0 m.×8·0 m ; 12·3 m.×9·1 m. ; 7·8 m.×11·9 m. (b) 7·1 m.×7·1 m ; 9·3 m.×8·2 m. ; 6·9 m.×10·0 m. (v) 46 cm.×46 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Mlid attack of stem borer; sever rat and bird damage; Nil. (ili) Yield of grain. (iv) (a) 1962 to 64. (b) Yes. (c) Nil. (v) and (vi) Nil. (vii) Error variances are heterogeneous and Treatments×years interaction is absent, results of the individual experiments are presented below.

5. RESULTS :

62(11)

(i) 1529 Kg/ha. (ii) 309·0 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Trratment	T_1	T_2	T_3	T_4	T_5
Av. yield	1632	1712	1708	1381	1213

63(31)

(i) 2170 Kg/ha. (ii) 645·9 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	2638	2357	2342	2312	1201

64 10)

(i) 3885 Kg/ha. (ii) 579·2 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
Av. yield	3206	4136	4036	4601	3447

C.D.=892·6 Kg/ha.

Crop :- Wheat. (*Rabi*). **Ref :- Ms. 60(82), 61(44),62(32), 63(20).**

Site :- Agri. Res. Stn., Bailhongal. **Type :- 'M'.**

Object :—To find out the optimum requirement of N, P and K for Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) China-Mug ; Gram and Groundnut ; Jowar for 62(32) and 63(20). (c) 12·4 C.L./ha. of F.Y.M. (ii) Black soil, (ii) 22.10.60 ; 4.11.61 ; 20.10.62 ; 19.10.63. (iv (a) 1 ploughing, 3 to 4 harrowings. (b) Drilling. (c) 45 Kg/ha. (d) 30 cm.×15 cm. (e) N.A. (v) 12·4 C.L/ha. of F.Y.M. (vi) Kenphad. (vii) Unirrigated. (viii) 2—3 weedings, 1—2 interculturings. (ix) 81 cm.; N.A. ; 20 cm. : 2 cm. (x) 2.2.61 ; 10.2.62 ; 22.1.63 ; 19.1.64.

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=22·4 Kg/ha.

(2) 3 levels of P_2O_5 as Super : P_0=0, P_1=56·0 and P_2=112·1 Kg/ha.

(3) 3 levsls of K_2O as Pot. Sul. : K_0=0, K_1=12·1 and K_2=224·2 Kg/ha.

3. DESIGN :

(i) 3^3 confd. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 7·3 m.×4·9 m. (b) 6 1m.×4·3 m. (v) 61 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Tiller counts, height of plants, yield of grain. (iv) (a) 1960 to 1963. (b) No. (c) Nil. (v) Bijapur ; Annegiri and Dharwar. (vi) Nil. (uii) Error variances are heterogeneous and (NP) ×years and (NK)×years interactions are present.

5. RESULTS :

(i) 847 Kg/ha. (ii) 210·0 Kg/ha. [based on 42 d.f. made up of (N, P, K, N×P and N×K)×years interactions]. (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	825	862	828	791	823	901	838
N_1	824	895	835	830	839	884	851
N_2	835	811	909	840	887	828	852
Mean	828	856	857	820	850	871	847

Years	N_0	N_1	N_2	Sig.	P_0	P_1	P_2	Sig.
1960	692	681	821	**	708	746	740	N.S.
1961	1003	1047	849		936	975	988	N.S.
1962	1290	1278	1284	N.S.	1288	1288	1276	N.S.
1963	368	399	454	*	380	415	426	N.S.
Pooled	838	851	852	N.S.	828	856	857	N.S.

K_0	K_1	K_2	Sig.	G.M.	S.E./plot
737	732	724	N.S.	731	105·8
946	980	973	N.S.	966	146·2
1227	1267	1358	N.S.	1284	193·2
373	419	429	N.S.	407	89·8
820	850	871	N.S.	847	210 0

Crop :- Wheat. **Ref :- Ms. 64(202), 65(73).**

Site :- Agri. Res. Stn., Bijapur. **Type :- 'M'.**

Object :—To find out the suitable time of applications of fertilizers to Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) Black soil. (iii) 19.10.1964 ; N.A. (iv) (a) Ploughing and harrowing. (b) Dibbling. (c) 45 Kg/ha. (d) 23 cm.×46 cm. (e) 2 to 3 thinned to one. (v) 12·4 C.L/ha. of F.Y. M. (vi) Kemphad. (vii) Unirrgated. (viii) Weeding and interculturing (ix) 1·2 cm ; 6·6 cm. (x) 20 2.65 ; 19.2.66

2. TREATMENTS :

4 manurial treatments : T_0= No fertiliser, T_1=16·8 Kg/ha. of N+11·2 Kg/ha. of P_2O_5 at planting; T_2= 16·8 Kg/ha. of N at planting+11·2 Kg/ha. of P_2O_5 15 days after planting. and T_3= 16·8 Kg/ha. of N at planting.

3. DESIGN :

(i) R.B.D. (ii) 4 (b) 19·5 m .×9.1.(iii) 4; 6. (iv) (a) 10·7 m.×4. 9 m. ; 4·9 m.×9·1 m. (b)9·1 m.×3·7 m. ; 4.3 m. ×7.9m. (iv) and (v) Yes,

4. GENERAL :

(i) Poor. (ii) Nil. (iii) Yield of grain. (iv) (a) 1964—1967. (b) No. (c) Nil. (v) Nil. (vi) and (vii) N.A.

5. RESULTS :

64 (202)

(i) 963 Kg/ha. (ii) 171.9 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	906	1008	1085	854

65(73)

(i) 339 Kg/ha. (ii) 67.2 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	333	331	359	334

Crop :- Wheat (*Rabi*). **Ref:- Ms. 62(281), 63(248), 64(199).**

Site :- Agri. Res. Stn., Bijapur. **Type :- 'M'.**

Object :— To find out the best method of application of fertilisers to obtain maximum yield.

1. BASAL CONDITIONS :

(i) Nil. (b) Wheat. (c) N.A. (ii) Black soil. (iii) 12.10.62 ; 1.11.63 ; 20.10.64. (iv) (a) 1 ploughing and 3 to 4 harrowings. (b) Drilling. (c) 45 Kg/ha. (d) 30·5 cm. between lines. (e) N.A. (v) Nil. (vi) Bir-aga Red (medium). (vii) Unirrigated. (viii) Hand interculturing. (ix) 42 cm. ; 21·7 cm. ; 12·4 cm. (x) 21.2.63 ; 21.2.64 ; 20.2.65.

2. TREATMENTS :

6 methods of application of N : T_1=Sowing by seed drill (control-no manure), T_2=16.8 Kg/ha. of N as A/S by seed cum fertilizer drill, T_3=Deep placement of fertilizer, 2/3 dose of 'N' by plough without mould board and $\frac{1}{3}$N by spray (as Urea), T_4=2/3 dose of 'N' at sowing by seed cum fertilizer drill and $\frac{1}{3}$ dose of N by spraying. T_5=$\frac{1}{2}$ dose of N at sowing by seed cum fertilizer drill and 2/3 dose by spray, T_6=Full dose (i.e.16.8 Kg/ha.) N by wooden plough at 10.2 cm. depth.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) 27·4 m.×9·1 m. (iii) 4. (iv) (a) 9·1 m.×4·9 m. (b) 7·3 m.×3·7 m. (v) and (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Grain yield. (iv) (a) 1962—1964. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Error variances are heterogeneous and Treatments × years interaction is absent.

5. RESULTS :

62 (281)

(i) 916 Kg/ha. (ii) 139.1 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of wheat in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6
Av yield	587	1039	972	949	864	1083

C. D.=209·6 Kg/ha.

63 (248)

(i) 557 Kg/ha. (ii) 154.9 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of wheat in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	528	631	471	597	590	519

64(119)

(i) 830 Kg/ha. (ii) 61·7 Kg/ha. (iii) Treatment difference are significant. (iv) Av yield of wheat in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6
Av yield	703	889	816	868	846	858

C.D.=92.9 Kg/ha.

Crop :- Wheat (*Rabi*). **Ref :- Ms. 60(286).**

Site :- Agri. Res. Stn., Bijapur. **Type :- 'M'.**

Object :— To judge the effect of fertilizers on Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar*. (c) 9·1 C.L./ha. of F.Y.M. (ii) Black soil. (iii) 10.10.60. (iv) (a) Ploughing and harrowing. (b) By fertilizer cum seed drill. (c) 45 Kg/ha. (d) 30 cm. (e) N.A. (v) Nil. (vi) Kemphad. (vii) Unirrigated. (viii) Interculturing. (ix) 65 cm. (x) 21.2.61.

2. TREATMENTS :

3 manurial treatments : T_0=Control, T_1=16 Kg/ha. of N and T_2=T_1+7·5 Kg/ha. of P_2O_5 as Super.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 2. (iv) (a) 12·2 m.×8·5 m. (b) 10·4 m.×6·7 m. (v) and (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of grain. (iv) (a) 1958-60. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 766 Kg/ha. (ii) 81·2 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	679	803	816

Crop :- Wheat. **Ref :- Ms. 62(278), 63(246).**

Site :- Agri. Res. Stn., Bijapur. **Type :- 'M'.**

Object :— To judge the effect of sunnhemp green manure on Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) F.Y.M. 12·4 C.L./ha. (ii) Black soil. (iii) 7.10.62 ; 1.7.63. (iv) (a) Ploughing and harrowing. (b) Drilling. (c) 45 Kg/ha. (d) 30 cm. between rows. (e) N.A. (v) Nil. (vi) Kemphad. (vii) Unirrigated. (viii) Hand weeding and interculturing. (ix) 42 cm. ; 22 cm. (x) 19.2.63 ; 19.2.64.

2. TREATMENTS :

10 manurial treatments : T_0=Control, T_1=11·2 Kg/ha. of P_2O_5+13·4 Kg/ha. of N at sowing, T_2=Grow sunnhamp applying 11·2 Kg/ha. P_2O_5 and harrow after one month, T_3=Grow sunnhemp applying 11·2 Kg/ha. P_2O_5 and bury sunnhemp with plough after one month, T_4=Grow sunnhemp applying 11·2 Kg/ha. P_2O_5 and harrow 1½ month after sowing, T_5=Grow sunnhemp applying 11·2 Kg/ha. P_2O_5 and bury 1½ month after sowing, T_6=Grow sunnhemp applying 11·2 Kg/ha. P_2O_5 and cut saun 1½ months after but use above ground portion for composting else where, T_7=Grow sunnhemp appling 11·2 Kg/ha. P_2O_5 and bury it after 2 months, T_8=Grow sunnhemp applying 11·2 Kg/ha. P_2O_5 and cut saun after 2 months but use above ground portion to compost else where and T_9=Green sunnhemp with 13·4 Kg N while sowing and bury after 1½ months.

3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) 18·3 m.×18·3 m. (iii) 4. (iv) (a) 9·1 m.×3·7 m. (b) 7·3 m.×2·4 m. (v) 91 cm.×61 cm. (vi) Yes.

4. GENERAL :

(i)Fair. (ii) Nil. (iii) Yield of grain. (iv) (a) 1962-63. (b) No. (c) Nil. (v) N.A. (vi) Nil. (vii) Error variances are heterogeneous and Treatments×years interaction is present.

5. RESULTS :

(i) 493 Kg/ha. (ii) 178·5 Kg/ha. (based on 9 d.f. made up of Treatments×years interaction. (iii) Treatment differences art 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	404	555	537	685	414	505	469	467	361	536

r	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
1962	422	678	652	898	438	588	521	564	364	582	*	571	117·4
1963	385	432	421	472	390	423	418	371	358	490	N.S.	416	·7
Pooled	404	555	537	685	414	505	469	467	361	536	N.S.	493	178·5

Crop :- Wheat (*Rabi*). **Ref :- Ms. 60(128), 61(119).**

Site :- Agri. Res. Stn., Bijapur. **Type :- 'M'.**

Object :— To study the effect of different nitrogenous fertilizers on Wheat.

1. BASAL CONDITIONS :

(i) (a) N.A. ; Wheat-*Jowar*. (b) Wheat ; *Jowar*. (c) 9·9 C.L /ha. of F.Y.M. ; 12·3 C.L./ha. of F.Y.M. (ii) Black. (iii) 12.10.60 ; 21.10.61. (iv) (a) Ploughing, clod crushing and 2 harrowings for 60(128), 4 harrowings for 61(119). (b) Drilling. (c) 45 Kg/ha. (d) 30 cm. between rows. (e) N.A. (v) Nil. (vi) Kemphad (medium). (vii) Unirrigated. (viii) Interculturing and weeding. (ix) 65 cm. ; 5 cm. (x) 22.2.61 ; 2.2.62.

2. TREATMENTS :

All combinations of (1) and (2) with a control (5 plots per replication).
(1) 2 levels of N : N_1=16·8 and N_2=33·6 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=Calcium Amm. Chloride.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 15. (b) 18·3 m.×16·5 m. (iii) 3. (iv) (a) 5·5 m.×3·7 m. (b) 4·6 m.×3·1m. (v) 46 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Normal lodging during January 1961. (ii) Nil. (iii) Ht. of Plants and grain yield. (iv) (a) 1960-61. (b) No. (c) Refer 5. Results. (v) and (vi) Nil. (vii) Error variances are homogeneous and Treatments × years interaction is absent.

5. RESULTS :

(i) 551 Kg/ha. (ii) 94·2 Kg/ha. (based on 73 d.f. made up of pooled error and Treatments × years interaction). (iii) Interaction N×S is significant. Control vs. others is significant. (iv) Av. yield of grain in Kg/ha.

Control=538 Kg/ha.

	S_1	S_2	S_3	S_4	S_5	Mean
N_1	637	529	508	522	505	540
N_2	529	559	546	630	610	575
Mean	583	544	527	576	557	557

C.D. for body of N×S table=108·6 Kg/ha.
C.D. for control vs. others=42·0 Kg/ha.

Years	S_1	S_2	S_3	S_4	S_5	Sig	N_1	N_2	Sig.
1960	786	763	750	766	756	N.S.	744	784	N.S.
1961	380	325	305	387	359	N.S.	336	366	N.S.
Pooled	583	544	527	576	557	N.S.	540	575	N-S.

Control	Sig.	G.M.	S.E./plot
759	N.S.	762	96·4
316	N.S.	339	102·0
538	*	551	94·2

Crop :- Wheat. **Ref :- Ms. 60(270), 61(266).**

Site :- Agri. Res. Stn., Dharwar. **Type :- 'M'.**

Object :— To study the effect of manures on the yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) to (c) Nil. (ii) Black soil. (iii) 16.10.60 ; 17.10.61. (iv) (a) Ploughing and harrowing. (b) Drilling. (c) 45 Kg/ha. (d) 30 cm. between rows. (e) N.A. (v) Nil. (vi) Kemphad. (vii) Unirrigated. (viii) Weeding and intercultivation. (ix) 6·1 cm. ; 7·8 cm. (v) 26.1.61 ; N.A.

2. TREATMENTS

5 manurial treatments : T_0=Control (no manure), T_1=12·4 C.L./ha. of F.Y.M., T_2=22·4 Kg/ha. of N as A/S, T_3=16·8 Kg/ha. of P_2O_5 as Super and $T_4=T_2+T_3$.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 8·5 m.×8·5 m. (b) 7·3 m.×7·3 m. (v) 61 cm.×61 cm. (vi) Yes.

4. GFNERAL :

(i) Fair. (ii) Nil. (iii) Yield of grain. (iv) (a) 1960-61. (b) No. (c) Nil. (v) N.A. (vi) Nil. (vii) Error variances are heterogeneous and Treatments×years interaction is absent.

5. RESULTS :

60(270)

(i) 1066 Kg/ha. (ii) 110·0 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
Av. yield	944	1060	1194	951	1180

C.D.=169·5 Kg/ha.

61(266)

(i) 1335 Kg/ha. (ii) 38·2 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	1288	1294	1371	1297	1426

C.D.=58·9 Kg/ha.

Crop :- Wheat (*Rabi*). **Ref :- Ms. 64(88)**

Site :- Agri. College, Dharwar. **Type :- 'M'**

Object :- To find out suitable fertilizers placement method and kind of fertilizer for application to Wheat in black soil.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Black Soil. (iii) 1.11.64. (iv) (a) Grabling and harrowing. (b) Drilling. (c) 45 Kg/ha. (d) 30 cm. between rows. (e) N.A. (v) N.A. (vi) ke phad (vii) Unirrigated. (viii) Weeding. (ix) 5 cm. (x)12.2.65.

2. TREATMEMTS :

All combinations of (1) and (2) with 24·7 kg. of P_2O_5 as super+one control

(1) 4 sources of N at 32.1 Kg/ha. : S_1=A/S, S_2=Urea, S_3=C/A/N and S_4=A/S/N.

(2) 4 methods of application : M_1=By plough sole 13 cm. deep a week before sowing M_2=By seed cum-fertilizer drill at sowing, M_3=P_2O_5 by Plough sole and N by seed-cum-fertilizer drill and M_4=Fertilizer in seed drill and seeds through the draw tubes behind the plough.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 17. (b) N.A. (iii) 4. (iv) (a) 7·3 m.×6·1 m. (b) 6·1 m.×4·9 m. (v) 61 cm. × 61 cm. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) yield of grain and straw. (iv) (a) to (c) No. (v) to (vii) Nil.

5. RESULTS :

(i) 445 Kg/ha. (ii) 40·4 Kg/ha. (iii) Main effects of S and M and S×M interaction are highly significant. Control Vs others is significant. (iv) Av. yield of grain in Kg/ha.

Control=357 Kg/ha.

	M_1	M_2	M_3	M_4	Mean
S_1	845	385	355	387	493
S_2	604	352	367	704	507
S_3	357	362	373	359	363
S_4	363	364	356	680	441
Mean	542	365	363	532	451

C.D. for S or M marginal means=28·7 Kg/ha.
C D. for body of table =57·7 Kg/ha.
C.D. for Control vs. others =41.9 Kg/ha.

Crop: - Wheat. **Ref. :- Ms. 62(83), 63(83).**
Site:- Agri. Res. Stn., Dharwar. **Type 'M'.**

Object :— To study the N, P, K requirement of Wheat.

1. BASAL CONDITIONS :

(i) (a) Groundnut—Wheat. (b) Groundnut. (c) 12·4 C.L./ha. of F.Y.M. (ii) Medium black. (iii) 26.10.62 ; 25.10.63. (iv) (a) Harrowing. (b) Drilling. (c) 45 kg/ha. (d) 30 cm.×15 cm. (e) 1. (v) Nil. (vi) Amrut (Early). (vii) Unirrigated. (viii) Nil. (ix) 27 cm. ; 14 cm. (x) 3.2.63 ; 28.1.64.

2. TREATMENTS :

All combinations of (1) , (2) and (3)
(1) 2 levels of N as A/S : N_0=0 and N_1=22·4 Kg/ha.
(2) 2 levels of P_2O_5 as super: P_0=0 and P_1=11·2 Kg/ha.
(3) 2 levels of K_2O as Mur. Pot.: K_0=0 and K_1=11·2 Kg/ha.

3. DESIGN :

(i) 2^3 Fact. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 7·3 m.×6·7 m. (b) 6·7 m.×6·1 m. (v) 30 cm. ×30 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of grain. (iv) (a) 1962—63. (b) No. (c) Nil. (v) N.A. (vi) Nil. (vii) Error variances are heterogeneous and Treatments×years interaction is absent.

5. RESULTS :

62(83)

(i) 1380 Kg/ha. (ii) 109·6 Kg/ha. (iii) Main effect of N alone is significant. (iv) Av. yield of grain in Kg/ha.

	P_0	P_1	K_0	K_1	Mean
N_0	1345	1320	1314	1351	1333
N_1	1378	1477	1438	1417	1428
Mean	1362	1399	1376	1384	1380
K_0	1303	1449			
K_1	1421	1348			

C.D. for N marginal means=80·6 Kg/ha.

63(83)

(i) 261 Kg/ha. (ii) 62·4 Kg/ha. (iii) Main effect of N alone is significant. (iv) Av. yield of grain in Kg/ha.

	P_0	P_1	K_0	K_1	Mean
N_0	236	225	259	203	231
N_1	270	314	304	280	292
Mean	253	269	281	241	261
K_0	270	292			
K_1	236	247			

C.D. for N marginal means=45·8 Kg.ha.

Crop :- Wheat (*Rabi*). **Ref :- Ms. 61(114), 62(65), 63(65).**

Site :- Agri. College Farm, Dharwar. **Type :- 'M'.**

Object :— To find out a suitable placement method of fertilizers to Wheat in black soil.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Nil ; Groundnut ; Chilly and Cotton mixture. (c) N.A. ; N.A. ; 19·8 C.L./ha. of F.Y.M. (ii) Black soil, (iii) 13.10.61 ; 5.11.62 ; 2.11.63. (iv) (a) Ploughing and harrowing. (b) to (e) N.A. (v) Nil. (vi) Kemphad. (vii) Unirrigated. (viii) Weeding and interculturing. (ix) N.A.; 4 cm. ; N.A. (x) 24.1.62 ; 25.2.63 ; February 1964.

2. TREATMENS :

All combinations of (1) and (2)+control.

(1) 2 manurial treatments : T_1=33·6 Kg/ha. of N as A/S+22·4 Kg/ha. of P_2O_5 as Super and T_2=50·4 Kg/ha. of N as A/S+33·6 Kg/ha. of P_2O_5 as Super.

(2) 5 methods of placement : M_1=By plough sole method, M_2=Drilled both ways 30 cm. apart before sowing, M_3=By draw tube 3 cm. below the seed, M_4=By seed cum fertilizer drill along with the seed in the same line and M_5=5 cm. away and 5 cm. deep placement at fertilizers from the seed line.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 11. (b) N.A. (iii) 4. (iv) (a) 9·1 m.×6·1 m. (b) 8·5 m.×5·5 m. (v) 30 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1961-63. (b) No. (c) Pooled results given under 5. (v) N.A. (vi) Nil. (vii) Error variances are heterogeneous and Treatments×years interaction is present.

5. RESULTS :

(i) 709 Kg/ha. (ii) 195·1 Kg/ha. (based on 20 d.f. made up of Treatments×years interaction). (iii) Control vs. others is significant. (iv) Av. yield of grain in Kg/ha.

Control = 543 Kg/ha

	M_1	M_2	M_3	M_4	M_5	Mean
T_1	772	695	719	707	653	709
T_2	886	691	739	725	665	741
	829	693	729	716	659	725

C.D. for control vs. others = 121·1 Kg/ha.

Years	M_1	M_2	M_3	M_4	M_5	Sig.	T_1	T_2	Sig.	G.M.	S.E /plot
1961	750	696	733	730	586	**	706	691	N.S	688	114·4
1962	1500	1176	1226	1239	1173	**	1226	1300	**	1226	70·6
1963	235	208	228	179	217	*	194	232	**	212	33·3
Pooled	829	693	729	716	659	N.S.	709	741	N.S.	709	195·1

Crop :- Wheat (*Rabi*). **Ref :- Ms. 60(83), 61(50).**

Site :- Agri. Res. Stn., Gangavathy. **Type :- 'M'.**

Object :— To find out a proper manurial schedule for wheat with newly localised T.B.P. area where the soil is of very poor fertility.

1. BASAL CONDITIONS :

(i) (a) Sugarcane-Wheat ; *Jowar*-Groundnut-Wheat. (b) Nil. ; groundnut. (c) Nil ; 140·1 Kg/ha. of super. (ii) Light black soil. (iii) 3.11.60 ; 3.11.61. (iv) (a) 2 ploughings and 4 harrowings. (b) Drilling. (c) 45 Kg/ha. (d) and (e) N.A. (v) 12·4 C.L./ha. of F.Y.M. (vi) K. 28. (vii) Irrigated. (viii) 2 weedings, 2 hoeings and 4 intercultivations for 60 (83) ; 2 hoeings and 1 weeding for 61 (50). (ix) N.A. ; Nil. (x) 11.2.61 ; 8.2.62.

2. TREATMENTS :

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

(1) 4 levels of N as A/S : N_0=0, N_1=33·6, N_2=44·8 and N_3=56·0 Kg/ha.

(2) 4 levels of P_2O_5 as Super : P_0=0, P_1=22·4, P_2=33·6 and P_3=44·8 Kg/ha.

(3) 4 levels of K_2O as Mur. Pot. : K_0=0, K_1=33·8, K_2=44·8 and K_3=56·0 Kg/ha.

3. DESIGN :

(i) 4^3 fact. in R.B.D. (ii) (a) 64. (b) N.A. (iii) 3. (iv) (a) 5·5 m. × 3·7 m. (b) 4·3 m. × 2·4 m. (v) 61 cm. × 61 cm. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1959-61. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Error variances are heterogeneous and Treatments × years interaction is absent.

5. RESULTS :

60(83)

(i) 1742 Kg/ha. (ii) 391·9 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	K_0	1			Mean
N_0	1356	1293	1455	1503	1563	1323	1534	1187	1402
N_1	1666	1823	2152	2041	1909	1989	1891	1893	1921
N_2	1723	1604	1687	1901	1771	1557	1820	1767	1729
N_3	1925	2099	1769	1879	1877	1823	2143	1829	1918
Mean	1668	1705	1766	1831	1780	1673	1847	1669	1742
K_0	1754	1863	1687	1816					
K_1	1698	1632	1642	1720					
K_2	1620	1670	2037	2061					
K_3	1598	1654	1697	1727					

C.D. for N marginal means=158·4 Kg/ha.

61(50)

(i) 595 Kg/ha. (ii) 223·2 Kg/ha. (iii) The main effects of N and P ars highly significant. (iv) Av. yield of grain in Kg/ha.

	P_0	P_1	P_2	P_3	K_0	K_1	K_2	K_3	Mean
N_0	504	478	586	546	475	558	518	563	528
1	442	412	600	652	440	522	506	638	527
N_2	553	437	624	659	565	600	510	598	568
N_3	741	749	732	810	741	774	740	777	758
Mean	560	519	635	667	555	614	669	644	595
K_0	541	454	525	701					
K_1	534	558	701	661					
K_2	515	492	671	596					
K_3	650	572	645	709					

C.D. for N or P marginal means=90·1 Kg/ha.

Crop :- Wheat. **Ref :- Ms. 61(136), 62(123), 63(106).**

Site :- Agri. Res. Stn., Naragund. **Type :- 'M'.**

Object :— To find out the utility of C/A/N on alkali soils.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton ; Wheat ; Wheat. (c) 12·4 C.L./ha. of F.Y.M. ; N.A. ; N.A. (ii) Alkali soils. (iii) 19.10.61 ; 26.10.62 ; 10.11.63. (iv) (a) Harrowing by blade harrow. (b) and (c) N.A. (d) 46 cm. between rows. (e) N.A. (v) Nil. (vi) Khempad. (vii) Unirrigated. (viii) Nil. (ix) 49 cm. ; 82 cm. in the whole year ; 58 cm. in the whole year. (x) 19.1.62 : 7.2.63 ; 11.2.64.

2. TREATMENTS :

3 manurial treatments : M_0=Control (No manure), M_1=16·8 Kg/ha, of N as C/A/N and M_2=16·8 Kg/ha. of N as A/S.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 8. (iv) (a) 5·5 m.×5·9 m. (b) 5·0 m.×5·0 m. (v) 46 cm.×46 cm. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of grain. (iv) (a) 1961-63. (b) No. (c) Results of combined analysis given under 5. (v) N.A. (vi) Nil. (vii) Error variances are homogeneous and Treatments×years interaction is absent.

5. RESULTS :

(i) 377 Kg/ha. (ii) 95·4 Kg/ha. (based on 46 d.f. made up of Treatments×years interaction and pooled error. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	M_0	M_1	M_2
Av. yield	371	436	325

C.D.=55·6 Kg/ha.

Years	M_0	M_1	M_2	Sig.	G.M.	S.E./plot
1961	225	225	181	N.S.	210	74·6
1962	546	677	476	*	566	124·8
1963	341	406	318	N.S.	355	78·4
Pooled	371	436	325	**	377	95·4

Crop :- Wheat (*Rabi*). **Ref :- Ms. 60(148), 61(139), 62(124), 63(114), 64(116), 65(101).**

Site :- Agri. Res. Stn., Naragund. Type :- 'M'.

Object :— To find out a suitable time and method of application of sulphur to Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton for 60 (148) ; Wheat for other years. (c) N.A. for 60(148) ; 62·8 Q/ha. of F.Y.M. +125·5 Kg/ha. of sulphur for 61(139), Nil for other years. (ii) Alkaline soil. (iii) 13.10.60 ; 19.10 61 ; 20.10.62 ; 2.11.63 ; 3.11.64 ; 31.10.65. (iv) (a) Harrowing by blade harrow. (b) Drilling. (c) 45 Kg/ha. (d) 36 cm. between rows. (e) N.A. (v) 12·4 C.L./ha. of F.Y.M. by broadcast for 60(148) ; 62 8 Q/ha. of F.Y.M. for 61(139) ; Nil for other years. (vi) Kenphad for 60 to 63, Amrut for 64 and 65. (vii) Unirrigated. (viii) Nil. (ix) 56 cm. in the whole year ; 49 cm. ; 82 cm. in the whole year ; 58 cm. in the whole year ; 108 cm. ; 36·8 cm. (x) 10.1.61 ; 16.1.62 ; 7.2.63 ; 5.2.64 ; 14.2.65 ; 27.2.66.

2. TREATMENTS:

Main-plot treatments :

2 times of application of Sulphur : T_1=15th July and T_2=15th August.

Sub-plot treatments :

4 methdos of application of Sulphur : M_1=Broadcasting and harrowing, M_2=Wooden Ploughing, M_3=Drilling and M_4=Furrowing.

Sulphur was applied at 125·5 Kg/ha.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 11·0 m. ×5·9 m. (b) 10·1 m.×5·0 m. (v) 46 cm.×46 cm. (vi) Yes.

4. GENERAL :

(i) Shunted growth in 65(101) good for other years. (ii) Nil. (iii) Plant ht. and yield of grain. (iv) (a) 1960-contd. (b) Yes. (c) Nil. (v) and (vi) Nil. (vii) Main-plot as well as sub-plot variances are hetrogeneous.

5. RESULTS :

60(148)

(i) 514 Kg/ha. (ii) (a) 102·1 Kg/ha. (b) 63·2 Kg/ha. (iii) Main effect of T alone is significant. (iv) Av. yield of grain in Kg/ha.

	M_1	M_2	M_3	M_4	Mean
T_1	500	488	487	508	496
T_2	595	537	482	518	533
Mean	547	512	485	513	514

C.D. for T marginal means=114·9 Kg/ha.

61(139)

(i) 217 Kg/ha. (ii) (a) 51·1 Kg/ha. (b) 79·2 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	M_1	M_2	M_3	M_4	Mean
T_1	200	180	250	171	200
T_2	277	277	210	175	235
Mean	238	229	230	173	217

62(124)

(i) 599 Kg/ha. (ii) (a) 27·9 Kg/ha. (b) 69·3 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	M_1	M_2	M_3	M_4	Mean
T_1	568	584	602	595	587
T_2	630	632	610	573	611
Mean	599	608	606	584	599

63(114)

(i) 369 Kg/ha. (ii) (a) 19·8 Kg/ha. (b) 58·3 Kg/ha. (iii) Main effect of T alone is significant. (iv) Av. yield of grain in Kg/ha.

	M_1	M_2	M_3	M_4	Mean
T_1	322	375	400	323	355
T_2	381	400	353	401	384
Mean	351	387	377	362	369

C.D. for T marginal means=22·3 Kg/ha.

64(116)

(i) 550 Kg/ha. (ii) (a) 102·8 Kg/ha. (b) 78·4 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	M_1	M_2	M_3	M_4	Mean
T_1	498	589	532	616	559
T_2	512	575	581	500	542
Mean	505	582	556	558	550

65(101)

(i) 1598 Kg/ha. (ii) (a) 192·1 Kg/ha. (b) 371·2 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	M_1	M_2	M_3	M_4	Mean
T_1	1957	1206	1591	1344	1524
T_2	1655	1690	1621	1724	1672
Mean	1806	1448	1606	1534	1598

Crop :- Wheat (*Rabi*). **Ref :- Ms 63(112), 64(91).**

Site :- Agri. Res. Stn., Naragund. **Type :- 'M'.**

Object : - To find a suitable method of application of N and P fertilizers.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Nil ; wheat. (c) Nil ; As per treatments. (ii) Alkaline. (iii) 2.11.63; 6.11.64. (iv) (a) Harrowing by blade harrow. (b) Drilling. (c) 45 Kg/ha (d) 30 cm. between rows. (e) N.A. (v) Nil. (vi) Amrut (early). (vii) Unirrigated. (viii) 1 to 2 hand weedings. (ix) 58 cm. in the whole year; 108 cm. in the whole year. (x) 9.2.64 ; 14.2.65.

2. TREATMENTS :

6 methods of application of 16.8 Kg./ha. of N+16.8 Kg./ha of P_2O_5 : M_0=Control (no manure), M_1= broadcasting, M_2=Deep placemeut : 2/3 dose behind the iron plough and $\frac{1}{3}$ dose at sowing by usual method, M_3=Deep placement : 2/3 dose behind the plough and $\frac{1}{3}$ dose as top dressing 2 to 3 weeks after germination of seeds M_4=2/3 dose by deep placement and $\frac{1}{3}$ dose by spraying twice : 1st 20 days after germination and 2nd at flowering stage and $M_5=\frac{1}{3}$ dose by deep placement and 2/3 dose by spraying as in M_4.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 8·8 m.×7·6 m. (b) 7·3 m×6·1 m. (v) 76 cm.×76cm. (vi) Yes

4. GENERAL :

(i) Good. (ii) Nil. (iii) Plant height and grain yield. (iv) (a) 1963—64. (b) Yes. (c) Results of combined analysis given under 5Results. (v) Bijapur and Bagalkot. (vi) Nil. (vii) Error variances are homogeneous and Treatments × years interaction is absent.

5. RESULTS :

(i) 228 Kg./ha. (ii) 121·5 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	M_0	M_1	M_2	M_3	M_4	M_5
Av. yield	144	350	258	226	206	182

C.D.=123·4 Kg.ha.

Years	M_0	M_1	M_2	M_3	M_4	M_5	Sig.	G.M.	S.E./plot
1963	127	351	245	230	188	155	N.S.	216	158·7
1964	160	350	270	223	225	208	N.S.	239	94·3
Pooled	144	350	258	226	206	182	*	228	121·5

Crop :- Wheat (*Rabi*). **Ref :- Ms 61(135), 62(120), 63(107),64(94).**

Site :- Agri. Res. Stri., Naragund. **Type :- 'M'.**

Object: — To study the effect of different chemicals in the Reclamation of Kari Soil.

1. BASAL CONDITIONS :

(i) No. (b) Cotton for 61(135), wheat for other years. (c) 12·4 C.L /ha. of F.Y.M. for 61(135) ; As per treatments for other years. (ii) Alkali soil. (iii) 5.11.61 ; 26.10.62 ; 2.11.63 ; 3.11.64. (iv) (a) Harrowing by blade harrow. (b) Broadcasting for 61(135) ; N.A. for 62 and 63. Drilling for 64(95). (c) 45 Kg/ha. for 64(94); N.A. for others. (d) 46 cm. between rows for 64(94) ; N.A. for others (e) N.A. (v) Nil. (vi) Amrut (early). (vii) Unirrigaated. (viii) Nil. (ix) 49 cm. ; 82 cm. in the whole year ; 58 cm. in the whole year ; 108 cm. inthe whole year. (x) 1.2.62 ; 1.2.63 ; 8.2.64.

2. TREATMENTS :

4 chemicals treatments : T_0=Control, T_1=44.8 Q/ha. of HNO_3, T_2=50·2 Q/ha of gypsum and T_3=12·6 Q/ha. of Sulphur.

3, DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) (iv) (a) 7·3 m.×4.3m. (b) 6·4 m×3·4 m. (v) 46 cm.×4 6m. (vi) Yes.

4. GENEAL :

(i) Normal. (ii) Nil. (iii) Ear head count ; plant height and grain yield. (iv) (a) 1961—1964. (b) Yes. (c) Pooled results are presented under 5 Results. (v) and (vi) Nil. (vii) Error variances are heterogeneous and Treatments × years interaction is present.

5. RESULTS :

(i) 450 Kg/ha. (ii) 225.6 Kg/ha. (based on 9 d.f. made up 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	374	510	468	448

	T_0	T_1	T_2	T_3	Sig.	G.M.	S.E./plot
1961	161	186	165	153	N.S.	166	36·1
1962	612	768	824	903	*	777	179·6
1963	292	392	359	267	N.S.	328	104·2
1964	433	692	522	469	**	529	120·7
Pooled	374	510	468	448	N.S.	450	225·6

Crop :- Wheat (*Rabi*). **Ref :- Ms. 63(105).**

Site :- Agri. Res. Stn., Naragund. **Type :- 'M'.**

Object :— To study the effect of different levels and sources of P_2O_5 on the yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) to (c) Nil. (ii) Alkaline. (iii) 3.11.63. (iv) (a) Harrowing by blade harrow. (b) to (e) N.A. (v) 33·6 Kg/ha. of N. (vi) Amrut (early). (vii) Unirrigated. (viii) Nil. (ix) 58 cm. in whole year. (x) 11.2.64.

2. TREATMENTS :

All combinations of (1) and (2).
(1) 3 levels of Ammo. Phos. : A_0=0, A_1=16·8 and A_2=33·6 Kg/ha.
(2) 3 levels of Super : B_0=0, B_1=16·8 and B_2=33·6 Kg/ha.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 5·9 m.×5·9 m. (b) 5·0 m.×5·0 m. (v) 46 cm.× 46 cm. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Plant count, height and grain yield. (iv) (a) 1963-contd. (modified in 1964). (b) No. (c) Nil. (v) Bagalkot and Bijapur. (vi) and (vii) Nil.

5. RESULTS :

(i) 374 Kg/ha. (ii) 74·6 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	A_0	A_1	A_2	Mean
B_0	445	383	393	407
B_1	343	417	352	371
B_2	354	344	336	345
Mean	381	381	360	374

Crop :- Wheat (*Rabi*). **Ref :- Ms. 64(118).**

Site :- Agri. Res. Stn., Naragund. **Type :- 'M'.**

Object :— To study the effect of different levels and sources of P_2O_5 on the yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) As per treatments. (ii) Alkaline. (iii) 5.11.64. (iv) 3 harrowing by blade harrow. (b) Seed drill. (c) 45 Kg/ha. (d) 40 cm. (e) Nil. (v) F.Y.M. at 33·6 Q/ha. +33·6 Kg/ha. of N as A/S at the time of sowing. (vi) Amrut. (vii) Unirrigated. (viii) 1 hand weeding. (ix) 107·3 cm. (x) 13.2.65.

2. TREATMENTS :

All combinations of (1) and (2)+a control.

(1) 2 levels of P_2O_5 : L_1=16·8 and L_2=33·6 Kg/ha.

(2) 2 sources of P_2O_5 : S_1=Ammo. Phos. and S_2=Supper.

3. DESIGN:

(i) Latin sq. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 7·6 m.×8·8 m. (b) 6·1 m.×7·3 m. (v) 2 rows of 38 cm. each on all sides. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1963-contd. (modified in 1964). (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 599 Kg/ha. (ii) 112·4 Kg/ha. (iii) None the effects is significant. (iv) Av. yied of grain in Kg/ha.

Control=557 Kg/ha.

	L_1	L_2	Mean
S_1	649	563	606
S_2	542	683	613
Mean	596	623	610

Crop :- Wheat (*Kharif*). **Ref :- Ms. 60(271).**

Site :- Agri. Res. Stn., Dharwar. **Type :- 'C'.**

Object :- To compare treated seeds with untreated seeds for seedling blight.

1. BASAL CONDITIONS :

(i) (a) to (c) Nil. (ii) Black soil. (iii) 15.10.60. (iv) Ploughing and harrowing. (b) Drilled. (c) 45 Kg/ha. (d) 30 cm. between rows. (e) N.A. (v) N.A. (vi) As per treatments. (vii) Unirrigated. (ix) Weeding and interculturing. (ix) 6·1 cm. (x) 15.1.61.

2. TREATMENTS :

4 seed treatments : T_1=Kemphad seeds treaeted with Agrosan, T_2=Local seeds treated with Agrosan, T_3=Kemphad seeds untreated and T_4=Local seeds untreated.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) 7·3 m.×6·1 m. (b) 6·1 m.×4·9 m. (v) 61 cm.×61 cm. (vi) Yes.

4. GENERAL :

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

5. RESULTS :

(i) 739 Kg/ha. (ii) 194·7 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	956	529	922	550

C.D.=311·5 Kg/ha.

Crop :- Wheat (*Rabi*). **Ref :- Ms. 60(86), 61(52).**

Site :- Agri. Res. Stn., Gangavathi. **Type :- 'C'.**

Object :— To find out the optimum seed rate for Wheat in the T.B.P. area where tillering is very sparce.

1. BASAL CONDITIONS :

(i) (a) Sugarcane-Wheat ; *Jowar*—Groundnut—Wheat. (b) Fallow ; Groundnut. (c) Nil ; 140·1 Kg/ha. of Super. (ii) Light black soil. (iii) 4.11.60 ; 2.11.61. (iv) (a) 1-2 ploughings and 2-4 harrowings. (b) Drilling. (c) As per treatments. (d) and (e) N.A. (v) 12·4 C.L./ha. of F.Y.M.+44·8 Kg/ha. of N+22·4 Kg/ha. of P_2O_5. (vi) K-28. (vii) Irrigated. (viii) 2 hand weedings and 1 hoeing. (ix) N.A. : Nil. (x) 23, 24.2.61 ; 6.3.62.

2. TREATMENTS :

6 seed rates : S_1=34, S_2=45, S_3=56, S_4=67, S_5=78 and S_6=90 Kg/ha.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 5. (iv) (a) and (b) 18·6 m.×2·7 m. for 60(86); 11·0 m.×4·6 m. for 61 (52). (v) Nil. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of grain. (iv) (a) 1960-61. (b) No. (c) Nil (v) and (vi) Nil. (vii) Error variances are heterogeneous and Treatments×years interaction is absent.

5. RESULTS :

60(86)

(i) 476 Kg/ha. (ii) 112·9 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	S_1	S_2	S_3	S_4	S_5	S_6
Av. yield	362	362	524	597	506	506

C.D.=149·0 Kg/ha.

61(52)

(i) 640 Kg/ha. (ii) 69·5 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	S_1	S_2	S_3	S_4	S_5	S_6
Av. yield	590	646	669	662	601	669

Crop :- Wheat (*Rabi*). **Ref :- Ms. 60(85), 61(51).**

Site :- Agri. Res. Stn., Gangavathi. **Type :- 'C'.**

Object :— To find out the optimum time of sowing for getting higher yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) *Jowar*-wheat ; Jowar-groundnut-wheat. (b) Nil ; Groundrut. (c) Nil ; 140·1 Kg./ha. of super. (ii) Light black soil. (iii) As per treatments. (iv) (a) 2 ploughings and 2 harrowings. (b) Drilling. (c) 45 Kg./ha. (d) and (e) N.A. (v) 12·4 C.L./ha. of F.Y.M.+44.8 Kg./ha. of N+22.4 Kg./ha of P_2O_5. (vi) K. 28. (vii) Irrigated. (viii) 1-2 hand weedings and 2 hoeings. (ix) N.A. ; 9 cm. (x) 12.2.61 ; 5.3.62.

2. TREATMENTS :

10 days of sowing : D_1=15th Oct., D_2=22nd Oct., 29th Oct., D_4=5th Nov., D_5=12th Nov., D_6=19th Nov. D_7=26 Nov., D_8=3rd Dec., D_9=10th Dec. and D_{10}=17th Dec.

3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 5. (iv) (a) and (b) 18·4 m.×2·7m. (v) Nil. (iv) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of grain. (iv) (a) 1960—1961. (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 :

(i) 281 Kg/ha. (ii) 88·5 Kg/ha. (based on 81 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	D_1	D_2	D_3	D_4	D_5	D_6	D_7	D_8
Mean yield	347	300	324	304	276	306	270	242
	D_9	D_{10}						
	242	200						

C. D.=78·9Kg/ha.

	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9	T_{10}	Sig.	G.M.	S.E./plot
1960	522	518	507	497	486	470	457	420	401	317	**	460	81·8
1961	172	83	141	110	65	141	83	65	83	83	N.S.	103	94·4
Pooled	347	300	324	304	276	306	270	242	242	200	*	281	83·5

Crop :- Wheat (*Rabi*). **Ref :- Ms. 60(93)**

Site :- Agri. Res. Stn., Sirugoppa. **Type :- 'CV'.**

Object :- To find out suitable time of sowing and variety to get more yield.

1. BASAL CODITIONS :

(i) *Jowar*—Cotton—Wheat. (b) Jowar. (c) 126 Q/ha. of F.Y.M.+44.8 Kg/ha of Nas A/S+22·4 Kg/ha. of P_2O_5 as super. (ii) Black Soil. (iii) As per Treatments. (iv) (a) 2 ploughing by victory plough. (b)and (c) N.A. (d) 28 cm.×27cm. (e) N.A. (v) 126 Q/ha. of F.Y.M.+44 Kg/ha. of Nas A/S+22·4 Kg/ha. of P_2O_5 as Super. N applied at the time of sowing by hand. (vi) As per treatments. (vii) Irrigated. (vii) 2 weedings. (ix) 28 cm. (x) 18-2-61 to 18-3-61.

2. TREATMENTS :

Main-plot treatments :

6 varieties :- N_1=Kemphad, V_2=C-253, V_3=PW-5, V_4=NP-710, V_5=K-28 and V_6=Hy 11-6.

Sub-plot treatments :

4 dates of sowing : D_1=13.10.1960., D_2=28.10.1960, D_3=5.11.1960 and D_4=12.11.1960.

3. DESIGN :

(i) Split-plot. (ii) (a) 6 main-plots/replication ; 4 sub-plots/main-plot. (b) N.A. (iii) 3 (iv) (a) 1/198. ha. (b) 1/247. (v) Two rows on either side. (iv) Yes.

4. GENERAL

(i) Normal. (ii) Yellow nest observed during the latter stage. (iii) Yield of grain. (iv) (a) to(c) No. (v) to (vii) Nil.

5. RESULTS.

(i) 345 Kg/ha. (ii) (a) 258·7 Kg/ha. (b) 95·6 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	184	285	310	352	398	429	326
D_2	327	315	343	331	415	380	352
D_3	276	247	229	226	247	367	265
D_4	421	495	310	422	448	537	439
Mean	302	335	298	333	377	428	345

C.D. for D marginal means=64·8 Kg/ha.

Crop :- Wheat (*Rabi*). **Ref :-Ms. 62(31), 63(21), 64(172).**

Site :- Agri. Res. Stn., Bailhongal. **Type :- 'CM'.**

Object :— To study the suitable G.M. crop for dry Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) As per treatments. (c) N.A. (ii) Medium black. (iii) 13.10.62 ; 19.10.63 ; 22.10.64. (iv) (a) 1 iron ploughing and 3 to 5 harrowings. (b) Drilling. (c) 45 Kg/ha. (d) 30 cm. between rows. (e) N.A. (v) 12.4 C.L./ha. of F.Y.M. for 62(31) and 63(21); 56 Q/ha. of F.Y.M. for 64(172). (vi) Amrut (early). (vii) Unirrigated. (viii) 1 weeding and interculturing. (ix) 20 cm. ; 2 cm. ; 23 cm. (x) 17.1.63 ; 21.1.64 ; 20.1.65.

2. TREATMENTS :

6 previous crops : C_0=Fallow (control), C_1=Chinamug, C_2=Sunnhemp (cut), C_3=Sunnhemp (uprooted) and harrowed with disc harrow), C_4=Sunnhemp (buried with iron plough) and C_5=Groundnut.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 14·6 m.×4·9 m. (b) 13·4 m.×3·7 m. (v) 61 cm.×61 cm. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of grain. (iv) (a) 1962-64. (b) No. (c) Results of combined analysis given under 5. (v) and(vi) Nil. (vii) Error variances are homogeneous and Treatments×years interaction is absent.

5. RESULTS :

(i) 747 Kg/ha. (ii) 121·3 Kg/ha. (based on 5 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_0	C_1	C_2	C_3	C_4	C_5
Av. yield	694	766	767	845	787	624

C.D.=99·3 Kg/ha.

Years	C_0	C_1	C_2	C_3	C_4	C_5	Sig.	G.M.	S.E./plot
1962	1053	1073	1134	1206	1189	974	N.S.	1105	118·4
1963	474	523	465	486	461	408	N.S.	470	128·7
1964	556	701	703	842	712	490	*	667	118·2
Pooled	694	766	767	845	787	624	**	747	121·3

Crop :- Wheat (*Rabi*). **Ref :- Ms. 62(90), 63(89), 64(62).**

Site :- Agri. Res. Stn., Saundatti. **Type :- 'CM'.**

Object :— To study the effect of Groundnut and chinamug taken in the *Kharif* season on the succeeding crop of Wheat.

1. BASAL CONDITIONS :

(i) (a) to (c) As per treatments. (ii) Medium black. (iii) 17.10.62 ; 29.10.63 ; 23.10.64. (iv) (a) 2 harrowings. (b) Drill sowing. (c) 45 Kg/ha, (d) 30 cm. between rows. (e) —. (v) 12·4 C.L./ha. of F.Y.M.+ 33·6 Kg/ha. of N+22·4 Kg/ha. of P_2O_5. (vi) Amrut. (vii) Unirrigated. (viii) Interculturing and hand weeding. (ix) 12 cm. ; N.A. ; 2 cm. (x) 29.1.63 ; 29.1.64 ; 31.1.65.

2. TREATMENTS :

All combinations of (1) and (2).

(1) 2 previous crops : C_1=Groundnut and C_2=China-mug.

(2) 2 manurial treatments: M_1=22·4 Kg/ha. of P_2O_5 and M_2=11·2 Kg/ha. of N+22·4 Kg/ha. of P_2O_5.

Manures were applied to previous crop in *Kharif* season.

3. DESIGN:

(i) Fact. in R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) and (b) 12·8 m.×8·2 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Yield of grain. (iv) (a) 1962-64. (b) No. (c) Results of combined analysis are presented under 5. Results. (v) N.A. (vi) Nil. (vii) Error variances are homogeneous and Treatments × years interaction is absent.

5. RESULTS :

(i) 294 Kg/ha. (ii) 46·7 Kg/ha. (based on 51 d.f. made up of pooled error and Treatments × years interaction). (iii) Main effect of C is highly significant. (iv) Av. yield of grain in Kg/ha.

	M_1	M_2	Mean
C_1	254	37	246
C_2	339	345	342
Mean	296	291	294

C.D. for C marginal means= 22·1 Kg/ha.

Years	C_1	C_2	Sig	M_1	M_2	Sig.	G.M.	S.E./plot
1962	312	446	**	390	376	N.S.	383	53·8
1963	206	260	**	243	224	N.S.	233	32·5
1964	211	321	**	257	274	N.S.	267	43·0
Pooled	246	342	**	296	291	N.S.	294	46·7

Crop :- Wheat (*Rabi*). **Ref :- Ms. 60(279).**

Site :- Agri. Res. Stn., Arbhavi. **Type :- 'IM'.**

Object :— To find out the optimum water and manurial requirements for Wheat.

1. BASAL CONDITIONS :

(i) (a) Maize-Wheat. (b) Maize. (c) F.Y.M. at 12·4 C.L./ha.+33·6 Kg/ha. of N as Urea+11·2 Kg/ha. of P_2O_5 as Super+11·2 Kg/ha. of K_2O as Pot. Sul. (ii) Black soil. (iii) 25 and 26.10.60. (iv) (a) Ploughing and harrowing. (b) Dibbling. (c) N.A. (d) 30 cm.×23 cm. (e) 2 to 3. (v) 12·4 C.L./ha. of F.Y.M. (vi) Kemphad. (vii) Irrigated. (viii) Gap filling, interculturing, and hand weeding. (ix) 8 cm. (x) 5.3.61.

2. TREATMENTS :

All combinations of (1) and (2).

(1) 2 intensities of irrigation : I_1=6·4 and I_2=8·9 cm.

(2) 5 manurial treatments : M_0=No manure, M_1=22·4 Kg/ha. of N as A/S and G.N.C. in 1 : 2 ratio, M_2=22·4 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 Pot. Sul., M_3=44·8 Kg/ha. of N as A/S and G.N.C. in 1 : 2 ratio and M_4=44·8 Kg/ha. of N+22·4 Kg/ha. of P_2O_5+22·4 Kg/ha. of K_2O.

N applied in two equal doses 3 and 6 weeks after sowing. P_2O_5 and K_2O applied 3 weeks after sowing.

3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 3. (iv) (a) 7·3 m.×6·7 m. (b) 6·4 m.×6·1 m. (v) 46 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Crop effected by rust. (iii) Yield of grain. (iv) (a) 1960-63 (modified every year). (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 797 Kg/ha. (ii) 128·7 Kg/ha. (iii) I effect is significant. (iv) Av. yield of grain in Kg/ha.

	M_0	M_1	M_2	M_3	M_4	Mean
I_1	749	701	742	776	726	739
I_2	823	843	897	840	876	856
Mean	786	772	820	808	801	797

C.D. for I marginal means=98·7 Kg/ha.

Crop :- Wheat (*Rabi*). **Ref :- Ms. 61(105).**

Site :- ~~Agri. Res.~~ Stn., Arbhavi. **Type :- 'IM'.**

Object :— To find out optimum water and manurial requirements of Wheat.

1. BASAL CONDITIONS :

(i) (a) Maize-Wheat. (b) Maize. (c) 24.7 C.L./ha. of F.Y.M. (ii) Medium black soil. (iii) 14.10.61. (iv) (a) Ploughing and harrowing opening furrows. (b) to (e) N.A. (v) 12·4 C.L./ha. of F.Y.M. (vi) Kemphad. (vii) As per treatments. (viii) 2 interculturings and 4 weedings. (ix) 7 cm. (x) 9.2.62.

2. TREATMENTS:

Main-plot treatments :

All combinations of (1) and (2).

(1) 3 intervals of irrigation : D_1=20, D_2=25 and D_3=30 days.

(2) 2 intensities of irrigation : I_1=6·4 and I_2=8·9 cm.

Sub-plot treatments :

2 manurial treatments : M_0=Control (no manure) and M_1=22·4 Kg/ha. of N+11·2 Kg/ha. of P_2O_5 +11·2 Kg/ha. of K_2O.

3. DESIGN :

(i) Split-plot. (ii) (a) 6 main-plots/replication ; 2 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 7·3 m.× 6·7 m. (b) 6·4 m.×6·1 m. (v) 46 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1960-63 (modified every year). (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1140 Kg/ha. (ii) (a) 211·0 Kg/ha. (b) 91·2 Kg/ha. (iii) Main effect of M alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	D_1	D_2	D_3	M_0	M_1	Mean
I_1	1184	1210	1009	1059	1209	1134
I_2	1169	1225	1044	1104	1189	1146
Mean	1176	1218	1026	1081	1199	1140
M_0	1123	1111	1011			
M_1	1230	1324	1042			

C.D. for M means=66·2 Kg/ha.

Crop :- Wheat (*Rabi*). **Ref :- Ms. 62(106).**

Site :- Agri. Res. Stn., Arbhavi. **Type :- 'IM'.**

Object :—To find out optimum water and manurial requirements of Wheat.

1. BASAL CONDITIONS:

(i) N.A. (b) Maize. (c) 24·7 C.L./ha. of F.Y.M. (ii) Medium black soil. (iii) 25.10.62. (iv) (a) Ploughing and harrowing. (b) to (e) N.A. (v) 12·4 C.L./ha. of F.Y.M. (vi) Kemphad. (vii) As per treatments. (viii) 2 interculturings and 3 weedings. (ix) 22 cm. (x) 1.3,63.

2. TREATMENTS :

Main-plot treatments :

3 intervals of irrigation : D_1=20, D_2=25 and D_3=30 days.

Sub-plot treatments :

All combinations of (1) and (2)

(1) 2 intensities of irrigation : I_1=6·4 and I_2=8·9 cm.

(2) 2 manurial treatments : M_0=Control (no manure) and M_1=22·4 Kg/ha. of N+11·2 Kg/ha. of P_2O_5. +11·2 Kg/ha. of K_2O.

3. DESIGN :

(i) Split plot. (b) (a) 3 main-plots/replication ; 4 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 7·3 m.×6·7 m. (b) 6·4 m.×6·1 m. (v) 46 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Normal, lodging in the month of Fabruary. (ii) Nil. (iii) Grain yield. (iv) (a) 1960—1963 (modified every year). (b) No. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

(i) 563 Kg/ha. (ii) (a) 178·0 Kg/ha. (b) 89·6 Kg/ha. (iii) Main effect of M alone is significant. (iv) Av. yield of grain in Kg/ha.

	I_1	I_2	M_0	M_1	Mean
D_1	560	545	529	575	552
D_2	587	552	537	602	569
D_3	511	626	503	634	568
Mean	552	574	523	603	563
M_0	505	541			
M_1	600	608			

C D. for M means=62·8 Kg/ha.

Crop :- Wheat (*Rabi*). **Ref :- Ms. 63(243).**

Site :- Agri. Res. Stn., Arbhavi. **Type :- 'IM'.**

Object :—To find out the optimum water and manurial requirement of Wheat.

1. BASAL CONDITIONS :

(i) (a) Maize—Wheat. (b) Maize. (c) N.A. (ii) Medium black soil. (iii) 7.11.63. (iv) (a) Ploughing and harrowing. (b) Dibbling. (c) 98·8 Kg/ha. (d) and (e) N.A. (v) Nil. (vi) Kemphad. (vii) As per treatments. (viii) 2 interculturings and 3 weedings. (ix) Nil. (x) 24.2.64.

2. TREATMENTS ;

Main-plot treatments :

3 intervals of irrigations : A_1=20, A_2=25 and A_3=30 days.

Sub-plot treatments:

All combinations of (1) and (2)

(1) 2 intensities of irrigations : I_1=6·4 cm. and I_2=8·9 cm.

(2) 2 levels of N : N_0=0 and N_1=22·4 Kg/ha.

3. DESIGN :

(i) Split—plot. (ii) (a) 3 main-plots/replication, 4 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 7·3 m.× 6·7 m. (b) 6·4 m.×6·1 m. (v) 46 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1960 to 1963 (modified every year). (b) No. (c) Nii. (v) to (vii) Nil.

5. RESULTS :

(i) 808 Kg/ha. (ii) (a) 100·0 Kg/ha. (b) 124·5 Kg/ha. (iii) Main effects of A, N and interaction A×N are highly significant. (iv) Av. yield of grain in Kg/ha.

	I_1	I_2	N_0	N_1	Mean
A_1	996	842	727	1111	919
A_2	804	742	719	827	773
A_3	707	757	704	760	732
Mean	836	780	717	899	808
N_0	751	682			
N_1	921	878			

C.D. for A marginal means =113·3 Kg/ha.
C.D. for N marginal means =87·2 Kg/ha.
C.D. for N means at the same level of A=151·0 Kg/ha.
C.D. for A means at the same level of N=156·6 Kg/ha.

Crop :- Wheat (*Rabi*). **Ref :- Ms. 60(MAE).**

Site :- M.A.E. Centre, Gangavati. **Type :- 'M'.**

Object :—Type IV : To study the effect of phosphate manuring of legumes and their after effect on the succeeding Wheat crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Mung and groundnut. (c) As per treatments. (ii) Deep black, (iii) 7.11.60. (iv) (a) Ploughing and harrowing. (b) By hand drill. (c) 45 Kg/ha. (d) 30 cm.×8 to 10 cm. (e) —. (v) Nil. (vi) NP—710. (vii) Irrigated. (viii) and (ix) N.A. (x) 21, 22.2. 61.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2)+control L_0P_0 (fallow)

(1) 2 legumes crops : L_1=Mung and L_2=Groundnut.
(2) 3 levels of P_2O_5 as Super given to legumes : P_0=0, P_1=44·8 and P_2=89·7 Kg/ha.

Sub-plot treatments :

3 levels of N as A/S given to Wheat crop : 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 and 3 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) and (b) N.A. (v) N.A. (vi) Yes.

GENERAL :

(i) and (ii) N.A. (iii) Yield of grain. (iv) (a) 1958 to 1960. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 386 Kg/ha. (ii) (a) 105·1 Kg/ha. (b) 53·5 Kg/ha. (iii) Main effect of N is significant. N×control Vs. others is highly significant.

	L_0P_0	L_1P_0	L_1P_1	L_1P_2	L_2P_0	L_2P_1	L_2P_2	Mean
N_0	258	295	341	378	387	452	360	353
N_1	424	304	406	470	397	452	480	419
N_2	286	305	434	443	360	433	433	385
Mean	323	301	394	430	381	446	424	386

C.D. for N marginal means=33·8 Kg/ha.

Crop :- Jowar (*Rabi*). **Ref :- Ms. 63(238), 64(206), 65 (79).**

Site :- Agri. Res. Stn., Bagalkot. **Tope :- 'M'.**

Object : — To compare the effect of Super with Ammo. Phos.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) N.A. (c) Nil. (ii) Blaek soil. (iii) Ploughing and harrowing. (b) Drilling. (c) 4·5 Kg/ha. (d) 46 cm.×30 cm. (e)—. (v) Nil for 1963 ; 12·4 C.L./ha. of F.Y.M. in 1964 and 65. (vi) M-35-1 (early). (vii) Unirrigated. (viii) 3 interculturing, two weedings. (ix) 69 cm, ; 61 cm. ; 26 cm. (x) 12.3.64 ; N.A.; N.A.

2. TREATMENTS :

All combinations of (1) and (2).

(1) 3 levels of Super : P_0=0, P_1=16·8 and P_2=33·6 Kg/ha.

(2) 3 levels of A/phos. : N_0=0, N_1=16·8 and N_2=33·6 Kg/ha.

3. DESIGN ;

(i) Fact. in R.B.D. (ii) (a) 9. (b) 65·8 m.×7·3 m. (iii) 4. (iv) (a) 7·3 m.×7·3 m. (b) 6·4 m.×6·4 m. (v) 91 cm. row alround. (vi) Yes.

4. GENERAL :

(i) Good, crop lodged during last week of Feb. 1964 ; Fair in 1964, 65. (ii) No. (iii) Height of plants, grain yield/plot. (iv) (a) 1963 to 1965. (b) No. (c) As under 5. Results. (v) Nil. (vi) N A. (vii) Error variances are homogeneous, Treatments×years interaction is absent.

5. RESULTS :

(i) 1399 Kg/ha. (ii) 393·8 Kg/ha. (based on 72 d.f. made up of Treatments×years interaction). (iii) Main effect of N is highly significant while that of P is significant. (iv) Av. yield of grain in Kg/ha.

	N_0	N_1	N_2	Mean
P_0	924	1286	1347	1186
P_1	1373	1546	1615	1511
P_2	1367	1522	1614	1501
Mean	1221	1451	1525	1399

C.D. for N or P marginal means=131·1 Kg/ha.

Years	N_0	N_1	N_2	Sig	P_0	P_1	P_2	Sig.	G.M.	S.E./plot
1963	1015	945	982	N.S.	937	1042	964	N.S.	980	150·3
1964	1366	1684	1860	**	1338	1757	1814	**	1637	192·6
1965	1284	1725	1734	**	1283	1735	1726	**	1581	198·0
Pooled	1221	1451	1525	**	1186	1511	1501	**	1399	393·8

Crop :- Jowar (*Rabi*). **Ref :- Ms. 63(235)**

Site :- Agri. Res. Stn., Bagalkot. **Type :- 'M'**

Object :- To study the comparative effect of organic and inorganic manures on *Rabi Jowar* in dry farming.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) Deep black soil. (iii) 8.10.63. (iv) (a) 3 harrowing (b) Seed drill (c) 4.5 Kg./ha. (d) 46 cm. × 30 cm. (v) Nil. (vi) M-35-1. (vii) Unirrigated. (viii) 1 weeding. (ix) 69 cm. (x) 15.3.64.

2. TREATMENTS.

8 manurial treatments : T_0=Control (no manure, two plots/block) ; T_1=2800 Kg./ha. F.Y.M., T_2=5600 Kg./ha. of F.Y.M., T_3=Equivalent quilities of N P K present in 28000 Kg./ha. of F.Y.M. (Nas A/S), T_4=As T_3. (Nas Urea), T_5=Equivalent quantities of NPK present in 5600 Kg/ha. of F.Y.M. (N as A/S), T_6=As T_5 (Nas urea) ; T_7=T_1+T_3 and T_7=T_1+T_4.

3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) 73·2 m. × 7·3 m. (iii) 3. (iv) (a) 7·3 m. × 7·3 m (b) 6·4 m. × 6·4 m. (v) 91 cm. row alround. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) grain yield (iv) (a) 1960. (b) Yes. (c) Nil. (v) N.A. (vi) and (vii) Nil.

5. RESULTS:

(i) 621 Kg/ha. (ii) 87·1 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	549	627	696	578	631	562	663	655	696

Crop :- Jowar (*Rabi*). **Ref :- Ms 63(237)**

Site :- Agri. Res. Stn., Bagalkot. **Type :- 'M'**

Object :- To find out the best method of application of fertilizer on dry land *Jowar*

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) Deep black soil. (iii) 8.10.63. (iv) (a) 3 harrowings. (b) Seed drill. (c) 4·5 Kg./ha. (d) 46 cm. × 30 cm. (e)—. (v) Nil. (vi) M-35-1. (vii) Unirrigated. (viii) Interculturing and 2 weedings. (ix) 69 cm. (x) 14.3.1964.

2. TREEATMENTS :

6 methods of application of 16·8 Kg/ha. of N+16·8 Kg/ha. of P_2O_5 : M_0=Control (no ferrtilizer), M_1=Normal method of fertilizer spreading, M_2=Deep placement 2/3 at the time of ploughing and $\frac{1}{3}$ at the time of sowing, M_3=$\frac{1}{3}$ of the fertilizer at the time of sowing and 2/3 at the time of flowering by spraying, M_4= Spraying 2/3 at the time of sowing and $\frac{1}{3}$ at the time of flowering by spraying and M_5=Full dose at ploughing only.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 11 m.×11 m. (b) 10·1 m.×10·1 m. (v) 91 cm. border rows alround.

4. GENERAL :

(i) Average lodged during the last week of February. (ii) Nil. (iii) Plant height and grain yield. (iv) (a) to (c) No. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 953 Kg/ha. (ii) 133·0 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	819	882	1170	1035	940	872

C.D. =200·4 Kg/ha.

Crop :- Jowar (*Rabi*). **Ref :- Ms. 63(240), 64(205), 65(78).**

Site :- Agri. Res. Stn., Bagalkot **Type :- 'M'.**

Object :— To find out the best method and dose of application of Super.

1. BASAL CONDITIONS :

(i) (a) Nil in 1963 ; Cotton-*Jowar* for 64, 65. (b) N.A. in 1963 ; Cotton for 1964 and 1965. (c) Nil in 1963 ; N.A. for 1964 and 65. (ii) Deep black soil. (iii) 6.11.63 ; N.A. ; N.A. (iv) (a) 3 ploughings (1963); ploughing and harrowing in 1964 and 965. (b) Seed drill. (c) 4·5 Kg/ha. (d) 46 cm.×30 cm. (e) N.A. (v) Nil in 1963 ; 12·4 C.L./ha. of F.Y.M. for others. (vi) M-35-1 (early). (vii) Unirrigated. (viii) Interculturing and two weedings and thinning. (ix) 69 cm ; 61 cm. ; 26 cm. (x) 16, 17.3.64 ; N.A. ; N.A.

2. TREATMENTS :

All combinations of (1) and (2).

(1) 4 levels of P_2O_5 as Super : P_0=0, P_1=33·6, P_2=100·8 Kg/ha.

(2) 4 methods of application of Super : M_0=Drilling, M_1=Placement 5·1 cm.×6·1 cm., M_2=Broadcasting and M_3=Deep placement.

(3) 2 doses of carriers : C_0=Super without carrier, C_1=Super mixed with carrier cowdung.

3. DESIGN :

(i) Confd. fact. in 1963 ; Fact. in R.B.D. in 1964 and 65. (ii) (a) 8 plots/block and 4 blocks/replication in 1963 ; 32 plots/replication in 1964 and 65. (b) 29·3 m.×58·5 m. in 1963 ; N.A. in 1964 and 65. (iii) 3. (iv) (a) 7·3 m.×7·3 m. (b) 6·4 m.×6·4 m. (v) 46 cm. alround. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Grain yield. (iv) (a) 1963-66. (b) No. (c) Nil. (v) N.A. (vi) Irregularities in exptl. result occured due to rainless condition ; late laying out of the plots and late application of treatments. (vii) Experiment laid out in 1963 analyed as fact. in R.B.D.

5. RESULTS :

63(240)

(i) 882 Kg/ha. (ii) 143·6 Kg/ha. (iii) Main effect of M and P×C interaction are significant. (iv) Av. yield of grain in Kg/ha.

	P_0	P_1	P_2	P_3	M_0	M_1	M_2	M_3	Mean
C_0	869	912	854	931	909	938	868	851	892
C_1	1003	847	871	765	884	947	902	753	872
Mean	936	880	863	848	897	942	885	802	882
M_0	924	893	889	881					
M_1	928	997	903	942					
M_2	1029	822	889	800					
M_3	863	808	769	769					

C.D. for M marginal means= 83.0 Kg/ha.
C.D. for body of P×C table=117·2 Kg/ha.

64(205)

(i) 1027 Kg/ha. (ii) 216·0 Kg/ha. (iii) Main effect of M is significant. (iv) Av. yield of grain in Kg/ha.

	P_0	P_1	P_2	P_3	M_0	M_1	M_2	M_3	Mean
C_0	964	1020	1136	1098	1039	1057	978	1145	1055
C_1	860	1033	1042	1066	968	940	960	1131	1000
Mean	912	1026	1089	1082	1004	998	969	1138	1027
M_0	903	991	1141	979					
M_1	932	981	999	1082					
M_2	828	891	1188	968					
M_3	985	1243	1027	1298					

C.D. for M marginal means=124·8 Kg/ha.

65(78)

(i) 1308 Kg/ha. (ii) 237·0 Kg/ha. (iii) Interaction P×C is sifinificant. (iv) Av. yield of grain in Kg/ha.

	P_0	P_1	P_2	P_3	M_0	M_1	M_2	M_3	Mean
C_0	1204	1414	1301	1405	1313	1378	1303	1329	1331
C_1	1296	1204	1394	1243	1242	1340	1274	1282	1284
Mean	1250	1309	1348	1324	1278	1359	1288	1306	1308
M_0	1201	1282	1261	1367					
M_1	1291	1337	1388	1419					
M_2	1210	1294	1341	1309					
M_3	1298	1323	1401	1201					

C·D. for the body of P×C table=193·6 Kg/ha

Crop :- Jowar (*Kharif*). **Ref. :- Ms. 60(172).**

Site :- Agri. Res. Stn., Bailhongal. **Type :- 'M'.**

Object :—To find out the best source of N for *Jowar*.

1. BASAL CONDITIONS :

(l) (a) Nil. (b) and (c) N.A. (ii) Black soil. (iii) 20.7.60. (iv) (a) N.A. (b) Drilling. (c) 4·5 Kg/ha. (d) 45 cm.×15 cm. (e) —. (v) Nil. (vi) BH. 4-1-4 (late). (vii) Unirrigated. (viii) N.A. (ix) 44 cm. (x) 5.1.61.

2. TREATMENTS:

7 sources of 33·6 Kg/ha. of N : S_0=Control (No. N), S_1=A/S, S_2=C/A/N, S_3=A/C, S_4=Urea, S_5=A/S/N S_6=and C/N.

The above fertilizers were drilled with 55·4 Kg. of P_2O_5 before sowing.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 7·6 m.×4·4 m. (b) 6·4 m.×3·2 m. (v) 60 cm.×60 cm. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Height of plant, no. of leaves etc. (iv) (a) 1958 to 1961. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1746 Kg/ha. (ii) 281·7 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	S_6
Av. yield	1581	1760	1456	1995	1916	1763	1750

Crop :- Jowar (*Kharif*). **Ref :- Ms. 61(45).**

Site :- Agri. Res. Stn., Bailhongal. **Type :- 'M'.**

Object :—To find out the best source of N for *Jowar*.

1. BASAL CONDITIONS:

(i) (a) *Jowar*-Wheat. (b) Wheat, (c) Nil. (ii) Medium black. (iii) 6.8.61. (iv) (a) 2 harrowings. (b) Drilling. (c) 4Kg/ha. (d) 46 cm.×15 cm. (e) N.A. (v) 12·4 C.L./ha. of F.Y.M.+22·4 Kg/ha. of Super. (vi) B.H. 4-1-4 (late)(vii) Unirrigated. (viii) 3 interculturing and hand weedings. (ix) 23 cm. (x) 26.12.61.

2. TREATMENTS :

6 sources of N at 33·6 Kg/ha. : S_0=Control (No N), S_1=A/S, S_2=C/A/N, S_3=A/C, S_4=Urea and S_5= C/N.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 7·6 m.×4·1 m. (b) 6.4 m.×3·2 m. (v) 61 cm.×46 cm. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Height of plant, length and breadth of earhead and grain yield. (iv) (a) 1958-N.A. (b) No. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

(i) 1516 Kg/ha. (ii) 224 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	863	1583	1466	1904	1646	1635

C.D.=337·5 Kg/ha.

Crop :- Jowar (*Kharif*). **Ref :- Ms. 60(183), 61(47).**

Site :- Agri. Res. Stn., Bailhongal. **Type :- 'M'.**

Object:—To find the optimum time and placement of fertilizers for *Jowar*.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) N.A.; Wheat. (c) Nil. (ii) Medium black. (iii) 24.7.60; 6.8.61. (iv) (a) 3 harrowings. (b) Drilling. (c) 4 to 5 Kg/ha. (d) 46 cm.×15 cm. (e) N.A. (v) 33·6 Q/ha. of F.Y.M. for 60(183), 12·35 C.L./ha. of F.Y.M. for 61(47). (vi) BH 4-1-4 (late). (vii) Unirrigated. (viii) 3 interculturings and hand weedings. (ix) 23 cm.; 44 cm. (x) 27.12.60; 26.12.61.

2. TREATMENTS :

8 times and methods of application of 33·6 Kg/ha. of N as A/S+22·4 Kg/ha. of P_2O_5 as Super:
M_0=Control (no manure), M_1=Drilled, M_2=Applied by draw tubes at sowing, M_3=At sowing by fertlizer-cum-seed drill, M_4=½ dose by fertilizer appliances and ½ dose by top dressing implements, M_5=Broadcast at sowing, M_6=Broadcast (½ at sowing+½ after 1½ months) and M_7=½ dose by draw tubes and ½ dose by broadcast.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 7·6 m.×4·4m : 7·6 m.×4·1 m. (b) 6·4 m.×3·2 m.; 6·4 m.×3·2 m. (v) 60 cm.×60 cm; 61 cm.×46 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1959 to 1961. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Error variances are heterogeneous. Treatments×years interaction is absent

5. RESULTS :

60(183)

(i) 1305 Kg/ha. (ii) 374·7 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
Av. yield	875	1315	1861	1471	1348	1234	1227	1107

61(47)

(i) 1278 Kg/ha. (ii) 182·1 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
Av. yield	643	1377	1320	1298	1256	1385	1482	1464

C.D.=267·9 Kg/ha.

Crop :- Jowar (*Kharif*). **Ref :- Ms. 62(33), 63(22), 64(119).**

Site :- Agri. Res. Stn., Bailhongal. **Type :- 'M'.**

Object :—To study the possibility of reducing the quantity of F.Y.M. by replacing the same artificial manures.

1. BASAL CONDITIONS :

(i) (a) Wheat-Gram-Jowar. (b) Wheat. (c) 12·4 C.L./ha. of F.Y.M. (ii) Black soil ; medium black. (ii) 25.7.1962 ; 6.7.1963. (iv) (a) 2 to 5 harrowings. (b) Drilling by hand. (c) 3 to 4 Kg/ha. (d) 46 cm.× 30 cm. (e) 2. (v) Nil. (vi) Sorghum vulgare (1962), GM-1-5 (late) (1963) ; Kalangode (late) (1964). (vii) Unirrigated. (viii) 3 intercultivations and 2 weedings. (ix) N.A. ; 27 cm. ; 83 cm. (x) 15.12.1962 ; 10.12.1963 ; 19.12.1964.

2. TREATMENTS :

9 manurial treatments : M_0=Control (no manure), M_1=2800 Kg/ha. of F.Y.M., M_2=5600 Kg/ha. of F.Y.M., M_3=Equivalent quantities of NPK present in 2800 Kg/ha. of F.Y.M. but 'N' applied as A/s, M_4=As M_3. Source of N is Urea, M_5=Equivalent quantities of NPK present in 5600 Kg/ha. of F.Y.M. but N applied as A/S ; M_6=As M_5. Source of N is Urea, $M_7=M_1+M_3$ and $M_8=M_2+M_4$.

3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 12·5 m.×6·4 m. (b) 10·1 m.×4·6 m. (v) 122 cm.× 91 cm. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of grain. No. of internodes, plants, leaves and plant height etc. (iv) (a) 1962—64. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Error variances are heterogeneous. Treatments× years interaction is absent.

5. RESULTS :

62(33)

(i) 1234 Kg/ha. (ii) 161·4 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	M_7	M_8
Av. yield	1129	1127	1190	1286	1301	1340	1378	1079	1278

63(22)

(i) 883 Kg/ha. (ii) 399·9 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	595	775	666	1220	818	919	1000	943	1014

64(119)

(i) 807 Kg/ha. (ii) 103·3 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	M_7	M_8
Av. yield	727	716	669	806	785	995	990	787	789

C.D.=150·8 Kg/ha.

Crop :- Jowar (*Rabi*). **Ref :- Ms. 63(187), 64(151).**

Site :- Soil Conservation Res. Stn., Bellary. **Type :- 'M'.**

Object :—To find out the optimum dose of N and P for economic return.

1. BASAL CONDITIONS :

(i) (a) *Jowar—Jowar.* (b) *Jowar.* (c) As per treatments. (ii) Deep black cotton soil. (iii) 3.9.1963 ; 2.10.1964. (iv) (a) Light harrowing. (b) Seed-drill. (c) 4 Kg/ha. (d) 46 cm.×23 cm. (e) 1. (v) As per treatments. (vi) M—35—1 (medium). (vii) Unirrigated. (viii) Hand weeding and hoeing. (ix) 18 cm. ; 16 cm. (x) 4.2.1964 ; 6.2.1965.

2. TREATMENTS :

All combinations of (1) and (2)

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

(2) 4 levels of P_2O_5 : P_0=0, P_1=22·4, P_2=44·8 and P_3=112·0 Kg/ha.

3. DESIGN :

(i) Fact. in R B.D. (ii) (a) 12. (b) 38·4 m.×25·6 m. (iii) 3. (iv) (a) 30·5 m.×1·4 m. (b) 18·3 m.× 2 3 m. (v) One row on each side. (vi) Yes.

4. GENERAL :

(i) Satisfactory in 1963 ; lodging in 1964. (ii) Nil. (iii) Grain yield, leaf area and count etc. (iv) (a) 1957-64 (b) Yes. (c) As under 5. Results. (v) and (vi) Nil. (vii) Experiments for the years 1957 to 1959 also considered. Error variances are heterogeneous and Treatments×years interaction is present. Crop failed in 1960 and 1961.1962 N.A.

5. RESULTS :

(i) 545 Kg/ha. (ii) 198·7 Kg/ha. (based on 44 d.f. made up of Treatments×years interaction). (iii) Only N effect is highly significant. (iv) Av. yield of grain in Kg/ha.

	P_0	P_1	P_2	P_3	Mean
N_0	467	439	447	498	463
N_1	520	543	607	547	554
N_2	603	603	682	588	619
Mean	530	528	579	544	545

C.D. for N marginal means=73·2 Kg/ha.

Years	N_0	N_1	N_2	Sig.	P_0	P_1	P_2	P_3	Sig.	G.M.	S.E./Plot
1963	189	315	370	**	254	266	323	322	N.S.	291	77·7
1964	870	1151	1370	**	1076	1075	1165	1206	N.S.	1130	235·3
Pooled	463	554	619	**	530	528	578	544	N.S.	545	198·7

Crop :- Jowar (*Rabi*). **Ref :- Ms. 62(203).**

Site :- Soil Conservation Res Stn., Bellary. **Type :- 'M'.**

Object :—To evaluate responses to spartin B (a mixture of micro-nutrients) under rainfed conditions.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Deep black cotton soil. (iii) 16.10.1962. (iv) (a) Light harrowing. (b) Dibbling. (c) 4 Kg/ha. (d) 45 cm.×15 cm. (e) 1. (v) As per treatments. (vi) Hagari-1. (medium). (vii) Unirrigated. (viii) 2 hand weedings and hoeing. (ix) 18 cm. (v) 19.2.63.

2. TREATMENTS :

All combinations of (1) and (2)+a control.

(1) 2 levels of manures : M_1=F.Y.M. at 5600 Kg/ha. and M_2=22·4 Kg/ha of N+44·8 Kg/ha. of P_2O_5.

(2) 2 levels of spartin B : L_0=0 and L_1=370 Kg/ha.

Spartin B is a synthetic mixture of micro-nutrients for Alkaline soils.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 5. (b) 18·3 m.×3 7 m. (iii) 6. (iv) (a) 3 7 m.×3·7 m. (b) 2·7 m.×2·7 m. (v) 46 cm.×46 cm. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Height measurements and yield of grain. (iv) (a) 1962—64, (modified in 1963). (b) Yes. (c) Nil. (v) Nil. (vi) Heavy and unuasal rains during Dec., 1962. (vii) Nil.

5. RESULTS :

(i) 308 Kg/ha. (ii) 155·3 Kg/ha. (iii) Control Vs. others is highly significant. (iv) Av. yield of grain in Kg/ha.

T_0=139 Kg/ha.

	M_1	M_2	Mean
L_0	350	386	368
L_1	374	289	332
Mean	362	338	350

C.D. for control Vs. others=146·3 Kg/ha.

Crop :- Jowar (*Rabi*). **Ref :- Ms. 63(188), 64(150).**

Site :- Soil Conservation Res. Stn., Bellary. **Type :- 'M'.**

Object : - To evaluate responses to spartin B (a mixture of micro-nutrients) under rainfed conditions.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Setaria ; *Jowar*. (c) Nil, as per treatments. (ii) Deep black cotton soil. (iii) 28.9.63 ; 3.10.64. (iv) (a) Light harrowing. (b) Dibbling. (c) 4 Kg/ha. (d) 45 cm.×15 cm. (e) 1. (v) Nil. (vi) M—35-1 (medium (vii) Unirrigated. (viii) 2 hand weedings and hoeing. (ix) 14 cm.; 16 cm. ; (x) N.A. ; 9.2.65.

2. TREATMENTS :

All combinations of (1)and(2) +2 extra treatments :

(1) 2 levels of manures : M_1=F.Y.M. at 5600 Kg/ha. and M_2=22·4 Kg/ha. of N+44·8 Kg/ha. of P_2O_5.

(2) 2 levels of spartin B : L_0=o and L_1=370 Kg/ha.

T_0=control, T_1=5600 Kg/ha. of F.Y.M.+22·4 Kg/ha. of N+44.8 Kg/ha. of P_2O_5.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 6. (b) 21·9 m.×11·0 m. (iii) 4. (iv) (a) 7·3 m×5·5 m. (b) 5·5 m.×4·3 m. (v) 91 cm.×61 cm. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Yield of grain. (iv) (a) 1962 to 1966 (modified in 1963) (b) No. (c) Nil. (vi) Nil. (vii) Error variances are heterogeneous. Treatments × years interaction is absent.

5. RESULTS.

63(188)

(i) 673 Kg/ha. (ii) 111.0 Kg/ha. (iii) Extra vs. others effect is significant. (vi) Av. yield of grain in Kg/ha.

T_0=555 Kg/ha. and T_1=639 Kg/ha.

	M_1	M_2	Mean
L_0	765	693	729
L_1	2858	2700	693
Mean	723	699	711

C.D. for extra vs others=102·4 Kg/ha.

64(150).

(i) 1170 Kg/ha. (ii) 238.7 Kg/ha. (iii) T_0 vs T_1 is highly significant. (iv) Av yield of grain in Kg/ha.

T_0=928 Kg/ha., T_1=1461 Kg/ha.

	M_1	M_2	Mean
L_0	1130	1212	1171
L_1	1115	1171	1143
Mean	1122	1192	1157

C.D. for T_0 vs T_1=359·8 Kg/ha.

Crop :- Jowar (*Rabi*). **. Ms. 60(129), 61(117), 62(282).**

Site :- Agri. Res. Stn., Bijapur. **Type :- 'M'.**

Object :—To study the effect of different nitrogeneous fertilizers on *Jowar*.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar*. (c) 12·4 C.L./ha. of F.Y.M. (ii) Black soil. (iii) 13.9.1960 ; 18.10.1961 ; N.A. (iv) (a) Ploughing, harrowing and clod crushing. (b) Drilling. (c) 7 Kg/ha .(d) 46 cm. between lines (e) –. (v) Nil. (vi) M—35-1, (vii) Unirrigated. (viii) Interculturing. (ix) 65 cm. ; 6 cm. ; 42 cm. (x) 21.2. 1961 ; 3.3.1962 ; N.A.

2. TREATMENTS :

All combinations of (1) and (2).

(1) 3 levels of N : N_0=0, N_1=16·8 and N_2=33.6 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=Calcium Ammonium Chloride.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 15. (b) N.A. (iii) 3. (iv) (a) 9·1 m.×5·5 m. (b) 7·3 m.×3·7 m. (v) 91 cm.×91 cm. (vi) Yes.

4. GENERAL:

(i) Fair in 1960 and 1962; 50% lodging in 1961. (ii) Stem borer attack in 1960. B.H.C. 10% was applied. Mites and sugary disease in 1961. No control measures. Nil in 1962. (iii) Height of plant and grain yield. (iv) (a) 1960 to 1962. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Error variances are heterogeneous. Treatments×years interaction is absent.

5. RESULTS :

60(129).

(i) 852 Kg/ha. (ii) 180.2 Kg/ha. (iii) Main effect of N alone is significant. (iv) Av. yield of grain in Kg/ha.

	S_1	S_2	S_3	S_4	S_5	Mean
N_0	—	—	—	—	—	739
N_1	921	908	763	989	869	890
N_2	887	823	1000	939	989	928
Mean	904	866	882	964	929	909

C.D. for N marginal means=134.7 Kg/ha.

61(117).

(i) 1154 Kg/ha. (ii) 107·3 Kg/ha. (iii) Main effects of S and N are highly significant. (iv) Av. yield of grain in Kg/ha.

	S_1	S_2	S_3	S_4	S_5	Mean
N_0	—	—	—	—	—	1044
N_1	1165	1219	1395	1231	963	1195
N_2	1204	1324	1413	1104	1065	1222
Mean	1184	1272	1404	1168	1014	1154

C.D. for S marginal means=126.9 Kg/ha.
C.D. for N marginal means=80.2 Kg/ha.

62(282).

(i) 1898 Kg/ha. (ii) 224·9 Kg/ha. (iii) None of the effect is significant. (iv) Av. yield of grain in Kg/ha.

	S_1	S_2	S_3	S_4	S_5	Mean
N_0	—	—	—	—	—	1822
N_1	1900	1911	1895	2145	1818	1934
N_2	1902	2235	1869	1902	1778	1937
Mean	1901	2073	1882	2024	1798	1898

Crop :- Jowar (*Rabi*). **Ref :- Ms. 62(134),**

Site :- Agri. Res. Stn., Bijapur. **Type :- 'M'**

Object :—To judge the effect of different nitrogeneous fertilizers on *Rabi Jowar*.

1. BASAL CONDITIONS :

(i)(a) *Jowar*— Wheat. (b) Wheat. (c) 56 Q/ha. of F.Y.M. (ii) (a) Medium black soil : Clayey Texture. (iii) 25.9.62. (iv) (a) 3 harrowings. (b) Seed-cum-fertilizer drill. (c) 7 Kg/ha. (d) 46 cm. between rows. (e) – . (v) Nil. (vi) M-35-1 (medium). (vii) Unirrigated. (viii) Intercultrings. (ix) 42 cm. (x) 18.2.63.

2. TREATMENTS :

All combinations of (1) and (2)+control (7 plots) :
(1) 4 sources of N : S_1=A/S, S_2=Urea, S_3=A/S/N and S_4=C/A/N.
(2) 2 levels of N : N_1=16.8 and N_2=33·6 Kg/ha.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 15. (b) 27·5 m.×27·5 m. (iii) 3. (iv) (a) 9·2 m.×5·5 m. (b) 7·3 m.×3·7 m.(v) 2 rows on either side. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Effected by Sugary disease and rust. (iii) Height of plants and yield of grain. (iv) (a) 1962 only. (b) No. (c) Nil. (v) Nil. (vi) Abnormal rains during 1st week of Dec. adversely affected the crop. (vii) Nil.

5. RESULTS :

(i) 1895 Kg/ha. (ii) 228·1 Kg/ha. (iii) Control vs others effect alone is highly significant. (iv) Av. yield of grain in Kg/ha.

Control=1812 Kg/ha.

	S_1	S_2	S_3	S_4	Mean
N_1	1898	1909	1892	2142	1960
N_2	1901	2233	1867	1901	1976
Mean	1900	2071	1880	2022	1968

C.D. for control vs others=138·6 Kg/ha.

Crop :-Jowar (*Rabi*). **Ms. 60(264), 61(116), 62(263).**

Site :- Agri. Res. Stn., Bijapur. **Type: - 'M'.**

Object ;—To find out the optimum combination of N, P and K for obtaining increased yield under rainfed conditions.

1. BASAL CONDITIONS.

(i) (a) Nil. (b) *Rabi Jowar* (c) 9·8 C.L./ha. of F.Y.M. in 1960 ; 12·4 C.L./ha. of F.Y.M. in 1961 and 1962. (ii) Medium black. (iii) 12.9.1960 ; 14.10.1961 ; 24.9.1962. (iv) (a) Ploughing and harrowing. (b) Drilling. (c) 14·8 Kg/ha. ; 7 Kg/ha. ; 6.7 Kg/ha. (d) 46 cm. between rows. (e) —. (v) Nil. (vi) M-35-1 (medium). (vii) Unirrigated. (viii) 3 interculturings in 1960 and 1961; 1 weeding. (ix) 76 cm.; 6 cm.; 70 cm. (x) 21.2 1961; 2.3.1962; 27.2.1963.

2. TREATMENTS :

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

(1) 3 levels of N as A/S : N_0=O, N_1=16·8 and N_2=33·6 Kg/ha.

(2) 3 levels of P_2O_5 as Super : P_0=O, P_1=16·8 and P_2=33·6 Kg/ha.

(3) 3 levels of K_2O as Potash : K_0=0, K_1=16·8 and K_2=33·6 Kg/ha.

3. DESIGN :

(i) 3^3 confd. partially. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) 49·4 m.×9·1 m. (iii) 2. (iv) 9·1 m.×5·5 m. (b) 7·3 m.×3·5 m. (v) 2 rows on either side. (v) Yes.

4. GENERAL :

(i) Normal. (ii) Severe attack of stem borer and heavy incidence of sugary disease during Oct.and Nov. respectively in 1960, mites to some extent at sugary disease in 1961, slight incidence of red leaf rust, and sugary diseases in 1962. (iii) Plant height, no. of inter-nodes, yield of grain etc. (iv) (a) 1959 to 1962 (b) No. (c) Nil. (v) and(vi)Nil. (vii) Error variances are heterogenous. Treatments×years interaction is absent.

5. RESULTS :

60(264).

(i) 797 Kg/ha. (ii) 88·8 Kg/ha. (iii) Main effect of N, P and interaction N×P are highly significant, Interaction N×P×K is also signficant. (iv) Av. yield of grain in Kg/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	717	497	533	596	580	571	582
N_1	787	743	8.6	784	746	816	782
N_2	1065	1078	938	984	1077	1020	1027
Mean	856	773	762	788	801	802	797
K_0	898	743	723				
K_1	857	776	776				
K_2	820	799	788				

C.D. for N or P marginal means=61·4 Kg/ha.
C.D. for the body of N×P table=106·3 Kg/ha.

61(116).

(i) 987 Kg/ha. (ii) 298·5 Kg/ha. (iii) None of the effect 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	974	950	886	901	882	1027	937
N_1	1086	791	1041	1086	941	891	973
N_2	984	1101	1069	961	1157	1036	1051
Mean	1015	947	999	983	993	985	987
K_0	955	839	1154				
K_1	1016	994	970				
K_2	1073	1009	872				

62(263).

(i) 1465 Kg/ha. (ii) 150·2 Kg/ha. (iii) Main effect of N is highly significant and that of P is significant. (vi) Av. yield of grain in Kg/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	1164	1229	1281	1266	1191	1227	1225
N_1	1467	1524	1627	1578	1510	1530	1539
N_2	1712	1470	1712	1628	1641	1625	1631
Mean	1448	1408	1540	1487	1447	1461	1465
K_0	1424	1419	1619				
K_1	1470	1334	1538				
K_2	1449	1470	1463				

C.D. for N or P marginal means=103·8 Kg/ha.

Crop :- Jowar (*Rabi*). **Ref :- Ms. 60(285), 61(275).**

Site :- Agri. Res. Stn., Bijapur. **Type :- 'M'.**

Object :—To study the residual effect of fertilizers applied to the previous crop of Bengal gram on the succeeding *Rabi Jawar*.

1. BASAL CONDITIONS :

(l) (a) *Jowar*-Gram. (b) Gram. (c) As per treatments. (ii) Black soil. (iii) N.A. (iv) (a) Ploughing and harrowing. (b) Seed drill. (c) 6·7 Kg/ha. (d) 45 cm. between rows. (e) Irregular. (v) Nil. (vi) M—35—1 (medium). (vii) Unirrigated. (viii) 3 intercultures. (ix) N.A. (x) 24.2.1961 ; 4.3. 1962.

2. TREATMENTS :

All combinations of (1) and (2)+a control (no manure)

(1) 2 levels of N as A/S : N_0=0 and N_1=11·2 Kg/ha. of N.

(2) 2 levels of P_2O_5 as Super : P_1=16·8, and P_2=33·6 Kg/ha. of P_2O_5 as Super.

Treatments applied to the previous crop of gram.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) 18·3 m.×15·2 m. ; 18·3 m.×12·2 m. (iii) 4. (iv) (a) 15·2 m.×3·7 m. ; 12·2 m.× 3·7 m. (b) 13·4 m.×1·8 m. ; 10·4 m.×2·7 m. (v) 4 and 2 border rows kept. (vi) Yes.

4. GENERAL :

(i) N.A.; Normal. (ii) Severe incidence of stem borer and sugary disease during Oct. and Nov. 1960 ; slight incidence of mites and sugary disease in 1961. (iii) Yield of grain. (iv) (a) 1958 to 1961. (b) No. (c) Nil. (v) N.A. (vi) Continuous heavy rain after sowing during September 1960. (vii) Error variances are heterogeneous and Treatments×years interaction is absent.

5. RESULTS :

60(285).

(i) 1611 Kg/ha. (ii) 205·1 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

Control=1631 Kg/ha.

	N_0	N_1	Mean
P_1	1329	1707	1518
P_2	1713	1673	1693
Mean	1521	1690	1606

61(275)

(i) 603 Kg/ha. (ii) 186·8 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

Control=594 Kg/ha.

	N_0	N_1	Mean
P_1	680	515	597
P_2	508	718	613
Mean	594	616	605

Crop :- Jowar (*Rabi*). **Ref :- Ms. 60(284), 61(274), 62(277), 63(245).**

Site :- Agri. Res. Stn., Bijapur. **Type :- 'M'.**

Object :—To study the effect of sunnhemp G.M. on *Jowar*.

1. BASAL CONDITIONS :

(i) Nil. (b) *Jowar*. (c) 12.C.L./ha. of F.Y.M.+16·8 Kg/ha. of N as A/s. (ii) Black soil. (iii) 28.9.1963 for 63(245); N.A. for others. (iv) (a) Ploughing and harrowing. (b) Drilling. (c) 6·7 Kg/ha. (d) 45 cm. between lines. (e) N.A. (v) Nil. (vi) M—35—1. (vii) Unirrigated. (viii) Hand weeding and interculturing. (ix) 65 cm. ; N.A.; 42 cm. ; 22 cm. (x) 5.3.1964 for 63(245); N.A. for other years.

2. TREATMENTS :

8 manurial treatments : T_0=Control (no G.M.), T_1=Growing sunnhemp and harrowing after one month, T_2=Growing sunnhemp +11·2 Kg/ha. of N+11·2 Kg/ha. of P_2O_5 and harrowing after one month, T_3=Growing sunnhemp and burying after 1½ months, T_4=Growing sunnhemp+11·2 Kg/ha. of N+11·2 Kg/ha. of P_2O_5 and burying after 1½ months, T_5=Growing sunnhemp and bury after 2 months, T_6=Growing sunnhemp+11·2 Kg/ha. of N+11·2 Kg/ha. of P_2O_5 and burying after 2 months and T_7=Growing sunnhemp and cut after 2 months.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 9·1 m.×5·5 m. (b) 7·3 m.×3·7 m. (v) 91 cm.×91 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Grain yield. (iv) (a) 1960 to 1963. (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 :

(i) 1099 Kg/ha. (ii) 408·7 Kg/ha. [based on 21 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
Av. yield	1021	933	1200	1339	1177	1093	1212	820

C.D.=306·9 Kg/ha.

Years	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	Sig.	G.M.	S.E./plot
1960	1245	1213	1280	1298	1420	1380	1621	1277	N.S.	1342	331·9
1961	792	680	707	1127	587	268	361	299	N.S.	603	170·9
1962	961	957	1430	1339	1213	1402	1451	846	N.S.	1200	178·4
1963	1085	882	1384	1592	1487	1321	1416	857	**	1253	269.4
Pooled	1021	933	1200	1339	1177	1093	1212	820	*	1099	408·7

Crop :- Jowar (*Rabi*). **Ref :- Ms. 60(287), 61(276), 62(279).**

Site :-Agri. Res. Stn., Bijapur. **Type :- 'M'.**

Object :—To find out suitable placement method of fertilizer to *Jowar*.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Gram. (c) 12·4 C.L. /ha. of F.Y.M. (ii) Black soil. (iii) 13.10.60 ; 12.10.61 ; 26.9.62. (iv) (a) Ploughing and harrowing. (b) Drilling. (c) 4·5 Kg/ha. for 60(287) and 6·7 Kg/ha. for 61(276) and 62(279). (d) 46 cm. between lines. (e) —. (v) Nil. (vi) M—35—1. (vii) Unirrigated. (viii) Top dressing and interculturing. (ix) 65 cm. ; N.A. ; 42 cm. (x) N.A. ; 4.3.62 ; 28.2.63.

2. TREATMENTS :

All combinations of (1) and (2)+a control

(1) 2 levels of fertilizers : L_1=16·8 Kg/ha. of N+11·2 Kg/ha. of P_2O_5 and L_2=2 L_1

(2) 7 methods of application of fertilizers : M_1=Drilling both ways before sowing, M_2=By seed cum-fertiliser drill to drop the fertiliser 5 cm. away and 5 cm. deep from the seed lines, M_3=By seed cum fertiliser drill to drop the fertiliser in the same line where the seed is sown, M_4=By plough sole method to drop the fertiliser 13 cm. deep with wooden plough one week before sowing, M_5=By attaching draw tube behind the drill, M_6=In two equal doses. First dose by S.C.F. drill to drop the fertiliser in the same line where the seed is sown, 2nd dose by top dressing drill to drop 7·6 cm. and away and 5 cm. deep from the crop line 1½ months after the first dose and M_7= In two equal doses by S.C.F. drill to drop the fertiliser 5 cm. away and 5 cm. deep from the seed line—2nd dose by top dressing drill 7·6 cm. away and 5 cm. deep from the crop line on either sides as bund after 1½ month of 1st dose.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 15. (b) N.A. (iii) 2. (iv) (a) 8·2 m.×5·5 m. (b) 7·3 m.×3·7 m. (v) and (vi) Yes.

4. GENERAL :

(i) Lodging. (ii) Nil. (iii) Gram yield. (iv) (a) 1960 to 1962. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Error variances are heterogeneous. Treatments×years interaction is absent.

5. RESULTS :

60(287)

(i) 1134 Kg/ha. (ii) 373·3 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of *Jowar* in Kg/ha.

Control=932 Kg/ha.

	M_1	M_2	M_3	M_4	M_5	M_6	M_7	Mean
L_1	1007	906	980	954	1510	1166	826	1050
L_2	1250	1134	1362	1489	1605	932	964	1248
Mean	1129	1020	1171	1221	1557	1049	895	1149

61(276)

(i) 1031 Kg/ha (ii) 324·5 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of Jowar in Kg/ha.

Control=1129 Kg/ha.

	M_1	M_2	M_3	M_4	M_5	M_6	M_7	Mean
L_1	1163	1154	917	700	1271	1520	794	1074
L_2	1069	886	1319	802	821	697	1225	974
Mean	1116	1020	1118	751	1046	1108	1009	1024

62(279)

(i) 1473 Kg/ha. (iii) 139·2 Kg/ha. (iii) Main effect of M is significant and effect of L is highly significant. (iv) Av. yield of Jowar in Kg/ha.

Control=1018 Kg/ha.

	S_1	S_2	S_3	S_4	S_5	S_6	S_7	Mean
L_1	1470	1426	1544	1337	1377	1274	1191	1374
L_2	1697	1724	1715	1666	1774	1521	1361	1637
Mean	1584	1575	1630	1501	1575	1397	1276	1505

C.D. for M marginal means=211·1 Kg/ha.
C.D. for L marginal means=112·9 Kg/ha.

Crop :- Jowar (*Rabi*). **Ref :- Ms. 60(283).**

Site :- Agri. Res. Stn., Bijapur. **Type :- 'M'.**

Object :—To study the effect of N and applied at different times on the yield of Jowar.

1. BASAL CONDITIONS :

(l) (a) Jowar-Gram. (b) Gram. (c) 10 C.L./ha. of F.Y.M. (ii) Limy soil. (iii) 14.1.1960. (iv) (a) Ploughing and harrowing. (b) By seed drill. (c) 6·7 Kg/ha. (d) 45 cm. between rows. (e) —. (v) Nil. (vi) M. 35-1. (medium). (vii) Unirrigated. (vlii) One interculturing and one weeding. (ix) 65 cm. (x) 21.2.1961.

2. TREATMENTS :

9 manurial treatments : T_0=Control (no manure), T_1=N_1 while sowing. T_2=N_1+P_1 while sowing, T_3=N_1 after 1 month, T_4=T_1+T_3, T_5=T_3+P_1 while sowing, T_6=N_2 while sowing+N_2 after 1 month and T_7=T_6+P_1 while sowing.

N_1=11·2 Kg/ha. of N, N_2=5·6 Kg/ha. of N and P_1=11·2 Kg/ha. of P_2O_5.

Fertilizers applied by seed-cum-fertilizer drill

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) 18·2 m.×16·5 m. (iii) 4. (iv) (a) 9·1 m.×4·1 m. (b) 7·3 m.×2·3 m. (v) 2 rows on each side. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) N.A. (iii) Yield of grain, straw and chaff. (iv) (a) 1958 to 1960. (b) No. (c) Nil. (v) N.A. (vi) Heavy and continuous rains after sowing. (vii) Nil.

5. RESULTS ;

(i) 1370 Kg/ha. (ii) 134·9 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
Av. yield	1216	1227	1186	1437	1547	1539	1382	1424

C.D.=198·3 Kg/ha.

Crop :- Jowar. **Ref :- Ms. 65(75).**

Site :- Agri. Res Stn., Bijapur. **Type :- 'M'.**

Object :—To study the possibility of introducing Am. Phos. as a carrier of P_2O_5 for the Calcareous soils of dry treat where response to Single Super is not forthcoming.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar* (c) 12·4 C.L./ha. of F.Y.M. (ii) Loamy soil to medium black. (iii) 25.9.65. (iv) (a) Ploughing and harrowing. (b) Dibbling. (c) 6·7 Kg/ha. (d) 46 cm.×23 cm. (e) 2 to 3 thinned to one. (v) 12·4 C.L/ha. of F.Y.M. (vi) M-35-1. (vii) Unirrigated. (viii) Interculturing and weeding. (iv) 6 cm. (x) 4.2.1966.

2. TREATMENTS :

All combinations of (1) and (2)+ a control (no manure)

(1) 2 sources of P_2O_5 : S_1 =Ammo. Phos. and S_2=Super.
(2) 2 levels of P_2O_5 : P_1=15 and P_2=30 Kg/ha.

3. DESIGN :

Fact. in R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 12·2 m.×5.5 m. (b) 10·4 m.×3·7 m. (v) and (iv) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Grain yield. (iv) (a) 1965 to 1967 (b) and (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 730 Kg/ha. (ii) 99.4 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

Control=743 Kg/ha.

	P_1	P_2	Mean
S_1	741	718	730
S_2	711	738	724
Mean	726	728	727

Crop :- Jowar (*Rabi*). **Ref :- Ms. 64(200), 65(71).**

Site :- Agri. Res. Stn., Bijapur. **Type :- 'M'.**

Object :– To study the effect of foliar application of N on *Rabi Jowar*.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar* (c) 12·4 C.L /ha. of F.Y.M.+16·8 Kg/ha. of N+11·2 Kg/ha. of P_2O_5. (ii) Black soil. (iii) 25.9.1964 ; 26.9.1965. (iv) (a) Ploughing and harrowing. (b) Dibbling. (c) 6·7 Kg/ha. (d) 46 cm.×23 cm. (e) 3 (thinned to 1). (v) Nil. (vi) M 35—1. (vii) Unirrigated. (viii) Weeding and interculturing. (ix) 34 cm. ; 57 cm. (x) 2.3. 1965 ; 10.2.1966.

2. TREATMENTS :

9 manurial treatments : T_0=Control (no manure), T_1=12·4 C.L./ha. of F.Y.M., T_2=16.8 Kg/ha. of N at sowing, T_3=28·0 Kg/ha. of N, ½ at sowing and ½ one month after sowing, T_4=11·2 Kg/ha. of N as soil application+5·6 Kg/ha. of N as spray at grand period, T_5=5·6 Kg/ha. of N as soil application+5·6 Kg/ha. of N as spray at grand period+5·6 Kg/ha. of N as spray at heading stage. T_6=11.2 Kg/ha. of N as soil application+5·6 Kg/ha. of N as spray at heading stage, T_7=16·8 Kg/ha. of N as soil application+5.6 Kg/ha. of N as spray at grand period+5·6 Kg/ha. of N as spray-heading stage and T_8= 16·8 Kg/ha. of N (spray) in 3 equal doses.

3. DESIGN :

(i) R.B D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) 9·1 m.×4·6 m. (b) 7·9 m.×3·7 m. (v) and (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Grain yield. (iv) (a) 1964 to 1966. (b) No. (c) Nil. (v) N.A, (vi) and (vii) Nil.

5. RESULTS :

64(200)

(i) 1969 Kg/ha. (ii) 196·0 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	1704	1485	2179	2211	2026	2011	2108	2233	1760

C.D.=286·1 Kg/ha.

65(71)

(i) 829 Kg/ha. (ii) 221·2 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	835	807	755	748	772	550	804	904	1285

C.D=322·8 Kg/ha.

—=—

Crop :- Jowar (*Rabi*). **Ref :- Ms. 62(280), 63(247), 64(198), 65(70).**

Site :- Agri. Res. Stn., Bijapur. **Type :- 'M'.**

Object :—To find out suitable method of application of fertilizers.

1. BASAL CONDITIONS :

(i) (a) *Jowar*. (b) *Jowar*. (c) N.A. (ii) Black soil. (iii) 27.9.62; 28.9.63; 24.9.64; 25.9.65. (iv) (a) Ploughing and harrowing. (b) Drilling. (c) 6·7 Kg/ha. (d) 46 cm. between lines. (e) N.A. (v) Nil. (vi) M. 35—1. (vii) Unirrigated. (viii) 2 interculturings. (ix) 42 cm.; 22 cm.; 26 cm.; 6 cm. (x) 2.3.63; 7,3.64; 4.3.65 and 8.2.66.

2. TREATMENTS :

6 methods of application of 16·8 Kg/ha. of N : T_1=Control (no manure), T_2=Application of N by seed cum fertilizer drill at sowing, T_3=Deep placement of fertilizer 2/3 dose of N by plough with out mould board and $\frac{1}{3}$ dose by spray, T_4=2/3 dose of N at sowing by seed cum fertilizer drill+$\frac{1}{3}$ dose by spray, T_5=$\frac{1}{3}$ dose of N at sowing by seed cum fertilizer drill+2/3 dose by spray and T_6=Full dose of N by wooden plough at sowing.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) 12·2 m.×32·9 m. (iii) 4. (iv) (a) 5·5m.×12·5m. (b) 3·7 m.×10·4 m. (v) 91 cm.×91cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of grain. (iv) (a) 1962 to 1965. (b) No. (c) Results of combined analysis are presented under 5. Results. (v) and (vi) Nil. (vii) Error variances are homogeneous. Treatments×years interaction is present.

5. RESULTS :

(i) 1123 Kg/ha. (ii) 238·6 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	1009	1097	1146	1204	1090	1192

Years	T_1	T_2	T_3	T_4	T_5	T_6	Sig.	G.M.	S.E./plot
1962	1117	1064	1037	1318	1130	1252	N.S.	1153	178·1
1963	1084	1231	1489	1345	1228	1356	N.S.	1289	167·9
1964	920	1238	1285	1280	1125	1409	**	1209	90·4
1965	913	854	772	872	879	751	N.S.	840	134·8
Pooled	1009	1097	1146	1204	1090	1192	N.S.	1123	238·6

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Crop :- Jowar (*Kharif*). **Ref :. Ms. 60(130), 61(112), 62(64), 63(56).**

Site :- College of Agriculture, Dharwar. **Type :- 'M'.**

Object :—To find out the suitable method of application of fertilizers to Jowar.

1. BASAL CONDITIONS :

(i) (a) N.A.; Nil; *Jowar*-Cotton. (b) N.A.; N.A.; Cotton. (c) N.A.; N.A.; 4·9 C.L./ha. of F.Y.M.; 12·4 C.L./ha. of F.Y.M. (ii) Black soil. (iii) 14.7.60; 24.7.61; 21.7.62; 13.7.63. (iv) (a) Ploughing and harrowing ; ploughing, clod crushing and harrowing; 1 tractor ploughing and 1 harrowing; 3 harrowings. (b) Drilling. (c) 4 Kg/ha.; (d) 38 cm. between rows ; N.A. ; 46 cm. between rows ; N.A. (e) N.A. (v) Nil. (vi) *Nandyal* (late). (vii) Unirrigated. (viii) Weeding and interculturing in 1960, 61 and 63 ; Nil for 62. (ix) 46 cm. (1960); N.A. for others. (x) 27.12.1960 ; 8.12.61; 15.1.63; 19.12.63.

2. TREATMENTS :

All combinations of (1) and (2)+a control

(1) 2 manurial treatments : T_1=33·6 Kg/ha. of N as A/S+22·4 Kg/ha. of P_2O_5 as Super and T_2=50·4 Kg/ha. of N as AS+33·6 Kg/ha. of P_2O_5 as Super.

(2) 7 methods of application : M_1=Broadcasting, M_2=Drilling both ways before sowing, M_3=Applied 5 cm. away and 5 cm. deep from the seed line by s.c.f. drill, M_4=Applied in the same line where the seed is sown by s.c.f. drill, M_5=To drop 2·5 cm. deeper than the seed in the same line where the seed is sown, M_6=½ dose by s.c.f. drill in the same line where the seed is sown+½ dose after 1½ months by top dressing drill 5 cm. away and 5 cm. deep from the crop line and M_7=½ dose by s.c.f. drill 5 cm. away and 5 cm. deep from the seed line+½ dose after 1½ months by top dressing drill 8 cm. away and 5 cm. deep from the crop line.

s.c.f. drill means seed-cum-fertilizer drill.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 15. (b) N.A. (iii) 4. (iv) (a) 9·1 m.×5·8m.; 9·1 m.×5·7 m. in 1961 and 62; 9·1 m.×6·1 m. (b) 7·9 m.×5·0 m.; 7·9 m.×5·0 m. in 61 and 62; 7·9 m.×5·0 m. (v) 61 cm.×38 cm. in 1960 to 62; 61 cm.×53 cm. in 63. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1960 to 63. (b) No. (c) As under 5. Results. (v) and (vi) Nil. (vii) Error variances are heterogenous and Treatments×years interaction is present.

5. RESULTS :

(i) 2115 Kg/ha. (ii) 371·3 Kg/ha. (based on 42 d.f. made up of Treatments×years interaction). (iii) Main effect of T is highly significant. M effect is significant. Control *vs.* others is highly significant. (iv) Av. yield of grain in Kg/ha.

Control=1470 Kg/ha.

	M_1	M_2	M_3	M_4	M_5	M_6	M_7	Mean
T_1	1927	2193	1933	2262	2014	2254	2023	2087
T_2	2276	2256	2207	2254	2134	2405	2138	2239
Mean	2103	2224	2070	2258	2074	2330	2080	2163

C.D. for M marginal means=187·4 Kg/ha.
C.D. for T marginal means=100·2 Kg/ha.
C.D. for control *vs.* others=194·0 Kg/ha.

Years	M_1	M_2	M_3	M_4	M_5	M_6	M_7	Sig.	S_1	S_2	S_3	Sig.
1960	1974	2214	1659	2097	1998	2422	1859	*	1939	2126		*
1961	3050	3052	2786	3102	2688	3237	2922	N.S.	2948	3005		*
1962	1559	1845	1765	1858	1714	1904	1801	N.S.	1684	1872		*
1963	1822	1785	2073	1976	1897	1755	1839	*	1776	1979		**
Pooled	2103	2224	2070	2258	2074	2330	2080	*	2087	2239		**

Control	G.M.	S.E./plot
1466	1966	332·3
2034	2914	383·6
950	1723	217·6
1428	1828	206·2
1470	2115	371·3

Crop :- Jowar (*Kharif*). **Ref :- Ms. 60(131), 61(113), 62(63), 63(57).**

Site :- College of Agriculture, Dharwar. **Type :- 'M'.**

Object :—To find out the suitable method of application of fertilisers to Jowar in red soil.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Red sandy loam. (iii) 8.7.60; 31.7.61; 21.7.62; 11.7.63. (iv) (a) Ploughing and harrowing. (b) Drilling. (c) 4 Kg/ha. (d) 46 cm. between rows. (e) N.A. (v) Nil. (vi) *Nandyal*. (vii) Unirrigated. (viii) Interculturing and weeding. (ix) 46 cm.; N.A.; N.A.; N.A. (x) 15,12.60 ; 20.12.61; 15.1.63; 12.12.63.

2. TREATMENTS:

Same as in expt. no. 60(130), 61(112), 62(64), 63(56) on page 179.

3. DESIGN ;

(i) Fact. in R.B.D. (ii) (a) 15. (b) N.A. (iii) 4. (iv) (a) 8·2 m. × 5·5 m. (b) 7·3 m. × 4·6 m. (v) 46 cm. × 46 cm. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of grain. (iv) (a) 1960 to 63. (b) No. (c) As under 5. Results. (v) N A. vi) Nil. (vii) Error variances are heterogeneous. Treatments × years interaction is present.

5. RESULTS :

(i) 1504 Kg/ha. (ii) 488·1 Kg/ha. (based on 42 d.f. made up of Treatments × years interaction). (iii) Main effect of T is significant. Control *vs.* others is highly significant. (iv) Av. yield of grain in Kg/ha.

Control=939 Kg/ha.

	M_1	M_2	M_3	M_4	M_5	M_6	M_7	Mean
T_1	1428	1448	1352	1592	1461	1468	1452	1457
T_3	1583	1704	1506	1711	1658	1675	1576	1630
Mean	1505	1576	1429	1651	1560	1571	1514	1544

C.D. for T marginal means=131·7 Kg/ha.
C.D. for control *vs.* others=255·0 Kg/ha.

Years	M_1	M_2	M_3	M_4	M_5	M_6	M_7	Sig.
1960	805	827	733	872	932	787	775	N.S.
1961	1668	1438	1698	1592	1961	1872	1814	*
1962	2155	2397	1807	2678	1786	2015	1941	N.S.
1963	1395	1643	1478	1463	1562	1613	1526	N.S.
Pooled	1505	1576	1429	1651	1560	1571	1514	N.S.

T_1	T_2	Sig.	Control	G.M.	S.E./plot
800	837	N.S.	471	795	169·8
1601	1840	**	639	1648	218·7
1932	2290	N.S.	1502	2070	357·7
1496	1556	**	1143	1500	321·1
1457	1630	*	939	1544	488·1

Crop :- Jowar (*Kharif*). **Ref :- Ms. 62(84), 63(84).**

Site :- Agri. Res. Stn., Dharwar. **Type :- 'M'.**

Object :—To study the N, P and K requirements for Jowar.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton; *Jowar*—Groundnut and Wheat (1963). (b) Cotton; Groundnut and Wheat (1963). (c) Nil. (ii) Medium black. (iii) 21.7.62; 12.7.63. (iv) (a) Harrowing. (b) Drilled. (c) 4 Kg/ha. (d) 46 cm.×15 to 20 cm. (e) N.A. (v) Nil. (vi) *Nandyal* (medium). (vii) Unirrigated. (viii) Nil. (ix) 56 cm.; 39 cm. (x) 26.12.62; 7.12.63.

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=11·2 and P_2=22·4 Kg/ha.
(3) 3 levels of K_2O as Mur. Pot. : K_0=0, K_1=11·2 and K_2=22·4 Kg/ha.

3. DESIGN :

(i) 3^3 confd. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 8·2 m.×7·3 m. (b) 7·3 m.×6·4 m. (v) 46 cm.×46 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of grain. (iv) (a) 1962—N.A. (b) No. (c) Nil. (v) N.A. (vi) Nil. (vii) Error variances are heterogeneous. Treatments×years interaction is absent.

5. RESULTS :

62(84)

(i) 2354 Kg/ha. (ii) 181·5 Kg/ha. (iii) Main effect of N is highly significant. 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	2097	2193	2043	2195	2109	2029	2111
N_1	2340	2321	2502	2408	2392	2363	2388
N_2	2667	2658	2366	2525	2686	2480	2564
Mean	2368	2391	2304	2376	2396	2291	2354
K_0	2323	2396	2409				
K_1	2507	2494	2186				
K_2	2274	2282	2317				

C.D. for N marginal means =125·5 Kg/ha.
C.D. for the body of N×P table=217·3 Kg/ha.

63(84)

(i) 2377 Kg/ha. (ii) 285·0 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	K_0	K_1	K_2	Mean
N_0	2050	2057	1970	2095	2169	1814	2026
N_1	2244	2657	2380	2416	2347	2519	2427
N_2	2558	2664	2812	2735	2651	2647	2678
Mean	2284	2459	2387	2415	2389	2327	2377
K_0	2151	2617	2476				
K_1	2379	2452	2336				
K_2	2322	2308	2350				

C.D. for N marginal means=197·1 Kg/ha.

Crop :- Jowar (*Kharif*). **Ref :- Ms. 61(267), 62(276), 63(231).**

Site :- Agri. Res. Stn., Dharwar. **Type :- 'M'.**

Object :—To study the effect of Mg. Phos. vs. Super on *Jowar*.

1. BASAL CONDITIONS :

(i) (a) Wheat *Jowar*. (b) Wheat. (c) N.A. (ii) Black soil. (iii) 23.7.63 ; 28.7.62; 18.7.63. (iv) (a) Ploughing and harrowing. (b) Drilled. (c) 4·5 Kg/ha. (d) 61 cm.×15 cm. (1961, 62); 46 cm. between rows (1963). (e) 2. (v) 12·4 C.L./ha. of F.Y.M. (vi) *Nandyal*. (vii) Unirrigated. (viii) Weeding and interculturing. (ix) 35 cm.; 41 cm.; 34 cm. (x) 23.12.61 ; 28.12.62; 18.12.63.

2. TREATMENTS :

All combinations of (1) and (2)+a control (no manure)

(1) 2 levels of P_2O_5 : P_1=16·8 and P_2=22·4 Kg/ha.

(2) 2 sources of P_2O_5 : S_1= Super and S_2=Mg. Phos.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 5. (b) N.A. (iii) 5, 6, 6. (iv) (a) 10·4 m.×4·9 m. ; 8·2 m.×6·4 m. in 62 and 63. (b) 9·1 m.×3·7 m.; 7·3 m.×5·5 m. in 62 and 63. (v) and (vi) Yes.

4. GENERAL :

(i) Fair. (ii) N.A. ; Nil in 1962 and 63. (iii) Yield of grain. (iv) (a) 1961—'63. (b) No. (c) Nil. (v) N.A. (vi) Nil. (vii) Error variances are heterogeneous. Treatments×years interaction is absent.

5. RESULTS :

61(267)

(i) 2171 Kg/ha. (ii) 383·8 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

Control=2081 Kg/ha.

	S_1	S_2	Mean
P_1	2136	2232	2184
P_2	2160	2249	2204
Mean	2148	2240	2194

62(276)

(i) 2167 Kg/ha. (ii) 148·5 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

Control=2235 Kg/ha.

	S_1	S_2	Mea
P_1	2042	2107	2075
P_2	2241	2208	2225
Mean	2142	2158	2150

63(231)

(i) 1357 Kg/ha. (ii) 161·2 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

Contral=1397 Kg/ha.

	S_1	S_2	Mean
P_1	1364	1233	1298
P_2	1444	1345	1394
Mean	1404	1289	1346

Crop :- Jowar (*Kharif*). **Ref :- Ms. 64(83).**

Site :- Agri. College Farm, Dharwar. **Type :- 'M'.**

Object :—To find out suitable placement method and kind of fertiliser for application to Jowar in black soil.

1. BASAL CONDITIONS :

(i) (a) Cotton+Chlily -*Jowar*. (b) Cotton+Chilly. (c) Nil. (ii) Black soil. (iii) 21.7.64. (iv) (a) Harrowing. (b) Dibbling. (c) N.A. (d) 38 cm. × 30 cm. (e) 2. (v) 32·1 Kg/ha. of P_2O_5 as Super. (vi) *Nandyal* (late). (vii) Unirrigated. (viii) Interculturing and weeding. (ix) 77 cm. (x) 23.12.64.

2. TBEATMENTS :

All combinations of (1) and (2) with 13 Kg/ha. of P_2O_5+a control

(1) 4 sources of N at 18 Kg/ha. : S_1=A/S, S_2=Urea, S_3=C/A/N and S_4=A/S/N.

(2) 4 methods of placement : M_1=10 cm. deep and 30 cm. apart before sowing, M_2=13 cm. deep by plough sole method a week before sowing (for P), ½ N by seed-cum-fertilizer drill at sowing and ½ N as top dressing 5 weeks after sowing, M_3=½ (N+P) by seed-cum-fertilizer drill at sowing and ½ by top dressing drill 5 cm. away and 5 cm. deep 5 weeks after sowing and M_4=3/4 (N+P) 5 cm. away and 5 cm. deep from seed line and remaining 8 cm. to 10 cm. deep between the lines by plough sole.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 17. (b) N.A. (iii) 4. (iv) (a) 9·1 m. × 6·1 m. (b) 8·2 m. × 5·3 m. (v) 46 cm. × 38 cm. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain and straw yield. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 395 Kg/ha. (ii) 65·7 Kg/ha. (iii) Main effect of M, interaction S × M and 'control *vs.* others' are highly significant (iv) Av. yield of grain Kg/ha.

Control=256 Kg/ha.

	M_1	M_2	M_3	M_4	Mean
S_1	545	310	467	421	436
S_2	392	274	442	410	379
S_3	441	321	421	395	395
S_4	303	505	437	380	406
Mean	420	353	442	401	404

C.D. for M marginal means =46·7 Kg/ha.
C.D. for control *vs.* others =95·7 Kg/ha.
C.D. for body of S × M table=93·4 Kg/ha.

Crop :- Jowar (*Kharif*). **Ref :- Ms. 64(84).**

Site :- Agril. College Farm, Dharwar. **Type :- 'M'.**

Object :—To find out the effect of different placement methods of different kinds of fertilizers on *Jowar* in red soil.

1. BASAL CONDITIONS :

(i) (a) Chilly+Cotton—*Jowar*. (b) Chilly+Cotton. (c) Nil. (ii) Red sandy loam. (iii) 18.7.64. (iv) (a) 2 harrowings. (b) Dibbling. (c) N.A. (d) 46 cm.×30 cm. (e) 2. (v) 32·1 Kg/ha. of P_2O_5. (vi) *Nandyal* (late). (vii) Unirrigated. (viii) Interculturing and weeding. (ix) 77 cm. (x) Dec., 64.

2. TREATMENTS ;

Same as in expt. no. 64(83) on page 184.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 17. (b) N.A. (iii) 4. (iv) (a) 8·2 m.×5·5 m. (b) 7·3 m.×4·6 m. (v) 46 cm.×46 cm. (vi) Yes.

4. GENERAL :

(i) Crop was seriously affected due to water logging and yields were extremely low. (ii) Nil. (iii) Yield of grain. (iv) (a) 1964—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 72 Kg/ha. (ii) 40·4 Kg/ha. (iii) Main effect of M is highly significant and 'control *vs.* others' is significant. (iv) Av. yield of grain in Kg/ha.

Control=32 Kg/ha.

	M_1	M_2	M_3	M_4	Mean
S_1	87	48	87	101	81
S_2	64	41	83	48	59
S_3	54	49	79	112	73
S_4	77	51	67	153	87
Mean	71	47	79	103	75

C.D. for M marginal means=28·8 Kg/ha.
C.D. for control *vs.* others =59·3 Kg/ha.

Crop :- Jowar (*Kharif*). **Ref :- Ms. 61(48), 62(36).**

Site :- Agri. Res. Stn., Gangavathy. **Type :- 'M'.**

Object :—To find out the optimum dose of organic manure for Jowar.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*. (b) Cotton. (c) Nil. (ii) Light black soil. (iii) 26.6.61; 10.6.62. (iv) (a) 2 ploughings and 2 to 4 harrowings. (b) Drilling. (c) 7 Kg/ha. (d) 38 cm. between rows. (e) —. (v) Nil. (vi) D—340. (vii) Irrigated. (viii) 1 to 3 hoeings and 4 hand weedings. (ix) 36 cm.; 54 cm. (x) 25, 26.11.61; 10.11.62.

2. TREATMENTS :

8 manurial treatments : T_0=Control (no manure), T_1=F.Y.M. only, T_2=Top dressing only (details N.A.), $T_3=T_1+T_2$, T_4=N, P and K equivalent of F.Y.M., $T_5=T_2+T_4$, $T_6=\frac{1}{2}$ F.Y.M.+$\frac{1}{2}$ F.Y.M. equivalent+top dressing and $T_7=\frac{1}{4}$ F.Y.M.+3/4 F.Y.M. equivalent+top dressing.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 5. (iv) (a) 1/198 ha. (b) 1/247 ha. (v) 6 cm. on either side. (vi) Yes.

4. GENERAL :

(i) Crop was damaged partially in 1962 and normal in '61. (ii) Nil. (iii) Yield of grain. (iv) (a) 1961-62. (b) No. (c) As under 5. Results. (v) and (vi) Nil. (vii) 30 to 40% of the crop damaged due to heavy rains in 1962. Error variances are heterogeneous. Treatments×years interaction is present.

5. RESULTS :

(i) 1658 Kg/ha. (ii) 576·1 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	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Av. yield	999	1176	1512	1567	1747	2180	1793	2290

C.D.=887·5 Kg/ha.

Years	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	Sig.	G.M.	S.E./plot
1961	429	375	894	1031	776	1188	1058	1370	**	890	203·1
1962	1569	1977	2130	2103	2718	3173	2528	3210	**	2426	376·1
Pooled	999	1176	1512	1567	1747	2180	1793	2290	*	1658	576·1

Crop :- Jowar (*Kharif*). **Ref :- 61(49), 62(35).**

Site :- Agri. Res. Stn., Gangavathy. **Type :- 'M'.**

Object :—To study the comparative effects of Mg. Phos. vs. Super on Jowar.

1. BASAL CONDITIONS ;

(i) (a) Cotton—*Jowar*. (b) Cotton. (c) 24·7 C.L./ha. of F.Y.M.+22·4 Kg/ha. of N+33·6 Kg/ha. of P_2O_5 (1961); 12·4 C.L./ha. of F.Y.M.+224 Kg/ha. of A/S+140 Kg/ha. of Super (1962). (iii) Light black soil. (iii) 26.6.61 ; 10.6.62. (iv) (a) 2 ploughings and 4 harrowings. (b) Dibbling. (c) 7 Kg/ha. (d) 38 cm. between rows. (e) —. (v) 24·7 C.L./ha. of F.Y.M.+44·8 Kg/ha. of N (½ N as basal dose+½ N after 45 days) in 1961 and 12·4 C.L./ha. of F.Y.M.+44·8 Kg/ha. of N as A/S in 1962. (vi) D—340 (medium). (vii) Irrigated. (viii) 1 hand weeding and 1 to 3 interculturings. (ix) 36 cm.; 54 cm. (x) 25, 26.11.1961; 8.11.62.

2. TREATMENTS :

All combinations of (1) and (2)+a control (no manure)

(1) 2 levels of P_2O_5 ; P_1=22·4 and P_2=33·6 Kg/ha.

(2) 2 sources of P_2O_5 : S_1=Super and S_2=Mg. Phos.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 5. (b) 22·9 m.×11·1 m.; 22·9 m.×9·2 m. (iii) 6. (iv) (a) 1/198 ha. (b) 1/247 ha. (v) 1 row on either side and 76 cm. lengthwise on both sides in 1961 and 1 row on either side in 1962. (vi) Yes.

4. GENERAL :

(i) Normal; Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1961—62. (b) No. (c) As under 5. Results. (v) Sirugappa. (vi) Nil. (vii) 30 to 40 percent of the crop damaged due to heavy rains in Oct. 1962. Error variances are homogeneous. Treatments×years interaction is absent.

5. RESULTS ;

(i) 2183 Kg/ha. (ii) 544·2 Kg/ha. (based on 44 d.f. made up of pooled error and Treatments×years interaction). (iii) Control *vs.* others effect and S effect are highly significant. (iv) Av. yield of grain in Kg/ha

Control=1291 Kg/ha.

	S_1	S_2	Mean
P_1	2743	2085	2414
P_2	2721	2074	2398
Mean	2732	2080	2406

C.D. for 'control *vs.* others' means=354·2 Kg/ha.
C.D. for S marginal means =316·9 Kg/ha.

Years	P_1	P_2	Sig.	S_1	S_2	Sig.	Control	G.M.	S.E./plot
1961	1684	1782	N.S.	1966	1500	*	1055	1597	495·1
1962	3130	3012	N.S.	3498	2644	*	1527	2762	533·9
Pooled	2414	2398	N.S.	2732	2080	*	1291	2183	544·2

Crop :- Jowar (*Rabi*). **Ref :- Ms. 62(262).**

Site :- Agril. Res. Stn., Haqari. **Type :- 'M'.**

Object :—To find out the relative merits of fused Mg. Phos. vs. Single Super at different levels on *Rabi* Jowar.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*. (b) Cotton. (c) Nil. (ii) Black Cotton soil. (iii) 19.10.62. (iv) (a) Ploughing and levelling. (b) Dibbling. (c) to (e) N.A. (v) 12 C.L./ha. F.Y.M.+22·4 Kg/ha. of N. (vi) M. 47—3. (vii) Unirrigated. (viii) Weeding. (ix) 30 cm. (x) 12.3.63.

2. TREATMENTS :

Same as in expt. nos. 61(267). 62(276), 63(231) on page 182.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) and (b) 1/247 ha. (v) 1 row on either side of each plot. (vi) Yes.

4. GENERAL :

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

5. RESULTS :

(i) 90 Kg/ha. (ii) 31·9 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

Control=75 Kg/ha.

	S_1	S_2	Mean
P_1	92	122	107
P_2	89	70	80
Mean	90	96	93

Crop :- Jowar (*Rabi*). **Ref :- Ms. 63(223).**

Site :- Agri. Res. Stn., Hagari. **Type :- 'M'.**

Object :—To find out the relative merits of fused Mg. Phos. vs. Single Super under dry conditions.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*. (b) Cotton. (c) Nil. (ii) Black Cotton soil. (iii) 3.10.63. (iv) (a) Ploughing and levelling. (b) Dibbling. (c) to (e) N.A. (v) 12 C.L./ha. of F.Y.M.+22·4 Kg/ha. of N. (vi) M—47-3. (vii) Unirrigated. (viii) Weeding. (ix) N.A. (x) 20.2.64.

2. TREATMENTS :

All combinations of (1) and (2)+a control (no manure)
(1) 2 levels of P_2O_5 : P_1=22·4 and P_2=33·6 Kg/ha.
(2) 2 sources of P_2O_5 ; S_1=Super and S_2=Mg. Phos.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) and (b) 1/247 ha. (v) One row on either side of each plot. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Weight of grain and straw. (iv) (a) 1962-63 (Treatments modified in 1963). (b) No. (s) Nil. (v) to (vii) Nii.

5. RESULTS :

(i) 933 Kg/ha. (ii) 40·6 Kg/ha. (iii) Main effects of S, P and control vs. others are highly significant. Interaction S×P is significant. (iv) Av. yield of grain in Kg/ha.

	S_1	S_2	Mean
P_1	917	783	850
P_2	989	897	943
Mean	953	840	896

C.D. for S or P marginal means=34·6 Kg/ha.
C.D. for control vs. others =38·7 Kg/ha.
C.D. for body of S×P table =48·9 Kg/ha.

—=—

Crop :- Jowar (*Rabi*). **Ref :- Ms. 62(121), 63(109).**

Site :- Agri. Res. Stn., Naragund. **Type :- 'M'.**

Object :—To find out how far sand will prove useful in improving karl soils of this tract.

1. BASAL CONDITIONS :

(i) (a) Cotton—Wheat—Jowar. (b) Wheat. (c) Nil. (ii) Karl soil—highly alkaline. (iii) 11.11.1962 ; 1.11.1963. (iv) (a) 3 harrowings by blade harrow. (b) and (c) N.A. (d) 46 cm. between rows. (e) —. (v) Nil. (vi) M 35-1 (medium). (vii) Unirrigated. (viii) Interculturing by hoe. (ix) N.A. (x) 25.3.1963 ; 25.3.1964.

2. TREATMENTS :

4 levels of sand : L_0=Control, L_1=100·4, L_2=150·6 and L_3=200·9 Kg/ha.
Time and method of application of sand N.A.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 7.3 m.×11·0 m. (b) 6·4 m.×10·1 m. (v) 46 cm.×46 cm. (vi) Yes.

4. GENERAL :

(i) 20% crop lodged due to heavy rains and winds in 1962. 80% crop lodged due to heavy winds on 12, 13.2.1964 ; Normal. (ii) Stem borer and sugary disease in earlier stages. Affected plants were uprooted and burnt. (iii) Plant count and grain yield. (iv) (a) 1961—64 (expt. failed in 1961 and treatments are modified in 1964). (b) Yes. (c) As under 5. Results. (v) and (vi) Nil. (vii) Error variances are homogeneous Treatments×years interaction is absent.

5. RESULTS :

(i) 373 Kg/ha. (ii) 94·8 Kg/ha. [based on 33 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	L_0	L_1	L_2	L_3
Av. yield	371	386	344	390

Years	L_0	L_1	L_2	L_3	Sig.	G.M.	S.E./plot
1962	371	354	305	393	N.S.	356	100·2
1963	371	419	382	386	N.S.	390	92·7
Pooled	371	386	344	390	N.S.	373	94·8

Crop :- Jowar (*Rabi*). **Ref :- Ms. 64(93).**

Site :- Agri. Res. Stn., Naragund. **Type :- 'M'.**

Object :--To find out how far sand will prove useful to a mechanical means in improving karl soils.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar*. (c) N.A. (ii) Alkaline. (iii) 5.11. 64. (iv) (a) Harrowing by country blade harrow. (b) Dibbling. (c) 9 Kg/ha. (d) 46 cm.×46 cm. (e) N.A. (v) Nil. (vi) M 35-1 (medium). (vii) Unirrigated. (viii) Interculturing by hoe. (ix) 108 cm. (x) 9.3.65.

2. TREATMENTS :

4 levels of sand : L_0=Control, L_1=251·1, L_2=502·2 and L_3=753·3 Q/ha.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 11·0 m.×7·3 m. (b) 10·1 m.×6·4 m. (v) 46 cm.×46 cm. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Slight attack of grass hopper was controlled bp B.H.C., Gammaxine Mixture and Folidol (iii) Plant count, height and grain yield. (iv) (a) 1961—64 (modified in 1964). (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 834 Kg/ha. (ii) 127·7 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	L_0	L_1	L_2	L_3
Av. yield	751	871	872	841

Crop :- Jowar (*Kharif*). **Ref :- Ms. 62(264), 64(188).**

Site :- Agri. Res. Stn., Raichur. **Type :- :M'.**

Object :—To compare the effect of Mg. Phos. with Super on the yield of *Jowar*.

1 BASAL CONDITIONS

(i) (a) to (c) Nil. (ii) Red soil. (iii) N.A. (iv) (a) Ploughings and 4 to 5 harrowings. (b) Drilling. (c) 5. Kg/ha. (d) 46 cm. between rows. (e) —. (v) 12·4 C.L./ha. of F.Y.M. (vi) D—240. (vii) Unirrigated (viii) 2 weedings and 2 interculturings. (ix) 84 cm.; 89 cm. (x) N.A.

2. TREATMENTS :

All combinations of (1) and (2)+a control (no manure)

(1) 2 levels of P_2O_5 : L_1=16·8 and L_2=22·4 Kg/ha.

(2) 2 sources of P_2O_5 : P_1=Super and P_2=Mg. Phos.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) 3·6 m. × 15·2 m. (b) 1/247 ha. (v) 3 rows. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Grain yield. (iv) (a) 1962–64. (b) No. (c) As under 5. Results. (v) N.A. (vi) Nil. (vii) Error variances are heterogeneous. Treatments × years interaction is absent. Experiment for 1961, 1963 N.A.

5. RESULTS :

62(264)

(i) 1912 Kg/ha. (ii) 579 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

Control=1907 Kg/ha.

	P_1	P_2	Mean
L_1	1951	1824	1888
L_2	1689	2191	1940
Mean	1820	2008	1914

64(188)

(i) 405 Kg/ha. (ii) 153·8 Kg/ha. (iii) Only control *vs.* others is highly significant. (iv) Av. yield of grain in Kg/ha.

Control=196 Kg/ha.

	P_1	P_2	Mean
L_1	444	442	443
L_2	549	393	471
Mean	496	418	457

C.D. for control *vs.* others=146·4 Kg/ha.

Crop :- Jowar (*Kharif*). **Ref :- Ms. 63(224).**

Site :- Agri. Res. Stn., Raichur. **Type :- 'M'.**

Object :—To study the role of F.Y.M. on the yield of *Jowar* in red soil under rainfed condition.

1. BASAL CONDITIONS :

(i) (a) to (c) Nil. (ii) Red soil. (iii) N.A. (iv) (a) 2 wooden ploughings ; 3 to 4 harrowings. (b) Drilling. (c) 5 Kg/ha. (d) 46 cm. between rows. (e) —. (v) Nil. (vi) D—3—40. (vii) Unirrigated. (viii) 2 weedings and 2 interculturings. (ix) 64 cm. (x) N.A.

2. TREATMENTS :

8 manurial treatments : T_0=Top dressing only, T_1=12·4 C.L./ha. of F.Y.M., $T_2=T_0+T_1$, T_3=F.Y.M. equivalent, $T_4=T_3+T_0$, T_5=9·3 C.L./ha. of F.Y.M.+$\frac{1}{4}$ F.Y.M. equivalent+top dressing, T_6=6·2 C.L /ha. of F.Y.M.+$\frac{1}{2}$ F.Y.M. equivalent+top dressing and T_7=3·1 C.L./ha. of F.Y.M.+3/4 F.Y.M. equivalent+top dressing.

Other details N.A.

3. DESIGN -

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 5. (iv) (a) and (b) 5·5 m.×13·7 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Grain yield/plot. (iv) (a) 1962—only. (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 961·1 Kg/ha. (ii) 260·7 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. yield	888	928	924	836	966	1265	1003	878

Crop :- Jowar (*Rabi*). **Ref :- Ms. 65(19).**

Site :- Agri. Res. Stn., Raichur. **Type :- 'M'.**

Object :—To study the effect of N and P fertilisers on the yield of *Rabi* Jowar.

1. BASAL CONDITIONS :

(i) (a) to (c) Nil. (ii) Red soil. (iii) N.A. (iv) (a) Ploughing and 4 to 5 harrowing. (b) Drilling. (c) 5 Kg/ha. (d) 46 cm. between rows. (e) —. (v) 12·4 C.L./ha. of F.Y.M.+22·4 Kg/ha. of K_2O_5 as Mur. Pot. applied uniformly. (vi) M. 35—1. (vii) Unirrigated. (viii) 2 weedings and 2 interculturings. (ix) 30 cm. (x) 14.2.66.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 5 levels of N : N_0=0, N_1=22·4, N_2=44·8, N_3=67·2 and N_4=89·6 Kg/ha.

(2) 5 levels of P_2O_5 : P_0=0, P_1=11·2, P_2=22·4, P_3=33·6 and P_4=44·8 Kg/ha.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 25. (b) N.A. (iii) 2. (iv) (a) N.A. (b) 4·6 m.×7·3 m. (v) 2 rows. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Grain yield. (iv) (a) 1965—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 445 Kg/ha. (ii) 194·1 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
P_0	453	336	731	463	284	453
P_1	260	423	658	318	413	414
P_2	414	501	348	401	389	411
P_3	269	420	553	456	456	431
P_4	605	433	523	393	620	515
Mean	400	423	563	406	432	445

Crop :- Jowar (*Kharif*). **Ref :- Ms. 63(227).**

Site :- Agri. Res. Stn., Raichur. **Type :- 'M'.**

Object : To study the residual effect of fertilizers applied to Groundnut during 1962—63 on *Kharif* Jowar.

1. BASAL CONDITIONS :

(i) (a) Groundnut—*Jowar*. (b) Groundnut. (c) As per treatments. (ii) Red soil (iii) 30.6.63. (iv) (a) Ploughing and harrowing. (b) Dibbling. (c) 6·7 Kg/ha. (d) and (e) N.A. (v) 12·4 C.L./ha. of F.Y.M. (vi) D—3—40. (vii) Unirrigated. (viii) Weeding and interculturing. (ix) 64 cm. (x) 16.12.63.

2. TREATMENTS :

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

(1) 2 levels of N as A/S : N_1=11·2 and N_3=22·4 Kg/ha.

(2) 3 levels of P_2O_5 as Super : P_1=16·8, P_2=33·6 and P_3=50 4 Kg/ha.

(3) 2 levels of K_2O as Mur. Pot. : K_0=0 and K_1=22·4 Kg/ha.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 4·6 m.×7·6 m. (v) 91 cm. alround. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of grain. (iv) (a) and (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 242 Kg/ha. (ii) 116·4 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	P_1	P_2	P_3	K_0	K_1	Mean
N_0	368	270	198	284	274	279
N_1	174	182	258	204	206	205
Mean	271	226	228	244	240	242
K_0	252	230	250			
K_1	290	222	207			

Crop :- Jowar (*Kharif*). **Ref :- Ms. 60(107).**

Site :- Agri. Res. Stn., Saundathi. **Type :- 'M'.**

Object :—To assess the value of 'complesal' a high grade German fertilizer mixture.

1. BASAL CONDITIONS :

(i) (a) *Jowar* - Groundnut. (b) Groundnut. (c) Nil. (ii) Medium black. (iii) 11.7.60. (iv) (a) 3 harrowings. (b) Sown by drill. (c) 7 Kg/ha. (d) 30 cm.×10 to 15 cm. (e) N.A. (v) 7·4 C.L./ha. of F.Y.M. applied by spreading on 5.6.1960. (vi) Fulgar white (improved). (vii) Unirrigated. (viii) 2 interculturings with hoe and 1 hand weeding. (ix) 44 cm. (x) 23.12.60.

2. TREATMENTS :

8 manurial treatments : M_0=Control (No manure), M_1=168·1 Kg/ha. of complesal at sowing, M_2=168·1 Kg/ha. of complesal (½ at sowing+½ after one month), M_3=168·1 Kg/ha. of A/S at sowing, M_4=168·1 Kg/ha. of A/S (½ at sowing+½ after one month), M_5=84·1 Kg/ha. of A/S at sowing, M_6=M_5+84·1 Kg/ha. of C/A/N after one month and M_7=168·1 Kg/ha. of A/S (½ at sowing and ½ at one month after sowing).

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) 142·7 m.×8·2 m. (iii) 4. (iv) (a) 17·8 m.×8·2 m. (b) 16·0 m.×6·4 m. (v) 91 cm. ×91 cm. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) There was attack of grass hoppers. B.H.C. 10% was dusted at 22·4 Kg/ha. (iii) Grain yield. (iv) (a) 1958 to 60. (b) No. (c) Nil. (v) Dharwar, Bailhongal, Raichur and Dodesagar. (vi) and (vii) Nil.

5. RESULTS ;

(i) 1681 Kg/ha. (ii) 225·4 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
Av. yield	1146	1081	1758	1824	1687	1784	1637	1931

C.D.=331·6 Kg/ha.

Crop :- Jowar (*Kharif*). **Ref :- Ms. 60(110), 61(83), 62(88), 63(78), 64(58), 65(97).**

Site :- Agri. Res. Stn., Saundathi. **Type :- 'M'.**

Object :—To study the possibility of reducing the dosage of organic manures and or replacing it by inorganic manures under dry farming conditions.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Groundnut. (b) Groundnut. (c) Nil. (ii) Medium black. (iii) 19.7.1960; 21.7.61; 19.7.62; 18.7.63; 10.7.64; 29.7.65. (iv) (a) 2 harrowings. (b) Drilling. (c) 7 Kg/ha. (d) 30 cm.×10 to 15 cm. (e) Nil. (v) Nil. (vi) Fulgar white. (vii) Unirrigated. (viii) 2 to 3 interculturings with hoe and 2 hand weedings. (ix) 44 cm.; 28 cm.; 47 cm.; 33 cm.; 55 cm. and 48 cm. (x) 25.12.60; 30.12.61; 6.1.63; 18.12.63 15.12.64 and 6.12.65.

2. TREATMENTS :

9 manurial treatments : T_0=Control (2 plots/block), T_1=2800 Kg/ha. of F.Y.M., T_2=5600 Kg/ha. of F.Y.M., T_3=Equivalent quantities of N, P and K present in T_1 (N as A/S), T_4=As T_3 (N as Urea), T_5=Equivalent quantities of N, P and K present in T_2 (N as A/S), T_6=As T_5 (N as Urea), T_7=T_1+T_3 and T_8=T_1+T_4.

3. DESIGN:

(i) R.B.D. (ii) (a) 10. (b) 45·7 m.×14·6 m. (iii) 4. (iv) (a) 9·1 m.×7·3 m. (b) 7·3 m.×5·5 m. (v) 91 cm. ×91 cm. (vi) Yes.

4. GENERAL:

(i) Satisfactory. (ii) Crop affected by sugary disease and no control measure was taken in 1960. Grass hopper attack. 22·4 Kg/ha. of B.H.C. 10% was dusted in 1960 to '62. Attack by stem borer, army worms in 61, 62, 64; Nil in 63, 65. (iii) Grain yield. (iv) (a) 1960—66. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS:

60(110)

(i) 915 Kg/ha. (ii) 195·9 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	376	418	786	1010	1038	1307	1389	12·8	1183

C.D. for the comparison of T_0 *vs.* others =246·2 Kg/ha.
C.D. for comparison of any 2 treatment means except T_0=284 2 Kg/ha.

61(83)

(i) 1555 Kg/ha. (ii) 229·7 Kg/ha. (iii) Treatment differences are significant and control *vs.* others is 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	1149	1287	1448	1676	1773	1894	1833	1778	1565

C.D. for comparison of T_0 *vs.* others =288·6 Kg/ha.
C.D. for comparison of any 2 treatment means except T_0=333·3 Kg/ha.

62(88)

(i) 751 Kg/ha. (ii) 178 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	307	466	758	850	867	853	969	1023	1114

C.D. for comparison of T_0 *vs.* others =224·6 Kg/ha.
C.D. for comparison of any 2 treatment means except T_0=259·3 Kg/ha.

63(78)

(i) 1555 Kg/ha. (ii) 229·7 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	1149	1281	1448	1676	1773	1894	1833	1778	1565

C.D. for comparison of T_0 *vs.* others =288·6 Kg/ha.
C.D. for comparison of any 2 treatment means except T_0=333·3 Kg/ha.

64(58)

(i) 859 Kg/ha. (ii) 197·5 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	T_8
Av. yield	340	634	827	770	896	1144	1188	1129	1324

C.D. for comparison of T_0 *vs.* others =248·2 Kg/ha.
C.D. for comparison of any 2 treatment means except T_0=286·5 Kg/ha.

65(97)

(i) 1175 Kg/ha. (ii) 162·7 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	852	986	1076	1166	1076	1435	1345	1524	1435

C.D. for comparison of T_0 *vs.* any others =204·4 Kg/ha.
C.D. for comparison of any 2 treatment means except T_0=236·1 Kg/ha.

Crop :- Jowar (*Kharif*). **Ref :- Ms. 61(87), 62(89), 63(88), 64(61).**

Site :- Agri. Res. Stn., Saundathi. **Type :- 'M'.**

Object :—To compare the effect of Mg. Phos. (fused) with Super. at different levels.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Groundnut. (b) Groundnut. (c) 22·4 Kg/ha. of Super. (ii) Medium black. (iii) 21.7.61; 15.7.62; 7.7.63; 11.7.64. (iv) (a) 3 harrowings. (b) Drilling. (c) 4 Kg/ha. (d) 46 cm.×10 to 15 cm. (e) Nil. (v) 12·4 C.L./ha. of F.Y.M. applied 2 to 4 weeks before sowing+22·4 Kg/ha. of N as A/S applied at sowing by combined drill. (vi) Fulgar white. (vii) Unirrigated. (viii) 3 interculturings with hoe and 2 weedings. (ix) 28 cm.; 48 cm.; 36 cm.; 55 cm. (x) 30.12.61; 5.1.63; 15.12.63; 12.12.64.

2. TREATMENTS :

All combinations of (1) and (2)+a control (no manure)

(1) 2 levels of P_2O_5 : P_1=16·8 and P_2=22·4 Kg/ha.
(2) 2 sources of P_2O_5 : S_1=Super and S_2=Mg. Phos.

3. DESIGN :

(i) Fact. in L. Sq. (ii) (a) 5. (b) 36·6 m.×34·3 m. (iii) 5. (iv) (a) 7·3 m.×6·9 m. (b) 5·5 m.×5·5 m. (v) 91 cm.×46 cm. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Attacked by army worms and grass hopper—10% B.H.C. dusted in 61 and 62. Nil for other years. (iii) Yield of grain. (iv) (a) 1962—64. (b) No. (c) As under 5. Results. (v) N.A. (vi) Nil. (vii) Error variances are homogeneous. Treatments×years interaction is absent.

5. RESULTS :

(i) 1620 Kg/ha. (ii) 184·1 Kg/ha. (based on 76 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.

Control=1595 Kg/ha.

	S_1	S_2	Mean
P_1	1640	1613	1626
P_2	1655	1595	1625
Mean	1648	1604	1626

Years	P_1	P_2	Sig.	S_1	S_2	Sig.	Control	G.M.	S.E./plot
1961	1707	1718	N.S.	1728	1698	N.S.	1731	1717	202·7
1962	1425	1428	N.S.	1482	1370	N.S.	1396	1420	169·9
1963	1451	1384	N.S.	1416	1420	N.S.	1479	1430	189·7
1964	1923	1968	N.S.	1964	1927	N.S.	1774	1912	203·2
Pooled	1626	1625	N.S.	1648	1604	N.S.	1595	1620	184·1

Crop :- Jowar (*Kharif*). **Ref :- Ms. 60(108), 61(81).**

Site :- Agri. Res. Stn., Saundathi. **Type :- 'M'.**

Object :—To study the time and placement of fertilizers on Jowar.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Groundnut. (b) Groundnut. (c) Nil. (ii) Medium black soil. (iii) 12.7.60; 7.7.61. (iv) (a) 3 harrowings. (b) Drill sowing. (c) 7 Kg/ha. (d) 30 cm. × 10 to 15 cm. (e) N.A. (v) 7·4 C.L./ha of F.Y.M. 1 month before sowing. (vi) Fulgar white (late). (vii) Unirrigated. (viii) 3 interculturings with hoe and 2 hand weedings. (ix) 44 cm.; 36 cm. (x) 25.12.60; 30.12.61.

2. TREATMENTS :

8 methods of application of 33·6 Kg/ha. of N as A/S+22·4 Kg/ha. of P_2O_5 as Super : M_0=Control (no manure), M_1=Drilled both ways (crosswise), M_2=Applied by draw tube 5 cm. below the surface at sowing, M_3=Applied by s.c.f. drill, M_4=½ dose by s c.f. drill+½ dose by top dressing implement 1 month after sowing, M_5=Broadcast at sowing, M_6=Broadcast (½ dose at sowing+½ dose 1 month after sowing) and M_7=½ dose as broadcast at sowing+½ applied by draw tubes at sowing.

s.c.f. drill stands for seed-cum-fertilizer drill.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) 142·7 m. × 6·4 m. (iii) 5. (iv) (a) 17·8 m. × 6·4 m. (b) 16·0 m. × 4·6 m. (v) 91 cm. × 91 cm. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Attack of grass hoppers. B.H.C. 10% was dusted at 22·4 Kg/ha. (iii) Grain yield. (iv) (a) 1958–63. (b) No. (c) As under 5. Results. (v) Bailhongal, Dharwar, Dodesagar and Raichur. (vi) Nil. (vii) Experiments for 1958 and 59 were also considered while pooling. Error variances are homogeneous. Trertments × years interaction is absent.

5. RESULTS:

(i) 1676 Kg/ha. (ii) 216·7 Kg/ha. (based on 133 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	M_0	M_1	M_2	M_3	M_4	M_5	M_6	M_7
Av. yield	1302	1678	1697	1723	1852	1722	1690	1744

C.D.=135·6 Kg/ha.

Years	M_0	M_1	M_2	M_3	M_4	M_5	M_6	M_7	Sig.	G.M.	S.E./plot
1960	1504	1939	1889	1944	2080	1909	1968	1968	*	1900	221·2
1961	1410	1649	1728	1724	1990	1846	1827	1820	N.S.	1749	273·8
Pooled	1302	1678	1697	1723	1852	1722	1690	1744	**	1676	216·7

Crop :- Jowar (*Kharif*). **Ref :- Ms. 60(109), 61(82).**

Site :- Agri. Res. Stn., Saundathi. **Type :- 'M'.**

Object :—To study the effect of different nitrogeneous fertilizers on the yield of *Jowar*.

1. BASAL CONDITIONS :

(i) (a) *Jowar*–Groundnut. (b) Groundnut. (c) Nil. (ii) Medium black soil. (iii) 11.7.60; 8.7.61. (iv) (a) 3 harrowings. (b) Drill sowing. (c) 7 Kg/ha. (d) 30 cm.×10 to 15 cm. (e) N.A. (v) 7·4 C.L./ha. of F.Y.M. in 1960; 7·4 C.L./ha. of F.Y.M. applied 1 month before sowing. (vi) Fulgar white (late). (vii) Unirrigated. (viii) 3 interculturings with hoe and 2 hand weedings. (ix) 44 cm.; 36 cm. (x) 26.12.60; 30.12.61.

2. TREATMENTS :

6 sources of N at 33·6 Kg/ha. : S_0=Control (No N), S_1=A/S, S_2=C/A/N, S_3=A/C, S_4=Urea and S_5=A/S/N.

22·4 Kg/ha. of P_2O_5 as Super applied at sowing with combined seed drill to all treatments. Control treatment i.e., S_0 had 2 plots.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) 142·7 m.×6·4 m. (iii) 4. (iv) (a) 14·6 m.×7·3 m. (b) 12·8 m.×5·5 m. (v) 91 cm. ×91 cm. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Grass hoppers attack. B.H.C. 10% was dusted at 22·4 Kg/ha. (iii) Graid yield. (iv) (a) 1958—63. (b) No. (c) As under 5. Results. (v) Bailhongal, Dharwar, Dodesaugar and Raichur. (vi) Nil. (vii) Experiment for 1959 also considered for pooling. Error variances are homogeneous. Treatments ×years interaction is present.

5. RESULTS :

(i) 1478 Kg/ha. (ii) 371·3 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	1195	1568	1499	1564	1611	1433

Years	S_0	S_1	S_2	S_3	S_4	S_5	Sig.	G.M.	S.E./plot
1960	1114	1608	1660	1846	1969	1439	**	1536	205·4
1961	1464	1775	1450	1490	1537	1391	N.S.	1510	245·2
Pooled	1195	1568	1499	1564	1611	1433	N.S.	1478	371·3

Crop :- Jowar (*Kharif*). **Ref :- Ms. 60(96).**

Site :- Agri. Res. Stn., Sirugappa. **Type :- 'M'.**

Object :—To find out the time of application of N at different stages of growth for *Jowar*.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton—Wheat. (b) Wheat. (c) 125·5 Q/ha. of F.Y.M.+44·8 Kg/ha. of N+22·4 Kg/ha. of P_2O_5. (ii) Deep black soil. (iii) N.A. (iv) (a) Ploughing and harrowing. (b) Drilling. (c) 11 Kg/ha. (d) 3 cm. × 23 cm. (e) N.A. (v) 125·5 Q/ha. of F.Y.M.+22·4 Kg/ha. of P_2O_5 as Super. (vi) *CO—9* (110 days). (vii) Irrigated. (viii) 1 hand weeding. (ix) 49 cm. (x) 3 and 4.11.60.

2. TREATMENTS :

4 times of application of N at 44·8 Kg/ha. : T_1=At sowing, T_2=1 month after sowing, T_3=$\frac{1}{2}$ dose at *sowing+$\frac{1}{2}$ dose after 1 month and* T_4=$\frac{1}{2}$ *dose 1 month after* sowing+$\frac{1}{2}$ dose at flag leaf stage.

3. DESIGN :

(i) R.B D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 1/124 ha. (b) 1/247 ha. (v) N.A. (vi) Yes.

4. GENERAL:

(i) Fair. (ii) Nil. (iii) Grain yield. (iv) (a) 1957—60. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS:

(i) 3245 Kg/ha. (ii) 463·3 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
Av. yield	3302	3304	3227	3148

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Crop :- Jowar (*Kharif*). **Ref :- Ms. 60(95), 61(258), 62(259).**

Site :- Agri. Res. Stn., Sirugappa. **Type :- 'M'.**

Object :—To find out the optimum dose of N, P and K for the yield of *Jowar*.

1. BASAL CONDITIONS :

(i) (a) *Jowar* - Cotton. (b) Cotton. (c) N.A. (ii) Black clayey soil. (iii) 24.6.1960 ; N.A. ; N.A.(iv) (a) Ploughing and harrowing. (b) Dibbling. (c) 13 Kg/ha. (d) 28 cm.×28 cm. ; 23 cm.×23 cm. (e) 1. (v) 125·5 Q/ha. of F.Y.M. (vi) CO–9. (vii) Irrigated. (viii) Weeding and thinning. (ix) 49 cm. ; 36 cm. ; 15 cm. (x) 25.10.1960 ; N.A. ; N.A.

2. TREATMENTS :

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

(1) 3 levels of N : N_0=0, N_1=33·6 and N_2=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.

3. DESIGN :

(i) 3^3 partially Confd. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A, (iii) 2. (iv) (a) 1/198 ha. (b) 1/247 ha. (v) and (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Yield of grain. (iv) (a) 1960 to 1962. (b) No. (c) As under 5. Results. (v) N.A. (vi) Nil. (vii) Error variances are heterogeneous. Treatments×years interaction is present.

5. RESULTS :

(i) 1584 Kg/ha. (ii) 331·9 Kg/ha, (based on 36 d.f. made up of interaction of years with (N, P, K, N×P, N×K and P×K). (iii) Main effect of N alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	N_0	N_1	N_2	K_0	K_1	K_2	Mean
P_0	1385	1520	1674	1582	1509	1488	1526
P_1	1485	1538	1857	1626	1665	1589	1626
P_2	1420	1605	1774	1626	1526	1647	1600
Mean	1430	1554	1768	1611	1567	1575	1584
K_0	1584	1579	1672				
K_1	1361	1547	1791				
K_2	1345	1537	1842				

C.D. for N marginal means=129·7 Kg/ha.

Years	N_0	N_1	N_2	Sig.	P_0	P_1	P_2	Sig.
1960	3022	2955	3096	N.S.	2928	3114	3031	N.S.
1961	545	691	976	**	675	687	850	*
1962	724	1017	1233	**	976	1080	919	**
Pooled	1430	1554	1768	**	1526	1626	1600	N.S.

K_0	K_1	K_2	Sig.	G.M.	S.E./plot
3103	2961	3009	N.S.	3024	434·3
730	753	729	N.S.	737	64·4
1002	987	986	N.S.	992	68·6
1611	1567	1575	N.S.	1584	331·9

Crop :- Jowar (*Kharif*). **Ref :- Ms. 61(256), 62(257), 63(39).**

Site :- Agri. Res. Stn., Sirugappa. **Type :- 'M'.**

Object :—To compare Mg. Phos. with Super at different levels.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*. (b) Cotton. (c) 124 Q/ha. of F.Y.M.+44·8 Kg/ha. of N as A/S for 61(256) and 62(257) and 125·5 Q/ha. of F.Y.M.+44·8 Kg/ha. of N as A/S+22·4 Kg/ha. of P_2O_5 as Super for 63(39). (ii) Medium black. (iii) 29.6.61 ; 16.6.62 ; 6.7.63. (iv) (a) Ploughing and harrowing. *(b) Dibbling.* (c) 6·3 Kg/ha. for 61 and 62 ; 12 to 15 Kg/ha. for 63. (d) 31 cm.×22 cm. for 61 and 62 ; 30 cm.×15 cm. for 63. (e) N.A. (v) Same as in (i) (c). (vi) CO—9. (vii) Irrigated. (viii) Weeding and interculturing. (ix) 42 cm. ; 53 cm. ; 48 cm. (x) 25.10.61 ; 3.10.62 ; 31.10.63.

2. TREATMENTS :

All combinations of (1) and (2)+one control.

(1) 2 levels of P_2O_5 : P_1=22·4 and P_2=33·6 Kg/ha.

(2) 2 sources of P_2O_5 : S_1=Super and S_2=Mg. Phos.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) 1/193. (b) 1/247. (v) N.A. (vi) Yes.

4. GENERAL:

(i) Fair. (ii) Nil. (iii) Grain yield. (iv) (a) 1961 to 1963. (b) No. (c) Nil. (v) N.A. (vi) Nil. (vii) Error variances are heterogeneous. Treatments × years interaction is absent.

5. RESULTS :

61(256)

(i) 2739 Kg/ha. (ii) 330·6 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

Control=2597 Kg/ha.

	S_1	S_2	Mean
P_1	2700	2821	2760
P_2	2700	2877	2788
Mean	2700	2849	2774

62(257)

(i) 3029 Kg/ha. (ii) 137·4 Kg/ha. (iii) Main effect of S is significant. Control vs. others is highly significant. (iv) Av. yield of grain in Kg/ha.

Control=2810 Kg/ha.

	S_1	S_2	Mean
P_1	3248	2974	3111
P_2	3128	2987	3058
Mean	3188	2980	3084

C.D. for S marginal means=159·6 Kg/ha.
C.D. for control vs. others=178·4 Kg/ha.

63(39)

(i) 1900 Kg/ha. (ii) 391·0 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

Control=1724 Kg/ha.

	S_1	S_2	Mean
P_1	1875	2022	1948
P_2	1970	1910	1940
Mean	1922	1966	1944

Crop :- Jowar (*Kharif*). **Ref :- Ms. 60 to 64(M.A.E.).**

Site :- M.A.E. Centre, Gangavati. **Type :- 'M'.**

Object :—Type II To study the effect of different levels of N, P and K with and without F.Y.M. on the yield of *Jowar*.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*—Groundnut. (b) Cotton. (c) As per treatments. (ii) Medium black. (iii) 21, 22 6.60; 14, 15.6.61; 11.6.62; 14.6.63; 15.6.64. (iv) (a) 2 ploughings and 5 harrowings. (b) Ey hand drill. (c) 9·0 Kg/ha. (d) 38 cm.×15 to 23 cm. (e) N.A. (v) N.A. (vi) D—340 (120 days). (vii) Irrigated. (viii) 2 weedings and 3 hoeings. (ix) N.A. (x) 5 to 21.11.60; 20 to 24.10.61; 7 to 9.11.62; 26.11.63 ; 25.10.64.

2. TREATMENTS:

All combinations of (1), (2), (3) and (4)

(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.

(4) 2 levels of F.Y.M.: F_0=0 and F_1=5600 Kg/ha.

3. DESIGN :

(i) 3^3×2 Fact. confd. (ii) (a) 9 plots/block ; 6 blocks/replication. [3 blocks received F_0 and 3 blocks received F_1 treatments]. (b) N.A. (iii) 1. (iv) (a) 15·5 m.×6 7 m. (b) 13·4 m.×6·1 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1960—65. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

60(M.A.E.)

(i) 1498 Kg/ha. (ii) 300·2 Kg/ha. (iii) Main effect of N is highly significant and interaction P×K is significant. (iv) Av. yield of grain in Kg/ha.

	N_0	N_1	N_2	P_0	P_1	P_2	K_0	K_1	K_2	Mean
F_0	899	1624	2014	1513	1394	1630	1426	1620	1490	1512
F_1	988	1441	2024	1311	1594	1547	1415	1626	1411	1484
Mean	943	1532	2019	1412	1494	1588	1420	1623	1450	1498
K_0	905	1560	1795	1166	1588	1506				
K_1	1041	1752	2076	1814	1416	1639				
K_2	882	1284	2185	1255	1478	1618				
P_0	1046	1429	1761							
P_1	805	1585	2092							
P_2	978	1582	2204							

C.D. for N marginal means =206·6 Kg/ha.
C.D. for the body of P×K table=357·8 Kg/ha.

61(M.A.E.)

(i) 843 Kg/ha. (ii) 254·6 Kg/ha. (iii) Main effects of F, N, P and interaction N×P are highly significant and interaction F×N is significant. (iv) Av. yield of grain in Kg/ha.

	N_0	N_1	N_2	P_0	P_1	P_2	K_0	K_1	K_2	Mean
F_0	164	602	916	195	631	857	562	489	632	561
F_1	435	1204	1737	762	1319	1294	1169	1075	1131	1125
Mean	300	903	1326	478	975	1075	865	782	881	843
K_0	304	918	1373	487	1001	1107				
K_1	260	874	1213	379	849	1118				
K_2	336	917	1391	568	1075	1000				
P_0	256	517	662							
P_1	269	1154	1502							
P_2	375	1038	1813							

C.D. for N or P marginal means=175·2 Kg/ha.
C.D. for F marginal means =143·0 Kg/ha.
C.D. for the body of N×P table=303·4 Kg/ha.
C.D. for the body of N×F table=247·8 Kg/ha.

62(M.A.E.)

(i) 1711 Kg/ha. (ii) 347·0 Kg/ha. (iii) Main effect of N alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	N_0	N_1	N_2	P_0	P_1	P_2	K_0	K_1	K_2	Mean
F_0	831	1663	2404	1564	1711	1623	1512	1633	1753	1633
F_1	855	1867	2646	1636	1939	1793	1831	1746	1791	1789
Mean	843	1765	2525	1600	1825	1708	1671	1690	1772	1711
K_0	811	1878	2325	1500	1882	1632				
K_1	783	1812	2474	1533	1811	1725				
K_2	935	1605	2776	1767	1782	1768				
P_0	847	1667	2286							
P_1	789	2024	2661							
P_2	893	1604	2628							

C.D. for N marginal means=238·8 Kg/ha.

63(M.A.E.)

(i) 796 Kg/ha. (ii) 272·2 Kg/ha. (iii) Main effect of N is highly significant and that of P is significant. (iv) Av. yield of grain in Kg/ha.

	N_0	N_1	N_2	P_0	P_1	P_2	K_0	K_1	K_2	Mean
F_0	382	711	908	442	915	644	719	618	665	667
F_1	590	984	1201	895	955	925	988	815	973	925
Mean	486	847	1055	668	935	785	853	716	819	796
K_0	462	841	1256	754	880	926				
K_1	553	811	785	530	1084	534				
K_2	444	889	1123	721	841	894				
P_0	533	705	767							
P_1	515	1005	1286							
P_2	411	832	1112							

C.D. for N or P marginal means=187·4 Kg/ha.

64(M.A.E.)

(i) 1122 Kg/ha. (ii) 172·6 Kg/ha. (iii) Main effect of F, N and interaction N×P are highly significant. Main effect of P and interaction N×K are significant. (iv) Av. yield of grain in Kg/ha.

	N_0	N_1	N_2	P_0	P_1	P_2	K_0	K_1	K_2	Mean
F_0	455	1076	1354	883	960	1042	958	1009	919	962
F_1	828	1263	1752	1232	1246	1366	1265	1307	1271	1281
Mean	642	1170	1553	1058	1103	1204	1112	1158	1095	1122
K_0	746	1137	1453	1100	1008	1228				
K_1	530	1237	1707	1100	1135	1240				
K_2	649	1136	1500	974	1166	1145				
P_0	718	1236	1229							
P_1	541	1165	1603							
P_2	666	1118	1828							

C.D. for N or P marginal means =118·8 Kg/ha.
C.D. for F marginal means =96·9 Kg/ha.
C.D. for the body of N×P or N×K table=205·8 Kg/ha.

Crop :- Jowar (*Kharif*). **Ref :- Ms. 61,62(M.A.E.).**

Site :- M.A.E. Centre, Gangavati. **Type :- 'M'.**

Object :—Type IX : To study the effect of Nitro-Phosphates and the method of application on the yield of *Jowar*.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Cotton. (c) 16·8 Kg/ha. of N as A/S. (ii) Medium black. (iii) 22, 23.6.61; 14 6 62. (iv) (a) 4 harrowings and ploughing. (b) Sowing by hand drill. (c) 9·0 Kg/ha. (d) 38 cm ×15 to 23 cm. (e) N.A. (v) Nil. (vi) D. 340; (4 months duration). (vii) Irrigated. (viii) 2 hoeings and weeding once. (ix) N.A. (x) 25.10.61 to 3.11.61 ; 1 to 5.11.62.

2. TREATMENTS :

All combinations of (1), (2) and (3)+4 extra treatments in each block.

(1) 3 types of Phosphates : P_1=Super, P_2=ODDA and P_3=PEC.

(2) 3 levels of P_2O_5 : L_1=11·7, L_2=23·4 and L_3=46·8 Kg/ha.

(3) 3 methods of application : M_1=At puddling by broadcasting, M_2=At planting below seed and M_3= Immediately after planting by band placement.

Extra treatments : E_0=0, E_1=13·4, E_2=26·8 and E_3=53·6 Kg/ha. of N.

3. DESIGN :

(i) 3^3+4 Fact. confd. (ii) (a) 13 plots/block and 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 11·0 m.× 5·5 m. (b) 8·8 m.×4·6 m. (v) 110 cm.×45 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1961—N.A. (b) and (c) No. (v) to (vii) Nil.

5. RESULTS :

61(M.A.E.)

(l) 621 Kg/ha. (ii) 282·6 Kg/ha. (iii) Main effect of L and M are highly significant. 'Extra *vs.* others' is significant. (iv) Av. yield of grain in Kg/ha.

N_0=387, Kg/ha. N_1 =461, Kg/ha. N_2=563 Kg/ha. and N_3=563 Kg/ha.

	L_1	L_2	L_3	M_1	M_2	M_3	Mean
P_1	480	729	1088	978	590	729	766
P_2	535	516	941	756	341	895	664
P_3	628	544	627	968	194	638	600
Mean	548	596	885	901	375	754	677
M_1	618	876	1208				
M_2	378	295	452				
M_3	648	618	996				

C.D. for L or M marginal means=190·3 Kg/ha.
C.D. for extra *vs.* others =260·8 Kg/ha.

62(M.A.E.)

(i) 2511 Kg/ha. (ii) 584·6 Kg/ha. (iii) Main effects of P and L are highly significant. (iv) Av. yield of grain in Kg/ha.

N_0=1922 Kg/ha., N_1=2399 Kg/ha., N_2=2539 Kg/ha. and N_3=2455 Kg/ha.

	L_1	L_2	L_3	M_1	M_2	M_3	Mean
P_1	2493	3082	3028	3470	2649	2485	2868
P_2	2179	2860	3307	2839	2607	2900	2782
P_3	1866	2376	2142	2175	1824	2385	2128
Mean	2179	2773	2826	2828	2360	2590	2593
M_1	2343	3026	3115				
M_2	2109	2486	2486				
M_3	2086	2806	2876				

C.D. for P or L marginal means=293.5 Kg/ha.

Crop :- Jowar (*Kharif*). **Ref :- Ms. 63 to 65 (S.F.T.)**

Site :- (District) : Belgaum and Bellary. **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) Deep black for Belgaum and Red sandy for other. (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 A/S, P_2O_5 as Super and K_2O as Mur. Pot.

3. DESIGN :

(i) and (ii) A selected district is dividedinto 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.
(iii) (a) 1/100 ha. (b) 1/200 ha. (iv) Yes.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1963 to 1966 for Belgaum ; 1963 to 1965 for Bellary. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

Belgaum

63(S.F.T.)

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.	489	612	323	689	864	983	793	115·6

Control yield=1503 Kg/ha. ; No. of trials=10.

64(S.F.T.)

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.	124	216	149	218	411	573	633	61·6

Control yield=1173 Kg/ha. ; No. of trials=7.

65(S.F.T.)

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.	207	230	192	346	149	529	597	53·2

Control yield=711 Kg/ha. ; No. of trials=12.

Bellary

63(S.F.T.)

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.	174	362	210	357	343	840	926	33·8

Control yield=983 Kg/ha. ; No. of trials=10.

64(S.F.T.)

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.	221	320	147	457	508	501	610	67·7

Control yield=937 Kg/ha. ; No. of trials=6.

65(S.F.T.)

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.	92	165	69	429	477	678	676	199·4

Control yield=1051 Kg/ha. ; No. of trials=6.

Crop :- Jowar (*Rabi*). **Ref :- Ms. 62,63, 64(S.F.T.) for Belgaum and 63, 64(S.F.T.) for Bellary.**

Site :- (District) : Belgaum and Bellary. 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) Deep black ; for Belgaum Red sandy for Bellary. (iii) to (vi) N.A. (vii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS and 3. DESIGN :

Same as in type A_1 (Kharif) on page 204.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1962 to 1966 [1965 N.A. for Belgaum, 1962 and 1965 N.A. for Bellary]. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

Belgaum

62(S.F.T.)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_1P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	104	16	146	181	145	127	—41	169·5

Control yield=623 Kg/ha. ; No. of trials=3.

63(S.F.T.)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_1P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	212	372	157	295	426	506	562	17·9

Control yield=661 Kg/ha. ; No. of trials=3.

64(S.F.T.)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_1P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	378	583	128	609	655	906	991	65.7

Control yield=649 Kg/ha. ; No. of trials=3.

Bellary

63(S.F.T.)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_1P_2	$N_2P_2K_1$	S.E.
Av. response of grain in Kg/ha.	98	91	98	108	184	248	340	41·6

Control yield=201 Kg/ha. ; No. of trials=2.

64(S.F.T.)

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.	48	48	48	78	92	111	152	18·5

Control yield=250 Kg/ha. ; No. of trials=3.

Crop :- Jowar (*Rabi*). **Ref :- Ms. 64 (S.F.T.).**

Site :- (District) : Bellary and Belgaum. **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 sandy for Bellary and Deep black for other. (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=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.
$N_2P_2K_2$=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 (*Kharif*) on page 204.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1964—only for Bellary and 1964 to 1966 [1965 N.A.] for Belgaum. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

Bellary

64(S.F.T.)

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.	73	40	96	98	117	175	216	22·2

Control yield=254 Kg/ha. ; No. of trials=3.

Belgaum

64(S.F.T.)

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.	457	217	270	586	754	787	1242	109·0

Control yield=583 Kg/ha. ; No. of trials=3.

Crop :- Jowar (*Rabi*). **Ref :- Ms. 63, 65 (S.F.T.) for Bellary, 62, 63(S.F.T.) for Belgaum.**

Site :- (District) : Bellary and Belgaum. **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) Deep black for Belgaum and Red sandy for other. (iii) to (vi) N.A. (vii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS and 3. DESIGN :

Same as in type A_1 (Rabi, irrigated) on page 207.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1962 to 1965 [1962 and 1964 N.A.] for Bellary ; 1962 to 1963 for Belgaum. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

Belgaum

62(S.F.T.)

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.	82	138	132	208	209	186	205	6·2

Control yield=534 Kg/ha. ; No. of trials=3.

63(S.F.T.)

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.	196	106	149	260	302	381	507	24·8

Control yield=625 Kg/ha. ; No. of trials=3.

Bellary

63(S.F.T.)

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.	40	10	69	52	75	91	132	20·5

Control yield=97 Kg/ha. ; No. of trials=2.

65(S.F.T.)

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.	215	150	175	195	155	200	235	83·7

Control yield=275 Kg/ha. ; No. of trials=2.

———

Crop :- Jowar (*Kharif*). **Ref :- Ms. 63, 64, 65(S.F.T.)**

Site :- (District) : Belgaum and Bellary. **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) Deep black for Belgaum and Red sandy for other. (iii) to (vi) N.A. (vii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS : and 3. DESIGN :

Same as in Type A_2 (Rabi Irrigated) on page 207.

4. GENERAL:

(i) to (iii) N.A. (iv) (a) 1963 to 1967 for Balgaum ; 1963 to 1965 for Bellary. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

Belgaum

63(S.F.T.)

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.	321	190	263	478	542	754	865	36·1

Control yield=1487 Kg/ha. ; No. of trials=10.

64(S.F.T.)

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.	125	138	191	242	375	490	610	69·8

Control yield=1188 Kg/ha. ; No. of trials=7.

65(S.F.T.)

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	162	208	244	362	513	616	46·8

Control yield=735 Kg/ha. ; No. of trials=11.

Bellary

63(S.F.T.)

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	270	354	273	325	827	994	34·2

Control yield=993 Kg/ha. ; No. of trials=9.

64(S.F.T.)

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	282	369	586	552	688	762	60·7

Control yield= 963 Kg/ha. ; No. of trials=6.

65(S.F.T.)

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.	167	148	192	420	473	631	658	118·1

Control yield=1011 Kg/ha.; No. of trials=7.

Crop :- Jowar (*Kharif*). **Ref :- Ms. 63, 64,65(S.F.T.) for Belgaum and Bellary.**

Site :- (District) : Belgaum and Bellary. 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) Deep black for Belgaum and Red sandy for other. (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.
N applied as A/S, P_2O_5 as Super and K_2O as Mur. Pot.

3. DESIGN :

Same as in type A_1 (*Kharif*) on page 204.

4. GENERAL INFORMATION :

(i) to (iii) N.A. (iv) (a) 1963 to 1966 for Belgaum ; 1963 to 1965 for Bellary. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

Belgaum

63(S.F.T.)

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	146	181	316	316	523	513	66·2

Control yield=1272 Kg/ha. ; No. of trials=9.

64(S.F.T.)

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.	134	59	128	199	264	354	325	61·7

Control yield=1185 Kg/ha. ; No. of trials=7.

65(S.F.T.)

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.	131	226	213	311	387	486	554	43 9

Control yield=722 Kg/ha. ; No. of trials=10.

Bellary

53(S.F.T.)

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.	171	23	60	167	219	419	784	34·0

Control yield=906 Kg/ha. ; No. of trials=9.

64(S.F.T.)

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.	255	91	118	300	305	382	745	62.4

Control yield=722 Kg/ha ; No. of trials=6.

65(S.F.T.)

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.	239	93	102	383	382	554	579	75·7

Control yield=850 Kg/ha. ; No. of trials=6.

Crop :- Jowar (*Rabi*). **Ref :- Ms. 62,63, 64(S.F.T.) for Belgaum and 63, 64, 65 (S.F.T.) for Bellary.**

Site :- (District) : Belgaum and Bellary. **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) Deep black for Belgaum and Red sandy for other. (iii) to (vi) N.A. (vii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS : and 3. DESIGN:

Same as in type A_3 (*Kharif*) on page 210.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1962 to 1966 [1965 N.A.] for Belgaum ; 1962 to 1965 for Bellary. (b) N.A. (c) Nil. (v) to (vii) Nil,

5. RESULTS :

Belgaum

62(S.F.T.)

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.	62	9	17	184	26	170	263	72·5

Control yield=617 Kg/ha. ; No. of trials=4.

63(S.F.T.)

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.	67	78	89	123	134	235	201	37·1

Control yield=515 Kg/ha. ; No of trials=2.

64(S.F.T.)

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.	339	200	299	556	688	865	882	109·5

Control yield=461 Kg/ha. ; No. of trials=3.

Bellary

63(S.F.T.)

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.	74	69	33	74	103	125	156	32·0

Control yield=144 Kg/ha. ; No. of trials=2.

64(S.F.T.)

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.	26	11	−8	48	33	85	75	26·5

Control yield=246 Kg/ha. ; No. of trials=3.

65(S.F.T.)

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	20	30	60	90	140	150	114·0

Control yield=400 Kg/ha. ; No. of trials=2.

Crop :- Jowar (*Rabi*). **Ref :- Ms. 60(280).**

Site :- Agri. Res. Stn., Arbhavi. **Type :- 'MV'.**

Object :- To study the effect of N on different varieties of *Jowar* under irrigated conditions.

1. BASAL CONDITIONS :

(i) (a) Maize (*Kharif*)—*Jowar*. (b) Maize. (c) 12·4 C.L./ha. of F Y.M.+33·6 Kg/ha. of N as Urea+11·2 Kg/ha. of P_2O_5 as Super+11·2 Kg/ha. of K_2O as Pot. Sul. (ii) Black soil. (iii) N.A. (iv) (a) Ploughing and harrowing. (b) N.A. (c) 5 Kg/ha. (d) 46 cm×31 cm. (e) 2 to 3, thinned to one plant/hill. (v) 12·4 C.L./ha. of F.Y.M. by spreading. (vi) As per treatments. (vii) Irrigated. (viii) Gap filling, interculturing and hand weeding. (ix) 8 cm. (x) 16.3.61.

2. TREATMENTS :

Main-plot treatments :

5 varieties : V_1=Local, V_2=M—35—1, V_3=M—47—3, V_4=G.S. 560—1—1 and V_5=Yenigar—2.

Sub-plot treatments :

2 manurial doses : M_0=0, and M_1=44·8 Kg/ha. of N+22·4 Kg/ha. of P_2O_5+22·4 Kg/ha. of K_2O.

½ N and full P and K applied 3 weeks after planting and rest of N applied 6 weeks after planting.

3. DESIGN :

(i) Split-plot. (ii) (a) 5 main-plots/replication ; 2 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 6·1 m. ×4·6 m. (b) 5·5 m×3·7 m. (v) One row on all sides. (vi) Yes.

4. GENERAL :

(i) The season was unfavourable. (ii) In early stages the crop was severely attacked by stem borer—Removing of stem borer and Folidol sprayed. (iii) Yield of grain. (iv) (a) 1958 to 1960. (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 278 Kg/ha. (ii) (a) 179·9 Kg/ha. (b) 127·4 Kg/ha. (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
M_0	316	311	440	259	55	276
M_1	246	385	312	355	101	280
Mean	281	348	376	307	78	278

Crop :- Jowar (*Kharif*). **Ref :- Ms. 65(99).**

Site :- Agri. Res. Stn., Saundathi. **Type :- 'MV'.**

Object :—To study the effect of N and P at higher levels on the yield of *Jowar* under dry farming conditions.

1. BASAL CONDITIONS :

(i) (a) Groundnut—*Jowar*. (b) Groundnut. (c) 22·4 Kg/ha. of Super. (ii) Medium black. (iii) N.A. (iv) (a) Ploughing and harrowings 4 times. (b) Dibbling. (c) 4·5 Kg/ha. (d) 46 cm.×15 cm. (e) 2. (v) 7·4 C.L./ha. of F.Y.M. applied one month before sowing. (vi) As per treatments. (vii) Unirrigated. (viii) 3 interculturings with hoes, 1 hand weeding. (ix) 48 cm. (x) N.A.

2. TREATMENTS :

Main-plot treatments :

3 varieties : V_1=G.M. 2—3—1, V_2=Kala gonda, and V_3=Fulger white.

Sub-plot treatments :

All combinations of (1) and (2).

(1) 3 levels of N : N_1=33·6, N_2=44·8 and N_3=56·0 Kg/ha.

(2) 3 levels of P_2O_5 : P_1=22·4, P_2=33·6 and P_3=44·8 Kg/ha.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 9 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a) 12·2 m.× ×5·5 m. (b) 11·0 m.×4·6 m. (v) One row all round. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Grain yield. (iv) (a) 1965—N.A. (b) Yes (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1446 Kg/ha. (ii) (a) 322·9 Kg/ha. (b) 295·6 Kg/ha. (iii) Main effect of V alone is significant. (iv) Av. yield of grain in Kg/ha.

	N_1	N_2	N_3	P_1	P_2	P_3	Mean
V_1	1684	1458	1478	1595	1498	1528	1540
V_2	1651	1644	1614	1614	1684	1910	1736
V_3	1000	1160	1023	1120	1020	1043	1061
Mean	1445	1421	1472	1443	1401	1494	1446
P_1	1389	1561	1379				
P_2	1342	1286	1575				
P_3	1604	1415	1462				

C.D. for V marginal means=463·2 Kg/ha.

Crop :- Jowar (*Rabi*). **Ref :- Ms. 63(234), 64(203), 65(76).**

Site :- Agri. Res. Stn., Bagalkot. **Type :- 'C'.**

Object :—To study the effect of different cultural practices on *Jowar*.

1. BASAL CONDITIONS :

(i) (a) Nil (1963); Cotton—*Jowar* ('64, '65). (b) Nil (1963); Cotton ('64, '65). (c) Nil ('63); N.A. ('64, '65). (ii) Deep black soil. (iii) 8.10.63; N.A.; N.A. (iv) (a) 3 harrowings ('63) ; Ploughing and harrowing ('64, 65)+as per treatments. (b) Seed-drill. (c) 4·5 Kg/ha. (d) 46 cm. × 30 cm. (e)—. (v) Nil. (vi) M. 35- 1 (early). (vii) Unirrigated. (viii) 3 interculturings, 1 weeding. (ix) 69 cm.; 61 cm.; 26 cm. (x) 15.3.64; N.A.; N.A.

2. TREATMENTS :

5 cultural practices : T_1=Simple harrowing (control), T_2=Iron ploughing without mould plough, T_3= Wooden ploughing, T_4=Contour lisping and T_5=Pocket formation.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) 84·1 m. × 11·0 m. (iii) 4. (iv) (a) 21·0 m. × 11·0 m. (b) 20·1 m. × 10·1 m. (v) 91 cm. row on one side. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Grain yield. (iv) (a) 1962—67. (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

63(234)

(i) 313 Kg/ha. (ii) 80·1 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_1	T_3	T_2	T_4	T_5
Av. yield	279	312	324	327	325

64(203)

(i) 827 Kg/ha. (ii) 111·8 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	776	746	817	848	946

65(76)

(i) 355 Kg/ha. (ii) 141·5 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
Av. yield	444	393	287	291	358

Crop :- Jowar (*Rabi*). **Ref :- Ms. 62(202), 63(189), 64(149).**

Site :- Soil Cons. Res. Stn., Bellary. **Type :- 'C'.**

Object :—To find out the optimum spacing for *Jowar*.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow; Cotton *Jowar*. (c) Nil. (ii) Deep black cotton soil. (iii) 20.10.62; 1.10.63; 3.10.64. (iv) (a) Light harrowing. (b) Dibbling. (c) 4 Kg/ha. (d) As per treatments. (e) 1. (v) Nil. (vi) M. 35—1 (medium). (vii) Unirrigated. (viii) Hand weeding. (ix) 18 cm. ; 14 cm. ; 16 cm. (x) 6.3.63; 12.2.64; 8.2.65.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 spacings between rows : R_1=46 and R_2=91 cm.

(2) 3 spacings between plants : P_1=15, P_2=31 and P_3=46 cm.

3. DESIGN:

(i) Fact. in R.B.D. (ii) (a) 6. (b) N.A. for 1962 ; 43·9 m.×9·1 m. for 1953 and '64 (iii) 4. (iv) (a) 13·7 m.× 7·3 m. in 1962 ; 9·1 m.×7·3 m. in 1963 and '64. (b) 13·7 m.×7·3 m. in 1962; 9·1 m.×6·4 m. in 1963 and '64. (v) Nil; N.A.; N.A. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Bird damage to the *Jowar* earhead in 1963. (iii) Height measurements; No. of leaves ; yield of grain. (iv) (a) 1962—contd. (expt. failed in '65). (b) No. (c) Nil. (v) Nil. (vi) Heavy and unusual rains during Dec. '62. (vii) Nil.

5. RESULTS :

62(202)

(i) 288 Kg/ha. (ii) 106·2 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	P_1	P_2	P_3	Mean
R_1	335	290	282	302
R_2	342	244	234	273
Mean	338	267	258	288

63(189)

(i) 512 Kg/ha. (ii) 96·3 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	P_1	P_2	P_3	Mean
R_1	474	570	490	511
R_2	513	552	470	512
Mea	494	561	480	512

64(149)

(i) 663 Kg/ha. (ii) 83·3 Kg/ha. (iii) P effect is highly significant. (iv) Av. yield of grain in Kg/ha.

	P_1	P_2	P_3	Mean
R_1	615	774	656	682
R_2	657	720	556	644
Mean	636	747	606	663

C.D. for P marginal means=88·6 Kg/ha.

———

Crop :- Jowar (*Rabi*). **Ref :- Ms. 63(195), 64(154).**

Site :- Soil Cons. Res. Stn., Bellary. **Type :- :C'.**

Object :—To find out the benefit in leaving reservoirs of water alternating with sown strips of crops.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) Cotton. (c) Nil. (ii) Deep black cotton soils. (iii) 1.10.63; 2.10.64. (iv) (a) As per treatments; Light harrowing in treatments T_0 and T_2 in '63. (b) Dibbling. (c) N.A. (d) 46 cm.×23 cm. (e) 1. (v) 5·6 Q./ha. of F.Y.M. (vi) M. 35—1 (medium). (vii) Unirrigated. (viii) Hoeing and hand weeding. (ix) N.A.; 2 cm. (x) N.A.; 10.2.65.

2. TREATMENTS :

5 cultural treatments : T_0=Control, T_1=Corrigation made 122 cm apart and alternate ridges tied with grass, T_2=Scoops made 122 cm. apart with single basin lister, T_3=Corrigations made 122 cm. apart with a V ditcher and T_4=Bunds put with bund at 122 cm. apart.

3. DESIGN:

(i) R.B.D. (ii) (a) 5. (b) 76·2 m.×15·2 m. (iii) 4. (iv) (a) and (b) 15·2 m.×6·9 m. (v) Nil. (vi) Yes.

4. GENERAL ;

(i) Satisfactory except in treatment T_1 where the crop growth was very poor probably due to severe competition for moisture between grass and *Jowar*. (ii) Nil. (iii) Height, No. of leaves, leaf area, weight of 500 grains and yield of grain. (iv) (a) 1963—64. (b) Yes. (c) Nil. (v) and (vi) Nil. (vii) Error variances are heterogeneous and Treatments×years interaction is absent.

5. RESULTS :

63(195)

(i) 342 Kg./ha. (ii) 157·8 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
Av. yield	388	125	377	413	406

64(154)

(i) 894 Kg/ha. (ii) 337·6 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
Av. yield	1027	233	1156	1073	980

C.D.=520·2 Kg/ha.

———

Crop :- Jowar (*Rabi*). **Ref :- Ms. 64(201), 65(72).**

Site :- Agri. Res. Stn., Bijapur. **Type :- 'C'.**

Object :—To find out suitable spacings for *Rabi Jowar*.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar*. (c) 12·4 C.L./ha. of F.Y.M.+16·8 Kg/ha. of N+11·2 Kg/ha. of P_2O_5. (ii) Medium black (with limy sub-soil). (iii) 23.9.64; 24.9.65. (iv) (a) Ploughing and harrowing. (b) to (e) As per treatments. (v) N.A. (vi) M. 35—1. (vii) Unirrigated. (viii) Thinning and interculturing. (ix) 26 cm.; 7 cm. (x) 3.3.65; 2.2.66.

2. TREATMENTS :

9 sowing treatments : T_1=Rows 46 cm. apart with 6·7 Kg/ha. as seed rate, T_2=31 cm.×31 cm. with 1 seed/hill, T_3=31 cm.×46 cm. with 1 seed/hill, T_4=31 cm.×46 cm. with 2 seeds/hill, T_5=46 cm.×46 cm. with 2 seeds/hill, T_6=46 cm.×61 cm. with 2 seeds/hill, T_7=46 cm.×61 cm. with 3 seeds/hill, T_8=46 cm.×23 cm. with 1 seed/hill and T_9=61 cm.×61 cm. with 4 seeds/hill.

Method of sowing for T_1 is drilling while for T_2 to T_9 it is dibbling.

First 7 treatments tried in 1964 and 9 treatments tried in 1965.

In case of dibbling, 4 seeds to be dibbled while planting and thinned after about a month to retain the respective number of seedlings as per treatments.

3. DESIGN :

(i) R.B.D. (ii) (a) 7 for 1964; 9 for '65. (b) N.A. (iii) 4. (iv) (a) 12·2 m.×5·5 m.; N.A. (b) 11·0 m.× 3·7 m.; 10·4 m.×3·7 m. (v) and (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Grain yield. (iv) (a) 1964 to '66. (Modified in '65). (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

64(201)

(i) 1302 Kg/ha. (ii) 150·4 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	1281	1216	1323	1217	1307	1453	1319

65(72)

(i) 668 Kg/ha. (ii) 187·5 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	T_6	T_7	T_8	T_9
Av. yield	460	582	577	416	808	644	761	771	991

C.D.=273·5 Kg/ha.

Crop :- Jowar (*Rabi*). **Ref :- Ms. 60(120).**

Site :- Agri. Res. Stn., Dhade Saugar. **Type :- 'C'.**

Object :—To find out optimum space between rows and plants under dibbled conditions.

1. BASAL CONDITIONS :

(i) (a) Paddy—Cotton. (b) Cotton. (c) 44·8 Kg/ha. of N+33·6 Kg/ha. of P_2O_5. (ii) Deep black Cotton soil. (iii) 15.10.60. (iv) (a) Ploughing with iron plough and harrowing with blade harrow. (b) Dibbling by hand. (c) N.A. (d) As per treatments. (e) one. (v) 44·8 Kg/ha. of N+22·4 Kg/ha. of P_2O_5. (vi) M 35—1 (125 to 130 days). (vii) Irrigated. (viii) One hand weeding. (ix) N.A. (x) 18.2.61.

2. TREATMENTS:

All combinations of (1) and (2)

(1) 5 row spacings : R_1=23, R_2=30, R_3=38, R_4=46 and R_5=53 cm.

(2) 4 plant spacings : S_1=10, S_2=15, S_3=20 and S_4=25 cm.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 20. (b) N.A. (iii) 2. (iv) (a) and (b) 8·2 m.×6·1 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Slight attack of stem borer—uprooting and burning of dead heart, spraying of Endrex against ear head. (iii) Height, thickness of stem, No. of beams and nodes and yield of grain. (iv) (a) 1958 to 1960. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2597 Kg/ha. (ii) 327·5 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	R_1	R_2	R_3	R_4	R_5	Mean
S_1	2989	2271	2385	2503	2458	2521
S_2	2610	2316	2368	2735	2447	2495
S_3	2639	2514	2518	3096	2582	2670
S_4	2447	2678	3221	2752	2401	2700
Mean	2671	2445	2623	2772	2472	2597

Crop :- Jowar (*Kharif*). **Ref :- Ms. 61(99).**

Site :- Agri. Res. Stn., Dhade Saugar. **Type :- 'C'.**

Object :—To find out the best spacing in between the rows and between plants for *Jowar*.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) Cotton. (c) 44·8 Kg/ha. of N+33·6 Kg/ha. of P_2O_5. (ii) Medium black Cotton soil. (iii) 16.6.61. (iv) (a) Ploughing. (b) N.A. (c) 9 to 11 Kg/ha. (d) As per treatments. (e) N.A. (v) 12:4 C.L./ha. of F.Y.M. (vi) D—3—40 (late). (vii) Irrigated. (viii) Gap filling, thinning, interculturing and hand weeding. (ix) 51 cm. (x) 2.11.61.

2. TREATMENTS :

Same as in expt. No. 60(120) on page 217.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 20. (b) N.A. (iii) 2. (iv) (a) and (b) 7·3 m.×4·3 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Light incidence of fly borer at the early stage—sprayed with Endrex, then there was attack of ear head bug. No control measures taken. (iii) Grain yield. (iv) (a) 1958—61. (b) No. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

(i) 857 Kg/ha. (ii) 253·2 Kg/ha. (iii) Main effect of R alone is significant. (iv) Av. yield of grain in Kg/ha.

	R_1	R_2	R_3	R_4	R_5	Mean
S_1	658	668	908	1003	1080	863
S_2	372	559	1017	971	872	758
S_3	567	826	1062	831	944	846
S_4	985	939	980	872	1030	961
Mean	646	748	992	919	982	857

C.D. of R marginal means=264·9 Kg/ha.

Crop :- Jowar (*Kharif*). **Ref :- Ms. 60(269), 61(265), 62(275).**

Site :- Agri. Res. Stn., Dharwar. **Type :- 'C'.**

Object : To study the effect of intercultivation of G.M. on *Jowar* crop.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) Cotton. (c) N.A. (ii) Black soil. (iii) 10.7.1960 ; 23.7.1961 ; 19.7.1962. (iv) (a) Ploughing and harrowing. (b) Dibbling. (c) 4·5 Kg/ha. (d) As per treatments. (e) 2. (v) Nil. (vi) Nandayal. (vii) Unirrigated. (viii) Intercultivation by implements. (ix) 34 cm ; 35 cm ; 44 cm. (x) N.A. ; 23.12.1961 ; 27.12.1962.

2. TREATMENTS :

4 intercultivation of G.M. crops : T_1=38 cm. spacing between two Jowar lines, T_2=76 cm. spacing between two Jowar lines, T_3=76 cm spacing between two Jowar lines+a line of *Sannhemp* between the *Jowar* lines and T_4=38 cm. spacing between two *Jowar* lines+a line of *sunnhemp* after two lines of *Jowar*.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 6·9 m.×11·0 m. (b) 6·1 m.×9·8 m. (v) and (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Grain yield. (iv) (a) 1960—'62. (b) No. (c) As under 5. Results. (v) and (vi) Nil. (vii) Error variances are heterogeneous. Treatments×years interaction is present.

5. RESULTS :

(i) 2832 Kg/ha. (ii) 843·2 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	2672	2821	3123	2710

———

Crop :- Jowar. **Ref :- Ms. 62(155).**

Site :- Agri. Res. Stn., Naragund. **Type :- 'C'.**

Object :— To find out different methods of cultural operations for conserving soil moisture and to obtain better yields.

1. BASAL CONDITIONS :

(i) (a) Cotton—Wheat—*Jowar*. (b) Wheat. (c) F.Y.M. at 33·6 Q/ha. (ii) Highly alkaline soil. (iii) 11.11.62. (iv) (a) As per treatments. (b) Drilling. (c) 4 Kg/ha. (d) 46 cm. between rows. (e) N.A. (v) 33·6 Kg/ha. of F.Y.M. (vi) M 35—1. (vii) Unirrigated. (viii) Hand weeding. (ix) 82 cm. (x) N.A.

2. TREATMENTS :

4 cultural treatments : C_0=Control, C_1=Wooden ploughing at contour lines, C_2=Iron ploughing without mould board and C_3=Contour listing.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) 7·6 m.×7·6 m. (b) 6·1 m.×6·1 m. (v) 76 cm.×76 cm. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Height of plant and yield of grain. (iv) (a) 1962—'64 (modified in 1964). (b) No. (c) Nil. (v) and (vi) Nil. (vii) Expt. failed in 1963.

5. RESULTS :

(i) 485 Kg/ha. (ii) 83·6 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of grain in Kg/ha.

Treatment	C_0	C_1	C_2	C_3
Av. yield	600	435	373	531

C.D. =133·7 Kg/ha.

Crop :- Jowar (*Rabi*). **Ref :- Ms. 64(97).**

Site :- Agri. Res. Stn., Naragund. **Type :- 'C'.**

Object :—To find the effect of cultural operations in conserving more moisture in soil and thereby increase the yield of *Jowar*.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar*. (c) N.A. (ii) Alkaline. (iii) 6.11.64. (iv) (a) As per treatments. (b) Drilling. (c) 4·5 Kg/ha. (d) 46 cm. between rows. (e) N.A. (v) Nil. (vi) M—35—1 (medium). (vii) Unirrigated. (viii) One interculturing and hand weeding. (ix) 108 cm. in whole year. (x) 26.3.65.

2. TREATMENTS :

5 cultural treatments : C_1=Harrowing, C_2=Wooden ploughing at contour lines, C_3=Iron ploughing without mould board, C_4=Pocket formation and C_5=Contour listing.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 8·8 m×7·62 m. (b) 7·3 m.×6·1 m. (v) 76 cm.×76 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) About 25% crop was effected by grass hopper and was controlled by dusting Gammaxene Folidol and B.H.C. mixture. (iii) Plant height, plant count, earhead count and grain yield. (iv) (a) 1962—1964 (modified in '64). (b) —. (c) Nil. (v) Bagalkot. (vi) and (vii) Nil.

5. RESULTS :

(i) 952 Kg/ha. (ii) 264·0 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
Av. yield	930	855	968	969	1037.

Crop :- Jowar (*Kharif*). **Ref :- Ms. 60(266).**

Site :- Agri. Res. Stn., Raichur. **Type :- 'C'.**

Object :- To find out the optimum spacing for *Kharif Jowar*.

1. BASAL CONDITIONS :

(i) (a) to (c) Nil. (ii) Red soil. (iii) 3.6.60. (iv) (a) Ploughing and harrowing. (b) Dibbling. (c) 6·7 Kg/ha. (d) As per treatments. (e) Nil. (v) 12·4 C.L./ha. of F.Y.M. (vi) D 3-40 (vii) Unirrigated. (viii) Weeding, interculturing and thinning. (ix) 70·7 cm. (x) 6.12.60.

2. TREATMENTS:

All combinations of (1) and (2).

(1) 4 spacings between rows : R_1=22·9, R_2=30·5, R_3=38·1 and R_4=45·7 cm.

(2) 4 spacings within rows : S_1=10·2, S_2=15·2, S_3=20·3 and S_4=25·4 cm.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 8·8 m.×4·6 m. (b) 7·9 m.×3·7. (v) 2 rows all round. (vi) Yes.

4. GENERAL :

(i) Poor. (ii) Nil. (iii) Grain yield. (iv) (a) N.A. (b) No. (c) Nil. (v) N.A. (vi) Moisture was less during grain formation stage. During flag stage, seed formation was very poor. (vii) Drought conditions prevailed for more than one month.

5. RESULTS :

(i) 552 Kg/ha. (ii) 195·2 Kg/ha. (iii) Main effects of R and S are significant. (iv) Av. yield of grain in Kg/ha.

	R_1	R_2	R_3	R_4	Mean
S_1	217	484	457	623	445
S_2	484	559	624	520	547
S_3	406	435	728	614	546
S_4	560	665	748	712	671
Mean	417	536	639	615	552

C.D. for S or R marginal means=138·0 Kg/ha.

Crop :- Jowar (*Rabi*). **Ref :- Ms 60(265).**

Site :- Agri. Res. Stn.. Raichur. **Type :- 'C'.**

Object :—To find out the optimum spacing for *Rabi Jowar*.

1. BASAL CONDITIONS :

(i) (a) to (c) Nil. (ii) Red soil. (iii) 11.10.60. (iv) Ploughing and harrowing. (b) Dibbling. (c) 6·7 Kg/ha. (d) As per treatments. (e) N.A. (v) 12·4 C.L./ha. of F.Y.M. (vi) M. 35—1. (vii) Unirrigated. (viii) Weeding and interculturing. (ix) 12·0 cm. (v) 14.2.61.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 spacings between rows : R_1=30·5, R_2=38·1, R_3=45·7 and R_4=53·3 cm.

(2) 4 spacings within rows : S_1=15·2, S_2=20·3, S_3=25·0 and S_4=30·5 cm.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 7·9 m.×3·7 m. (v) 2 rows all round.

4. GENERAL :

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

5. RESULTS :

(i) 422 Kg/ha. (ii) 137·4 Kg/ha. (iii) Main effect of R is significant. (iv) Av. yield of grain in Kg/ha.

	R_1	R_2	R_3	R_4	Mean
S_1	363	411	426	400	400
S_2	330	352	616	523	455
S_3	330	425	557	494	452
S_4	384	364	364	411	381
Mean	352	388	491	457	422

C.D. for R marginal means=97·2 Kg/ha.

Crop :- Jowar (*Kharif*). **Ref :- Ms. 61(84), 62(87), 63(87), 64(57).**

Site :- Agri. Res. Stn., Saundathi. **Type :- 'C'.**

Object :—To study the effect of double cropping in relation to the yield of succeeding crop of *Jowar* in dry tract.

1. BASAL CONDITIONS :

(i) (a) and (b) As per treatments. (c) 22·4 Kg/ha. of Super applied to all the plots of Groundnut crop. (iii) Medium black. (iii) 7.7.61; 14.7.62; 7.7.63; 10.7.64. (iv) (a) 3 harrowings. (b) Drilling. (c) 7 Kg/ha. (d) 30 cm.×10 to 15 cm. (e) Nil. (v) 12·4 C.L./ha. of F.Y.M. applied one month prior to sowing+33·6 Kg/ha. of N+22·4 Kg/ha. of P_2O_5 at the time of sowing. (vi) Fulgar white (late). (vii) Unirrigated. (viii) 2 interculturings with hoe and hand weeding. (ix) 46 cm.; 46 cm.; 36 cm.; 55 cm. (x) 30.12.1961; 5.1.63; 20.12.63; 15.12.64.

2. TREATMENTS .

5 crop rotations : C_0=Groundnut (early)—Fallow—*Kharif Jowar*, C_1=Groundnut (early)—Wheat—*Kharif Jowar*, C_2=Groundnut (early)—Gram—*Kharif Jowar*, C_3=Groundnut (early)—*Rabi Jowar*—*Kharif Jowar* and C_4=Groundnut (early)—Cotton (Jayadha)—*Kharif Jowar*.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) 32·0 m.×13·7 m. (iii) 4 (iv) (a) 13·7 m.×6·4 m. (b) 11·9 m.×4·6 m. (v) 91 cm.×91 cm. (vi) Yes.

4. GENERAL :

(i) Fairly satisfactory in 1961 and 62; Satisfactory in 1963 ; fairly normal but lodging was observed in 1964. (ii) Crop attacked by army worms in the early stages and Deccan wingles grass hoppers. Dusting of 10% B.H.C. done in 1961 and 1962 ; Nil in 1963 ; Stem borer attack. No control measures. (iii) Grain yield. (iv) (a) 1960 –N.A. (b) No. (c) As under 5. Results. (v) and (vi) Nil. (vii) Error variances are homogeneous. Treatments×years interaction is absent.

5. RESULTS :

(i) 1413 Kg/ha. (li) 255·5 Kg/ha. (based on 60 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_0	C_1	C_2	C_3	C_4
Av. yield	1639	1445	1411	1224	1348

C.D.=180·7 Kg/ha.

Years	C_0	C_1	C_2	C_3	C_4	Sig.	G.M.	S.E./plot
1961	1835	1723	1667	1250	1321	N.S.	1559	289·9
1962	1198	1149	1163	1132	1167	N.S.	1162	205·2
1963	1845	1551	1707	1350	1504	*	1592	205·0
1964	1679	1359	1109	1162	1402	N.S.	1342	274·4
Pooled	1639	1445	1411	1224	1348	**	1413	255·5

Crop :- Jowar (*Kharif*). **Ref :- Ms. 60(181), 61(46).**

Site :- Agri. Res. Stn., Bailahongal. **Type :- 'CV'.**

Object :—To find the optimum varietal, spacing and seedrate combination for *Jowar*.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) N.A ; Gram. (c) N.A. (ii) Medium black. (iii) 17.7.60; 4, 5.8.61. (iv) (a) 2 to 3 harrowings. (b) Drilling. (c) and (d) As per treatments. (e) N.A. (v) 56 Q/ha. of F.Y.M.+28 Kg/ha. of N+ 22·4 Kg/ha. of P_2O_5. (vi) As per treatments. (vii) Unirrigated. (viii) Interculturings and hand weedings. (ix) 38 cm ; 23 cm. (x) 23.12.60; 24.12.61.

2. TREATMENTS :

Main-plot treatments :

3 spacings : S_1=38 cm.×15 cm., S_2=46 cm.×15 cm. and S_3=61 cm.×15 cm.

Sub-plot treatments :

All combinations of (1) and (2)

(1) 2 varieties : V_1=G.M. 1—5 and V_2=B.H. 4—1—4.

(2) 2 seed rates : R_1=4·5 and R_2=6·7 Kg/ha.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication; 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 10·2 m.× 5·6 m. for S_1, 10·1 m.×5·5 m. for S_2 and 10·4 m.×5·5 m. for S_3. (b) 9·1 m.×4·3 m. (v) 1 row on one side and 2 rows of 30 cm. each on the other side. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil; Slight attack of rust and downey mildew. No control measures. (iii) Yield of grain. (iv) (a) 1958 to 61 (modified in '60). (b) No. (c) As under 5. Results. (v) N.A. (vi) Nil. (vii) Both the error variances are homogeneous. Both Main-plot and Sub-plot Treatments×years interactions are absent.

5. RESULTS :

(i) 1710 Kg/ha. (ii) (a) 454·8 Kg/ha. (based on 14 d.f. made up of pooled error and Treatments×years interaction). (b) 287·7 Kg/ha. (based on 61 d.f. made up of pooled error and Sub-plot Treatments×Years interaction). (iii) Only V effect is significant. (iv) Av. yield of grain in Kg/ha.

	S_1	S_2	S_3	R_1	R_2	Mean
V_1	1536	1725	1650	1613	1661	1637
V_2	1722	1767	1863	1724	1844	1748
Mean	1629	1746	1756	1668	1753	1710
R_1	1552	1672	1781			
R_2	1706	1820	1732			

C.D. for V marginal means=117·5 Kg/ha.

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Crop :- Jowar (*Kharif*). **Ref :- Ms. 60(111), 61(85), 62(86), 63(86), 64(60).**

Site :- Agri. Res. Stn., Saundathi. **Type :- 'CV'.**

Object :—To find out a suitable variety with proper spacings and seed rate for *Jowar*.

1. BASAL CONDITIONS:

(i) (a) *Jowar*—Groundnut. (b) Groundnut. (c) Nil. (ii) Medium black soil. (iii) 13.7.60; 7.7.61. ; N.A. ; N.A. ; N.A. (iv) (a) 3 harrowings. (b) Drilling. (c) and (d) As per treatments. (e) Nil. (v) 6·2 C.L./ha. of F.Y.M.+Fertilizer mixture at 33·6 Kg/ha. of N as A,S and 22·4 Kg/ha. of P_2O_5 as Super in 1960. N.A. for others. (vi) As per treatments. (vii) Unirrigated. (viii) 2 intercultures with hoe and 2 hand weedings. (ix) 44 cm.; 36 cm.; N.A. ; N.A. ; N.A. (x)12.12.60 ; 30.12.61. ; N.A. ; N.A. ; N.A.

2. TREATMENTS :

Main-plot treatments:

2 varieties : V_1=Local and V_2=Fulgar white.

Sub-plot treatments :

3 row spacings : S_1=30, S_2=38 and S_3=46 cm.

Sub-Sub-plot treatments :

3 seed rates : R_1=2, R_2=4 and R_3=7 Kg/ha.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 3 sub-plots/main-plot and 3 sub-sub-plots/sub-plot. (b) 44·8m.×33·4 m. (iii) 3. (iv) (a) 11·0 m.×7·3m. for S_1 and S_2 and 11·4m.×7·3m. for S_3. (b) 9·1m.×5·5m. (v) 91 cm.×91 cm. for S_1 and S_2 and 114 cm.×91 cm. for S_3. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Attack of grass-hopper. B.H.C. 10% was dusted at 22·4 Kg/ha. (iii) Grain yield. (iv) (a) 1960—N.A. (b) No. (c) As under 5. Results. (v) N.A. (vi) Nil. (vii) Sub-sub-plot error variances are heterogeneous.

5. RESULTS:

60(111)

(i) 1308 Kg/ha. (ii) (a) 314·7 Kg/ha. (b) 293·4 Kg/ha. (c) 167·5 Kg/ha. (iii) Main effect of R alone is significant. (iv) Av. yield of grain in Kg/ha.

	S_1	S_2	S_3	R_1	R_2	R_3	Mean
V_1	1216	1271	1358	1297	1332	1216	1282
V_2	1387	1382	1237	1355	1428	1423	1335
Mean	1301	1326	1297	1326	1380	1212	1308
R_1	1367	1340	1371				
R_2	1334	1433	1373				
P_3	1203	1206	1249				

C.D. for R marginal means=115·2 Kg/ha.

61(85)

(i) 1264 Kg/ha. (ii) (a) 334·5 Kg/ha. (b) 263·1 Kg/ha. (c) 115·6 Kg/ha. (iii) Main effect of R and interaction V×R are highly significant. (iv) Av. yield of grain in Kg/ha.

	S_1	S_2	S_3	R_1	R_2	R_3	Mean
V_1	1154	1106	1048	1332	1054	924	1103
V_2	1496	1483	1298	1499	1435	1344	1426
Mean	1325	1294	1173	1415	1244	1134	1264
R_1	1493	1410	1342				
R_2	1328	1336	1068				
R_3	1155	1137	1110				

C.D. for R marginal means =79·5 Kg/ha.
C.D. for R means at the same level of V=112·5 Kg/ha.
C.D. for V means at the same level of R=392·1 Kg/ha.

62(86)

(i) 864 Kg/ha. (ii) (a) 226·2 Kg/ha. (b) 152·3 Kg/ha. (c) 123·0 Kg/ha. (iii) Main effect of R alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	S_1	S_2	S_3	R_1	R_2	R_3	Mean
V_1	905	880	865	1018	860	772	883
V_2	911	799	827	953	781	804	846
Mean	908	839	846	985	820	788	864
R_1	1031	906	1016				
R_2	870	802	788				
R_3	822	810	732				

C.D. for R marginal means=84·6 Kg/ha.

63(86)

(i) 1178 Kg/ha. (ii) (a) 229·8 Kg/ha. (b) 159·9 Kg/ha. (c) 153·7 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	S_1	S_2	S_3	R_1	R_2	R_3	Mean
V_1	1161	1161	1147	1237	1142	1090	1156
V_2	1156	1252	1193	1170	1200	1231	1200
Mean	1158	1207	1170	1204	1171	1160	1178
R_1	1187	1216	1209				
R_2	1133	1216	1163				
R_3	1154	1188	1138				

64(60)

(i) 1102 Kg/ha. (ii) (a) 471·0 Kg/ha. (b) 296·8 Kg/ha. (c) 228·0 Kg/ha. (iii) Main effect of R alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	S_1	S_2	S_3	R_1	R_2	R_3	Mean
V_1	942	972	895	1132	938	739	936
V_2	1180	1346	1278	1388	1213	1204	1268
Mean	1061	1159	1086	1260	1076	971	1102
1	1190	1294	1295				
2	1054	1094	1080				
3	939	1090	884				

C.D. for R marginal means=156·9 Kg/ha.

Crop :- Jowar (*Kharif*). **Ref :- Ms. 60(267), 61(263).**

Site :- Agri. Res. Stn., Dharwar. **Type :- 'CM'.**

Object :—To assess the superiority of departmental method over local method of cultivation.

1. BASAL CONDITIONS :

(i) (a) Wheat—*Jowar*. (b) Wheat. (c) N.A. (ii) Medium black soil. (iii) 10.7.1960 ; 16.7.1961. (iv) (a) Ploughing and harrowing. (b) Drilling. (c) and (d) As per treatments. (e) 2. (v) Nil. (vi) Nandyal. (vii) Unirrigated. (viii) Intercultivation by implements. (ix) 34 cm ; 42 cm. (x) 21.12.1960 ; 12.12.1961.

2. TREATMENTS :

3 methods of cultivation :- T_1=No fertilizer with 38 cm. spacing and 4·5 Kg/ha of seed rate, T_0=Departmental methods—44·8 Kg/ha of N as A/s (½ at planting and ½ after 3 weeks)+22·4 Kg/ha of P_2O_5 as Super at sowing with 4·5 Kg/ha of seed rate and 61 cm. spacing and T_2=22·4 Kg/ha of N as A/S (half at sowing+half 3 weeks after sowing)+22·4 Kg/ha of P_2O_5 as Super at sowing with 61 cm. spacing and 4·5 Kg/ha. of seed rate.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 12. (iv) (a) 10·7 m.×6·1 m. (b) 7·6 m.×3·1 m. (v) and (vi) Yes.

4. GENERAL :

(i) Healthy crop. (ii) N.A. (iii) Grain yield. (iv) (a) 1960—'62 (treatments modified in 1962). (b) No. (c) As under 5. Results. (v) N.A. (vi) Nil. (vii) Error variances are homogeneous. Treatment×years interaction is present.

5. RESULTS :

(i) 2641 Kg/ha. (ii) 532·7 Kg/ha. (based on 2 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
Av. yield	2140	3052	2732

C.D.=310·2 Kg/ha.

Years	T_0	T_1	T_2	Sig.	G.M.	S.E./plot
1960	1904	3026	2552	**	2494	287·8
1961	2376	3078	2912	**	2789	250·0
Pooled	2140	3052	2732	**	2641	532·7

Crop :- Jowar (*Kharif*). **Ref :- Ms. 62(274)**

Site :- Agri. Res. Stn., Dharwar. **Type :- 'CM'.**

Object :—To assess the superiority of departmental method over local method.

1. BASAL CONDITIONS :

(i) (a) Wheat—*Jowar*. (b) Wheat. (c) N.A. (ii) Medium black soil. (iii) 19.7.62. (iv) (a) Ploughing and harrowing. (b) Drilled. (c) and (d) As per treatments. (e) 2. (v) Nil. (vi) Nandyal. (vii) Unirrigated. (viii) Intercultivation by implements. (ix) 44 cm. (x) N.A.

2. TREATMENTS :

2 methods of cultivation :- T_0=No fertilizer with 38 cm. of spacing and 4·5 Kg/ha. of seed rate and T_1=Departmental method : 44·8 Kg/ha. N as A/S (½ at sowing+½ after 3 weeks)+22·4 Kg/ha of P_2O_5 as Super at sowing. Seedrate at 4·5 Kg/ha and spacing 61cm.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 4. (iv) (a) 26·8 m×18·3 m. (b) 23·8 m.×12·2 m. (v) and (vi) Yes.

4. GENERAL :

(i) Healthy crop. (ii) N.A. (iii) Grain yield. (iv) (a) 1960—'62 (Treatments modified in 1962). (b) No. (c) Nil. (v) N.A. (vi) Nil. (vii) N.A.

5. RESULTS :

(i) 2820 Kg/ha. (ii) 296·5 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	T_0	T_1
Av. yield	2373	3268

Crop :- Jowar (*Rabi*) **Ref :- Ms. 64(96).**

Site :- Agri. Res. Stn., Naragund. **Type :- 'CM'.**

Object :—To study the effect of G.M. in reclaiming alkali soils and increasing the yield.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar*. (c) As per treatments. (ii) Alkaline. (iii) 17.11.64. (iv) (a) Harrowing by blade harrow. (b) Drilling. (c) 4·5 Kg/ha. (d) 46 cm. between lines. (e) —. (v) Nil. (vi) M. 35-1 (medium). (vii) Unirrigated. (viii) One interculturing. (ix) N.A. (x) 9.4.65.

2. TREATMENTS :

6 cultural-cum-manurial treatments : T_0=Control (no G.M.), T_1=*Sannhemp* harrowed after one month, T_2=*Sannhemp* ploughed after 1½ months, T_3=Iron ploughing only, T_4=12·4 C.L./ha. of F.Y.M. and T_5=16·8 Kg/ha. of N+16·8 Kg/ha of P_2O_5.

3. DESIGN :

(i) R.B.D, (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 5·9 m.×5·9 m. (b) 5·0 m.×5·0 m. (v) 46 cm.×46 cm. (vi) Yes.

4, GENERAL :

(i) Very poor. (ii) Heavy attack of grass hopper. Dusted with Gammaxene, B.H.C. and Folidol mixture. (iii) Plant height, earhead count and grain yield. (iv) (a) 1964 only. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 254 Kg/ha. (ii) 155 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	305	175	277	237	270	259

Crop :- Jowar (*Rabi*). **Ref :- Ms. 60(149), 61(138).**

Site :- Agri. Res. Stn., Naragund. **Type :- 'CM'.**

Object :—To study the effect of dibbling and concentrated effect of manuring on the yield of *Jowar*.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat ; *Jowar*. (c) Nil ; As per treatments. (ii) Alkaline. (iii) 11.10.60 ; 13.10.61. (iv) (a) Harrowing by country blade harrow. (b) As per treatments, (c) 9 Kg/ha. (d) 46 cm.×46 cm. (e) N.A. (v) Nil. (vi) M. 35-1. (vii) Unirrigated. (viii) 1 interculturing and weeding. (ix) 56 cm. ; 49 cm. (x) N.A. ; 8.3.62.

2. TREATMENTS :

All combinations of (1) and (2)+2 extra treatments.

(1) 2 methods of sowing : M_1=Drilling and M_2=Spot dibbling.

(2) 3 manurial treatments : T_0=Control, T_1=12·4 C.L./ha. of F.Y.M. and T_2=N, P and K application equivalent of 12·4 C.L./ha. of F.Y.M.

Extra treatments : E_1=12·4 C.L./ha. of F.Y.M.+11·2 Kg/ha. of N+11·2 Kg/ha. of P_2O_5 with spot dibbling and E_2=12·4 C.L./ha. of F.Y.M.+22.4 Kg/ha. of N+22·4 Kg/ha of P_2O_5 with spot dibbling.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 11·0 m.×6·0 m. (b) 10·1 m.×5·0 m. (v) 46 cm. ×46 cm. (vi) Yes.

4. GENERAL :

(i) Stunted growth in 61(138). (ii) Nil. (iii) Plant height ; earhead count and yield of grain. (iv) (a) 1960—'64 (modified in 62 and again in 63). (b) No. (c) Nil. (v) and (vi) Nil. (vii) Error variances are heterogeneous. Treatment×years interaction is absent.

5. RESULTS :

60(149)

(i) 453 Kg/ha. (ii) 143·5 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

E_1=348 and E_2=329 Kg/ha.

	T_0	T_1	T_2	Mean
M_1	531	489	413	478
M_2	514	511	489	505
Mean	522	500	451	491

61(138)

(i) 63 Kg/ha. (ii) 30·8 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

E_1=47 and E_2=61 Kg/ha.

	T_0	T_1	T_2	Mean
M_1	72	68	64	68
M_2	29	90	73	64
Mean	51	79	68	66

Crop :- Jowar (*Rabi*). **Ref :- Ms. 62(125).**

Site :- Agri. Res. Stn., Naragund. **Type :- 'CM'.**

Object :—To find out the effect of method of sowing and manuring on yield of *Jowar*.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar*. (c) As per treatments. (ii) Alkaline. (iii) 8.11.62. (iv) (a) Harrowing by blade harrow. (b) As per treatments. (c) to (e) N.A. (v) Nil. (vi) Maldandi M 35-1 (medium). (vii) Unirrigated. (viii) 2 interculturings by hoe. (ix) 58 cm. (x) 25.3.63.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 methods of sowing : S_1=Spot dibbling and S_2=Drilling.

(2) 4 manurial treatments : M_0=Control, M_1=12·35 C.L./ha. of F.Y.M., M_2=N, P and K application equivalent of 12·4 C.L./ha. of F.Y.M. and M_3=12·4 C.L./ha. of F.Y.M. +11·2 Kg/ha. of N+11·2 Kg/ha. of P_2O_5.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 11·1 m.×5·9 m. (b) 10·1 m.×5·0 m. (v) 53 cm.×46 cm. (vi) Yes.

4. GENERAL :

(i) 40% of the crop was lodged. (ii) Slight attack of sugony disease and stem borer. Affected plants were uprooted and burnt. (iii) Yield of grain. (iv) (a) 1960–64 (modified in 1962 and again in 1963). (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 726 Kg/ha. (ii) 198·6 Kg/ha. (iii) Main effect of M alone is significant. (iv) Av. yield of grain in Kg/ha.

	M_0	M_1	M_2	M_3	Mean
S_1	557	747	948	782	758
S_2	564	653	743	816	694
Mean	560	700	846	799	726

C.D. for M marginal means=206·5 Kg/ha.

Crop :- Jowar (*Rabi*). **Ref :- Ms. 63(110), 64(99).**

Site :- Agri. Res. Stn., Naragund. **Type :- 'CM'.**

Object :—To find the effect of method of sowing and manuring on the yield of *Jowar*.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar*. (c) As per treatments. (ii) Alkaline. (iii) 8, 9.11.63 ; 8.11.64. (iv) (a) Harrowing by blade harrow. (b) Drilling. (c) 5 Kg/ha. (d) 46 cm. between rows. (e) N.A. (v) Nil. (vi) M 35-1 (medium). (vii) Unirrigated. (viii) 2 interculturings and 1 weeding. (ix) N.A. (x) 28.3.64 ; 25.3.65.

2. TREATMENTS :

10 treatments : T_1=Drilling 46 cm. apart, T_2=Dibbling, T_3=12·4 C.L./ha. of F.Y.M. and spot dibbling, T_4=12·4 C.L./ha. of F.Y.M. and drilling, T_5=N, P and K equivalent of 12·4 C.L./ha. of F.Y.M. and spot dibbling, T_6=N, P and K equivalent of 12·4 C.L./ha. of F.Y.M. and drilling, T_7=12·4 C.L./ha. of F.Y.M.+11·2 Kg/ha. of N+11·2 Kg/ha. of P_2O_5 and spot dibbling, T_8=12·4 C.L./ha. of F.Y.M.+22·4 Kg/ha. of N+22·4 Kg/ha. of P_2O_5 and spot dibbling, T_9=T_7+56 Kg/ha. of Sulphur and T_{10}=T_7+125·6 Q/ha. of sand.

3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) 11·9 m.×5·9 m. (b) 10·1 m.×5·0 m. (v) 54 cm.×46 cm. (vi) Yes.

4. GENERAL :

(i) 85% of the crop lodged during 12th and 13th Feb. due to heavy winds in 63(110). Good for 64(99). (ii) Nil; In the earlier stages grass hoppers damaged the crop to the extent of 20 to 25%. These were controlled by dusting B.H.C. and Gammaxene mixture. (iii) Yield of grain. (iv) (a) 1960—64 (modified in 1962 and again in '63. (b) Yes. (c) As under 5. Results. (v) and (vi) Nil. (vii) Error variances are homogeneous. Treatment × years interaction is absent.

5. RESULTS :

(i) 931 Kg/ha. (ii) 269·7 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	T_5	T_6	T_7	T_8	T_9	T_{10}
Av. yield	830	884	878	683	884	1072	1020	1039	910	1114

Years	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9	T_{10}	Sig.	G.M.	S.E./plot
1963	508	509	444	537	494	856	742	577	610	688	N.S.	596	300·0
1964	1152	1258	1313	829	1273	1289	1297	1501	1210	1540	*	1266	228·2
Pooled	830	884	878	683	884	1072	1020	1039	910	1114	N.S.	931	269·7

Crop :- Jowar (*Kharif*). **Ref :- Ms. 64(213).**

Site :- Agri. Res. Stn., Bailahongal. **Type :- 'CMV'.**

Object :—To study the response of local improved *Jowar* varieties to high fertility conditions and high plant population.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Groundnut. (b) Wheat. (c) 12·4 C.L./ha. of F.Y.M. (ii) Medium black. (iii) 26.7.64. (iv) (a) 4 harrowings. (b) Dibbling. (c) and (d) As per treatments. (e) 1. (v) 12·4 C.L./ha. of F.Y.M. (vi) As per treatments. (vii) Unirrigated. (viii) 2 hoeings, 1 hand weeding. (ix) 83 cm. (v) 27.12.64.

2. TREATMENTS :

Main-plot treatments :

2 varieties : V_1=*Kalagonda* and V_2=G M. 2—3—1.

Sub-plot treatments :

6 spacings : S_1=46 cm.×30 cm.; S_2=46 cm.×15 cm.; S_3=38 cm.×30 cm., S_4=38 cm.×15 cm., S_5=30 cm.×30 cm. and S_6=30 cm.×15 cm.

Sub-Sub-plot treatments :

4 levels of N : N_0=0, N_1=25, N_2=50 and N_3=75 Kg/ha.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/block; 6 sub-plots/main-plot; 4 sub-sub-plots/sub-plot. (b) N.A. (iii) 2. (iv) (a) N.A. (b) 6·1 m.×4·6 m. (v) and (vi) Yes.

4. GENERAL :

(i) Good. (ii) Army worm attack. Controlled by spraying. (iii) Yield of grain. (iv) (a) 1964—67 (Expt. for 65 N.A.) (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1226 Kg/ha. (ii) (a) 1307·0 Kg/ha. (b) 516·2 Kg/ha. (c) 224·4 Kg/ha. (iii) Main effect of N alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	S_1	S_2	S_3	S_4	S_5	S_6	N_0	N_1	N_2	N_3	Mean
V_1	1230	1275	1132	1153	1104	988	535	1102	1309	1640	1147
V_2	1263	1191	1649	1372	1401	953	551	1149	1538	1980	1305
Mean	1246	1233	1391	1262	1252	970	543	1126	1424	1810	1226
N_0	631	507	704	476	593	347					
N_1	1097	1262	1321	1063	1031	980					
N_2	1540	1350	1513	1628	1437	1074					
N_3	1717	1813	2024	1882	1948	1480					

C.D. for N marginal means=130·9 Kg/ha.

Crop :- Jowar (*Kharif*). **Ref :- Ms. 60(275).**

Site :- Agri. Res. Stn., Arbhavi. **Type :- 'IM'.**

Object :—To find out optimum water and manurial requirements for *Jowar*.

1. BASAL CONDITIONS :

(i) (a) to (c) Nil. (ii) Sandy loam, Brown masari, alluvial type. (iii) 8.6.60. (iv) (a) 2 ploughings, clod crushing and harrowing. (b) Dibbling. (c) 4·5 Kg/ha. (d) 46 cm.×30 cm. (e) 3 thinned to one. (v) 12·4 C.L./ha. of F.Y.M. spread and mixing by harrowing. (vi) Nandayal (155 days). (vii) Irrigated. (viii) Interculturing, weeding and thinning. (ix) 58 cm. (x) 24.11.60.

2. TREATMENTS :

All combinations of (1) and (2).

(1) 2 irrigations : I_1=6·4 ha. cm. and I_2=8·9 ha. cm, of irrigation.

(2) 5 manures : M_0=Control (no manure), M_1=33·6 Kg/ha. of N as A/S and G.N.C. in 1 : 2 ratio, M_2=33·6 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 Pot. Sul., M_3=Twice M_1 and M_4=Twice M_3.

1st dose of $\frac{1}{2}$N+full doses of P_2O_5 and K_2O, applied 3 weeks after sowing and 2nd dose of N at 8 weeks after sowing.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) 7·3 m.×6·7 m. (b) 6·4 m.×6·1 m. (v) One row all round. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Grain yield. (iv) (a) 1959–60. (b) and (c) No. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 2676 Kg/ha. (ii) 264·4 Kg/ha. (iii) Main effect of M alone is highly significant. (iv) Av. yield of grain in Kg/ha.

	M_0	M_1	M_2	M_3	M_4	Mean
I_1	2053	2332	2944	2764	3248	2668
I_2	2234	2540	2606	2844	3198	2684
Mean	2144	2436	2775	2804	3223	2676

C.D. for M marginal means=271·3 Kg/ha.

Crop :- Jowar (*Kharif*). **Ref :- Ms. 61(268), 62(109), 63(232).**

Site :- Agri. Res. Stn., Arbhavi. **Type :- 'ICV'.**

Object :—To study the effect of different spacings and irrigations on different varieties of *Jowar*.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) Cotton. (c) 89·6 Q/ha. of farm compost+33·6 Kg/ha. of N+16·8 Kg/ha. of P_2O_5 +16·8 Kg/ha. of K_2O. (ii) Medium black soil. (iii) 17.6.1961 ; 13.6.1962 ; 14.6.1963. (iv) (a) 1 ploughing, 2 harrowings, clod crushing and planking etc. (b) Dibbled by hand. (c) 7·4 Kg/ha. (d) As per treatments. Plants 30 cm. apart. (e) 2. (v) 89·6 Q/ha. of F.Y.M.+67·2 Kg/ha. of N+22·4 Kg/ha. of P_2O_5 +22·4 Kg/ha. of K_2O in 1961, 1963. (vi) As per treatments. (vii) Irrigated. (viii) Interculturing and hand weeding. (ix) 29 cm. ; 39 cm. ; 39 cm. (x) 4, 5.12.1961 ; 24 to 27.11.1962 ; 1, 2.12.1963.

2. TREATMENTS :

Main-plot treatments :

3 row spacings : S_1=46, S_2=60 and S_3=76 cm.

Sub-plot treatments :

2 varieties : V_1=*Nandayal* and V_2=*Giddmaidandi*.

Sub-sub-plot treatments ;

2 irrigation levels : I_1=6·4 ha. cm. and I_2=8·9 ha. cm.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 2 sub-plots/main-plot and 2 sub-sub-plots/sub-plot. (b) 43·9 m.×22·0 m. (iii) 3. (iv) (a) 11·0 m.×7·3 m. (b) 9·1 m.×6·1 m. (v) Yes (2 rows). (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Slight stem borer attack was observed. (iii) Germination count, height of plant, and grain yield, etc. (iv) (a) 1961—contd. (Exots. for 64 and '65 N.A.) (b) No. (c) Nil. (v) N.A. (vi) Nil. (vii) Experiment is continued.

5. RESULTS :

61(268)

(i) 4388 Kg/ha. (ii) (a) 271·4 Kg/ha. (b) 598·4 Kg/ha. (c) 334·9 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	S_1	S_2	S_3	I_1	I_2	Mean
V_1	4225	4239	4282	4203	4295	4249
V_2	4738	4300	4543	4573	4482	4527
Mean	4482	4270	4413	4388	4388	4388
I_1	4518	4247	4397			
I_2	4445	4292	4429			

62(109)

(i) 2989 Kg/ha. (ii) (a) 287·6 Kg/ha. (b) 327·4 Kg/ha. (c) 216·0 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	S_1	S_2	S_3	I_1	I_2	Mean
V_1	3153	2909	3193	3074	3096	3085
V_2	2972	2779	2927	2834	2952	2893
Mean	3063	2844	3060	2954	3024	2989
I_1	3042	2798	3022			
I_2	3083	2890	3099			

63(232)

(i) 3960 Kg/ha. (ii) (a) 550·6 Kg/ha. (b) 477·1 Kg/ha. (c) 261·5 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	S_1	S_2	S_3	I_1	I_2	Mean
V_1	4052	3903	3952	4000	3938	3969
V_2	4237	4039	3578	4024	3878	3951
Mean	4144	3971	3765	4012	3908	3960
I_1	4264	4106	3666			
I_2	4024	3836	3864			

Crop :- Jowar (*Kharif*). **Ref :- Ms. 61(270).**

Site :- Agri. Res. Stn., Sirugappa. **Type :- 'ICV'.**

Object :— To study the effect of spacings and irrigations on different varieties of *Jowar*.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*—Bengal gram. (b) Cotton. (c) 12·4 C.L./ha. of F.Y.M, (ii) Black medium kirl soil (Alkaline). (iii) 17.6.61. (iv) (a) 2 ploughings, clad crushing and harrowing. (b) Dibbling. (c) 4·5 Kg/ha. (d) 46 cm.×30 cm. (e) 3 seeds/hole (thinned to two). (v) 12·4 C.L./ha. of F.Y.M.+67·2 Kg/ha. of N+22·4 Kg/ha. of P_2O_5+22·4 Kg/ha. of K_2O in 3 doses. (vi) As per treatments. (vii) Irrigated. (viii) 3 weedings and 3 interculturing. (ix) 31 cm. (x) 4 and 5.12.61.

2. TREATMENS :

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

(1) 2 varieties : V_1=*Naudyal* and V_2=*Gtddamaladandi.*

(2) 3 spacings : S_1=46 cm.×30 cm., S_2=61 cm.×30 cm. and S_3=76 cm.×30 cm.

(3) 2 irrigations : I_1=6·4 ha. cm. and I_2=8·9 ha. cm.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. N.A. (iii) 3. (iv) (a) 11·0 m.×7·3 m. (b) 9·1 m.×6·1 m. (v) and (vi) Yes.

4. GENERAL :

(i) Good (minor lodging here and there.) (ii) Slight attack of borer and rust. Affected shoots removed. and Folidol sprayed. (iii) Grain yield/plot. (iv) (a) 1961. (b) and (c) N.A. (v) to (vii) Nil.

5. RESULTS :

(i) 4388 Kg/ha. (ii) 415·0 Kg/ha., (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	V_1	V_2	I_1	I_2	Mean
S_1	4225	4738	4518	4445	4481
S_2	4239	4300	4247	4292	4270
S_3	4282	4544	4397	4429	4413
Mean	4249	4527	4387	4389	4388
I_1	4203	4573			
I_2	4295	4482			

Crop :- Jowar (*Rabi*). **Ref :- Ms. 60(100).**

Site :- Agri. Res. Stn., Sirugappa. **Type :- 'D'.**

Object :— To find out a suitable insecticide that can control the fly borer "*Atherigora Indica*".

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton—Groundnut. (b) Groundnut. (c) 125·5 Q./ha. of F.Y.M.+44·8 Kg/ha. of P_2O_5 as Super. (ii) Black cotton soil. (iii) 11.10.60. (iv) (a) 2 ploughings. (b) Drilling. (c) 22 Kg/ha. (d) 28 cm.×15 cm. (e) N.A. (v) 125·5 Q./ha. of F.Y.M.+44·8 Kg/ha. of N as A/S+22·4 Kg/ha. of P_2O_5 as Super. (vi) M 31-2 (late). (vii) Irrigated. (viii) Hand weeding. (ix) 3 cm. (x) 17.2.61.

2. TREATMENTS :

6 insecticides : I_0=Control, I_1=2·5 c.c. of Folidol, I_2=57 gm. of Heptachlor 25% W.P., I_3=28 gm. of B.H.C. 50% W.P., I_4=9 c.c. of Basudin and I_5=6 c.c. of Endrin.

The insecticides were applied at the above rates/gallon of water.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 1/247 ha. (b) 1/329 ha. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Incidence of fly borer—as per observations. Spraying of insecticides—as per treatments. (iii) Dead heart counts were taken at weekly intervals and yield of grain. (iv) (a) 1960 only. (b) No. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

Dead-heart Counts

(i) 304 counts/plot. (ii) 49·1 counts/plot. (iii) Treatment differences are not significant. (iv) Av. of dead heart counts/plot.

Treatment	I_0	I_1	I_2	I_3	I_4	I_5
Av. count	298	296	328	342	264	297

Grain Yield

(i) 368/Kg/ha. (ii) 302·9 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	I_4	I_5
Av. yield	500	425	177	301	645	161

Crop :- Jowar (*Rabi*). **Ref :- Ms. 62(62)**

Site :-Agri. Res. Stn., Sirugappa. **Type :- 'D'.**

Object :—To find out the efficiency of systemic insecticides in controlling the *Jowar* stemfly and also to study the residual effect.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) Cotton. (c) 125·5 Q/ha. of F.Y.M. as basal dressing+44·8 Kg/ha. of N as A/S after 40 days of sowing. (ii) (a) Black cotton soil. (iii) 25.9.62. (iv) (a) Working victory plough and country plough. Working blade harrow and band former and ridger. (b) Drilling. (c) 13 Kg/ha. (d) 28 cm.×20 cm. (e) N.A. (v) 44·8 Kg/ha. of N as A/S+22·4 Kg/ha. of P_2O_5 as Super. (vi) M-31-2 (medium about 130 days.) (vii) Irrigated. (viii) One hand weeding. (ix) 15 cm. (x) 1.2.63.

2. TREATMENTS :

4 insecticides : I_0=Control (seeds soaked in water only), I_1=1 ml. of metasystox in 1000 ml. of water, I_2=4 ml. of ekatin in 760 ml. of water and I_3=4 ml. of hexatin in 760 ml. of water.

Seeds were soaked for 24 hours in water, then in the above insecticides for 15 minutes before sowing. Spray at the same concentration was given when the pest incidence commenced.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 1/247 ha. (b) 1/494 ha. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Incidence of *Antherigona indica* fairly heavy. (iii) Dead heart counts were taken at weekly intervals and yield of grain and straw. (iv) (a) 1962—1963 (Treatments modified). (b) No. (c) Nil. (v) (a) N.A, (b) Nil. (vi) Nil. (vii) As there was heavy bird damage straw yields were analysed.

5. RESULTS :

(i) 8486 Kg/ha. (ii) 993·4 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of straw in Kg/ha.

Treatment	I_0	I_1	I_2	I_3
Av. yield	8399	8174	8592	8780

Crop :- Jowar (*Rabi*). **Ref :- Ms. 63(45).**

Site :- Agri. Res. Stn., Sirugappa. **Type :- 'D'.**

Object :— To find the efficiency of systemic insecticide in controlling *Jowar* stemfly and also to study their residual effect.

1. BASAL CONDITIONS :

(i) (a) *Jowar*, Cotton. (b) Cotton. (c) 125·5 Q/ha. of F.Y.M. as basal dressing+44·8 Kg/ha. of N as A/S after 40 days of sowing. (ii) (a) Black cotton soil. (iii) 24.9.63. (iv) (a) Working victory plough and disc plough blade harrow, band former, and ridger. (b) Dibbling by hands. (c) 17 Kg/ha. (d) 28 cm.× 15 cm. (e) 2 to 3. (v) 44·8 Kg/ha. of N as A/S+22·4 Kg/ha. of P_2O_5 as Super. (vi) M-31-2 (medium.) (vii) Irrigated. (viii) 2 hand weedings and working junior hoe once. (ix) 15 cm. (x) 22.1.64.

2. TREATMENTS :

5 insecticides : I_0=Control (seeds soaked in water only), I_1=1 c.c. of metasystox/1000 c.c. of water, I_2=4 c.c. of ekatin/760 c.c. of water, I_3=4 c.c. of hexatin/760 c.c. of water and I_4=28 gm. of diptrex/8 gallons of water.

Seeds were first soaked in water for 6 hours and then in the above insecticides for 30 minutes before sowing.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 1/247 ha. (b) 1/494 ha. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Moderate incidence of fly borer and stem borer. (iii) Grain yield and dead heart counts. (iv) (a) 1962 to 1963 (Treatment modified.) (b) No. (c) Nil. (v) (a) N.A. (b) Nil. (vi) Nil. (vii) There was heavy bird damage inspite of scaring and hence no plot wise yield were recorded.

5. RESULTS :

(i) 499 counts/plot. (ii) 62·0 counts/plot. (iii) Treatment differences are not significant. (iv) Av. dead heart count/plot.

Treatment	I_0	I_1	I_2	I_3	I_4
Av. count.	514	514	515	533	419

Crop :- Jowar (*Kharif*). **Ref :- Ms. 63(46).**

Site :- Agri. Res. Stn., Sirugappa. **Type :- 'D'.**

Object :—To find out a suitable insecticide that can control *Jowar* fly.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*. (b) Cotton. (c) 125·5 Q/ha. of F.Y.M.+22·4 Kg/ha. of N+22·4 Kg/ha. of P_2O_5 as basal dressing and 22·4 Kg/ha. of N after 40 days of sowing. (ii) (a) Black cotton soil. (iii) 17.7.63. (iv) (a) Working victory plough. Working blade harrow bund former, and ridger. (b) to (e) N.A. (v) 125·5 Q/ha. of F.Y.M.+44·8 Kg/ha. of N as A/S+22·4 Kg/ha. of P_2O_5 as Super. (vi) Co.—9. (vii) Irrigated. (viii) 1 hand weeding. (ix) 48 cm. (x) 28.10.63.

2. TREATMENTS :

5 insecticides : I_0=Control (seeds soaked in water only). I_1=1 c.c. of metasystox/1000 c.c. of water, I_2=4 c.c. of ekatine/760 c.c. of water, I_3=4 c.c. of hexatine/760 c.c. of water and I_4=28 gm. of diptrex/760 c.c. of water.

Seeds were soaked in water for 6 hours and then in the above insecticides for 15 minutes before sowing.

3. DESIGN:

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 1/247 ha. (b) 1/494 ha. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Moderate incidence of *jowar* fly. (iii) Dead heart counts and grain yield. (iv) (a) 1963—N.A. (b) N.A. (c) Nil. (v) (a) N.A. (b) Nil. (vi) Nil. (vii) Field rats affected the germination of seeds by removing the sown seeds to some extent.

5. RESULTS :

(i) 261 counts/plot. (ii) 29·0 counts/plot. (iii) Treatment differences are not significant. (iv) Av. dead heart counts/plot.

Treatment	I_0	I_1	I_2	I_3	I_4
Av. count	286	253	252	258	255

Crop :- Jowar (*Rabi*). **Ref :- Ms. 64(26).**

Site :- Agri. Res. Stn., Sirugappa. **Type :- 'D'.**

Object :—To find out suitable insecticides that can control the *Jowar* fly.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Gram. (b) Red Gram. (c) 125·5 Q/ha. of F.Y.M.+44·8 Kg/ha, of N+22·4 Kg/ha. of P_2O_5 applied at the time of sowing as a basal dose. (ii) Black cotton soil. (iii) 26.9.64. (iv) (a) Working with victory plough, (b) Hand dibbling. (c) 12 to 15 Kg/ha. (d) 30 cm.×15 cm. (e) 1 to 2 (thinned to one after 5 days). (v) 125·5 Q/ha. of F.Y.M.+44·8 Kg/ha. of N+22·4 Kg/ha. of P_2O_5. (vi) M. 31—2 (medium). (vii) Irrigated. (viii) 1 hand weeding and working with junior hoe twice. (ix) 13 cm. (x) N.A.

2. TREATMENTS :

6 insecticides : T_0=Control (no insecticide), T_1=Dimecron 100 E at 0·05%, T_2=Dimecron 50% 0·at05%, T_3=Sevin 85% at 0·05%, T_4=Roger 40 E at 0·05% and T_5=Folidol E—605 at 0·05%.

Insecticides sprayed twice.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 1/247 ha. (b) 1/494 ha. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) *Jowar* fly. (iii) Dead heart counts were taken and grain yield. (iv) (a) 1964—N.A. (b) Ist year. (c) N.A. (v) to (vii) N.A.

5. RESULTS :

Dead Heart Count

(i) 124 Counts/plot. (ii) 17·2 Counts/plot. (iii) The treatment differences are not significant. (iv) Av. dead heart counts/plot.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. count	124	126	119	134	125	113

Grain yield

(i) 1227 Kg/ha. (ii) 324·4 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	1278	1361	1153	1209	1142	1223

Crop :- Jowar (*Kharif*). **Ref :- Ms. 64(40).**

Site :- Agri. Res. Stn., Sirugappa. **Type :- 'D'.**

Object :—To find out a suitable insecticide that can control *Jowar* fly.

1. BASAL CONDITIONS:

(i) (a) *Jowar*—Cotton. (b) Cotton. (c) 125·5 Q/ha. of F.Y.M.+44·8 Kg/ha. of N+22·4 Kg/ha. of P_2O_5 (ii) Black cotton soil. (iii) 8.7.64. (iv) (a) Ploughing and harrowing. (b) Hand dibbling. (c) 2 to 3 Kg/ha. (d) 30 cm.×15 cm. (e) 2 to 3. (v) 125·5 Q/ha. of F.Y.M.+44·8 Kg/ha. of N+22·4 Kg/ha. of P_2O_5. (vi) Co.—9 (early). (vii) Irrigated. (viii) Thinning; hoeing and weeding. (ix) 58 cm. (x) 22.10.64.

2. TREATMENTS :

6 insecticides : T_0=Control (no insecticide), T_1=Dimecron 100, T_2=Dimecron 50, T_3=Sevin 85. T_4=Roger 40E and T_5=Folidol.
More details N.A.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 1/247 ha. (b) 1/494 ha. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Dead heart counts before and after spraying insecticides. (iv) (a) and (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

(i) 193 counts/plot. (ii) 26 counts/plot. (iii) Treatment differences are not significant. (iv) Av. dead heart counts/plot.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. count	212	191	177	188	204	187

Crop :- Jowar (*Kharif*). **Ref :- Ms. 65(93).**

Site :- Agri. Res. Stn., Sirugappa. **Type :- 'D'.**

Object :—To find out a suitable insecticides that can control the *Jowar* fly.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*. (b) Cotton. (c) 12·4 Tons/ha. F.Y.M.+44·8 Kg/ha. of N+22·4 Kg/ha. of P_2O_5. (ii) Black cotton soil, 70% clayey. (iii) 16.7.65. (iv) (a) Ploughing and harrowing. (b) Hand dibbling. (c) 7·4 Kg/ha. (d) 46 cm.×23 cm. (e) 2 to 3 (thinned to 1). (v) 12·4 Tons/ha. of F.Y.M.+44·8 Kg/ha. of N+22·4 Kg/ha. of P_2O_5 applied before sowing. (vi) Co.—9 (early). (vii) Irrigated. (viii) Weeding and thinning. (ix) 17 cm. (x) 27.10.65.

2. TREATMEMTS :

8 spraying of insecticides : T_0=Control (no spraying), T_1=0·5 gms. of thione granules per foot row length, T_2=Dimecron 100 EC, T_3=Sevin 10%, T_4=Rogour 40 EC, T_5=Heptachlor, T_6= B.H.C. 10% 11·2 Kg/ha. and T_7=B.H.C. 10% 22·4 Kg/ha.

3. DESIGN:

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) and (b) 2·7 m.×6·1 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) *Jowar* fly. (iii) % of dead heart counts and grain yield data. (iv) 1965 - N.A. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1778 Kg/ha. (ii) 462·7 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. yield	1573	2283	1673	1734	1929	1232	2048	1754

Crop :- Bajra (*Kharif*). **Ref :- Ms. 63(S.F.T.)**

Site :- (District) : Banglore, Chikmagalur, Hassan, Mandya and Mysore. **Type :- 'M'.**

Object:—Type A_1 : To study the response curves of important cereals, 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) Red loamy for Banglore and Chikmagalur and Red sandy 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=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 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 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) to (iii) N.A. (iv) (a) 1963—only. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

Bangalore

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.	571	711	318	622	724	760	940	51·5

Control yield=1581 Kg/ha. ; No. of trials=10.

Chikmagalur

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.	123	420	49	271	494	716	889	149·4

Control yield=568 Kg/ha. ; No. of trials=2.

Hassan

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.	228	382	198	300	410	444	518	42·7

Control yield=910 Kg/ha. ; No. of trials=6.

Mandya

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.	45	177	112	197	162	144	290	125·9

Control yield=2962 Kg/ha. ; No. of trials=7.

Mysore

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.	187	289	242	316	392	352	689	59·1

Control yield=907 Kg/ha. ; No. of trials=9.

Crop :. Bajra (*Kharif*). **Ref :- Ms. 63 (S.F.T.).**

Site :- (District) : Banglore, Chikmagalur, Hassan, Mandya and Mysore. **Type :- 'M'.**

Object :—Type A_2 : To study the response curves of important cereal, cash and oilseed crops to Phosphorus applied singly and in cambination with other nutrients.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Red loamy for Banglore and Chikmagalur ; Red sandy 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=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.
$N_2P_2K_2$=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 on page 233

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1963—only. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

Belgaum

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	388	527	461	670	670	871	40·4

Control yield - 1518 Kg/ha. ; No. of trials=10.

Chikmagalur

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.	74	49	296	469	642	889	1260	108·8

Control yield=543 Kg/ha. ; No. of trials=2.

Hassan

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.	182	105	162	274	348	390	502	30·3

Control yield=943 Kg/ha. ; No. of trials=7.

Mandya

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.	59	97	217	120	124	226	388	87·4

Control yield=2938 Kg/ha. ; No. of trials=7.

Mysore

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.	293	236	306	220	447	426	686	68·2

Control yield=658 Kg/ha ; No. of trials=9.

Crop :- Bajra (*Rabi*). **Ref :- Ms. 63(S.F.T .)**

Site :- (District) : Banglore, Chikmagalur, Hassan, Mandya and Mysore. **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 loamy for Banglore and Chikmagalur ; Red sandy for others. (iii) to (vi) N.A. (vii) Unirigated. (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.
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 238.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1963 – only. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

Banglore

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.	619	379	442	501	577	656	856	31·8

Control yield=1651 Kg/ha. ; No. of trials=11.

Chikmagalur

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.	0	—148	98	197	370	518	568	118·0

Control yield=518 Kg/ha. ; No. of trials=2.

Hassan

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.	269	116	168	325	381	427	527	51·8

Control yield=891 Kg/ha. ; No. of trials=7.

Mandya

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.	78	—58	17	138	—32	200	74	99·5

Control yield=2935 Kg/ha. ; No. of trials=6.

Mysore

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.	244	243	249	318	398	591	716	81·2

Control yield=821 Kg/ha. ; No. of trials=9.

Crop :- Bajra (*Kharif*). **Ref :- Ms. 60(145), 61(118),62(130).**

Site :- Agri. Res. Stn., Bijapur. **Type :- 'C'.**

Object :— To find out suitable spacing and economic seed rate for *Bajra*.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Groundnut ; Tur ; *Jowar*. (c) 12·4 C.L./ha. of F.Y.M. for 60 and 61 ; 12·4 C.L./ha. of F.Y.M.+11·2 Kg/ha. of N as A/S for 62. (ii) Medium type. (iii) 4.7.60 ; 30.6.61 ; 3.7.62. (iv) (a) Ploughing and 3—4 harrowings. (b) Drilling. (c) and (d) As per treatments. (e) N.A. (v) 12·4 C.L./ha. of F.Y.M. (vi) Golgeri 1—8—5. (vii) Unirrigated. (viii) 2 interculturings and 1 hand weeding ; 3 interculturings ; 2 hand weedings and 2 interculturings. (ix) 82 cm. ; 27 cm. ; 70 cm. (x) 13.11.60 ; 10.12.61 ; 10.11.62.

2. TREATMENTS :

Main-plot treatments :

3 spacings between rows : S_1=23, S_2=30 and S_3=38 cm.

Sub-plot treatments :

3 seed rates : R_1=2, R_2=4 and R_3=7 Kg/ha.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) For S_1 7·3 m.×5·5 m., for S_2 7·3 m ×5·8 m. and for S_3 7·3 m.×6·1 m. (b) 6·1 m.×5·5 m. (v) and (vi) Yes.

4. GENERAL :

(i) Normal ; 50% lodging ; Normal. (ii) Ergot disease to some extent. No control measures. (iii) Yield of grain. (iv) (a) 1960 – 1962 (b) No. (c) Results of combined analysis given under 5. Results. (v) and (vi) Nil. (vii) Main and sub-plot error variances are homogeneous and both main and sub-plot Treatments×years interactions are present.

5. RESULTS ;

(i) 387 Kg/ha. (ii) (a) 127·0 Kg/ha. (based on 4 d.f. made up of Treatments×years interaction.) (b) 84·5 Kg/ha. (based on 12 d.f. made up of Treatments×years interaction). (iii) Main effect of R is highly significant. (iv) Av. yield of grain in Kg/ha.

	R_1	R_2	R_3	Mean
S_1	505	396	332	411
S_2	404	431	321	385
S_3	393	381	320	365
Mean	434	403	324	387

C.D. for R marginal means=43·4 Kg/ha.

Years	S_1	S_2	S_3	Sig	R_1	R_2	R_3	Sig.	G.M.	S.E./Main plot	S.E./Sub-plot
1960	244	231	244	N.S.	249	261	209	*	240	43·8	49·5
1961	612	625	600	N.S.	680	638	519	**	612	76·6	56·8
1962	377	298	251	N.S.	373	308	245	**	309	68·7	73·4
Pooled	411	385	365	N.S.	434	403	324	**	387	127·0	84·5

Crop :- Bajra (*Kharif*). **Ref :- Ms. 65(77).**

Site :- Agri. Res. Stn., Bagalkot. **Type :- 'CMV'.**

Object : – To study the effect of spacings and levels of N on different varieties of *Bajra*.

1. BASAL CONDITIONS :

(i) (a) to (c) Nil. (ii) Black soil. (iii) 1.7.65. (iv) (a) Ploughing and harrowing. (b) N.A. (c) and (d) As per treatments. (e) N.A. (v) Nil. (vi) As per treatments. (vii) Unirrigated. (viii) Weeding and interculturing. (ix) 25·6 cm. (x) 30.10.1965.

2. TREATMENTS :

All combination of (1), (2) and (3).

(1) 2 varieties : V_1=G 1–8–5 and V_2=HB–1.
(2) 3 levels of N : N_0=0, N_1=60 and N_2=120 Kg/ha.
(3) 3 row spacings : S_1=45, S_2=67·5 and S_3=90 cm.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 18. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 5·5 m.×5·5 m. (v) and (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of grain. (iv) (a) 1965–1966. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1363 Kg/ha. (ii) 283 Kg/ha. (iii) Main effects of V and N are highly significant. (iv) Av. yield of grain in Kg/ha.

	N_0	N_1	N_2	S_1	S_2	S_3	Mean
V_1	1025	1213	1329	1148	1151	1268	1189
V_2	1405	1653	1551	1671	1436	1502	1536
Mean	1215	1433	1440	1409	1294	1385	1363
S_1	1272	1444	1512				
S_2	1098	1414	1369				
S_3	1274	1442	1439				

C.D. for V marginal means=119·1 Kg/ha.
C.D. for N marginal means=145·9 Kg/ha.

Crop:- Bajra (*Kharif*). **Ref :- Ms. 65(74).**

Site:- Agri. Res. Stn., Bijapur. **Type :- 'CMV'.**

Object :— To study the influence of row spacings and levels of nitrogen on the yield of *Bajra* varieties.

1. BASAL CONDITIONS :

(i) (a) Nil, (b) and (c) N.A. (ii) Limy soil and medium black. (iii) 15.6.65. (iv) (a) Ploughing and harrowing. (b) Dibbling. (c) 4·5 Kg/ha. (d) 15 cm. within rows. (e) 2. (v) 12·4 C.L./ha. of F.Y.M.+ 56 Kg/ha. of P_2O_5. (vi) As per treatments. (vii) Unirrigated. (viii) Weeding and interculturing. (ix) 20·5 cm. (x) 6.10.65 and 28.10.65.

2. TREATMENTS :

Same as in Expt. No. 65(77) on page 243.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 18. (b) N.A. (iii) 5. (iv) (a) 6·1 m × 5·5 m. (b) 5·5 m. × 3·7 m. (v) and (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1965—1967. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 848 Kg/ha. (ii) 219·8 Kg/ha. (iii) Main effects of V and N are highly significant. (iv) Av. yield of grain in Kg/ha.

	N_0	N_1	N_2	S_1	S_2	S_3	Mean
V_1	551	758	965	804	759	711	758
V_2	720	1042	1052	1024	868	921	938
Mean	636	900	1008	914	813	816	848
S_1	673	993	1077				
S_2	669	874	897				
S_3	565	833	1051				

C.D. for V marginal means=92·5 Kg/ha.
C.D. for N marginal means=113·3 Kg/ha.

———

Crop :- Bajra (*Kharif*). **Ref :- Ms. 60(146), 61(142), 62(131).**

Site :- Agri. Res. Stn., Bijapur. **Type :- 'D'.**

Object : - To study the effect of fungicides on *Bajra* against the control of ergot disease.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Bajri*. (c) Nil. (ii) Medium loamy soil. (iii) 5.7.60 ; 12.7.61 ; 5.7.62. (iv) (a) 2 to 3 ploughings and harrowings. (b) Sowing by drill. (c) 7 Kg/ha. (d) 30 cm. between rows. (e) N.A. (v) Nil. (vi) Bijapur—11—11—7—14 (medium). (vii) Unirrigated. (viii) 2 interculturings and 1 hand weeding. (ix) 82 cm. ; 43 cm. ; 70 cm. (x) 15.11.60 ; 20.12.61 ; 16.11.62.

2. TREATMENTS :

All combinations of (1) and (2).

(1) 2 soil treatments : T_1=Treated and T_2=Untreated.

(2) 2 seed treatments : S_1=Treated and S_2=Untreated.

Soil is treated with fine Sulphur at 44·8 Kg/ha. Seeds treated with Agroson G.N.C. 0·2% by weight.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 4. (b) 9·1 m. × 9·8 m. (iii) 4. (iv) (a) 9·1 m. × 2·4 m. (b) 7·3 m. × 1·8 m. (v) 91 cm. × 30 cm. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Ergot disease. (iii) Plant counts, height of plants, No. of Ergot and yield of grain. (iv) (a) 1960 – 1962. (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(146)

(i) 855 Kg/ha. (ii) 184·8 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	S_1	S_2	Mean
T_1	935	907	921
T_2	781	799	790
Mean	858	853	855

61(142)

(i) 547 Kg/ha. (ii) 61·1 Kg/ha. (iii) Main effect of S and S×T interaction are significant. (iv) Av. yield of grain in Kg/ha.

	S_1	S_2	Mean
T_1	586	568	577
T_2	630	404	517
Mean	608	486	547

C.D. for S marginal means=67·2 Kg/ha.

C.D. for body of S×T table=95·0 Kg/ha.

62(131)

(i) 183 Kg/ha. (ii) 24·8 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	S_1	S_2	Mean
T_1	171	181	176
T_2	201	179	190
Mean	186	180	183

Crop :- Maize (*Kharif*). **Ref :- Ms. 64 (S.F.T.).**

Site :- (District) : Belgaum. **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) Deep black. (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.
$N_2P_2K_1$=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) and (ii) 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 randomnly 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. (iii) (a) 1/100 ha. (b) 1/200 ha. (iv) Yes.

4 GENERAL :

(i) to (iii) N.A. (iv) (a) 1964 only. (b) N.A. (c) Nil. (v) to (vii) N.A.

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.	417	565	159	540	679	738	782	59·8

Control yield=4371 Kg/ha. ; No. of trials=2.

Crop :- Maize (*Kharif*). **Ref :- Ms. 64 (S.F.T.).**

Site :- (District) : Belgaum. **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) Deep black. (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.
$N_2P_2K_2$ =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 on page 245

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1964 only. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

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.	108	54	84	148	202	336	464	49·6

.Control yield=4591 Kg/ha. ; No. of trials=2.

Crop :- Maize (*Kharif*). **Ref :- Ms. 61(271).**

Site :- Agri. Res. Stn., Arbhavi. **Type :- 'MV'.**

Object :—To find out the optimum requirement of the crop regarding N, P and K for the hybrid that is being recommended to the cultivators.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Maize and Cotton mixture. (c) 22·4 Kg/ha. of N+22·4 Kg/ha. of P_2O_5. (ii) Black sandy loam. (iii) 24.6.61. (iv) (a) Ploughing, harrowing and levelling. (b) to (e) N.A. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) Interculturing. (ix) 12 cm. (x) N.A.

2. TREATMENTS :

Main-plot treatments :

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

2 varieties : V_1=Local and V_2=Deccan hybrid *makka* (late).

Sub-plot treatments : All combinations of (1), (2) and (3).

(1) 5 levels of N : N_0=0, N_1=44·8, N_2=89·6, N_3=134·4 and N_4=179·2 Kg/ha.

(2) 3 levels of P_2O_5 : P_0=0, P_1=44·8 and P_2=89·6 Kg/ha.

(3) 2 levels of K_2O : K_0=0, K_1=89·6 Kg/ha.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication; 30 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 9·1 m.×3·7 m. (b) 9·1 m.×2·9 m. (v) 1 row on each side. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Aphid attack-sprayed with Endrex 50E.C. Folidol sprayed against cater pillars. 2—4,D sprayed to control weeds. (iii) Yield of grain. (iv) (a) 1961. (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 4250 Kg/ha. (ii) (a) 21·4 Kg/ha. (b) 8·8 Kg/ha. (iii) Main effects of V, N and interaction V×N are highly significant. (iv) Av. yield of grain in Kg/ha.

	N_0	N_1	N_2	N_3	N_4	K_0	K_1	V_1	V_2	Mean
P_0	3313	3415	4168	5048	5048	4158	4239	5002	3395	4198
P_1	3255	3919	4126	4793	5280	4294	4255	5036	3514	4274
P_3	3050	3818	4300	4765	5466	4431	4128	5192	3367	4279
Mean	3206	3717	4198	4868	5264	4294	4207	5076	3425	4250
V_1	3359	4271	5003	6009	6740	5069	5083			
V_2	3053	3163	3393	3727	3789	3520	3331			
K_0	3311	3840	4196	4913	5212					
K_1	3101	3595	4200	4824	5316					

C.D. for V marginal means =8·7 Kg/ha.

C.D. for N marginal means =1·1 Kg/ha.

C.D. for V means at the same level of N=2·2 Kg/ha.

C D. for N means at the same level of V=5·0 Kg/ha.

Crop :- Maize (*Kharif*). **Ref :- Ms. 62(82), 63(82).**

Site :- Agri. College Farm, Dharwar. **Type :- 'MV'.**

Object :—To study the effect of fertilizers on the various varieties of hybrid Maize.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Chilly+Cotton. (c) 12·4 C.L./ha. of F.Y.M.+33·6 Kg/ha. of N+22·4 Kg/ha. of P_2O_5+5·6 Kg/ha. of K_2O. (ii) Black soil. (iii) 20.7.62; 6.8.63. (iv) (a) 3 harrowings. (b) Dibbling. (c) 22 Kg/ha. (d) 61 cm.×30 cm. (e) 2. (v) 56·0 Kg/ha. of P_2O_5+56·0 Kg/ha. of K_2O. (vi) As per treatments. (vii) Unirrigated. (viii) Interculturing and weeding. (ix) 78 cm.; 79 cm. (x) 1.11.62; 22.11.63.

2. TREATMENTS :

Main-plot treatments :

3 varieties : V_1=Ranjit, V_2=Deccan and V_3=Ganga−101.

Sub-plot treatments :

4 levels of N as A/S : N_1=56·0, N_2=112·1, N_3=168·1 and N_4=224.2 Kg/ha.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication, 4 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 9·1 m.×6·1 m. (b) 7·3 m.×4·9 m. (v) 91 cm.×61 cm. (vi) Yes.

4. GENERAL :

(i) Satisfactory. Some lodging occurred due to rains on 6.10.62 in 62(82). (ii) Nil. (iii) Yield of grain. (iv) (a) 1962—63. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Sub-plot error variances are heterogeneous. Results of individual years are presented under 5. Results.

5. RESULTS :

62(82)

(i) 5800 Kg/ha. (ii) (a) 1049·0 Kg/ha. (b) 932·0 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	N_1	N_2	N_3	N_4	Mean
V_1	5530	4520	5930	6690	5668
V_2	5640	5770	5300	5750	5615
V_3	5690	5610	6500	6670	6118
Mean	5620	5300	5910	6370	5800

63(82)

(i) 4102 Kg/ha. (ii) (a) 519·0 Kg/ha. (b) 327·8 Kg/ha. (iii) N effect is highly significant. V effect is significant. (iv) Av. yield of grain in Kg/ha.

	N_1	N_2	N_3	N_4	Mean
V_1	3136	4170	4533	4989	4207
V_2	3491	4144	4810	4786	4308
V_3	3237	3590	4097	4234	3790
Mean	3288	3968	4480	4670	4102

C.D. for V marginal means=333·8 Kg/ha.

C.D. for N marginal means=220·3 Kg/ha.

Crop :- Maize (*Rabi*). **Ref :- Ms. 63(81).**

Site :- Agri. College Farm, Dharwar. **Type :- 'MV'.**

Object :—To study the effect of fertilizers on different varieties of hybrid Maize under irrigated conditions.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Chilly+Cotton. (c) 12·4 C.L./ha. of F.Y.M.+33·6 Kg/ha. of N+22·4 Kg/ha. of P_2O_5+5·6 Kg/ha. of K_2O. (ii) Black soil. (iii) 30.10.63. (iv) (a) 3 harrowings. (b) Dibbling. (c) 22 Kg/ha. (d) 61 cm.×30 cm. (e) 2 seeds/hill. (v) 56 Kg/ha. of P_2O_5+56 Kg/ha. of K_2O. (vi) As per treatments. (vii) Irrigated. (viii) Interculturing and weeding. (ix) 79 cm. (x) N.A.

2. TREATMENTS :

Same as in expt. No. 62(82), 63(82) on page 248.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication, 4 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 6·1 m.×4·9 m. (b) 4·9 m.×3·7 m. (v) 61 cm.×61 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1963—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 4148 Kg/ha. (ii) (a) 1686·9 Kg/ha. (b) 578·0 Kg/ha. (iii) N effect is highly significant. (iv) Av. yield of grain in Kg/ha.

	N_1	N_2	N_3	N_4	Mean
V_1	4850	4767	4673	4552	4710
V_2	4605	5049	4385	3264	4326
V_3	3653	3447	3532	3002	3409
Mean	4369	4421	4197	3606	4148

C.D. for N marginal means=978·9 Kg/ha.

Crop :- Maize (*Rabi*). **Ref :- Ms. 61(107).**

Site :- Agri. Res. Stn., Arbhavi. **Type :- 'CV'.**

Object :—To find out the effect of spacing on different varieties of Maize.

1. BASAL CONDITIONS :

(i) (a) Sugarcane—*Sannhemp*—Maize. (b) *Sannhemp.* (c) No. (ii) Black mixed soil. (iii) 27.10.61. (iv) (a) Ploughing and harrowing. (b) and (c) N.A. (d) As per treatments. (e) Nil. (v) 403·5 Q/ha. of G.M. (vi) As per treatments. (vii) Irrigated. (viii) Thinning, 2 interculturings and 3 weedings. (ix) 2 cm. (x) 13.3.62.

2. TREATMENTS :

Main-plot treatments :

5 varieties : V_1=Deccan 1, V_2=Ganga 101, V_3=A.D. cura, V_4=3 way hybrid and V_5=Local.

Sub-plot treatments :

4 spacings : S_1=61 cm.×23 cm., S_2=61 cm.×30 cm., S_3=61 cm.×38 cm. and S_4=61 cm.×46 cm.

3. DESIGN ;

(i) Split-plot. (ii) (a) 5 main-plots/replication, 4 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a) 3·1 m.×9·1 m. (b) 1·8 m.×9·1 m. (v) 1 row on either side length-wise. (vi) Yes.

4. GENERAL :

(i) Good. (ii) No. (iii) Yield of grain. (iv) (a) 1961—N.A. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 4284 Kg/ha. (ii) (a) 525·6 Kg/ha. (b) 418·3 Kg/ha. (iii) Main effects of V and S are highly significant. (iv) Av. yield of grain in Kg/ha.

	V_1	V_2	V_3	V_4	V_5	Mean
S_1	6727	6309	5023	3095	4007	5032
S_2	6189	6070	3977	3379	3110	4545
S_3	5955	5217	3797	1914	2721	3921
S_4	5591	5217	3528	1973	1884	3639
Mean	6116	5703	4081	2590	2930	4284

C.D. for V marginal means=729·5 Kg/ha.
C.D. for S marginal means=398·3 Kg/ha.

Crop :- Maize (*Kharif*). **Ref :- Ms. 60(273).**

Site :- Agri. Res. Stn., Arbhavi. **Type :- 'CMV'.**

Object :—Nitrogen-*cum*-spacing-*cum*-Varietal trial on *Kharif* Maize.

1. BASAL CONDITIONS :

(i) (a) Sugarcane—Maize. (b) Sugarcane. (c) 22·4 Kg/ha. of N. (ii) Sandy loam. (iii) 23.6.60. (iv) (a) 2 tractor ploughings, 2 wooden ploughings and 2 harrowings. (b) Hand dibbling. (c) N.A. (d) 91cm.×30cm. (e) 1 seed/hill. (v) N, P and K at 22·4 Kg/ha. each, applied before sowing. (vi) As per treatments. (vii) Irrigated. (viii) Bullock interculturing and hand weeding. (ix) 50·8 cm. (x) 28.10.60.

2. TREATMENTS :

Main-plot treatments :

2 varieties : V_1=Teras 26 and V_2=Local.

Sub-plot treatments :

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

(1) 2 Spacings between rows : R_1=61 and R_2=91 cm.

(2) 3 Spacings between plants : P_1=18·3, P_2=36·7 and P_3=54·9 cm.

(3) 4 levels of N : N_0=0, N_1=44·8, N_2=89·6 and N_3=179·2 Kg/ha.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication, 24 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 9·1 m.×1·8 m. (v) 1 row on either side. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Leaf eating caterpiller—controlled by Nicotine Sulphate and Folidol. (iii) Yield of grain. (iv) (a) 1960 only. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 8863 Kg/ha. (ii) (a) 4167 Kg/ha. (b) 2294 Kg/ha. (iii) Main effects of V, N, P, R and interaction V×P are highly significant. (iv) Av. yield of grain in Kg/ha.

	R_1	R_2	P_1	P_2	P_3	N_0	N_1	N_2	N_3	Mean
V_1	7927	6588	9663	6636	5472	6255	6997	8123	7653	7257
V_2	11201	9736	9706	11100	10601	8223	10400	11718	11534	10469
Mean	9564	8162	9684	8868	8037	7239	8699	9921	9593	8863
N_0	7735	6743	7350	7544	6823					
N_1	9180	8218	9162	8602	8333					
N_2	11021	8821	10799	10365	8598					
N_3	10321	8866	11427	8960	8392					
P_1	10038	9330								
P_2	9556	8179								
P_3	9097	6976								

C.D. for V marginal means =1914 Kg/ha.
C.D. for R marginal means =652·2 Kg/ha.
C.D. far P marginal means =798·8 Kg/ha.
C.D. for N marginal means =922·4 Kg/ha.
C.D. for V means at the same level of P=207·7 Kg/ha.
C.D. for P means at the same level of V=573·5 Kg/ha.

Crop :- Maize (*Kharif*). **Ref :- Ms. 61(272).**

Site :- Agri. Res. Stn., Arbhavi. **Type :- 'CMV'.**

Object : —To observe the yield response in relation to N and plant population.

1. BASAL CONDITIONS:

(i) (a) Maize—*Sannhemp*. (b) *Sannhemp*. (c) 22·4 Kg/ha. of N+22·4 Kg/ha. of P_2O_5+11·2 Kg/ha. of K_2O. (ii) Sandy loam. (iii) 4.6.61. (iv) (a) Ploughing, harrowing and levelling. (b) to (e) N A. (v) 37 C.L./ha. of F.Y.M.+90 Kg/ha. of P_2O_5+90 Kg/ha. of K_2O. (vi) As per treatments. (vii) Irrigated. (viii) Bullock *interculturing* and hand weeding. (ix) 17·8 cm. (x) 24.9.61.

2. TREATMENTS :

Main-plot treatments :

2 varieties : V_1=Local (early), V_2=Deccan hybrid *makka* (late).

Sub-plot treatments :

3 row spacings : S_1=61 cm., S_2=76 cm. and S_3=91 cm.

Sub-sub-plot treatments :

3 levels of N : N_1=67·2, N_2=134 and N_3=202 Kg/ha.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication, 3 sub-plots/main-plot, 3 sub-sub-plots/sub-plot. (b) N.A. (iii) 4 (iv) (a) N.A. (b) 9·2 m.×2·6 m. for S_1, 9·1 m.×3·1 m. for S_2, 9·1 m.×3·7 m. for S_3. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Aphids—sprayed with Endrex 50 E.C. Folidol sprayed against cater pillar, 2 - 4, D sprayed to control weeds. (iii) Yield of grain. (iv) (a) 1961. (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 5964 Kg/ha. (ii) (a) 1048·6 Kg/ha. (b) 628·2 Kg/ha. (c) 439·6 Kg/ha. (iii) Main effects of V, S and N are highly significant. (iv) Av. yield of grain in Kg/ha.

	S_1	S_2	S_3	N_1	N_2	N_3	Mean
V_1	8654	7605	7696	7710	7948	8297	7985
V_2	4514	3853	3462	3686	3972	4171	3943
Mean	6584	5729	5579	5698	5960	6234	5964
N_1	6147	5674	5274				
N_2	6649	5666	5567				
N_3	6956	5847	5896				

C.D. for V marginal means=786·6 Kg/ha.
C.D. for S marginal means=395·1 Kg/ha.
C.D. for N marginal means=257·3 Kg/ha.

Crop :- Maize (*Kharif*). **Ref :- Ms. 61(269), 62(107), 63(241).**

Site :- Agri. Res. Stn., Arbhavi. **Type :- 'IM'.**

Object :—To find out the optimum water and manurial requirements for *Kharif* Maize.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sunnhemp* for 61 and 62 ; Gram for 63. (c) Nil. (ii) Sandy loam. (iii) 8.6.61; 10.6.62; 6.6.63. (iv) (a) Ploughing and harrowing. (b) Hand dibbling for 61(269); N.A. for others. (c) N.A. (d) 91 cm. × 30 cm. for 61(269); N.A. for others. (e) 1 seed/hill for 61(269); N.A. for others. (v) 12·4 C.L./ha. of F.Y.M. for 61(269); 14·8 C.L./ha. of F.Y.M. for 62(107) and 17·3 C.L./ha. of F.Y.M. for 63(241). (vi) and (vii) As per treatments. (viii) Thinning, 2 interculturings and 1 to 2 weedings. (ix) 23·5 cm.; 23 cm. ; 22·9 cm. (x) 25.9.61 ; 13.9.62; 2.10.63.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 manurial treatments : M_1=Local Maize with 22·4 Kg/ha. of P_2O_5+11·2 Kg/ha. of K_2O, M_2= Deccan variety with 22·4 Kg/ha. of N+11·2 Kg/ha. of P_2O_5+11·2 Kg/ha. of K_2O, M_3=Deccan variety with 44·8 Kg/ha of N+22·4 Kg/ha. of P_2O_5+22·4 Kg/ha. of K_2O and M_4=Deccan variety. with 89·7 Kg/ha. of N+44·8 Kg/ha. of P_2O_5+44·8 Kg/ha. of K_2O.

(2) 2 intensities of irrigation : I_1=6 and I_2=9 cm.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) 14·6 m.×26·8 m. for 61(269) and 62(107); N.A. for 63(241) (iii) 4. (iv) (a) 7·3 m.×6·7 m. (b) 5·5 m.×6·1 m. (v) and (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Attack of aphids and rust. (iii) Yield of grain. (iv) (a) 1960 to 1962. (b) No. (c) As given under 5-Results. (v) and (vi) N.A. (vii) Error variances are homogeneous and Treatments×years interaction is absent.

5. RESULTS :

(i) 4161 Kg/ha. (ii) 497·5 Kg/ha. (based on 77 d.f. made up of pooled error and Treatments×years interaction). (iii) Effect of M is highly significant. (iv) Av. yield of grain in Kg/ha.

	M_1	M_2	M_3	M_4	Mean
I_1	3809	3898	4372	4775	4213
I_2	3799	3639	4247	4752	4109
Mean	3804	3768	4309	4763	4161

C.D. for M marginal means=287·1 Kg/ha.

Years	M_1	M_2	M_3	M_4	Sig	I_1	I_2	Sig.	G.M.	S.E./plot
1961	4700	4244	5157	5151	**	4719	4907	N.S.	4813	446·8
1962	2987	3606	3759	4428	**	3777	3613	N.S.	3695	446·1
1963	3726	3456	4012	4711	**	4144	3808	N.S.	3976	586·5
Pooled	3804	3768	4309	4763	**	4213	4109	N.S.	4161	497·5

Crop :- Maize (*Rabi*). **Ref :- Ms. 62(108).**

Site :- Agri. Res. Stn., Arbhavi. **Type :- 'IM'.**

Object :— To find out optimum water and manurial requirements.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Maize. (c) 12·4 C.L./ha. of F.Y.M.+38·5 Kg/ha. of N as A/S+17·8 Kg/ha. of P_2O_5 as Super +13·6 Kg/ha. of K_2O as Mur. Pot. (ii) Sandy loam, Brown Masari alkaline. (iii) 6.11.62. (iv) (a) Ploughing and harrowing. (b) to (e) N.A, (v) 17·3 C.L./ha. of F.Y.M. (vi) and (vii) As per treatments. (viii) Thinning, 2 interculturings, 2 to 3 weedings. (ix) 14 cm. (x) Local on 2,3.63; Deccan on 21.3.63.

2. TREATMENTS :

All combinations of (1) and (2).

(1) 4 manurial treatments : M_1=Local variety with 33·6 Kg/ha. of N+16·8 Kg/ha. of P_2O_5+16 8 Kg/ha. of K_2O, M_2=Deccan variety with 33·6 Kg/ha. of N+16·8 Kg/ha. of P_2O_5+16 8 Kg/ha. of K_2O, M_3=Deccan variety with 67·2 Kg/ha. of N+33·6 Kg/ha. of P_2O_5+33·6 Kg/ha. of K_2O, and M_4=Deccan variety with 89·7 Kg/ha. of N+50·4 Kg/ha. of P_2O_5+50·4 Kg/ha of K_2O.

(2) 2 intensities of irrigation : I_1=6 and I_2=9 cm

3. DESIGN :

Same as in Expt. No. 61(106), 63 (242) given below.

4. GENERAL :

(i) Lodging was observed in local variety. (ii) Attack of aphids and rusts were found in local variety. (iii) Yield of grain. (iv) (a) 1961—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2221 Kg/ha. (ii) 244·7 Kg/ha. (iii) M effect is highly significant. (iv) Av. yield of grain in Kg/ha.

	M_1	M_2	M_3	M_4	Mean
I_1	1375	1914	2523	3125	2234
I_2	1282	1970	2687	2893	2208
Mean	1328	1942	2605	3009	2221

C.D. for M marginal means=254·4 Kg/ha.

Crop :- Maize (*Rabi*). **Ref :- Ms. 61(106), 63(242).**

Site :- Agri. Res. Stn., Arbhavi. **Type :- 'IM'.**

Object :— To find out the optimum water and manurial requirement of Maize.

I, BASAL CONDITIONS :

(i) (a) Nil. (b) *Sannhemp.* (c) Nil. (ii) Black mixed kirl ; sandy loam. (iii) 27.10.61, 10.11.63. (iv) (a) Ploughing & harrowing. (b) to (e)N.A. (v) 403·5 Q/ha. of G.M. for 61(106); 17·3 C.L./ha. of F.Y.M. for 63(242). (vi) and (vii) As per treatments. (viii) Thinning, 2 interculturings and 3 weedings. (ix) 2 cm ; Nil. (x) 6.3.62 to 7.3.62 ; 3.3.64 and 30.3.64.

2· TREATMENTS :

All combinations of (1) and (2).

(1) 4 manurial treatments : M_1=3 way hybrid maize with 33·6 Kg/ha of N+16·8 Kg/ha. of P_2O_5+16·8 Kg/ha. of K_2O, M_2=Deccan 1 variety with 33·6 Kg/ha. of N+16·8 Kg/ha. of P_2O_5+16·8 Kg/ha. of K_2O, M_3=Deccan 1 variety with 67·2 Kg/ha. of N+33·6 Kg/ha. of P_2O_5+33·6 Kg/ha. of K_2O and M_4=Deccan 1 variety with 100·9 Kg/ha. of N+50·4 Kg/ha. of P_2O_5+50·4 Kg/ha. of K_2O.

(2) 2 intensities of irrigation : I_1=6 and I_2=9 cm.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 7·3 m.×6·7 m. (b) 6·1 m.×5·5 m. (v) 61 cm.×61 cm. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Yield of grain. (iv) (a) 1961—1963 (Treatments were modified in 1962 only.) (b) No. (c) As under 5. Results. (v) and (vi) Nil. (vii) Error variances are homogeneous and Treatments × years interaction is absent.

5. RESULTS :

(i) 4539 Kg/ha. (ii) 443·8 Kg/ha. (based on 49 d.f. made up of Treatments × years interaction and pooled error). (iii) Main effect of M is significant. (iv) Av. yield of grain in Kg/ha.

	M_1	M_2	M_3	M_4	Mean
I_1	3432	4189	4945	5461	4507
I_2	3417	4487	4977	5406	4572
Mean	3424	4338	4961	5433	4539

C.D. for M marginal means = 315·4 Kg/ha.

Years	I_1	I_2	Sig.	M_1	M_2	M_3	M_4	Sig.	G.M.	S.E./plot
1961	5106	5139	N.S.	3984	4990	5733	5784	**	5122	493·0
1963	3907	4004	N.S.	2864	3685	4189	5083	**	3955	372·2
Pooled	4507	4572	N.S.	3424	4338	4961	5433	*	4539	443·8

Crop :- Maize (*Rabi*). **Ref :- Ms. 60(277).**

Site :- Agri. Res. Stn., Arbhavi. **Type :- '1M'.**

Object :—To find out optimum water and manurial requirements of 3 way hybrid Maize.

1. BASAL CONDITIONS :

(i) (a) G. M. (b) Sunnhemp. (c) Nil. (ii) Black mixed kirl (Alkaline patches). (iii) 22.10.60. (iv) (a) Ploughing, harrowing and levelling. (b) Dibbling. (c) N.A. (d) 45·7 cm. × 30·5 cm. (e) 2 seeds/hill thinned to one. (v) Nil. (vi) 3 way cross hybrid Maize (105 days). ($I_5 \times L_5 \times S_{23}$). (vii) As per treatments. (viii) Gap filling, thinning, interculturing and weeding. (ix) 8·3 cm. (x) 23.2.61.

2. TREATMENTS :

All combinations of (1) and (2).

(1) Two levels of irrigation : I_1=6 and I_2=9 cm.

(2) 5 manurial treatments : M_0=No manure. M_1=33·6 Kg/ha. of N as A/S and G.N.C. in 1 : 2 ratio. M_2=33·6 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 Pot. Sul., M_3=69·2 Kg/ha. of N as A/S and G.N.C. in 1 : 2 ratio and M_4=69·2 Kg/ha. of N as A/S+22·4 Kg/ha. of P_2O_5+22·4 Kg/ha. of K_2O.

Fertilzers applied in one dose 3 weeks after planting.

3. DESIGN :

(i) Fact. in R.B,D. (ii) (a) 10. (b) N.A. (iii) 3. (iv) (a) 12·2 m. × 8·2 m. (b) 11·0 m. × 6·4 m. (v) 2 rows on all sides. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of grain. (iv) (a) 1959—'60. (b) N.A. (c) Nil. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 3607 Kg/ha, (ii) 609·7 Kg/ha. (iii) Main effect of M is significant. (iv) Av. yield of grain in Kg/ha.

	M_0	M_1	M_2	M_3	M_4	Mean
I_1	2526	3836	3091	3656	3879	3398
I_2	2934	3874	4287	3822	4169	3817
Mean	2730	3855	3689	3739	4024	3607

C.D. for M marginal means=739·5 Kg/ha.

Crop :- Maize (*Kharif*). **Ref :- Ms. 60(274).**

Site :- Agri. Res. Stn., Arbhavi. **Type :- 'IM'.**

Object :— To find out the optimum water and manurial requirements for the Maize crop.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Gram. (b) Gram. (c) 12·4 C.L./ha. of F.Y.M.+22·4 Kg/ha. of N as A/s+22·4 Kg/ha. of P_2O_5 as Super. (ii) Sandy loam, brown Masari and Alluvial type. (iii) 1.6.60, (iv) (a) Ploughing and harrowing. (b) Dibbling. (c) N.A. (d) 91 cm.×30 cm. (e) 2 to 3 seeds thinned to one. (v) F.Y.M. at 12·4 C.L./ha. applied by spreading and mixing. (vi) Hybrid maize. (vii) As per treatments. (viii) Interculturing, thinning and weeding. (ix) 19·6 cm. (x) 4.9.60.

2. TREATMENTS :

All combinations of (1) and (2).

(i) Two levels of irrigation : I_1=5 and I_2=8 cm.

(ii) 5 manurial treatments : M_0=No manure. M_1=22·4 Kg/ha. of N as A/S and G.N.C. in 1 : 2 ratio, M_2=22·4 Kg/ha. of N as A/S+11·2 Kg/ha. of P_2O_5+11·2 Kg/ha. of K_2O, M_3=44·8 Kg/ha. of N as A/S and G.N.C. in 1 : 2 ratio and M_4=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 Pot. Sul.

Fertilizer applied 3 weeks after sowing by spreading and hoeing.)

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 10. (b) N.A. (iii) 3. (iv) (a) 7·3 m.×6·7 m. (b) 6·4 m.×6·1 m. (v) One row on all sides. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) All the of growth stage effected with *Helminthos Pharium turcicum* and leaf eating catter piller. Controlled by spraying Nicotine Sulphate and Goammaxene dust. (iv) (a) 1959—1960. (b) Yes. (c) Nil. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 4450 Kg/ha. (ii) 278·7 Kg/ha. (iii) Main effect of M is highly significant. (iv) Av. yield of grain in Kg/ha.

	M_0	M_1	M_2	M_3	M_4	Mean
I_1	3544	4669	4408	4768	4899	4457
I_2	3892	4287	4434	4858	4741	4442
Mean	3718	4478	4421	4813	4820	4450

C.D. for M marginal means=338·1 Kg/ha.

Crop :- Ragi (*Kharif*). **Ref :- Ms. 62(52).**

Site :- Agri. Res. Stn., Hebbal. **Type :- 'M'.**

Object :— To find out the optimum levels of N, P and K with compost for *Ragi* under rainfed conditions in red soil area.

1. BASAL CONDITIONS :

(i) (a) *Ragi—Ragi.* (b) *Ragi.* (c) N.A. (ii) Red sandy loam. (iii) 7.8.62. (iv) (a) Ploughing with M.B. plough. Passing cultivator 2 times, passing spike tooth and harrowing once. (b) Drilling. (c) 6 to 7 Kg/ha. (d) 30 cm.×15 cm. (v) 100·4 Q/ha. of compost. (vii) H-22 (late). (vii) Unirrigated. (viii) Passing *chippa kanti* 2 times, 2 weedings, 1 crop filling. (ix) 65 cm. (x) 20.12.62.

2. TREATMENTS :

4 manurial treatments ; T_0=Control, T_1=22·4 Kg/ha. of N+22·4 Kg/ha. of P_2O_5+22·4 Kg/ha. of K_2O, T_2=44·8 Kg/ha. of N+44·8 Kg/ha. of P_2O_5+44·8 Kg/ha. of K_2O and T_3=67·2 Kg/ha. of N+67·2 Kg/ha. of P_2O_5+67·2 Kg/ha. of K_2O.

All manures applied in one dose at the time of drilling by broadcasting and mixing up with soil.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) and (b) 5·0 m.×10·1 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) No. (iii) Tiller counts and yield of grain. (iv) (a) to (c) No. (v) to (vii) Nil.

5. RESULTS :

(i) 1883 Kg/ha. (ii) 193·6 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	1116	1513	2090	2812

C.D.=238·2 Kg/ha.

Crop :- Ragi (*Kharf*). **Ref :- Ms. 63(49).**

Site :- Agri. Res. Stn., Hebbal. **Type :- 'M'.**

Object :— To find the best combination of N, P and K for rainfed *Ragi*.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Red sandy soil. (iii) 10.7.63. (iv) (a) N.A. (b) Drilling. (c) 6 to 7 Kg/ha. (d) 30 cm.×15 cm. (e) N.A. (v) 75·3 Q/ha. of compost at sowing. (vi) H-22 *Ragi*. (vii) Unirrigated. (viii) Thinning, gap filling and weeding. (ix) 60 cm. (x) 2.12.63.

2. TREATMENTS :

4 manurial treatments : T_1=22·4 Kg/ha. of N+22·4 Kg/ha. of P_2O_5+22·4 Kg/ha. of K_2O, T_2=44·8 Kg/ha. of N+22·4 Kg/ha. of P_2O_5+22·4 Kg/ha. of K_2O, T_3=67·2 Kg/ha. of N+44·8 Kg/ha. of P_2O_5+44·8 Kg/ha. of K_2O and T_4=89·6 Kg/ha. of N+44·8 Kg/ha. of P_2O_5+44·8 Kg/ha. of K_2O.

All N, P and K applied in one dose at drilling except for N in T_4 where N was applied in 2 doses, at drilling and 45 days after.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 5. (iv) (a) 6 6 m.×6·1 m. (b) 6·1 m.×5·5 m. (v) 26 cm.×30 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) 1814 Kg/ha. (ii) 188·1 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
Av. yield	1460	1606	2074	2115

C.D.=259·2 Kg/ha.

———

Crop :- Ragi (*Kharif*). **Ref :- Ms. 64(66).**

Site :- Agri. Res. Stn., Hebbal. **Type :- 'M'.**

Object : - To study the range effect of the applications of N, P and K fertilizers to *Ragi* under dry land conditions.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Ragi*. (c) N.A. (ii) Red sand. (iii) 31.7.64. (iv) (a) 3 ploughings, passing cultivator and halube. (b) Sowing in lines by hand behind marker. (c) 5 Kg/ha. (d) 23 cm. between rows, (e) N.A. (v) Nil (vi) H 22 (late). (vii) Unirrigated. (viii) 2 thinnings and 2 weedings. (ix) N.A. (x) First week of December, 1964.

2. TREATMENTS :

9 manurial treatments : T_1=0, T_2=33·6 Kg/ha. of N, T_3=67·2 Kg/ha. of N, T_4=33·6 Kg/ha. of N+22·4 Kg/ha. of P_2O_5, T_5=67·2 Kg/ha. of N+44·8 Kg/ha. of P_2O_5, T_6=33·6 Kg/ha. of N+22·4 Kg/ha. of P_2O_5+22·4 Kg/ha. of K_2O, T_7=67·2 Kg/ha. of N+44·8 Kg/ha. of P_2O_5+44·8 Kg/ha. of K_2O, T_8=56 Q/ha. of F.Y.M and T_9=33·6 Kg/ha. of N+22·4 Kg/ha. of P_2O_5+22·4 Kg/ha, of K_2O+56 Q/ha. of F.Y.M.

N applied as A/S, P_2O_5 as Super and K_2O as Mur. Pot. F.Y.M. applied one month before drilling. N, P and K broadcasted and mixed with the soil at the time of drilling.

3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) 43·6 m.×11·3 m. (iii) 3. (iv) (a) 11·3 m.×4·6 m. (b) 10·2 m.×4·0 m. (v) 53 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) to (c) No. (v) to (vii) Nil.

5. RESULTS :

(i) 1150 Kg/ha. (ii) 449·8 Kg/ha. (iii) Treament 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	T_9
Av. yield	1053	1025	1226	1153	1617	1034	1306	934	1006

———

Crop :- Ragi (*Kharif*). **Ref :- Ms. 63(64), 64(56).**

Site :- Agri. Res. Stn., Hebbal. **Type :- 'M'.**

Object :— To find the effect of P and K in combination with N on the yield of *Ragi*.

1. BASAL CONDITIONS :

(i) (a) Groundnut—*Ragi*. (b) *Ragi*, Groundnut. (c) Nil. (ii) Red sandy soil. (iii) 15, 16.7.63 ; 16.7.64. (iv) (a) N.A. (b) Drilling ; Dibbling. (c) 6 to 7 Kg/ha. (d) 30 cm. × 15 cm. (e) N.A. (v) 9·9 C.L./ha. of F.Y.M. (vi) H-22. (vii) Unirrigated. (viii) Hand weeding and gap-filling. (ix) 60 cm. ; 89 cm. (x) 25.11.63 to 2.12.63 ; 2.12.64.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2).

(1) 3 levels of P_2O_5 as Super : $P_0=0$, $P_1=22{\cdot}4$ and $P_2=44{\cdot}8$ Kg/ha.

(2) 3 levels of K_2O as Mur. Pot. : $K_0=0$, $K_1=22{\cdot}4$ and $K_2=44{\cdot}8$ Kg/ha.

Sub-plot treatments :

5 levels of N as A/S : $N_0=0$, $N_1=22{\cdot}4$, $N_2=44{\cdot}8$, $N_3=67{\cdot}2$ and $N_4=89{\cdot}6$ Kg/ha.

3. DESIGN :

(i) Split-plot. (ii) (a) 9 main-plots/replication, 5 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a) 6·6 m. × 4·6 m. (b) 5·5 m. × 3·7 m. (v) 54 cm. × 45 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Slight attack of blast in 63(64). (iii) Yield of grain. (iv) (a) 1963—1964 (b) No. (c) Nil. (v) Mandya. (vi) Nil. (vii) Main plot variances are heterogeneous and Treatments × years interaction is absent. Hence the results of individual years are presented under 5. Results.

5. RESULTS :

63(64)

(i) 2489 Kg/ha. (ii) (a) 556·9 Kg/ha. (b) 368·9 Kg/ha. (iii) Main effect of N is highly significant. (iv) Av. yield of grain in Kg/ha.

	P_0	P_1	P_2	N_0	N_1	N_2	N_3	N_4	Mean
K_0	2300	2423	2640	1507	2129	2484	2912	3240	2454
K_1	2355	2678	2516	1694	2167	2485	3038	3197	2516
K_2	2242	2475	2776	1613	2125	2680	2828	3242	2498
Mean	2299	2525	2644	1604	2140	2550	2926	3226	2489
N_0	1329	1693	1792						
N_1	1965	2148	2308						
N_2	2334	2560	2755						
N_3	2838	2905	3034						
N_4	3027	3320	3333						

C.D. for N marginal means=245·5 Kg/ha.

64(56)

(i) 1243 Kg/ha. (ii) (a) 273·2 Kg/ha. (b) 411·4 Kg/ha. (iii) Main effect of P is significant. N effect is highly significant. (iv) Av. yield of grain in Kg/ha.

	P_0	P_1	P_2	N_0	N_1	N_2	N_3	N_4	Mean
K_0	1225	1271	1245	912	1027	1273	1449	1581	1247
K_1	1060	1266	1311	964	1057	1164	1422	1455	1212
K_2	1156	1235	1416	972	961	1257	1421	1733	1269
Mean	1147	1257	1324	949	1013	1231	1431	1590	1243
N_0	840	1010	998						
N_1	988	971	1079						
N_2	1119	1268	1308						
N_3	1339	1429	1524						
N_4	1450	1608	1713						

C.D. for P marginal means=122·1 Kg/ha.

C.D. for N marginal means=223·4 Kg/ha.

Crop :- Ragi (*Kharif*). **Ref :- Ms. 63(63).**

Site :- Agri. Res. Stn., Hebbal. **Type :- 'M'.**

Object :—To find out the effect of P and K in combination with N on the yield of *Ragi*.

1. BASAL CONDITIQNS :

(i) (a) Nil. (b) *Ragi*. (c) Nil. (ii) Red sandy soil. (iii) 15, 16.7.63. (iv) (a) N.A. (b) Dibbling. (c) 6 to 7 Kg/ha. (d) 30 cm. × 15 cm. (e) N.A. (v) 19·8 C.L./ha. of F.Y.M. spread evenly and mixed 2 weeks before sowing. (vi) H.—22. (vii) Unirrigated. (viii) Hand thinning and gap filling. (ix) 60 cm. (x) 25.11.63 to 2.12.63.

2. TREATMENTS :

Same as in expt. no. 63(64) on page 259.

3. DESIGN :

(i) Split-plot. (ii) (a) 9 main-plots/replication, 5 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a) 6·6 m. × 4·6 m. (b) 5·5 m. × 3·7 m. (v) 54 cm. × 46 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Slight attack of blast. No control measures takan. (iii) Plant height, grain yield and No. of tillers. (iv) (a) 1963—only. (b) No. (c) Nil. (v) Mandya and Hagari. (vi) and (vii) Nil.

5. RESULTS :

(i) 2462 Kg/ha. (ii) (a) 253·5 Kg/ha. (b) 337·0 Kg/ha. (iii) N is highly significant. (iv) Av. yield of grain in Kg/ha.

	P_0	P_1	P_2	N_0	N_1	N_2	N_3	N_4	Mean
K_0	2344	2544	2420	1486	2034	2597	2875	3187	2436
K_1	2394	2434	2630	1544	2109	2566	2981	3231	2486
K_2	2517	2408	2463	1425	2062	2562	2981	3283	2463
Mean	2418	2462	2504	1485	2068	2575	2946	3233	2462
N_0	1393	1475	1587						
N_1	2028	2031	2146						
N_2	2595	2599	2531						
N_3	2898	3043	2896						
N_4	3179	3160	3361						

C.D. for N marginal mnans=228·0 Kg/ha.

Crop :- Ragi. **Ref :- Ms. 60(17), 61(64).**

Site :- Agri. Res. Stn., Hebbal. **Type :- 'M'.**

Object :—To study the effect of N, P and K on the yield of *Ragi*.

1. BASAL CONDITIONS :

(i) (a) *Ragi*—Groundnut—*Ragi*. (b) Groundnut. (c) 11·2 Kg/ha. of P_2O_5, Nil. (ii) Red soil (sandy loam). (iii) 25.6.60, 11.7.61. (iv) (a) Ploughing and harrowing. (b) Drilling. (c) 7 Kg/ha. (d) 25 cm. between rows. (e) N.A. (v) 5604 Kg/ha. of F.Y.M. incorporated in soil by working cultivator a fortnight before sowing. (vi) H–22. (vii) Unirrigated. (viii) 2 thinning cum interculturings and 2 to 3 hand weedings. (ix) 57 cm., 73 cm. (x) 15.11.60; 27.11.61.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2)

(1) 2 levels of N as A/S : N_1=16·8 and N_2=33·6 Kg/ha.

(2) 2 levels of P_2O_5 as Super : P_1=16·8 and P_2=33·6 Kg/ha.

Sub-plot treatments :

2 levels of K_2O as Mur. Pot. : K_0=0, K_1=16·8 and K_2=33·6 Kg/ha.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication, 3 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) and (b) 6·7 m.×5·8 m. for 60(17) and 8·8 m.×6·1 m. for 61(64). (v) Nil. (vi) Yes.

4. GENERAL :

(i) General. (ii) Nil. (iii) Periodical tiller counts, height measurements and yield of grain. (iv) (a) 1959–61 (1959 N.A). (b) No. (c) Nil. (v) and (vi) Nil. (vii) Main-plot as well as sub-plot error variances are heterogeneous.

5. RESULTS :

60(17)

(i) 675 Kg/ha. (ii) (a) 138·8 Kg/ha. (b) 95·4 Kg/ha. (iii) None of the effect is significant. (iv) Av. yield of grain in Kg/ha.

	P_1	P_2	K_0	K_1	K_2	Mean
N_1	679	642	657	668	656	660
N_2	704	676	629	716	724	690
Mean	692	659	643	692	690	675
K_0	674	613				
K_1	716	668				
K_2	685	696				

61(64)

(i) 3424 Kg/ha. (ii) 636·4 Kg/ha. (iii) Main effect of N is highly significant. (iv) Av. yield of grain in Kg/ha.

	P_1	P_2	K_0	K_1	K_2	Mean
N_1	3125	3682	3425	3336	3451	3404
N_2	3244	3645	3385	3409	3540	3444
Mean	3184	3664	3404	3373	3495	3424
K_0	3097	3712				
K_1	3254	3491				
K_2	3202	3788				

C.D. for N marginal means = 319·6 Kg/ha.

Crop :- Ragi. **Ref :- Ms. 60 (23), 61(69).**

Site :- Agri. Res. Stn., Hebbal. **Type :- 'M'.**

Object :—To compare the efficacy of inorganic fertilizers containing N, P and K with compost in increasing the yield of *Ragi*.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Ragi*. (c) 100·4 Q ha. of F.Y.M. in 60(23) and 75·3 Q/ha. of compost in 61(69). (ii) Sandy soil. (iii) 16.7.60; 19.7.61. (iv) (a) 3 to 4 ploughings, (b) Drilling. (c) 7 Kg/ha. (d) 25 cm. between rows. (e) N.A. (v) Nil. (vi) H—22. (vii) Unirrigated. (viii) Thinning of the crop by the local implement weeding and propping. (ix) 56 cm., 72 cm. (x) 24.11.60; 22.11.61.

2. TREATMENTS ;

6 manurial treatments : T_0=Control, T_1=Compost at 100·4 Q/ha., T_2=NPK equivalent to 100·4 Q/ha. of Compost, T_3=75·3 Q/ha. of Compost+NPK equivalent to 25·1 Q/ha. of Compost, T_4=50·2 Q/ha. of Compost+NPK equivalent to 50·2 Q/ha. of Compost and T_5= 25·1 Q/ha. of Compost+NPK equivalent to 75·3 Q/ha. of Compost.

Compost applied 15 to 20 days before drilling.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) 40·2 m.×24·4 m. for 60(23), 26·8 m.×36·6 m. (iii) 4. (iv) (a) 13·4 m.×12·2 m. (b) 12·8 m.×11·6 m. for 60(23); 13·1 m.×11·9 m. (v) 30 cm.×30 cm. for 60(23); 15 cm.×15 cm. (vi) Yes.

4. GENERAL :

(i) Crop has lodged to some extent in plots which had received combined doses of manure and fertilizer in 60(23). Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1960—61. (b) No. (c) Results of combined analysis are given under 5. Results. (v) N.A. (vi) Nil. (vii) Error variances are homogeneous.

5 RESULTS :

(i) 1813 Kg/ha. (ii) 303·8 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	T_0	T_1	T_2	T_3	T_4	T_5
Av. yield	1360	1412	1719	1954	2130	2305

C.D.=310·2 Kg/ha.

Years	T_0	T_1	T_2	T_3	T_4	T_5	Sig.	G.M.	S.E./plot
1960	1374	1400	1982	2158	2291	2423	**	1938	204·0
1961	1347	1423	1456	1750	1969	2187	**	1689	163·6
Pooled	1360	1412	1719	1954	2130	2305	**	1813	303·8

Crop :- Ragi. **Ref :- Ms. 60(22), 61(71).**

Site :- Agri. Res. Stn., Hebbal. **Type :- 'M'.**

Object :—To find out the best time and method of application of fertilisers to *Ragi*.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Ragi*. (c) 75·3 Q/ha. of F.Y.M. in 60(22), 12·4 C.L./ha. of Compost+22·4 Kg/ha. of P_2O_5 in 61(71). (ii) Sandy soil. (iii) 26.6.60; 19.7.61. (iv) (a) 3 ploughings. (b) Drilling. (c) 6 to 7 Kg/ha. (d) 30 cm. between rows for 60(22); 25 cm. between rows in 61(71). (e) N.A. (v) 22·4 Kg/ha. of P_2O_5+75·3 Q/ha. of Compost. (vi) H—22. (vii) Unirrigated. (viii) Weedings and thinning. (ix) 56 cm.; 73 cm. (x) 19.11.60; 4.12.61.

2. TREATMENTS :

All combinations ot (1) and (2)

(1) 3 times of application of N : T_1=At sowing, T_2=½ at sowing+½ at one month later and T_3=A month after sowing.

(2) 2 methods of application of N : M_1=By broadcast and M_2=By drilling.

N applied as A/S at 22·4 Kg/ha.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 14·0 m.×14·0 m. for 60(22); 14·0 m.×7·3 m. for 61(71). (b) 13·4 m.×13·4 m. for 60(22); 13·7 m.×7·0 m. for 61(71). (v) 30 cm.×30 cm. for 60(22); 15 cm.×15 cm. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Attack of white ants in 60(22); Nil for 61(71). (iii) Yield of grain. (iv) (a) 1960—62 (modified in 62). (b) No. (c) Nil. (v) N.A. (vi) Nil. (vii) Error variances are heterogeneous and Treatments × years interaction is absent.

5. RESULTS :

60(22)

(i) 1567 Kg/ha. (ii) 102·9 Kg/ha. (iii) Main effects of M and T and M×T interaction are highly significant. (iv) Av. yield of grain in Kg/ha.

	T_1	T_2	T_3	Mean
M_1	1243	1467	1414	1375
M_2	1450	1579	2250	1760
Mean	1346	1523	1832	1567

C.D. for T marginal means=109·7 Kg/ha.
C.D. for M marginal means=89·5 Kg/ha.
C.D for body of table =154·9 Kg/ha.

61(71)

(i) 2201 Kg/ha. (ii) 205·7 Kg ha. (iii) Main effects of T and M are highly significant. Interaction T×M is significant. (iv) Av. yield of grain in Kg ha.

	T_1	T_2	T_3	Mean
M_1	1887	2182	2064	2044
M_2	2123	2241	2712	2359
Mean	2005	2211	2388	2201

C.D. for T marginal means=219·0 Kg/ha.
C.D. for M marginal means=179 0 Kg/ha.
C.D. for body of table =309·7 Kg/ha.

Crop :- Ragi (*Kharif*). **Ref :- Ms. 62(49).**

Site :- Agri. Res. Stn., Hebbal. **Type :- 'M'.**

Object : - To find out suitable time and method of application of fertilizers to *Ragi* crop under rainfed conditions.

1. BASAL CONDITIONS :

(i) (a) *Ragi* after *Ragi*. (b) *Ragi*. (c) 33·6 Kg/ha. of N+22·4 Kg/ha. of P_2O_5+73·3 Q/ha. of compost. (ii) Sandy soil. (iii) 4.8 62. (iv) (a) 3 ploughings with M.B. plough. Passing K.M. cultivator twice and passing halube twice. (b) Drilling. (c) 6 to 7 Kg/ha. (d) 30 cm.×15 cm. (e) N.A. (v) 33·6 Kg/ha. of N+22·4 Kg ha. of P_2O_5+75·3 Q/ha. of compost. (vi) H-22 (medium and late). (vii) Unirrigated. (viii) Passing with chippa kunti. 3 weedings. (ix) 67 cm. (x) 19.12.62.

2. TREATMENTS :

Same as in Expt. No. 60(22) on page 263.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 6. (b) 28·0 m.×21·9 m. (iii) 4. (iv) (a) 14·0 m.×7·3 m. (b) 13·7 m.×7·0 m. (v) 15 cm.×15 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Height of mothes shoot, no. of tilliers and yield of grain. (iv) (a) 1960—1962 (modified in1962). (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1018 Kg/ha. (ii) 75·3 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	Mean
M_1	936	988	910	945
M_2	1040	1144	1092	1092
Mean	988	1066	1001	1018

C.D. for M marginal means=65·5 Kg/ha.

Crop :- Ragi. **Ref :- Ms. 64(163), 64(162).**

Site :- Agri. Res. Stn., Hiriyur. **Type :- 'M'.**

Object :— To study the effect of N, P and K on the yield of dry land Ragi.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Black soil. (iii) 26.7.64 ; 14.8.64. (iv) (a) 3 ploughing. (b) Drill sown—Transplanted. (c) 5 to 6 Kg/ha. (d) 23 cm. between rows. (e) Nil. (v) 5 C.L./ha. of compost or F.Y.M. (vi) H 22 ; Poorna. (vii) Unirrigated. (viii) Weeding and harrowing. (ix) 37·3 cm. (x) 28.11.64, 19.11.64.

2. TREATMENTS :

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

(1) 3 levels of N : N_0=0, N_1=33·6 and N_2=67·3 Kg./ha.

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

(3) 3 levels of K_2O : 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) 2. (iv) (a) 9·8 m.×6·4 m. (b) 7·9 m.×5·2 m. (v) and (vi) Yes.

4. GENERAL :

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

5. RESULTS :

64(163)

(i) 696 Kg/ha. (ii) 148·3 Kg/ha. (iii) Main effects of N and K are highly significant. 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	439	394	504	558	382	396	446
N_1	627	775	657	797	630	633	687
N_2	964	956	945	1066	947	852	955
Mean	677	708	702	807	653	627	696
K_0	686	862	873				
K_1	763	618	579				
K_2	581	645	655				

C.D. for N or K marginal means=102·4 Kg/ha.
C.D. for body of N×K table=177·5 Kg/ha.

64(162)

(i) 695 Kg/ha. (ii) 166·4 Kg/ha. (iii) Main effects of N, K and interaction N×K are significant. (iv) Av. yield of grain in Kg/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	576	556	552	772	524	387	561
N_1	756	671	724	781	656	715	717
N_2	722	913	787	892	734	796	807
Mean	685	713	688	815	638	633	695
K_0	989	781	675				
K_1	467	666	781				
K_2	598	693	607				

C.D. for N or K marginal means=115·0 Kg/ha.
C.D. for body of N×K table=199·2 Kg/ha.

Crop :- Ragi. **Ref :- Ms. 63(200), 64(159), 65(50).**

Site :- Agri. Res. Stn., Hiviyur. **Type :- 'M'.**

Object :— To study the effect of N, P and K on Ragi under irrigated conditions.

1. BASAL CONDITIONS :

(i) (a) N.A. for 63 and 64 ; Napier grass—Paddy—*Ragi* for 65. (b) N.A. for 63 and 64 ; Paddy for 65. (c) N.A. for 63 and 64 ; 67·2 Kg/ha. of N+33·6 Kg/ha. of P_2O_5+33·6 Kg/ha. of K_2O. (ii) Black soil. (iii) N.A. ; 28.2.64 ; 4.4.65. (iv) (a) 3 ploughings for 63 and 64 ; 3 ploughings, 2 harrowings and passing cultivator once for 65. (b) Transplanting. (c) 11 to 13 Kg/ha. for 63 and 64 ; 7 Kg/ha. for 65, (d) 23 cm. between rows for 63 ahd 64 ; 23 cm.×10 cm. for 65. (e) N.A. (v) 12·4 C.L./ha. of F.Y.M. (vi) Poorna. (vii) Irrigated. (viii) Weeding and interculturing. (ix) 11·2 cm. ; 2·8 cm. ; 4·5 cm. (x) N.A. ; 20.5.64 ; 21.6.65 and 8.7.65.

2. TREATMENTS :

All combinations of (1), (2) and (3).
(1) 3 levels of N : N_0=0, N_1=33·6 and N_2=67·2 Kg/ha.
(2) 3 levels of P_2O_5 : P_0=0, P_1=22·4 and P_2=44·8 Kg/ha.
(3) 3 levels of K_2O : 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) 2. (iv) (a) 9·8 m.×6·4 m. (b) 7·9 m.×5·2 m. (v) 4 rows. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (b) Nil. (iii) Yield of grain. (iv) (a) 1963—66. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

63(200)

(i) 704 Kg/ha, (ii) 183·2 Kg/ha. (iii) Main effect of N 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	521	698	579	612	615	572	600
N_1	711	817	679	763	753	691	736
N_2	802	658	870	745	853	731	777
Mean	678	724	709	707	741	664	704
K_0	638	753	730				
K_1	743	719	760				
K_2	654	702	638				

C.D. for N marginal means=126·6 Kg/ha.

64(159)

(i) 2305 Kg/ha. (ii) 238·4 Kg/ha. (iii) Main effects of N, P and K 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	2329	1939	1840	1657	1879	2571	2036
N_1	2632	2084	2120	1889	2160	2786	2278
N_2	2935	2555	2313	2087	2582	3134	2601
Mean	2632	2193	2091	1877	2207	2831	2305
K_0	2220	1788	1624				
K_1	2450	2124	2047				
K_2	3225	2664	2602				

C.D. for N, P or K marginal means=164·8 Kg/ha.

65(50)

(i) 1921 Kg/ha. (ii) 292·6 Kg/ha. (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	1691	1651	1590	1549	1803	1580	1644
N_1	2092	1775	1909	2010	1876	1890	1925
N_2	2162	2114	2308	2100	2208	2275	2194
Mean	1982	1846	1936	1886	1962	1915	1921
K_0	1997	1742	1920				
K_1	2054	1808	2024				
K_2	1893	1989	1862				

C.D, for N marginal means=202·3 Kg/ha.

Crop :- Ragi (*Rabi*). **Ref. :- Ms. 62, 63 (S.F.T.).**

Site :- (District) : Mysore. **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 sandy. (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 =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 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 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) to (iii) N.A. (iv) (a) 1962 to 1966 [1964 and 1965 N.A.]. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

62(S.F.T.)

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.	224	288	407	540	573	308	937	140·2

Control yield=1130 Kg/ha. ; No. of trials=5.

63(S.F.T.)

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.	14	21	16	72	79	92	102	12·6

Control yield=245 Kg/ha. ; No. of trials=3.

———

Crop :- Ragi (*Kharif*). **Ref :- Ms. 64,65(S.F.T.) for Mandya and Mysore and 64 (S.F.T.) for others.**

Site :- (District) : Banglore, Hassan, Mandya, Mysore, N. Kanara and Shimoga. **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) N.A. (ii) Red loamy for Banglore, Laterite for N. Kanara and Red sandy 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 (Rabi Irrigated) on page 268.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1964 to 1966 for Mandya and Mysore ; 1964 only for Shimoga ; 1964 to 1966 [1965 N.A.] for others. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

Banglore

64(S.F.T.)

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.	262	485	239	656	621	820	903	106·9

Control yield=1969 Kg/ha. ; No. of trials=18.

Hassan

64(S.F.T.)

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.	—47	162	—58	81	352	441	342	73·2

Control yield=1140 Kg/ha.; No. of trials=4.

Mandya

64(S.F.T.)

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.	469	389	329	498	518	407	630	190·8

Control yield=2854 Kg/ha. ; No. of trials=7.

65(S.F.T.)

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	400	150	275	475	750	600	95·0

Control yield=2025 Kg/ha. ; No. of trials=3.

Mysore

64(S.F.T.)

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.	—367	—320	—469	—282	—232	—161	7	184·3

Control yield=1630 Kg/ha. ; No. of trials=9.

65(S.F.T.)

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	400	400	400	820	640	1080	0·0

Control yield=2609 Kg/ha. ; No. of trials=1.

N. Kanara

64(S.F.T.)

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.	256	434	336	553	474	948	1067	0·0

Control yield=2609 Kg/ha. ; No. of trials=1.

Shimoga

64(S.F.T.)

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.	131	271	158	372	382	692	635	120·0

Control yield=591 Kg/ha. ; No. of trials=3.

Crop :- Ragi (*Rabi*). **Ref :- Ms. 62, 63 (S.F.T.).**

Site :- (District) : Mysore. **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 others nutrients.

1. BASAL CONDITIONS :

(i) N.A. (ii) Red sandy. (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 =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+ 70Kg/ha. of P_2O_5.
$N_2P_2K_2$=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 (Rabi) on page 268.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1962 to 1963. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

62(S.F.T.)

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.	415	676	764	994	691	972	1117	280·5

Control yield=880 Kg/ha ; No. of trials=4.

63(S.F.T.)

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.	20	25	23	57	57	63	81	10·0

Control yield=256 Kg/ha ; No. of trials=3.

Crop :- Ragi (*Kharif*). **Ref :- Ms. 64, 65 (S.F.T.) for Mandya, 64(S.F.T.) for Banglore, Hassan Mysore and Shimoga.**

Site :- (District) : Banglore, Hassan, Mandya, Mysore and Shimoga. **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) N.A. (ii) Red loamy for Banglore and Red sandy for others. (iii) to (vi) N.A. (vii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS and 3. DESIGN :

Same as Type A_2 (Rabi) on page 270.

4. GENERAL :

(i) to (iii) N A. (iv) 1964 only for Shimoga ; 1964 to 1966 [1965 N.A. for Banglore and Hassan] for others. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

Banglore

62(S.F.T.)

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.	233	65	331	361	558	818	957	159·0

Control yield=1951 Kg/ha ; No. of trials=17.

Hassan

64(S.F.T.)

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.	90	153	181	127	336	404	553	60·7

Control yield=1009 Kg/ha ; No. of trials=9.

Mandya

64(S.F.T.)

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.	247	247	420	333	494	599	728	91·0

Control yield=3162 Kg/ha. ; No. of trials=6.

65(S.F.T.)

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	0	275	100	250	400	450	103·9

Control yield= 1800 Kg/ha. ; No. of trials=2.

Mysore

64(S.F.T.)

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.	331	247	327	479	535	668	878	72·8

Control yield=1023 Kg/ha. ; No. of trials=9.

Shimoga

64(S.F.T.)

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.	95	87	135	351	469	570	616	72·3

Control yield=617 Kg/ha. ; No. of trials=3.

Crop :- Ragi (*Rabi*). **Ref :- Ms. 62, 63 (S.F.T.)**

Site :- (District) : Mysore. **Type :- 'M'.**

Gbject:—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) N.A. (ii) Red sandy. (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 =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 P_2O_5+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.
N applied as A/S, P_2O_5 as Super and K_2O as Mur. Pot.

3. DESIGN :

Same as in Type A_1 (Rabi) on page 268.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1962 to 1963. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

62(S.F.T.)

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.	225	372	203	628	557	873	1078	102·5

Control yield=639 Kg/ha. ; No. of trials=5.

63(S.F.T.)

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.	21	15	15	68	66	74	75	11·5

Control yield=259 Kg/ha. ; No. of trials=3.

Crop :- Ragi (*Kharif*). **Ref :- Ms. 64 (S.F.T.) Banglore, Mysore, Hassan and Shimoga and 64, 65 (S.F.T.) for Mandya.**

Site :- (District) : Banglore, Hassan, Mandya, Mysore and Shimoga. **Type :- 'M'.**

Object :—Type$_3$: 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) N.A. (ii) Red loamy for Banglore and Red sandy for others. (iii) to (vi) N.A. (vii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS and 3. DESIGN :

Same as Type A_3 (Rabi) on page 272.

4. GENERAL :

(i) to (iii) N.A. (iv) 1964—only for Shimoga ; 1964 to 1965 [1965 N.A.] for Mysore; 1964 to 1966 [1965 N.A. for Banglore and Hassan] for others. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

Banglore

64(S.F.T.)

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.	265	220	239	418	504	665	728	88·9

Control yield=1898 Kg/ha. ; No. of trials=18.

Hassan

64(S.F.T.)

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.	96	198	63	188	206	300	168	48·2

Control yield=964 Kg/ha. ; No. of trials=4.

Mandya

64(S.F.T.)

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.	329	222	300	325	564	477	636	106·7

Control yield=3377 Kg/ha. ; No. of trials=7.

65(S.F.T.)

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	300	233	733	366	533	900	161·9

Control yield=2233 Kg/ha. ; No. of trials=3.

Mysore

64(S.F.T.)

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.	77	—48	—77	201	148	304	511	50·0

Control yield=1269 Kg/ha. ; No. of trials=9.

Shimoga

64(S.F.T.)

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.	141	—7	132	322	266	467	630	177·8

Control yield=524 Kg/ha. ; No. of trials=3.

Crop :- Ragi (*Kharif*). **Ref :- Ms. 61(66).**

Site :- Agri. College, Hebbal. **Type :- 'C'.**

Object .—To find out which of the green manure crop when ploughed in *situ* would give the highest yield.

1. BASAL CONDITIONS :

(i) (a) No. (b) *Ragi*. (c) 14·8 C.L./ha. of Compost. (ii) N.A. (iii) 4.8.61. (iv) (a) 3 ploughings, harrowings, sowing G.M. (b) Drilling. (c) 7 Kg/ha. (d) 25 cm. between rows. (e) Nil. (v) 112·1 Kg/ha. of P_2O_5 as Super applied to G.M. crop as basal dose. (vi) H—22 (late). (vii) Unirrigated. (viii) and (ix) N.A. (x) 22.12.61.

2. TREATMENTS :

4 previous crops : T_1=*Ragi*, T_2=*Sunhemp*, T_3=Green Gram and T_4=Horse Gram.
G.M. crop sown on 9.6.61 and ploughed in 17.7.61.

3. DESIGN ;

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 7·6 m.×20·1 [illegible]. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Stunted growth. (ii) No. (iii) Grain yield, height and tiller counts. (iv) (a) 1961 only. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Expt. failed in 1962.

5. RESULTS :

(i) 775 Kg/ha. (ii) 100·8 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	749	798	773	778

Crop :- Ragi (*Kharif*). **Ref :- Ms. 60(18), 61(70).**

Site :- Agri. Res. Stn., Hebbal. **Type :- 'C'.**

Object :—To find out suitable rotational crop in the cultivation of *Ragi* under rainfed conditions.

1. BASAL CONDITIONS :

(i) (a) As per treatments. (b) *Ragi.* (c) 9·9 C.L./ha. of Compost. (ii) Sandy loam. (iii) 7.7.60; 13.7.61. (iv) (a) Ploughings and harrowings. (b) Drilled. (c) 7 Kg/ha. (d) 23 cm. × 10 cm. in 60(18); 25 cm. between rows in 61(70). (e) N.A. (v) 100 Q/ha. of Compost + 22 Kg/ha. of N + 27 Kg/ha. of P_2O_5. (vi) H—22. (vii) Unirrigated. (viii) Intercultivation and weeding. (ix) 43 cm.; 72 cm. (x) 16.11.60 to 24.2.61; 29.11.61.

2. TREATMENTS :

6 previous crops : T_1=*Ragi*, T_2=Groundnut, T_3=Red gram, T_4=Dalichos lab-lab, T_5=Castor and T_6=Niger.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 11·0 m. × 5·9 m. ; 10·1 m. × 5·0 m. (b) 10.1 m. × 5·0 m. ; 9·6 m. × 4·6 m. (v) 46 cm. × 46 cm. ; 23 cm. × 23 cm. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Yield of grain. (iv) (a) 1960—61. (b) No. (c) As under 5. Results. (v) and (vi) Nil. (vii) Error variances are heterogeneous and Treatments × years interaction is present.

5. RESULTS :

(i) 1824 Kg/ha. (ii) 1097·5 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_1	T_2	T_3	T_4	T_5	T_6
Av. yield	2291	2105	1618	1520	1652	1759

Years	T_1	T_2	T_3	T_4	T_5	T_6	Sig.	G.M.	S.E./plot
1960	1883	807	740	370	247	359	**	734	95·0
1961	2699	3403	2495	2671	3058	3155	**	2914	322·2
Pooled	2291	2105	1618	1520	1652	1759	**	1824	1097·5

Crop :- Ragi (*Kharif*). **Ref :- Ms. 61(68), 62(50).**

Site :- Agri. Res. Stn., Hebbal. **Type :- 'C'.**

Object :—To find out the advantages of transplanting over drilling of *Ragi.*

1. BASAL CONDITIONS :

(i) (a) *Ragi—Ragi.* (b) *Ragi.* (c) 7·4 C.L./ha. of Compost for 61(68), 75·3 Q/ha. of Compost + 16·8 Kg/ha. of N + 16·8 Kg/ha. of P_2O_5 in 62(50). (ii) Sandy soil. (iii) 17.7.61/16.8.61; 4.8.62/7.9.62. (iv) (a) 3 ploughings. (b) As per treatments. (c) 6 to 7 Kg/ha. (d) 30 cm. × 15 cm. (e) N.A. (v) 75·3 Q/ha. of Compost + 16·8 Kg/ha. of K_2O. (vi) H—22. (vii) Unirrigated. (viii) 2 to 3 weedings and thinning. (ix) 72 cm.; 67 cm. (x) 4.12.61; 12.12.62.

2. TREATMENTS :

2 methods of sowing : M_1=Sowing through the drill and M_2=Transplanting.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 6. (iv) (a) 12·8 m.×4·6 m. (b) 12·5 m.×4·3 m. (v) 15 cm.×15 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of grain. (iv) 1961–62. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Error variances are homogeneous and Treatments×years interaction is absent.

5. RESULTS :

(i) 1122 Kg/ha. (ii) 156·1 Kg/ha. (based on 11 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	M_1	M_2
Av. yield	832	1413

C.D.=140·3 Kg/ha.

Years	M_1	M_2	Sig.	G.M.	S.E./plot
1961	1007	1701	**	1354	138·0
1962	656	1125	**	891	139·1
Pooled	832	1413	**	1122	156·1

Crop :- Ragi (*Kharif*). **Ref :- Ms. 62(45).**

Site :- Agri. Res. Stn., Hebbal. **Type :- 'C'.**

Object :—To study the advantages of drilling vs. broadcasting of *Ragi* under rainfed conditions.

1. BASAL CONDITIONS :

(i) (a) *Ragi—Ragi*. (b) *Ragi*. (c) 75·3 Q/ha. of Compost+16·8 Kg/ha. of N+16·8 Kg/ha. of P_2O_5 applied before sowing. (ii) Sandy soil. (iii) 4.8.62. (iv) (a) 3 ploughings (M.B. plough), 2 harrowing and passing brush harrows after sowing of seeds. (b) As per treatments. (c) 7 Kg/ha. (d) 30 cm. between rows (in case of drilling). (e) N.A. (v) 75·3 Q/ha. of Compost+16·8 Kg/ha. of N+16·8 Kg/ha. of P_2O_5. (vi) H—22. (vii) Unirrigated. (viii) Thinning of crops after 20 days of sowing and 2 weedings. (ix) 67 cm. (x) 12.12.62.

2. TREATMENTS :

2 methods of sowing : M_1=Broadcasting and M_2=Drilling.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) 12·8 m.×9·1 m. (iii) 6. (iv) (a) 12·8 m.×4·6 m. (b) 12·5 m.×4·3 m. (v) 15 cm. ×15 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1962 only. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 656 Kg/ha. (ii) 90·7 Kg/ha. (iii) Treatment difference is not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	M_1	M_2
Av. yield	594	719

Crop :- Ragi (*Kharif*). **Ref :- Ms. 62(51), 63(43).**

Site :- Agri. Res. Stn., Hebbal. **Type :- 'C'.**

Object :— To find out the optimum number of ploughing and harrowing as preparative cultivation for *Ragi*.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Ragi* ; Groundnut. (c) N.A. (ii) Red sandy loam. (iii) 31.7.62 ; 16.7.63. (iv) (a) As per treatments. (b) Drilling. (c) 6 to 7 Kg/ha. (d) 30 cm.×15 cm. (e) N.A. (v) 100·4 Q/ha. of compost+ 22·4 Kg/ha. of N+22·4 Kg/ha. of P_2O_5+22·4 Kg/ha. of K_2O. (vi) H-22 (late). (vii) Unirrigated. (viii) 2 hand weedings and gap filling. (ix) 65 cm. ; 58 cm. (x) 24.12.62 ; 5.12.63.

2. TREATMENTS :

6 numbers of ploughings and harrowings : T_1=2, T_2=3, T_3=4, T_4=5, T_5=6 and T_6=7.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 5. (iv) (a) and (b) 5·0 m.×20·1 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Tiller counts and yield of grain. (iv) (a) 1962—1963. (b) No. (c) As under 5. Results. (v) and (vi) Nil. (vii) Error variances are homogeneous and Treatments×years interaction is present.

5. RESULTS :

(i) 1332 Kg/ha. (ii) 542·8 Kg/ha. (based an 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_1	T_2	T_3	T_4	T_5	T_6
Av. yield	1311	1354	1190	1346	1442	1346

Years	T_1	T_2	T_3	T_4	T_5	T_6	Sig.	G.M.	S.E./plot
1962	1315	1355	1353	1509	1797	1757	**	1514	111·4
1963	1307	1352	1027	1183	1087	935	N.S.	1149	130·6
Pooled	1311	1354	1190	1346	1442	1346	N.S.	1332	542·8

Crop :- Ragi. **Ref :- Ms. 60(19), 61(55).**

Site :- Agri. Res. Stn., Hebbal. **Type :- 'C'.**

Object :— To find the suitable sowing date for *Ragi*.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Ragi*. (c) 9·9 C.L./ha. of F.Y.M. or compost. (ii) Sandy loam. (iii) As per treatments. (iv) (a) 4 ploughings. (b) Drilling. (c) 6 to 7 Kg/ha. (d) 30 cm.×15 cm. (e) N.A. (v) 9·9 C.L./ha. of compost for 60(19). 7·4 C.L./ha. of compost+22·4 Kg/ha. of N as A/S+13·4 Kg/ha. of P_2O_5 as Super for 61(55). (vi) H-22. (vii) Unirrigated. (viii) Intercultivation and weeding. (ix) 57 cm. ; 72 cm. (x) Nov. 1960 to Jan. 1961 ; N.A.

2. TREATMENTS :

4 dates of dowing : D_1=2nd fortnight of June, D_2=1st fortnight of July, D_3=2nd fortnight of July and D_4=1st fortnight of August.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 3 for 60(19) ; 4 for 61(55). (iv) (a) and (b) 11·0 m.×5·5 m. for 60(19) ; 29·3 m.×5·2 m. for 61(55). (v) Nil. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of grain. (iv) (a) 1959—1961 (1959 N.A.). (b) No. (c) As under 5. Results. (v) and (vi) Nil. (vii) Error variances are homogeneous and Treatments×years interaction is present.

5. RESULTS :

(i) 1203 Kg/ha. (ii) 461·0 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	D_1	D_2	D_3	D_4
Av. yield	1196	1325	1400	890

Years	D_1	D_2	D_3	D_4	Sig.	G.M.	S.E./plot
1960	422	331	437	332	N.S.	380	62·6
1961	1777	2070	2122	1308	**	1819	129·4
Pooled	1196	1325	1400	890	N.S.	1203	461·0

Crop :- Ragi (*Kharif*). **Ref :- Ms. 60(21), 61(53).**

Site :- Agri. Res. Stn., Hebbal. **Type :- 'CMV'.**

Object :— To find out the merits of improved vs. local method of *Ragi* cultivation in dry lands.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Ragi*. (c) N.A. (ii) Red sandy loam. (iii) 27.6.60 ; 2.7.61. (iv) (a) 3 to 4 ploughings and 2 harrowings. (b) Seed drill. (c) 6 to 7 Kg/ha. (d) 30 cm.×15 cm. (e) N.A. (v) 9·9 C.L./ha. of compost broadcasted and covered by working country plough. (vi) H-22 (medium). (vii) Unirrigated. (viii) As per treatments. (ix) 43 cm. ; 72 cm. (x) 12.10.60 ; 28.11.61.

2. TREATMENTS :

2 methods of *Ragi* cultivation : M_1=Local method and M_2=Intensive method.

Local Method : (a) Local variety. (b) No seed treatment. (c) Thinning with *kunta*. (d) No fertiliser. (e) Intercultivation by *kunta* as locally done.

Intensive Method : (a) Improved variety H-22. (b) Seed treatment. (c) Thinning out to 15 cm. along the line and 30 cm. between lines. (d) Fertilisers at 62·8 Kg/ha. of P_2O_5+22·4 Kg/ha. of N. (e) Intercultivation once in a week a minimum of 4 and 2 hand weeding. (f) Proper control of diseases in time.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 6 for 60(21) and 12 for 61(53). (iv) (a) 11·0 m.×5·9 m. (b) 10·1 m.×5·0 m. (vi) 46 cm.×46 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Tiller counts, height measurements and yield of grain. (iv) (a) 1959—1961 (failed in 1959). (b) Yes. (c) As under 5. Results. (v) and (vi) Nil. (vii) Error variances are homogeneous and Treatments × years interaction is present.

5. RESULTS :

(i) 2268 Kg/ha. (ii) 732·5 Kg/ha. (based on 1 d.f. made up of Treatments × years interaction). (iii) Treatment difference is not significant. (iv) Av. yield of grain Kg/ha.

Treatment	M_1	M_2
Av. yield	1908	2627

	M_1	M_2	Sig.	G.M.	S.E./plot.
1960	1973	2347	**	2160	146·9
1961	1875	2767	**	2321	277·9
Pooled	1908	2627	N.S.	2268	732·5

Crop :- Ragi (*Kharif*). **Ref :- Ms. 63(47).**

Site :- Agri. Res. Stn., Hebbal. **Type :- 'D'.**

Object :— To find out the most suitable chemical method of weed control in Ragi.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Ragi.* (c) 100·4 Q/ha. of compost+22·4 Kg/ha. of N+22·4 Kg/ha. of P_2O_5. (ii) Red sandy soil. (iii) 12.8.63. (iv) (a) N.A. (b) Dibbling. (c) 6 to 7 Kg/ha. (d) 30 cm. × 15cm. (e) N.A. (v) 19·8 C.L./ha. of compost+33·6 Kg/ha. of N+33·6 Kg/ha. of P_2O_5+11·2 Kg/ha. of K_2O. (vi) H-22. (vii) Unirrigated. (viii) Thinning, gap filling and weeding. (ix) 54 cm. (ix) 21.12.63.

2. TREATMENTS :

7 chemical treatments : T_0=Control (No spray), T_1=1·7 Kg. acid equivalent of 2, 4-D/ha as pre emergence spraying, T_2=1·7 Kg. acid equivalent of 2, 4-D/ha as post emergence spraying, T_3=1·7 Kg. acid equivalent of 2, 4-D/ha. as both pre and post emergence spraying. T_4=1·7 Kg. active ingredients of stem F-34/ha. as pre emergence spraying, T_5=1·7 Kg. active ingredients of stem F-34/ha. as post emergence spraying, T_6=1·7 Kg. active ingredients of stem F-34/ha. as post and pre emergence spraying.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) and (b) 6·7 m. × 5·5 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Fair. Lodging in 2-4-D treated plots. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1963. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 803 Kg/ha. (ii) 580·3 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
Av. yield	994	382	784	698	842	1014	908

C.D.=862·2 Kg/ha.

Crop :- Korra (*Rabi*). **Ref :- Ms. 63(186), 64(152).**

Site :- Soil Conservation Res. Stn., Bellary. **Type :- 'M'.**

Object :—To evaluate the response to the application of spartin B, a synthetic mixture of micronutrients (for alkaline soils) under rainfed conditions.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar—Korra*. (c) Nil; As per treatments. (ii) Deep black cotton soils. (iii) 18.8.63; 18.6.64. (iv) (a) Light harrowing. (b) Sowing through the seed dibblers. (c) 3 Kg/ha. (d) 30 cm. × 15 cm. (e) 1. (v) As per treatments. (vi) *Hagari*—2 (medium). (vii) Unirrigated. (viii) Weeding and hoeing. (ix) 18 cm.; 37 cm. (x) 22.11.63 ; 28.10.64.

2. TREATMENTS :

All combinations of (1) and (2)+2 extra treatments

(1) 2 levels of manures : M_1=5600 Kg/ha. of F.Y.M. and M_2=22·5 Kg/ha of N as A/S+45 Kg/ha. of P_2O_5 as Super.

(2) 2 levels of Spartin B : L_0=0 and L_1=370 Kg/ha.

T_0=Control, T_1=5600 Kg/ha. of F.Y.M.+22·5 Kg/ha. of N as A/S+45 Kg/ha. of P_2O_5 as Super+370 Kg/ha. of Spartin B.

Spartin B is a synthetic mixture of micronutrients for alkaline soils.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 6. (b) 21·9 m. × 11·0m. (iii) 4. (iv) (a) 7·3 m. × 5·5 m. (b) 6·7 m. × 4·9 m. (v) 30 cm. × 30 cm. (vi) Yes.

4, GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Height, tiller count etc. and yield of grain. (iv) (a) 1963—64. (b) Yes. (c) Nil. (v) and (vi) Nil. (vii) Error variances are heterogeneous and Treatments × years interaction is absent.

5. RESULTS :

63(186)

(i) 432 Kg/ha. (ii) 34·2 Kg/ha. (iii) M effect is highly significant. T_0 vs. T_1 is highly significant. (iv) Av. yield in Kg/ha.

T_0=227 Kg/ha., T_1=643 Kg/ha.

	M_1	M_2	Mean
L_0	320	535	428
L_1	301	563	432
Mean	310	549	430

C.D. for M marginal means=36·4 Kg/ha.

64(152)

(i) 537 Kg/ha. (ii) 72·7 Kg/ha. (iii) M effect is highly significant. T_0 vs. T_1 is highly significant. (iv) Av. yield of grain in Kg/ha.

T_0=294 Kg/ha., T_1=738 Kg/ha.

	M_1	M_2	Mean
L_0	443	625	534
L_1	508	612	560
Mean	476	618	547

C.D. for M marginal means=77·4 Kg/ha.

Crop :- Korra. **Ref :- Ms. 60(13).**

Site :- Soil Conservation Res. Stn., Bellary. **Type :- 'M'.**

Object :—To find out the optimum dose of N and P for *Korra*.

1. BASAL CONDITIONS :

(i) (a) to (c) Nil, (ii) Black cotton soil. (iii) 26.9.60. (iv) (a) Harrowing. (b) Drilling. (c) 3 Kg/ha. (d) 30 cm. between rows. (e) N.A. (v) 80·7 Kg/ha. of A/S+161·4 Kg/ha. of Super. (vi) H—2. (vii) Unirrigated. (viii) Interculturing and stirring well. (ix) 31 cm. (x) 7.1.61.

2. TREATMENTS :

All combinations of (1) and (2)

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

(2) 4 levels of P_2O_5 : P_0=0, P_1=22·4, P_2=44·8 and P_3=112·1 Kg/ha.

3. DESIGN :

(i) Fact in R.B.D. (ii) (a) 12. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 1/179 ha. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Grain yield. (iv) (a) 1957—60. (b) N.A. (c) Nil. (v) and (vi) Nil. (vii) The crop could not be sown in 59 due to non availability of rain.

5. RESULTS :

(i) 127 Kg/ha. (ii) 26·7 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	P_0	P_1	P_2	P_3	Mean
N_0	141	156	130	73	125
N_1	125	125	151	118	128
N_2	127	117	129	137	128
Mean	131	133	140	107	127

Crop :- Korra. **Ref :- Ms. 62(208).**

Site :- Soil Conservation Res. Stn., Bellary. **Type :- 'M'.**

Object :—To find out the optimum dose of N and P for economic return.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Deep black cotton soils. (iii) 1.9.62. (iv) (a) Light harrowing twice. (b) Sowing through seed drill. (c) 4 Kg/ha. (d) 30 cm. between rows. (e) N.A. (v) As per treatments. (vi) *Hagari*—2 (medium). (vii) Unirrigated. (viii) Hand weeding. (ix) 30 cm. (x) 12.12.62.

2. TREATMENTS :

All combinations of (1) and (2)

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

(2) 4 levels of P_2O_5 : P_0=0, P_1=22·4, P_2=44·8 and P_3=112·0 Kg/ha.

3. DESIGN :

(i) Randomised scattard block design. (ii) (a) 12. (b) 38·4 m.×25·6 m, (iii) 3. (iv) (a) 38·4 m.× 2·1 m. or 25·6 m.×3·2 m. (b) 55·6 sq. m. (v) 2 rows on each side. (vi) Yes.

4. GENERAL :

(i) Better and healthier growth of the crop was noticed in plots with N and P comb ... Nil. (iii) Height, tiller count and yield. (iv) (a) 1962 only. (b) No. (c) Nil. (v) to (vii) Nil

5. RESULTS :

(i) 420 Kg/ha. (ii) 44·2 Kg/ha. (iii) No effect is significant. (iv) Av. yield of grain in Kg/ha.

	P_0	P_1	P_2	P_3	Mean
N_0	347	468	382	507	426
N_1	269	439	498	537	436
N_2	260	399	443	487	397
Mean	292	435	441	510	420

Crop :- Korra. **Ref :- Ms. 63(38), 64(27).**

Site :- Agri. Res. Stn., Sirugappa. **Type :- 'M'.**

Object :—To find out the optimum dose of N,P, K to *Novane* crop to get the maximum yield under T.B.P.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Korra*. (b) Cotton. (c) 125·6 Q/ha. of F.Y.M.+44·8 Kg/ha. of N as A/S for 63(38), 125·6 Q/ha. of F.Y.M.+44·8 Kg/ha. of N as A/S+22·4 Kg/ha. of P_2O_5 for 64(27). (ii) Black cotton soil. (iii) 20.6.63; 30.6.64. (iv) (a) 1 ploughing and 2 harrowings. (b) Dibbling. (c) 2 to 4 Kg/ha. (d) 30 cm. between rows. (e) 1. (v) 125·6 Q/ha. of F.Y.M. (vi) N—1 (medium). (vii) Irrigated. (viii) 2 hand weedings and working junior hoe once. (ix) 41 cm.; 58 cm. (x) 1.10.63; 22.10.64.

2. TREATMENTS :

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

(1) 3 levels of N as A/S : N_0=0, N_1=33·6 and N_2=67·2 Kg/ha.

(2) 3 levels of P_2O_5 as Super : P_0=0, P_1=33·6 and P_2=67·2 Kg/ha.

(3) 3 levels of K_2O as Mur. Pot. : K_0=0 K_1=33·6 and K_2=67·2 Kg/ha.

Manures applied by hand in lines before sowing.

3. DESIGN :

(i) 3^3 confd. (ii) (a) 9 plots/block; 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 1/165 ha.; 1/198 ha. (b) 1/247 ha. (v) 1 row on either side. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) No. of tillers, length of earhead and height of plants and yield of grain. (iv) (a) 1963—64. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Error variances are heterogeneous and Treatments × years interaction is absent.

5. RESULTS :

63(38)

(i) 2111 Kg/ha. (ii) 298·1 Kg/ha. (iii) Main effects of N and P are significant. (iv) Av. yield of grain in Kg/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	1550	1734	1501	1664	1562	1559	1595
N_1	2125	2181	2136	2231	2249	1962	2147
N_2	2226	2748	2795	2422	2721	2626	2590
Mean	1967	2221	2144	2106	2177	2049	2111
K_0	1992	2103	2222				
K_1	1928	2474	2130				
K_2	1981	2086	2080				

C.D. for N or P marginal means=205·8 Kg/ha.

64(27)

(i) 820 Kg/ha. (ii) 89·6 Kg/ha. (iii) Main effects of N, K and N×P interaction are significant. (iv) Av. yield of grain in Kg/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	552	644	534	546	666	518	577
N_1	882	763	817	762	864	836	821
N_2	968	1116	1103	1036	1073	1078	1062
Mean	801	841	818	781	868	811	820
K_0	740	790	814				
K_1	861	866	876				
K_2	808	867	764				

C.D. for N or K marginal means=61·1 Kg/ha.
C.D. for body of N×P table =106·8 Kg/ha.

Crop :- Gram (*Rabi*). **Ref :- Ms. 60(126).**

Site :- Agri. Res. Stn., Bijapur. **Type :- 'CV'.**

Object :— To find out most suitable spacing for different varieties of Gram.

1. BASAL CONDITIONS :

(i) (a) Wheat—Gram. (b) Wheat. (c) 9·9 C.L./ha. of F.Y.M. (ii) Deep black. (iii) 12.10.60. (iv) (a) Ploughing and harrowing. (b) Hand dibbling. (c) N.A. (d) As per treatments. (e) N.A. (v) Nil. (vi) As per treatments. (vii) Unirrigated. (viii) Interculturing and hand weeding. (ix) 65 cm. (x) 28.2.61.

2. TREATMENTS :

Main-plot treatments :

3 spacing between lines : S_1=30 cm., S_2=37 cm. and S_3=46 cm.

Sub-plot treatments :

3 varieties : V_1=*Chafa*, V_2=Badaehana and V_3=N—1.

Sub-sub-plot treatments :

3 spacing between plants : P_1=6 cm., P_2=15 cm. and P_3=20 cm.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication, 3 sub-plots main plot and 3 sub-sub plots/sub-plot. (b) N.A. (iii) 4. (iv) (a) 7·3 m.×6·1 m. (b) 4·6 m.×1·8 m. (v) 2 border lines. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Pod borer attack, applied B.H.C. 10%. (iii) Yield of grain. (iv) (a) 1958—1960. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 931 Kg/ha. (ii) (a) 194·3 Kg/ha. (b) 229·9 Kg/ha. (c) 94·0 Kg/ha. (iii) V effect and interaction V×P is significant. P effect is highly significant. (iv) Av. yield of grain in Kg/ha.

	V_1	V_2	V_3	P_1	P_2	P_3	Mean
S_1	1048	804	1097	1090	964	897	983
S_2	754	882	998	974	857	803	878
S_3	929	907	964	981	912	904	933
Mean	910	864	1020	1015	911	868	931
P_1	1012	895	1139				
P_2	865	857	1013				
P_3	855	843	907				

C.D. for V marginal means =113·8 Kg/ha.
C.D. for P marginal means =44·5 Kg/ha.
C.D. for P means at the same level of V=77·0 Kg/ha.
C.D. for V means at the same level of P=130·0 Kg/ha.

Crop :- Gram (*Rabi*). **Ref :- Ms. 61(108).**

Site :- Agri. Res. Stn., Arbhavi. **Type :- 'IM'.**

Object :— To study the water and manurial requirements for Gram.

1. BASAL CONDITIONS :

(i) (a) Maize—Gram—Cotton. (b) Maize. (c) 12·4 C.L./ha. of F.Y.M. (ii) Black soil. (iii) 15.10.61. (iv) (a) Ploughing and harrowing with disc harrow. (b) to (e) N.A. (v) 12·4 C.L./ha. of F.Y.M. (vi) *Chafa* gram. (vii) Irrigated. (viii) 2 interculturings and 2 weedings. (ix) 5 cm. (x) 7.3.62 to 10.3.62.

2. TREATMENTS :

Main-plot treatments :

3 intervals of irrigation : T_1=20, T_2=25 and T_3=30 days.

Sub-plot treatments :

2 intensities of irrigation : I_1=6 and I_2=9 cm./turn.

Sub-sub-plot treatments :

2 levels of manures : M_0=0 and M_1=22·4 Kg/ha. of N+11·2 Kg/ha. of P_2O_5+11·2 Kg/ha. of K_2O.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication, 2 sub-plots/main-plot, 2 sub-sub-plots/sub-plot. (b) N.A. (iii) 3. (iv) (a) 7·3 m.×6·7 m. (b) 6·4 m.×6·1 m. (v) 40 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1961—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS:

(i) 1697 Kg/ha. (ii) (a) 565·6 Kg/ha. (b) 338·0 Kg/ha. (c) 302·2 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of gram in Kg/ha.

	I_1	I_2	T_1	T_2	T_3	Mean
M_0	1627	1635	1657	1571	1658	1631
M_1	1839	1688	1990	1585	1815	1763
Mean	1733	1661	1773	1581	1737	1697
T_1	1982	1565				
T_2	1646	1516				
T_3	1571	1903				

Crop :. Gram (*Rabi*). **Ref :- Ms. 62(110).**

Site :- Agri. Res. Stn., Arbhavi. **Type :- 'IM'.**

Object :— To study the water and manurial requirements of Gram.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Maize. (c) F.Y.M. at 103·8 C.L./ha. Super at 454·7 Kg/ha. Mur. Pot. at 66·7 Kg/ha., Urea at 192·7 Kg/ha. (ii) Black mixed sandy loam. (iii) 13.11.62. (iv) (a) Ploughing and harrowing. (b) to (e) N.A. (v) 24·7 C.L./ha. of F.Y.M. (vi) *Chafa* gram. (vii) Irrigated. (viii) One interculturing. 2 weedings. (ix) 22·4 cm. (x) 7.3.63.

2. TREATMENTS :

Main-plot treatments :
3 No. of irrigations : T_1=4 (20 days interval), T_2=3 (25 days interval) and T_3=3 (30 days interval).

Sub-plot treatments:
All combination of (1) and (2).
(1) 2 intensities of irrigation : I_1=5 cm. and I_2=9 cm.
(2) 2 levels of manures : M_0=0 and M_1=22·4 Kg/ha. of N+11·2 Kg/ha. of P_2O_5+11·2 Kg/ha. of K_2O.

3. DESIGN :

(i) Split-plot. (ii) 3 main-plots/replication, 4 sub-plots/main-plot. (iii) 3. (iv) (a) 7·3 m.×6·7 m. (b) 6·4 m.×6·1 m. (v) and (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1961—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1103 Kg/ha. (ii) (a) 189·6 Kg/ha. (b) 246·6 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	I_1	I_2	M_0	M_1	Mean
T_1	1288	1140	1123	1305	1214
T_2	1003	947	1007	942	975
T_3	1151	1087	963	1275	1119
Mean	1147	1058	1031	1174	1103
M_0	1064	998			
M_1	1230	1118			

Crop :- Gram (*Rabi*). **Ref :- Ms. 60(278).**

Site :- Agri. Res. Stn., Arbhavi. **Type :- 'IM'.**

Object : — To find out the optimum water and manurial requirement of Gram.

1. BASAL CONDITIONS:

(i) (b) Maize—Gram. (b) Maize. (c) 12·4 C.L./ha. of F.Y.M.+33·6 Kg/ha. of N+11·2 Kg/ha. of P_2O_5+ 11·2 Kg/ha. of K_2O. *(ii) Black soil. (iii) 24.10.60. (iv) (a) Ploughing, harrowing and opening furrows* (b) Dibbling. (c) N.A. (d) 30 cm.×23 cm. (e) 2 to 3. (v) 12·4 C.L./ha. of F.Y.M (vi) *Chafa* (122 days duration). (vii) Irrigated. (viii) Weeding and interculturing. (ix) 8 cm. (x) N.A.

2. TREATMENTS :

All combinations of (1) and (2).

(1) 5 fertilizers : M_0=No fertilizer, M_1=22·4 Kg/ha. of N as A/S+22·4 Kg/ha. of P_2O_5 as Super, M_2=M_1+22·4 Kg/ha. of Pot. Sul., M_3=44·8 Kg/ha. of N as A/S+22·4 Kg/ha. of P_2O_5 as Super and M_4=M_3+22·4 Kg/ha. of K_2O as Pot. Sul.

(2) 2 irrigation levels : I_1=6·4 and I_2=8·9 ha. cm.

3. DESIGN:

(i) Fact. in R.B.D. (ii) (a) 10. (b) N.A. (iii) 3. (iv) (a) 7·3m.×6·7m. (b) 6·4 m.×6·1 m. (v) and (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1959—N.A. (b) No. (c) Nil. (v) and (vi) Nil. (vii) In general the season was favourable for crop growth.

5. RESULTS :

(i) 2030 Kg/ha. (ii) 360·0 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of grain in Kg/ha.

	M_0	M_1	M_2	M_3	M_4	Mean
I_1	2385	1948	1871	2042	1888	2027
I_2	2291	2198	1855	2017	1804	2033
Mean	2338	2073	1863	2030	1846	2030

Crop :- Green Gram (*Kharif*). **Ref :- Ms. 62(207).**

Site :- Soil Conservation Res. Stn., Bellary. **Type :- 'C'.**

Object :—To find out the optimum seed rate for Green Gram.

1. BASAL CONDITIONS ;

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Deep black cotton soils. (iii) 9.6.62. (iv) (a) Light harrowing. (b) Sowing through seed drill. (c) As per treatments. (d) 30 cm. between rows. (e) - . (v) Nil. (vi) China mung No. 781 (early). (vii) Unirrigated. (viii) Hand weeding. (ix) 17 cm. (x) 8 to 21.8.1962.

2. TREATMENTS :

5 seed rates : R_1=4, R_2=5, R_3=9, R_4=11 and R_5=13 Kg/ha.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) 18·3 m.×11·0 m. (iii) 6. (iv) (a) and (b) 11·0 m.×3·7 m. (v) Nil (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil (iii) Canopy measurement, population count and grain yield. (iv) (a) 1961—1962. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Expt. failed in 1961.

5. RESULTS :

(i) 53·6 Kg/ha. (ii) 23·7 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Kg/ha.

Treatment	R_1	R_2	R_3	R_4	R_5
Av. yield	44·0	53·5	55·1	52·1	63·1

———

Crop :- Tur (*Kharif*). **Ref :- Ms. 64(25), 65(92).**

Site :- Agri. Res. Stn., Sirugappa. **Type :- 'D'.**

Object :—To find out a suitable insecticide that can control the Tur pod borer.

1. BASAL CONDITIONS :

(i) (a) *Jowar—Tur—Jowar*. (b) Cowpea : *Rabi Jowar*. (c) 125·5 Q/ha. of F.Y.M.+44·8 Kg/ha. of N+22·4 Kg/ha. of P_2O_5. (ii) Black Cotton soil. (iii) 27.6.1964 ; 23.6.1965. (iv) (a) Working victory plough, working with blade harrow and ridger in 1964 ; ploughing and harrowing in 1965. (b) Hand dibbling. (c) 6 to 8 Kg/ha. (d) N.A. (e) 2 to 3 seeds dibbled, thinned to one. (v) 125·5 Q/ha. of F.Y.M.+44·8 Kg/ha. of N+22·4 Kg/ha. of P_2O_5 applied at the time of sowing. (vi) Early ; medium (Udgir). (vii) Irrigated. (viii) 2 hand weedings passing blade harrow in between rows twice in 1964 ; thinning and weeding in 1965. (ix) 59 cm. ; 32 cm. (x) N.A. ; 10.1.1966.

2. TREATMENTS :

4 spraying treatments : T_0=Control, T_1=Servin 85 % S.P. 0·5 %, T_2=B.H.C. 50 % –0·5% and T_3= D.D.T. 50%–0·5%.

Treatments applied at the time of bud formation.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) 1/247 ha. (b) 1/494 ha. (v) 5 rows. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Tur pod longer—control measures as per treatments. (iii) Pest counts were taken after 12 days of spraying. (iv) (a) 1964—contd. (b) No. (c) Nil. (v) N.A. (vi) Nil. (vii) The percentage of pods were transferred into angles and analysed, the transformation being $\theta = \sin^{-1}\sqrt{p}$ where p is the percentage.

5. RESULTS :

64(25)

(i) 9·46 % of 400 pods. (ii) 0·1 %. (iii) Treatment differences are highly significant. (iv) Av. percentage of pests count in degrees.

Treatment	T_0	T_1	T_2	T_3
Av. percentage	14·9	6·3	8·1	8·6

65(92)

(i) 17·62 degrees, (ii) 1·85 degrees. (iii) Treatment differences are highly significant. (iv) Av. percentage of pest count in degrees.

Treatment	T_0	T_1	T_2	T_3
Av. degree	22·69	12·78	14·13	20·88
Av. percentage	14·9	4·9	6·0	12·7

C.D.=2·53 degrees.

Crop :- Potato (*Kharif*). **Ref :- Ms. 63, 64, 65(S.F.T).**

Site :- (District) Bangalore. **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) N.A. (ii) Red loamy. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments :

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 P_2O_5.

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 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) to (iii) N.A. (iv) (a) 1063—65. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

63(S.F.T.)

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 potato in Kg/ha.	629	461	214	1113	1271	1429	2016	

Control yield=7012 Kg/ha ; No. of trials=5.

64 (S.F.T.)

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 potato in Kg/ha.	247	568	523	673	848	993	1135	113·1

Control yield=3281 Kg/ha ; No. of trials=5.

65(S.F.T.)

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 potato in Kg/ha.	224	196	348	684	972	1068	816	225·9

Control yield=10472 Kg/ha ; No. of trials=5.

Crop :- Potato (*Rabi*). **Ref :- Ms. 62 (S.F.T.).**

Site :- (District) : Banglore. **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) N.A. (ii) Red loamy. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS : and 3. DESIGN :

Same as in Type A_1 (*Kharif*) on page 288.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1962 to 1966 [1963 to 1965 N.A.] (b) N.A. (c) Nil. (v) to (vii) N.A.

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 potato in Kg/ha.	1977	3275	1318	3855	4316	5944	7228	2048·6

Control yield=35039 Kg/ha. ; No. of trials=3.

Crop :- Potato (*Kharif*). **Ref :- Ms. 63, 64, 65 (S.F.T.)**

Site :- (District) : Banglore. **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) N.A. (ii) Red loamy. (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 (*Kharif*) on page 288.

4. GENERAL :

(i) to (iii) N A. (iv) (a) 1963 to 1965. (b) N.A. (c) Nil. (v) to (vii) N A.

5. RESULTS :

63(S.F.T.)

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 potato in Kg/ha.	1087	685	1014	1759	1324	1858	2517	295·1

Control yield=6714 Kg/ha. ; No of trials=6.

64(S.F.T.)

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 potato in Kg/ha.	322	425	596	754	838	1161	1367	129·4

Control yield=3288 Kg/ha. ; No. of trials=5.

65(S.F.T.)

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 potato in Kg/ha.	1328	—96	368	572	668	1068	1052	690·6

Control yield=9792 Kg/ha. ; No. of trials=5.

Crop :- Potato (*Rabi*). **Ref :- Ms. 62 (S.F.T.)**

Site :- (District) : Banglore. **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) N.A. (iii) Red loamy. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATEMENTS : and 3. DESIGN :

Same as in Type A_2 (*Kharif*) on page 289.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1962 to 1966 [1963 to 1965 N.A.]. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

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 potato in Kg/ha.	619	613	652	922	1344	1996	2570	289·5

Control yield=7413 Kg/ha. ; No. of trials=3.

Crop :- Potato (*Kharif*). **Ref :- Ms. 63, 64, 65 (S.F.T.)**

Site :- (District) : Banglore, **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 (iii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments :

O =Control (no manure).
N_1 =60 Kg/ha. of N.
K_1 =60 Kg/ha. of K_2O.
K_2 =120 Kg/ha. of K_2O.
N_1K_1 =60 Kg/ha. of N+60 Kg/ha. of K_2O.
N_1K_2 =60 Kg/ha. of N+120 Kg/ha. of K_2O.
N_2K_2 =120 Kg/ha. of N+120 Kg/ha. of K_2O.
$N_1P_1K_1$ =60 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 (*Kharif*) on page 288.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1963 to 1965. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

63(S.F.T.)

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 potato in Kg/ha.	395	168	622	968	919	1403	1067	216·2

Control yield=7739 Kg/ha.; No. of trials=2.

64(S.F.T.)

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 potato in Kg/ha.	403	191	377	619	795	889	1052	89·7

Control yield=3325 Kg/ha. ; No. of trials=5.

65(S.F.T.)

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 potato in Kg/ha.	190	315	410	640	750	1125	1125	192·7

Control yield=9675 Kg/ha. ; No. of trials=4.

Crop :- Potato (*Rabi*). **Ref :- Ms. 62 (S.F.T.).**

Site :- (District) : Banglore. **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) N.A. (ii) Red loamy. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS and 3. DESIGN :

Same as in Type A_3 (*Kharif*) on page 291.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1962 to 1966 [1963 to 1965 N.A.] (b) N.A. (c) Nil. (v) to (vii) N A.

5. RESULTS :

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 potato in Kg/ha.	448	297	520	916	1034	1265	1357	216·2

Control yield=7848 Kg/ha. ; No. of trials=3.

—=—

Crop :- Sugarcane. **Ref :- Ms. 60(292).**

Site :- Agri. Res. Stn., Alnawar. **Type :- 'M'.**

Object :—To find out a suitable ratio of A,S and Cake for manuring the plant Cane.

1. BASAL CONDITIONS :

(i) (a) Paddy—Sugarcane—Ratoon. (b) Paddy. (c) Nil. (ii) Medium black. (iii) 31.1.60. (iv) (a) Ploughing, clod crushing, levelling, opening ridges and furrows. (b) Planting of setts. (c) 24,700 setts/ha. (d) 91 cm. between lines. (e) N.A. (v) Nil. (vi) Co-419. (vii) Irrigated. (viii) Loosening the soil by hand tools interculturing. (ix) 89 cm. (x) 28.1.61.

2. TREATMENTS : and 3. DESIGN :

Same as in expt. No. 60(291) on page 292.

F.Y.M. was applied in furrows, Super applied at 8 to 13 cm. deep in furrows. N was given in 3 doses, at the time of planting, 8 weeks after planting and at earthing up.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Cane yield. (iv) (a) 1956—N.A. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 399·5 Q/ha. (ii) 69·2 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	T_9	T_{10}
Av. yield	333·2	277·5	364·7	352·7	337·8	377·7	272·9	442·7	307·2	473·3

C.D.=118·7 Q/ha.

———

Crop :- Sugarcane (*Ratoon*). **Ref :- Ms. 60(291).**

Site :- Agri. Res. Stn., Alnawar. **Type :- 'M'.**

Object :—To find out a suitable ratio of A/S and G.N.C. for manuring *Ratoon* cane crop.

1. BASAL CONDITIONS :

(i) (a) Plant cane—*Ratoon*—Paddy. (b) Cane. (c) As per *ratoon* crop treatments. (ii) Medium black. (iii) *Ratoon* crop. (iv) (a) Ploughing between lines with the iron plough cutting stubbles to the ground level. (c) 24,700 setts/ha. (d) 91 cm. (e) 1. (v) Nil. (vi) Co—419. (vii) Irrigated. (viii) Weeding once. (ix) 89 cm. (x) 31.1.61.

2. TREATMENTS :

10 manurial treatments : T_1=168 Kg/ha. of N as A/S, T_2=168 Kg/ha, of N as A/S and G.N.C. in 2·1 ratio, T_3=168 Kg/ha. of N as A/S and G.N.C. in 1 : 1 ratio, T_4=T_1+24·7 C.L./ha. of F.Y.M., T_5=T_2+24·7 C.L./ha. of F.Y.M., T_6=T_3+24·7 C.L./ha. of F.Y.M., T_7=T_1+37·1 C.L./ha. of F.Y.M., T_8=T_4+112 Kg/ha. of P_2O_5, T_9=37·1 C.L./ha. of F.Y.M.+33·6 Kg/ha. of N as A/S and T_{10}=T_9+112 Kg/ha. of P_2O_5,

All the P_2O_5 as Super was given before ploughing on the sides. N was given in 3 doses as at the time of opening the ridges, after 8 weeks and at the time of earthing up.

3. DESIGN .

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 3. (iv) (a) 11·6 m.×5·5 m. (b) 9·1 m.×3·7 m. (v) 122 cm. ring alround. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Cane yield. (iv) (a) 1956– N.A. (b) Yes. (c) Nil. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 337 4 Q/ha. (ii) 90·1 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	T_9	T_{10}
Av. yield	273·8	330·4	310·9	275·6	347·1	270·1	379·6	362·0	426·0	398·1

———

Crop :- Sugarcane. **Ref :- Ms. 60(289).**

Site :- Agri. Res. Stn., Alnawar. **Type :- 'M'.**

Object :—To find out the effect of different levels of P with different levels of N on Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Paddy—Sugarcane. (b) Paddy. (c) Nil. (ii) Medium black. (iii) 25.1.60. (iv) (a) Ploughing, clod crushing, opening ridges and furrows. (b) Planting setts. (c) 24,700 setts/ha. (d) 91 cm. between lines. (e) Nil. (v) 24·7 C.L./ha. of F.Y.M. (vi) Co—419. (vii) Irrigated. (viii) Loosing soil by hand tool, height earthing up and weeding. (ix) 89 cm. (x) N.A.

2. TREATMENTS :

6 fertilizers : T_1=*168 Kg/ha. of N+112 Kg/ha. of* P_2O_5 *as Super*, T_2=*168 Kg/ha. of N+168 Kg/ha. of* P_2O_5 as Super, T_3=224 Kg/ha. of N+112 Kg/ha. of P_2O_5 as Super, T_4=224 Kg/ha. of N+168 Kg/ha. of P_2O_5 as Super, T_5=168 Kg/ha. of N+112 Kg/ha. of P_2O_5 as B.M. and T_6=T_5+5 Q/ha. of lime.

N was given in the form of A/S and G.N.C. in 1 : 1 in 3 doses, one at the time of planting, second after 8 weeks of planting and third at the time of earthing up. ½ dose of P_2O_5 was given at the time of planting and the other ½ at the time of earthing up.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 11·6 m.×5·5 m. (b) 9·1 m.×3·7 m. (v) and (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Cane yield. (iv) (a) 1956—N.A. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 499·5 Q/ha. (ii) 63·9 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	490·7	459·4	497·7	588·9	405·1	555·5

C.D.=96·3 Q/ha.

Crop :- Sugarcane. **Ref :- Ms. 60(281).**

Site :- Agri. Res. Stn., Arbhavi. **Type :- 'M'.**

Object :—To determine the effect of N, P and K on Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Maize—Sugarcane. (b) Maize. (c) 33·6 Kg/ha. of N+22·4 Kg/ha. of P_2O_5+12·4 C.L./ha. of F.Y.M. (ii) Brown sandy loam. (iii) 6.1.60. (iv) (a) Ploughing, clod crushing, 2 harrowing, opening furrows. (b) Planting of setts. (c) 29640 3 eyebuded setts/ha. (d) 108 cm. between lines. (e) 1. (v) 37 C.L./ha. of F.Y.M.+spreading and mixing by ploughing. (vi) Co—419. (vii) Irrigated. (viii) Interculturing and weeding. (ix) 73 cm. (x) 13, 14.2 1961.

2. TREATMENTS :

All combinations of (1) and (2) with 224 Kg/ha. of N as A/S and G.N.C. in 1 : 2 ratio.

(1) 2 levels of P_2O_5 as Super at planting : P_0=0 and P_1=84 Kg/ha.

(2) 2 levels of K_2O as Mur. Pot. at planting : K_0=0 and K_1=84 Kg/ha.

N applied in 4 doses first at planting, second at 8 weeks after, third at 16 weeks after and fourth at earthing up.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 4. (b) N.A. (iii) 5. (iv) (a) 10·4 m.×4·3 m. (b) 8·5 m.×2·1 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Cane yield. (iv) (a) 1958—N.A. (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

5. RESULTS ;

(i) 1248·5 Q/ha. (ii) 104·6 Q,ha. (iii) Treatment differences are not significant. (iv) Av. yield of Cane in Q/ha.

	K_0	K_1	Mean
P_0	1253·1	1295·2	1274·1
P_1	1240·8	1204·8	1222·9
Mean	1246·9	1250·1	1248·5

Crop :- Sugercane. **Ref :- Ms. 61(103), 62(135), 63(233).**

Site :- Agri. Res. Stn., Arbhavi. **Type :- 'M'.**

Object :— To ascertain whether Nitro. Phos. and Mg. Phos. can be used for supplying P to Sugarcane instead of Super.

1. BASAL CONDITIONS :

(i) (a) *Jowar*/Maize, Sunnhemp, Sugarcane. (b) *Jowar*/Maize, Sunnhemp. (c) G.M. (ii) Black mixed alkaline ; Sandy loam. (iii) 24.1.1961 ; 14.1.1962 ; 21.1.1963. (iv) (a) Ploughing and harrowing, clod crushing opening furrows. (b) Planted in furrows. (c) N.A. (d) N.A. in 1963, 1964 and 91 cm. between rows. (e) N.A. (v) 37·1 C.L./ha. of F.Y.M. in 1961, 22·2 C.L./ha. of F.Y.M. in 1962 and 19·8 C.L./ha. of F.Y.M. in '63. (vi) Co—419. (vii) Irrigated. (viii) 1 interculturing, 3 weedings and earthing up operation. (ix) 52 cm, ; 58 cm. ; 58 cm. (x) 11 to 14.2.1962 ; 28.1.1963 ; Feb. 1964.

2. TREATMENTS :

4 manurial treatments : T_1=224·2 Kg/ha. of N as A/S+84·1 Kg/ha. of P_2O_5 as Super, T_2=224·2 Kg/ha. of N as A/S+84·1 Kg/ha. of P_2O_5 as Mg. phos., T_3=140·1 Kg/ha. of N as A/S+84·1 Kg/ha. of N as Nitro. Phos.+84·1 Kg/ha. of P_2O_5 as Nitro. phos. (O.D.D.A.) and T_4=130·0 Kg/ha. of N as A/S+94·2 Kg/ha. of N as Nitro. phos. +84·1 Kg/ha. of P_2O_5 as Nitro. phos. (P.E.C.)

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 10·1 m.×11·0 m. (b) 8·2 m.×9·1 m. (v) 91 cm.×91 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Stem-borer controlled by mechanical measure and spraying with folidol (iii) Yield of cane. (iv) (a) 1961—'63. (b) No. (c) As under 5. Results. (v) and (vi) Nil. (vii) Error variances are homgeneous. Treatments×years interaction is absent.

5. RESULTS :

(i) 1033·6 Q/ha. (ii) 62·6 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 cane in Q/ha.

Treatment	T_1	T_2	T_3	T_4
Av. yield	1021·5	1033·2	1050·0	1032·9

Years	T_1	T_2	T_3	T_4	Sig.	G.M.	S.E./plot
1961	889·0	886·8	889·9	876·6	N.S.	885·6	71·6
1962	1134·5	1114·7	1133·8	1169·2	N.S.	1138·0	52·9
1963	1040·9	1089·2	1126·2	1052·9	N.S.	1077·3	58·7
Pooled	1021·5	1030·2	1050·0	1032·9	N.S.	1033·6	62·6

Crop :- Sugarcane. **Ref :- Ms. 62(40).**

Site :- Sugarcane Res. Stn., Gangavathy. **Type :- 'M'.**

Object :— To study the possibilities of replacing organic manures by inorganic fertilisers.

1. BASAL CONDITIONS :

(i) (a) Paddy—Sugarcane. (b) *Paddy*. (c) 24·7 C.L./ha. of F.Y.M. +44·8 Kg./ha. of N+33·6 Kg/ha. of P_2O_5. (ii) Mixed soil. (iii) 30.1.62. (iv) (a) 3 ploughing with country plough. (b) Planted in furrows. (c) 24710 setts/ha. (v) Nil. (vi) Co - 419 (late). (vii) Irrigated. (viii) and (ix) N.A. (x) Feb 1963.

2. TREATMENTS :

4 manurial treatments : T_1=252·2 Kg./ha. of N as A/S+56·0 Kg/ha. of P_2O_5+112·1 Kg/ha. of K_2O+ 49·4 C.L./ha of compost, T_2=252·2 Kg/ha. of N as A/S/N+56·0 Kg/ha. of P_2O_5 +112·1 Kg/ha. of K_2O+49·4 C.L /ha. of compost, T_3=24·7 C.L./ha. of compost equivalent in the form of artificial fertilisers+252·2 Kg/ha. of N as A/S+56·0 Kg./ha. of P_2O_5+112·1 Kg/ha. of K_2O and T_4=12·4 C.L./ha. of compost+37·1 C.L./ha. of compost equivalent in the form of artificial fertilirers + 252·2 Kg/ha. of N+56·0 Kg/ha. of P_2O_5+112·1 Kg/ha. of K_2O.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) 21·9 m.×18·3 m. (iii) 6. (iv) (a) and (b) 11·0 m.×9·1 m. (v) Nil. (vi) Yes.

4. GENERAL ;

(i) Satisfactory. (ii) Nil. (iii) Cane yield. (iv) (a) 1962. (b) No. (c) Nil. (v) (a) Shankeswar and Shimoga. (b) Nil. (vi) Nil. (vii) Expt. conducted at Nagenhally village.

5. RESULTS :

(i) 827·6 Q/ha. (ii) 14·3 Q/ha. (iii) Treatment differences are significant. (iv) Av. yield of sugarcane in Q/ha.

Treatment	T_1	T_2	T_3	T_4
Av. yield	815·2	825·9	826·9	842·5

C.D.=17·6 Q/ha.

———

Crop :- Sugarcane. **Ref :- Ms. 62(39).**

Site :- Sugarcane Res. Stn., Gangavathy **Type :- 'M'.**

Object :— To study the possibilities of replacing organic manures by inorganic fertilisers.

1. BASAL CONDITIONS :

(i) (a) Paddy - Sugarcane. (b) Paddy. (c) 24·7 C.L./ha. of F.Y.M.+44·8 Kg/ha. of N+33·6 Kg/ha. of P_2O_5. (ii) Black cotton soil. (iii) 10.1.1962. (iv) (a) Deep ploughing by tractor followed by ridging. (b) Transplanting. (c) 24710 setts/ha (d) 91 cm. between rows. (e) N.A. (v) Nil. (vi) Co.—419 (late). (vii) Irrigated. (viii) and (ix) N.A. (x) Feb, 1963.

2. TREATMENTS to 4. GENERAL :

Same as in Expt. No. 62(40) on 295.

Expt. conducted at Kotlala village.

5. RESULTS :

(i) 1074·7 Q/ha. (ii) 62·5 Q/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of sugarcane in Q/ha.

Treatment	T_1	T_2	T_3	T_4
Av. yield	1044·5	988·5	1137·6	1128·3

C.D.=76·9 Q/ha.

———

Crop :- Sugarcane. **Ref :- Ms. 62(38).**

Site :- Sugarcane Res. Stn., Gangavathy. **Type :- 'M'.**

Object :— To study the possibilities of replacing oil cakes and compost by fertilisers in Sugarcane manuring.

1. BASAL CONDITIONS :

(i) (a) Paddy—Sugarcane. (b) Paddy. (c) 24·7 C.L./ha. of F.Y.M.+44·8 Kg/ha. of N+33·6 Kg/ha of P_2O_5. (ii) Black cotton soil. (iii) 22.2.62. (iv) (a) Deep ploughing by tractor followed by ridging. (b) Planting in furrows. (c) 24710 setts/ha. (d) 91 cm. between rows. (e) N.A. (v) Nil. (vii) Co. 419. (vii) Irrigated. (viii) Nil. (ix) N.A. (x) Feb. and March, 68.

2. TREATMENTS to 4. GENERAL :

Same as in Expt. No. 62(40) on page 295. (Expt. conducted at I.S.A. Farm, Munirabad).

5. RESULTS :

(i) 1300·6 Q/ha, (ii) 30·8 Q/ha. (iii) Treatment differences are not significant, (iv) Av. yield of sugarcane in Q/ha.

Treatment	T_1	T_2	T_3	T_4
Av. yield	1288·2	1274·9	1319·5	1319·9

——=——

Crop :- Sugarcane. **Ref :- Ms. 62(41).**

Site :- Sugarcane Res. Stn., Gangavathy. **Type :- 'M'.**

Object :—To study the effect of P on the yield and quality of Cane.

1. BASAL CONDITIONS :

(i) (a) Paddy —Sugarcane. (b) Paddy. (c) 24·7 C.L./ha. of F.Y.M.+44·8 Kg/ha. of N+33·6 Kg/ha. of P_2O_5. (ii) Black soil. (iii) 22.2.62. (iv) (a) 3 ploughings. (b) Planting in furrows. (c) 24710 setts/ha. (d) 91 cm. between rows. (e) Nil. (v) Nil. (vi) Co—419 (late). (vii) Irrigated. (viii) and (ix) N.A. (x) Feb. to March, 63.

2. TREATMENTS :

4 manurial treatments : T_1=24·7 C.L./ha. of compost+252·2 Kg/ha. of N as A/S, T_2=56·0 Kg/ha. of P_2O_5 at planting+24·7 C.L./ha. of compost+112·1 Kg/ha. of K_2O+252·2 Kg/ha. of N, T_3=56·0 Kg/ha. of P_2O_5 at planting+56·0 Kg/ha. of P_2O_5 at earthing up +24·7 C.L./ha. of compost+112·1 Kg/ha. of K_2O+252·2 Kg/ha. of N and T_4= 112·1 Kg/ha. of P_2O_5 at planting+24·7 C.L./ha. of compost+112·1 Kg/ha. of K_2O+252·2 Kg/ha. of N.

N applied as A/S and P_2O_5 as Super.

3. DESIGN:

(i) R.B.D. (ii) (a) 4. (b) 21·9 m.× 18·3 m. (iii) 6. (iv) (a) and (b) 11·0 m.×9·1 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Weight of Cane in metric Tons/plot. (iv) (a) 1962—N.A. (b) No. (c) Nil. (v) Shankeswar and Shimoga. (vi) Nil. (vii) Expt. conducted at I.S.A. Farm, Munirabad.

5. RESULTS:

(i) 1239·9 Q/ha. (ii) 37·5 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of sugarcane in Q/ha.

Treatment	T_1	T_2	T_3	T_4
Av. yield	1227·2	1227·6	1225·4	1279·0

————

Crop :- Sugarcane (*Main*). **Ref :- Ms. 63(24).**

Site :- Sugarcane Res. Stn., Gangavathy. **Type :- 'M'.**

Object :—To explore the possibilities of replacing organic manures wholly or partly for main season Cane.

1. BASAL CONDITIONS :

(i) (a) *Daincha*—Sugarcane. (b) *Daincha*. (c) Nil. (ii) Black cotton soil. (iii) January, 1963. (iv) (a) Deep ploughing with tractor followed by discing. (b) Planted in furrows. (c) Nil. (d) 91 cm. between rows. (e) N.A. (v) Nil. (vi) Co—419 (late). (vii) Irrigated. (viii) 3 hand weedings followed by heavy ridging. (ix) N.A. (x) 13.2.64 to 18.2.64.

2. TREATMENTS :

10 manurial treatments : M_0=Control (no manure), M_1=20 C.L./ha. of F.Y.M., M_2=N, P and K equivalent of M_1 in inorganic form, M_3=M_1+M_7, M_4=M_2+M_7, M_5=10 C.L./ha. of F.Y.M.+M_7+N, P and K equivalent of ½ of M_2 in organic form, M_6=M_7+5 C.L./ha. of F.Y.M.+N, P and K equivalent of 3/4 of M_5 in inorganic form, M_7=336 Kg/ha. of N+84 Kg/ha. of P_2O_5+112 Kg/ha. of K_2O as top dressing, M_8=M_7 with N as A/S and G.N.C. in 1 : 1 ratio and M_9=M_1+M_8.

3. DESIGN

(i) R.B.D. (ii) (a) 10. (b) 36·6 m.×29·9 m. (iii) 4. (iv) (a) 14·0 m.×7·3 m. (b) 12·2 m.×5·5 m. (v) one border row is kept on either side. (vi) Yes.

4. GENERAL :

(i) Fair. Crop lodged slightly in the month of November 1964. (ii) Nil. (iii) Tiller counts, height measurements, cane samples for sucrose were analysed. (iv) (a) N.A. (b) No. (c) Nil. (v) (a) Mandya. (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 1134·5 Q/ha. (ii) 115·6 Q/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of Sugarcane in Q/ha

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9
Av. yield	316·9	574·4	1136·9	1347·7	1265·9	1360·1	1399·7	1298·7	1369·8	1274·8

C.D.=167·7 Q/ha.

Crop :- Sugarcane (*Main*). **Ref :- Ms. 63(27).**

Site :- Sugarcane Res. Stn., Gangavathy. **Type :- 'M'.**

Object :—To study the relative efficiency and the effect of different nitrogeneous fertilizers on the yield and quality of Cane.

1. BASAL CONDITIONS :

(i) (a) *Daincha*—Sugarcane. (b) *Daincha*. (c) Nil. (ii) Black cotton soil. (iii) Jan. 1973. (iv) (a) Deep ploughing with tractor followed by discing. (b) Planted in furrows. (c) 24710 setts/ha. (d) 91 cm. between furrows. (e) N.A. (v) 24·7 C.L./ha. of F.Y.M.+84·1 Kg/ha. of P_2O_5+112·1 Kg/ha. of K_2O. (vi) Co—419. (vii) Irrigated. (viii) 2 hand weedings followed by heavy ridging. (ix) N.A. (x) 15 to 20.1.1964.

2. TREATMENTS :

6 sources of 336·2 Kg/ha. of N : S_1=Urea, S_2=A/S, S_3=C/N, S_4=A/C, S_5=A/S/N and S_6=C/A/N. Nitrogeneous fertilizers applied 10, 20, 30 and 40% at planting, 6, 10, and 14 weeks after planting respectively.

3. DESIGN:

(i) L. Sq. (ii) (a) 6. (b) 49·4 m.×11·0 m. (iii) 6. (iv) (a) 11·0 m.×8·2 m. (b) 9·1 m.×6·4 m. (v) 91 cm. ×91 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Slight incidence of mealy was observed and controlled by sprayiag malathion. (iii) Tiller counts, height measurements and yield of Cane. (iv) (a) 1963 only. (b) No. (c) Nil. (v) *Mandya*. (vi) and (vii) Nil.

5. RESULTS :

(i) 1005·3 Q/ha. (ii) 179·9 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of cane in Q/ha.

Treatment	S_1	S_2	S_3	S_4	S_5	S_6
Av. yield	1075·6	899·0	992·6	977·5	1056·4	1030·7

Crop :- Sugarcane. **Ref :- Ms. 63(25), 64(21).**

Site :- Sugarcane Res. Stn., Gangavathy. **Type :- 'M'.**

Object :—To find out optimum combinations of N, P and K for Cane.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Sugarcane. (b) Fallow ; *Jowar*. (c) Nil; 22·4 Kg/ha. of N+11·2 Kg/ha. of P_2O_5+12·4 C.L./ha. of F.Y.M. (ii) Black cotton soil. (iii) 2.2.63; 8.2.64. (iv) (a) Deep ploughing with tractor followed by discing. (b) Planted in furrows. (c) 29653 setts/ha.; 24710 setts/ha. (d) 91 cm. between rows. (e) Nil. (v) 24·7 C.L./ha. of F.Y.M. (vi) Co—419 (late). (vii) Irrigated. (viii) Nil; 3 hand weedings. (ix) N.A. (x) 18 to 20.2.64; 6.3.65.

2. TREATMENTS :

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

(1) 2 levels of N as A/S : N_1=224·2 and N_2=336·2 Kg/ha.

(2) 2 levels of P_2O_5 as Super : P_0=0 and P_1=168·1 Kg/ha.

(3) 2 levels of K_2O as Mur. Pot. : K_0=0 and K_1=112·1 Kg/ha.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) 24·4 m.×25·6 m. (iii) 4. (iv) (a) 12·2 m.×6·4 m. (b) 10·4 m.×4·6 m. (v) 91 cm.×91 cm. (vi) Yes.

4. GENERAL :

(i) Fair in 1963. Population not uniform due to *alkali* attack in 1964. (ii) Smutted clumps were removed as and when they appeared (1963). Nil in 1964. (iii) Tiller counts, height measurements and cane yield. (iv) (a) 1963 to 64. (b) No. (c) As under 5. Results. (v) and (vi) Nil. (vii) Error variances are homogeneous. Treatments×years interaction is present.

5. RESULTS :

(i) 665·3 Q/ha. (ii) 259·4 Q/ha. (based on 6 d.f. made up of Treatments×years interaction). (iii) None of the effects is significant. (iv) Av. yield of cane in Q/ha.

	K_0	K_1	N_1	N_2	Mean
P_0	673·1	581·9	625·2	629·8	627·5
P_1	768·5	637·8	685·5	720·8	703·1
Mean	720·8	609·8	655·4	675·3	665·3
N_1	682·5	628·3			
N_2	759·1	591·4			

Years	N_1	N_2	Sig.	P_0	P_1	Sig.
1963	802·4	772·1	N.S.	743·6	830·9	N.S.
1964	508·3	578·3	N.S.	511·4	575·4	N.S.
Pooled	655·4	675·3	N.S.	627·5	703·1	N.S.

K_0	K_1	Sig.	G.M.	S.E./plot
912·0	662·5	**	787·3	207·1
529·6	557·2	N.S.	543·4	181·9
720·8	609·8	N.S.	665·3	259·4

Crop :- Sugarcane. **Ref :- Ms. 62(217), 64(160), 65(51).**

Site :- Agri. Res. Stn., Hiriyur. **Type :- 'M'.**

Object :—To study the effect of N, P and K on Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 67 Kg/ha. of N + 44·8 Kg/ha. of P_2O_5 and K_2O each. (ii) Black soil. (iii) 15 8.62; 13.7.64; 20.9.65. (iv) (a) 1 to 3 ploughings in 1962 and 64; 3 ploughings, 1 harrowing and levelling twice in 65. (b) Planting setts. (c) 29640 setts/ha. (d) N.A. in 62, 64 and 91 cm. between rows in 65. (e) N.A. (v) 24·7 C.L./ha. of F.Y.M. in 62 and 64, 12·4 to 14·8 C.L./ha. of F.Y.M. in 65. (vi) Co—419. (vii) Irrigated. (viii) 3 to 4 interculturings and earthing up. (ix) 262 cm.; 75 cm.; 81 cm (x) 18.11.63; 23.10.65; 12.12.66.

2. TREATMENTS :

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

(1) 3 levels of N : N_1=280, N_2=392 and N_3=504 Kg/ha.

(2) 3 levels of P_2O_5 : P_0=0, P_1=84 and P_2=168 Kg/ha.

(3) 3 levels of K_2O : K_0=0, K_1=112 and K_2=224 Kg/ha.

10, 20, 30 and 40 percent of N applied at planting, 6th week, 10th week and 14th week after planting respectively.

3. DESIGN :

(i) 3^3 confd. (ii) (a) 9 plots, block; 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 9·1 m. × 9·1 m. (b) 9·1 m. × 7·3 m. in 62 and 64; 8·2 m. × 8·2 m. in 65. (v) and (vi) Yes.

4. GENERAL :

(i) Fair. (ii) N.A. (iii) Cane yield. (iv) (a) 1962 to 67. (b) No. (c) Nil. (v) and (vi) N.A. (vii) Data and Results for the year 1963 N.A.

5. RESULTS :

62(217)

(i) 1096·5 Q/ha. (ii) 209·4 Q/ha. (iii) Interaction N×P×K 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_1	1094·9	1121·3	1204·5	1148·1	1299·5	973·1	1140·2
N_2	1030·8	1130·0	941·4	996·6	995·7	1109·9	1034·1
N_3	1197·2	1147·4	1001·4	1081·1	1162·2	1102·5	1115·3
Mean	1107·6	1132·9	1049·1	1075·3	1152·5	1061·8	1096·5
K_0	1114·7	1089·9	1021·4				
K_1	1247·1	1264·6	945·8				
K_2	961·1	1044·2	1180·2				

64(160)

(i) 1117·5 Q/ha. (ii) 332·8 Q/ha. (iii) Interaction N×P×K 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_1	1126·2	1115·5	962·3	1054·0	1079·4	1070·7	1068·0
N_2	1043·3	1118·0	1257·8	997·7	1203·9	1217·4	1139·7
N_3	1111·3	983·7	1339·2	966·0	1501·9	966·3	1144·7
Mean	1093·6	1072·4	1186·4	1005·9	1261·7	1084·8	1117·5
K_0	1017·4	913·0	1087·4				
K_1	1158·6	1230·4	1396·2				
K_2	1104·8	1073·9	1075·7				

65(51)

(i) 922·8 Q/ha. (ii) 260·8 Q/ha. (iii) None of the effects is significant. (iv) Av. yield of Cane in Q/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_1	933·1	993·1	784·9	912·9	954·7	843·5	903·7
N_2	858·0	624·1	1014·5	880·4	804·5	811·8	832·2
N_3	993·4	1066·9	1037·2	1011·6	1024·4	1061·5	1032·5
Mean	928·2	894·7	945·5	935·0	927·9	905·6	922·8
K_0	935·5	977·9	891·5				
K_1	904·5	918·2	960.9				
K_2	944·4	788·1	984·3				

Crop :- Sugarcane. **Ref :- Ms. 62(218), 64(161).**

Site :- Agri. Res. Stn., Hiriyur. **Type :- 'M'.**

Object :—To determine suitable quantity and time of application of phosphatic fertilizers to Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Paddy—*Ragi*—Groundnut. (b) Paddy. (c) 67·2 Kg/ha. of N+44·8 Kg/ha. of P_2O_5+44·8 Kg/ha. of K_2O. (ii) Red soil. (iii) 20.8.62; 17.6.64. (iv) (a) 3 to 4 ploughings, opening furrows 91 cm. apart. (b) Planting. (c) 24700 to 29640 setts/ha. (d) 91 cm. between rows. (e) 1. (v) 336 Kg/ha. of N+84 Kg/ha. of P_2O_5+112 Kg/ha. of K_2O. (vi) Co—419. (vii) Irrigated. (viii) 2 interculturings and earthing up. (ix) 25 cm.; 75 cm. (x) 10.11.63; 6.10.65.

2. TREATMENTS :

5 applications of phosphatic fertilizers : P_0=Control, P_1=84 Kg/ha. of P_2O_5 at 10 cm. depth, P_2=84 Kg/ha. of P_2O_5 at 10 cm. depth with compost (1 : 8), P_3=No P_2O_5 to G.M. crop at sowing, P_4=84 Kg/ha. of P_2O_5 to G.M. crop at sowing and P_5=84 Kg/ha. of P_2O_5 to Cane at planting+84 Kg/ha. of P_2O_5 to G.M. crop at sowing.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 9·1 m.×9·1 m. (b) 9·1 m.×8·2 m. (v) and (vi) Yes.

4. GENERAL :

(i) Fair. (ii) N.A. (iii) Yield of Cane (iv) (a) 1962 to 66 (treatments modified in 65). (b) No. (c) As under 5. Results. (v) aud (vi) Nil. (vii) Data for the year 1963 N.A. Error variances are homogeneous. Treatments×years interaction is absent.

5. RESULTS .

(i) 811·6 Q/ha. (ii) 180·1 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 in Q/ha.

Treatment	P_0	P_1	P_2	P_3	P_4	P_5
Av. yield	769.2	814·0	742·4	843·4	859·8	840·8

	P_0	P_1	P_2	P_3	P_4	P_5	Sig.	G.M.	S.E./plot
1962	799·8	873·0	837·4	977·9	934·3	1020·8	N.S.	907·2	153·0
1964	738·6	754·9	647·3	709·0	785·4	660·9	N.S.	716·0	210·9
Pooled	769·2	814·0	742·4	843·4	859·8	840·8	N.S.	811·6	180 1

Crop :- Sugarcane. **Ref :- Ms. 65(48).**

Site :- Agri. Res. Stn., Hiriyur. **Type :- 'M'.**

Object :—To determine suitable quantity and time of application of phosphatic fertilizers to Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Sugarcane—Paddy—Paddy. (b) Paddy. (c) 67·2 Kg/ha. of N+33·6 Kg/ha. of P_2O_5 and K_2O each. (ii) Red loam. (iii) 18.7.65. (iv) (a) 3 ploughings, passing cultivator once and harrowing once. (b) Planting setts. (c) 29640 setts/ha. (d) 91 cm. between rows. (e) Nil. (v) 24·7 C.L./ha. of F.Y.M. (vi) Co—419. (vii) Irrigated. (viii) Earthing up once; passing of wooden plough once. (ix) 90 cm. (x) 30.8.66.

TREATMENTS :

8 phosphatic treatments : T_1=112 Kg/ha. of P_2O_5 at planting, T_2=112 Kg/ha. of P_2O_5 with compost at planting, T_3=56 Kg/ha. of P_2O_5 at planting+56 Kg/ha. of P_2O_5 at earthing up, T_4=56 Kg/ha. of P_2O_5 at planting+56 Kg/ha. of P_2O_5 at earthing up with compost, T_5=168 Kg/ha. of P_2O_5 at planting, T_6=168 Kg/ha of P_2O_5 at planting with compost, T_7=84 Kg/ha. of P_2O_5 at planting+84 Kg/ha. of P_2O_5 at earthing up, T_8=84 Kg/ha. of P_2O_5 at planting+84 Kg/ha. of P_2O_5 at earthing up with compost.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) 36·6 m.×18·3 m. (iii) 3. (iv) (a) 9·1 m.×9·1 m. (b) 8·2 m.×8·2 m. (v) 1 row on either side. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Stem borer attack, sprayed Endrin. (iii) Cane yield. (iv) (a) 1964 to 66 (experiment modified in 65). (b) No. (c) Nil. (v) Mandya and Hebbal. (vi) and (vii) Nil.

5. RESULTS :

(i) 601·2 Q/ha. (ii) 59·8 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	T_8
Av. yield	580·7	599 4	572·3	645·2	536·4	675·7	587·6	612·2

Crop :- Sugarcane. **Ref :- Ms. 60(173), 61(170).**

Site :- Sugarcane Res. Stn., Mandya. **Type :- 'M'.**

Object :—To find out the effect of split application of phosphate on Sugarcane.

BASAL CONDITIONS:

(i) (a) *Ragi*—Sugarcane. (b) *Ragi*. (c) Nil. (ii) Sandy loam. (iii) 13.6.60; 15.7.61. (iv) (a) Ploughing, clod crushing. (b) Planting setts. (c) 30000, 3 eye budded setts/ha. (d) 91 cm. between rows. (e) 1. (v) 112 Q/ha. of F.Y.M. and 336 Kg/ha. of N in 4 doses. (vi) CO—419. (vii) Irrigated. (viii) Interculturing and weeding. (ix) 117 cm.; 176 cm. (x) 19.7.61; 11.11.62.

2. TREATMENTS :

4 methods of application of 84 Kg/ha. of P_2O_5 : M_1=At planting on the surface, M_2=10 cm. below the surface, M_3=Half at planting+half at earthing up and M_4=At earthing up.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) 9·1 m.×7·3 m. (b) 7·3 m.×5·5 m.; 9·1 m.×7·3 m. (v) 91 cm.×91 cm. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Tiller counts, cane population and yield of sugarcane. (iv) (a) 1959—61. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Error variances for the years 1959 to 61 are heterogeneous and interaction is absent.

5. RESULTS :

60(173)

(i) 1890 Q/ha. (ii) 276·7 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of sugarcane in Q/ha.

Treatment	M_1	M_2	M_3	M_4
Av. yield	1906	1912	1736	2006

61(170)

(i) 716 Q/ha. (ii) 71·6 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of Sugarcane in Q/ha.

Treatment	M_1	M_2	M_3	M_4
Av. yield	698	695	712	760

Crop :- Sugarcane. **Ref :- Ms. 60(203), 61(208).**

Site :- Reg. Res. Stn., Mandya. **Type :- 'M'.**

Object :— To study the effect of application of N on the yield and quality of Sugarcane.

1. BASAL CONDITIONS :

(i) (a) *Ragi* — Sugarcane. (b) *Ragi*. (c) N.A. (ii) Sandy loam. (iii) 14.6.1960 ; 8.9.1961. (iv) (a) Ploughing. (b) Planting. (c) 29600 setts/ha. (d) 91 cm. between rows. (e) 1. (v) 24 C.L./ha. of compost +84 Kg/ha. of P_2O_5. (vi) CO—419. (vii) Irrigated. (viii) 3 harrowings. (ix) 60 cm. ; N.A. (x) 18.7.1961 ; N.A.

2. TREATMENTS :

All combinations of (1) and (2).

(1) 2 sources of 336 Kg/ha. of N : S_1=A/S and S_2=Urea.

(2) 3 methods of application of N : M_1=In 4 doses 10, 20, 30 and 40% at planting, 6, 10 and 14 weeks after planting, M_2=In 5 doses 5, 10, 15, 30 and 40% at planting, 6, 10, 14 and 18 weeks after planting and M_3=In 6 doses 5, 10, 15 20, 25 and 30% at planting, 6, 9, 12, 14 and 18 weeks after planting respectively.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 7·1 m.×9·1 m. (b) 5·5 m.×7·1 m. (v) 82 cm. ×100 cm. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) Yield of Sugarcane. (iv) (a) 1960 to 1961. (b) No. (c) As under 5. Results. (v) and (vi) Nil. (vii) Error variances are homogeneous. Treatments×years interaction is absent.

5. RESULTS :

(i) 1532 Q/ha. (ii) 197·7 Q/ha. [based on 35 d.f. made up of pooled and Treatments×years interaction]. (iii) None of the effects is significant. (iv) Av. yield of sugarcane in Q/ha.

	M_1	M_2	M_3	Mean
S_1	1459	1679	1506	1548
S_2	1488	1547	1570	1515
Mean	1474	1613	1508	1532

2. T

Years	M_1	M_2	M_3	Sig.	S_1	S_2	Sig.	G.M.	S.E./Plot
1960	1637	1825	1679	N.S.	1704	1722	N.S.	1713	194·2
1961	1310	1400	1337	N.S.	1391	1308	N.S.	1349	220·5
Pooled	1474	1613	1508	N.S.	1548	1515	N.S.	1532	197·7

Crop :- Sugarcane (*Adsali*). **Ref :- Ms. 60(190), 61(193), 62(173).**

Site :- Sugarcane Res. Stn., Mandya. **Type :- 'M'.**

Object :—To study the effect of phosphatic fertilizer through *Sannhemp* on the yield.

1. BASAL CNNDITIONS :

(i) (a) and (b) Nil. (c) N.A. (ii) Sandy loam. (iii) 5.10.1960 ; 9.6.1961 ; 17.9.1962. (iv) (a) Ploughing, clod crushing and levelling. (b) Planting setts. (c) 29,640 setts/ha. with 3 eyebud. (d) 91 cm. between rows. (e) 1. (v) 336 Kg/ha. of N in 4 rows. (vi) CO. 419 (late). (vii) Irrigated. (viii) Hand weeding, intercultivation and earthing up. (ix) Normal. (x) 15.10.1961 ; 17.9.1962 and 28.10.1963.

2. TREATMENTS :

6 manurial treatments : T_1= 25 C.L./ha. of F.Y.M.+112/Kg/ha. of P_2O_5 as Super at planting, T_2= 25 C.L./ha. of F.Y.M.+224 Kg/ha. of P_2O_5 as Super at planting, T_3=*Sannhemp* at 5604 Kg/ha.+112 Kg/ha. of P_2O_5 as Super at planting, T_4=*Sannhemp* at 5604 Kg/ha.+224 Kg/ha. of P_2O_5 as Super at planting, T_5=*Sannhemp* at 112 Kg/ha. of P_2O_5 as Super to *sannhemp* and T_6=*Sannhemp* at 5604 Kg/ha.+224 Kg/ha. of P_2O_5 as Super to *sannhemp*.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 7·3 m.×7·3 m. ; 9·1 m.×9·1 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) 2—4, D was sprayed. (iii) Germination, tiller count and yield of cane. (iv) (a) 1960 to 1962. (b) No. (c) Nil. (v) N.A. (vi) Nil. (vii) Error variances are heterogeneous. Treatments×years interaction is absent.

5. RESULTS :

60(190)

(i) 1662 Q/ha. (ii) 177·8 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	1654	1687	1665	1790	1690	1488

61(193)

(i) 1587 Q/ha. (ii) 264·9 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	1565	1521	1443	1677	1525	1792

62(173)

(i) 1796 Q/ha. (ii) 129·6 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	1788	1962	1835	1840	1679	1671

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Crop :- Sugarcane. **Ref :- Ms. 60(205), 61(211), 62(204).**

Site :- Reg. Res. Stn., Mandya. **Type :- 'M'.**

Object : —To study the effect of important green manures crops on the succeeding major crop of Sugarcane.

1. BASAL CONDITIONS :

(i) (a) and (b) As per treatments. (c) Nil. (ii) Sandy loam. (iii) 29.11.1959 ; 12.7.1961 ; 30.9.1961. (iv) (a) Ploughing. (b) Planting. (c) 29, 652 (3-budded) setts/ha. (d) 91 cm. between rows. (e) N.A. (v) 84 Kg/ha. of P_2O_5+336 Kg/ha. of N in 3 doses+112 Kg/ha. of K_2O, 28 C.L./ha. of F.Y.M. applied to control plots. (vi) CO—419. (vii) Irrigated. (viii) Passing tin harrow and blade harrow 3 times ; weeding and culturing. (ix) 60 cm. ; 110 cm. ; 127 cm. (x) 28 12.1960 ; 26.10.1962 ; 9.11.1963.

2. TREATMENTS :

4 previous G.M. crops : T_0=Control (No G.M. crop), T_1=*Sannhemp*, T_2=*Dhaincha* and T_3=*Sasbania Speciosa*.

3. DESIGN :

(i) R.B D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 8·2 m.×12·2 m. (b) 6·4 m.×10·4 m. (v) 91 cm.×91 cm (vi) Yes.

4. GENERAL :

(i) Normal. (ii) N.A. (iii) Cane yield. (iv) (a) 1960 to 1962. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Error variances are heterogeneous and Treatments×years interaction is absent.

5. RESULTS :

60(205)

(i) 796 Q/ha. (ii) 33 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
Av. yield	797	805	796	785

61(211)

(i) 1616 Q/ha. (ii) 146·4 Q/ha. (iii) Treatment differences are significant. (iv) Av. yield of sugarcane in Q/ha.

Treatment	T_0	T_1	T_2	T_3
Av. yield	1797	1478	1624	1565

C.D.=180·1 Q/ha.

62(204)

(i) 1204 Q/ha. (ii) 176·7 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
Av. yield	1230	1203	1190	1192

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Crop :- Sugarcane. **Ref :- Ms. 61(171), 62(210).**

Site :- Sugarcane Res. Stn., Mandya. **Type :- 'M'.**

Object :—To study the effect of lime on the yield of Cane.

1. BASAL CONDITIONS :

(i) (a) Nii. (b) *Ragi*. (c) 33·6 Kg/ha. of N+33·6 Kg/ha. of P_2O_5+67·2 Kg/ha. of K_2O. (ii) Sandy loam. (iii) 10.10.1961 ; 12.10.1962. (iv) (a) Ploughing. (b) Planting setts. (c) 30,000 setts/ha. with 3 eye buds/sett. (d) 91 cm. between rows. (e) 1. (v) 112 Q/ha. of F.Y.M.+84 Kg/ha. of P_2O_5+112 Kg/ha. of K_2O +336 Kg/ha. of N in 4 doses. (vi) CO—419. (vii) Irrigated. (viii) Hand weeding and interculturing. (ix) 165 cm. ; N A. (x) 11.1.1963 ; 15 1.1964.

2. TREATMENTS :

6 doses of lime : L_0=0, L_1=6·3, L_2=12·6, L_3=18·8, L_4=25·1 and L_5=37·7 Q/ha.
Lime applied on 23.7.1961 and 3rd week after planting, ploughed into the soil and cultivation was done.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iji) 4. (iv) (a) 9·1 m.×9·1 m. (b) 9·1 m.×7·3 m. (v) 91 cm. on either side. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Yield of sugarcane. (iv) (a) 1961 to 1963 (Treatments changed in 1963). (b) No. (c) Nil. (v) and (vi) No. (vii) Error variances are heterogeneous and Treatments×years interaction is absent.

5. RESULTS :

61(171)

(i) 1238 Q/ha. (ii) 337·6 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of sugarcane in Q/ha.

Treatment	L_0	L_1	L_2	L_3	L_4	L_5
Av. yield	1179	1230	1236	1209	1289	1283

62(210)

(i) 1548 Q/ha. (ii) 132·7 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of sugarcane in Q/ha.

Treatment	L_0	L_1	L_2	L_3	L_4	L_5
Av. yield	1474	1538	1546	1512	1613	1604

Crop :- Sugarcane. **Ref :- Ms. 63(154).**

Site :- Sugarcane Res. Stn., Mandya. **Type :- 'M'.**

Object :—To study the effect of lime on the yield of Cane.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Ragi*. (c) 33·6 Kg/ha. of N+33·6 Kg/ha. of P_2O_5+67·2 Kg/ha. of K_2O. (ii) Sandy loam. (iii) 13.9.63. (iv) (a) Ploughing. (b) Planting in setts. (c) 3 eyebudded, 30,000 setts/ha. (d) 91 cm. between rows. (e) N.A. (v) 112 Q/ha. of F.Y.M.+84 Kg/ha. of P_2O_5+112 Kg/ha. of K_2O+336 Kg/ha. of N in 4 doses. (vi) Co—419. (vii) Irrigated. (viii) Hand weeding and interculturing. (ix) 187 cm. (x) 29.11.64.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of lime : L_0=0, L_1=12·6 Q/ha. of lime and L_2=37·7 Q/ha. of Dolomite.

(2) 2 levels of *Sannhemp* : S_0=Control and S_1=*Sannhemp* (quantity N.A.).

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 9 1 m.×6·1 m. (b) 7·3 m ×6·1 m. (v) 91 cm. on either side. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Yield of cane. (iv) (a) 1961—63 (modified in 63). (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1052 Q/ha. (ii) 179·2 Q/ha. (iii) None of the effects is significant. (iv) Av. yield of sugarcane in Q/ha.

	L_0	L_1	L_2	Mean
S_0	1079	982	1031	1031
S_1	1144	1019	1053	1072
Mean	1112	1000	1042	1052

Crop :- Sugarcane (*Adsali*). **Ref :- Ms. 62(172), 63(168), 64(128), 65(40).**

Site :- Sugarcane Res. Stn., Mandya. **Type :- 'M'.**

Object :—To find the optimum combination of N, P and K for *Adsali* Cane.

1. BASAL CONDITIONS :

(i) (a) and (b) Nil. (c) N.A. (ii) Sandy loam. (iii) 14.8.62; 29.9.63; 8.7.64 ; 7.7.65. (iv) (a) Ploughing, clod crushing and levelling. (b) Planting setts. (c) 29,640 setts/ha. (3-eye budded). (d) 91 cm. between rows. (e) 1. (v) 25 C.L./ha. of F.Y.M. at planting. (vi) Co.—419 (late). (vii) Irrigated. (viii) 2 to 3 hand weedings and interculturing by bullocks and earthing up (ix) Normal in 62 to 64; 116 cm. in 65. (x) 16.11.63; 15.12.64; 27.10.65 ; 26 to 28.11.66.

2. TREATMENTS :

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

(1) 2 levels of N as A/S : N_1=224 and N_2=336 Kg/ha.

(2) 3 levels of P_2O_5 as Super : P_1=56, P_2=112 and P_3=168 Kg/ha.

(3) 3 levels of K_2O as Pot. Chl. : K_1=84, K_2=168 and K_3=252 Kg/ha.

10, 20, 30 and 40% of N applied at planting, 6, 10, 14 weeks after planting respectively. P_2O_5 applied at planting.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 18. (b) N.A. (iii) 3 for 62 and 2 for other years. (iv) (a) 11·9 m.×11·9 m. (b) 10·1 m.×10·1 m. (v) 91 cm.×91 cm. (vi) Yes.

4- GENERAL :

(i) Fair. (ii) 2—4, D weedicides sprayed 2 to 3 days after planting. (iii) Sugarcane yield. (iv) (a) 1962—65. (b) No. (c) Nil. (v) N.A. (vi) Nil. (vii) Error variances are heterogeneous and Treatments×years interaction is absent.

5. RESULTS :

62(172)

(i) 1744·2 Q/ha. (ii) 351·7 Q/ha. (iii) Interaction N×P is significant. (iv) Av. yield of sugarcane in Q/ha.

	P_1	P_2	P_3	K_1	K_2	K_3	Mean
N_1	1666·3	1777·6	1584·8	1641·9	1707·2	1679·6	1676·2
N_2	1803·5	1591·2	2041·8	1812·9	1758·4	1865·2	1812·2
Mean	1734·9	1684·4	1813·3	1727·4	1732·8	1772·4	1744·2
K_1	1618·3	1647·0	1916·9				
K_2	1807·0	1558·7	1832·6				
K_3	1779·4	1847·4	1690·5				

C.D. for body of NP table=337·0 Q/ha.

63(168)

(i) 1414·2 Q/ha. (ii) 136·4 Q/ha. (iii) None of the effects is significant. (iv) Av. yield of sugarcane in Q/ha.

	P_1	P_2	P_3	K_1	K_2	K_3	Mean
N_1	1364·3	1471·1	1489·5	1461·7	1437·7	1425·5	1441·6
N_2	1363·7	1341·1	1455·3	1323·7	1492·3	1344·1	1386·7
Mean	1364·0	1406·1	1472·4	1392·7	1465·0	1384·8	1414·2
K_1	1282·1	1363·3	1532·7				
K_2	1511·7	1454·7	1428·6				
K_3	1298·1	1400·3	1455·9				

64(128)

(i) 1866·4 Q/ha. (ii) 171·9 Q/ha. (iii) Main effect of N is significant. K effect is highly significant. (iv) Av. yield of sugarcane in Q/ha.

	P_1	P_2	P_3	K_1	K_2	K_3	Mean
N_1	1763·4	1807·8	1793·3	1606·6	1843·5	1914·4	1788·2
N_2	1970·4	1977·2	1886·1	1869·2	1850·1	2114·5	1944·6
Mean	1866·9	1892·5	1839·7	1737·9	1846·8	2014·4	1866·4
K_1	1689·1	1683·4	1841·2				
K_2	1885·1	1916·2	1739·0				
K_3	2026·5	2077·9	1938·9				

C.D. for N marginal means=120·9 Q/ha.

C.D. for K marginal means=148·1 Q/ha.

65(40)

(i) 1603·4 Q/ha. (ii) 283·6 Q/ha. (iii) None of the effects is significant. (iv) Av. yield of sugarcane in Q/ha.

	P_1	P_2	P_3	K_1	K_2	K_3	Mean
N_1	1553·9	1789·2	1606·6	1576·9	1722·3	1650·5	1649·9
N_2	1475·1	1537·0	1658·8	1576·3	1491·3	1603·4	1557·0
Mean	1514·5	1663·1	1632·7	1576·6	1606·8	1626·9	1603·4
K_1	1584·3	1573·5	1572·0				
K_2	1485·5	1759·6	1575·3				
K_3	1473·8	1656·1	1750·8				

Crop :- Sugarcane. **Ref :- Ms. 60(211), 61(214).**

Site :- Sugarcane Res. Stn., Mandya. **Type :- 'M'.**

Object :—To study the possibility of replacing organic manures partly or wholly by inorganic fertilizers.

1. BASAL CONDITIONS :

(i) (a) *Ragi*—Sugarcane. (b) *Ragi*. (c) N.A. (ii) Sandy loam. (iii) 11.1.60; 31.1.61. (iv) (a) Ploughing. (b) Planting setts. (c) 30,000 setts/ha. (d) 91 cm between rows. (e) Nil. (v) 25 C.L./ha. of F.Y.M. (vi) Co—419. (vii) Irrigated. (viii) Digging and passing tin harrow and blade harrow 3 times. (ix) N.A. (x) 19.1.61; 30.1.62.

2. TREAPMENTS:

10 manurial treatments : M_0=Control (no manure), M_1=20 C.L /ha. of F.Y.M., M_2=N, P and K equivalent of M_1 in inorganic form, $M_3=M_1+M_2$, $M_4=M_2+M_7$, M_5=10 C.L./ha. of F.Y.M.+M_7+N, P and K equivalent of ½ of M_2 in inorganic form, $M_6=M_7+5$ C.L./ha. of F.Y.M.+N, P and K equivalent of 3/4 of M_2 in inorganic form, M_7=336 Kg/ha. of N+84 Kg/ha. of P_2O_5+112 Kg/ha. of K_2O as top dressing, $M_8=M_7$ with N as A/S and G.N.C. in 1 : 1 ratio and $M_9=M_3+M_8$.

Equivalent of M_2 is 55 Kg/ha. of N+125 Kg/ha. of P_2O_5+251 Kg/ha. of K_2O in inorganic form.

3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N A. (iii) 3. (iv) (a) 9·8 m.×5·5 m.; 7·3 m.×6·1 m. (b) 7·9 m.×3·7 m.; 7·3 m.×6·1 m. (v) 91 cm.×91 cm. for 60 ; Nil for 61. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of cane. (iv) (a) 1959—61. (b) No. (c) Results of combined analysis given under 5. Results. (v) N.A. (vi) Nil. (vii) Expt. no. 59(60) has also been taken while pooling. Error variances are homogeneous and Treatments×years interaction is present.

5. RESULTS :

(i) 746 Q/ha. (ii) 237·8 Q/ha. (based on 18 d.f. made up of Treatments×years interaction. (iii) Treatment differences are significant. (iv) Av. yield of sugarcane in Q/ha.

Treatment	M_0	M_1	M_2	M_3	M_4	M_5	M_6	M_7	M_8	M_9
Av. yield	451	677	737	875	777	784	867	725	641	922

C.D.=223·4 Q/ha.

Years	M_0	M_1	M_2	M_3	M_4	M_5	M_6	M_7	M_8	M_9	Sig.	G.M.	S.E./plot
1960	305	635	536	1052	549	621	823	543	424	926	N.S.	641	187·3
1961	447	461	601	472	630	604	537	493	413	793	N.S.	545	161·9
Pooled	451	677	737	875	777	784	867	725	641	922	*	746	237·8

Crop :- Sugarcane (*Adsali*). **Ref :- Ms. 60(210).**

Site :- Reg. Res. Stn., Mandya. **Type :- 'M'.**

Object :—To study the possibility of replaclng organic manures partly or wholly by inorganic.

1. BASAL CONDITIONS :

(i) (a) *Ragi*—Sugarcane. (b) *Ragi*. (c) N.A. (ii) Sandy loam. (iii) 16.7.1960. (iv) (a) Ploughing. (b) Planting setts. (c) 30,000 setts/ha. (d) 91 cm. between rows. (e) N.A. (v) 28 C.L./ha. of F.Y.M. at planting. (vi) Co—419. (vii) Irrigated. (viii) Digging, passing tin harrow and blade harrow 3 times. (ix) N.A. (x) 5.7.61.

2. TREATMENTS :

Same as in expt. no. 60(211), 61(214) on page 310.

3. DESIGN :

(i) R.B,D. (ii) (a) 10. (b) N.A. (iii) 3. (iv) (a) 9·1 m.×9·1 m. (b) 7·3 m.×7·3 m. (v) 91 cm.×91 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) N.A. (iii) Cane yield. (iv) (a) 1958—60. (b) No. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

(i) 997 Q/ha. (ii) 159·7 Q/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of sugarcane in Q/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9
Av. yield	586	691	953	1170	1138	1267	1064	953	928	1220

C.D.=273·9 Q/ha.

Crop :- Sugarcane. **Ref :- Ms. 60(206).**

Site :- Reg. Res. Stn., Mandya. **Type :- 'M'.**

Object :—To study the effect of different nitrogeneous fertilizers on the yield of Sugarcane.

1. BASAL CONDITIONS :

(i) (a) to (c) Nil. (ii) Sandy loam. (iii) 3.8.1960. (iv) (a) Ploughing. (b) Planting. (c) 26 setts/row. (d) 91 cm. between rows. (e) Nil. (v) 28 C.L./ha. of F.Y.M.+84 Kg/ha. of P_2O_5. (vi) Co—419. (vii) Irrigated (viii) Passing blade harrow and tin harrow 3 times, weeding and interculturing. (ix) 60 cm. (x) 11.8.61.

2. TREATMENTS :

6 manurial treatments : M_1=C/A/N at 224 Kg/ha , M_2=A/C at 202 Kg/ha., M_3=Urea at 112 Kg/ha., M_4= A/S/N at 202 Kg/ha., M_5=C/N at 336 Kg/ha. and M_6=A/S at 224 Kg/ha.
All applied in 4 doses viz. 10, 20, 30 and 40 percent at planting, 6th, 10th and 14th week after planting respectively.

3. DESIGN :

(i) L. Sq. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) 9·8 m.×7·3 m. (b) 7·9 m.×5·5 m. (v) 91 cm. ×91 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) N.A (iii) Yield of sugarcane. (iv) (a) 1959—60. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS .

(i) 1323 Q/ha. (ii) 208·8 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of sugarcane in Q/ha.

Treatment	M_1	M_2	M_3	M_4	M_5	M_6
Av. yield	1266	1335	1267	1472	1332	1265

Crop :- Sugarcane (*Adsali*). **Ref :- Ms. 62(212).**

Site :- Reg. Res. Stn., Mandya. **Type :- 'M'.**

Object :—To study the response of *ratoon* crop of Sugarcane at varying levels of N and P.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sugarcane. (c) N.A. (ii) Sandy loam. (iii) 20.9.62. (iv) (a) Ploughing. (b) Planting setts. (c) 25,000 setts/ha. approx. (d) 91 cm. between rows. (e) Nil. (v) 49·4 C.L./ha. of F.Y.M. (vi) Co—419. (vii) Irrigated. (viii) Digging, passing tin harrow and blade harrow 3 times. (ix) N.A. (x) 2.10.1963.

2. TREATMENTS :

All combinations of (1) and (2)
(1) 2 levels of N : N_1=224 and N_2=334 Kg/ha.
(2) 3 levels of P_2O_5 : P_0=0, P_1=56·0 and P_2=112·1 Kg/ha.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 9·1 m.×4·6 m. (v) and (vi) Yes.

4. GENERAL :

(i) Fair. (ii) N.A. (iii) Yield of sugarcane. (iv) (a) to (c) No. (v) to (vii) N.A.

5. RESULTS :

(i) 1331 Q/ha. (ii) 279·9 Q/ha. (iii) No effect is significant. (iv) Av. yield of sugarcane in Q/ha.

	P_0	P_1	P_2	Mean
N_1	1372	1320	1305	1332
N_2	1199	1387	1400	1329
Mean	1286	1354	1352	1331

Crop :- Sugarcane (*Main*). **Ref :- Ms. 62(211).**

Site :- Reg. Res. Stn., Mandya. **Type :- 'M'.**

Object :—To study the response of *ratoon* crop of Sugarcane at varying levels of N and P.

1. BASAL CONDITIONS :

(i) (a) to (c) Nil. (ii) Sandy loam. (iii) 15.1.62. (iv) (a) Ploughing. (b) Planting setts. (c) 25,000 setts/ha. (d) 91 cm. between rows. (e) Nil. (v) 49 C.L./ha. of F.Y.M. (vi) Co—419. (vii) Irrigated. (viii) Digging and interculturing, passing blade harrow 3 times. (ix) 127 cm. (x) 5.2.63.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N : N_1=168, N_2=224 and N_3=280 Kg/ha.

(2) 2 levels of P_2O_5 : P_1=56·0 and P_2=112·1 Kg/ha.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 9·1 m.×9 1 m. (v) N.A. (vi) **Yes.**

4. GENERAL :

(i) Fair. (ii) N.A. (iii) Yield of sugarcane. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1108 Q/ha. (ii) 236·3 Q/ha. (iii) None of the effects is significant. (iv) Av. yield of sugarcane in Q/ha.

	N_1	N_2	N_3	Mean
P_1	1173	1147	1149	1156
P_2	1075	943	1161	1060
Mean	1124	1045	1155	1108

Crop :- Sugarcane. **Ref :- Ms. 64(113).**

Site :- Sugarcane Res. Stn., Mandya. **Type :- 'M'.**

Object :—To compare the effects of Super vs. Thomas phos. on Sugarcane.

1. BASAL CONDITIONS :

(i) (a) *Ragi*—Sugarcane. (b) *Ragi*. (c) N.A. (ii) Sandy loam. (iii) 26.9.64. (iv) (a) Ploughing and clod crushing. (b) Planting of setts. (c) 30,000 3 eyebudded setts/ha. (d) 91 cm. between rows. (e) 1. (v) 33·6 Kg/ha. of N as A/S in 4 doses+112 Kg/ha. of K_2O as Pot. Chloride in 1 dose. (vi) Co—419. (vii) Irrigated. (viii) Interculturing and weeding. (ix) 68 cm. (x) 18.1.68.

2. TAEATMENTS :

3 manurial treatments : T_1=84 Kg/ha. of P_2O_5 at planting as Super, T_2=84 Kg/ha. of P_2O_5 as Thomas Phos. at planting and T_3=84 Kg/ha. of P_2O_5 at planting as Super+CaO (form N.A.) at 186 Kg/ha.+Mg. Phos. at 9·3 Kg/ha.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 4. (iv) (a) and (b) 9·1 m.×8·2 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Cane yield. (iv) (a) 1964 only. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 917 Q/ha. (ii) 302.5 Q/ha. (ii) Treatment differences are not significant. (iv) Av. yield of sugarcane in Q/ha.

Treatment	T_1	T_2	T_3
Av. yield	890	920	942

Crop :- Sugarcane (*Adsali*). **Ref :- Ms. 60(189).**

Site :- Sugarcane Res. Stn., Mandya. **Type :- 'M'.**

Object :—To study the effect of N, P and K applied individually and in combinations on the yield of Sugarcane.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Ragi*. (c) N.A. (ii) Sandy loam. (iii) 22.6.60. (iv) (a) Ploughing, clod crushing and levelling. (b) Planting setts. (c) 29,640 (3 eyebudded) setts/ha. (d) 91 cm. between rows. (e) 1. (v) 10 C.L./ha. of F.Y.M. at planting. (vi) Co—419 (late). (vii) Irrigated. (viii) Hand weeding. (ix) N.A. (x) 30.7.61.

2. TREATMENTS :

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

(1) 2 levels of N as A/S : N_1=168, N_2=336 and N_3=504 Kg/ha.

(2) 3 levels of P_2O_5 as Super : P_0=0, P_1=84 and P_2=168 Kg/ha.

(3) 3 levels of K_2O : K_0=0, K_1=112 and K_2=224 Kg/ha.

10, 20, 30 and 40 percent of N applied at planting, remaining dose 6th week, 10th week and 14th week after planting. P and K applied at planting.

3. DESIGN :

(i) 3^3 confd. (ii) (a) 9 plots/block; 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 9·1 m.×9·1 m. (b) 7·3 m. ×7·3 m. (v) 91 cm. on all sides. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Tiller counts and cane yield. (iv) (a) 1958—61 (crop seasons differ). (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1445·8 Q/ha. (ii) 266·1 Q/ha. (iii) None of the effects is significant. (iv) Av. yield of cane in Q/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_1	1513·9	1381·5	1298·0	1384·8	1408·5	1400·1	1397·8
N_2	1341·0	1613·3	1312·2	1416·2	1433·9	1416·5	1422·2
N_3	1487·4	1588·5	1476·3	1401·4	1489·3	1661·6	1517·4
Mean	1447·5	1527·8	1362·2	1400·8	1443·9	1492·7	1445·8
K_0	1424·8	1415·8	1361·8				
K_1	1495·5	1479·6	1356·6				
K_2	1422·1	1687·9	1368·2				

Crop :- Sugarcane (*Annual*). **Ref :- Ms. 61(188).**

Site :- Sugarcane Res. Stn., Mandya. **Type :- 'M'.**

Object :—To study the effect of N, P and K applied individually and in combinations on the yield of of Sugarcane.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy. (c) N.A. (ii) Sandy loam. (iii) 28.1.61. (iv) (a) Ploughing, clod crushing and levelling. (b) Planting. (c) 29,640 (3 eye budded) setts/ha. (d) 91 cm. between rows (e) 1. (v) 10 C.L./ha. of F.Y.M. at planting. (vi) Co–419 (late). (vii) Irrigated. (viii) Hand weeding. (ix) N.A. (x) 30.1.62.

2. TREATMENT :

Same as in expt. no. 60(189) on page no. 314.

3. DESIGN :

(i) 3^3 confd. (ii) (a) 9 plots/block; 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 15·2 m.×6·4 m. (b) 13·4 m.×4·6 m. (v) 91 cm. on all sides. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Tiller count and cane yield. (iv) (a) 1958–61 (seasons differ). (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 743·2 Q/ha. (ii) 171·1 Q/ha. (iii) Main effect of P is significant. (iv) Av. yield of sugarcane in Q/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_1	676·4	669·0	787·3	644·3	676·6	811·9	710·9
N_2	663·9	797·3	807·5	727·0	772·8	769·0	756·3
N_3	696·0	708·7	882·8	733·3	856·3	697·7	762·4
Mean	678·9	725·0	825·8	701·5	768·6	759·5	743·2
K_0	663·6	689·3	751·7				
K_1	663·7	784·6	857·5				
K_2	709·1	701·3	868·2				

C.D. for P marginal means=119·8 Q/ha.

Crop :- Sugarcane (*Adsali*). **Ref :- Ms. 61(191).**

Site :- Sugarcane Res. Stn., Mandya. **Type :- 'M'.**

Object :—To study the effect of compound fertilizers like Mg. phos. and Nitro-phos. on the yield of Cane.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fodder. (c) N.A. (ii) Sandy loam. (iii) 27.9.61. (iv) (a) Ploughing, clod crushing and levelling. (b) Planting setts. (c) 29,640 (3 eye budded) setts/ha. (d) 91 cm. between rows. (e) 1. (v) 25 C.L./ha. of F.Y.M. (vi) Co—419 (late). (vii) Irrigated. (viii) 2 to 3 hand weedings and intercultivating by bullocks and earthing up. (ix) N.A. (x) 15.1.63.

2. TREATMENTS :

4 fertilizers : T_1=134 Kg/ha. of N as A/s+79 Kg/ha. of P_2O_5 as Super at 14th week of planting and 33 Kg/ha. of P_2O_5 as Super at planting, T_2=Same as T_1 source of P_2O_5 is Mg. Phos., T_3=56 Kg/ha. of N as A/S+79 Kg/ha. of N+79 Kg/ha. of P_2O_5 as Nitro-phos. at 14th week of planting and 33 Kg/ha. of P_2O_5 as O.D.D.A. at planting and T_4=40 Kg/ha. of N as A/S+92 Kg/ha. of N and 83 Kg/ha. of P_2O_5 as Nitrophos. at 14th week of planting and 29 Kg/ha. of P_2O_5 as PEC at planting.

33, 67 and 101 Kg/ha. of N as A/S applied at planting, 6th week and 10th week after planting to all the plots.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 8·2 m.×9·1 m. (b) 6·4 m.×7·3 m. (v) 91 cm.×91 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) 2—4, D weedicide sprayed 2 to 3 days after planting. (iii) Tillering counts and yield of cane. (iv) (a) 1961—63 (Treatments modified in 1962). (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1406·8 Q/ha. (ii) 202·8 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
Av. yield	1400·4	1383·4	1300·1	1543·5

Crop :- Sugarcane (*Adsali*). **Ref :- Ms. 62(215), 63(199).**

Site :- Sugarcane Res. Stn., Mandya. **Type :- 'M'.**

Object :—To study the effect of compound fertilizers on the yield of Sugarcane.

1. BASAL CONDITIONS :

(i) (a) *Ragi*—Sugarcane. (b) *Ragi*. (c) N.A. (ii) Sandy loam. (iii) 15.10.62; 13.9.63. (iv) (a) Ploughing. (b) Planting setts. (c) 30,000 setts/ha. (approximately). (d) 91 cm. between rows. (e) Nil. (v) 25 C.L./ha. of F.Y.M. (vi) Co—419 (late). (vii) Irrigated. (viii) Digging and earthing up. (ix) N.A. (x) 4.12.1963 ; N.A.

2. TREATMENTS :

5 fertilizers : T_1=134·4 Kg/ha. of N as A/S+78·4 Kg/ha. of P_2O_5 as Super at 14th week of planting and 33·6 Kg/ha. of P_2O_5 as Super at planting, T_2=As T_1 except source of P_2O_5 is Mg. Phos., T_3=56·0 Kg/ha. of N as A/S+78·4 Kg/ha. of N+78·4 Kg/ha. of P_2O_5 at 14th week of planting and 33·6 Kg/ha. of P_2O_5 at planting (source—Nitrophos. and O.D.D.A.), T_4=41·4 Kg/ha. of N as A/S+93·0 Kg/ha. of N+82·9 Kg/ha. of P_2O_5 at 14th week of planting and 29·1 Kg/ha. of P_2O_5 at planting (source—Nitrophos. and O.D.D.A.) and T_5=106·4 Kg/ha. of N as A/S+28·0 Kg/ha. of N+78·4 Kg/ha. of P_2O_5 at 14th week of planting+33·6 Kg/ha. of P_2O_5 as Ammo. Phos. at planting.

33·6, 67·2 and 100·8 Kg/ha of N applied at planting, 6th and 10th week of planting to all the plots, source of N for T_1 to T_4 is A/S and for T_5 is A/S and Ammo. Phos. in 2 : 1 ratio.

3. DESIGN :

(i) L. Sq. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 9·1 m.×8·2 m. (b) 9·1 m.×6·4 m. (v) and (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of Cane. (iv) (a) 1961—63 (Treatments modified in 62). (b) No. (c) Nil (v) and (vi) Nil. (vii) Variances are heterogeneous and Treatments×years interaction is absent.

5. RESULTS :

62(215)

(i) 1495 2 Q/ha (ii) 252·6 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grain in Q/ha.

Treatment	T_1	T_2	T_3	T_4	T_5
Av. yield	1647 0	1500·1	1474·5	1416·8	1437·6

63(199)

(i) 1032·2 Q/ha (ii) 475·2 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
Av. yield	1044·4	1091·3	1102·4	1014·6	908·4

Crop :- Sugarcane (*Adsali*). **Ref :- Ms. 60(191).**

Site Sugarcane Res. Stn., Mandya. **Type :- 'M'.**

Object :—To study the suitable carrier and placement method of phosphate for Sugarcane.

1. BASAL CONDITIONS :

(i) (a) *Ragi*—Sugarcane. (b) *Ragi*. (c) 33·6 Kg/ha. of N+33·6 Kg/ha. of P_2O_5+67·2 Kg/ha. of K_2O. (ii) Sandy loam. (iii) 18.8.60. (iv) (a) Ploughing, clod crushing and levelling. (b) Planting setts. (c) 29,640 (3 budded) setts/ha. (d) 91 cm. within rows. (e) Nil. (v) 25 C.L./ha. of F.Y.M.+33·6 Kg/ha. of N as A/S in 4 doses. (vi) Co - 419 (late). (vii) Irrigated. (viii) Hand weeding, intercultivation and earthing up. (ix) N.A. (x) 12.8.61.

2. TREATMENTS :

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

(1) 2 levels of P_2O_5 : P_0=0 and P_1=112 Kg/ha.

(2) 2 depths of placement : S_1=Surface and S_2=10 cm. deep.

(3) 3 methods of application : M_0=No mixing, M_1=Mixing with cowdung and M_2=Mixing with compost.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. (b) N A. (iii) 4. (iv) (a) 9·1 m. × 7·3 m. (b) 7·3 m. × 5·5 m. (v) 91 cm. × 91 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) 2--4, D was sprayed. (iii) Tiller count and yield of cane. (iv) (a) 1958 to 65 (treatments modified every year till 1962). (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1136·1 Q/ha. (ii) 108·7 Q/ha. (iii) P effect is highly significant, while M effect is significant. (iv) Av. yield of cane in Q/ha.

	S_1	S_2	M_0	M_1	M_2	Mean
P_0	1007·6	1004·8	1019·0	1059·8	939·8	1006·2
P_1	1279·7	1252·3	1232·1	1321·2	1244·6	1266·0
Mean	1143·6	1128·6	1125·6	1190·5	1092·2	1136·1
M_0	1162·6	1088·5				
M_1	1200·3	1180·7				
M_2	1068·0	1116·5				

Crop :- Sugarcane (*Adsali*). **Ref :- Ms. 61(194).**

Site :- Sugarcane Res. Stn., Mandya. **Type :- 'M'.**

Object :—To study the suitable carrier and placement method of phosphate for Sugarcane.

1. BASAL CONDITIONS :

(i) (a) *Ragi*—Sugarcane. (b) *Ragi*. (c) 33 Kg/ha. of N+33 Kg/ha. of P_2O_5+67 Kg/ha. of K_2O. (ii) Sandy loam. (iii) 23.8.1961. (iv) (a) Ploughing, clod crushing and levelling. (b) Planting setts. (c) 3 eyebudded 29640 setts/ha. (d) 91 cm. within rows. (e) Nil. (v) 25 C.L./ha. of F.Y.M.+336 Kg/ha. of N as A/S in 4 doses. (vi) Co—419 (late). (vii) Irrigated. (viii) Hand weeding, intercultivation and earthing up. (ix) Normal. (x) 30.11.1962.

2. TREATMENTS :

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

(1) 3 levels of P_2O_5 : P_1=56, P_2=112 and P_3=168 Kg/ha.

(2) 2 depths of placement : S_1=Surface and S_2=10 cm. deep.

(3) 2 methods of application : M_0=No mixing and M_1=Mixing with cowdung.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 3. (iv) (a) and (b) 9·1 m.×8·2 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) 2—4, D was sprayed. (iii) Tiller count and yield of cane. (iv) (a) 1958 to 65 (modified every year till 62). (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS:

(i) 1412·7 Q/ha. (ii) 228·7 Q/ha. (iii) None of the effects is significant. (iv) Av. yield of cane in Q/ha.

	P_1	P_2	P_3	M_0	M_1	Mean
S_1	1330·1	1403·1	1440·1	1343·4	1438·8	1391·1
S_2	1453·2	1369·9	1479·7	1402·7	1465·9	1434·3
Mean	1391·6	1386·5	1459·9	1373·0	1452·4	1412·7
M_0	1366·4	1364·8	1387·8			
M_1	1416·9	1408·2	1532·0			

Crop :- Sugarcane. **Ref :- Ms. 62(174).**

Site :- Sugarcane Res. Stn., Mandya. **Type :- 'M'.**

Object :—To study the suitable carrier and placement method of phosphate for Sugarcane.

1. BASAL CONDITIONS :

(i) (a) *Ragi*—Sugarcane. (b) *Ragi*. (c) 33 Kg/ha. of N+33 Kg/ha. of P_2O_5+67 Kg/ha. of K_2O. (ii) Sandy loam. (iii) 29.8.62. (iv) (a) Ploughing, clod crushing and levelling. (b) Planting. (c) 29640 3 eye budded (d) 91 cm. within rows. (e) Nil. (v) 25 C.L./ha. of F.Y.M.+336 Kg/ha. of N as A/S in 4 doses. setts/ha. (vi) Co—419 (late). (vii) Irrigated. (viii) Hand weeding, intercultivation and earthing up. (ix) N.A. (x) 5.11.63.

[redacted]ENTS :

[redacted]inations of (1), (2) and (3).

[redacted]2 levels of P_2O_5 : P_1=84 and P_2=168 Kg/ha.

[redacted]2 levels of compost carrier : C_0=0 and C_1=Compost carrier mixed with cowdung.

[redacted]) 3 times of application : T_1=Full dose at planting, T_2=Full dose at earthing up and T_3=½ at planting and ½ at earthing up.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 3. (iv) (a) and (b) 9·1 m.×9·1 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) 2—4, D was sprayed. (iii) Tiller count and yield of cane. (iv) (a) 1958—65 (modified every year till 62). (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS:

(i) 1549·3 Q/ha. (ii) 214·5 Q/ha. (iii) None of the effects is significant. (iv) Av. yield of cane in Q/ha.

	T_1	T_2	T_3	C_0	C_1	Mean
P_1	1546·8	1468·2	1566·8	1490·8	1563·8	1527·3
P_2	1528·9	1598·8	1586·3	1584·0	1558·6	1571·3
Mean	1537·8	1533·5	1576·6	1537·4	1561·2	1549·3
C	1525·3	1495·6	1591·3			
C_1	1550·4	1571·4	1561·8			

Crop :- Sugarcane. **Ref :- Ms. 63(198), 64(158), 65(36).**

Site :- Sugarcane Res. Stn., Mandya. **Type :- 'M'.**

Object :—To study the suitable carrier and placement method of phosphate for Sugarcane.

1. BASAL CONDITIONS :

(i) (a) *Ragi*—Sugarcane. (b) *Ragi*. (c) Sandy loam. (iii) 18.8.63; 27.9.64; 20.9.65. (iv) (a) Ploughing. (b) Planting. (c) 30,000 setts/ha. (approx). (d) 91 cm. between rows. (e) 1. (v) 25 C.L./ha. of F.Y.M.+ 336 Kg/ha. of N as A/S in 4 doses. (vi) Co—419. (vii) Irrigated. (viii) Digging and earthing up in 1963, 64; Hand weeding, 2 to 3 interculturings and earthing up in 65. (ix) N.A. (63, 64); 108 cm. (x) N.A.; 21 to 23.1.66; 18 to 20.1.67.

2. TREATMENTS :

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

(1) 2 levels of P_2O_5 : P_1=84 and P_2=168 Kg/ha.

(2) 3 carriers : C_0=No carrier, C_1=Compost carrier and C_2=*Sannhemp* carrier i.e. G.M.

(3) 3 times of application : T_1=Full dose at planiing, T_2=Full dose at earthing up and T_3=Half at planting and half at earthing up.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 18. (b) N.A. (iii) 2. (iv) (a) 9·1 m.×9·1 m. (b) 9·1 m.×7·3 m. (v) and (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of cane. (iv) (a) 1958 to 65 (Treatments modified every year till 62 (c) As under 5. Results. (v) and (vi) Nil. (vii) Error variances are homogeneous. Treatmer interaction is absent.

5. RESULTS :

(i) 1529·0 Q/ha. (ii) 220 4 Q/ha. (based on 77 d f made up of pooled error and Treatments × years interaction). (iii) Interaction P × C alone is significant. (iv) Av yield of cane in Q/ha.

	C_0	C_1	C_2	T_1	T_2	T_3	Mean
P_1	1421	1564	1585	1451	1546	1571	1523
P_2	1575	1560	1469	1484	1560	1561	1535
Mean	1498	1562	1527	1468	1553	1566	1529
T_1	1495	1426	1483				
T_2	1508	1604	1548				
T_3	1492	1657	1550				

C.D. for body of P × C table=146·9 Q/ha.

Years	C_0	C_1	C_2	Sig.	T_1	T_2	T_3	Sig.
1963	1414	1480	1503	N.S.	1406	1444	1547	N.S.
1964	1650	1715	1626	N.S.	1578	1742	1671	N.S.
1965	1430	1491	1452	N.S.	1419	1474	1480	N.S.
Pooled	1498	1562	1527	N.S.	1468	1553	1566	N.S.

P_1	P_2	Sig.	G.M.	S.E./plot
1456	1475	N.S.	1466	224·1
1637	1691	N.S.	1664	240·6
1476	1439	N.S.	1458	264·3
1523	1535	N.S.	1529	220·4

Crop :- Sugarcane. **Ref :- Ms. 63(250), 64(208), 65(90).**

Site :- Agri. Res. Stn., Sankeswar. **Type :- 'M'.**

Object :—To find out the suitable N, P and K manurial schedule for the Sugarcane crop grown under lift irrigation tract.

1. BASAL CONDITIONS :

(i) (a) to (c) Nil. (b) Medium black soil. (iii) 21.1.63; 6.2.64; 25.2.65. (iv) (a) Ploughing and harrowing. (b) Wet method. (c) 24710 (3 eyebuded) setts/ha. (d) 91 cm. (e) Nil. (v) 24·7 C.L./ha. of F.Y.M. (vi) Co—419. (vii) Irrigated. (viii) 2 weedings and earthings. (ix) 93 cm.; 77 cm.; 61 cm. (x) 2nd week of Jan. 64; 11.1.65; 26.2.66.

[redacted]s :

tions of (1), (2) and (3)
vels of N : N_1=224 and N_2=336 Kg/ha.
vels of P_2O_5 : P_0=0 and P_1=84 Kg/ha.
levels of K_2O : K_1=84, K_2=168 and K_3=225 Kg/ha.
N and full dose of P and K applied in one dose at planting.
20%, 30% and 40% of N applied after 6th, 10th and 14th week of planting.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 10·7 m.×6·1 m. for 63 : 12·2 m.× 5·5 m. for 64 and 65. (v) 150 cm. around. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of cane. (iv) (a) 1963 to 65. (b) No. (c) Nil. (v) N.A. (vi) Nil. (vii) Error variances are heterogeneous and Treatments×years interaction is absent.

5. RESULTS :

63(250)

(i) 1503·3 Q/ha. (ii) 277·7 Q/ha. (iii) None of the effects is significant. (iv) Av. yield of cane in Q/ha.

	P_0	P_1	K_1	K_2	K_3	Mean
N_1	1572·8	1533·2	1551·5	1531·2	1576·3	1553·0
N_2	1393·8	1513·4	1581·9	1441·6	1337·3	1453·6
Mean	1483·3	1523·3	1566·7	1486·4	1456·8	1503·3
K_1	1621·5	1511·9				
K_2	1443·9	1528·9				
K_3	1384·5	1529·2				

64(208)

(i) 1249·1 Q/ha. (ii) 162·9 Q/ha. (iii) None of the effects is significant. (iv) Av. yield of cane in Q/ha.

	P_0	P_1	K_1	K_2	K_3	Mean
N_1	1222·3	1223·6	1234·4	1274·6	1159·9	1223·0
N_2	1229·6	1320·7	1241·2	1272·8	1311·4	1275·2
Mean	1226·0	1272·2	1237·8	1273·7	1235·7	1249·1
K_1	1175·9	1299·7				
K_2	1284·5	1262·9				
K_3	1217·5	1253·9				

65(90)

(i) 1022·3 Q/ha. (ii) 138·6 Q/ha. (iii) None of the effects is significant. (iv) Av. yield of cane in Q/ha.

	P_0	P_1	K_1	K_2	K_3	Mean
N_1	1021·8	1028·3	993·2	1072·5	1009·4	1025·0
N_2	991·7	1047·2	968·8	1027·9	1061·8	1019·5
Mean	1006·8	1037·8	981·0	1050·2	1035·6	1022·3
K_1	995·0	967·1				
K_2	1019·2	1081·2				
K_3	1006·2	1065·0				

Crop :- Sugarcane. **Ref :- Ms. 60(288), 61(277), 62(284).**

Site :- Agri. Res. Stn., Sankeswar. **Type :- 'M'.**

Object :—To evolve suitable manurial schedule for medium rainfall area of Belgaum zone under lift irrigation tract.

1. BASAL CONDITIONS :

(i) (a) Groundnut—*Jowar*—Sugarcane. (b) Groundnut—*Jowar* mixture (1960); Chillies 1961; N.A. (c) N.A. (1960); 44·8 Kg/ha. of N+22·4 Kg/ha. of P_2O_5+22·4 Kg/ha. of K_2O (1961); N.A. (ii) Medium black. (iii) 1.3.60; 29.1.61; N.A. (iv) (a) Ploughing and harrowing. (b) Wet method. (c) 24,700 3 eyebudded setts/ha. (d) 91 cm. between rows. (e) 1. (v) 24·7 C.L./ha. of F.Y.M. or T.C. (vi) Co—419 (vii) Irrigated. (viii) 3 weedings and earthing up 5 cm. and propping 2·5 cm. (ix) 100 cm. ; 115 cm. ; N.A. (x) 1.2.61; 2nd week of Jan. '62 ; N.A.

2. TREATMENTS :

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

(1) 3 levels of N : N_1=168, N_2=252 and N_3=336 Kg/ha.

(2) 3 levels of P_2O_5 : P_0=0, P_1=56 and P_2=112 Kg/ha.

(3) 3 levels of K_2O : K_0=0, K_1=84 and K_2=168 Kg/ha.

10% of N and full dose of P_2O_5 and K_2O applied at planting. The rest of N applied in 3 doses at 20%, 30% and 40%. (Details N.A.)

3. DESIGN :

(i) 3^3 confd. (ii) (a) 9 plots/block; 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 13·7 m.×7·0 m. (1960 and 62); 10·7 m.×5·5 m. (1961). (b) 12·2 m.×5·5 m. (1960 and 62); 9·1 m.×4·6 m. for 61. (v) 1·5m. ring. (vi) Yes.

4. GENERAL :

(i) Fair. Lodged to some extent. (ii) Top shoot borer and leaf spots and stem borer. (iii) Cane yield. (iv) (a) 1960 to 62. (b) No. (c) Nil. (v) N.A. (vi) Nil. (vii) Error variances are heterogeneous. Treatments×years interaction is absent.

5. RESULTS :

60(288)

(i) 1687·4 Q/ha. (ii) 168·0 Q/ha. (iii) Main effects of N and K 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_1	1598·5	1571·8	1573·7	1444·5	1534·1	1765·0	1581·2
N_2	1606·6	1786·2	1765·9	1674·7	1744·4	1739·6	1719·6
N_3	1809·4	1693 8	1781·5	1622·7	1892·9	1769·2	1761·6
Meau	1671·5	1683·9	1706·9	1580·6	1723·8	1757·9	1687·4
K_0	1635·5	1535·5	1570·9				
K_1	1748·5	1715·5	1707·4				
K_2	1630·6	1800·7	1842·5				

C.D. for N or K marginal means=115·6 Q/ha.

61(277)

(i) 1489·9 Q/ha. (ii) 108·1 Q/ha. (iii) None of the effects is significant. (iv) Av. yield of cane in Q/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_1	1503·9	I356·6	1518·7	1484·6	1423·2	1471·3	1459·7
N_2	1522·2	1512·7	1526·9	1495·6	1507·4	1558·7	1520·6
N_3	1522·4	1471·1	1474·7	1449·7	1534·5	1484·0	1489·4
Mean	1516·2	1446·8	1506·7	1476·6	1488·4	1504·7	1489·9
K_0	1513·6	1444·9	1471·4				
K_1	1540·6	1412·5	1512·5				
	1494·3	1482·9	1536·8				

62(284)

(i) 1120·3 Q/ha. (ii) 110·1 Q/ha. (iii) Main effects of N and P and interactions N×K are significant. (iv) Av. yield of cane in Q/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_1	1026·3	1031·0	1127·7	1053·5	1045·0	1086·6	1061·7
N_2	1039·8	1145·7	1186·0	1060·4	1214·7	1096·3	1123·8
N_3	1184·3	1115·0	1226·9	1237·6	I085·1	1203·5	1175·4
Mean	1083·5	1097·2	1180·2	1117·2	1114·9	1128·8	1120·3
K_0	1058·5	1110·5	1182·6				
K_1	1102·1	1053·7	I189·0				
K_2	1089·9	1127·5	1169·1				

C.D. for N or P marginal means=75·7 Q/ha.
C.D. for body of N×K table =131·1 Q/ha.

Crop :- Sugarcane (*Annual*).

Ref :- Ms. 63, 64, 65 (S.F.T.) for Belgaum 62, 64, (S.F.T.) for Hassan, 65(S.F.T.) for Mandya, 63, 65 (S.F.T.) for N. Kanara, 63, 64 (S.F.T.) for Shimoga.

Site :- (District) : Belgaum, Hassan, Mandya, N. Kanara and Shimoga.

Type :- 'M'.

Object :—Type A_1 : To study the response curves of important cereal, cash and oilseed crops to N applied singly and in combination with other nutrients.

1- BASAL CONDITIONS :

(i) N.A. (ii) Deep black for Belgaum ; laterite for N. Kanara and red sandy for others. (iii) to (vi) N.A. (vii) Unirrigatd. (viii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments :

O =Control (no manure).
N_1 =15 Kg/ha. of N.
N_2 =30 Kg/ha. of N.
P_1 =30 Kg/ha. of P_2O_5.
N_1P_1 =15 Kg/ha. of N+30 Kg/ha. of P_2O_5.
N_2P_1 =30 Kg/ha. of N+30 Kg/ha. of P_2O_5.
N_2P_2 =30 Kg/ha. of N+60 Kg/ha. of P_2O_5.
$N_2P_2K_1$ =30 Kg/ha. of N+60 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) and (ii) 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. (iii) (a) 1/100 ha. (b) 1/200 ha. (iv) Yes.

4. GENERAL :-

(i) to (iii) N.A. (iv) (a) 1962 to 1964 for Hassan [1963 N.A.] ; 1963 to 1964 for Shimoga ; 1963 to 1966 [1964 N.A. for N. Kanara] for Belgaum and N. Kanara ; 1965 only for Mandya. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

Belgaum

63(S.F.T.)

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 Q/ha.	143·5	224·4	70·7	192·3	252·4	283·8	331·8	16·3

Control yield=904·4 Q/ha. ; No. of trials=10.

64(S.F.T.)

Treatment	N_1	N_2	P_1	N_1P_1	N_2P_1	N_1P_2	$N_2P_2K_1$	S.E.
Av. response of cane in Q/ha.	140·9	275·4	89·8	175·1	316·2	411·6	486·7	19·4

Control yield=969·4 Q/ha. ; No. of trials=10.

65(S.F.T.)

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 Q/ha.	136·7	235·1	102·7	188·4	265·5	322·9	386·7	26·7

Control yield=1220 Q/ha. ; No. of trials=7.

Hassan

62(S.F.T.)

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 Q/ha.	110·3	57·4	46·6	183·3	133·6	91·5	278·9	63.9

Control yield=1413·1 Q/ha. ; No. of trials=2.

64(S.F.T.)

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 Q/ha.	37·6	69·6	−8·9	99·0	45·4	122·6	178·8	45·4

Control yield=850·0 Q/ha. ; No. of trials=3.

Mandya

65(S.F.T.)

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 Q/ha.	35·0	104·0	82·0	60·0	116·0	167·0	168·0	35·6

Control yield=1105·1 Q/ha. ; No. of trials=2.

N. Kanara

63(S.F.T.)

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 Q/ha.	49·9	103·2	31·2	60·7	116·1	131·3	146·4	8·6

Control yield=768·7 Q/ha. ; No. of trials=10.

65(S.F.T.)

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 Q/ha.	62·9	106·0	51·7	91·8	167·0	195·8	261·7	19·0

Control yield=1254·5 Q/ha. ; No. of trials=8.

Shimoga

63(S.F.T.)

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 Q/ha.	33·5	55·9	99·2	96·3	111·3	152·3	173·2	28·6

Control yield=636 Q/ha. ; No. of trials=6.

64(S.F.T.)

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 Q/ha.	88·3	145·0	97·5	223·4	280·0	151·6	314·3	74·5

Control yield=819·7 Q/ha. ; No. of trials=3.

Crop :- Sugarcane (*Annual*).

Ref :- Ms. 63, 64,65 (S.F.T.) for Belgaum; 62, 64, (S.F.T.) for Hassan ; 65, (S.F.T.) for Mandya; 63,65 (S.F.T.) for N. Kanara and 63, 64 (S.F.T.) for Shimoga.

Site :- (District) : Belgaum, Hassan, Mandya, N. Kanara and Shimoga.

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) Deep black for Belgaum ; Laterite for N. Kanara and Red sandy for others. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS:

8 manurial treatments :

O=Control (no manure).
N_1=15 Kg/ha. of N.
P_1=30 Kg/ha. of P_2O_5.
P_2=60 Kg/ha. of P_2O_5.
N_1P_1=15 Kg/ha. of N+30 Kg/ha. of P_2O_5.
N_1P_2=15 Kg/ha. of N+60 Kg/ha. of P_2O_5.
N_2P_2=30 Kg/ha. of N+60 Kg/ha. of P_2O_5.
$N_2P_2K_2$=30 Kg/ha. of N+60 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 324.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1962 to 1964 [1963 N.A.] for Hassan ; 1965 only for Mandya ; 1963 to 1964 for Shimoga ; 1963 to 1966 [1964 N.A. for N. Kanara] for others. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

Belgaum

63(S.F.T.)

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 Q/ha.	157.8	95·3	143·4	195·1	243·2	282·5	333·7	24·9

Control yield=837·8 Q/ha. ; No. of trials=11.

64(S.F.T.)

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 Q/ha.	115·6	61·6	178·5	124·5	225·5	376·3	431·9	25·2

Control yield=925·4 Q/ha. ; No. of trials=9.

65(S.F.T.)

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 Q/ha.	116·4	41·5	150·2	140·2	55·3	224·2	238·7	29·7

Control yield=1226 Q/ha. ; No. of trials=7.

Hassan

62(S.F.T.)

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 Q/ha.	91·5	39·4	98·7	14·3	148·0	202·7	212·5	41·4

Control yield=1029 Q/ha. ; No. of trials=2.

64(S.F.T.)

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 Q/ha.	70·2	49·3	90·6	70·4	138·4	125·2	197·8	28·3

Control yield=717 Q/ha. ; No. of trials=3.

Mandya

65(S.F.T.)

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 Q/ha.	29·0	60·0	16·0	112·0	153·0	203·0	258·0	77·4

Control yield=1089 Q/ha. ; No. of trials=3.

N. Kanara

63(S.F.T.)

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 Q/ha.	1·9	55·8	42·4	44·7	97·5	142·5	114·4	35·0

Control yield=748·9 Q/ha. ; No. of trials=9.

65(S.F.T.)

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 Q/ha.	68·7	35·9	71·9	106·4	145·8	200·7	234·4	17·2

Control yield=1170·7 Q/ha ; No. of trials=8.

Shimoga

63(S.F.T.)

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 Q/ha.	53·6	61·1	67·7	74·5	39·4	103·2	114·9	12·5

Control yield=680 Q/ha. ; No. of trials=3.

64(S.F.T.)

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 Q/ha.	53·4	27·7	−9·9	36·9	26·3	105·4	237·2	72·5

Control yield=968·6 Q/ha. ; No. of trials=3.

———

Crop :- Sugarcane (*Annual*).

Ref :- Ms. 63 to 65(S.F.T.) for Belgaum ; 62, 64 (S.F.T.) for Hassan; 65 (S.F.T.) for Mandya ; 63, 65 (S.F.T.) for N. Kanara and 63, 64 (S.F.T.) for Shimoga.

Site :- (District) : Balgaum, Hassan, Mandya, N. Kanara and Shimoga.

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) Deep black for Belgaum ; Laterite for N. Kanara and Red sandy for others. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments :

O =Control (no manure).
N_1 =15 Kg/ha. of N.
K_1 =30 Kg/ha. of K_2O.
K_2 =60 Kg/ha. of K_2O.
N_1K_1 =15 Kg/ha. of N+30 Kg/ha. of K_2O.
N_1K_2 =15 Kg/ha. of N+60 Kg/ha. of K_2O.
N_2K_2 =30 Kg/ha. of P_2O_5+60 Kg/ha. of K_2O.
$N_1P_1K_1$ =15 Kg/ha. of N+30 Kg/ha. of P_2O_5+30 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 324.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1962 to 1964 [1963—N.A.] for Hassan ; 1963 to 1964 for Shimoga ; 1965 only for Mandya and 1963 to 1966 [1964—N.A. for N. Kanara] for others. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

Belgaum

63(S.F.T.)

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 Q/ha.	149·5	63·4	172·8	88·0	205·5	269·6	217·3	18·7

Control yield=907 Q/ha. ; No. of trials=10.

64(S.F T.)

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 Q/ha.	—282·0	84·2	—241·0	103·8	—259·0	—141·3	—200·4	18·5

Control yield= 1155·6 Q/ha. ; No. of trials=10.

65(S.F.T.)

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 Q/ha.	122·9	50·9	30·9	131·5	147·1	238·6	190·9	22·4

Control yield=1123 Q/ha. ; No. of trials=9.

Hassan

62(S.F.T.)

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 Q/ha.	23·7	13·6	74·4	130·3	24·8	209·2	222·8	95·4

Control yield=1310 Q/ha. ; No. of trials=2.

64(S.F.T.)

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 Q/ha.	46·4	66·2	115·4	58·1	99·3	180·1	165·3	35·1

Control yield=762·3 Q/ha. ; No. of trials=2.

Mandya

65 (S.F.T.)

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 Q/ha.	49·0	74·0	89·0	133·0	127·0	142·0	102·0	24·5

Control yield=933 Q/ha. ; No. of trials=2.

N. Kanara

63(S.F.T.)

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 Q/ha.	61·9	26·1	69·4	35·1	81·5	135·3	95·7	85·4

Control yield=731 Q/ha. ; No. of trials=10.

65(S.F.T.)

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 Q/ha.	79·4	39·8	51·3	107·4	120·3	176·5	196·1	18·3

Control yield=1110 Q/ha.; No. of trials=8.

Shimoga

63(S.F.T.)

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 Q/ha.	2·5	16·8	46·9	67·6	124·1	98·0	96·0	30·1

Control yield=558 Q/ha. ; No. of trials=6.

64(S.F.T.)

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 Q/ha.	47·4	38·2	137·1	14·5	102·8	199·0	295·2	38·7

Control yield=753·8 Q/ha. ; No. of trials=3.

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Crop :- Sugarcane. **Ref :- Ms. 62(152).**

Site :- Sugarcane Res. Stn., Mandya. **Type :- 'MV'.**

Object :—To sudy the effect of different levels of N on the two varieties of Cane.

1. BASAL CONDITIONS :

(i) (a) *Ragi*—Sugarcane. (b) *Ragi*. (c) N.A. (ii) Sandy loam. (iii) 13.9.1962. (iv) (a) Ploughing. (b) Planting setts. (c) 30,000 setts/ha. (3 eyebuds/sett). (d) 91 cm. between rows. (e) —. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) Interculturing and weeding. (ix) 127 cm. (x) 2, 3.11.1963.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N as A/S : N_1=168, N_2=224 and N_3=280 Kg/ha.

(2) 2 varieties : V_1=Co—419 and V_2=I.C. 225.

N in 4 doses at planting, 6th, 10th and 14th week after planting.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 9·1 m.×7·3 m. (b) 8·2 m.×5·5 m. (v) 45 cm.× 90 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination and tiller counts. (iv) (a) to (c) No. (v) to (vii) Nil.

5. RESULTS :

(i) 1906 Q/ha. (ii) 188·1 Q/ha. (iii) None of the effects is significant. (iv) Av. yield of sugarcane in Q/ha.

	N_1	N_2	N_3	Mean
V_1	1932	1958	1937	1942
V_2	1825	1762	2021	1869
Mean	1878	1860	1979	1906

Crop :- Sugarcane. **Ref :- Ms. 60(123).**

Site :- Agri. Res. Stn., Dhadesagur. **Type :- 'C'.**

Object :—To determine the best period of sowing and the optimum spacing required between lines.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sannhemp*. (c) N.A. (ii) Medium black soil. (iii) As per treatments. (iv) (a) Opening furrows. (b) Planting in furrows. (c) N.A. (d) As per treatments. (e) N.A. (v) 67·2 Kg/ha. of N as A/S+26·9 Kg/ha. of P_2O_5 as Super. (vi) Co.—419 (early). (vii) Irrigated. (viii) N.A. (ix) 71 cm. (x) 24.12.60 and 17.1.61.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 dates of planting : D_1=1st week of December, D_2=1st week of January, D_3=1st week of February and D_4=1st week of March.

(2) 3 spacing between rows : S_1=61 cm., S_2=91 cm. and S_3=122 cm.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 3. (iv) (a) and (b) 13·8 m.×7·3 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) There was borer attack in initial stage. (iii) Yield of sugarcane. (iv) (a) 1958—N.A. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(a) 873·3 Q/ha. (ii) 96·7 Q/ha. (iii) None of the effects is significant. (iv) Av. yield of sugarcane in Q/ha.

	D_1	D_2	D_3	D_4	Mean
S_1	847·1	785·8	935·0	888·8	864·2
S_2	904·1	874·0	843·3	849·9	867·8
S_3	939·3	951·0	896·1	765·0	887·8
Mean	896·8	870·3	891·5	834·6	873·3

Crop :- Sugarcane (*Main*). **Ref :- Ms. 63(26).**

Site :- Sugarcane Res. Stn., Gangavathy. **Type :- 'C'.**

Object :—To study the loss in yield and vigour of Cane due to continuous use of seed materials without renewing.

1. BASAL CONDITIONS :

(i) (a) *Daincha*—Sugarcane. (b) *Daincha*. (c) Nil. (ii) Black cotton soil. (iii) January, 1963. (iv) (a) Deep ploughing with tractor followed by discing. (b) Planted in furrows. (c) 24,710 setts/ha. (d) 91 cm. between furrows. (e) —. (v) Nil. (vi) Co.—419 (late). (vii) Irrigated. (viii) 3 hand weedings followed by heavy ridging. (ix) N.A. (x) 27 to 29.1.1964.

2. TREATMENTS :

6 types of seed : T_1=Good seed, T_2=Deteriorated seed, T_3=Good seed grown one year on the farm, T_4=Deteriorated seed grown one year on the farm, T_5=Good seed grown two years on the farm and T_6=Deteriorated seed grown two years on the farm.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) 22·6 m.×16·5 m. (iii) 4. (iv) (a) 11·0 m.×5·5 m. (b) 9·1 m.×3·7 m. (v) 91 cm.×91 cm. (vi) Yes.

4. GENERAL :

(i) Slight lodging took place in the month of November, 1964. (ii) Slight incidence of mealy bug was noticed, melathian sprayed. (iii) Tiller counts, height measurements and cane yield. (iv) (a) 1961 only. (b) No. (c) Nil. (v) Sankeswar. (vi) and (vii) Nil.

5. RESULTS :

(i) 1416·3 Q/ha. (ii) 190·5 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of sugarcane in Q/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	1500·9	1342·5	1370·9	1353·6	1483·1	1447·0

Crop :- Sugarcane. **Ref :- Ms. 60(89).**

Site :- Reg. Sugarcane Res. Stn., Gangavathi. **Type :- 'C'.**

Object :—To find out suitable dates of planting of Sugarcane for this tract.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Sugarcane. (b) *Jowar*. (c) 12·4 C.L./ha. of F.Y.M.+44·8 Kg/ha. of N. (ii) Medium black cotton soil. (iii) As per treatments. (iv) (a) 2 ploughings. (b) Planting in furrow. (c) 29,653 setts/ha. (d) 91 cm. to 122 cm. between rows. (e) N.A. (v) 24·7 C.L./ha. of F.Y.M.; P_2O_5 and K_2O applied at time of planting (quantity N.A., N applied at 336·2 Kg/ha. in 4 doses,10, 20, 30 and 40% at planting, 8, 10 and 14 weeks after planting respectively. (vi) Co.—419 (late). (vii) Irrigated. (viii) 3 hand weedings and 1 earthing up. (ix) 51 cm. (x) 20 and 22.6.61.

2. TREATMENTS :

6 dates of planting : D_1=6.1.60, D_2=21.1.60, D_3=6.2.60, D_4=21.2.60, D_5=6.3.60 and D_6=21.3.60.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) 32·9 m.×21·3 m. (iii) 6. (iv) (a) 11·0 m.×10·1 m. (b) 9·1 m.×8·2 m. (v) 91 cm. ×91 cm. (vi) Yes.

4. GENERAL :

(i) Good. Crop lodged to a greater extent in the month of Dec., 1960 and Feb., 1961. (ii) Heavy attack of stem borer in the treatment planted in the month of March, controlled by spraying with endrine. (iii) Cane yield. (iv) (a) 1959 to 60. (b) No. (c) Nil. (v) Sankeswar and Mandya. (vi) and (vii) Nil.

5. RESULTS :

(i) 868·4 Q/ha. (ii) 122·2 Q/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of sugarcane in Q/ha.

Treatment	D_1	D_2	D_3	D_4	D_5	D_6
Av. yield	882·3	1077·8	838·9	947·6	722·8	741·2

C.D.=1454 Q/ha.

Crop :- Sugarcane. **Ref :- Ms. 60(204), 61(210), 62(198).**

Site :- Reg. Res. Stn., Mandya. **Type :- 'C'.**

Object :—To study the effect of different crops on the succeeding Sugarcane crop.

1. BASAL CONDITIONS:

(i) (a) and (b) As per treatments. (c) 34 Kg/ha. each of N, P_2O_5 and K_2O. (ii) Sandy loam. (iii) 3.12.1960 ; 6.11.1961 ; 25.10.1962. (iv) (a) Ploughing. (b) Planting. (c) 30464 setts/ha. (d) 91 cm. between rows. (e) 1. (v) 84 Kg/ha. of P_2O_5+112 Kg/ha. of K_2O+24·7 C.L./ha. of F.Y.M.+336 Kg/ha. of N in 6 doses. (vi) CO—419. (vii) Irrigated. (viii) 3 harrowings. (ix) 60 cm. ; normal ; 127 cm. (x) 10.1.1962 ; 27.2.1963 ; 18.11.1963.

2. TREATMENTS :

5 previous crops : T_1=*Ragi*, T_2=Paddy, T_3=Tobacco, T_4=Cotton and T_5=Groundnut.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 20·1 m.×7·0 m. (b) 18·3 m.×5·5 m. (v) 91 cm.×76 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) N.A. (iii) Yield of sugarcane. (iv) (a) 1960 to 1962. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Error variances are heterogeneous and Treatments×years interaction is absent.

5. RESULTS :

60(204)

(i) 1121 Q/ha. (ii) 84·2 Q/ha. (iii) Treatment differences are significant. (iv) Av. yield of sugarcane in Q/ha.

Treatment	T_1	T_2	T_3	T_4	T_5
Av. yield	1119	1075	1255	1006	1148

C.D.=129.8 Q/ha.

61(210)

(i) 1537 Q/ha. (ii) 326·8 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of sugarcane in Q/ha.

Treatment	T_1	T_2	T_3	T_4	T_5
Av. yield	1652	1602	1800	1226	1408

62(198)

(i) 1431 Q/ha. (ii) 149·5 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of sugarcane in Q/ha.

Treatment	T_1	T_2	T_3	T_4	T_5
Av. yield	1588	1359	1403	1456	1351

Crop :- Sugarcane (*Adsali*). **Ref :- Ms. 64(127).**

Site :- Sugarcane Res. Stn., Mandya. **Type :- 'C'.**

Object :—To study the effect of intercropping on the yield of Cane and to utilize the land in ridges during early stages.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) Sandy loam. (iii) 5.8.1964 for sugarcane and 12.8.1964 for intercrops. (iv) (a) Ploughing, clad crushing and levelling. (b) Planting setts. (c) 29640 setts/ha. (3 eyebud/sett) (d) 91 cm. between rows. (e) —. (v) 25 C.L./ha. of F.Y.M. before planting, 84 Kg/ha. of P_2O_5 as Super, 112 Kg/ha. of K_2O as Potash+336 Kg/ha. of N in four doses. (vi) CO—419 (late). (vii) Irrigated. (viii) 2 to 3 hand weedings and interculturing by bullocks and earthing up. (ix) Normal. (x) 4.12.1965.

2. TREATMENTS :

6 intercrops : T_0=Control, T_1=*Sunnhemp* with 34 Kg/ha. as seed rate, T_2=Beans with 30 cm.×90 cm. spacing and 22 Kg/ha. as seed rate, T_3=Raddish with 8 cm.×90 cm. spacing and 6 Kg/ha. as seed rate, T_4=Groundnut with 15 cm.×90 cm. spacing and 45 Kg/ha. as seed rate and T_5=Tobacco with 30 cm.×90 cm. spacing and 4000 seedlings.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 9·1 m.×9·1 m. (b) 7·3 m.×7·3 m. (v) 91 cm.×91 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) B.H.C. was sprayed to all intercrops. (iii) Cane yield. (iv) (a) 1964—1965 (Treatments were modified in 65). (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 3101 Q/ha. (ii) 377·5 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	3197·8	3229·6	3040·9	3080·2	3050·3	3007·3

Crop :- Sugarcane. **Ref :- Ms. 65(39).**

Site :- Sugarcane Res. Stn., Mandya. **Type :- 'C'.**

Object :—To study the effect of inter-cropping on the yield of Cane and to utilise the land in ridges during early stages.

1. BASAL CONDITIONS :

(i) (a) to (c) Nil. (ii) Sandy loam. (iii) 9.8.65 (inter-crops on 18.8.65). (iv) (a) Ploughing, clod crushing and levelling. (b) Planting setts. (c) 29640 setts/ha (3 eyebuds/sett). (d) 91 cm. between rows. (e) Nil. (v) 336 Kg/ha. of A/S+84 Kg/ha. of P_2O_5+112 Kg/ha. of K_2O+27·4 C.L./ha. of Compost. P_2O_5 and K_2O full dose at planting. (vi) Co. 419. (vii) Yes. (viii) Hand weeding, 2 to 3 times interculturing and earthing up. (ix) 113 cm. (x) 27 and 28.12.66.

2. TREATMENTS :

6 inter-crops : T_0=Control, T_1=*Sannhemp*, T_2=Beans, T_3=Raddish, T_4=Groundnut and T_5=Lucerne.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 9·1 m.×9·1 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Cane yield. (iv) (a) 1964 to 65 (Treatments were modified in 65). (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 2000·5 Q/ha. (ii) 343·4 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	1965·8	1889·8	2137·0	2023·0	1991·9	1995·2

Crop :- Sugarcane. **Ref :- Ms. 61(209), 62(197).**

Site :- Reg. Res. Stn., Mandya. **Type :- 'C'.**

Object :—To study the possibilities of preventing lodging of Sugarcane by adopting different cultural methods.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sugarcane. (c) N.A. (ii) Sandy loam. (iii) 16.7.1961 ; 3.7.1962. (iv) (a) Ploughing. (b) Planting. (c) 30190 setts/ha. (d) 91 cm. between rows. (e) 1. (v) 12·6 C.L./ha. of Compost+84 Kg/ha. of P_2O_5 as Super for 1961, 24 C.L./ha. of F.Y.M.+84 Kg/ha. of P_2O_5+336 Kg/ha. of K_2O. for 1962. (vi) Co—419. (vii) Irrigated. (viii) 3 harrowings. (ix) Normal ; 127 cm. (x) 9.11.1962 ; 29.9.1963.

2. TREATMENTS :

6 cultural treatments : T_0=Control, T_1=Earthing by hand at the age of 8 months, T_2=Propping cane between two rows with trash and earthing, T_3=Propping cane with bamboo, T_4= Propping cane with wires and T_5=Planting cane in trenches 10 cm. deep.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 9.1 m.×9.1 m. (b) 7.1 m.×7.1m. (v) 100 cm.×100 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) N.A. (iii) Yield of sugarcane. (iv) (a) 1961 to 62. (b) No. (c) As under 5. Results. (v) and (vi) Nil. (vii) Error variances are homogeneous. Treatments×years interaction is present.

5. RESULTS :

(i) 1868 Q/ha. (ii) 480·5 Q/ha. (based on 5 d.f. made up of Treatments×years interaction). (iii) Treatments 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	1734	1941	2005	1949	1658	1918

Years	T_0	T_1	T_2	T_3	T_4	T_5	Sig.	G.M.	S.E./plot
1961	2075	2651	2648	2506	1932	2412	**	2371	210·0
1962	1394	1231	1362	1392	1384	1425	N.S.	1365	223·5
Pooled	1734	1941	2005	1949	1658	1918	N.S.	1868	480·5

Crop :- Sugarcane (*Adsali*). **Ref :- Ms. 61(189), 62(171).**

Site :- Sugarcane Res. Stn., Mandya. **Type :- 'C'.**

Object :—To study the effect of intercropping on the yield of Cane and to utilize the land in ridges during early stage.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Ragi*; Fallow. (c) 33 Kg/ha. of N+33 Kg/ha. of P_2O_5+67 Kg/ha. of K_2O in 1961 and N.A. in 62. (ii) Sandy loam. (iii) 1.8.61 and 3.8.62 (Cane); 4.8.61 and 3.8.62 (intercrops). (iv) (a) Ploughing, clod crushing and levelling. (b) Planting setts. (c) 29640 setts/ha. (3 eyebuds/sett). (d) 91 cm. between rows. (e) N.A. (v) 25 C.L./ha. of F.Y.M.+34 Kg/ha. of P_2O_5 in one dose. 136 Kg/ha. of N in 3 doses viz. 20, 40 and 40 percent at 6th, 10th and 14th week after planting. (vi) Co—419 (late). (vii) Irrigated. (viii) 2 to 3 hand weedings and earthing up in 61 and 62; interculturing by bullocks in 62. (ix) Normal. (x) 10.11.62 and 14.10.63.

2. TREATMENTS :

8 interculturings : T_0=Control (no inter-crop), T_1=*Sannhemp*, T_2=Beans, T_3=Raddish, T_4=Groundnut, T_5=Tobacco, T_6=Knol-Khol and T_7=Onion.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 3. (iv) (a) 9·1 m.×9·1 m. (b) 7·3 m.×7·3 m. (v) 91 cm.×91 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) B.H.C. was sprayed to all inter-crops. (iii) Cane yield. (iv) (a) 1961 to 65 (not conducted in 63. Treatments changed in 1964 and 65). (b) No. (c) Nil. (v) and (vi) Nil. (vii) Error variances are heterogeneous. Treatments×years interaction is absent.

5. RESULTS :

61(189)

(i) 2341·2 Q/ha. (ii) 152·0 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
Av. yield	2467·5	2689·8	2032·2	2217·2	2256·4	2185·4	2383·4	2497·4

C.D.=266·3 Q/ha.

62(171)

(i) 1796·4 Q/ha. (ii) 319·8 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
Av. yield	1944·5	1879·1	1871·6	1963·2	1655·0	1662·4	1705 4	1690·4

Crop :-Sugarcane. **Ref :- Ms. 60(213), 62(214), 63(197).**

Site :- Sugarcane Res. Stn., Mandya. **Type :- 'C'.**

Object :—To study the effect on change of seed material.

1. BASAL CONDITIONS :

(i) (a) *Ragi*—Sugarcane. (b) *Ragi*. (c) N.A. (ii) Sandy loam. (iii) 9.7.60; 16.7.62; 24.7.63. (iv) (a) Ploughing. (b) Planting setts. (c) 30,000 setts/ha. (approx.). (d) 91 cm. between rows. (e) 1. (v) 25 C.L /ha. of F.Y.M.+84 Kg/ha. of P_2O_5+336 Kg/ha. of N+112 Kg/ha. of K_2O. (vi) Co—419. (vii) Irrigated. (viii) Digging and earthing up in 1960 and 63; digging, passing tin harrow and blade harrow in 62. (ix) N.A. (x) 1.9 61; N.A.; 12.10.64.

2. TREATMENTS :

6 seed materials : C_1=Padegaon, C_2=Factory old, C_3=Ryots old, C_4=Farm old, C_5=Ugon and C_6=*Ratoon* crop.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 7·3 m.×9·1 m. (b) 5·5 m.×7·3 m. (v) 90 cm.×90 cm. (vi) Yes.

4. GENERAL :

(i) Fair, Satisfactory. (ii) Nil. (iii) Yield of cane. (iv) (a) 1960 to 63 (expt. for 61 N.A.). (b) No. (c) As under 5. Results. (v) and (vi) N.A. (vii) Error variances are heterogeneous, Treatments × years interaction is absent.

5. RESULTS :

60(213)

(i) 1377 Q/ha. (ii) 274·2 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of cane in Q/ha.

Treatment	C_1	C_2	C_3	C_4	C_5	C_6
Av. yield	1580	1368	1430	1104	1330	1451

62(214)

(i) 2810 Q/ha. (ii) 475·1 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of cane in Q/ha.

Treatment	C_1	C_2	C_3	C_4	C_5	C_6
Av. yield	3112	2682	2818	2627	2756	2865

63(197)

(i) 828 Q/ha. (ii) 128·5 Q/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of cane Q/ha.

Treatment	C_1	C_2	C_3	C_4	C_5	C_6
Av. yield	1044	679	859	507	898	979

C.D.=189·4 Q/ha.

Crop :- Sugarcane (*Main*). **Ref :- Ms. 64(22).**

Site :- Sugarcane Res. Stn., Gangavathy. **Type :- 'CV'.**

Object :—To assess the loss in yield of Cane by using seed materials continuously with out renewing.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Sugarcane. (b) *Jowar*. (c) 12·4 C.L./ha. of F.Y.M.+22·4 Kg/ha. of N+11·2 Kg/ha. of P_2O_5. (ii) Black cotton soil. (iii) 3.2.64. (iv) (a) Deep ploughing with tractor followed by discing. (b) Planted in furrows. (c) 24710 setts/ha. (d) 91 cm. between furrows. (e) Nil. (v) 24·7 C.L./ha. of F.Y.M. +84·1 Kg/ha. of P_2O_5+112·1 Kg/ha. of K_2O+336·2 Kg/ha. of N as A/S in 4 doses of 10, 20, 30 and 40% at planting, 6, 10 and 14 weeks after planting respectively. (vi) Co—419 (late). (vii) Irrigated. (viii) Heavy earthing up operation by working with ridger. (ix) 91 cm. (x) 6.3.65.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 varieties : V_1=Good seed and V_2=Deteriorated seed.

(2) 4 types of seed materials : T_1=Unused seed, T_2=Grown 1 year seed on the farm, T_3=Grown 2 years on the farm and T_4=Grown 3 years on the farm.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) 9·1 m.×732·2 m. (iii) 3. (iv) (a) 9 1 m.×9·1 m. (b) 7·3 m.×7·3 m. (v) 91 cm.×91 cm. (vi) Yes.

4. GENERAL :

(i) Crop lodged in the month of Sept. (ii) Nil. (iii) Tiller counts and yield of cane. (iv) (a) 1964 only. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1207·6 Q/ha. (ii) 116·6 Q/ha. (iii) V effect is highly significant. (iv) Av. yield of sugarcane in Q/ha.

	T_1	T_2	T_3	T_4	Mean
V_1	1319·5	12·2·9	1298·8	1294·6	1279·0
V_2	1034·6	1118·9	1184·6	1207·4	1236·4
Mean	1177·0	1160·9	1241·7	1251·0	1207·6

C.D. for V marginal means=102·1 Q/ha.

Crop :- Sugarcane. **Ref :- Ms. 60(290).**

Site :- Agri. Res. Stn., Alnawar. **Type :- 'CM'.**

Object :—To find out the effect of N, P and K and trace elements on the deteriorated seeds.

1. BASAL CGNDITIONS :

(i) (a) Sugarcane—Paddy. (b) Paddy. (c) N.A. (ii) Medium black. (iii) 14.2.1960. (iv) (a) Ploughing, clod crushing, opening furrows and ridges. (b) Planting setts. (c) 24710 setts/ha. (d) 91 cm. between lines. (e) Nil. (v) 168 Kg/ha. of N as A/S and cake in ratio 1 : 1 to all plots. (vi) Co—419. (vii) Irrigated. (viii) Loosening the soil by hand tool and light earthing up. (ix) 89 cm. (x) N.A.

2. TREATMENTS :

8 seed types and manurial treatments : T_1=Second year seed+24·7 C.L./ha. of F.Y.M., T_2=Deteriorated seed+24·7 C.L./ha. of F.Y.M., T_3=T_2+168 Kg/ha. of P_2O_5, T_4=T_2+22·4 Kg/ha. K_2O, T_5=T_2+168 Kg/ha. of P_2O_5+22·4 Kg/ha. of K_2O, T_6=Deteriorated seed+minor elements, T_7=T_6+168 Kg/ha. of P_2O_5+224 Kg/ha. of K_2O, T_8=T_6+10 Q/ha. of lime.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 2. (iv) (a) 9·1 m.×4·6 m. (b) 7·3 m.×2·7 m. (v) 90 cm.×90 cm. (vi) Yes.

4. GENERAL :
(i) Satisfactory. (ii) Nil. (iii) Cane yield. (iv) (a) 1957—N.A. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 554·4 Q/ha. (ii) 127·0 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of sugarcane in Q/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Av. yield	624.3	436·3	661·4	503·6	612·7	438·6	705·5	452·5

Crop :- Sugarcane (*Adsali*). **Ref :- Ms. 63(30).**

Site :- Sugarcane Res. Stn., Gangavathy. **Type :- 'CM'.**

Object :—To study the possibilities of obtaining maximum Sugar due to different dates of harvest of Cane.

1. BASAL CONDITIONS :

(i) (a) G.M., Sugarcane. (b) *Sannhemp*. (c) Nil. (ii) (a) Black cotton soil. (iii) 4.8.1963. (iv) (a) Deep ploughing with tractor followed by discing. (b) Planted in furrows. (c) 24710 setts/ha. (d) 91 cm. between rows. (e) Nil. (v) Nil. (vi Co. 419 (late). (vii) Irrigated. (viii) 2 hand weedings and earthing up. (ix) N.A. (x) As per treatments.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N : N_1=168·1, N_2=336.2 and N_3=504·4 Kg.

(2) 2 dates of harvest : D_1=9.12.1964 and D_2=4.2.1965.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 6. (b) 32·9 m.×12.8 m. (iii) 4. (iv) (a) 11·0 m.×6·4 m. (b) 9.1 m.×4·6 m. (v) 91 cm.×91 cm. (vi) Yes.

4. GENERAL :

(i) Lodged to some extent. (ii) Crop was attacked by top shoot borer, controlled by spraying Endrine. (iii) Tiller counts, height measurements, girth and no. of internodes. (iv) 1963 only. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1162·7 Q/ha. (ii) 83·8 Q/ha. (iii) Main effects of N and D are highly significant. (iv) Av. yield of sugarcane in Q/ha.

	N_1	N_2	N_3	Mean
D_1	977·0	1196·0	1145·1	1106·0
D_2	1193·5	1283·2	1181·7	1219·5
Mean	1085·2	1239·6	1163·4	1162·7

C.D. for N marginal means=89.3 Q/ha.

C.D. for D marginal means=72.9 Q/ha.

Crop :- Sugarcane (*Main season*). **Ref :- Ms. 63(28), 64(20).**

Site :- Sugarcane Res. Stn., Gangavathy. **Type :- 'CM'.**

Object :—To find out the suitable dose of N, optimum spacing and seed rate for Sugarcane.

1. BASAL CONDITIONS :

(i) (a) *Dhaincha*—Sugarcane in 1963 and *Jowar*—Sugarcane in 1964. (b) *Dhaincha* in 1963 and *Jowar* in 1964. (c) Nil (1963); 22·4 Kg/ha. of N+11·2 Kg/ha. of P_2O_5+12·4 C.L./ha. of F.Y.M. (1964). (ii) Black cotton soil. (iii) 27, 28.1.63; 11.2.1964. (iv) (a) Deep ploughing with tractor followed by discing (b) Planted in furrows. (c) and (d) As per treatments. (e) Nil. (v) 24.7 C.L./ha. of F.Y.M.+84.1 Kg/ha. of P_2O_5+112·1 Kg/ha. of K_2O. (vi) Co.—419(late). (vii) Irrigated. (viii) 3 hand weedings followed by heavy ridging. (ix) N.A. (x) 1, 8.3.1964; 5.3.1965.

2. TREATMENTS :

Main-plot treatments :

2 levels of N : N_1=224·2 and N_2=336.2 Kg/ha.

Sub-plot treatments :

2 spacings : S_1=76 and S_2=107 cms.

Sub-sub-plot treatments :

2 types of setts : T_1=24710 and T_2=29653 setts/ha.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication; 2 sub-plots/main-plot and 2 sub-sub-plots/sub-plot. (b) N.A. (iii) 4. (iv) (a) 11.0 m.×10.7 m. (b) 8·4 m.×9·1 m. (v) 130 cm.×76 cm. (vi) Yes.

4. GENERAL :

(i) Slight lodging noticed in the month of Dec., 1963 ; Satisfactory in 1964. (ii) Nil. (iii) Tillers counts, height measurement, no. of internodes and cane yield. (iv) (a) 1963 to 66. (b) No. (c) Nil. (v) and (vi) Nil. (vii) All the error variances are homogeneous. Main, sub and sub-sub-plot treatments×year inter-actions are absent.

5. RESULTS :

(i) 885 Q/ha. (ii) (a) 175·2 Q/ha. [based on 7 d.f. made up of pooled error and treatments×years inter-action]. (b) 200·2 Q/ha. (based on 14 d.f. made up of pooled error and S×years and N×S×years inter-action). (c) 173.2 Q/ha. (based on 27 d.f. made up of pooled error and T×years, N×T×years, and S×T ×years interaction. (iii) None of the effects is significant. (iv) Av. yield of cane in Q/ha.

	N_1	N_2	T_1	T_2	Mean
S_1	750	906	846	810	828
S_2	950	934	945	940	942
Mean	850	920	895	875	885
T_1	878	912			
T_2	822	928			

Years	N_1	N_2	S.E./plot	Sig.	S_1	S_2	S.E./plot	Sig.
1963	1111	1075	159·4	N.S.	1040	1146	129·8	N.S.
1964	588	766	214·2	N.S.	616	738	213·2	N.S.
Pooled	850	920	175·2	N.S.	828	942	185·1	N.S.

T_1	T_2	Sig.	G.M.	S.E./plot
1102	1084	N.S.	1093	212·7
688	666	N.S.	677	145·8
895	875	N.S.	885	173·3

Crop :- Sugarcane. **Ref :- Ms. 60(88), 62(42).**

Site :- Reg. Sugarcane Res. Stn., Gangavathy. **Type :- 'CM'.**

Object :—To find out the optimum spacing and dose of N for Sugarcane.

1. BASAL CGNDITIONS :

(i) (a) *Jowar*, Sugarcane in 1960 ; *Sannhemp*—Sugarcane in 1962. (b) *Jowar* in 1960 and *Sannhemp* in 1962. (c) 12·4 C.L./ha. of F.Y.M.+22·4 Kg/ha. of P_2O_5+44·8 Kg/ha. of N in 1960; Nil in 1962. (ii) Medium block cotton soil. (iii) 2 and 6.3.1960; 1 and 3.8.1962. (iv) (a) 2 ploughings in 1960; Deep ploughings with tractor followed by disc harrowing. (b) Planting in furrows. (c) 29652 setts/ha. for 91 cm. spacing and 22240 setts for 122 cm. spacing. (d) As per treatments. (e) Nil. (v) 24.7 C.L./ha. of F.Y.M.+P_2O_5 and K_2O (dosage N.A.) applied at planting by broadcasting. (vi) Co.--419 (late). (vii) Irrigated. (viii) 3 hand weedings and earthing up. (ix) 51 cm.; 62 cm. (x) 18 and 22.6.1961; 10 and 18.10.1963.

2. TREATMENTS :

Main-plot treatments :

3 levels of N as A/S : N_1=168·1, N_2=252·2 and N_3=336.2 Kg/ha.

Sub-plot treatments :

2 spacings between rows :S_1=91 and S_2=122 cm.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication; 2 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 14·0 m. ×11·0 m. (b) 12.2 m.×7.3 m. (v) Yes. (vi) Yes.

4. GENERAL :

(i) Satisfactory ; crop lodged to a greater extent in the month of Feb., 1961. (ii) Heavy attack of stem-borer, endrine sprayed in 1960. (iii) Tiller counts, height measurements and yield of sugarcane. (iv) (a) 1959 to 62 (Expt.for 61—N.A.). (b) No. (c) Nil. (v) and (vi) Nil. (vii) Sub-plot error variances are heterogeneous.

5. RESULTS :

60(88)

(i) 846.2 Q/ha. (ii) (a) 109·6. Q/ha. (b) 88·2 Q/ha. (iii) S effect is significant. (iv) Av. yield of sugarcane in Q/ha.

	N_1	N_2	N_3	Mean
S_1	820·2	911·4	923·0	884·9
S_2	752·5	827·8	842·3	807·5
Mean	786·4	869·6	882·6	846·2

C.D. for S marginal means=88·6 Q/ha.

62(42)

(i) 1487·9 Q/ha. (ii) (a) 179·0 Q/ha. (b) 142·5 Q/ha. (iii) Main effect of N is significant. Main effect of S is highly significant. (iv) Av. yield of sugarcane in Q/ha.

	N_1	N_2	N_3	Mean
S_1	1469·0	1583·7	1644·8	1565·8
S_2	1258·2	1489·7	1482·1	1410·0
Mean	1363·6	1536·7	1563·4	1487·9

C.D. for N marginal means=230·3 Q/ha.
C.D. for S marginal means=143·1 Q/ha.

Crop :- Sugarcane. **Ref :- Ms. 62(205), 63(194), 64(153), 65(41).**

Site :- Reg. Res. Stn., Mandya. **Type :- 'CM'.**

Object :—To study the combined effect of spacing, seed-rate and graded levels of N on yield and quality of Cane.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) 28.7.62, 7.7.63., 20.7.64., 18.7.65. (iv) (a) Ploughing, clod crushing and levellings. (b) Planting setts. (c) and (d) As per treatments. (e) N.A. (v) 28 C.L./ha. of F.Y.M.+84 Kg/ha. of P_2O_5+112 Kg/ha. of K_2O. (vi) Co.—419. (vii) Irrigated. (vii) Passing blade harrow and tin harrow 3 times, weeding and inter-culturing. (ix) 127 cm ; Normal ; Normal ; 116 cm. (x) 2.10.63 ; 15.10.64 ; 21.11.65 ; 2.12.66.

2. TREATMENTS :

Main-plot treatments :
2 levels of N : N_1=224 and N_2=336 Kg/ha.

Sub-plot treatments :
2 spacings : S_1=76 and S_2=91 cm.

Sub-sub-plot treatments :
2 seed rates : R_1=24710 and R_2=29652 setts/ha.

N applied in 4 split-doses.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 2 sub-plots/main-plot ; 2 sub-sub-plots/sub-plot. (b) N.A. (iii) 4 for 1962 to 64 and 3 for 1965 year. (iv) (a) N.A. (b) 9·1 m.×7·5 m. for 62 and 63 ; 11·0 m.×9.1 m, for 64 and 65. (v) and (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of cane. (iv) (a) 1962-65. (b) No. (c) Nil. (v) N.A. (vi) Nil. (viii) Sub-sub-plot error variances are heterogeneous.

5. RESULTS :

62(205)

(i) 912 Q/ha. (ii) (a) 200·5 Q/ha. (b) 121·9 Q/ha. (c) 84·2 Q/ha. Inter-action N×R is significant. (iv) Av. yield of sugarcane in Q/ha.

	N_1	N_2	S_1	S_2	Mean
R_1	838	938	905	871	888
R_2	957	913	989	881	935
Mean	897	925	947	876	912
S_1	931	963			
S_2	864	888			

C.D. for R means at the same level of N=91·9 Q/ha.
C.D. for N means at the same level of R=233·2 Q/ha.

63(194)

(i) 1979 Q/ha. (ii) (a) 304·1 Q/ha. (b) 144·3 Q/ha. (c) 191·2 Q/ha. (iii) None of the effects is significant. (iv) Av. yield of sugarcane in Q/ha.

	N_1	N_2	S_1	S_2	Mean
R_1	1871	1992	1919	1944	1931
R_2	2099	1955	2041	2013	2027
Mean	1985	1973	1980	1978	1979
S_1	2004	1956			
S_2	1966	1991			

64(153)

(i) 1884 Q/ha. (ii) (a) 202·7 Q/ha. (b) 88·5 Q/ha. (c) 175·4 Q/ha. (iii) Interaction N×S is significant. (iv) Av. yield of sugarcane in Q/ha.

	N_1	N_2	S_1	S_2	Mean
R_1	1738	2090	1872	1956	1914
R_2	1693	2013	1809	1897	1853
Mean	1715	2052	1841	1927	1884
S_1	1730	1951			
S_2	1700	2153			

C.D. for S means at the same level of N=108·2 Q/ha.
C.D. for N means at the same level of S=239·6 Q/ha.

65(41)

(i) 1853 Q/ha. (ii) (a) 432·5 Q/ha. (b) 238·8 Q/ha. (c) 286·0 Q/ha. (iii) None of the effects is significant. (iv) Av. yield of sugarcane in Q/ha.

	N_1	N_2	S_1	S_2	Mean
R_1	1898	1799	1839	1858	1849
R_2	1994	1720	1841	1874	1857
Mean	1946	1760	1840	1866	1853
S_1	1898	1782			
S_2	1994	1737			

Crop :- Sugarcane. **Ref :- Ms. 60(207), 61(212).**

Site :- Reg. Res. Stn., Mandya. **Type :- 'CM'.**

Object :—To study the effect of different levels of N and spacings on the yield of Cane.

1. BASAL CONDITIONS :

(i) (a) to (c) Nil. (ii) Sandy loam. (iii) 20.7.60; 23.9.61. (iv) (a) Ploughing. (b) Planting. (c) Nil. (d) As per treatments. (e) N.A. (v) 28 C.L./ha. of F.Y.M.+84 Kg/ha. of P_2O_5. (vi) Co—419. (vii) Irrigated. (viii) Passing blade and tin harrow 3 times; weeding and interculturing. (ix) 60 cm.; 110 cm. (x) 30.8.61; 24.1.63.

2. TREATMENTS :

Main-plot treatments :

3 levels of N : N_1=168, N_2=336 and N_3=504 Kg/ha.

Sub-plot treatments :

2 spacings between rows : S_1=91 and S_2=122 cm.

N at 10, 20, 30 and 40% applied at planting, 6, 10 and 14 weeks after planting.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication; 2 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 11·0 m.× 9·1 m. (b) 7·3 m.×7·3 m. (v) 182 cm.×91 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) N.A. (iii) Yield of sugarcane. (iv) (a) 1958 to 61. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Sub-plot error variances are heterogeneous.

5. RESULTS :

60(207)

(i) 953 Q/ha. (ii) (a) 221·8 Q/ha. (b) 179·2 Q/ha. (iii) None of the effects is significant. (iv) Av. yield of sugarcane in Q/ha.

	N_1	N_2	N_3	Mean
S_1	984	870	1081	978
S_2	905	976	902	928
Mean	944	923	992	953

61(212)

(i) 1948 Q/ha. (ii) (a) 338·0 Q/ha. (b) 565·5 Q/ha. (iii) None of the effects is significant. (iv) Av. yield of sugarcane in Q/ha.

	N_1	N_2	N_3	Mean
S_1	2150	1584	1878	1871
S_2	1862	2208	2009	2026
Mean	2006	1896	1944	1948

Crop :- Sugarcane (*Adsali*). **Ref :- Ms. 61(192).**

Site :- Sugarcane Res. Stn., Mandya. **Type :- 'CM'.**

Object :—To study the effect of different seed material (obtained from different sources) in combination with fertilizer on the yield and quality of Sugarcane.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Ragi*. (c) 25 C.L./ha. of F.Y.M. (ii) (a) Sandy loam. (b) N.A. (iii) 19.8.61. (iv) (a) Ploughing, clod crushing and levelling. (b) Planting setts. (c) 29640 setts/ha. (d) 91 cm. between rows. (e) 3 eyebuds/sett. (v) 25 C.L./ha. of F.Y.M. before planting. (vi) Co–419 (late). (vii) Irrigated. (viii) 2 to 3 hand weedings and interculturing and earthing up. (ix) Normal. (x) 26.11.62.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 6 types of seed material : S_1=Padegaon, S_2=Factory old, S_3=Local ryots, S_4=Farm old, S_5=Ugar and S_6=*Ratoon*.

(2) 2 levels of manures : L_1=336 Kg/ha. of N+84 Kg/ha. of P_2O_5+112 Kg/ha. of K_2O as Mur. Pot. and L_2=252 Kg/ha. of N+56 Kg/ha. of P_2O_5.

N applied as A/S in 4 equal doses, P_2O_5 applied as Super at planting. K_2O applied as Mur. Pot. at planting.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 3. (iv) (a) 9·1 m.×7·3 m. (b) 7·3 m.×5·5 m. (v) 91 cm.× 91 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) 2—4 D weedicide sprayed 2 to 3 days after planting. (iii) Tiller count, height, proportion of cane and yield. (iv) (a) 1961—64 (Treatments modified in 63). (b) No. (c) Nil. (v) and (vi) Nil. (vii) Expt. for '62—N.A.

5. RESULTS ;

(i) 1723·4 Q/ha. (ii) 170·1 Q/ha. (iii) Main effect of S. is highly significant. (iv) Av. yield of cane in Q/ha.

	S_1	S_2	S_3	S_4	S_5	S_6	Mean
L_1	1960·9	1651·3	1872·9	1312·5	1976·7	1807·3	1763·6
L_2	1878·7	1602·3	1780·9	1371·5	1786·6	1678·7	1683·1
Mean	1919·8	1626·8	1826·9	1342·0	1881·6	1743·0	1723·4

C.D. for S marginal means=203·6 Q/ha.

Crop :- Sugarcane (*Adsali*). **Ref :- Ms. 63(169), 64(129).**

Site :- Sugarcane Res. Stn., Mandya. **Type :- 'CM'.**

Object :- To study the effect of different seed materials, obtained from different sources in combination with fertilizers on the yield and quality of Sugarcane.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Ragi*—Sugarcane. (c) 25 C.L./ha. of F.Y.M. (ii) Sandy loam. (iii) 24.7.63; 17.6.64. (iv) (a) Ploughing, clod crushing and levelling. (b) Planting setts. (c) 29640 setts/ha. (3 eyebuds/sett). (d) 91 cm. between rows. (e) Nil. (v) 25 C.L./ha. of F.Y.M. before planting. (vi) Co—419 (late). (vii) Irrigated. (viii) 2 to 3 hand weedings, interculturing and earthing up. (ix) Normal. (x) 12.10.64; 10.10.65.

2. TREATMENTS :

Main-plot treatments :

6 types of seed-materials : S_1=Padegaon, S_2=Factory old, S_3=Local ryots, S_4=Farm old, S_5=Ugar and S_6=*Ratoon* crop.

Sub-plot treatments :

4 manurial treatments : M_1=252 Kg/ha. of N in 4 doses viz. 10, 20, 30 and 40% of N applied at planting, 6th, 10th and 14th week of planting respectively, M_2=112 Kg/ha. of Super+112 Kg/ha. of A/S at 6th week after planting and 244 Kg/ha. of A/S+56 Kg/ha. of Super+56 Kg/ha. of G.N.C. at final earthing up, M_3= 252 Kg/ha. of N in 4 doses as M_1+112 Kg/ha. of K_2O as Pot. Sul. at planting and M_4=336 Kg/ha. of N in 4 doses as in M_1+84 Kg/ha. of P_2O_5 +112 Kg/ha. of K_2O.

3. DESIGN :

(i) Split-plot. (ii) (a) 6 main-plots/replication; 4 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a) 9·1 m.× 7·3 m. (b) 7·3 m.×5·5 m. (v) 91 cm.×91 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) 2—4 D weedicide sprayed 2 to 3 days after planting. (iii) Tiller count, height and cane yield. (iv) (a) 1961 to 64 (Treatments modified in '63). (b) No. (c) Nil. (v) N.A. (vi) Nil. (vii) Sub-plot error variances are heterogeneous.

5. RESULTS :

63(169)

(i) 1417·5 Q/ha. (ii) (a) 211·4 Q/ha. (b) 135·9 Q/ha. (iii) None of the effects is significant. (iv) Av. yield of cane in Q/ha.

	S_1	S_2	S_3	S_4	S_5	S_6	Mean
M_1	1586·9	1074·1	1565·4	1036·5	1685·6	1171·0	1353·2
M_2	1586·9	1323·3	1452·4	1787·8	1689·2	1752·0	1598·6
M_3	1850·6	1038·3	1059·8	871·5	1312·6	1549·3	1280·4
M_4	1414·8	1409·4	1682·0	1321·6	1120·8	1678·4	1437·8
Mean	1609·8	1211·3	1439·9	1254·4	1452·0	1537·7	1417·5

64(129)

(i) 1265·8 Q/ha. (ii) (a) 278·9 Q/ha. (b) 298·9 Q/ha. (iii) None of the effects is significant. (iv) Av. yield of cane in Q/ha.

	S_1	S_2	S_3	S_4	S_5	S_6	Mean
M_1	1259·1	889·2	1454·4	901·8	937.7	1607·1	1174·9
M_2	1402·6	1026·0	1358·1	963·6	1363·4	1449·7	1260·6
M_3	1197·4	1222·6	1001·5	1082·5	1333·5	1502 2	1223·3
M_4	1765·2	1303·6	1118·3	1293·0	1632·4	1312·9	1404·2
Mean	1406·1	1110·4	1233·1	1060·2	1316·8	1468·0	1265·8

Crop :- Sugarcane. **Ref :- Ms. 64(209), 65(91).**

Site :- Agri. Res. Stn., Sankeswar. **Type :- 'CM'.**

Object:—To find out optimum spacing and seed rate with optimum N to get economic return.

1. BASAL CONDITIONS :

(i) (a) to (c) Nil. (ii) Medium black. (iii) 11.2.64; 25.1.65. (iv) (a) Ploughing and harrowing. (b) Wet method (planted setts). (c) and (d) As per treatments. (e) Nil. (v) 24·7 C.L./ha. of F.Y.M.+56 Kg/ha. of P_2O_5+84 Kg/ha. of K_2O all applied at the time of planting. (vi) Co—419. (vii) Irrigated. (viii) 2 earthing up and 2 weedings. (ix) 77 cm.; N.A. (x) 21.2.65; 4.3.66.

2. TREATMENTS :

Main-plot treatments :

2 levels of N : N_1=224 and N_2=336 Kg/ha. of N.

Sub-plot treatments :

2 spacings : S_1=76 and S_2=107 cm.

Sub-sub-plot treatments :

2 seed rates : R_1=24710 and R_2=29652 setts/ha.

10, 20, 30 and 40% of N applied at the time of planting, after 6th week, 10th week and 14th week of planting respectively.

3. DESIGN :

(i) Split-split-plot. (ii) (a) 2 main-plots/replication, 2 sub-plots/main-plot ; 2 sub-sub-plots/sub-plot. (b) N.A. (iii) 3. (iv) (a) 13·7 m.×8·5 m. (b) 10·7 m.×5·5 m. (v) 1·5 m. alround. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) N.A. (iii) Cane yield. (iv) (a) 1964—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

64(209)

(i) 1176·2 Q/ha. (ii) (a) 67·1 Q/ha. (b) 77·2 Q/ha. (c) 146·1 Q/ha. (iii) S effect alone is significant. (iv) Av. yield of cane in Q/ha.

	S_1	S_2	R_1	R_2	Mean
N_1	1211·5	1077·9	1159·3	1130·0	1144·7
N_2	1239·6	1175 6	1129·7	1285·5	1207·6
Mean	1225·6	1126·7	1144·5	1207·8	1176·2
R_1	1188·1	1101·0			
R_2	1263·0	1152·5			

C.D. for S marginal means=87·5 Kg/ha.

65(91)

(i) 788·8 Q/ha. (ii) (a) 126·5 Q/ha. (b) 120·2 Q/ha. (c) 189·6 Q/ha. (iii) None of the effects is significant. (iv) Av. yield of cane in Q/ha.

	S_1	S_2	R_1	R_2	Mean
N_1	756·7	738·4	742·4	752·7	747·6
N_2	822·4	837·5	829·0	831·0	830·0
Mean	789·6	788·0	785·7	791·8	788·8
R_1	741·3	830·1			
R_2	837·8	745·8			

Crop :- Sugarcane. **Ref :- Ms. 62(104).**

Site :- Agri. Res. Stn., Arbhavi. **Type :- 'I'.**

Object :—To find out the optimum interval and intensity of irrigation for Sugarcane.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Maize.* (c) Nil. (ii) (a) Medium black mixed shallow soil. *(iii)* 12.1.62. (iv) (a) Ploughing and clod crushing, harrowing, opening furrows and channels. (b) Planted in furrows. (c) to (e) N.A. (v) 49·4 C.L./ha. of F.Y.M.+224·2 Kg/ha. of N+112·1 Kg/ha. of P_2O_5+112·1 Kg/ha. of K_2O. (vi) Co.—419. (vii) As per treatments. (viii) 1 interculturing, 4 weedings and earthing up. (ix) 58 cm. (x) 12.2.63.

2. TREATMENTS :

All combinations of (1) and (2)

(i) 4 no. of irrigations : I_1=34 irrigations each at 10 days interval, I_2=30 irrigations each at 12 days interval, I_3=23 irrigations each at 15 days interval and I_4=26 irrigations each at 15 days interval.

(2) 2 intensities of irrigations : L_0=0 and L_1=3/4 judgement.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 12.2 m.×8.5 m. (b) 9.8 m.×6.4 m. (v) 120 cm.×100 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Stem borer controlled by mechanical means and spraying with Folidol. (iii) Yield of cane. (iv) (a) 1962—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 984.0 Q/ha. (ii) 74.1 Q/ha. (iii) None of the effects is significant. (iv) Av. yield of Sugarcane in Q/ha.

	I_1	I_2	I_3	I_4	Mean
L_0	1026·7	958·7	982·3	931·4	974·8
L_1	973·9	1038·4	1005·5	955·1	993·2
Mean	1000·3	998·6	993·9	943·2	984·0

Crop :- Sugarcane. **Ref :- Ms. 63(23).**

Site :- Agri. Res. Stn. Sirugappa. **Type :- 'I'.**

Object :—To study the effect of different periods of irrigation on the yield of Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) 12·4 C.L./ha. of F.Y.M.+44·8 Kg/ha. of N+22·4 Kg/ha. of P_2O_5. (ii) Deep black. (iii) Planting on 7, 8.2.1963. (iv) (a) 2 ploughings. (b) planted in furrows. (c) 24710 setts/ha. (d) 91 cm. between rows. (e) N.A. (v) 24·7 C.L./ha. of F.Y.M.+84·1 Kg/ha. of P_2O_5+112.1 Kg/ha. of K_2O+336·2 Kg/ha. of N in 4 split doses of 10%, 20%, 30% and 40% at planting, 6, 10 and 14 weeks after planting respectively. (vi) Co.—419 (Late). (vii) As per treatments. (viii) 2 hand weedings. (ix) 76 cm. (x) 10.2.64.

2. TREATMENTS :

(i) 6 irrigations : T_1=March 10th to April 10th, T_2=April 10th to May 10th, T_3=May 10th to June 10th. T_4=April 10th to 25th and Dec. 10th to 25th, T_5=Dec. 10th to Jan. 10th. and T_6= Normal irrigation practices.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 11·0 m.×8·5 m. (b) 7·3 m.×6·7 m. (v) 183 cm.× 91 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Attack of stem borer. Malathion sprayed thrice. (iii) Yield data and stand count. (iv) (a) 1963 only. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Expt. conducted by Sugarcane Res. Stn., Gangavathy.

5. RESULTS :

(i) 751·0 Q/ha. (ii) 93·6 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of sugarcane in Q/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	733·2	797·6	748·4	794·7	769·2	663·0

Crop :- Sugarcane. **Ref :- Ms. 61(259), 62(260).**

Site :- Agri. Res. Stn., Sirugappa. **Type :- 'I'.**

Object :—To find out the effect of break of one month in irrigation on Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Sugarcane—Paddy. (b) Paddy. (c) N.A. (ii) Medium black soil. (iii) 10.2.61, 24.1.1962. (iv) (a) Ploughing and opening furrows. (b) Wet method of chain planting. (c) 29652 setts/ha. (d) 91 cm. between rows. (e) Nil. (v) 24.7 C.L./ha. of F.Y.M.+56 Kg/ha. of P_2O_5+112 Kg/ha. of K_2O+336 Kg/ha. of N. (vi) Co.—419 (Mid. late). (vii) Irrigated. (viii) Harrowing and light earthing up. (ix) 74 cm., 53 cm. (x) 26.1.62 and 8.3.62 ; 27.3.63.

2. TREATMENTS :

6 irrigational treatments :

T_1=Not irrigated between April 10th and May 10th, T_2=Not irrigated between April 10th to 25th and Dec. 10th to 25th, T_3=Not irrigated between Dec. 10th to Jan. 10, T_4=Not irrigated between March 10th to April 10th, T_5=Not irrigated between May 10th to June 10th and T_6=Normal irrigation practices (Irrigation onee in 8 days throughout the crop season).

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) 66·0 m.×33·0 m. (iii) 4. (iv) (a) 11·3 m.×8·2 m. ; 10·1 m.×9·1 m. (b) 5·8 m. ×4·6 m. ; 6·4 m.×5·5 m. (v) 175 cm.×183 cm.; 185 cm.×182 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of sugarcane. (iv) (a) 1961-62. (b) No. (c) As under 5. Results. (v) N.A. (vi) Nil. (vii) Error variances are homogeneous. Treatments×years interaction is absent.

5. RESULTS :

(i) 1410 Q/ha. (ii) 204·0 Q/ha. (with 30 d.f. made up of pooled error). (iii) Treatment differences are not significant. (iv) Av. yield of sugarcane in Q/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	1306	1441	1473	1401	1418	1418

Years	T_1	T_2	T_3	T_4	T_5	T_6	Sig.	G.M.	S.E./plot
1961	1116	1223	1250	1234	1290	1138	N.S.	1209	232·0
1962	1496	1659	1696	1568	1545	1699	N.S.	1610	171·4
Pooled	1306	1441	1473	1401	1418	1418	N.S.	1410	197·0

Crop :- Sugarcane. **Ref :- Ms. 61(104), 62(103).**

Site :- Agri. Res. Stn., Arbhavi. **Type :- 'IM'.**

Object :—To find out water and manurial requirement of Sugarcane.

1. BASAL CONDITIONS.:

(i) (a) Maize, *Sannhemp*, Sugarcane in 1961 ; Sugarcane, *Sannhemp*, G.M. in 1962. (b) Maize and *Sannhemp* in 1961 ; *Sannhemp*, G.M. in 1962. (c) 12·4 C.L./ha. of F.Y.M. in 1961 ; N.A. in 1962. (ii) Black mixed soil. (iii) 20.1.1961 ; 19.1.1962. (iv) (a) Ploughing and harrowing, opening furrows. (b) Planted in furrows. (c) to (e) N.A. (v) 39·5 C.L./ha. of F.Y.M. in 1961 ; 49.8 C.L./ha. of F.Y.M. (vi) Co.—419. (vii) Irrigated. (viii) 1 interculturing, 3 to 4 weedings and earthing up. (ix) 52 cm. ; 58 cm. (x) 29.1.1962 to 3.2.1962 ; 28.1.1963 to 2.2.1963.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 manurial treatments : M_1=224.2 Kg/ha. of N as A/S and G.N.C. in the ratio of 1 : 2, M_2= 224.2 Kg/ha. of N as A/S in 6 doses, $M_3=M_2+112{\cdot}1$ Kg/ha. of P_2O_5 at planting and $M_4=M_3+112{\cdot}1$ Kg/ha. of $P_2O_5+11{\cdot}2$ Kg/ha. of K_2O at planting.

(2) 2 levels of irrigations : I_0=0 and I_1=3/4 judgement.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) 97·5 m.×7·5 m. (iii) 4. (iv) (a) 12·2 m.×7·5 m. (b) 9·8 m.×5·3 m. (v) and (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of cane. (iv) (a) 1961-62. (b) No. (c) As under 5. Results. (v) and (vi) Nil. (vii) Error variances are homogeneous. Treatments×years interaction is absent.

5. RESULTS :

(i) 991·0 Q/ha. (ii) 103·0 Q/ha. (based on 49 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.

	M_1	M_2	M_3	M_4	Mean
I_0	946·8	988·0	951·5	1027·0	978·3
I_1	940·6	1005·0	1029·3	1039·5	1003·6
Mean	943·7	996·5	990·4	1033·2	991·0

Years	M_1	M_2	M_3	M_4	Sig.	I_0	I_1	Sig.	G.M.	S.E./plot
1961	909·4	912·5	925·0	981·0	N.S.	921·0	942·9	N.S.	932·0	79·7
1962	978·1	1080·5	1055·7	1085·5	N.S.	1035·7	1064·3	N.S.	1050·0	124·9
Pooled	943·7	996·5	990·4	1033·2	N.S.	978·3	1003·6	N.S.	991·0	103·0

Crop :- Sugarcane. **Ref :- Ms. 63(244).**

Site :- Agri. Res. Stn., Arbhavi. **Type :- 'IM'.**

Object :—To find out water and manurial requirement of Sugarcane.

1. BASAL CONDITIONS :

(i) (a) *Sannhemp* – Sugarcane. (b) *Sannhemp*. (c) Nil. (ii) Black and alkaline patches. (iii) 5.2.63. (iv) (a) Ploughing, harrowing and opening furrows. (b) to (e) N.A. (v) As per treatments. (vi) Co—419. (vii) Irrigated. (viii) Interculturing and weeding. (ix) 58 cm. (x) 20.1.64.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 manurial treatments : M_1=224 Kg/ha. of N in 1 : 2 ratio as A/S and G.N.C., M_2=224 Kg/ha. of N as A/S, M_3=224 Kg/ha. of N as A/S+112 Kg/ha. of P_2O_5 and M_4=M_3+112 Kg/ha. of K_2O.

(2) 2 intensities of irrigations : I_1=Judgement and I_2=3/4 judgement.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 12·2 m.×7·5 m. (b) 9·8 m.×5·3 m. (v) and (vi) Yes.

4. GENERAL :

(i) Good. (ii) Stem borer controlled by spraying Folidol and endrine. (iii) Nil. (iv) (a) to (c) No. (v) to (vii) Nil.

5. RESULTS :

(i) 1263·9 Q/ha. (ii) 98·1 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
I_1	1254·1	1223·9	1227·7	1265·7	1242·8
I_2	1287·0	1294·0	1313·7	1251·3	1285·0
Mean	1267·6	1259·0	1270·7	1258·5	1263·9

Crop :- Sugarcane (*Adsali*). **Ref :- Ms. 60(102), 61(100).**

Site :- Agri. Res. Stn., Arbhavi. **Type :- 'IM'.**

Object :—To find out optimum water and manurial requirement for Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Maize-*Jowar*-Sugarcane in 1960; Sugarcane; *Sannhemp* and Maize for 1961. (b) Maize—*Jowar* in 1960; *Sannhemp*—Maize in '61. (c) 24·7 C.L./ha. of F.Y.M. in '60; N.A. in '61. (ii) Black, mixed alkaline. (iii) 20.7.60; 10,8.61. (iv) (a) Ploughing and harrowing, opening furrows. (b) Planted in furrows. (c) to (e) N.A. (v) 61·8 C.L./ha. of F.Y.M. (vi) Co—419. (vii) Irrigated. (viii) 2 interculturings, 6 to 7 weedings and earthing up. (ix) 109 cm.; 70 cm. (x) 4 to 9.2.62; 5 to 11.2.63.

2. TREATMENTS:

Main-plot treatments :

3 levels of N : N_1=252·2, N_2=336·2 and N_3=420·3 Kg/ha.

Sub-plot treatments :

All combinations of (1) and (2)

(1) 2 levels of P_2O_5 : P_0=0 and P_1=112·1 Kg/ha.

(2) 2 intensities of irrigation : I_0=0 and I_1=3/4 judgement.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication; 4 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 14·6 m.× 7·5 m. (b) 13·1 m.×5·3 m. (v) 76 cm.×105 cm. (vi) Yes.

4. GENERAL :

(i) Good. Lodging in June '61. (ii) Stem-borer controlled by mechanical means and spraying Folidol in '60. (iii) Yield of cane. (iv) (a) 1960—N.A. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Sub-plot error variances are heterogeneous.

5. RESULTS :

60(102)

(i) 1051·8 Q/ha. (ii) (a) 85·8 Q/ha. (b) 143·1 Q/ha. (iii) Interaction N×I is significant. (iv Av. yield of cane in Q/ha.

	N_1	N_2	N_3	I_0	I_1	Mean
P_0	1018·8	1034·9	1074·4	1044·2	1041·2	1042·7
P_1	1103·4	1031·4	1047·8	1063·0	1058·8	1060·9
Mean	1061·1	1002·8	1153·9	1053·6	1050·0	1051·8
I_0	1004·0	1002·8	1153·9			
I_1	1118·2	1063·5	968·3			

C.D. for I means at the same level of N=173·5 Q/ha.
C.D. for N means at the same level of I=155·3 Q/ha.

61(100)

(i) 901·3 Q/ha. (ii) (a) 147·5 Q/ha (b) 82·1 Q/ha. (iii) None of the effects is significant. (iv) Av. yield of cane in Q/ha.

	N_1	N_2	N_3	I_0	I_1	Mean
P_0	932·4	882·6	901·6	914·9	896·1	905·5
P_1	961·8	849·6	880·1	914·4	879 9	897·2
Mean	947·1	866·1	890·8	914·6	888·0	901·3
I_0	943·1	903 1	897·8			
I_1	251·1	829·1	883·9			

Crop :- Sugarcane. **Ref :- Ms. 60(208), 61(213), 62(206).**

Site :- Reg. Res. Stn., Mandya. **Type :- 'IM'.**

Object :—To study the effect of irrigation with different levels of N on the yield of Cane.

1. BASAL CONDITIONS :

(i) (a) to (c) Nil. (ii) Sandy loam. (iii) 25.12.60; 2.9.61; 11.7.62. (iv) (a) Ploughing and 3 harrowings. (b) Planting setts. (c) 29652 setts/ha. (d) 91 cm. between rows. (e) N.A. (v) 84 Kg/ha. of P_2O_5+112 Kg/ha. of K_2O+28 C.L./ha. of compost. (vi) Co—419. (vii) Irrigated. (viii) Weeding and interculturing. (ix) 60 cm.; 110 cm.; 127 cm. (x) 7.2.62 ; 8.12.62; 24.9.63.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 levels of N : N_1=252 and N_2=336 Kg/ha.
(2) 2 levels of irrigation : I_1=Judgement and I_2=3/4th of judgement.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 7·6 m.×9·1 m.; 9·1 m.×9·1 m.; N.A. (b) 5·8 m. ×7·3 m.; 7·3 m.×7·3 m. in 61 and 62. (v) 91 cm.×91 cm. in 1960 and 1961 ; N.A. in '62. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) N.A. (iii) Sugarcane. (iv) (a) 1960 to 62. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Error variances are heterogeneous and Treatments × years interaction is absent.

3. RESULTS :

60(208)

(i) 1294 Q/ha. (ii) 137·5 Q/ha. (iii) No effect is significant. (iv) Av. yield of sugarcane in Q/ha.

	N_1	N_2	Mean
I_1	1290	1371	1330
I_2	1252	1262	1257
Mean	1271	1316	1294

61(213)

(i) 1374 Q/ha. (ii) 242·2 Q/ha. (iii) No effect is significant. (iv) Av. yield of sugarcane in Q/ha.

	N_1	N_2	Mean
I_1	1341	1336	1339
I_2	1396	1421	1409
Mean	1369	1379	1374

62(206)

(i) 1171 Q/ha. (ii) 134·8 Q/ha. (iii) No effect is significant. (iv) Av. yield of sugarcane in Q/ha.

	N_1	N_2	Mean
I_1	1224	1157	1190
I_2	1146	1158	1152
Mean	1185	1157	1171

Crop :- Sugarcane. **Ref :- Ms. 64(164).**

Site :- Reg. Res. Stn., Mandya. **Type :- 'lM'.**

Object :—To find out the water requirements and different levels of N.

1. BASAL CONDITIONS :

(i) (a) to (c) Nil. (ii) Sandy loam. (iii) 24.10.64. (iv) (a) Ploughing. (b) Planting setts. (c) 29653 setts/ ha. (d) 91 cm. between rows. (e) Nil. (v) 112 Kg/ha. of K_2O+84 Kg/ha. of P_2O_5 at planting. (vi) Co— 419. (vii) Irrigated. (viii) Weeding and interculturing. (ix) and (x) N.A.

2. TREATMENTS :

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

(1) 4 irrigation levels : W_1=51, W_2=76, W_3=102 and W_4=152 ha. cm.

(2) 2 irrigation intervals : I_1=4 and I_2=8 days.

(3) 2 levels of N : N_1=224 and N_2=336 Kg/ha. of N.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 2. (iv) (a) N.A. (b) 9·1 m.×8·2 m. (v) and (vi) Yes.

4. GENERAL :

(i) Fair. (ii) N.A. (iii) Cane yield. (iv) (a) 1964—N.A. (b) No. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

(i) 878·8 Q/ha. (ii) 200·0 Q/ha. (iii) Main effects of W and I are significant. (iv) Av. yield of Cane in Q/ha.

	W_1	W_2	W_3	W_4	I_1	I_2	Mean
N_1	613·6	802·0	889·7	991·3	934·3	713·9	824·1
N_2	842·2	977·4	842·8	1071·4	1012·9	853·9	933·4
Mean	727·9	889·7	866·2	1031·3	973·6	784·0	878·8
I_1	722·9	1008·6	972·7	1190·3			
I_2	732·9	770·8	759·8	872·4			

C.D. for W marginal means=213·1 Q/ha.

C.D. for I marginal means=150·7 Q/ha.

Crop :- Sugarcane. **Ref :- Ms. 62(37).**

Site :- I.S.A.Farm, Munirabad. **Type :- 'IM'.**

Object :— To improve the yield and quality of cane by applying molasses.

1. BASAL CONDITIONS :

(i) (a) Paddy—Sugarcane. (b) Paddy. (c) 24.7 C.L./ha. of F.Y.M.+44·8 Kg/ha. of N+33·6 Kg/ha. of P_2O_5. (ii) Black cotton soil. (iii) 4.3.62 (iv) (a) Deep ploughing by tractor followed by ridging. (b) Planting in furrows. (c) 24 710 setts/ha. (d) 91 cm. between rows. (e) N A. (v) N.A. (vi) Co-419 (late). (vii) Irrigated. (viii) Nil. (ix) N.A. (x) March, 1963.

2. TREATMENT :

4 sett treatments : T_0=Control, T_1=Sett treatment with molasses, T_2=Through irrigation (Details N.A.) and T_3=Sett treatments irrigation with molasses.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) and (b) 11·0 m.×9·1 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Yield of sugarcane. (iv) (a) 1962—N.A. (b) No. (c) Nil. (v) Sankeswar and Shimoga. (vi) Nil. (vii) Expt. conducted by S.R.S. Gangavathi.

5. RESULTS :

(i) 1283·0 Q/ha. (ii) 51·2 Q/ha. (iii) Treatment differences are significant. (iv) Av. yield of cane in Q/ha.

Treatment	T_0	T_1	T_2	T_3
Av. yield	1293·5	1288·5	1230·1	1319·9

C.D.=63·0 Q/ha.

———

Crop :- Sugarcane. **Ref :- Ms. 60(184).**

Site :- Sugarcane Res. Stn., Mandya. **Type :- 'D'.**

Object :— To find suitable programme of controlling weeds.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Ragi*. (c) N.A. (ii) Sandy loam (red soil). (iii) 8.6.1960. (iv) (a) Ploughing, clod-owsing and levelling. (b) Planting setts. (c) 30,000 setts/ha. (3eyebed/sett). (d) 91 cm. between rows. (v) 112 Q/ha. of F.Y.M.+84 Kg/ha. of P_2O_5 at planting. 336 Kg/ha. of N as A/S in 4 doses. (vi) Co-419. (vii) Irrigated. (viii) As per treatments. (ix) N.A. (x) 16.7.1961.

2. TREATMENTS :
10 cultural-cum weedicidal treatments : T_0=Control—No weeding and spraying, T_1=Pre-emergence spray of 2·24 Kg/ha. of 2-4, D as Hedanol, T_2=Pre+Post emergence spray of 2·24 Kg/ha. of 2-4,D as Hedanol, T_3=T_2+3rd spray at earthing up, T_4=Pre-emergence spray of Hedanol+inter-culturing, T_5=Pre+Post spray of Hedanol+inter culturing, T_6=T_5+3rd spraying at earthing up, T_7=Pre+Post emergence spray of 2·24 Kg/ha. of 2-4, D +5·6 Kg/ha. of Dowpon, T_8=Two hand weedings only and T_9 =Pre +Post emergence spray of 5·6 Kg/ha. of Dowpon.

3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) 9·1 m.×5·5 m. (b) 7·3 m.×3·7 m. (v) 91 cm.×91 cm. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Germination, tillering, weed counts and cane yield. (iv) (a) 1959 to 1965 (slightly modified every year). (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2988 Q/ha. (ii) 415·4 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	T_6	T_7	T_8	T_9
Av. yield	3290	3110	2910	2810	2950	2930	3120	2800	3160	2800

———

Crop :- Sugarcane (*Adsali*). **Ref :- Ms. 61(182).**

Site :- Sugarcane Res. Stn., Mandya. **Type :- 'D'.**

Object :—To find out suitable methods for controlling weeds.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Ragi*. (c) N.A. (ii) Sandy loam (red soil). (iii) 25.6.61. (iv) (a) Ploughing, clod crushing and levelling. (b) Planting setts. (c) 32,000 setts/ha. (3 eyebuds/sett). (d) 91 cm. between rows. (e) Nil. (v) 112 Q/ha. of F.Y.M.+84 Kg/ha. of P_2O_5 at planting, 336 Kg/ha. of N as A/S in 4 doses. (vi) Co—419. (vii) Irrigated. (viii) As per treatments. (ix) N.A. (x) 25.11.62.

2. TREATMENTS :

6 cultural-weedicidal treatments : T_1=Pre emergence spray of Hedanol (2—4, D)+1 weeding after 8 weeks, T_2=Pre and post emergence spray of Hedanol (2—4, D), T_3=Pre and post emergence spray of Hedanol (2—4, D)+interculturing, T_4=T_2+3rd spray at earthing up, T_5=Pre and post emergence spray of Hedanol+post emergence spray of Dowpon at 5·6 Kg/ha.+interculturing and T_6=2 weedings only.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) and (b) 9·1 m.×3·7 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Germination counts and cane yield. (iv) (a) 1959 to 65 (modified every year). (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1849 Q/ha. (ii) 184·2 Q/ha. (iii) Treatment differences are significant. (iv) Av. yield of sugarcane in Q/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	2022	2033	1767	1731	1720	1820

C.D.=277·6 Q/ha.

Crop :- Sugarcane (*Adsali*). **Ref :- Ms. 62(165).**

Site :- Sugarcane Res. Stn., Mandya. **Type :- 'D'.**

Object : – To find out suitable method of controlling weeds.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Ragi*. (c) N.A. (ii) Sandy loam (red soil). (iii) 18.9.62. (iv) (a) Ploughing, clod crushing and levelling. (b) Planting setts. (c) 32,000 setts/ha. (3 eyebuds/sett). (d) 91 cm. between rows. (e) Nil. (v) 112 Q/ha. of F.Y.M.+84 Kg/ha. of P_2O_5 at planting. 336 Kg/ha. of N as A/S in 4 doses. (vi) Co—419. (vii) Irrigated. (viii) As per treatments. (ix) N.A. (x) 29.10.63.

2. TREATMENTS :

4 cultural-weedicidal treatments : T_1=Hedanol pre and post emergence spraying at 2·2 Kg/ha. of active acid+interculturing, T_2=2 weedings+interculturings, T_3=Pre and post emergence spraying of Simazine at 5.6 Kg/ha. and interculturing and T_4=T_2+post emergence spray of Dowpon at 11·2 Kg/ha.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 2. (iv) (a) and (b) 9·1 m.×1·8 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Germination counts and yield of cane. (iv) (a) 1959—65 (Treatments modified every year). (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1748 Q/ha. (ii) 221·0 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of sugarcane in Q/ha.

Treatment	T_1	T_2	T_3	T_4
Av. yield	1693	1843	1725	1738

Crop :- Sugarcane (*Adsali*). **Ref :- Ms 63(162).**

Site :- Sugarcane Res. Stn., Mandya. **Type :- 'D'.**

Object :—To find suitable method of controlling weeds.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Ragi*. (c) N.A. (ii) Sandy loam. (iii) 20.9.63. (iv) (a) Ploughing, clod crushing and levelling, (b) Planting setts. (c) 32,000 setts/ha. (6 eyebuds/sett). (d) 91 cm. between rows. (e) Nil. (v) 84 Kg/ha. of P_2O_5 at planting+336 Kg/ha. of N in 4 doses. (vi) Co—419. (vii) Irrigated. (viii) As per treatments. (ix) N.A. (x) 25.11.64.

2. TREATMENTS :

4 weedicidal treatments : T_0=Control, T_1=Spraying Hedanol (2—4, D) at 2·7 Kg/ha.of active acid (16.9.63), T_2=Pre and post emergence spray as above, T_3=Simazine pre emergence spray at 5·4 Kg/ha. and T_4=Pre and post emergence spray of Hedanol (2—4, D)+post emergence spray of Simazine at 5·4 Kg/ha.

3. DESIGN :

(i) L. Sq. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) and (b) 6·1 m.×7·3 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Germination count and yield of Cane. (iv) (a) 1959 to 65 (Treatments modified every year). (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1258 Q/ha. (ii) 215·1 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
Av. yield	1140	1257	1195	1276	1422

Crop :- Sugarcane (*Adsali*). **Ref :- Ms. 64(117).**

Site :- Sugarcane Res. Stn., Mandya. **Type :- 'D'.**

Object :—To find out suitable programme of controlling weeds of Sugarcane.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Ragi*. (c) N.A. (ii) Sandy loam (red soil). (iii) 21.6.64. (iv) (a) Ploughing, clod crushing, levelling. (b) Planting setts. (c) 30,000 setts/ha. (3 eyebud/sett). (d) 91 cm. between rows. (e) Nil. (v) N at 336 Kg/ha. in 4 doses+84 Kg/ha. of P_2O_5 at planting. (vi) Co—419. (vii) Irrigated. (viii) As per treatments. (ix) 238 cm. (x) 17.10.65.

2. TREATMENTS .

6 weedicidal treatments : T_0=Control, T_1=Pre and post emergence spray of 2, 4—D (Hedonal), T_2=Pre emergence spray of Simazine, T_3=Pre and post emergence spray of Simazine, T_4=T_3+Dowpon as in T_3 and T_5=Pre and post emergence of Hedonal+Dowpon.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 7·9 m.×10·1 m. (b) 6·1 m.×8·2 m. (v) 91 cm.×91 cm. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Germination, tillering and weed counts. (iv) (a) 1959—65 (Treatments modified every year). (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS:

(i) 1751·5 Q/ha. (ii) 199·3 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	1479·9	1823·8	1734·1	1659·3	1878·6	1933·4

———

Crop :- Sugarcane. **Ref :- Ms. 65(38).**

Site :- Reg. Res. Stn., Mandya. **Type :- 'D'.**

Object :— To find out the best method of controlling weeds.

1. BASAL CONDITIONS :

(i) (a) to (c) Nil. (ii) Sandy loam. (iii) 26.10.1965. (iv) (a) Ploughing with kolar mould plough. (b) Planting setts. (c) 30,000 setts/ha. (3 eyebud/sett. (d) 91 cm. between rows. (e) N.A. (v) 84 Kg/ha. of Super+268·8 Kg/ha. of N applied in 4 split doses. (vi) Co-419. (vii) Irrigated, (viii) Hand weeding, 2 to 3 times interculturing and earthing up. (ix) 102 cm. (x) 10 and 11.12.1966.

2. TREATMENTS :

6 weedicidal treatments :

T_0=Control (No spraying), T_1=Pre and post emergence spraying of 2, 4-D (Hedanol), T_2=Pre-emergence spraying of Simazine (Tafazine only), T_3=Pre and post emergence spraying of Simazine (in the form of Tafazine), T_4=Pre and post emergence spraying of Simazine+Dowpon and T_5=Pre and post emergence spraying of Hedanol+Dowpon.

[Hedanol 80%, 2, 4-D at 12 gm./plot. Tafazine 50% at 24 gm./plot. Dowpon (Sodium salt of 2, 2 at 24 gm./plot).

Ist spray on 30.10.65, IInd spray on 12.11.65.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) N.A. (b) 6·10 m.×8·2 m. (v) and (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of cane. (iv) 1959 to 1965 (Treatments modified every year). (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

5. RESULTS:

(i) 959·8 Q/ha. (ii) 258·1 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	1063·2	1145·8	903·3	962·1	955·6	728·5

———

Crop :- Sugarcane. **Ref : Ms. 63(196), 64(157).**

Site :- Reg. Res. Stn., Mandya. **Type :- 'D'.**

Object :— To control the early loss of vigour in Sugarcane with the help of different fungicides.

1. BASAL CONDITIONS:

(i) (a) Fallow—Sugarcane (1963) ; Groundnut—Sugarcane (1964). (b) Fallow (1963) ; Groundnut and (Sugarcane 1964. (c) N.A. (ii) Sandy loam. (iii) 11.7 1963 ; 31.10.1964. (iv) (a) Ploughing. (b) Planting setts. (c) 25,000 setts/ha. (1963). 30,000 setts/ha. (1964). (d) 91 cm. between rows. (e) Nil. (v) 28 C.L./ha. of F.Y.M +84 Kg/ha. of P_2O_5+112 Kg/ha. of K_2O+336 Kg/ha. of N as G.N.C. in 4 doses. (vi) Co-419. (vii) Irrigated. (viii) Digging, passing tin harrows and blade harrows 3 times. (ix) N.A. (x) 3.10.1964 : 31.1.1966.

2. TREATMENTS :

10 fungicidal treatments : T_0=Control (T.D.: Top dressing only), T_1=Fungicides+T.D. (Bordeaux mixture one day prior to planting in 455 litres of water, T_2=Heptachlor EC+T.D. (6% dust 28 Kg/ha. soil application—7 days prior to planting), T_3=Heptachlor dust+T.D. (in 371 litres of water one at planting—one at one month after planting, T_4=T.D. only N in 8 doses at pianting, 6, 10, 14, 18, 22, 26 and 30th week after planting in 5, 10, 20, 25, 15, 15, 5 and 5% respectively, T_5=T_4+mineral elements (56 Kg/ha. of Mg. Phos.+4·5 Kg/ha. of Fe. Sul.+4·5 Kg/ha. of Cu. Sul. 4·5 Kg/ha. of Borax+6·7 Kg/ha. of Mn.+9 Kg/ha. of Zn. Sul.), T_6=40 C.L./ha. of compost+T.D., T_7=40 C.L./ha. of compost+T.D. as A/S and G.N.C. in 30 : 70 ratio, T_8=Nematicide+T.D. (173 litres/ha. Shell D.D. at 30 cm. sq. distance 20 days prior to planting and T_9=G.L. manuring (112 Q/ha. of glyricidia).

3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 9·1 m.×9·1 m. (v) and (vi) Yes.

4. GENERAL :

(i) Fair. (ii) N.A. (iii) Cane yield. (iv) 1962 to 1965 (Treatment modified in 1963 and 1965). (b) No. (c) Nil. (v) and (vi) N.A. (vii) Error variances are heterogeneous. Treatments×years interaction is absent.

5. RESULTS :

63(196)

(i) 2091 Q/ha. (ii) 116·5 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
Av. yield	1933	2175	2158	2073	2022	2113	2186	2143	2072	2036

64(157)

(i) 1629 Q/ha. (ii) 243·9 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
Av. yield	1532	1794	1553	1607	1527	1350	1707	1775	1596	1853

Crop :- Sugarcane. **Ref :- Ms. 65(37).**

Site :- Reg. Res. Stn., Mandya. **Type :- 'D'.**

Object :—To control early loss of vigour in Sugarcane.

Crop :- Sugarcane. **Ref : Ms. 63(196), 64(157).**

Site :- Reg. Res. Stn., Mandya. **Type :- 'D'.**

Object :— To control the early loss of vigour in Sugarcane with the help of different fungicides.

1. BASAL CONDITIONS:

(i) (a) Fallow—Sugarcane (1963) ; Groundnut—Sugarcane (1964). (b) Fallow (1963) ; Groundnut and (Sugarcane 1964. (c) N.A.(ii) Sandy loam. (iii) 11.7 1963 ; 31.10.1964. (iv) (a) Ploughing. (b) Planting setts. (c) 25,000 setts/ha. (1963). 30,000 setts/ha. (1964). (d) 91 cm. between rows. (e) Nil. (v) 28 C.L./ha. of F.Y.M +84 Kg/ha. of P_2O_5+112 Kg/ha. of K_2O+336 Kg/ha. of N as G.N.C. in 4 doses. (vi) Co-419. (vii) Irrigated. (viii) Digging, passing tin harrows and blade harrows 3 times. (ix) N.A. (x) 3.10.1964 : 31.1.1966.

2. TREATMENTS :

10 fungicidal treatments : T_0=Control (T.D.: Top dressing only), T_1=Fungicides+T.D. (Bordeaux mixture one day prior to planting in 455 litres of water, T_2=Heptachlor EC+T.D. (6% dust 28 Kg/ha. soil application—7 days prior to planting), T_3=Heptachlor dust+T.D. (in 371 litres of water one at planting—one at one month after planting, T_4=T.D. only N in 8 doses at planting, 6, 10, 14, 18, 22, 26 and 30th week after planting in 5, 10, 20, 25, 15, 15, 5 and 5% respectively, T_5=T_4+mineral elements (56 Kg/ha. of Mg. Phos.+4·5 Kg/ha. of Fe. Sul.+4·5 Kg/ha. of Cu. Sul. 4·5 Kg/ha. of Borax+6·7 Kg/ha. of Mn.+9 Kg/ha. of Zn. Sul.), T_6=40 C.L./ha. of compost+T.D., T_7=40 C.L./ha. of compost+T.D. as A/S and G.N.C. in 30 : 70 ratio, T_8=Nematicide+T.D. (173 litres/ha. Shell D.D. at 30 cm. sq. distance 20 days prior to planting and T_9=G.L. manuring (112 Q/ha. of glyricidia).

3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 9·1 m.×9·1 m. (v) and (vi) Yes.

4. GENERAL :

(i) Fair. (ii) N.A. (iii) Cane yield. (iv) 1962 to 1965 (Treatment modified in 1963 and 1965). (b) No. (c) Nil. (v) and (vi) N.A. (vii) Error variances are heterogeneous. Treatments×years interaction is absent.

5. RESULTS :

63(196)

(i) 2091 Q/ha. (ii) 116·5 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
Av. yield	1933	2175	2158	2073	2022	2113	2186	2143	2072	2036

64(157)

(i) 1629 Q/ha. (ii) 243·9 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
Av. yield	1532	1794	1553	1607	1527	1350	1707	1775	1596	1853

Crop :- Sugarcane. **Ref :- Ms. 65(37).**

Site :- Reg. Res. Stn., Mandya. **Type :- 'D'.**

Object :—To control early loss of vigour in Sugarcane.

1. BASAL CONDITIONS

(i) (a) to (c) Nil. (ii) Sandy loam. (iii) 16.10.65. (iv) (a) Ploughing, clod crushing and levelling. (b) Planting setts. (c) 29,640 setts/ha. (3 eyebuds/sett). (d) 91 cm. between rows. (e) Nil. (v) 24·7 C.L./ha. of F.Y.M. (vi) Co—419. (vii) Irrigated. (viii) Hand weeding, 2 to 3 interculturings and earthing up. (ix) 102 cm. (x) 10.12.66.

2. TREATMENTS :

10 fungicidal treatments : T_0=Control (T.D. : Top dressing only standard method), T_1=Fungicides+T.D. (Bordeaux mixture 1 day prior of planting), T_2=Heptachlor dust+T.D. (6%dust at 28 Kg/ha.7 days prior to planting),T_3=Heptachlor E.C.+T.D.(1235 c.c./ha. in 680 litres of water in 2 applications, ½ at planting other ½ at earthing up), T_4=T.D. only of P and K at planting. (N=336 Kg/ha. in 8 doses at planting, 6, 10, 14, 18, 22, 26 and 30 week after planting in 5, 10, 20, 25, 15, 15, 5 and 5 % respectively. After final earthing up N is given through irrigation water, T_5=T.D with N (336 Kg/ha.) in 8 doses+all minor elements Mg. Phos., Fe. Sul., Cu. Sul.; Borax, Mn. and Zn. Sul.), T_6=98·8 C.L./ha. of compost+T.D., T_7=98·8 C.L./ha. of compost+T.D. (N as A/S and G.N.C.), T_8=Numaticide+T.D. (618 litres/ha. applied 15 to 20 days prior to planting), and T_9=Green leaf manuring+T.D. (112 Q/ha. of G.M. as Glyricide).

T.D.=336 Kg/ha. of N as G.N.C.+84 Kg/ha. of P_2O_5 as Super+112 Kg/ha. of K_2O.

3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 9·1 m.×9·1 m. (v) N.A. (vi) Yes.

4. GENERAL:

(i) Fair. (ii) Nil. (iii) Cane yield. (iv) (a) 1962 to 65 (Treatments modified in 62 and 66). (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1889 Q/ha. (ii) 332·7 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
Av. yield	1902	1549	1982	1784	1819	1946	2042	2173	1767	1925

Crop :- Sugarcane (*Adsali*). **Ref :- Ms. 61(190).**
Site :- Sugarcane Res. Stn., Mandya. **Type :- 'CD'.**

Object :—To find out the best method of controlling *Hariyali* (weeds).

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) Sandy loam. (iii) N.A. (iv) (a) Ploughing with *kolar* mould board plough. (b) Planting setts. (c) 29640 setts/ha. (3 eyebud/sett). (d) 91 cm. between rows. (e) Nil. (v) Nil. (vi) Co—419 (late). (vii) Unirrigated. (viii) N.A. (ix) Normal. (x) N.A.

2. TREATMENTS :

4 *spraying treatments* : T_0=Control, T_1=Spraying with 22 Kg/ha. of Dowpon in 273 to 364 litres of water once, T_2=2 sprayings with 22 Kg/ha. of Dowpon in 273 to 364 litres of water and T_3=Ploughing and spraying with 22 Kg/ha. of Dowpon in 273 to 364 litres of water just before sprouting.

T_1 applied on 16.7.61, T_2 on 16.7.61 and 24.8.61 and T_3 on 24.8.61.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) and (b) 10·1 m.×10·1 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Weed counts. (iv) (a) 1961 only. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS:

(i) 68·1°. (ii) 6·7°. (iii) Treatment differences are highly significant. (iv) Av. angle and percentage of weeds per 3 random spots of 90 cm. × 90 cm.

Treatment	T_0	T_1	T_2	T_3
Mean angle	41·8°	72·0°	79·8°	78·8°
Percentage	44·4%	90·5%	96·9%	96·2%

C.D.=8·1%.

Crop :- Cotton (*Rabi*). **Ref :- Ms. 63(236).**

Site :- Agri. Res. Stn., Bagalkot. **Type :- 'M'.**

Object :—To find out the best method of application of fertilisers on dry land Cotton.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Rabi Jowar*. (c) N.A. (ii) Deep black soil. (iii) 5.9.63. (iv) (a) 3 harrowings. (b) Sowing with 61 cm. seed drill. (c) 9 Kg/ha. (d) 61 cm. × 30 cm. (e) 2. (v) Nil. (vi) *Jayadhar* (medium). (vii) Unirrigated. (viii) Interculturing. (ix) 69 cm. (x) 22.2.64 and 25.3.64.

2. TREATMENTS :

6 times an. methods of application of fertilizers : T_0=Control (no fertilizer), T_1=Normal method (fertilizers spreading), T_2=2/3 at ploughing broadcasted+1/3 at sowing lines, T_3=Spreading 2/3 at sowing line and spraying $\frac{1}{3}$ at flowering, T_4=Spreading 2/3 at sowing line and spraying 1/3 at flowering and T_5=Full dose at ploughing.

Fertilizer dose is 16·8 Kg/ha. of N+16·8 Kg/ha. of P_2O_5.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) 65·8 m. × 11·3 m. (iii) 4. (iv) (a) 11·0 m. × 11·0 m. (b) 10·1 m. × 10·1 m. (v) 91 cm. border alround. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Height, boll counts. Yield of *kapas*. (iv) (a) 1963 only. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 498 Kg/ha. (ii) 55·3 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	T_4	T_5
Av. yield	415	583	546	495	502	448

C.D.=83·3 Kg/ha.

Crop :- Cotton (*Rabi*). **Ref :- Ms. 62(200).**

Site :- Soil Cons. Res. Stn., Bellary. **Type :- 'M'.**

Object :—To evaluate the responses to the application of spartin—B under rainfed conditions.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton. (c) Nil. (ii) Deep black cotton soil. (iii) 10 9.62. (iv) (a) 4 light harrowings. (b) Dibbling. (c) 11 Kg/ha. (d) 91 cm.×23 cm. (e) 2. (v) As per treatments. (vi) Western 1 (late). (vii) Unirrigated. (viii) 3 hand weedings and 1 hoeing. (ix) 36 cm. (x) 22.4.63.

2. TREATMENTS :

All combinations of (1) and (2)+a control (no manure)

(1) 2 levels of manures : M_1=5600 Kg/ha. of F.Y.M. and M_2=22·4 Kg/ha. of N+44·8 Kg/ha. of P_2O_5.

(2) 2 levels of spartin B : L_0=0 and L_1=370 Kg/ha.

Spartum B is a synthetic mixture of micronutrients.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 5. (b) 18·3 m.×3·7 m. (iii) 6. (iv) (a) 3·7 m.×3·7 m. (b) 2·7 m.×2·7 m. (v) 46 cm.×46 cm. (vi) Yes.

4. GENERAL :

(i) Shedding of leaves due to disease and shedding of flowers due to heavy rains. (ii) Disease observed. Control measures not taken. (iii) Height measurements, Boll counts, yield of *kapas*. (iv) (a) 1962 to 64 (modified in 63). (b) No. (c) Nil. (v) Nil. (vi) Heavy and unusual rains during Dec. '62. (vii) Nil.

5. RESULTS :

(i) 145 Kg/ha. (ii) 53·4 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of *kapas* in Kg/ha.

T_0=139 Kg/ha.

	M_1	M_2	Mean
L_0	133	145	139
L_1	181	127	154
Mean	157	136	146

Crop :- Cotton (*Rabi*). **Ref :- Ms. 63(191), 64(147).**

Site :- Soil Cons. Res. Stn., Bellary. **Type :- 'M'.**

Object :— To evaluate the responses to the application of Spartin—B under rainfed conditions.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar* ; Cotton. (c) Nil. (ii) Deep black cotton soil. (iii) 24.9.1963 ; 19.9.1964. (iv) (a) 4 light harrowings. (b) Dibbling. (c) 11 Kg/ha. (d) 91 cm.×23 cm. (e) One. (v) As per treatments. (vi) Western 1 (late). (vii) Unirrigated. (viii) 3 hand weedings and 1 hoeing. (ix) 15 cm. ; 21 cm. (x) N.A.

2. TREATMENTS :

All combinations of (1) and (2)+2 extra treatments.

(1) 2 levels of manures : M_1=5600 Kg/ha. of F.Y.M. and M_2=22·4 Kg/ha. of N+44·8 Kg/ha. of P_2O_5.

(2) 2 levels of Spartin B : L_0=0 and L_1=370 Kg/ha.

2 extra treatments : T_0=Control, T_1=5600 Kg/ha. of F.Y.M.+22·4 Kg/ha. of N+44·8 Kg/ha. of P_2O_5+370 Kg/ha. of Spartin B.

Spartin B is a synthetic mixture of micronutrients for alkaline soils.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 6. (b) 21·9 m.×11·0 m. (iii) 4. (iv) (a) 7·3 m.×5·5. (b) 5·5 m.×4·3 m. (v) 91 cm.×61 cm. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Height measurements, boll counts and yield of *kapas*. (iv) (a) 1962 to 1964 (treatments modified in 1963. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Error variances are heterogeneous and Treatments × years interaction is absent,

5. RESULTS :

63(191)

(i) 226 Kg/ha. (ii) 33·9 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of *kapas* in Kg/ha.

T_0=227 Kg/ha., T_1=223 Kg/ha.

	M_1	M_2	Mean
L_0	211	221	216
L_1	249	223	236
Mean	230	222	226

64(14)

(i) 356 Kg/ha. (ii) 84·1 Kg/ha. (iii) None of the effects is significant) (iv) Av. yield of *kapas* in Kg/ha.

T_0=307 Kg/ha., T_1=390 Kg/ha.

	M_1	M_2	Mean
L_0	346	333	340
L_1	403	356	380
Mean	374	345	360

Crop :- Cotton (*Rabi*). **Ref :- Ms. 60(12), 62(201), 63(190), 64(148).**

Site :- Soil Cons. Res. Stn., Bellary. **Type :- 'M'.**

Object :— To find out the optimum dose of N and P for Cotton.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton. (c) As per treatments. (ii) Black cotton soil. (iii) 25.9.1960 ; 8.9.1962 ; 27.9.1963 ; 19.9.1964. (iv) (a) 2 harrowings. (b) Drilling. (c) 8 Kg/ha. (d) 91 cm. between rows. (e) N.A. (v) Nil. (vi) Western—1 (late). (vii) Unirrigated. (viii) Weeding and interculturing. (ix) 15 cm. ; 36 cm. ; 15 cm.; 21 cm. (x) 15.3.1961 ; 30.3.1963 ; N.A. ; N.A.

2. 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) 4 levels of P_2O_5 as Super : P_0=0, P_1=22·4, P_2=44·8 and P_3=112·1 Kg/ha.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 3. (iv) (a) 38·4 m. × 2·1 m. (b) 36·6 m. × 1·5 m. (v) 91 cm. × 30 cm. (vi) Yes.

4. GENERAL :

(i) Satisfactory except poor in 1952 and 1963. (ii) Nil. (iii) Height of plants. boll count and yield of *kapas*. (iv) (a) 1960—1964. (b) Yes. (c) As under 5. Results (v) and (vi) Nil. (vii) Experiment failed in 1961. Error variances are homogeneous. Treatments × years interaction is absent.

5. RESULTS :

(i) 193 Kg/ha. (based on 121 d.f. made up of pooled error and Treatments × years interaction). (iii) Main effect of P alone is highly significant. (iv) Av. yield of *kapas* in Kg/ha.

	P_0	P_1	P_2	P_3	Mean
N_0	145	195	223	198	190
N_1	178	209	196	191	194
N_2	183	193	212	195	196
Mean	169	199	210	195	193

C.D. for P marginal means=17·0 Kg/ha.

Years	P_0	P_1	P_2	P_3	Sig.	N_0	N_1	N_2	Sig.	G.M.	S.E./plot
1960	205	238	246	230	N.S.	223	218	248	N.S.	230	37·7
1962	103	137	131	136	N.S.	140	118	122	N.S.	127	33·7
1963	126	149	154	138	N.S.	134	150	142	N.S.	142	30·2
1964	241	272	309	275	*	264	288	271	N.S.	274	42·7
Pooled	169	199	210	195	*	190	194	196	N.S.	193	36·4

Crop :- Cotton (*Rabi*). **Ref :- Ms. 65(1).**

Site :- Soil Cons. Res. Stn., Bellary. **Type :- 'M'.**

Object : – To study the effect of different form of fertilizers on the yield of Cotton.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Jowar*, (c) 5000 Kg/ha. of F.Y.M. (ii) Deep black cotton soil. (iii) 23.9.65. (iv) (a) Ploughing and harrowing. (b) Dibbling by the dibbler 5 to 6 cm. below the surface. (c) N.A. (d) 30 cm. × 30 cm. (e) 1. (v) 40 Kg/ha. of P_2O_5 as Super applied to all plots. (vi) D.R. 72 cotton (early). (vii) Unirrigated. (viii) Weeding and hoeing. (ix) 66 cm. (x) 2.1.66.

2. TREATMENTS :

6 sources of 40 Kg/ha of N : S_0=Control (no N applied), S_1=Urea, S_2=A/S, S_3=Amm. Phos., S_4=Nitro Phos. and S_5=C/N.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A (iii) 4. (iv) (a) 7·3 m. × 5·5 m. (b) 6·7 m. × 5·5 m. (v) One row on either side. (vi) Yes.

4. GENERAL :

(i) Not normal. (ii) Nil. (iii) Yield of *kapas*. (iv) (a) 1965—N.A. (b) and (c) N.A. (v) N.A. (vi) The crop affected adversely by sever drought. (vii) Nil.

5. RESULTS :

(i) 139 Kg/ha. (ii) 44·5 Kg/ha, (iii) The 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	126	146	118	126	178	138

Crop :- Cotton (*Rabi*). **Ref :- Ms. 60(15).**

Site :- Soil Cons. Res. Stn., Bellary. **Type :- 'M'.**

Object :—To find out the effect of trace elements on Cotton.

1. BASAL CONDITIONS :

(i) (a) to (c) Nil. (ii) Black cotton soil. (iii) 27.9.60. (iv) (a) Harrowing. (b) Drilling. (c) 8 Kg/ha. (d) 91 cm. between rows. (e) N.A. (v) Nil. (vi) W—1 Cotton. (vii) Unirrigated. (viii) Interculturing and weeding. (ix) 15 cm. (x) 15.3.61.

2. TREATMENTS :

9 trace elements : M_0=Control (no trace elements), M_1=Standard (all trace elements viz. Mg.+Fe.+Mn.+Zn.+Cul.+Boron+Molybdenum), $M_2=M_1$ except Mg., $M_3=M_1$ except Fe,, $M_4=M_1$ except Mn., $M_5=M_1$ except Zn., $M_6=M_1$ except Cu., $M_7=M_1$ except Boran and $M_8=M_1$ except Molybdenum.

3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 6·4 m.×4·9 m. (b) 4·6 m.×3·1 m. (v) 91 cm.×91 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Boll counts and yield of *kapas*. (iv) (a) 1958—60. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 161 Kg/ha. (ii) 57·7 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of *kapas* in Kg/ha.

Treatment	M_0	M_1	M_2	M_3	M_4	M_5	M_6	M_7	M_8
Av. yield	206	140	226	114	137	178	152	132	168

Crop :- Cotton (*Rabi*). **Ref :- Ms. 60(14).**

Site :- Soil Cons. Res. Stn., Bellary. **Type :- 'M'.**

Object :—To find out the optimum dose and frequency of application of F.Y.M.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Cotton. (c) As per treatments. (ii) Black cotton soil. (iii) 25.9.60. (iv) (a) Harrowing. (b) Drilling. (c) 8 Kg/ha. (d) 91 cm. between lines. (e) N.A. (v) As per treatments. (vi) W—1 Cotton. (vii) Unirrigated. (viii) Interculturing and weeding. (ix) 11 cm. (x) 16.3.61.

2. TREATMENTS :

7 manurial treatments : M_0=Control (2 plots), M_1=22·4 Q/ha. of F.Y.M. every year, M_2=44·8 Q/ha. of F.Y.M. alternate years (from 1st year), M_3=44·8 Q/ha. of F.Y.M. alternate years (from 2nd year), M_4=67·3 Q/ha. of F.Y.M. every 3rd year (from 1st year), M_5=67·3 Q/ha. of F.Y.M. every 3rd year (from 2nd year) and M_6=67·3 Q/ha. of F.Y.M. every 3rd year (from 3rd year).

3. DESIGN:

(i) R.B.D. (ii) (a) 8 (b) N.A. (iii) 4. (iv) (a) 13·7 m.×9.1 m. (b) 11 9 m.×7 3 m. (v) 91 cm.×91 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Boll counts and yield of *kapas*. (iv) (a) 1958 –N.A. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS:

(i) 151 Kg/ha. (ii) 38·6 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of *kapas* in Kg/ha.

Treatment	M_0	M_1	M_2	M_3	M_4	M_5	M_6
Av. yield	131	159	211	124	165	161	129

C.D. for comparison of M_0 vs. others =49·2 Kg/ha.

C.D. for comparison of two means other than M_0=56·8 Kg/ha.

Crop :- Cotton (*Rabi*). **Ref :- Ms. 64(89).**

Site :- Agri. College Farm, Dharwar. **Type :- 'M'.**

Object :—To find out suitable placement method and kind of fertilizer for Cotton in red soil.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Jowar*. (c) N.A. (ii) Red sandy loam. (iii) 29.8.64. (iv) (a) Ploughing, grubbling and harrowing. (b) Dibbling. (c) N.A. (d) 61 cm.×30 cm. (e) 2. (v) Nil. (vi) *Laxmi*. (vii) Unirrigated. (viii) Interculturing and weeding. (ix) 40 cm. (x) 12.2.65 and 12.3.65.

2. TREATMENTS:

All combinations of (1) and (2) with 32·1 Kg/ha. of P_2O_5 as Super+a control.

(1) 4 sources of N at 44·5 Kg/ha. : S_1=A/S, S_2=Urea, S_3=C/A/N and S_4=A/S/N.

(2) 4 methods of placement : M_1=By plough sole 8cm. deep a week before sowing, M_2=P_2O_5 by plough sole a week before sowing and N by seed-cum-fertilizer drill at sowing, M_3=Placement 5 cm. deep and 5 cm. to the side of the seed line and M_4=Fertilizer through seed drill and seed through the straw tubes attached behind the seed drill.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 17. (b) N.A. (iii) 4. (iv) (a) 9·1 m.×6·1 m. (b) 7·9 m.×4·9 m. (v) 61 cm.× 61 cm. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of *kapas*. (iv) (a) 1964. (b) N.A. (c) Nil. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 786 Kg/ha. (ii) 228·7 Kg/ha. (iii) Main effect of S and 'control *vs.* others' are highly significant. (iv) Av. yield of *kapas* in Kg/ha.

Control=450 Kg/ha.

	M_1	M_2	M_3	M_4	Mean
S_1	543	768	848	899	764
S_2	703	710	654	741	702
S_3	1034	997	724	959	929
S_4	861	868	817	781	832
Mean	785	836	761	845	807

C.D. for S marginal means =162·8 Kg/ha.
C.D. for comparison of control *vs.* others=237·3 Kg/ha.

Crop :- Cotton. **Ref :- Ms. 63(133).**
Site :- Agri. Res. Stn., Dharwar. **Type :- 'M'.**

Object :—To determine the optimum dose of fertilizers and manures for *Jayadhar* Cotton.

1. BASAL CONDITIONS :
(i) (a) *Jowar*—Cotton. (b) *Jowar*. (c) 63 Q/ha. of F.Y.M. (ii) Deep black cotton soil. (iii) 14.8.63. (iv) (a) 2 ploughings, cross ploughing and 2 harrowings. (b) Dibbled in furrows. (c) to (e) N.A. (v) Nil. (vi) *Jayadhar*. (vii) Unirrigated. (viii) 3 intercultivation and 3 weedings. (ix) 41 cm. (x) 2 to 19.3.64.

2. TREATMENTS :
All combinations of (1), (2), (3) and (4).
(1) 3 levels of F.Y.M, : F_0=0, F_1=62·8 and F_2=125·6 Q/ha.
(2) 3 levels of N : N_0=0, N_1=28·0 and N_2=56·0 Kg/ha.
(3) 3 levels of P_2O_5 : P_0=0, P_1=28·0 and P_2=56·0 Kg/ha.
(4) 3 levels of K_2O : K_0=0, K_1=28·0 and K_2=56·0 Kg/ha.

3. DESIGN :
(i) 3^4 confd. (ii) (a) 9 plots/block, 9 blocks/replication. (b) N.A. (iii) 1. (iv) (a) N.A. (b) 2·4 m.× 7·3 m. (v) 2 rows on all sides. (vi) Yes.

4. GENERAL :
(i) Normal. (ii) Nil. (iii) Yield of *kapas*. (iv) (a) N.A. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :
(i) 731 Kg/ha. (ii) 118·8 Kg/ha. (iii) Main effect of N is significant. (iv) Av. yield of *kapas* in Kg/ha.

	N_0	N_1	N_2	P_0	P_1	P_2	K_0	K_1	K_2	Mean
F_0	675	712	745	745	710	677	759	705	667	710
F_1	654	783	733	711	712	747	737	708	725	723
F_2	680	698	815	733	776	684	746	736	712	731
Mean	670	731	764	729	733	703	747	716	701	721
K_0	764	695	784	751	776	715				
K_1	632	765	752	704	707	738				
K_2	614	733	756	733	715	656				
P_0	667	750	771							
P_1	710	737	751							
P_2	632	706	770							

C.D. for N marginal means=65·4 Kg/ha.

Crop :- Cotton (*Rabi*). **Ref :- Ms. 60(268), 61(264).**

Site :- Agri. Res. Stn., Dharwar. **Type -: 'M'.**

Object :—To study the effect of N and P on Cotton crop.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cottcn. (b) *Jowar*. (c) N.A. (ii) Medium black soil. (iii) 13.8.1960 ; 11.8.1961. (iv) (a) Ploughing and harrowing. (b) Dibbling. (c) 9 Kg/ha. (d) 61 cm.×30 cm. (e) 1. (v) Nil. (vi) *Laxmi* Cotton. (vii) Unirrigated. (viii) Intercultivations by implements. (ix) 22 cm. ; 25cm. (x) 19.1.1961 ; N.A.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 levels of N as A/S : N_0=0 and N_1=22·4 Kg/ha.

(2) 2 levels of P_2O_5 as Super : P_0=0 and P_1=16.8 Kg/ha.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 9.1 m.×7·3 m. (b) 6·7×6·1 m. (v) 120 cm. ×60 cm. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) N.A. (iii) Yield of *kapas*. (iv) (a) 1960—61 (b) No. (c) Nil. (v) and (vi) Nil. (vii) Error variances are heterogeneous. Treatments × years interaction is absent.

5. RESULTS:

61 (*268*)

(i) 812 Kg/ha. (ii) 182. 1 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of *kapas* in Ka/ha.

	P_0	P_1	Mean
N_0	920	756	838
N_1	842	730	786
Mean	881	743	812

61(264)

(i) 553 Kg/ha. (ii) 79·3 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of *kapas* in Kg/ha.

	P_0	P_1	Mean
N_0	558	568	563
N_1	554	532	543
Mean	556	550	553

———

Crop :-Cotton (*Rabi*). **Ref :- 60(119), 61(97), 62(79), 63(103).**

Site :- Agri. College Farm, Dharwar. **Type :- 'M'**

Object :—To find out suitable placement method of application of fertilizers to Cotton.

1. BASAL CODITIONS :

(i) (a) to (c) N.A. (ii) Black cotton soil. (iii) 20.8.1960 ; 22.8.1961; 17.8.1962 ; 17.8.1963. (iv) (a) Ploughing, clod crushing and harrowing. (b) N.A. ; N.A. ; Dibbling ; N.A. (c) to (e) N.A. (v) Nil. (vi) *Jayadhar*. (vii) Unirrigated. (viii) Interculturing, weeding and spraying. (ix) N.A. (x) 6.2.1961 to 4.3.1961; 10.2.1962 to 9.4.1962; 7 pickings dates N.A.; 7.2.1964 to 31.3.1964.

2. TREATMENTS :

All combinations of (1) and (2) +one control.

(1) 2 manurial treatments : T_1=33·6 Kg/ha. of N+22·4 Kg/ha. of P_2O_5 and T_2=50·4 Kg/ha. of N+33·6 Kg/ha. of P_2O_5.

(2) 4 methods of placement : M_1=By plough sole method 13 cm. deep about one week before sowing, M_2=To drop in the same line when the seed is sown by S.C.F. drill, M_3=To drop 4 cm. deeper than seed in the same line with S.C.F. drill and M_4=To drop 5 cm. deep and 5 cm. away from the seed line by S.C.F. drill.

S.C.F. means seed-cum-fretilizer drill.

3. DESIGN :

(i) Fact. R. B. D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 9·1 m×6·1 m. (b) 7·3 m×4·9 m. (v) 91 cm.×61 cm. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of *kapas*. (iv) (a) 1959 to 1963. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Error variances are heterogeneous and Treatments×years interaction is absent.

5. RESULTS :

60(119)

(i) 718 Kg/ha. (ii) 68·6 Kg/ha. (iii) Main effect of M is highly significant and 'control vs. other' treatments effect is significant. (iv) Av. yield of *kapas* in Kg/ha.

Control=650 Kg/ha.

	M_1	M_2	M_3	M_4	Mean
T_1	763	743	670	658	708
T_2	801	770	763	651	654
Mean	782	756	716	654	727

C.D for M marginal means=70·8 Kg/ha.
C.D. for control vs. others =75·1 Kg/ha.

61(97)

(i) 464 Kg/ha. (ii) 47·6 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of *kapas* in Kg/ha.

Control=425 Kg/ha.

	M_1	M_2	M_3	M_4	Mean
T_1	483	453	484	446	466
T_2	492	451	513	430	472
Mean	488	452	498	438	469

62(79)

(i) 652Kg/ha. (ii) 89·4 Kg/ha. (iii) Main effect of T alone is highly significant. (iv) Av. yield of *kapas* in Kg/ha.

	M_1	M_2	M_3	M_4	Mean
T_1	618	571	613	621	606
T_2	729	721	664	734	712
Mean	674	646	638	678	659

C.D. for T marginal means=65·2 Kg/ha.

63(103)

(i) 1141 Kg/ha. (ii) 127·3 Kg/ha. (iii)Main effect of M alone is significant. (iv) Av. yield of *kapas* in Kg/ha.

Control=1049 Kg/ha.

	M_1	M_2	M_3	M_4	Mean
T_1	1192	1243	1072	1013	1130
T_2	1207	1243	1018	1236	1176
Mean	1199	1243	1045	1124	1153

C.D. for M marginal means=131·4 Kg/ha.

Crop :- Cotton (*Rabi*). **Ref :- Ms. 60(111), 61(96), 62(78), 63(102).**

Site :- Agri. College Farm, Dharwar. **Type :- 'M'.**

Object:— To find out suitable placement method of application of fertilizer to Cotton in light soil.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Light red loamy (1960) ; Light red soil (1961 to 1963). (iii) 18.8.1960 ; 11.8.1961 ; 24.8.1962 ; 28.9.1963. (iv) (a) Ploughing and harrowing. (b) to (e) N.A. (v) N.A. (1960), Nil for 1961 to 1963. (vi) *Laxmi*. (vii) Unirrigated. (viii) Interculturing, weeding and spraying (ix) N.A. (x) 23.1.1961 to 20.2.1961 ; 1.1.1962 to 6.4.1962 ; 7 pickings for 1962 (dates N.A.) ; 5.2.1964 to 19.3.1964.

2. TREATMENTS :

All combinations of (1) and (2)+one control.

(1) 2 manurial treatments : T_1=33·6 Kg/ha. of N+22·4 Kg/ha. of P_2O_5 and T_2=50·4 Kg/ha. of N+33·6 Kg/ha. of P_2O_5.

(2) 4 methods of placement : M_1=By plough sole method 13 cm. deep about one week before sowing, M_2=To drop in the same line when the seed is sown by s.c.f. drill, M_3=To drop 4 cm. deeper than seed in the same line with s.c.f. drill and M_4=To drop 5 cm. deep and 5 cm. away from the seed line by s.c.f. drill.

S.c.f. drill means seed-cum-fertilizer drill.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 9·1 m.×6·1 m. (b) 7·3 m.×4·9 m. (v) 91 cm.×61cm. (vi) Yes.

4. GENERAL :

(i) Growth below normal. (ii) Nil. (iii) Yield of *kapas*. (iv) (a) 1959 to 1963. (b) No. (c) Nil (v) and (vi) Nil. (vii) Error variances are heterogeneous and Treatments×years interaction is absent.

5. RESULTS :

60(118)

(i) 233 Kg/ha. (ii) 41·3 Kg/ha. (iii) Only control vs. others effect is significant. (iv) Av. yield of *kapas* in Kg/ha.

Control=193 Kg/ha.

	M_1	M_2	M_3	M_4	Mean
T_1	221	225	241	224	228
T_2	261	259	245	224	247
Mean	241	242	243	224	238

C.D. for control vs. others treatments means=45·2 Kg/ha.

61(96)

(i) 264 Kg/ha. (ii) 63·5 Kg/ha. (iii) Only control vs. others effect is highly significant. (iv) Av. yield of *kapas* in Kg/ha.

Control=168 Kg/ha.

	M_1	M_2	M_3	M_4	Mean
T_1	276	222	361	245	276
T_2	211	345	233	317	276
Mean	243	284	297	281	276

C.D. for control vs. others treatment means=69·5 Kg/ha.

62(78)

(i) 418 Kg/ha. (ii) 109·0 Kg/ha. (iii) None of the effects is signifieant. (iv) Av. yield of *kapas* in Kg/ha.

Control=423 Kg/ha.

	M_1	M_2	M_3	M_4	Mean
T_1	399	365	490	402	414
T_2	489	344	418	431	420
Mean	444	355	454	416	417

63(102)

(i) 71 Kg/ha. (ii) 19·0 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of *kapas* in Kg/ha.

Control=51 Kg/ha.

	M_1	M_2	M_3	M_4	Mean
T_1	83	60	82	54	70
T_2	63	85	78	83	77
Mean	73	73	80	68	74

Crop :- Cotton (*Rabi*). **Ref :- Ms. 62(66).**

Site :- Agri. College Farm, Dharwar. **Type :- 'M'.**

Object :— To find the optimum time of application of N to Cotton.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*. (b) *Jowar*. (c) N.A. (ii) Medium black. (iii) 5.9.62. (iv) (a) 3 ploughings and 3 harrowings. (b) Dibbling. (c) to (e) N.A. (v) 28·0 Kg/ha. of K_2O+28·0 Kg/ha. of P_2O_5. (vi) Jayadhar. (vii) Unirrigated. (viii) 3 weedings and 3 interculturings. (ix) 32 cm. (x) 15.3.63 to 12.4.63.

2. TREATMENTS :

All combinations of (1) and (2)+control (2 plots/replication).

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

(2) 6 times of application of N : T_1=At sowing, T_2=At thinning, T_3=At flowering, T_4=½ dose at sowing+½ dose at thinning, T_5=½ dose at sowing+½ dose at flowering and T_6=½ dose at thinning+½ dose at flowering.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 14. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 5·5 m.×3·7 m. (v) 2 rows alround. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of *kapas*. (iv) (a) 1962—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 702 Kg/ha. (ii) 57·9 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of *kapas* in Kg/ha.

Control=684 Kg/ha.

	T_1	T_2	T_3	T_4	T_5	T_6	Mean
N_1	709	712	677	702	761	702	710
N_2	708	666	659	774	690	697	699
Mean	708	689	668	738	726	700	705

Crop :- Cotton. **Ref :- Ms. 63(138).**

Site :- Agri. Res. Stn., Dharwar. **Type :- 'M'.**

Object :— To determine the suitable dose and time of application for Cotton.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) *Jowar*. (c) 62·8 Q/ha. of F.Y.M. (ii) Deep black cotton soil. (iii) 16.8.63. (iv) 2 ploughing and cross ploughing harrowing, levelling and opening furrows. (b) Dibbled in furrows. (c) 9 Kg/ha. (d) 60 cm. between rows. (e) 2. (v) 62·8 Q/ha. of F.Y.M. (vi) Jayadhar. (vii) Unirrigated. (viii) 3 interculturing and 3 weedings. (ix) 50 cm. (x) 24.3.64.

2. TREATMENTS :

Same as in expt. no. 62(60) on page 371. Source of N : N.A.

3. DESIGN :

(i) R B.D. (ii) (a) 14. (b) N.A. (iii) 3. (iv) (a) 4·8 m.×10·3 m. (b) 2·4 m.×7·9 m. (v) 120 cm.×120 cm. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of *kapas*. (iv) (a) 1962—N.A. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 726 Kg/ha. (ii) 119·2 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of *kapas* in Kg/ha.

Control=687 Kg/ha.

	T_1	T_2	T_3	T_4	T_5	T_6	Mean
N_1	714	724	637	792	712	757	722
N_2	661	835	671	790	771	719	741
Mean	687	779	654	791	741	738	732

Crop :- Cotton (*Kharif*). **Ref.:- Ms. 61(155), 62(69).**

Site :- Agri. Res. Stn., Dharwar. **Type :- 'M'.**

Object :— To find out the effect of seed treatmen ton the growth and yield of Cotton.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) *Jowar*. (c) Nil. (ii) Medium black. (iii) 3.8.1961 ; 23.8.62. (iv) (a) 2 ploughings and 3 harrowings. (b) Dibbling in furrows. (c) 9 Kg/ha. (d) 60 cm. between rows. (e) 2. (v) 44·8 Kg/ha. of F.Y.M. for 61(155) and Nil for other. (vi) *Laxmi*. (vii) Unirrigated. (viii) Weeding for 61(155) ; 3 weedings and 3 interculturings for other. (ix) 19 cm. ; 6 cm. (x) 18 to 23.4.62 ; 18.3.63 to 15.4.63.

2. TREATMENTS :

4 seed treatments : T_0=Control, T_1=5·6 Kg/ha. of P_2O_5 as Super, T_2=5·6 Kg/ha. of potash and T_3=3·4 Kg/ha. of lime.

Seeds treated with the fertilizer and mixed with 44·8 Kg/ha. of F.Y.M. before sowing.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 11·5 m.×6·1 m. ; N.A. (b) 9·1 m.×3·7 m. ; 9·8 m×8·5 m. (v) 120 cm.×120 cm. ; two rows on all sides. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of *kapas*. (iv) (a) 1961—1962. (b) No. (c) Nil. (v) Gadag. (vi) Nil. (vii) Error variances are heterogeneous and Treatments×years interaction is absent.

5. RESULTS :

61(155)

(i) 481 Kg/ha. (ii) 51·8 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
Av. yield	488	468	479	490

62(69)

(i) 249 Kg/ha. (ii) 32·1 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
Av. yield	253	256	252	237

Crop :- Cotton. **Ref :- Ms. 63(139), 64(212), 65(1^{16}).**

Site :- Agri. Res. Stn., Gadag. **Type :- 'M'.**

Object :— To study the effect of foliar vs. soil application of fertilizers and the effect of harmones.

1. BASAL CONDITIONS:

(i) (a) *Jowar*—Cotton in 1963 ; *Jowar*—Gram—Cotton in 1964 and 1965. (b) *Jowar* in 1963 ; Gram in 1964 and 1965. (c) 62·8 Q/ha. of F.Y.M. in 1963 ; 12·4 C.L./ha. of F.Y.M. in 1964 and 1965. (ii) Medium black cotton soil. (iii) 26.9.1963 ; 25.9.1964 ; N.A. (iv) (a) 2 ploughings and cross ploughing, levelling and opening furrows in 1963 ; 2 wooden ploughings and 2 harrowings in 1964 and 1965. (b) Dibbled in furrows. (c) 11·2 Kg/ha. (d) 61 cm.×31 cm. (e) 1. (v) 62·8 Q/ha. of F.Y.M. in 1963 ; Nil in 1964 and 1965. (vi) *Laxmi*. (vii) Unirrigated. (viii) 4 intersultivations and 3 weedings in 1963 ; 3 weedings in 1964 and 1965. (ix) 23 cm. ; 36 cm. ; N.A. (x) 23.2.1964 to 18.3.1964 ; 8.3.1965 to 8.4.1965. ; N.A.

2. TREATMENTS :

Main-plot treatments:

All combinations of (1) and (2)+a control.

(1) 2 levels of N as A/S : N_1=5·6 and N_2=11·2 Kg/ha.

(2) 3 methods of application of N : M_1=Soil application, M_2=Foliar application and M_3=½ soil application+½ foliar application.

Sub-plot treatments :

(1) 2 levels of harmones : H_1=NAA at 10 pp.m. and H_2=NAA at 20 pp.m.

(2) 2 times of application of harmones : T_1=4—5 leaf stage and T_2=At flowering.

3. DESIGN :

(i) Split-plot. (ii) (a) 7 main-plots/replication ; 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) N.A. in 1963 ; 7·3 m.×6·4 m. in 1964 and 1965. (b) 9·1 m.×4·9 in 1963 ; 6·1 m.×5·8 m. in 1964 and 1965. (v) 2 rows alround. (vi) Yes.

4. GENERAL :

(i) Normal in 1963 ; Good in 1964 and 1965. (ii) Nil in 1963, Endrin sprayed in 1964 to 1965. (iii) Yield of *kapas*. (iv) (a) 1962 to 1966 (1962—N.A.) (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

63(139)

(i) 517 kg/ha. (ii) (a) 107·8 Kg/ha. (b) 100·3 Kg/ha. (iii) Main effect of M and Control vs. others are significant. (iv) Av. yield of *kapas* in Kg/ha.

Control

	H_1	H_2	Mean
T_1	475	409	442
T_2	480	465	472
Mean	477	437	457

	N_1	N_2	H_1	H_2	T_1	T_2	Mean
M_1	585	561	581	565	592	554	573
M_2	497	501	489	508	520	478	499
M_3	504	513	471	546	486	531	508
Mean	529	525	514	540	533	521	527
T_1	549	516	535	530			
T_2	508	534	493	549			
H_1	509	518					
H_2	548	531					

C.D. for M marginal means =56·6 Kg/ha.

C.D. for comparison of control vs. others=61·2 Kg/ha.

64(212)

(i) 628 Kg/ha. (ii) (a) 206·6 Kg/ha. (b) 151·6 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of *kapas* in Kg/ha.

Control

	H_1	H_2	Mean
T_1	594	475	534
T_2	601	507	554
Mean	597	491	544

	N_1	N_2	H_1	H_2	T_1	T_2	Mean
M_1	600	686	624	662	638	648	643
M_2	643	647	628	662	651	639	645
M_3	662	615	628	649	660	617	638
Mean	635	649	627	658	650	635	642
T_1	620	680	656	644			
T_2	650	619	597	672			
H_1	656	597					
H_2	614	702					

65(116)

(i) 1478 Kg/ha. (ii) (a) 2858·0 Kg/ha. (b) 1116·2 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of *kapas* in Kg/ha.

Control

	H_1	H_2	Mean
T_1	1845	1890	1864
T_2	2240	1787	2014
Mean	2043	1839	1941

	N_1	N_2	H_1	H_2	T_1	T_2	Mean
M_1	924	771	822	873	864	831	847
M_2	774	954	812	915	848	879	864
M_3	2263	2716	2598	2381	2505	2475	2490
Mean	1320	1480	1411	1390	1406	1395	1400
T_1	1165	1646	1217	1594			
T_2	1476	1314	1604	1186			
H_1	1122	1700					
H_2	1519	1260					

Crop :- Cotton (*Rabi*). **Ref :- Ms. 60(159), 61(146).**

Site :- Agri. Res. Stn., Gadag. **Type :- 'M'.**

Object :—To find out the effect on the growth and yield of Cotton by the application of N and P.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) *Jowar*. (c) N.A. (ii) Medium black soil. (iii) 26.9.1960 ; 27.9.1961. (iv) (a) 2 ploughings and 2 to 4 harrowings ; Levelling and opening furrows. (b) Dibbling in furrows. (c) 9 Kg/ha. (d) 61 cm. between rows. (e) 2. (v) Nil. (vi) *Laxmi*. (vii) Unirrigated. (viii) 3 weedings. (ix) 25 cm. ; 17 cm. (x) 30.3.1961 ; 3.3.1962 to 5.4.1962.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N : $N_0=0$, $N_1=11{\cdot}2$, $N_2=22{\cdot}4$ and $N_3=33{\cdot}6$ Kg/ha.

(2) 4 levels of P_2O_5 : $P_0=0$, $P_1=28{\cdot}0$, $P_2=56{\cdot}0$ and $P_3=84{\cdot}0$ Kg/ha.

3. DESIGN :

(i) Fact. in R.B.D (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) and (b) N.A. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Yield of *kapas*. (iv) (a) 1959-61. (b) No. (c) Nil. (v) and (vi) N.A. (vii) Error variances are heterogeneous. Treatments × years interaction is absent.

5. RESULTS :

60(159)

(i) 420 Kg/ha. (ii) 60·7 Kg/ha. (iii) Main effect of N alone is highly significant. (iv) Av. yield of *kapas* in Kg/ha.

	N_0	N_1	N_2	N_3	Mean
P_0	403	457	389	487	434
P_1	351	450	396	439	409
P_2	374	401	392	458	406
P_3	433	396	427	564	430
Mean	390	426	401	462	420

C.D. for N marginal means=43·3 Kg/ha.

61(146)

(i) 496 Kg/ha. (ii) 125·0 Kg/ha. (iii) Main effect of P alone is highly significant. (iv) Av. yield of *kapas* in Kg/ha.

	N_0	N_1	N_2	N_3	Mean
P_0	537	355	291	529	438
P_1	413	540	474	514	485
P_2	493	474	596	525	522
P_3	519	535	620	529	551
Mean	490	476	495	524	496

C.D. for P marginal means=89·1 Kg/ha.

Crop :- Cotton (*Rabi*). **Ref :- Ms. 61(140), 62(71).**

Site :- Agri. Res. Stn., Gadag. **Type :-'M'.**

Object :—To find out the effect of seed treatment on growth and yield of Cotton.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) *Jowar*. (c) Nil. (ii)Medium black cotton soil. (iii) 6.10.1961 ; 21.9.1962. (iv) (a) 2 to 3 ploughings and 3 to 4 harrowings. (b) Dibbled in plough furrows. (c) 9 Kg/ha. (d) 61 cm. between rows. (e) 2. (v) Nil. (vi) *Laxmi*. (vii) Unirrigated. (viii) 3 weedings. (ix) 15 cm. ; 39 cm. (x) 4 to 29.3.1962 ; 24.2.1962 to 31.3.1963.

2. TREATMENTS :

4 seed treatments : T_0=Control, T_1=5·6 Kg/ha. of phosphoric acid as Super, T_2=5·6 Kg/ha. af Potash and T_3=3·4 Kg/ha. of Lime.

Seeds treated with above were mixed with 44.8 Kg/ha. of F.Y.M. before sowing.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 17·1 m.×6·1 m. (v) 2 rows alround. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of *kapas*. (iv) (a) 1961-62. (b) No. (c) As under 5. Results. (v) and (vi) Nil. (vii) Error variances are homogeneous. Treatments×years interaction is absent.

5. RESULTS :

(i) 432 Kg/ha. (ii) 48·2 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
Av. yield	445	416	452	413

Years	T_0	T_1	T_2	T_3	Sig.	G.M.	S.E./plot
1960	556	497	549	485	**	522	42·8
1961	335	335	355	341	N.S.	342	50·7
Pooled	445	416	452	413	N.S.	432	48·2

Crop :- Cotton. **Ref :- Ms. 60(152).**

Site :- Agri. Res. Stn., Gadag. **Type :- 'M'.**

Object :—To study the effect of application of N, P and K on the growth and yield of Cotton.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) *Jowar*. (c) Nil. (ii) Medium black cotton soil. (iii) 27.9.1960. (iv) (a) 2 ploughings, 3 harrowings. (b) Dibbling in furrows. (c) 9 Kg/ha. (d) 61 cm. between rows. (e) 2. (v) Nil. (vi) *Laxmi*. (vii) Unirrigated. (viii) weeding. (ix) N.A. (x) 24.1.1961 to 24.2.1961.

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=168 and P_2=336 Kg/ha.

(3) 3 levels of K_2O as Potash : K_0=0, K_1=112 and K_2=224 Kg/ha.

3. DESIGN :

(i) 3^3 confd. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A. (iii) 4. (iv) (a) and (b) N.A. (v) 2 rows on all side. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of *kapas*. (iv) (a) 1952-N.A. (b) No. (c) Nil. (v) Dharwar. (vi) N A. (vii) Nil.

5. RESULTS :

(i) 375 Kg/ha. (ii) 57·6 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of *Kapas* in Kg/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	369	370	358	366	353	378	366
N_1	383	379	385	381	389	376	382
N_2	394	358	380	345	388	399	377
Mean	382	369	374	364	377	384	375
K_0	365	351	375				
K_1	397	391	343				
K_2	384	364	405				

Crop :- Cotton. **Ref :- Ms. 60(155), 60(156).**

Site :- Agri. Res. Stn., Gadag. **Type :- 'M'.**

Object :—To find out the residual effect of N, P and K applied during 1957-58 on *Laxmi* Cotton.

1. BASAL CONDITIONS :

(i) (a) Cotton after cotton. (b) Cotton. (c) Nil. (ii) Medium black. (iii) 5.10.1960 ; N.A. (iv) (a) 3 ploughings and 3 harrowings. (b) Dibbled in furrows. (c) 9 Kg/ha. (d) 61 cm. between rows. (e) 2. (v) Nil. (vi) *Laxmi* ; M.A.—5. (vii) Unirrigated. (viii) weeding. (ix) 25 cm. ; N.A. (x) 28.3.1961 ; N.A.

2. TREATMENTS :

Same as in expt. no. 60(152) on page 378.
Fertilizers applied during the year 1957-58. Residual effect being studied.

3. DESIGN :

(i) 3^3 confd. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) and (b) N.A. (v) 2 rows alround. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) *Kapas* yield. (iv) (a) 1958 to 60. (b) Yes. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

60(156). (Variety M.A.—5).

(i) 460 Kg/ha. (ii) 122·5 Kg/ha. (iii) Main effect of P alone is highly significant. (iv) Av. yield of *kapas* in Kg/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	383	460	507	447	507	396	450
N_1	397	507	569	573	415	485	491
N_2	251	514	554	459	441	419	440
Mean	344	493	543	493	454	433	460
K_0	443	455	581				
K_1	328	504	531				
K_2	261	521	518				

C.D. for P marginal means=84·8 Kg/ha.

60(155). (Variety *Laxmi*)

(i) 662 Kg/ha. (ii) 125·7 Kg/ha. (iii) Main effect of P alone is highly significant. (iv) Av. yield of *kapas* in Kg/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	559	677	736	655	679	638	657
N_1	560	669	723	712	623	617	651
N_2	615	731	689	684	709	642	678
Mean	578	692	716	684	670	632	662
K_0	577	694	781				
K_1	609	699	703				
K_2	547	684	665				

C.D. for P marginal means=86·8 Kg/ha.

Crop :- Cotton (*Rabi*). **Ref :- Ms. 60(157).**

Site :- Agri. Res. Stn., Gadag. **Type :- 'M'.**

Object :—To find out the best combination of N, P and K for Cotton, mixed with F.Y.M.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) *Jowar*. (c) Nil. (ii) Medium black soil. (iii) 12.9.60. (iv) (a) 2 ploughings, 2 harrowings. (b) Dibbled in furrows. (c) 9 Kg/ha. (d) 61 cm. (e) 2. (v) F.Y.M. at the time of sowing (Quantity N.A). (vi) *Laxmi*. (vii) Unirrigated. (viii) 4 weedings, 2 interculturings. (ix) 41 cm. (x) 31.3.61.

2. TREATMENTS :

All combinations of (1), (2) and (3)
(1) 2 levels of N : N_0=0 and N_1=56 Kg/ha.
(2) 2 levels of P_2O_5 : P_0=0 and P_1=56 Kg/ha.
(3) 2 levels of K_2O : K_0=0 and K_1=56 Kg/ha.

3. DESIGN :

(i) 2^3 Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 6. (iv) (a) and (b) N.A. (v) 2 rows alround. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) *Kapas* yield. (iv) (a) 1959—N.A. (b) No. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

(i) 284 Kg/ha. (ii) 83·9 Kg/ha. (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	243	242	253	232	242
N_1	324	329	329	324	326
Mean	283	285	291	278	284
K_0	299	283			
K_1	268	288			

C.D. for N marginal means=49·2 Kg/ha.

Crop :- Cotton (*Rabi*). **Ref :- Ms. 60(153).**

Site :- Agri. Res. Stn., Gadag. **Type :- 'M'.**

Object :—To find out the effect of N, P and K on the yield and growth of Cotton.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) *Jowar.* (c) Nil. (ii) Medium black cotton soil. (iii) 12.9.60. (iv) (a) 3 ploughings and 3 harrowings. (b) Dibbled in furrows. (c) 9 Kg/ha. (d) 61 cm. between rows. (e) 2. (v) Nil. (vi) *Laxmi.* (vii) Unirrigated. (viii) Weeding. (ix) Nil. (x) 17.2.61 to 30.3.61.

2. TREATMENTS :

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

(1) 2 levels of N : N_0=0 and N_1=33·6 Kg/ha.

(2) 2 levels of P_2O_5 : P_0=0 and P_1=67·2 Kg/ha.

(3) 2 levels of K_2O : K_0=0 and K_1=33·6 Kg/ha.

3. DESIGN :

(i) 2^3 Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 7·3 m.×7·3 m. (v) 2 rows alround. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of *kapas.* (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 284 Kg/ha. (ii) 84·9 Kg/ha. (iii) N×P×K interaction alone is significant. (iv) Av. yield of *kapas* in Kg/ha.

	P_0	P_1	K_0	K_1	Mean
N_0	242	243	253	231	242
N_1	324	327	328	324	326
Mean	283	285	290	278	284
K_0	299	282			
K_1	266	288			

Crop :- Cotton (*Rabi*). **Ref :- Ms. 61(141).**

Site :- Agri. Res. Stn., Gadag. **Type :- 'M'.**

Object : –To find out the effect of applying manures on the growth and yield of Cotton on Ryots plot when bad boll opening had been observed during previous year.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) *Jowar.* (c) Nil. (ii) Medium black cotton soil. (iii) 29.9.61. (iv) (a) 2 ploughings and 4 harrowings. (b) Dibbled in plough furrows. (c) 9 Kg/ha. (d) 61 cm. between rows. (e) 2. (v) Nil. (vi) *Laxmi.* (vii) Unirrigated. (viii) 3 weedings. (ix) 18 cm. (x) 16.2.62 to 20.3.62.

2. TREATMENTS :

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

(1) 2 levels of N : N_0=0 and N_1=33·6 Kg/ha.

(2) 2 levels of P_2O_5 : P_0=0 and P_1=67·2 Kg/ha.

(3) 2 levels of K_2O : K_0=0 and K_1=67·2 Kg/ha.

3. DESIGN :

(i) 2^3 Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 17·1 m.×6·1 m. (v) 2 row alround. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of *kapas*. (iv) (a) and (b) No. (c) Nil. (v) and (vi) Nil. (vii) Experiment conducted at Nalwad Ryots plot.

5. RESULTS :

(i) 126 Kg/ha. (ii) 57·7 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of *kapas* in Kg/ha.

	P_0	P_1	K_0	K_1	Mean
N_0	143	114	142	115	128
N_1	130	117	109	138	124
Mean	136	116	126	126	126
K_0	135	111			
K_1	137	115			

Crop :- Cotton (*Rabi*). **Ref :- Ms. 61(148).**

Site :- Agri. Res. Stn., Gadag. **Type :- 'M'.**

Object :—To find out the effect of application of N, P and K on the growth and yield of Cotton in Ryots plots when bad boll opening had occured during previous year.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) *Jowar*. (c) Nil. (ii) Medium black soil. (iii) 13.10.61. (iv) (a) 2 ploughings and 3 harrowings. (b) Dibbling in plough furrows. (c) 9 Kg/ha. (d) 61 cm. between rows. (e) 2. (v) Nil. (vi) *Laxmi*. (vii) Unirrigated. (viii) 3 weedings. (ix) 18 cm. (x) 22.3.62.

2. TREATMENTS : to 4. GENERAL :

Same as in expt. no. 61(141) on page 381.

5. RESULTS :

(i) 284 Kg/ha. (ii) 139·0 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of *kapas* in Kg/ha.

	P_0	P_1	K_0	K_1	Mean
N_0	248	262	287	223	255
N_1	289	337	303	323	313
Mean	269	299	295	273	284
K_0	250	340			
K_1	288	259			

Crop :- Cotton (*Rabi*). **Ref :- Ms. 61(147).**

Site :- Agri. Res. Stn., Gadag. **Type :- 'M'.**

Object :— To find out the residual effect of manures applied during the previous year on growth and yield of Cotton.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*. (b) *Jowar*. (c) Nil. (ii) Medium black cotton soil. (iii) 27.9.61. (iv) (a) 2 ploughings and 4 harrowings. (b) Dibbled in furrows. (c) 9 Kg/ha. (d) 61 cm. between rows. (e) 2. (v) Nil. (vi) Laxmi. (vii) Unirrigated. (viii) 3 weedings. (ix) 18 cm. (x) 4.3.62 to 4.4.62.

2. TREATMENTS :

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

(1) 2 levels of N : N_0=0 and N_1=33·6 Kg/ha.
(2) 2 levels of P_2O_5 : P_0=0 and P_1=56·0 Kg/ha.
(3) 2 levels of K_2O : K_0=0 and K_1=56·0 Kg/ha.

3. DESIGN :

(i) 2^3 Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 8 5 m.×7·3 m. (v) 2 rows all round. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of *kapas*. (iv) (a) N.A (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 255 Kg/ha. (ii) 71·6 Kg/ha. (iii) The interaction N×P×K is highly significant and interaction N×P is significant. (iv) Av. yield of *kapas* in Kg/ha.

	P_0	P_1	K_0	K_1	Mean
N_0	217	232	241	208	225
N_1	238	334	281	291	286
Mean	228	283	261	250	255
K_0	242	279			
K_1	213	286			

C.D. for body of N×P table=59·0 Kg/ha.

Crop :- Cotton (*Rabi*). **Ref :- Ms. 60(158), 61(149).**

Site :- Agri. Res. Stn., Gadag. **Type :- 'M'**

Object :— To find out the effect on growth and yield of Cotton by applying different combinations of N, P and K.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) *Jowar*. (c) Nil. (ii) Medium black soil. (iii) 27.9.1960 ; 26.9.1961. (iv) (a) 2 ploughings, 2 to 4 harrowings, levelling and opening furrows. (b) Dibbled in furrows. (c) 9 Kg/ha. (d) 61 cm. between rows. (e) 2. (v) Nil. (vi) Laxmi. (vii) Unirrigated. (viii) 3 weedings. (ix) 25 cm. ; 17 cm. (x) 31.3.1961 ; 3.3.1962 to 4.4.1962.

2. TREATMENTS :

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

(1) 3 levels of N : N_0=0, N_1=16·8 and N_2=33·6 Kg/ha.

(2) 3 levels of P_2O_5 : P_0=0, P_1=28·0 and P_2=56·0 Kg/ha.

(3) 3 levels of K_2O : K_0=0, K_1=28·0 and K_2=56·0 Kg/ha.

3. DESIGN :

(i) 3^3 confd. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 14·0 m. × 3·7 m. (v) and (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) *Kapas* yield and no. of flowers and bulbs/plant. (iv) (a) 1959—N.A. (b) No. (c) As under 5. Results. (v) and (vi) Nil. (vii) Error variances are heterogeneous. Treatments × years interaction is absent.

5. RESULTS :

60(158)

(i) 372 Kg/ha. (ii) 57·9 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of *kapas* in Kg/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	369	364	345	366	347	366	360
N_1	383	379	384	380	389	376	382
N_2	389	358	380	347	381	399	376
Mean	380	367	370	364	372	380	372
K_0	367	351	375				
K_1	390	385	343				
K_2	385	364	392				

61(149)

(i) 441 Kg/ha. (ii) 92·3 Kg/ha. (iii) P effect alone is significant. (iv) Av. yield of *kapas* in Kg/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	392	451	427	418	436	415	423
N_1	396	444	457	415	437	445	432
N_2	426	453	520	455	482	462	466
Mean	405	449	468	429	452	441	441
K_0	382	427	479				
K_1	419	487	449				
K_2	413	433	477				

C.D. for P marginal means=45·1 Kg/ha.

Crop :- Cotton (*Rabi*). **Ref :- Ms. 62(122).**

Site :- Agri., Res. Stn., Naragund. **Type :- 'M'.**

Object ;— To find out the best method of application of sulphur to improve the local soil.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton. (c) Nil. (ii) Alkaline. (iii) 14.9.62. (iv) (a) Harrowing by blade harrow. (b) Dibbling. (c) N.A. (d) 46 cm. between rows. (e) N.A. (v) Nil. (vi) *Jayadhar* (medium). (vii) Unirrigated. (viii) 2 interculturings by entire hoe. (ix) 82 cm. (x) 1, 19.3.63.

2. TREATMENTS :

3 methods of application of sulphur at 125·5 Kg/ha. : M_0=Control (no sulphur), M_1=Broadcasting and M_2=Applied at the time of sowing with seeds by spot application.

3. DESIGN ;

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 8. (iv) (a) 6·0 m.×6·0 m. (b) 5·0 m.×5·0 m. (v) 46 cm.×46 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Plant height, boll count and yield of *kapas*. (iv) (a) 1961—contd (modified in 1963). (b) Yes. (c) Nil. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 179 Kg/ha. (ii) 36·6 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of *kapas* in Kg/ha.

Treatment	M_0	M_1	M_2
Av. yield	171	190	175

Crop :- Cotton (*Rabi*). **Ref:- Ms. 63(108), 64(92).**

Site :- Agri. Res. Stn., Naragund. **Type :- 'M'.**

Object :— To find out the effect of sulphur and F.Y M. in increasing the yield of Cotton.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton. (c) Nil (1963). As per treatments (1964). (ii) Alkaline. (iii) 4.10 1963 ; 22.9.1964. (iv) (a) Harrowing by blade harrow. (b) Dibbling. (e) N.A. (d) 46 cm. between rows. (e) 2. (v) Nil. (vi) *Jaaydhar* (medium). (vii) Unirrigated. (viii) 2 interculturings by entire hoe. (ix) N.A. ; 58 cm. (x) 14, 28.3.1964 and 10.4.1964 ; 8.3.1965 to 8.4.1965.

2. TREATMENTS ;

3 manurial treatments : M_0=Control (no manure), M_1=12·4 C.L./ha. of F.Y.M.+125·5 Kg/ha. of sulphur broadcasted, M_2=As M_1 but sulphur by spot application.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 8. (iv) (a) 6·9 m.×5·9 m. (b) 5·0 m.×5·0 m. (v) 46 cm.×46 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Plant height, boll count and *kapas* yield. (iv) (a) 1961—contd. (modified in 1963). (b) Yes. (c) As under 5. Results. (v) N.A. (vi) Nil. (vii) Error variances are homogeneous.

5. RESULTS :

(i) 442 Kg/ha. (ii) 117 3 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 *kapas* in Kg/ha.

Treatment	M_0	M_1	M_2
Av. yield	390	472	465

Years	M_0	M_1	M_2	Sig.	G.M.	S.E./plot.
1963	348	430	429	N.S.	403	90·9
1964	431	513	501	N.S.	482	145·6
Pooled	390	472	465	N.S.	442	117·3

Crop :- Cotton (*Rabi*). **Ref :- Ms. 63(111), 64(90).**

Site :- Agri. Res. Stn., Naragund. **Type :- 'M'**

Object : —To find out suitable method of application of N and P fertilizers.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton. (c) Nil ; As per treatments. (ii) Alkaline. (iii) 3.10.1963. ; 17.10.1964. (iv) (a) Harrowing by blade harrow. (b) Dibbling. (c) N.A. (d) 76 cm. × 76 cm. (e) 2. (v) Nil. (vi) *Jayadhar* (medium). (vii) Unirrigated. (viii) 2 hand weedings (1963, 1964) ; 3 interculturings (1964). (ix) 58 cm. ; N.A. (x) 3,14 and 29.3.1964 ; 19.3.1965 and 8.4.1965.

2. TREATMENTS :

6 methods of application of 16·8 Kg/ha. of N+16·8 Kg/ha. of P_2O_5 : M_0=ploughing only, M_1=Broadcast (normal application), M_2=Deep placement of 2/3 of mixture of N and P behind the iron plough (M.B. removed) and $\frac{1}{3}$ at sowing time by usual method, M_3=2/3 dose by deep placement behind the plough and $\frac{1}{3}$ dose as top dressing 2 to 3 weeks after germination of seeds, M_4=2/3 dose by deep placement and $\frac{1}{3}$ dose by spraying twice (i) 20 days after germination and (ii) at flowering stage and M_5=$\frac{1}{3}$ dose by deep placement and 2/3 dose by spraying as in M_4.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 8·8 m. × 7·6 m. (b) 7·3 m. × 6·1 m. (v) 76 cm. × 76 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Plant count, height and yield of *kapas*. (iv) (a) 1963 to 1964. (b) Yes. (c) As under 5. Results. (v) Bijapur and Bagalkot. (vi) Nil. (vii) Error varinaces are homogenous. Treatments × years interaction is absent.

5. RESULTS :

(i) 363 Kg/ha. (ii) 72·3 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 *kapas* in Kg/ha.

Treatment	M_0	M_1	M_2	M_3	M_4	M_5
Av. Yield	366	384	374	366	372	315

	M_0	M_1	M_2	M_3	M_4	M_5	Sig.	G.M.	S.E./plot.
1963	431	503	465	496	477	466	N.S.	473	71·6
1964	199	229	302	253	254	279	N.S.	253	77·5
Pooled	366	384	374	366	372	315	N.S.	363	72 3

Crop :- Cotton (*Kharif*). **Ref :- Ms. 64(178).**

Site :- Minor Res. Stn., Ranebennur. **Type :- 'M'**

Object :—To study the effect of defferent levels and optimum time of application of N.

1. BASAL CONDITIONS :

(i) (a) to (c) Nil. (ii) (a) Medium black cotton soil. (iii) 25.6.1964. (iv) (a) 3 ploughing with wooden plough, harrowing with blade furrows. (b) Dibbling. (c) Nil. (d) 61 cm.×30 cm. (e) 1. (v) 28 Kg/ha. of P_2O_5+28 Kg/ha. of K_2O. (vi) *Laxmi* (late). (vii) Unirrigated. (viii) weeding of interculturing. (ix) 60 cm. (x) 2.10.1964 to 9.3. 65.

2. TREATMENTS :

All combinations of (1) and (2)+control (2 plots).

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

(2) 6 times of application of N : T_1=Full dose at sowing, T_2=Full dose at thinning, T_3 =Full dose at flowering, T_4=½ dose at sowing +½ dose at thinning, T_5=½ dose at sowing +½ dose at flowering and T_6=½ dose at thinning+½ dose at flowering.

3. DESIGN :

(i) Fact. in R.B. D. (ii) (a) 14. (b) 36·6 m.×51·2 m. (iii) 3. (iv) (a) 12·2 m.×3·7 m. (b) 11·6 m.× 2·4 m. (v) 30 cm.×65 cm. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) *Kapas* yield. (iv) (a) 1964—N.A. (b) No. (c) Nil. (v) to (vii) N A.

5. RESULTS :

(i) 897 Kg/ha. (ii) 121·9 Kg/ha. (iii) Control vs. other treatments effect alone is highly significant. (iv) Av. yield of *Kapas* in Kg/ha.

Control=645 Kg/ha.

	T_1	T_2	T_3	T_4	T_5	T_6	Mean
N_1	926	901	901	908	1021	962	937
N_2	928	956	843	1098	898	928	942
Mean	927	931	872	1003	960	945	940

C.D. for control vs. others=110·5 Kg/ha.

Crop :- Cotton. **Ref :- 65(100).**

Site :- Agri. Res. Stn., Saundathi. **Type :- 'M'.**

Object :—To study the response of N and P at higher levels on the yield of *Laxmi* Cotton under dry farming condition.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar.* (b) *Kharif Jowar.* (c) 33·6 Kg/ha. of A/S+22·4 Kg/ha. of Super applied at sowing. (ii) Medium black. (iii) 23.8.65. (iv) (a) Ploughing and harrowing 5 times. (b) Dibbling. (c) N.A. (d) 61 cm.×15 cm. (e) 2. (v) 5 C.L./ha. of F.Y.M.+ 5 Kg/ha. of Mur. Pot to all plots. (vi) *Laxmi.* (vii) Unirrigated. (viii) 5 interculturings and 2 hand weedings. (ix) 48 cm. (x) 25.12.65. to 11.3.66.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N : N_1=22·4, N_2=33·6 and N_3=44·8 Kg/ha.

(2) 3 levels of P_2O_5 : P_1=11·2, P_2=16·8 and P_3=22·4 Kg/ha.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 14·3 m.×7·4 m. (b) 13·4 m.×6.1 m. (v) one row alround. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) *Kapas* yield. (iv) (a) 1965—N.A. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 594 Kg/ha. (ii) 95·8 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of *kapas* in Kg/ha.

	P_1	P_2	P_3	Mean
N_1	534	522	561	549
N_2	570	609	616	598
N_3	615	612	679	635
Mean	573	591	619	594

Crop :- Cotton. (*Rabi*). **Ref :- Ms. 60(104), 61(80), 62(92), 63(91), 64(63).**

Site :- Agri. Res. Stn., Saundathi. **Type :- 'M'.**

Object :—To find out the N, P and K requirements of Cotton in the dry tract.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar.* (b) *Jowar.* (c) 12·4 C.L./ha. of F.Y.M. (ii) Medium black. (iii) 19.8.1960 ; 25.8.1961 ; 21.8.1962 ; 29.8.1963 ; 21.8.1964. (iv) (a) 4 harrowings in 1960 ; iron ploughing and 3 harrowings in other years. (b) Dibbling. (c) 11 Kg/ha. (d) 61 cm.×15 to 18 cm. (e) N.A. (v) Nil. (vi) *Jayadhar.* (vii) Unirrigated. (viii) 4 interculturings with hoe and 1 to 2 hand weedings. (ix) 32 cm. ; 21 cm. ; 43 cm. ; 21 cm. ; 37 cm. (x) 26.2.1961 ; 9.3.1962 to 8.4.1962 ; 25.2.1963 ; 1.2.64 ; 2.3.65.

2. TREATMENTS :

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

(1) 3 levels of N as A/S : N_0=0, N_1=22·4 and N_2=44.8 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) 3^3 confd. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) 49·4 m.×14.0 m. (iii) 2. (iv) (a) 14·0 m. ×5·5 m. (b) 12·2 m.×4.3 m. (v) 91 cm.×61 cm. (vi) Yes.

4. GENERAL:

(i) Satisfactory (1960 61 and 63). Fairly Normal (1964). Crop suffered due to unfavourable cloudy week in 1962. (ii) Attack of semi loopes cotton piller. Folidol 0·04% sprayed in 1960. Nil for other years. (iii) Plant height, count and *kapas* yield. (iv) (a) 1960- contd. (b) No. (c) As under 5. Results. (v) Nil. (vi) Cotton crop unfavourably affected by weather conditions in 1961. Nil in other years. (vii) Error variances are heterogeneous. Treatments×years interaction is absent.

5. RESULTS :

60(104)

(i) 482 Kg/ha. (ii) 51·4 Kg/ha. (iii) Main effects of N alone is highly significant. (iv) Av. yield of *kapas* in Kg/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	380	429	416	406	399	420	408
N_1	494	509	496	491	503	506	500
N_2	534	567	516	546	536	535	539
Mean	469	502	476	481	479	487	482
K_0	454	507	482				
K_1	473	492	473				
K_2	481	507	473				

C.D. for N marginal means=35·3 Kg/ha.

61(80)

(i) 211 Kg/ha. (ii) 39·0 Kg/ha. (iii) Main effect of N is highly significont. Interaction P×K is significant. (iv) Av. yield of *kapas* in Kg/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	144	165	144	132	165	157	151
N_1	250	226	193	219	209	240	223
N_2	247	254	278	250	252	277	260
Mean	214	215	205	200	209	225	211
K_0	216	220	164				
K_1	214	187	225				
K_2	211	239	225				

C.D. for N marginal means=26·9 Kg/ha.
C.D. for body of N×K table=46.6 Kg/ha.

62(92)

(i) 332 Kg/ha. (ii) 31·2 Kg/ha. (iii) Main efiects of N and P are highly significant. (iv) Av. yield of *kapas* in Kg/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	267	299	254	276	255	289	273
N_1	314	348	337	336	321	341	333
N_2	367	420	382	403	401	364	389
Mean	316	355	324	338	326	331	332
K_0	304	356	355				
K_1	314	349	314				
K_2	330	360	304				

C.D. for N or P marginal means=21·5 Kg/ha.

63(91)

(i) 438 Kg/ha. (ii) 17·8 Kg/ha. (iii) Main effect of N and interaction P×K are highly significant. Main effect of P and K are significant. (iv) Av. yield of *k apas* in Kg/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	365	370	351	353	364	368	362
N_1	465	465	436	456	452	456	455
N_2	493	496	504	483	488	521	498
Mean	441	443	430	431	435	449	438
K_0	445	446	402				
K_1	430	422	453				
K_2	448	462	436				

C. D. for N, P or K marginal means=12.3 Kg/ha.
C. D. for body of P×K table=21·4 Kg/ha.

64(63)

(i) 354 Kg/ha. (ii) 46·2 Kg/ha. (iii) Main effect of N is highly significant. Interaction P×K is significant. (iv) Av. yield of *kapas* in Kg/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	250	267	266	247	265	270	261
N_1	358	374	379	356	362	393	370
N_2	406	474	416	464	408	424	432
Mean	338	372	354	356	345	362	354
K_0	305	409	354				
K_1	332	348	355				
K_2	377	358	352				

C. D. for N marginal means =31·9 Kg/ha.
C. D. for body of P×K table=55·3 Kg/ha.

Crop :- Cotton (*Rabi*). **Ref :- Ms. 60(94), 61(261).**

Site :- Agri. Res. Stn., Sirugappa. **Type :- 'M'.**

Object :—To find out the optimum dose of N, P and K to get more yield of Cotton.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*. (b) *Jowar*. (c) 125·6 Q/ha. of F.Y.M.+44·8 Kg/ha. of N as A/S+22·4 Kg/ha. of P_2O_5 as Super in1960; N.A. in 1961. (ii) Black soil. (iii) 8.9.1960; 1.9.1961. (iv) (a) 2 ploughings with victory plough, harrowing and ridging. (b) Dibbling. (c) N.A. in 1960 ; 12·4 Kg/ha. in 1961. (d) 69 cm.× 23 cm. (e) N.A. (v) 125·6 Q/ha. of F.Y.M. in 1960 ; 113·8 Q/ha. of F.Y.M in 1961. (vi) *Laxmi*. (vii) Irrigated. (viii) weedings and interculturing. (ix) 28 cm; 42 cm. (x) 28.2.1961 to 28.3.1963; 2.4.1962.

2. TREATMENTS :

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

(1) 3 levels of N : N_0=0, N_1=33·6 and N_2=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.

Time and method of application of fertilizers in 1960 N.A. In 1961, fertilizers applied in furrows. N applied in 2 equal doses—half at the time of sowing along with total amount of P and K. Remaining N was applied after 30 days of sowing.

3. DESIGN :

(i) 3^3 partially confd. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 1/124 ha, in 1960 ; 7·4 m.×6·9 m. in 1961. (b) 1/165 ha. in 1960 ; 5·5 m.×5·5 m. in 1961. (v) N.A. in 1960 ; one row on each side in 1961. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Severe attack of Jassids in 1960 ; Nil in 1961. (iii) Yield of *kapas*. (iv) (a) 1960 to 61 N.A. (b) No. (c) As under 5. Results. (v) N.A. (vi) Nil. (vii) Error variances are heterogeneous. Treatments×years interaction is absent.

5. RESULTS :

60(94)

(i) 1328 Kg/ha. (ii) 148·5 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of *kapas* in Kg/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	1278	1320	1374	1378	1292	1303	1324
N_1	1273	1411	1295	1385	1224	1371	1327
N_2	1351	1300	1344	1238	1372	1385	1332
	1301	1344	1338	1334	1296	1353	1328
K_0	1295	1385	1321				
K_1	1278	1234	1376				
K_2	1329	1413	1316				

61(261)

(i) 1328 Kg/ha. (ii) 467·3 Kg/ha. (iii) Interaction N×P×K alone is significant. (iv) Av. yield of *kapas* in Kg/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	1888	1916	1927	1889	1871	1970	1910
N_1	1679	2153	2153	2079	2018	1888	1995
N_2	2058	1699	2071	2118	1783	1927	1943
Mean	1875	1923	2050	2029	1891	1828	1949
K_0	1820	2085	2181				
K_1	1830	1888	1954				
K_2	1975	1795	2015				

Crop :- Cotton. **Ref :. Ms. 63(137).**

Site :- Agri. Res. Stn., Sirugappa. **Type :- 'M'.**

Object :—To find out the best time of application and suitable dose of N for Cotton.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) *Jowar*. (c) 63 Q/ha. of F.Y.M. (ii) Heavy black cotton soil. (iii) 21.8.63. (iv) (a) 2 ploughings and cross ploughing, levelling of opening furrows. (b) Dibbled in furrows. (c) 11 Kg/ha. (d) 60 cm.×23 cm. (e) 2 to 3. (v) 56 Kg/ha. of P_2O_5+56 Kg/ha. of K_2O. (vi) *Laxmi*. (vii) Irrigated. (viii) 3 interculturings and 3 weedings. (ix) 40 cm. (x) 19 and 21.3 64.

2. TREATMENTS :

Same as in expt. no. 62 (57) on page 393.
This year N_1= 28 Kg/ha. and N_2=56 Kg/ha.

3. DESIGN :

(i) R.B.D. (ii) (a) 14. (b) N.A. (iii) 3. (iv) (a) 10·7 m.× 7·3 m. (b) 8·3 m.×4·9 m. (v) 120 cm. ×120 cm. (vi) Yes.

4. GENERAL :

(i) Poor. (ii) Boll worm attack. (iii) Yield of *kapas*. (iv) (a) N.A. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 139 Kg/ha. (ii) 74·1 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of *kapas* in Kg/ha.

Control=129 Kg/ha.

	T_1	T_2	T_3	T_4	T_5	T_6	Mean
N_1	92	143	241	111	206	227	170
N_2	127	113	114	83	94	145	113
Mean	110	128	178	97	150	186	141

Crop :- Cotton (*Rabi*). **Ref :- Ms. 62(57), 64(23), 65(96).**

Site :- Agri. Res. Stn., Sirugappa. **Type :- 'M'.**

Object :—To determine the optimum time of application of N to Cotton.

1. BASAL CONDITIONS ;

(i) (a) Wheat—Cotton (1962); Wheat—Cotton—*Jowar* ('64); *Jowar*—Cotton ('65). (b) Wheat ; Wheat ; *Jowar*. (c) 125·6 Q/ha. of F.Y.M.+44·8 Kg/ha. of N as A/S+22·4 Kg/ha. of P_2O_5 as Super ('62, '64); 120 Q/ha. of F.Y.M. in 65. (ii) Black cotton soil ('62) ; Black soil ('64) ; Medium black ('65). (iii) 11.8.62 ; 13.8.64 ; 18.8.65. (iv) (a) Working with kante, ('62) ; 4 ploughings ('64) ; ploughing and harrowing ('65). (b) Dibbling. (c) 10 Kg/ha. (d) 61 cm. × 30 cm. (e) 2. (v) 56 Kg/ha. of P_2O_5 as Super+56 Kg/ha. of K_2O as Mur. Pot. applied before sowing ('62) ; 68·7 Kg/ha. of Super+208 Kg/ha. of Mur. Pot. ('64); 210 Kg/ha. of A/S+35 Kg/ha. of Super+94 Kg/ha. of Mur. Pot. ('65). (vi) *Laxmi*. (vii) Irrigated. (viii) 2 weedings ('62) ; 4 intercultivation and 1 hand weeding ('64) ; hand weeding and passing cultivation ('65), (ix) 49 cm.; 31 cm.; 14 cm. (x) 21.3.63; 22.2.65 to 31.3.65; N.A.

2. TREATMENTS :

All combinations of (1) and (2)+2 control plots

(1) 2 levels of N : N_1=124 and N_2=247 Kg/ha.

(2) 6 times of application : T_1=At sowing, T_2=At thinning, T_3=At flowering, T_4=½ dose at thinning +½ dose at sowing, T_5=½ dose at sowing+½ dose at flowering and T_6= ½ dose at thinning+½ dose at flowering.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 14. (b) N.A. (iii) 3. (iv) (a) 1/198 ha. (1962 and 65); 8·3 m. × 6·1 m. ('64). (b) 1/247 ha. (1962 and '65); 8·3 m. × 4·9 m. ('65) (v) Yes (1962 and '65) ; 61 cm. on either side in ('64). (vi) Yes.

4. GENERAL :

(i) Good (1962) ; fair (1964 and 65). (ii) Jassids and Lumps noticed during crop growth. Endrine sprayed. Red leaf blite also noticed in 1962. Incidence of Aphids, Jassids and Red leaf. Aphids and Jassids controlled by spraying Endrine (1963). Aphids, Jassids and Thrips in 1965. Endrine sprayed. (iii) No. of bolls, flowers and good and bad boll opening, *kapas* yield. (iv) (a) 1962—N.A. (Treatments modified in 1964). (b) N.A. (c) As under 5. Results. (v) N.A. (vi) Nil. (vii) Error variances are heterogeneous. Treatments × years interaction is present.

5. RESULTS :

(i) 1034 Kg/ha. (ii) 205·3 Kg/ha. (based on 26 d.f. made up of Treatments × years interaction). (iii) Control *vs.* others effect alone is significant. (iv) Av. yield of *kapas* in Kg/ha.

Control=915 Kg/ha.

	T_1	T_2	T_3	T_4	T_5	T_6	Mean
N_1	1044	1107	1054	939	1142	1009	1049
N_2	1105	1059	932	1145	1048	1060	1058
Mean	1074	1083	993	1042	1095	1034	1054

C.D. for control *vs.* others=107·5 Kg/ha.

Years	T_1	T_2	T_3	T_4	T_5	T_6	Sig.	N_1	N_2	Sig.	Control	G.M.	S.E./plot
1962	1272	1164	1254	1268	1282	1127	N.S.	1240	1215	N.S.	1178	1221	147·2
1964	1308	1431	1051	1127	1351	1306	**	1232	1293	N.S.	970	1220	162·5
1965	643	653	674	733	652	671	N.S.	675	667	N.S.	598	661	87·0
Pooled	1074	1083	993	1042	1095	1034	N.S.	1049	1058	N.S.	915	1034	205·3

Crop :- Cotton (*Rabi*). **Ref :- Ms. 60(92), 62(60).**

Site :- Agri. Res. Stn., Sirugappa. **Type :- 'M'.**

Object :— To find out the residual effect of organic and inorganic manures on the Cotton crop.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*. (b) *Jowar*. (c) Nil. (ii) Black soil. (iii) 8.9.60; 1.9.62. (iv) (a) Working with victory plough and hire kunte (1960) ; blade harrow and ridger in 1962. (b) Dibbling. (c) N.A. (d) 69 cm.× 30 cm. (e) N.A. (v) Nil. (vi) *Laxmi* (medium). (vii) Irrigated. (viii) Weeding and working with cultivation. (ix) 28 cm.; 33 cm. (x) 21.2.61 to 31.3.61; 2.2.63 to 10.4.63.

2. TREATMENTS :

Main-plot treatments :

3 sources of N : S_1=G.L., S_2=G.M. and S_3=A/S.

Sub-plot treatments :

3 levels of N : N_0=0, N_1=22·4 and N_2=44·8 Kg/ha.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 1/124 ha. (b) 1/124 ha.; 1/247 ha. (v) Nil ; N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of *kapas*. (iv) (a) 1958—62. (b) No. (c) Nil. (v) N.A. (vi) Nil. (vii) Both the error variances are homogeneous. Main-plot and sub-plot Treatments×years interactions are absent.

5. RESULTS :

(i) 644 Kg/ha. (ii) (a) 77·0 Kg/ha. (based on 14 d.f. made up of pooled error and main-plot Treatments× years interaction). (b) 125·8 Kg/ha. (based on 42 d.f. made up of pooled error and sub-plot Treatments× years interaction). (iii) Main effect of N alone is significant. (iv) Av. yield of *kapas* in Kg/ha.

	N_0	N_1	N_2	Mean
S_1	664	588	648	633
S_2	534	613	716	621
S_3	664	626	744	678
Mean	621	609	703	644

C.D. for N marginal means=73·3 Kg/ha.

Years	S_1	S_2	S_3	Sig.	S.E./ Main plot	N_0	N_1	N_2	Sig.	G.M.	S.E./Sub-plot
1960	643	625	685	N.S.	59·0	688	604	661	N.S.	657	134 6
1962	623	617	671	N.S.	100·8	554	614	744	*	637	96 8
Pooled	633	621	678	N.S.	77·0	621	609	703	*	644	125 8

Crop :- Cotton (*Rabi*). **Ref :- Ms. 62(59), 63(36).**

Site :- Agri. Res. Stn., Sirugappa. **Type :- 'M'.**

Object :—To find the optimum combination of N, P and K for Cotton.

1. BASAL CONDITIONS :

(i) (a) Cotton. (b) *Jowar*. (c) 251·1 Q/ha. of F.Y.M.+44·8 Kg/ha. of N+22·4 Kg/ha. of P_2O_5. (ii) Black cotton soil. (iii) 14.8.62; 21.8.63. (iv) (a) 2 ploughings (1962); ploughing, passing kunte and ridger ('63). (b) Dibbling. (c) 10 to 12 Kg/ha. (d) 61 cm.×30 cm.; 69 cm.×30 cm. (e) 2. (v) Nil; 125·6 Q/ha. of F.Y.M. (vi) *Laxmi*. (vii) Irrigated. (viii) Weeding, thinning and intercultivation. (ix) 54 cm.; 26 cm. (x) 4.2.63 to 9.4.63; 24.1.64 to 6.3.64.

2. TREATMENTS :

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

(1) 3 levels of N as A/S : N_0=0, N_1=28 and N_2=56 Kg/ha.

(2) 3 levels of P_2O_5 as Super : P_0=0, P_1=28 and P_2=56 Kg/ha.

(3) 3 levels of K_2O as Mur. Pot : K_0=0, K_1=28 and K_2=56 Kg/ha.

3. DESIGN :

(i) 3^3 confd. (ii) (a) 9 plots/block; 3 blocks/replication. (b) 6·9 m.×49·4 m. (iii) 2. (iv) (a) 6·9 m.×5·5 m.; 6·9 m.×4·3 m. (b) 4·1 m.×4·3 m.; 5·5 m.×3·7 m. (v) 137 cm.×61 cm.; 69 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Good; Normal. (ii) Aphids, Jassids were observed. Heavy attack of thrips, sprayed with endrine. (iii) Germination count, height of plants and yield of *kapas*. (iv) (a) 1961—N.A. (b) No. (c) As under 5. Results. (v) and (vi) Nil. (vii) Error variances are heterogeneous. Treatments×years interaction is absent.

5. RESULTS :

62(59)

(i) 1176 Kg/ha. (ii) 229·1 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of *kapas* in Kg/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	1132	1219	1059	1078	1231	1101	1137
N_1	1215	1327	1319	1263	1273	1325	1287
N_2	982	1160	1166	1113	1115	1081	1103
Mean	1110	1235	1181	1151	1206	1169	1176
K_0	971	1283	1200				
K_1	1293	1189	1138				
K_2	1065	1234	1207				

63(36)

(i) 331 Kg/ha. (ii) 119·6 Kg/ha. (iii) Only the interaction N×K is significant. (iv) Av. yield of *kapas* in Kg/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	257	317	353	247	361	319	309
N_1	336	371	334	305	380	357	347
N_2	267	301	447	415	293	308	338
Mean	287	330	378	322	345	328	331
K_0	271	306	389				
K_1	327	360	347				
K_2	262	323	398				

C.D. for N×K table=143·3 Kg/ha.

Crop :- Cotton (*Rabi*). **Ref :- Ms. 63(135), 64(29), 65(95).**

Site :- Agri. Res. Stn., Sirugappa. **Type :- 'M'.**

Object :—To find out suitable manurial requirements for irrigated Cotton.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) *Jowar*. (c) 125·6 Q/ha. of F.Y.M.+44·8 Kg/ha. of N+22·4 Kg/ha. of P_2O_5. (ii) Medium black; black soil ; N.A. (iii) 3.9.63 ; 21.8.64 ; N.A. (iv) (a) 1 ploughing and 1 harrowing in 63 ; working victory plough, kunte and ridger in 64; N.A. (b) Hand dibbling. (c) 10 to 11Kg/ha. (d) 5cm. between plants; 61 cm.×30 cm. :N.A. (e) 3 ; 2 ; N.A. (v) Nil. (vi) *Laxmi*. (vii) Irrigated. (viii) Weedings and intercultivation. (ix) 40 cm.; 27 cm. ; N.A. (x) 10.3.64 to 3.4.64; 2.2.65 to 10.3.65 ; N.A.

2. TREATMENTS :

All combinations of (1), (2), (3) and (4)

(1) 3 levels of F.Y.M. : F_0=0, F_1=62·8 and F_2=125·6 Q/ha.
(2) 3 levels of N as A/S : N_0=0, N_1=56·0 and N_2=112·1 Kg/ha.
(3) 3 levels of P as Super : P_0=0, P_1=56·0 and P_2=112·1 Kg/ha.
(4) 3 levels of K as Mur. Pot. : K_0=0, K_1=56·0 and K_2=112·1 Kg/ha.

3. DESIGN :

(i) 3[a] confd. (ii) (a) 9 plots/block; 9 blocks/replication. (b) N.A. (iii) 1. (iv) (a) 8·3 m.×5·5 m.; 1/247 ha.; 8·3 m.×4·9 m. (b) 5·5 m.×3·7 m.; 1/494 ha.; 5·5 m.×3·7 m. (v) 138 cm.×91 cm.; 1 row on either side; 138 cm.×61 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Attack of Thrips, Jassids and Boll worm. Endrine sprayed. (iii) Yield of *kapas*. (iv) (a) 1963 to 65. (b) No. (c) Nil. (v) Dharwar, Gadag and Bagalkot. (vi) N.A. (vii) Error variances are heterogeneous. Treatments×years interaction is absent.

5. RESULTS :

63(135)

(i) 759 Kg/ha. (ii) 109·0 Kg/ha. (iii) Main effect of F alone is highly significant. (iv) Av. yield of *kapas* in Kg/ha.

	N_0	N_1	N_2	P_0	P_1	P_2	K_0	K_1	K_2	Mean
F_0	703	626	781	695	707	708	658	722	730	703
F_1	788	815	805	838	762	808	807	823	778	803
F_2	758	767	785	695	787	798	823	693	794	770
Mean	750	736	790	753	752	771	763	746	767	759
K_0	744	760	784	808	701	779				
K_1	787	661	790	713	770	755				
K_2	718	787	797	738	784	780				
P_0	725	724	810							
P_1	758	747	750							
P_2	766	737	811							

C.D. for F marginal means=63 0 Kg/ha.

6 4(29)

(i) 1132 Kg/ha. (ii) 2·0·7 Kg/ha. (iii) Main effect of N is highly significant and that of F is significant. (iv) Av. yield of *kapas* in Kg/ha.

	N_0	N_1	N_2	P_0	P_1	P_2	K_0	K_1	K_2	Mean
F_0	877	1122	1194	1037	1119	1037	1151	974	1069	1064
F_1	934	1067	1265	1022	1144	1101	1092	1088	1086	1089
F_2	1136	1282	1311	1280	1227	1222	1325	1173	1231	1243
Mean	982	1157	1257	1113	1163	1120	1190	1078	1128	1132
K_0	991	1277	1301	1208	1168	1192				
K_1	1003	1012	1220	1092	1193	950				
K_2	953	1182	1250	1039	1128	1218				
P_0	1048	1102	1189							
P_1	916	1269	1304							
P_2	983	1099	1278							

C.D. for N marginal means=126·9 Kg/ha.

65(95)

(i) 1246 Kg/ha. (ii) 210·9 Kg/ha. (iii) Main effects of N and F are highly significant. K effect is significant. (iv) Av, yield of *kapas* in Kg/ha.

	N_0	N_1	N_2	P_0	P_1	P_2	K_0	K_1	K_2	Mean
F_0	1030	971	1195	1103	1043	1050	970	1169	1057	1065
F_1	1199	1367	1396	1350	1197	1415	1251	1330	1381	1321
F_2	1167	1368	1519	1351	1318	1385	1247	1358	1448	1351
Mean	1132	1235	1370	1268	1186	1283	1156	1286	1295	1246
K_0	1092	1155	1220	1160	1102	1205				
K_1	1110	1276	1471	1368	1098	1392				
K_2	1194	1274	1419	1275	1358	1253				
P_0	1203	1206	1395							
P_1	1017	1257	1283							
P_2	1175	1243	1432							

C.D. for N, K or F marginal means=116·0 Kg/ha.

Crop :- Cotton. **Ref :- Ms. 60, 61, 62, 63, 64(M.A.E).**

Site :- M.A.E. Centre, Gangavathi. **Type :- 'M'.**

Object :—Type II : To study the effect of different levels of N, P, K and F.Y.M. on the yield of Cotton.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*—Groundnut. (b) Groundnut. (c) Nil. (ii) Medium deep black. (iii) 27.8.60; 29.8.61; 26.8.62; 28.8.63; 25.8.64. (iv) (a) 2 ploughings and 4 to 5 harrowings. (b) Dibbling on ridges. (c) 16 8 Kg/ha. (d) 61 cm.×30 cm. (e) Nil. (v) Nil. (vi) *Laxmi*. (vii) Irrigated. (viii) Weeding and interculturing. (ix) 21·8 cm.; 21·6 cm.; 47·7 cm.; N.A.; N.A. (x) 12.2.61 to 1.4.61; 31.1.62 to 4.4.62; 28.2.63 to 22.4.63; 7.4.64; 4.4.65.

2. TREATMENTS :

All combinations of (1), (2), (3) and (4)

(1) 3 levels of N as A/S : N_0=0, N_1=33·6 and N_2=67·2 Kg/ha.

(2) 3 levels of P_2O_5 as Super : P_0=0, P_1=33·6 and P_2=67·2 Kg/ha.

(3) 3 levels of K_2O as Mur. Pot. : K_0=0, K_1=33·6 and K_2=67·2 Kg/ha.

(4) 2 levels of F.Y.M. : F_0=0 and F_1=56·0 Kg/ha.

3. DESIGN :

(i) 3^3×2 Fact. confd. (ii) (a) 9 plots/block; 6 blocks/replication. (b) N.A. (iii) 1. (iv) (a) 15·5 m.×6·7 m. (b) 14·3 m.×5·5 m. (v) 61 cm.×61 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of Thrips and Aphids controlled by spraying Folidol and Endrine. (iii) Yield of *kapas*. (iv) (a) 1957—contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

60(M.A.E.)

(i) 577 Kg/ha. (ii) 135·6 Kg/ha. (iii) Main effect of P is significant and that of N is significant. (iv) Av. yield of *kapas* in Kg/ha.

	N_0	N_1	N_2	P_0	P_1	P_2	K_0	K_1	K_2	Mean
F_0	452	599	572	406	581	636	563	516	544	541
F_1	544	646	646	507	664	665	609	599	628	612
Mean	498	623	609	457	623	650	586	558	586	577
K_0	498	655	605	470	636	652				
K_1	507	572	595	397	627	650				
K_2	489	642	627	504	606	648				
P_0	461	480	430							
P_1	480	646	743							
P_2	553	743	654							

C.D. for N or P marginal means=93·3 Kg/ha.

61(M A.E.)

(i) 1111 Kg/ha. (ii) 88·0 Kg/ha. (iii) Main effect of F, N, P, K and interactions N×P, N×K are highly significant. Interaction F×N and F×K are significant. (iv) Av yield of *kapas* in Kg/ha.

	N_0	N_1	N_2	P_0	P_1	P_2	K_0	K_1	K_2	Mean
F_0	959	1171	1005	867	1162	1106	941	1033	1161	1045
F_1	1033	1264	1236	950	1300	1284	1144	1171	1219	1178
Mean	996	1217	1120	908	1231	1195	1042	1102	1190	1111
K_0	968	1199	959	784	1217	1125				
K_1	950	1227	1129	913	1180	1213				
K_2	1070	1226	1273	1027	1296	1247				
P_0	885	1098	741							
P_1	1107	1300	1286							
P_2	996	1253	1336							

C.D. for N, P or K marginal means=60·5 Kg/ha.
C.D. for F marginal means =49·3 Kg/ha.
C.D. for N×P or N×K table =104·8 Kg/ha.
C.D. for F×N or F×K table =85·6 Kg/ha.

62(M.A.E.)

(i) 642 Kg/ha. (ii) 73·6 Kg/ha. (iii) Main effects of F, N and P are highly significant. Interaction N×P, F×P are significant. (iv) Av. yield of *kapas* in Kg/ha.

	N_0	N_1	N_2	P_0	P_1	P_2	K_0	K_1	K_2	Mean
F_0	430	513	501	292	529	623	479	461	504	481
F_1	735	818	855	698	838	872	842	792	774	803
Mean	583	665	678	495	683	747	660	626	639	642
K_0	600	674	707	481	698	802				
K_1	568	672	639	481	709	689				
K_2	581	649	687	522	643	751				
P_0	496	476	513							
P_1	604	746	700							
P_2	648	774	820							

C.D. for N or P marginal means=50·6 Kg/ha.
C.D. for F marginal means =41·3 Kg/ha.
C.D. for body of N×P table =87·7 Kg/ha.
C.D. for body of F×P table =71·6 Kg/ha.

63(M.A.E.)

(i) 751 Kg/ha. (ii) 141·2 Kg/ha. (iii) Main effect of N alone is highly significant (iv) Av. yield of *kapas* in Kg/ha.

	N_0	N_1	N_2	P_0	P_1	P_2	K_0	K_1	K_2	Mean
F_0	468	666	738	607	617	648	619	628	626	624
F_1	766	907	960	831	815	987	923	833	877	878
Mean	617	786	849	719	716	817	771	731	751	751
K_0	634	819	861	705	745	863				
K_1	561	778	853	698	696	798				
K_2	657	762	834	755	708	791				
P_0	581	773	844							
P_1	578	774	797							
P_2	693	812	947							

C.D. for N marginal means=97·2 Kg/ha.

64(MA.E.)

(i) 421 Kg/ha. (ii) 125·7 Kg/ha. (iii) Main effects of F, N and P are highly significant. (iv) Av. yield of *kapas* in Kg/ha.

	N_0	N_1	N_2	P_0	P_1	P_2	K_0	K_1	K_2	Mean
F_0	255	375	370	245	392	362	336	297	366	333
F_1	389	497	640	426	536	564	530	486	510	509
Mean	322	436	505	336	464	463	433	391	438	421
K_0	331	426	542	352	422	525				
K_1	311	408	455	284	462	428				
K_2	324	473	518	371	508	436				
P_0	258	359	390							
P_1	348	458	586							
P_2	360	490	539							

C.D. for N or P marginal means=86·5 Kg/ha.
C.D. for F marginal means =70·6 Kg/ha.

Crop :- Cotton. **Ref :- Ms. 60(M.A.E).**

Site :- M.A.E. Centre, Gangavathi. **Type :- 'M'.**

Object :—Type V :—To study the effect of different times of application of N on the yield of Cotton.

1. BASAL CONDITIONS :

(i) (a) Cotton—Black gram—*Rabi Jowar.* (b) *Jowar.* (c) 22·4 Kg/ha. of N as A/S. (ii) Deep black. (iii) 20.8.60. (iv) (a) 2 ploughings and 4 harrowings. (b) Dibbling. (c) 17 Kg/ha. (d) 60 cm. × 30 cm. (e) Nil. (v) 56 Q/ha. of F.Y.M.+22·4 Kg/ha. of P_2O_5. (vi) *Laxmi* cotton. (vii) Irrigated. (viii) 2 weedings and 3 hoeings. (ix) N.A. (x) 14.2.61 to 31.3.61.

2. TREATMENTS :

All combinations of (1) and (2)+a control

(1) 2 sources of 56·0 Kg/ha. of N : S_1=A/S and S_2=Urea.

(2) 6 times of application of N : T_1=Full dose at sowing, T_2=Full dose at first interculture, T_3=Full dose at flowering, T_4=½ at sowing+½ at flowering, T_5=⅓ at sowing+⅓ at first interculture+⅓ at flowering and T_6=½ at flowering+½ one month after flowering.

3. DESIGN :

(i) R.B.D. (ii) (a) 13. (b) N.A. (iii) 3. (iv) and (v) N.A. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Yield of *kapas*. (iv) (a) 1957–60. (b) N.A. (c) Nil. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 621 Kg/ha. (ii) 83·9 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of *kapas* in Kg/ha.

Control=56·3 Kg/ha.

	T_1	T_2	T_3	T_4	T_5	T_6	Mean
S_1	701	544	627	664	646	609	632
S_2	599	627	636	590	636	636	621
Mean	650	586	632	627	641	622	626

Crop :- Cotton (*Rabi*). **Ref :- Ms. 64 and 65(M.A.E).**

Site :- M.A.E. Centre, Gangavathi. **Type :- 'M'.**

Object :—Type V (a) : To study the effect of different methods of application of N on the yield of Cotton.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Groundnut. (c) Nil. (ii) Medium black. (iii) 30.8.64; N.A. (iv) (a) 1 ploughing and 4 harrowings. (b) Sowing with seed drill. (c) 15 Kg/ha. (d) 50 cm.×30 cm. (e) N.A. (v) Nil. (vi) *Laxmi*. (vii) Irrigated. (viii) 4 weedings and 3 interculturings. (ix) N.A. (x) 3 pickings from 23.2.65 to 6.4.65; N.A.

2 TREATMENTS :

All combinations of (1) and (2)+a control

(1) 2 levels of N : N_1=60 and N_2=120 Kg/ha.

(2) 5 methods of application : M_1=Broadcast at sowing, M_2=Placement of fertilizer one week before sowing about 12·5 cm. deep by plough sole method, M_3=Placement of fertilizer in the same line as seed by seed cum fertilizer drill, M_4=Placement of fertilizer about 4 cm. below the seed by seed cum fertilizer drill and M_5=Band placement of fertilizer about 5 cm. below and 5 cm. away from the seed.

. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 11. (b) N.A. (iii) 4. (iv) and (v) N.A. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Attack of Aphids. Sprayings with Folidol and Endrine. (iii) Yield of *kapas*. (iv) (a) 1964—65. (b) N.A. (c) Results of combined analysis are presented under 5. Results. (v) to (vii) Nil.

5. RESULTS :

(i) 533 Kg/ha. (ii) and (iii) N.A. (iv) Av. yield of *kapas* in Kg/ha.

Control=568 Kg/ha.

Treatment	M_1	M_2	M_3	M_4	M_5	N_1	N_2
Mean yield	*537*	*465*	*544*	*573*	*526*	*568*	*489*

Crop :- Cotton (*Rabi*). **Ref :- Ms. 63, 64 (S.F.T.) for Bellary and 65(S.F.T.) for Raichur.**

Site :- (District) : Bellary and Raichur. **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 sandy. (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
$N_2P_2K_1$=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 :

(i) & (ii) 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. (iii) and (iv) N.A.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1963 to 1965 [1964 N.A.]for Bellary ; 1965 to 1966 for Raichur. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

Bellary

63(S.F.T.)

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 *kapas* in Kg/ha.	160	316	233	295	433	521	731	139·8

Control yield=257 Kg/ha. ; No. of trials=5.

65(S.F.T.)

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 *kapas* in Kg/ha.	– 23	2	—20	26	57	86	91	28·9

Control yield=258 Kg/ha. ; No. of trials=5.

Raichur

65(S.F.T.)

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 *kapas* in Kg/ha.	41	42	38	73	63	71	102	22·9

Control yield=241 Kg/ha. ; No. of trials=6.

Crop :- Cotton (*Kharif*). **Ref :- Ms. 63, 64 (S.F.T.).**

Site :- (District) : Bellary. **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) N.A. (ii) Red sandy. (iii) to (vi) N.A. (vii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS and 3. DESIGN :

Same as in Type A_1 (*Rabi*) on page 402.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1963 to 1964. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

63(S.F.T.)

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 *kapas* in Kg/ha.	122	195	244	239	201	314	404	32·1

Control yield=233 Kg/ha. ; No. of trials=4.

64(S.F.T.)

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 *kapas* in Kg/ha.	86	133	73	155	204	272	296	25·0

Control yield=461 Kg/ha.; No. of trials=6.

Crop :- Cotton (*Rabi*). **Ref :- Ms. 63, 65 (S.F.T.) for Bellary and 65 (S.F.T.) for Raichur.**

Site :- (District) : Bellary and Raichur. **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) N.A. (ii) Red sandy. (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 =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.
$N_2P_2K_1$=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 (*Rabi*) on page 402.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1963 to 1965 [1964 N.A.] for Bellary and 1963 to 1966 [1963 and 1964 N.A] for Raichur. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

Bellary

63(S.F.T.)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of *kapas* in Kg/ha.	136	122	179	253	160	329	444	68·7

Control yield=297 Kg/ha. ; No. of trials=5.

65(S.F.T.)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of *kapas* in Kg/ha.	6	42	—4	11	22	60	57	16·2

Control yield=160 Kg/ha. ; No. of trials=5.

Raichur

65(S.F.T.)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of *kapas* in Kg/ha.	17	5	13	15	23	32	52	11·6

Control yield=135 Kg/ha. ; No. of trials=6.

Crop :- Cotton (*Kharif*). **Ref :- Ms. 63, 64 (S.F.T.).**

Site :- (District) : Bellary. **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) N.A. (ii) Red sandy. (iii) to (vi) N.A. (vii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS and 3. DESIGN:

Same as Type A_2 (*Rabi*) on page 404.

4. GENERAL :

(i) to (iii) N.A. (iv) 1963 to 1964. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

63(S.F.T.)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of *kapas* in Kg/ha.	85	84	86	124	120	142	207	37·8

Control yield=280 Kg/ha. ; No. of trials=2.

64(S.F.T.)

Treatment	N_1	P_1	P_2	N_1P_1	N_1P_2	N_2P_2	$N_2P_2K_1$	S.E.
Av. response of *kapas* in Kg/ha.	119	77	124	152	201	274	319	34·8

Control yield=435 Kg/ha. ; No. of trials=6.

Crop :- Cotton (*Rabi*). **Ref :- Ms. 63 to 65(S.F.T.) for Bellary and 65 (S.F.T.) for Raichur.**

Site :- (District) : Bellary and Raichur. **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) N.A. (ii) Red sandy. (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.
$N_1P_1K_1$ =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 (*Rabi*) on page 402.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1963to 1965 [1964—N.A.] for Bellary and 1963 to 1966 [1963 and 1964—N.A.] for Raichur. (b) N A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

Bellary

63(S.F.T.)

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 *kapas* in Kg/ha.	92	63	44	150	147	267	321	36·8

Control yield=237 Kg/ha. ; No. of trials=5.

64(S.F.T.)

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 *kapas* in Kg/ha.	22	6	18	45	9	20	56	17·5

Control yield= 192 Kg/ha. ; No. of trials=5.

65(S.F.T.)

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 *kapas* in Kg/ha.	14	4	14	19	20	52	75	26·1

Control yield=112 Kg/ha. ; No. of trials=5.

Crop :- Cotton (*Kharif*). **Ref :- Ms. 63, 64 (S.F.T.).**

Site :- (District) : Bellary. **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) N.A. (ii) Red sandy. (iii) to (vi) N.A. (vii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS : and 3. DESIGN :

Same as in type A_2 (*Rabi*) on page 405.

4. GENERAL INFORMATION :

(i) to (iii) N.A. (iv) (a) 1963 to 1964 (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

63(S.F.T.)

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 *kapas* in Kg/ha.	104	8	41	97	133	162	299	18·4

Control yield=169 Kg/ha. ; No. of trials=4.

64(S.F.T.)

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 *kapas* in Kg/ha.	135	66	97	178	147	262	275	20·1

Control yield=355 Kg/ha. ; No. of trials=6.

Crop :- Cotton (*Kharif*). **Ref :- Ms. 63(131).**

Site :- Agri. Res. Stn., Bagalkot. **Type :- 'C'.**

Object :— To study the effect of different cultural practices on the germination and yield of Cotton.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) *Jowar*. (c) 62·8 Q/ha. of F.Y.M. (ii) Medium black cotton soil. (iii) A_0= 2.9.1963 and A_1=25.9.1963. (iv) (a) Ploughing and cross ploughing. Levelling and opening furrows. (b) Dibbled in furrows. (c) As per treatments. (d) and (e) N.A. (v) 62·8 Q/ha. of F.Y.M. (vi) *Suyodhar* cotton. (vii) Unirrigated. (viii) As per trertments. (ix) 40 cm. (x) 14.2.1964 to 31.3.1964.

2. TREATMENTS :

All combinations of (1), (2), (3), (4), (5) and (6)

(1) 2 *timings of sowings* : A_0=*Early sowing and* A_1=*Normal sowing*.
(2) 2 types of bunding : B_0=Non-contour bunding and B_1=Contour bunding.
(3) 2 mulchings : C_0=Non-mulching and C_1=Mulching.
(4) 2 methods of sowing : D_0=Line sowing without side-furrows and D_1=Line sowing with side furrows.
(5) 2 seed rates : E_0=6·7 Kg/ha. and E_1=10·1 Kg/ha.
(6) 2 levels of intercultivation : F_0=2 and F_1=4 intercultivations.

3. DESIGN :

(i) 2^6 Fact. Confd. (ii) 8 plots/block ; 8 blocks/replication. (b) N.A. (iii) 1. (iv) (a) N.A. (b) 7·9 m.× 5·5 m. (v) 2 rows on all sides. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of *kapas*. (iv) (a) and (b) No. (c) Nil. (v) Gadag. (vi) and (vii) Nil.

5. RESULTS :

(i) 425 Kg/ha. (ii) 92·0 Kg/ha. (based on 31 d.f. made up of higher order interactions. (iii) Main effect of A and interaction D×E×F are highly significant. Interactions B×C, C×E, A×C×D and B×C×E are significant. (iv) Table of mean and differential response in Kg/ha.

	Mean response	*Differential response*											
		A		B		C		D		E		F	
		—	+	—	+	—	+	—	+	—	+	—	+
A	—159·4	—	—	—141·7	—177·1	—175·8	—143·0	—165·3	—153·5	—159·7	—159·1	—175·4	—143·4
B	—11·9	5·8	—29·6	—	—	—73·4	49·6	—1·4	—22·4	1·6	—25·4	20·4	—44·2
C	10·6	—5·8	27·0	—50·9	72·1	—	—	41·4	—20·2	67·7	—46·5	36·8	—15·6
D	7·6	1·7	13·5	18·1	—2·9	38·4	—23·2	—	—	—6·2	21·4	—12·7	27·9
E	12·6	12·3	12·9	26·1	—0·9	69·7	—44·5	—1·2	26·4	—	—	43·9	—18·7
F	15·7	—0·3	31·7	48·0	—16·6	41·9	—10·5	—4·6	—36·0	47·0	—15·6	—	—

C.D. for mean response of A =46·9 Kg/ha.
C.D. for differential response of B×C and C×E=66·3 Kg/ha.

Crop :- Cotton (*Kharif*). **Ref :- Ms. 63(126).**

Site :- Agri. Res. Stn., Bagalkot. **Type :- 'C'.**

Object :— To study the effect of deep ploughing and intercultivation on the yield of cotton.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) *Jowar*. (c) 62·8 Q/ha. of F.Y.M. (ii) Medium black cotton soil. (iii) 7.9.1963. (iv) (a) As per treatments. (b) to (e) N.A. (v) 62·8 Q/ha. of F.Y.M. (vi) *Suyodhar*. (vii) Unirrigated. (viii) As per treatments. (ix) 40 cm. (x) 2.3.1964 to 17.4.1964.

2. TREATMENTS :

Main-plot treatments :

6 phases of ploughing : P_1=PPP, P_2=OP, P_3=PO, P_4=OOP, P_5=OPO and P_6=POO.

Sub-plot treatments :

2 types of ploughing : M_1=Deep ploughing and M_2=Local practices.

Sub-sub-plot treatments :

4 cultural practices : C_0=No intercultivation, C_1=1 intercultivation, C_2=2 intercultivations and C_3= Chemical weedicides (Femoxome at 0·68 Kg. of acide equivalent in 769 litres of water/ha).

PPP—Ploughing all the years. OP or PO—ploughing once in two years and OOP, OPO or POO—ploughing once in three years.

3. DESIGN:

(i) Split-plot. (ii) (a) 6 main-plots/replication ; 2 sub-plots/main-plot ; 4 sub-sub-plots/sub-plot. (b) N.A. (iii) 2. (iv) (a) N.A. (b) 8·5 m. × 4·9 m. (v) 2 rows alround. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of *kapas*. (iv) (a) 1963—N.A. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Treatments P_1, P_3 and P_6 are alike while P_2, P_4 and P_5 are alike during the 1st year.

5. RESULTS :

(i) 355 Kg/ha. (ii) (a) 98·2 Kg/ha. [(based on 9 d.f. (b) 52·3 Kg/ha. (based on 10 d.f.) (c) 62·2 Kg/ha. (based 60 d.f.) (iii) None of the effects is significant. (iv) Av. yield of *kapas* in Kg/ha.

	C_0	C_1	C_2	C_3	M_1	M_2	Mean
$P_1+P_3+P_6$	342	344	382	353	350	360	355
$P_2+P_4+P_5$	346	336	361	377	344	366	355
Mean	344	340	372	365	347	363	355
M_1	322	334	378	353			
M_2	366	345	365	377			

Crop :- Cotton (*Rabi*). **Ref :- Ms. 60(33).**

Site :- Soil Cons. Res. Centre, Bellary. **Type :- 'C'.**

Object :— To find the comparative merit of presoaked sowing over that of ordinary unsoaked seed.

1. BASAL CONDITIONS :

(i)(a) Nil. (b) Cowpeas. (c) Nil. (ii) Black cotton soil. (iii) 27.9.60. (iv) (a) Harrowing. (b) Drilling. (c) 8 Kg/ha. (d) 91 cm. (e) N.A. (v) 28·0 Q/ha. of F.Y.M. (vi) W_1. (vii) Unirrigated. (viii) Weeding and interculturing. (ix) 5 cm. (x) 12.3.61.

2. TREATMENTS :

2 seed treatments : T_0=Ordinary seed (unsoaked) and T_1=Seed presoaked for 24 hrs.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 6. (iv) (a) 4·9 m.×4·3 m. (b) 3·7 m.×3·1 m. (v) 61 cm.×61 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of *kapas*. (iv) (a) 1959 to 1960. (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 3326 Kg/ha. (ii) 800·3 Kg/ha. (iii) Treatment difference is not significant. (iv) Av. yield of *kapas* in Kg/ha.

Treatment	T_0	T_1
Av. yield	3339	3313

Crop :- Cotton (*Rabi*). **Ref :- Ms. 60(209).**

Site :- Soil Cons. Res. Stn., Bellary. **Type :- 'C'.**

Object :— To study the effect of weeding within the line in addition to the normal cultivating with respect to the economics of the operation.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar*. (c) N.A. (ii) Deep black cotton soil. (iii) 27.9.60. (iv) (a) Ploughing and harrowing. (b) Drilling. (c) 8 Kg/ha. (d) 91 cm.×23 cm. (e) 1. (v) Nil. (vi) Western—1 (late). (vii) Unirrigated. (viii) Handweeding. (ix) 44 cm. (x) 13.2.61 and 14.3.61.

2. TREATMENTS :

2 cultural treatments : T_1=Intercultivation only and T_2=Intercultivating+line weeding.

3. DESIGN :

(i) AB—BA method. (ii) (a) 2. (b) N.A. (iii) 6. (iv) (a) N.A, (b) 15·2 m.×12·2 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of *kapas*. (iv) (a) 1959—N.A. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 148 Kg/ha. (ii) 56·4 Kg/ha. (iii) Treatment difference is not significant. (iv) Av. yield of *kapas* in Kg/ha.

Treatment	T_1	T_2
Av. yield	149	147

Crop :- Cotton (*Rabi*). **Ref :- Ms. 62(199).**

Site :- Soil Cons. Res. Stn., Bellary. **Type :- 'C'.**

Object :—To find out the optimum spacing between rows and plants.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) *Jowar*. (c) Nil. (ii) Deep black cotton soil. (iii) 10.9.62. (iv) (a) Light harrowing twice. (b) Dibbling. (c) 11 Kg/ha. (d) As per treatments. (e) 2. (v) Nil. (vi) Western—1 (late). (vii) Unirrigated. (viii) Hand weeding and thinning. (ix) 36 cm. (x) 29.3.1963.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 spacings between rows : S_1=91 and S_2=137 cm.

(2) 3 spacings between plants : P_1=30, P_2=46 and P_3=61 cm.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 6. (b) 43·9 m.×7·3 m. (iii) 4. (iv) (a) 13·7 m.×7·3 m. (b) 12·8 m.×7·3 m. (v) 46 cm. on either side. (vi) Yes.

4. GENERAL :

(i) Shedding of leaves due to diseases and flowers due to heavy rains. (ii) Disease observed. No control measure could be taken as the disease was not identified. (iii) Height, boll count, yield of *kapas*. (iv) (a) 1962 contd. (modified in 1963). (b) Yes. (c) Nil. (v) Nil. (vi) Unusual and heavy rainfall during December 1962. (vii) Nil.

5. RESULTS :

(i) 85 Kg/ha. (ii) 23·7 Kg/ha. (iii) Main effect of P alone is significant. (iv) Av. yield of *kapas* in Kg/ha.

	P_1	P_2	P_3	Mean
S_1	118	93	67	93
S_2	89	74	68	77
Mean	104	84	68	85

C. D. for P marginal means=25·3 Kg/ha.

Crop :- Cotton (*Rabi*). **Ref :- Ms. 63(193), 64(145).**

Site :- Soil Cons. Res. Stn., Bellary. **Type :- 'C'.**

Object :—To find out the optimum spacing between rows and plants.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) *Jowar*. (c) 125 Q/ha. of F.Y.M. (ii) Deep black cotton soil. (iii) 25.9.1963 ; 20.9.1964. (iv) (a) Light harrowing twice. (b) Dibbling. (c) 11 Kg/ha. (d) As per treatments. (e) 1. (v) Nil. (vi) Western—1 (late). (vii) Unirrigated. (viii) Hand weeding and thinning. (ix) 15 cm ; 21 cm. (x) N.A. ; 4, 26.3.1965.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 spacings between rows : S_1=46 and S_2=91 cm.

(2) 4 spacings between plants : P_1=continuous, P_2=23, P_3=30 and P_4=46 cm.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) 29·3 m.×9·1 m. (iii) 4. (iv) (a) 9·1 m.×7·3 m. (b) 9·1 m.×6·4 m. (v) One row on either side. (vi) Yes.

4. GENERAL :

(i) Poor boll opening due to moisture stress. (ii) Nil. (iii) Height, boll count and yield of *kapas*. (iv) (a) 1962 contd. (modified in 1963). (b) Yes. (c) As under 5. Results. (v) and (vi) Nil. (vii) Error variances are homogeneous. Treatment × years interaction is absent.

5. RESULTS :

(i) 301 Kg/ha. (ii) 37·4 Kg/ha. (based on 49 d.f. made up of pooled error and Treatment × years interaction). (iii) Only P effect is highly significant. (iv) Av. yield of *kapas* in Kg/ha.

	P_1	P_2	P_3	P_4	Mean
S_1	300	365	315	258	310
S_2	298	313	291	270	293
Mean	299	339	303	264	301

C. D. for P marginal means=26.6 Kg/ha.

Years	P_1	P_2	P_3	P_4	Sig.	S_1	S_2	Sig.	G.M.	S.E./plot
1963	261	284	245	227	N.S.	262	246	N.S.	262	34·0
1964	337	394	361	301	N.S.	357	340	N.S.	348	40·2
Pooled	299	339	303	264	*	310	293	N.S.	301	37·4

Crop :- Cotton (*Rabi*). **Ref :- Ms. 63(192), 64(146).**

Site :- Soil Cons. Res. Stn., Bellary. **Type :- 'C'.**

Object: —To find out the benefits that accrue in leaving reservoirs alternating with sown strips.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) *Jowar*. (c) Nil. (ii) Deep black cotton soil. (iii) 25.9.1963 ; 19.9.64. (iv) (a) As per treatments. (b) Dibbling. (c) 8 Kg/ha. (d) 91 cm. × 23 cm. (e) One. (v) Nil. (vi) Western 1 (late). (vii) Unirrigated. (viii) Hand weeding and hoeing. (ix) 15 cm. ; 21 cm. (x) N.A.; 9 and 27.3.1965.

2. TREATMENTS :

(i) 5 cultural treatments.: T_0=Control, T_1=Corrugations at 1·2 m. apart and the alternate ridges tied with grass, T_2=Scoops made at 1·2 m. apart with single basin lister, T_3=Corrugations made at 1·2 m. apart with a 'V' ditch, and T_4=Bunds put with a bund former at 1·2 m. apart.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) 76·2 m. × 6·9 m. (iii) 4. (iv) (a) and (b) 15·2 m. × 6·9 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Poor growth. (ii) Generally poor boll bursting due to moisture stress. (iii) Yield of *kapas*. (iv) (a) 1963 to 64. (b) Yes. (c) As under 5. Results. (v) N.A. (vi) Nil. (vii) Error variances are heterogeneous. Treatments × years interaction is present.

5. RESULTS :

(i) 229 Kg/ha. (ii) 172·7 Kg/ha. based on 4 d.f. made up of Treatment × years interaction. (iii) Treatments 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	266	72	265	272	268

Years	T_0	T_1	T_2	T_3	T_4	Sig.	G.M.	S.E./plot
1963	125	57	119	118	107	**	105	22·8
1964	407	87	411	427	428	**	352	88·0
Pooled	266	72	265	272	268	N.S.	229	172·7

Crop :- Cotton. **Ref :- Ms. 63(127).**

Site :- Agri. Res. Stn., Dharwar. **Type :- 'C'.**

Object :—To study the effect of deep ploughing and intercultivation.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) *Jowar*. (c) 62·8 Q/ha. of F.Y.M. (ii) Deep black cotton soil. (iii) 22.8.1963. (iv) (a) As per treatments. (b) Dibbled in furrows. (c) to (e) N.A. (v) 62·8 Q/ha. of F.Y.M. (vi) Jayadhar cotton. (vii) Unirrigated. (viii) 3 interculturings and 3 weedings. (ix) 41 cm. (x) 20.2.1964 to 27.3.1964.

2. TREATMENTS :

Main-plot treatments :
6 phases of ploughings : P_1=PPP, P_2=OP, P_3=PO, P_4=OOP, P_5=OPO and P_6=POO.

Sub-plot treatments :
3 types of ploughing : M_1=Normal ploughing, M_2=Blade harrowing and M_3=Deep ploughing.

Sub-sub-plot treatments :
6 applications of fertilizers : F_0=No fertilizer, F_1=Ploughing method to drop the fertilizers 13 cm. deep with the help of wooden plough about a week before sowing, F_2= By seed cum fertilizer drill (applied in seed lines), F_3=By seed cum fertilizer drill to drop the fertilizers 3·8 cm. deeper than the seed, F_4= By seed cum fertilizers drill dropping the fertilizers 51 cm. deep and 51 cm. away on one side of the seed line and F_5=Local method of fertilizers application

Amount of fertilizers applied N.A.

Note : PPP—Ploughing all the years, OP or PO—ploughing once in two years and OOP, POP POO denote ploughing once in three years.

3. DESIGN :

(i) Split-plot. (ii) (a) 6 main-plots/replication ; 3 sub-plots/main-plot ; 6 sub-sub-plots/sub-plot. (b) N.A. (iii) 2. (iv) (a) N.A. (b) 4·3 m. × 8·5 m. (v) 2 rows on all side. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of *kapas*. (iv) (a) 1963—N.A. (b) No. (c) Nil. (v) Bagalkot and Gadag. (vi) Rainfall ill distributed. (vii) Treatments P_1, P_3 and P_6 are alike and P_2, P_4 and P_5 are alike during 63.

5. RESULTS :

(i) 304 Kg/ha. (ii) (a) 648·9 Kg/ha. based on 9 d.f. (b) 200·6 Kg/ha. based on 20 d.f. (c) 41·5 Kg/ha. based on 150 d.f. (iii) F effect is highly significant. Interaction P × M × F is significant. (iv) Av. yield of *kapas* in Kg/ha.

	F_1	F_2	F_3	F_4	F_5	F_6	$P_1+P_3+P_6$	$P_2+P_4+P_5$	Mean
M_1	283	311	288	301	271	271	262	312	287
M_2	308	308	273	295	285	251	268	306	287
M_3	331	356	343	335	325	336	381	294	338
Mean	307	325	301	310	294	286	304	304	304
$P_1+P_3+P_6$	314	315	294	308	299	293			
$P_2+P_4+P_5$	300	335	309	312	289	279			

C. D. for F marginal means=20·4 Kg/ha.

Crop :- Cotton. **Ref :- Ms.63(128).**

Site :- Agri. Res. Stn., Gadag. **Type :- 'C'.**

Object : To study the effect of deep ploughing and intercultivation on the yield of Cotton.

1. BASAL CONDITIONS :

(i) (a) *Jowar* – Cotton. (b) *Jowar*. (c) Nil. (ii) Medium black. (iii) 24.9.1963. (iv) (a) As per treatments. (b) Dibbled in furrows. (c) to (e) N.A. (v) 62·8 Q/ha. of F.Y.M. (vi) *Laxmi* Cotton. (vii) Unirrigated. (viii) 3 interculturings and 3 weedings. (ix) 33 cm. (x) 22.2.1964 to 17.3.1964.

2. TREATMENTS :

Same as in expt. no. 63(126) on page 408.

3. DESIGN :

(i) Split-plot. (ii) (a) 6 main-plots/replication ; 2 sub-plots/main-plot ; 4 sub-sub-plots/sub-plot. (b) N.A. (iii) 2. (iv) (a) N.A, (b) 7·0 m.×6·1 m. (v) 2 rows on all side. (vl) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) *Kapas* yield. (iv) (a) 1963—N.A. (b) No. (c) Nil. (v) Bagalkot and Dharwar. (vi) Uneven rainfall. (vii) Expt. conducted by Cotton Physiologist Agri. College. Dharwar. Treatments P_1, P_3 and P_6 are alike and P_2, P_4, P_5 are alike during 1963.

5. RESULTS :

(i) 319 Kg/ha. (ii) (a) 170·2 Kg/ha. based on 9 d.f. (b) 121·6 Kg/ha. based on 10 d.f. (c) 94·2 Kg/ha. based on 60 d.f. (iii) C effect is highly significant. Interaction M×C is significant. (iv) Av. yield of *kapas* in Kg/ha.

	C_1	C_2	C_3	C_4	M_1	M_2	Mean
$P_1+P_3+P_6$	309	418	368	232	311	352	332
$P_2+P_4+P_5$	277	364	385	196	312	299	306
Mean	293	391	376	214	311	326	319
M_1	316	339	389	201			
M_2	271	442	364	226			

C. D. for C marginal means=54·4 Kg/ha.
C. D. for M means at the same level of C=86·4 Kg/ha.
C. D. for C means at the same level of M=76·9 Kg/ha.

Crop :- Cotton. **Ref :- Ms.63(132).**

Site :- Agri. Res. Stn., Gadag. **Type :- 'C'.**

Gbject :—To study the effect of different cultural practices on the germination and yield of Cotton.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) *Jowar*. (c) 62·8 Q/ha. of F.Y.M. (ii) Medium black cotton soil. (iii) 24.9.1963 and 28.9.1963. (iv) (a) Twice ploughing and cross ploughing, 3 harrowings and levelling. (b) Dibbling. (c) to (e) N.A. (v) 62·8 Q/ha. of F.Y.M. (vi) *Laxmi* Cotton. (vii) Unirrigated. (viii) 3 interculti-vation and 3 weedings. (ix) 33 cm. (x) 21.2.1964.

2. TKEATMENTS :

As in expt. no. 63(131) on page 407 conducted at Bagalkot.

3. DESIGN :

(i) 2^6 Fact. confd. (ii) (a) 8 plots/blocks ; 8 blocks/replication. (b) N.A. (iii) 1. (iv) (a) N.A. (b) 9·8 m.×4·6 m. (v) 2 rows on all round. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) *Kapas* yield. (iv) (a) N.A. (b) No. (c) Nil. (v) Bagalkot. (vi) Uneven rainfall occured during the crop season. (vii) Nil.

5. RESULTS :

(i) 819 Kg/ha. (ii) 210·7 Kg/ha. based on 31 d.f. (iii) Main effect of A alone is highly significant. (iv) Table of mean and differential response in Kg/ha.

	Mean response	Differential response											
		A		B		C		D		E		F	
		+	−	+	−	+	−	+	−	+	−	+	−
A	−206·2	−	=	−181·9	−230·5	−188·8	−223·6	−251·8	−160·6	−245·9	−166·5	−215·0	−197·4
B	58·5	82·8	34·2	—	—	74·6	42·4	23·4	93·6	12·2	104·8	165·7	−48·7
C	−18·2	−0·8	−35·6	−2·1	−34·3	—	—	−41·6	5·2	12·0	−48·4	−60·1	23·7
D	−61·6	−107·2	−26·5	−96·7	−26·5	−85·0	−38·2	—	—	−109·6	−13·6	−13·3	−109·9
E	54·6	14·9	94·3	8·3	100·9	84·8	24·4	6·6	102·6	—	—	34·4	74·8
I	17·3	8·5	26·1	−26·5	−89·9	−24·6	59·2	65·6	−31·0	−2·9	37·5	—	—

C.D. for mean response of A=107·5 Kg/ha.

Crop :- Cotton (*Rabi*). **Ref :- Ms. 60(150), 61(133).**

Site :- Agri. Res. Stn., Naragund. **Type :- 'C'.**

Object :—To find out suitable time of sowing for Cotton in this tract.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton. (c) Nil. (ii) Alkaline soil. (iii) As per treatments. (iv) (a) 3 harrowings with country blade harrow. (b) Seed-drill in 1960, dibbling in 1961. (c) 9 to 11 Kg/ha. (d) 76 cm. between rows in 1960. 61 cm.×61 cm. in 1961. (e) 2. (v) Nil. (vi) *Laxmi*. (vii) Unirrigated. (viii) 3 inter-culturings and 1 weeding (1960), interculturing (1961). (ix) 56 cm. ; 49 cm. (x) 21.2.1961 to 28.3.1961 ; 19.2.1962 and 26.3.1962.

2. TREATMENTS :

4 sowing dates : D_1 = Last week of July, D_2 = 2nd week of August, D_3 = Last week of August and D_4 = 2nd week of September.

3. DESIGN :

(i) L. Sq. (ii) (a) 4. (b) N.A. (iii) N.A. (iv) (a) 14·0 m. × 9·1 m. (b) 12·5 m. × 6·1 m. (v) 76 cm, × 152 cm. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Height, boll count, plant count and yield of *kapas*. (iv) (a) 1958 to 62. (b) No. (c) As under 5. Results. (v) N.A. (vi) Nil. (vii) Error variances are homogeneous. Treatments × years interaction is present. Results for 1958 are available for the *Laxmi* and Jagadhar varieties combined. In 1959, *Laxmi* was not sown on one date. Hense results for three dates are available.

5. RESULTS :

(i) 171 Kg/ha. (ii) 77·0 Kg/ha. based on 3 d.f. made up of Treatments × years interaction. (iii) Treatment differences are not significant. (iv) Av. yield of *kapas* in Kg/ha.

Treatment	D_1	D_2	D_3	D_4
Av. yield	204	212	149	118

Years	D_1	D_2	D_3	D_4	Sig.	G.M.	S.E./plot
1960	364	364	276	218	**	306	21·5
1961	44	60	22	18	N.S.	36	25·3
Pooled	204	212	149	118	N.S.	171	77·0

Crop :- Cotton (*Rabi*). **Ref :- Ms. 60(151), 61(134).**

Site :- Agri. Res. Stn., Naragund. **Type :- 'C'.**

Object :—To find out suitable time of sowing for Cotton in this tract.

1. BASAL CONDITIONS : to 3. DESIGN :

Same as in expt. no. 60(150), 61(133) on page 414.

Here *Jayodhar* variety is tried.

4. GENERAL :

(i) Satisfactory ; Normal. (ii) Nil. (iii) Height, boll count, plant count and yield of *kapas*. (iv) (a) 1958 to 62. (b) No. (c) As under 5. Results. (v) N.A. (vi) Nil. (vii) Error variances are heterogeneous. Treatments × years interaction is present.

5. RESULTS :

(i) 135 Kg/ha. (ii) 54·6 Kg/ha. based on 3 d.f. made up of Treatments × years interaction. (iii) Treatment differences are not significant. (iv) Av. yield of *kapas* in Kg/ha.

Treatment	D_1	D_2	D_3	D_4
Av. yield	136	102	149	154

Years	D_1	D_2	D_3	D_4	Sig.	G.M.	S.E./plot.
1960	246	184	272	278	N.S.	245	80·2
1961	26	19	27	30	N.S.	25	13·1
Pooled	136	102	149	154	N.S.	135	54·6

Crop :- Cotton. **Ref :- Ms. 61(154).**

Site :- Agri. Res. Stn., Dharwar. **Type 'CV'.**

Object :— To find out the effect of sowing dates on growth and yield of Cotton.

1. BASAL CONDITIONS :

(i) (a) *Jowar*, Cotton. (b) *Jowar*. (c) Nil. (ii) Black cotton soil. (iii) As per treatments. (iv) 2 ploughings and 3 harrowings. (b) Dibbled in furrows. (c) N.A. (d) 60 cm.×23 cm. (e) 2. (v) Nil. (iv) As per treatments. (vii) Unirrigated. (viii) 3 weedings. (ix) 24 cm. (x) 29.12.61 to 21.4.62.

2. TREATMENTS :

All combinations of (1) and (2).
(1) 3 dates of sowing ; D_1=29.7.1961, D_2=15.8.1961 and D_3=25.6.1961.
(2) 2 varieties : V_1=*Laxmi* and V_2=Jayadhar.

3. DESIGN :

(i) Fact. in R.B.D, (ii) (a) 6. (b) N.A. (iii) and (iv) N.A. (b) 18·3 m.×11.0 m. (v) 2 rows all round. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of *kapas*. (iv) (a) N.A. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 373 Kg/ha. (ii) 53·3 Kg/ha. (iii) Main effect of D alone is highly significant. (iv) Av. yield of *kapas* in Kg/ha.

	D_1	D_2	D_3	Mean
V_1	415	366	331	371
V_2	418	358	348	375
Mean	416	362	340	373

C.D. for D marginal means=44·9 Kg/ha.

Crop :- Cotton. **Ref :- Ms. 62(34).**

Site :- Agri. Res. Stn., Gangavathy.. **Type :- 'CV'.**

Object :—To find the optimum time of sowing for different varieties of Cotton.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) *Jowar*. (c) 251·1 Q/ha. of F.Y.M.+44·8 Kg/ha. of N+22·4 Kg/ha. of P_2O_5. (ii) Light black cotton soil. (iii) As per treatments. (iv) (a) 2 ploughings and 2 harrowings. (b) Dibbling. (c) N.A. (d) As per treatments. (e) N.A. (v) 251·1 Q/ha. of F.Y.M.+44·8 Kg/ha. of N+22·4 Kg/ha. of P_2O_5. (vi) As per treatments. (vii) Irrigated. (viii) 6 hand weedings. (ix) 58 cm. (x) 23.9.1962 to 25.3.63.

2. TREATMENTS :

6 dates of sowing : D_1=25.4.1962, D_2=10·5.1962, D_3=25·5.1962, D_4=10.6.1962, D_5=20.8.1962 and D_6=20.8.1962.

Variety 170—CO_2 was sown as in D_1 to D_4 with spacing 91 cm.×61 cm. Variety *Laxmi* was sown as in D_5 and D_6 with spacing 91 cm.×30 cm. for D_5 and 69 cm.×30 cm. for D_6.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 5. (iv) (a) 12·2 m.×5·5 m. (b) 11·0 m.×3·7 m. (v) 61 cm.×91 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Heavy attack of Aphids, Jassids, Boll worm and Black arm. 6 times Endrine was sprayed. (iii) Yield of *kapas*. (iv) (a) and (b) N.A. (c) Nil. (v) Sirugappa. (vi) Season was unfavourable to cotton. Heavy rains and cloudy weather prevailed during bursting period. (vii) Nil.

5. RESULTS :

(i) 1318 Kg/ha. (ii) 369·8 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of *kapas* in Kg/ha.

Treatment	D_1	D_2	D_3	D_4	D_5	D_6
Av. yield	1447	1831	1131	973	1202	1321

C. D.=487·9 Kg/ha.

Crop :- Cotton. (*Kharif*). **Ref :- Ms. 64(25).**

Site :- Agri. Res. Stn., Sirugappa. **Type :- 'CV'.**

Object :—To study the performance of Sea Island Cotton with other varieties under different sowing dates.

1. BASAL CONDITIONS :

(i) (a) Cotton—Groundnut—Bengal gram. (b) Bengal gram. (c) 125·6 Q/ha. of F.Y.M.+44·8 Kg/ha. of P_2O_5 as Super. (ii) Black soil. (iii) As per treatments. (iv) (a) 1 ploughing and 1 harrowing working with hire kunte and ridger. (b) Dibbling by hand. (c) 9 Kg/ha. (d) 76 cm.×30 cm. (e) 2 to 3. (v) 125·6 Q/ha. of F.Y.M. applied before sowing. 28·0 Kg/ha. of N as A/S+112·1 Kg/ha. of P_2O_5 as Super+ 56·0 Kg/ha. of K_2O as Mur. Pot. at the time of sowing. (vi) As per treatments. (vii) Irrigated. (viii) 4 weedings, earthing up once by spades. (ix) 64 cm. (x) 18.9.64 to 11.1.65.

2. TREATMENTS :

Main-plot treatments:

3 varieties : V_1=170—CO_2, V_2=Sea island and V_3=*Laxmi*.

Sub-plot treatments ;

4 dates of sowing : D_1=15.4.1964, D_2=1.5.1964, D_3=15.5.1964 and D_4=1.6.1964.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 1/198 ha. (b) 1/247 ha. (v) One row on either side. (vi) Yes.

4. GENERAL :

(i) The crop was very bad. (ii) The crop was attacked by Red leaf blight disease, Black arms and heavy Boll worms. First sprayed with Folidol and later Endrine with W.P. Sulpher—But not controlled. (iii) Germination percentage and yield of *kapas*. (iv) (a) 1964 N.A. (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 333 Kg/ha. (ii) (a) 254·4 Kg/ha. (b) 124·9 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of *kapas* in Kg/ha.

	D_1	D_2	D_3	D_4	Mean
V_1	230	202	231	231	223
V_2	443	433	224	264	341
V_3	485	470	462	317	433
Mean	386	368	305	217	333

Crop :- Cotton (*Rabi*). **Ref :- Ms. 64(207), 65(80).**

Site :- Agri. Res. Stn., Bagalkot. **Type :- 'CM'.**

Object :—To study the effect of different fertilizers and cultural practices on the yield of Cotton.

1. BASAL CONDITIONS :

(i) (a) *Jowar* – Cotton. (b) *Jowar*. (c) 29·6 Kg/ha. of N+24·7 Kg/ha. of P_2O_5. (ii) Deep black soil. (iii) 1.9.1964 ; 2.9.1965. (iv) (a) Wooden ploughing and harrowing. (b) Dibbling. (c) and (d) As per treatments. (e) 1. (v) 12·4 C.L./ha. of F.Y.M. (vi) *Suyodhar*. (vii) Unirrigated. (viii) Weeding, interculturing and thinning. (ix) 61 cm. ; 25 cm. (x) N.A. ; 24.2.1966.

2. TREATMENTS :

Main-plot treatments :

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

(1) 2 sowing dates : D_1=15 days earlier and D_1=Normal date.
(2) 2 spacings : S_1=46 cm. and S_2=61 cm.
(3) 2 seed rates : R_1=6·7 and R_2=10·1 Kg/ha.

Sub-plot treatments :

All combinations of (1) and (2)

(1) 2 levels of N : N_0=0 and N_1=30 Kg/ha.
(2) 2 levels of P_2O_5 : P_0=0 and P_1=30 Kg/ha.

3. DESIGN :

(i) Split-plot. (ii) (a) 8 main-plots/replication ; 4 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 9·1 m.× 5·5 m. (b) 8·5 m.×4·9 m. (v) 30 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Bollworm, Jassids, Stel attack. (iii) *Kapas* yield. (iv) (a) 1964-68. (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

64(207)

(i) 511 Kg/ha. (ii) (a) 121·6 Kg/ha. (b) 89·2 Kg/ha. (iii) Main effect of N alone is highly significant. (iv) Av. yield of *kapas* in Kg/ha.

	S_1	S_2	R_1	R_2	N_0	N_1	P_0	P_1	Mean
D_1	515	538	521	532	491	562	521	533	527
D_2	515	475	487	503	470	521	486	504	495
Mean	515	507	504	518	480	542	504	518	511
P_0	488	519	488	519	464	543			
P_1	542	495	520	516	497	540			
N_0	474	486	475	485					
N_1	556	527	533	550					
R_1	525	483							
R_2	505	530							

C. D. for N marginal means=36·7 Kg/ha.

65(80)

(i) 311 Kg/ha. (ii) (a) 73·2 Kg/ha. (b) 53·4 Kg/ha. (iii) Main effect of D and interactions D×S and D×R are highly significant. Interaction D×S×R is significant. (iv) Av. yield of *kapas* in Kg/ha.

	S_1	S_2	R_1	R_2	N_0	N_1	P_0	P_1	Mean
D_1	361	311	370	302	328	345	338	335	336
D_2	248	324	263	309	286	286	286	286	286
Mean	304	318	316	306	307	315	312	310	311
P_0	303	321	320	304	307	316			
P_1	306	315	313	308	306	315			
N_0	297	317	323	291					
N_1	312	319	310	321					
R_1	296	338							
R_2	313	298							

C. D. for D marginal means=32·0 Kg/ha.

C. D. for body of D×R or S×R tables=46·7 Kg/ha.

Crop :- Cotton (*Rabi*). **Ref :- Ms.62(81), 63(80).**

Site :- Agri. College Farm, Dharwar. **Type :- 'CM'.**

Object :—To find the optimum spacing between rows and plants within rows with different levels of fertilizers for Cotton.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) *Jowar*. (c) 28·0 Kg/ha. of N+16.8 Kg/ha. of P_2O_5 in two equal doses. (ii) Black soil. (iii) 25.8.62 ; 10.8.63. (iv) (a) 3 harrowings. (b) As per treatments. (c) 11 Kg/ha. (d) As per treatments. (e) 2. (v) 22·4 Kg/ha. of P_2O_5+22·4 Kg/ha. of K_2O. (vi) *Laxmi*. (vii) Unirrigated. (viii) 3 interculturings and 2 weedings. (ix) 78 cm. ; 79 cm. (x) 21.1.63 to 1.4.63, 8.2.64 to 10.3.64.

2. TREATMENTS :

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

(1) 2 rows spacings : S_1=61 cm. and S_2=91 cm.

(2) 2 methods of sowing : D_1=Drilling and thinning to maintain 30 cm. spacing and D_2=Dibbling and thinning to maintain 30 cm. spacing.

(3) 2 manurial treatments : M_1=22·4 Kg/ha. of N+22·4 Kg/ha. of P_2O_5+22·4 Kg/ha. of K_2O and M_2=44·8 Kg/ha. of N+44·8 Kg/ha. of P_2O_5+44·8 Kg/ha.of K_2O.

3. DESIGN :

(i) 2^3 Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 3. (iv) (a) 9·1 m.×7·3 m. (b) 7·3 m.×6·1 m. (v) 91 cm.×61 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Dusted B.H.C. 5% at 16·8 to 22·4 Kg/ha. and sprayed Endrine once. (iii) Height, no. of plants/plot, no. of bolls/plant and yield of *kapas*. (iv) (a) 1962-63. (b) No. (c) Nil. (v) N.A. (vi) Nil. (vii) Error variances are heterogeneous. Treatments×years interaction is absent.

5. RESULTS :

62(81)

(i) 786 Kg/ha. (ii) 159·2 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of *kapas* in Kg/ha.

	D_1	D_2	M_1	M_2	Mean
S_1	807	675	713	771	742
S_2	801	859	807	852	830
Mean	804	767	760	811	786
M_1	794	727			
M_2	814	807			

63(80)

(i) 606 Kg/ha. (ii) 37·7 Kg/ha. (iii) Main effect of M and interaction D×M are significant. (iv) Av. yield of *kapas* in Kg/ha.

	D_1	D_2	M_1	M_2	Mean
S_1	602	607	581	628	605
S_2	624	590	596	619	607
Mean	613	598	588	624	606
M_1	616	560			
M_2	611	636			

C. D. for M marginal means=23·4 Kg/ha.
C. D. for body of D×M table=33·0 Kg/ha.

Crop :- Cotton (*Rabi*). **Ref :- Ms. 62(80), 63(79).**

Site :- Agri. College Farm, Dharwar. **Type :- 'CM'.**

Object :--To find out the optimum spacing between rows and plants for Cotton with different levels of fertilisers.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) *Jowar*. (c) 28·0 Kg/ha. of N+16·8 Kg/ha. of P in two equal doses. (ii) Black. (iii) 25.8.62; 10.8.63. (iv) (a) 2 to 3 harrowings. (b) As per treatments. (c) 11 Kg/ha. (d) As per treatments. (e) 2. (v) 22·4 Kg/ha. of P_2O_5+22·4 Kg/ha. of K_2O. (vi) *Jayadhar*. (vii) Unirrigated. (viii) 3 interculturings and 2 weedings. (ix) 78 cm.; 79 cm. (x) 21.1.63 to 1.4.63; 8.2.64 to 10.3.64.

2. TREATMENTS :

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

(1) 2 row spacings : S_1=61 cm. and S_2=91 cm.

(2) 2 methods of sowing : D_1=Drilling and thinning to maintain 30 cm. spacing and D_2=Dibbling and thinning to maintain 30 cm. spacing.

(3) 2 levels of N as A/S : N_1=22·4 and N_2=44·8 Kg/ha.

3. DESIGN :

(i) 2^3 Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 3. (iv) (a) 9·1 m.×7·3 m. (b) 7·3 m.×6·1 m. (v) 91 cm. ×61 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Dusted B.H.C. 5% at 16·8 to 22·4 Kg/ha. and sprayed with Endrine once. (iii) Yield of *kapas*. (iv) (a) 1962—63. (b) No. (c) Nil. (v) N.A. (vi) Nil. (vii) Error variances are homogeneous. Treatments×years interaction is absent.

5. RESULTS :

(i) 689 Kg/ha. (ii) 91·2 Kg/ha. (based on 34 d.f. made up of pooled error and Treatments×years interaction). (iii) None of the effects is significant. (iv) Av. yield *kapas* of in Kg/ha.

	D_1	D_2	N_1	N_2	Mean
S_1	706	685	677	715	696
S_2	694	670	671	693	682
Mean	700	678	674	704	689
N_1	692	656			
N_2	708	700			

Years	S_1	S_2	Sig	D_1	D_2	Sig.
1962	656	588	N.S.	639	604	N.S.
1963	736	775	N.S.	761	750	N.S.
Pooled	696	682	N.S.	700	678	N.S.

N_1	N_2	Sig.	G.M.	S.E./plot
621	623	N.S.	622	103·2
727	784	N.S.	755	67·6
674	704	N.S.	689	91·2

Crop :- Cotton (*Rabi*). **Ref :- Ms. 63(140).**

Site :- Agri. Res. Stn., Dharwar. **Type :- 'CM'.**

Object :—To determine suitable date of sowing and spacing and their inter-relation with fertilizer application.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) *Jowar.* (c) 62·8 Q/ha. of F.Y.M. (ii) Black cotton soil. (iii) As per treatments. (iv) (a) 2 ploughings and cross ploughing, levelling and opening furrows. (b) Dibbled in furrows. (c) N.A. (d) As per treatments. (e) N.A. (v) 62·8 Q/ha. of F.Y.M.+28·2 Kg/ha. of P_2O_5+28·2 Kg/ha. K_2O. (vi) *Jayadhar.* (vii) Unirrigated (viii) 3 harrowings, 3 weedings. (ix) 41 cm. (x) 14.2.64 to 19.3.64.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2)

(1) 3 dates of sowing : D_1=10 to 15 days before normal sowing (1.8.63), D_2=Normal sowing (14.8.63) and D_3=10 to 15 days after normal sowing (28.8.63).

(2) 3 spacings : S_1=61 cm.×23 cm., S_2=61 cm.×30 cm. and S_3=61 cm.×46 cm.

Sub-plot treatments :

3 levels of N as A/S : N_0=0, N_1=28·0 and N_2=56·0 Kg/ha.

3. DESIGN :

(i) Split-plot. (ii) (a) 9 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a) N.A. (b) 3·7 m.×9·8 m. (v) 2 rows alround. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of *kapas.* (iv) to (vii) N.A.

5. RESULTS :

(i) 746 Kg/ha. (ii) (a) 190·0 Kg/ha. (b) 101·0 Kg/ha. (iii) Main effect of N and interaction D×N are significant. (iv) Av. yield of *kapas* in Kg/ha.

	D_1	D_2	D_3	S_1	S_2	S_3	Mean
N_0	639	776	726	718	758	668	715
N_1	678	818	680	740	593	743	725
N_2	900	773	724	760	917	718	798
Mean	739	789	710	739	789	710	746
S_1	752	758	708				
S_2	864	771	733				
S_3	645	817	667				

C.D. for N marginal means =70·7 Kg/ha.

C.D. for N means at the same level of D=122.6 Kg/ha.

C.D. for D means at the same level of N=177·0 Kg/ha.

Crop :- Cotton (*Rabi*). **Ref :- Ms. 62(77).**

Site :- Agri. Res. Stn., Gadag. **Type :- 'CM'.**

Object :—To find out the effect of cultural cum fertilizer treatments on the yield of Cotton.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) *Jowar*. (c) Nil. (ii) Medium black cotton soil. (iii) As per treatments. (iv) (a) 2 ploughings and 3 harrowings. (b) Opening 5 cm. furrows and dibbling. (c) and (d) As per treatments. (e) N.A. (v) Nil. (vi) *Laxmi*. (vii) Unirrigated. (viii) Nil. (ix) 40 cm. (x) 24.2.63 and 22.3.63.

2. TREATMENTS :

Main-plot treatments :

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

(1) 2 dates of sowing : D_1=11.9.62 and D_2=25.9.62.

(2) 3 row spacings : S_1=46 cm., S_2=61 cm. and S_3=91 cm.

(3) 2 seed rates : R_1=9 and R_2=13 Kg/ha.

Sub-plot treatments :

All combinations of (4) and (5)

(4) 2 levels of N : N_0=0 and N_1=28·0 Kg/ha.

(5) 2 levels of P : P_0=0 and P_1=28·0 Kg/ha.

3. DESIGN :

(i) Split-plot. (ii) (a) 12 main-plots/replication; 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) and (b) 8·2 m.×4·9 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of *kapas*. (iv) (a) and (b) N.A. (c) Nil. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 780 Kg/ha. (ii) (a) 349·6 Kn/ha. (b) 129·2 Kg/ha. (iii) Main effects of D, N and P are highly significant. (iv) Av. yield of *kapas* in Kg/ha.

	S_1	S_2	S_3	R_1	R_2	N_0	N_1	P_0	P_1	Mean
D_1	904	902	892	899	899	793	1003	865	932	899
D_2	625	645	712	613	709	581	739	610	709	660
Mean	765	773	802	756	804	687	871	738	821	780
P_0	739	712	764	717	759	650	825			
P_1	791	833	840	793	850	724	919			
N_0	662	684	714	675	699					
N_1	867	860	889	835	907					
R_1	783	761	724							
R_2	749	786	880							

C.D. for D marginal means =102·8 Kg/ha.

C.D. for N or P marginal means=36·9 Kg/ha.

Crop :- Cotton (*Rabi*). **Ref :- Ms. 63(42).**

Site :- Agri. Res. Stn., Gadag. **Type :- 'CM'.**

Object :—To find out suitable spacing, dates of sowing and fertilizers for Cotton.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) *Jowar*. (c) 62·8 Q/ha. of F.Y.M. (ii) Medium black cotton soil. (iii) As per treatments. (iv) (a) 2 ploughings and cross ploughing, levelling and opening furrows. (b) Dibbled in furrows. (c) and (d) As per treatments. (e) N.A. (v) 62·8 Q/ha. of F.Y.M. (vi) *Laxmi*. (vii) Unirrigated. (viii) 3 interculturings and 3 weedings. (ix) 33 cm. (x) 23.2.64 to 3.3.64.

2. TREATMENTS :

Main-plot treatments :

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

(1) 2 dates of sowing : D_1=10 to 15 days earlier from normal sowing and D_2=Normal sowing (25.9.63).

(2) 3 spacings : S_1=46 cm., S_2=61 cm. and S_3=76 cm.

(3) 2 seed rates : R_1=9 and R_2=13 Kg/ha.

Sub-plot treatments :

All combinations of (1) and (2)

(1) 2 levels of N as A/S : N_0=0 and N_1=28·0 Kg/ha.

(2) 2 levels of P_2O_5 as Super : P_0=0 and P_1=28·0 Kg/ha.

Manures applied in one dose at sowing.

3. DESIGN :

(i) Split-plot. (ii) (a) 12 main-plots/replication; 4 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 7·9 m.×5·5 m. (v) 2 rows alround. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of *kapas*. (iv) (a) 1963—contd. (Treatments modified every year). (b) No. (c) Nil. (v) Dharwar and Bagalkot. (vi) and (vii) Nil.

5. RESULTS :

(i) 498 Kg/ha. (ii) (a) 245·4 Kg/ha. (b) 105·5 Kg/ha. (iii) Main effects of D and S are significant. N and P effects are highly significant. (iv) Av. yield of *kapas* in Kg/ha.

	S_1	S_2	S_3	R_1	R_2	N_0	N_1	P_0	P_1	Mean
D_1	521	655	475	529	572	453	648	538	562	550
D_2	434	498	405	408	484	380	512	398	494	446
Mean	478	577	440	468	528	416	580	468	528	498
P_0	440	539	424	447	488	398	538			
P_1	514	614	456	489	567	435	621			
N_0	407	478	364	384	449					
N_1	548	675	516	552	607					
R_1	425	550	430							
R_2	530	603	450							

C.D. for D marginal means =84·8 Kg/ha.
C.D. for S marginal means =103·9 Kg/ha.
C.D. for N or P marginal means=35·1 Kg/ha.

Crop :- Cotton (*Rabi*). **Ref :- Ms. 65(114).**

Site :- Agri. Res. Stn., Gadag. **Type :- 'CM'.**

Object :—To study the effect of variations in date of sowing, spacing, fertilizers, seed rate and their interaction on the yield of Cotton.

1. BASAL CONDITIONS :

(i) (a) *Kharif Jowar*—Cotton. (b) *Kharif Jowar.* (c) 12·4 C.L./ha. of F.Y.M. (ii) Medium black soil. (iii) As per treatments. (iv) (a) 3 wooden ploughings and harrowings. (b) Dibbling. (c) 11·2 Kg/ha. (d) As per treatments. (e) 1. (v) Nil. (vi) *Laxmi.* (vii) Unirrigated. (viii) 3 weedings. (ix) 25 cm. (x) N.A.

2. TREATMENTS :

Main-plot treatments :

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

(1) 2 dates of sowing : D_1=10 to 15 days earlier to normal (3.9.65) and D_2=Normal date of sowing (29.9.65).

(2) 3 spacings : S_1=46, S_2=61 and S_3=91 cm.

(3) 2 seed rates : R_1=9·0 and R_2=12·3 Kg/ha.

Sub-plot treatments :

All combinations of (1) and (2)

(1) 2 levels of N : N_0=0 and N_1=28 Kg/ha.

(2) 2 levels of P_2O_5 : P_0=0 and P_1=28 Kg/ha.

3. DESIGN :

(i) Split-plot. (ii) (a) 12 main-plots/replication; 4 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 9·1 m. × 5·5 m. (b) 7·9 m.×4·9 m. (v) One row kept. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Boll worms, leaf spot, Dusty cotton bugs—Endrine sprayed. (iii) *Kapas* yield. (iv) (a) 1962—contd. (Treatments modified every year, data for 64 N.A). (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 676 Kg/ha. (ii) (a) 220.5 Kg/ha. (b) 124·9 Kg/ha. (iii) Main effect of D and interaction S×D×R are highly significant. Interaction S×D is significant. (iv) Av. yield of *kapas* in Kg/ha.

	S_1	S_2	S_3	R_1	R_2	N_0	N_1	P_0	P_1	Mean
D_1	888	769	918	860	857	830	887	887	830	858
D_2	512	547	425	523	466	484	505	462	527	494
Mean	700	658	671	691	661	657	696	674	679	676
P_0	691	664	667	692	656	671	677			
P_1	709	652	675	690	667	643	715			
N_0	682	667	662	691	623					
N_1	718	649	720	691	700					
R_1	725	687	662							
R_2	675	630	680							

C.D. for D marginal means =76·2 Kg/ha.
C.D. for the body of S×D table=152·8 Kg/ha.

Crop :- Cotton (*Rabi*). **Ref :- Ms. 60(163).**

Site :- Agri. Res. Stn., Gadag. **Type :- 'CM'.**

Object : —To study the effect of different dates of sowing and application of manure on the growth and yield of Cotton.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) *Jowar*. (c) Nil. (ii) Medium black cotton soil. (iii) As per treatments. (iv) (a) 2 ploughings and 3 harrowings. (b) Dibbling in furrows. (c) 9 Kg/ha. (d) 61 cm. between rows. (e) 2. (v) Nil. (vi) *Laxmi*. (vii) Unirrigated. (viii) 3 weedings. (ix) 93 cm. (x) 16.2.61 to 27.3.61.

2. TREATMENTS :

Main-plot treatmemts :

3 dates of sowing : D_1=7.9.60, D_2=25.9.60 and D_3=7.10.60.

Sub-plot treatments :

2 levels of N as A/S : N_0=0 and N_1=22·4 Kg/ha.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication; 2 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 10·4 m.× 6·1 m. (b) 9·1 m.×4·9 m. (v) 61 cm.×61 cm. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of *kapas*. (iv) (a) 1952—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 363 Kg/ha. (ii) (a) 125·8 Kg/ha. (b) 61·8 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of *kapas* in Kg/ha.

	D_1	D_2	D_3	Mean
N_0	385	352	367	368
N_1	389	346	340	358
Mean	387	349	353	362

Crop :- Cotton (*Rabi*). **Ref :- Ms. 60(165).**

Site :- Agri. Res. Stn., Gadag. **Type :- 'CM'.**

Object :—To find out the effect of spacing between plants and rows, with different numbers of seedlings/hill on the growth and yield of Cotton.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) *Jowar*. (c) Nil. (ii) Black cotton soil. (iii) 4.10.60. (iv) (a) Ploughing by wooden plough once and 3 harrowings by black harrow. (b) Dibbled in furrows. (c) N.A. (d) and (e) As per treatments. (v) 7·4 C.L./ha. of F.Y.M. (vi) *Laxmi*. (vii) Unirrigated. (viii) 3 weedings and 3 interculturings. (ix) 25 cm. (x) 17.2.61 to 27.3.61.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 spacings : S_1=61 cm.×30 cm. and S_2=30 cm.×30 cm.

(2) 2 number of seedlings : H_1=2 and H_2=1 seedling/hole.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 4. (b) 19·4 m.×10·3 m. (iii) 8. (iv) (a) 10·3 m.×4·9 m. (b) 9·1 m.×3·7 m. (v) 60 cm.×60 cm. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of *kapas*. (iv) (a) N.A. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 986 Kg/ha. (ii) 310·0 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of *kapas* in Kg/ha.

	S_1	S_2	Mean
H_1	981	1008	995
H_2	814	1139	976
Mean	898	1074	986

Crop :- Cotton (*Rabi*). **Ref :- Ms. 60(144), 61(137), 62(119).**

Site :- Agri. Res. Stn., Naragund. **Type :- 'CM'.**

Object :—To study the effect of dibbling and concentrated effect of manuring on the yield of Cotton.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) *Jowar*; Cotton in 1961 and 62. (c) Nil. (ii) Alkaline soil. (iii) 15.9.60; 12.10.61; 15.9.62. (iv) (a) Harrowing by country blade harrow. (b) As per treatments. (c) 9 Kg/ha. (d) 61 cm.×61 cm. (e) 2. (v) Nil. (vi) *Jayadhar* (medium). (vii) Unirrigated. (viii) 3 interculturings and 1 weeding, digging pits for spot manuring (1960); interculturings with blade hoe (1961) and 2 interculturings by entire hoe (1962). (ix) 56 cm.; 49 cm. ; 82 cm. (x) 24.2.61 to 24.3.61; 21.3.62 to 6.4.62; 21.3.63.

2 TREATMENTS :

All combinations of (1) and (2)+one extra treatment

(1) 2 methods of sowing : S_1=Drilling and S_2=Spot dibbling.

(2) 3 manurial treatments : M_0=Control, M_1=12·4 C.L./ha. of F.Y.M. and M_2=N, P, K equivalent to 12·4 C.L./ha. of F.Y.M.

Extra treatment : E=12·4 C.L./ha. of F.Y.M.+22·4 Kg/ha. of N+22·4 Kg/ha. of P_2O_5, dibbling in spots.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 7·6 m.×7·6 m. (b) 6·1 m.×6·1 m. (v) 76 cm.×76 cm. (vi) Yes.

4. GENERAL :

(i) Germination highly defective in dibbled plots. (ii) Nil. (iii) Plant height, boll count and yield of *kapas*. (iv) (a) 1960 to 62. (b) No. (c) As under 5. Results. (v) and (vi) Nil. (vii) Error variances are homogeneous. Treatments×years interaction is absent.

5. RESULTS :

(i) 217 Kg/ha. (ii) 84·8 Kg/ha. (based on 20 d.f. made up of pooled error and Treatment×years interaction). (iii) Extra vs. others effect is significant. Interaction S×M is highly significant. (iv) Av. yield of *kapas* in Kg/ha.

E=270 Kg/ha.

	M_0	M_1	M_2	Mean
S_1	167	206	300	225
S_2	187	241	150	193
Mean	177	224	225	209

C.D. for extra vs. others =52·8 Kg/ha.
C.D. for body of S×M table=69·2 Kg/ha.

Years	M_0	M_1	M_2	Sig.	S_1	S_2	Sig.	Control	G.M.	S.E./plot
1960	202	270	306	N.S.	300	219	N.S.	357	273	81·7
1961	102	121	100	N.S.	90	126	N.S.	134	112	65·0
1962	228	280	269	N.S.	284	234	N.S.	320	268	90·2
Pooled	177	224	225	N.S.	225	193	N.S.	270	217	84·8

Crop :- Cotton (*Rabi*). **Ref :- Ms. 63(113), 64(98), 65(102).**

Site :- Agri. Res. Stn., Naragund. **Type :- 'CM'.**

Object :—To study the effect of different methods of sowing and manuring on the yield of Cotton.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton. (c) As per treatments. (ii) Alkaline. (iii) 5.10.63; 23.9.64; 28.9.65. (iv) (a) Harrowing by country blade harrow. (b) As per treatments. (c) N.A. ; N.A.; 11 Kg/ha. (d) 76 cm.×76 cm.; 61 cm. between rows in 1964;61 cm. in lines for drilling and 30 cm.×61 cm. in dibbled plots (1965). (e) N.A. (v) Nil. (vi) *Jayadhar* (medium). (vii) Unirrigated. (viii) 2 interculturings by entire hoe (1963) and (1965) ; 2 hand weedings and 3 interculturings for 64. (ix) 58 cm.; N.A., 37 cm. (x) 9.2.64; 8.3.65 to 8.4.65; 23.2.66 and 13.3.66.

2. TREATMENTS :

9 cultural and manurial treatments : T_1=Sowing 61 cm. apart by drilling, T_2=Sowing 61 cm. apart by dibbling, T_3=T_1+12·4 C.L./ha. of F.Y.M., T_4=T_2+12·4 C.L./ha. of F.Y.M., T_5=T_1+NPK equivalent to 12·4 C.L./ha. of F.Y.M., T_6=T_2+NPK equivalent to 12·4 C.L./ha. of F.Y.M., T_7=T_1+12·4 C.L./ha. of F.Y.M.+22·4 Kg/ha. of N+22·4 Kg/ha. of P_2O_5, T_8=T_2+12·4 C.L./ha. of F.Y.M.+56 Kg/ha. of Sulphur +11·2 Kg/ha. of N+11·2 Kg/ha. of P_2O_5 and T_9=T_2+12·4 C.L./ha. of F.Y.M.+11·2 Kg/ha. of N+11·2 Kg/ha. of P_2O_5+125·5 Q/ha. of sand.

3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 7·6 m.×7·6 m. (b) 6·1 m.×6·1 m. (vi) 76 cm.×76 cm. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Plant height, boll count and *kapas* yield. (iv) (a) 1960—N.A. (b) Yes. (c) As under 5. Results. (v) N.A. (vi) Nil. (vii) Yield of *kapas* for T_1 to T_6 given for 1963 only.

5. RESULTS :

63(113)

(i) 334 Kg/ha. (ii) 73·1 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of *kapas* in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_7
Av. yield	370	217	311	323	466	254

C.D.=106·7 Kg/ha.

64(98)

(i) 339 Kg/ha. (ii) 138·2 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of *kapas* in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9
Av. yield	244	389	194	248	431	486	392	345	324

65(102)

(i) 147 Kg/ha. (ii) 60·4 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of *kapas* in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9
Av. yield	123	172	118	187	156	124	108	182	150

Crop :- Cotton (*Rabi*). **Ref :- Ms. 62(61), 64(30).**

Site :- Agri. Res. Stn., Siruguppa. **Type :- 'CM'.**

Object :—To determine the suitable dates of sowing and spacing and their interaction with fertilizer application.

1. BASAL CONDITIONS :

(i) (a) *Jowvr*—Cotton. (b) *Jowar*. (c) 125·6 Q/ha. of F.Y.M.+44·8 Kg/ha. of N as A/S+22·4 Kg/ha. of P_2O_5 as Super. (ii) Deep black cotton soil ; deep black soil. (iii) As per treatments. (iv) (a) Working with hire kunte and ridger and sarma kunte in 62 and 64; Ploughing with victory plough in 64. (b) Dibbling. (c) N.A.; 10 Kg/ha. (d) As per treatments. (e) N.A.; 2. (v) 56·0 Kg/ha of P_2O_5 as Super+56 0 Kg/ha. of K_2O as Pot. Sul. applied before dibbling the seeds. (vi) *Laxmi*. (vii) Irrigated. (viii) 2 weedings, working with cultivation and ridger. (ix) 50 cm.; 29 cm. (x) 25.3.63; 2.2.65 to 9.4.65.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2)

(1) 3 dates of sowing : D_1=1st August, D_2=15th August and D_3=30th August.

(2) 3 spacings : S_1=23 cm., S_2=30 cm. and S_3=38 cm.

Sub-plot treatments :

3 levels of N : N_0=0. N_1=56·0 and N_2=112·1 Kg/ha.

3. DESIGN :

(i) Split-plot. (ii) (a) 9 main-plots/replication; 3 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a) 1/198 ha. (b) 1/247 ha. (v) 1 row on either side. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Jassids were noticed. Endrine was sprayed to control them. Red leaf blight was also noticed during the crop growth. (iii) No. of first opened bolls, good and bad boll opening, final population counts and *kapas* yield. (iv) (a) 1962 to 64 (Treatments were modified in 63). (b) No. (c) As under 5. Resuts. (v) N.A. (vi) Nil. (vii) Dates of sowing in 1963 differ. It has not taken into consideration while pooling. Main plot error variances for the years 1962 and 64 are homogeneous. Main-plot Treatments × years interaction is absent and sub-plot error variances are homogeneous.

5. RESULTS :

62(61)

(i) 765 Kg/ha. (ii) (a) 325·4 Kg/ha. (b) 148·3 Kg/ha. (iii) Main effect of N alone is significant. (iv) Av. yield of *kapas* in Kg/ha.

	D_1	D_2	D_3	N_0	N_1	N_2	Mean
S_1	773	707	769	709	865	675	749
S_2	1033	781	724	788	947	803	846
S_3	779	825	494	672	751	675	699
Mean	861	771	662	723	855	718	765
N_0	773	709	687				
N_1	974	850	739				
N_2	838	754	561				

C.D. for N marginal means=103·8 Kg/ha.

64(30)

(i) 1162 Kg/ha. (ii) (a) 114·8 Kg/ha. (b) 94·4 Kg/ha. (iii) Main effects of D and N are highly significant. Main effect of S and interactions D×N and D×S×N are significant. (iv) Av. yield of *kapas* in Kg/ha.

	D_1	D_2	D_3	N_0	N_1	N_2	Mean
S_1	1296	1174	1131	1007	1205	1386	1200
S_2	1313	1176	1084	973	1330	1270	1191
S_3	1278	1071	934	918	1152	1213	1094
Mean	1296	1141	1050	966	1229	1291	1162
N_0	1064	966	868				
N_1	1310	1192	1185				
N_2	1513	1263	1096				

C.D. for D or S marginal means =88.3 Kg/ha.
C.D. for N marginal means =66·2 Kg/ha.
C.D. for two N means at the same level of D=114·5 Kg/ha.
C.D. for two D means at the same level of N=128·4 Kg/ha.

Crop :- Cotton. (*Rabi*). **Ref :- Ms. 63(141).**

Site :- Agri. Res. Stn., Siruguppa. **Type :- 'CM'.**

Object :—To determine suitable dates of sowing and spacing and their relation with fertilizer application.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) *Jowar*. (c) 125·5 Q/ha. of F.Y.M.+44·8 Kg/ha. of N as A/S+22·4 Kg/ha. of P_2O_5 as Super. (ii) (a) Medium black. (b) N.A. (iii) As per treatments. (iv) (a) 2 ploughings, once harrowing, formed ridges. (b) Hand dibbling. (c) 11 Kg/ha. (d) As per treatments. (e) 2. (v) 56 Kg/ha. of P_2O_5+56 Kg/ha. of K_2O mixed and applied through seed drill before sowing. (vi) *Laxmi*. (vii) Irrigated. (viii) Thinning and weeding and working with cultivator. (ix) 44 cm. (x) 17.2.64 to 26.3.64.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2)

(1) 3 dates of sowing : D_1=10.8.1963, D_2=20.8.63 and D_3=30.8.1963.

(2) 3 spacings : S_1=23 cm., S_2=30 cm. and S_3=38 cm.

Sub-plot treatments :

3 levels of N as A/S : N_0=0, N_1=56·0 and N_2=112·1 Kg/ha.

3. DESIGN :

(i) Split-plot. (ii) (a) 9 main-plots/replication, 3 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a) 9·1 m. ×5·5 m. (b) 6·7 m.×4·9 m. (v) 122 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Bad boll opening more. (ii) Aphids, jassids, thrips and black arm—sprayed with Endrine six times. (iii) Yield and boll count. (iv) (a) 1962-64. (b) No. (c) Nil. (v) Dharwar. (vi) Nil. (vii) Sowing dates differ in 1963.

5. RESULTS :

(i) 495 Kg/ha. (ii) (a) 166·4 Kg/ha. (b) 142·5 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of *kapas* in Kg/ha.

	S_1	S_2	S_3	N_0	N_1	N_2	Mean
D_1	526	524	447	421	550	526	499
D_2	581	510	493	532	535	517	528
D_3	451	505	420	501	479	396	459
Mean	519	513	453	485	521	480	495
N_0	519	509	426				
N_1	525	550	489				
N_2	514	479	445				

Crop :- Cotton (*Rabi*). **Ref :- Ms. 61 to 63 (M.A.E.).**

Site :- M.A.E. Centre, Gangavati. **Type :- 'CM'.**

Object :—Type (viii) : To study the effect of cultural practices along with different levels of N and P on the yield of Cotton.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Bengal Gram for 61. N.A. for other years. (c) 11·2 Kg/ha. of N as A/S for 61. N.A. for other years. (ii) Medium black. (iii) As per treatments. (iv) (a) 1 ploughing and 4 harrowings. (b) Dibbling. (c) As per treatments. (d) N.A. (e) Nil. (v) 5604 Kg/ha. of F.Y.M. (vi) *Laxmi*. (vii) Irrigated. (viii) 2 weedings and 2 hoeings. (ix) N.A. (x) 4 pickings from 18.1.62 to 22.3.62 ; N.A. ; 4.2.64.

2. TREATMENTS :

Main-plot treatments :
All combinations of (1) and (2)

(1) 3 dates of sowing : D_1=Early, D_2=Normal and D_3=Late.

(2) 3 seed rates : S_1=56·0, S_2=78·4 and S_3=100·9 Kg/ha.

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) 9 main-plots/replication and 9 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a) and (b) N.A. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Continuously attacked by Aphids and Thrips, sprayings with Folidol. (iii) Yield of *kapas*. (iv) (a) 1961-63. (b) N.A. (c) N.A. (v) Nil. (vi) N.A. (vii) P marginal means are N.A.

5. RESULTS :

61(MAE)

(i) 926. (ii) (a) aud (b) N.A. (iii) Main effects of D, S and N are significant. (iv) Av. yield of *kapas* in Kg/ha.

Treatment	S_1	S_2	S_3	D_1	D_2	D_3	N_0	N_1	N_2
Mean yield	1035	885	858	1177	946	655	855	990	933

62(MAE)

(i) 714 Kg/ha. (ii) (a) and (b) N.A. (iii) Main effects of D, S and N are significant. (iv) Av. yield of *kapas* in Kg/ha.

Treatment	S_1	S_2	S_3	D_1	D_2	D_3	N_0	N_1	N_2
Mean yield	866	615	663	692	899	553	642	757	744

63(MAE)

(i) 597 Kg/ha. (ii) (a) and (b) N.A. (iii) Main effects of D and N are significant. (iv) Av. yield of *kapas* in Kg/ha.

Treatment	S_1	S_2	S_3	D_1	D_2	D_3	N_0	N_1	N_2
Mean yield	643	616	532	697	588	506	494	629	668

Crop :- Cotton (*Rabi*). **Ref :- Ms. 61(74), 62(58), 63(37).**

Site :- Agri. Res. Stn., Siruguppa. **Type :- 'I'.**

Object :—To study the effect of time and freqnency of irrigation with respect to yield of Cotton.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) *Jowar*. (c) 125·6 Q/ha. of F.Y.M.+44·8 Kg/ha. of N+22·4 Kg/ha. of P_2O_5 in 1961 and 1963 ; 24·7 C.L./ha. of F.Y.M.+44·8 Kg/ha. of N+22·4 Kg/ha. of P_2O_5 in 1962. (ii) Black cotton soil. (iii) 27.8.1961 ; 14.8.1962 ; 20.8.1963. (iv) (a) Ploughing, harrowing and passing ridger in 1961, 1963, 3 harrowings in 1962. (b) Dibbling. (c) 7 Kg/ha. in 1961 ; 10 Kg/ha. in 1962 ; 8 to 10 Kg/ha. in 1963. (d) 46 cm. between rows in 1961 ; 61 cm.×30 cm. in 1962 ; 69 cm.×30 cm. in 1963. (e) N.A. in 1961, 1962 and 1 in 1963. (v) 125·6 Q/ha. of F.Y.M.+44·8 Kg/ha. of N+22·4 Kg/ha. of P_2O_5. (P_2O_5 and F.Y.M. as basal dose, N in two split doses ½ at sowing and ½ at 40 days after sowing). (vi) *Laxmi*. (vii) As per treatments. (viii) Earthing and weeding in 1961 ; weeding, thinning and intercultivation in 1962 ; weeding, passing cultivator and ridger in 1963. (ix) 24 cm. ; 54 cm. ; 27 cm. (x) 22.1.1962 to 14.3.1962 ; 29.1.1963 to 9.4.1963 ; 3.2.1964 to 9.3.1964.

2. TREATMENTS:

Main-plot treatments :

4 irrigations : I_0=control (no irrigation), I_1=7, I_2=9 and I_3=12 irrigations.

Sub-plot treatments :

3 last dates of irrigation : D_1=15th December, D_2=1st Jan. and D_3=15th Jan.

4. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication, 3 sub-plots/main-plot. (b) N.A. ; 15.5 m.×7·3 m. ; N.A. (iii) 3 ; 4 ; 4. (iv) (a) 9·6 m.×7·3 m. ; 8·2 m.×7·3 m. ; 9·1 m.×5·5 m. (b) 6·9 m.×6·7 m. ; 6·1 m.×5·5 m. 6·1 m.×4·1 m. (v) 137 cm.×30 cm ; 137 m.×61 cm ; 152 cm.×69 cm. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Incidence of thrips and red leaf blight disease observed in 1961. Attack of Jassids and aphids, severe attack of thrips in 1962. Severe attack of aphids in 1963. Thrips and jassids also noticed. Black worm and red leaf blight disease also observed. Control measure taken by syraying endrine. (iii) Height and breadth of the plant, yield of *kapas*. (iv) (a) 1961—N.A. (b) No. (c) As under 5. Results. (v) and (vi) Nil. (vii) Both the error variances are heterogeneous.

5. RESULTS :

61(74)

(i) 1289 Kg/ha. (ii) (a) 176·6 Kg/ha. (b) 157·0 Kg/ha. (iii) Control vs. irrigation effect is highly significant. (iv) Av. yield of *kapas* in Kg/ha.

Control=1163 Kg/ha.

	I_1	I_2	I_3	Mean
D_1	1378	1318	1414	1370
D_2	1540	1432	1258	1410
D_3	1394	1368	1384	1382
Mean	1437	1373	1352	1387

C. D. for the comparison of control vs. irrigations=133·2 Kg/ha.

62(58)

(i) 976 Kg/ha. (ii) (a) 144·1 Kg/ha. (b) 168·9 Kg/ha. (iii) Main effect of I alone is highly significant. (iv) Av. yield of *kapas* in Kg/ha.

Control=937 Kg/ha.

	I_1	I_2	I_3	Mean
D_1	953	1071	864	1001
D_2	1079	1136	782	1172
D_3	971	1308	733	793
Mean	1001	1172	1004	976

C. D. for I marginal means=181·1 Kg/ha.

63(37)

(i) 486 Kg/ha. (ii) (a) 184·4 Kg/ha. (b) 107·3 Kg/ha. (iii) Control vs. irrigation effect is highly significant. (iv) Av. yield of *kapas* in Kg/ha.

Control=333 Kg/ha.

	I_1	I_2	I_3	Mean
D_1	525	497	573	532
D_2	475	492	464	477
D_3	470	479	549	494
	490	489	529	503

C. D. for the comparison of control vs. irrigations=139·0 Kg/ha.

Crop :- Cotton. **Ref :- Ms· 60(276).**

Site :- Agri. Res. Stn., Arbhavi. **Type :- 'IM'.**

Object :—To find out optimum water and manurial requirements for Cotton under irrigated condition.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Gram. (b) Gram. (c) 22·4 Kg/ha. of N as A/S+22·4 Kg/ha. of P_2O_5 as Super. (ii) Black mixed kirl (alkaline). (iii) 30.5.60. (iv) (a) Ploughing and harrowing. (b) Dibbling. (c) 9 Kg/ha, (d) 91 cm.×91 cm. (e) 3 to 4 seeds/hill, thinned to one. (v) 12·4 C.L./ha. of F.Y.M. spread and mixed by harrowing. (vi) 170 CO_2 (9 month duration). (vii) As per treatments. (viii) Intercultivation by blade hoe and hand weeding. (ix) 58 cm. (x) 26.10.60 to 8.4.61.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 irrigation levels : I_1=6·4 ha. cm. and I_2=8·9 ha. cm.

(2) 5 manurial treatments : M_0=No manure, M_1=33·6 Kg/ha. of N as A/S and G.N.C. in 1 : 2 ratio ; M_2=M_1+16·8 Kg/ha. of P_2O_5 as Super+16·8 Kg/ha. of K_2O as Pot. Sul. ; M_3=Twice of M_1 and M_4=Twice of M_2,

1st dose : ½ N+full dose of P_2O_5 and K_2O 3 weeks after planting.
2nd dose : Rest of N, 8 weeks after planting.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 10. (b) N.A. (iii) 3. (iv) (a) 9·1 m.×7·3 m. (b) 7·3 m.×5·5 m. (v) One row alround. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) *kapas* yield. (iv) (a) 1959—N.A. (b) Yes. (c) Nil. (v) to (vi) Nil.

5. RESULTS :

(i) 1966 Kg/ha. (ii) 271·9 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of *kapas* in Kg/ha.

	M_0	M_1	M_2	M_3	M_4	Mean
I_1	1907	1994	2182	2049	1772	1981
I_2	1884	1985	2058	1987	1837	1950
Mean	1896	1990	2120	2018	1804	1966

Crop :- Cotton (*Rabi*). **Ref :- Ms. 60(124).**

Site :- Agri. Res. Stn., Dhadesauger. **Type :- 'IM'.**

Object :— To study the N, P and irrigation requirements for *Laxmi* Cotton to get maximum yield.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) *Jowar*. (c) N.A. (ii) Medium black soil. (iii) 26 and 27.8.1960. (iv) (a) Ploughing with victory plough and country harrow. (b) Dibbling. (c) N.A. (d) 61 cm.×30 cm. (e) 2 to 3. (v) N.A. (vi) *Laxmi*. (vii) As per treatments. (viii) 2 to 3 hand weedings. (ix) 36 cm. (x) 6 to 29.3.1961.

2. TREATMENTS :

Main-plot treatments :

4 levels of irrigation : I_0=0, I_1=3, I_2=6 and I_3=9 irrigations.

Sub-plot treatments :

(1) 5 levels of N as A/S : N_0=0, N_1=22·4, N_2=44·8, N_3=67·2 and N_4=89·7 Kg/ha.

(2) 5 levels of P_2O_5 as Super : P_0=0, P_1=11·2, P_2=22·4, P_3=33·6 and P_4=44·8 Kg/ha.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 25 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a) and (b) 6·1 m.×6·0 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) There was severe attack of red leaf, thrips, jassids and aphids—controlled by spraying and folidol and Endrex. (iii) *Kapas* yield. (iv) (a) to (c) N.A. (v) N.A. (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 624 Kg/ha. (ii) (a) 141 5 Kg/ha. (b) 166·5 Kg/ha. (iii) Main effect of I, N and P are highly significant. (iv) Av. yield of *kapas* in Kg/ha.

	P_0	P_1	P_2	P_3	P_4	N_0	N_1	N_2	N_3	N_4	Mean
I_0	354	349	369	393	340	359	347	395	365	338	361
I_1	532	580	636	635	696	514	669	682	619	596	616
I_2	554	739	705	837	837	644	655	881	741	752	735
I_3	581	718	864	886	883	629	675	836	906	884	786
Mean	505	596	644	688	689	536	587	699	657	642	624
N_0	378	551	573	611	569						
N_1	555	577	569	618	615						
N_2	545	683	724	811	730						
N_3	484	600	736	730	738						
N_4	564	572	616	668	793						

C.D. for I marginal means =90·1 Kg/ha.
C.D. for N or P marginal means =74·1 Kg/ha.

Crop :- Cotton. **Ref :- Ms. 61(101), 62(102).**

Site :- Agri. Res. Stn., Arbhavi. **Type :- 'IC'.**

Object :— To find out the best spacings and irrigation requirements for Cotton.

1. BASAL CONDITIONS :

(i) (a) Wheat, Gram—Cotton ; Cotton—*Jowar* and *Maize*. (b) Wheat and Gram ; *Jowar* and *Maize*. (c) 12·4 C.L./ha. of F.Y.M.+22·4 Kg/ha. of N+11·2 Kg/ha. of P_2O_5+11·2 Kg/ha. of K_2O. (ii) Black soil ; black mixed kirl. (iii) 10.6.1961 ; 10.6.1962. (iv) (a) 9 ploughings and harrowing. (b) and (c) N.A. (d) As per treatments. (e) N.A. (v) 12·4 C.L./ha. of F.Y.M. (vi) CO_2—170. (vii) As per treatments. (viii) 2 interculturings and 5 to 6 weedings. (ix) 32 cm. ; 63 cm. (x) 14.11.1961 to 2.4.1962 ; 17.11.1962 to 22.4.1963.

2. TREATMENTS :

Main-plot treaments :

3 intervals of irrigation : M_1=20, M_2=25 and M_3=30 days.

Sub-plot treatments :

All combinations of (1) and (2).

(1) 3 spacings : S_1=122 cm.×91 cm. ; S_2=122 cm.×122 cm. and S_3=91cm.×91 cm.

(2) 2 doses of irrigation : I_1=5 cm. and I_2=8 cm./turn.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 6 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 11·0× 7·3 m. (b) 7·3 m.×3·7 m. (v) 183 cm.×183 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Aphids, jassids, bollworm, controlled by spraying with folidol and endrine. (iii) Yield of *kapas*, (iv) (a) 1961 to 1963. (Design changed in 1963). (b) No. (c) Nil. (v) and (vi) Nil. (vii) Errors variances due to Main plot are heterogeneous, main-plot Treatments×years interactions is absent.

5. RESULTS:

61(101)

(i) 1736 Kg/ha. (ii) (a) 221·9 Kg/ha. (b) 234·9 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of *kapas* in Kg/ha.

	S_1	S_2	S_3	M_1	M_2	M_3	Mean
I_1	1881	1604	1683	1678	1656	1784	1706
I_2	1836	1769	1695	1611	1705	1982	1767
Mean	1833	1687	1690	1644	1680	1883	1736
M_1	1720	1742	1473				
M_2	1841	1574	1631				
M_3	1937	1745	1967				

62(102)

(i) 2006 Kg/ha. (ii) (a) 1654·6 Kg/ha. (b) 304·7 Kg/ha. (iii) Main effect of S alone is highly significant. (iv) Av. yield of *kapas* in Kg/ha.

	S_1	S_2	S_3	M_1	M_2	M_3	Mean
I_1	2100	1594	2368	1975	2094	1993	2021
I_2	1996	1502	2477	1794	2071	2110	1992
Mean	2048	1548	2423	1885	2082	2051	2006
M_1	1754	1499	2401				
M_2	2282	1692	2273				
M_3	2107	1453	2594				

C.D. for S marginal means=207·5 Kg/ha.

Crop .- Cotton (*Kharif*). **Ref :- Ms. 63(167).**

Site :- Agri. Res. Stn., Arbhavi. **Type :- 'IC'.**

Object :— To study the interval and depth of irrigation and spacing on the yield of Coteon.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) *Jowar*. (c) 56 Q/ha. of Farm compost+67·2 Kg/ha. of N+33·6 Kg/ha. of P_2O_5+33·6 Kg/ha. of K_2O. (ii) Black alkaline soil. (iii) 4.6.63. (iv) (a) Ploughing, harrowing and clod crushing. (b) Dibbiing. (c) 4·9 Kg/ha. (d) As per treatments. (e) 2. (v) 89·6 Q/ha. of F.Y.M.+33·6 Kg/ha. of N+16·8 Kg/ha. of P_2O_5+16·8 Kg/ha. of K_2O. (vi) 173 CO_2 (mid late). (vii) Irrigated. (viii) Interculturing and hand weeding. (ix) 40 cm. (x) April, 1964.

2. TREATMENTS :

Main-plot treatments :

3 intervals of irrigation : M_1=20, M_2=25 and M_3=30 days.

Sub-plot treatments :

3 spacings : S_1=122 cm.×91 cm. ; S_2=122 cm.×122 cm. and S_3=91 cm.×91 cm.

Sub-sub-plot treatments :

2 intensities of irrigations : I_1=12·5 cm. over a ha. and I_2=18·8 cm. over a ha.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 3 sub-plots/main-plot ; 2 sub-sub plots/sub-plot. (b) N.A. (iii) 3. (iv) (a) 11·0 m.×7·3 m. (b) 7·3 m.×3·7 m. (v) 182 cm.×182 cm. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of *Kapas*. (iv) (a) 1961 to 1963 (design modified in 1963). (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1096 Kg/ha. (ii) (a) 643·9 Kg ha. (b) 181·6 Kg/ha. (c) 243·6 Kg/ha. (iii) Main effect of S is highly significant. (iv) Av. yield of *Kapas* in Kg/ha.

	M_1	M_2	M_3	I_1	I_2	Mean
S_1	1083	980	1248	1054	1153	1104
S_2	937	883	1040	909	998	953
S_3	1114	1345	1234	1328	1133	1231
Mean	1045	1069	1174	1097	1095	1096
I_1	1022	1130	1140			
I_2	1068	1008	1207			

C.D. for S marginal means=131·8 Kg/ha.

Crop :- Cotton (*Rabi*). **Ref :- Ms. 60(84).**

Site :- Agri. Res. Stn., Gangavati. **Type :- 'IC'.**

Object :— To find out optimum time of sowing and the intervals of irrigation required for *Laxmi* Cotton.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) *Jowar*. (c) 12·4 C.L./ha. of F.Y.M. (ii) Light black soil. (iii) As per treatments. (iv) (a) 2 ploughings and 4 harrowings. (b) Dibbling. (c) N.A. (d) 91 cm.×61 cm. (e) N.A. (v) 12·4 C.L./ha. of F.Y.M. (vi) *Laxmi* (medium). (vii) As per treatments. (viii) 2 hand weedings and hoeing. (ix) N.A. (x) 15.2.61.

2. TREATMENTS :

Treatments in one direction :

10 sowing dates : D_1=2nd week of Oct. 1961, D_2=3rd week of Oct. 1961, D_3=4th week of Oct. 1961, D_4=1st week of Nov. 1961, D_5=2nd week of Nov. 1961, D_6=3rd week of Nov. 1961, D_7=4th week of Nov. 1961, D_8=1st week of Dec. 1961, D_9=2nd week of Dec. 1961 and D_{10}=3rd week of Dec. 1961.

Treatments in perpendicular direction :

5 irrigational treatments : I_0=No irrigation, I_1=3 irrigations at an interval of 30 days, I_2=4 irrigations at an interval of 21 days, I_3=6 irrigations at an interval of 15 days and I_4=8 irrigations at an interval of 10 days.

3. DESIGN :

(i) Strip-plot. (ii) (a) 10 strips in one direction ; 5 strips in orthogonal direction. (b) N.A. (iii) 2. (iv) (a) 8·5 m.×7·3 m. (b) 7·3 m.×6·7 m. (v) 61 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of *kapas*. (iv) (a) 1958-N.A. (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

5. RETULTS :

(i) 385 Kg/ha. (ii) (I) 51·2 Kg/ha. (D) 168·7 Kg/ha. (ID) N.A. (iii) Main effects of I and D are highly significant. (iv) Av. yield of *kapas* in Kg/ha.

	D_1	D_2	D_3	D_4	D_5	D_6	D_7	D_8	D_9	D_{10}	Mean
I_0	497	471	526	656	347	289	254	127	147	78	339
I_1	552	497	563	650	332	266	306	150	147	81	354
I_2	480	497	702	800	358	375	341	127	136	75	389
I_3	520	609	604	852	456	448	393	150	153	72	426
I_4	656	673	685	823	335	367	332	110	136	66	418
Mean	541	549	616	756	366	349	325	133	144	74	385

C.D. for I marginal means = 45·0 Kg/ha.

C.D. for D marginal means = 170·9 Kg/ha.

Crop :- Cotton (*Rabi*). **Ref :- Ms. 63(122), 64(204).**

Site :- Agri. Res. Stn., Bagalkot. **Type :- 'D'.**

Object :—To determine a suitable method of controlling weeds in Cotton.

1. BASAL CONDITIONS :

(I) (a) *Jowar*—Cotton. (b) *Jowar*. (c) Nil. (ii) Medium black cotton soil; black soil. (iii) 25.9.63; 2.9.64. (iv) (a) 2 ploughings and cross ploughing (1963); Ploughing and harrowing (1964). (b) Dibbled in furrows. (c) N.A. (1963); 7·4 Kg/ha. (1964). (d) N.A. (e) N.A.; 1. (v) 62·8 Q/ha. of F.Y.M. ; Nil. (vi) *Jayadhar*. (vii) Unirrigated. (viii) 3 intercultivations (1963); weeding and interculturing (1964). (ix) 33 cm.; 61 cm. (x) 29.3.64; N.A.

2. TREATMENTS :

5 weedicidal treatments : W_0=Unweeded (control), W_1=Local method of weeding, W_2=Pre-emergence application of weedicides, W_3=Pre-emergence application of weedicides+cultural method of weeding and W_4=Cultural method of weeding (twice with implements and once hand weeding).

Weedicides used : Fermoxon applied at 0·68 Kg. equivlent in 302·8 litres of water.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 8·5 m.×4·9 m. (v) 2 rows alround. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of *kapas*. (iv) (a) 1963 to 66. (Expt. for 1965 N.A.) (b) No. (c) Nil. (v) Gadag and Dharwar. (vi) Nil. (vii) Error variances are heterogeneous. Treatments×years interaction is absent.

5. RESULTS :

63(122)

(i) 588 Kg/ha. (ii) 141·2 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of *kapas* in Kg/ha.

Treatment	W_0	W_1	W_2	W_3	W_4
Av. yield	606	540	599	558	639

64(204)

(i) 338 Kg/ha. (ii) 68.3 Kg ha. (iii) Treatment differences are not significant. (iv) Av. yield of *kapas* in Kg/ha.

Treatment	W_0	W_1	W_2	W_3	W_4
Av. yield	379	325	278	356	354

Crop :- Cotton (*Rabi*). **Ref :- Ms. 65(2).**

Site :- Soil Cons. Res. Farm, Bellary. **Type :- 'D'.**

Object :—To study the effect of "Benedyne" a plant growth stimulant on physical conditions of the soil and nutrient release for plant of growth.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton. (c) 5000 Kg/ha. of F.Y.M. (ii) Deep black cotton soil. (iii) 24.9.65. (iv) (a) Ploughing and light harrowing. (b) Dibbling by the dibbler 5 to 6 cm. below surface. (c) N.A. (d) 30 cm. ×30 cm. (e) 1. (v) 50 Kg/ha. of N+50 Kg/ha. of P_2O_5 (with harrow on 18.8.65). (vi) P.R.S.—72 (early). (vii) Unirrigated. (viii) Weeding and hoeing. (ix) 67 cm. (x) 1.2.66.

2. TREATMENTS :

5 sprayings of Benedyne : T_0=Control (water sprayed), T_1=142 g ., T_2=284 gm., T_3=426 gm. nnd T_4=568 gm. of Benedyne in 22·7 litres of water/plot.

3. DESIGN :

(i) R.B.D. (*ii*) (a) 5. (b) 15·2 m.×0·6 m. (iii) 5. (iv) (a) and (b) 3·1 m.×0·6 m. (v) Nil. (vi) Yes.

4. GENERAL ;

(i) Abnormal. (ii) Nil. (iii) *Kapas* yield. (iv) (a) and (b) No. (c) Nil. (v) N.A. (vi) Crop affected by drought. (vii) Nil.

5. RESULTS :

(i) 271 Kg/ha. (ii) 61·4 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	234	224	316	350	230

C.D.=82·4 Kg/ha.

Crop :- Cotton (*Rabi*). **Ref :- Ms. 62(271).**

Site :- Agri. Res. Stn., Dharwar. **Type :- 'D'.**

Object :—To find out an effective insecticide for control of various Cotton pests.

1. BASAL CONDITIONS :

(i) (a) *Jowar*-- Cotton. (b) *Jowar*. (c) 12·4 C.L./ha. of F.Y.M. (ii) Black soil. (iii) 11.8.62. (iv) (a) Ploughing and harrowing 2 to 3 times. (b) Hand dibbling. (c) 10 to 12 Kg/ha. (d) 61 cm.×31 cm. (e) 1. (v) Nil. (vi) *Laxmi* (vii) Unirrigated. (viii) Intercultivation by implements. (ix) 48 cm. (x) 5.4.63.

2. TREATMENTS:

6 sprayings of insecticides : T_0=Control without water, T_1=Control with water, T_2=Sevin at 0·02%, T_3= D.D.T. at 0·1%+B.H.C. at 0·1%, T_4=Endrine at 0·02% and T_5=Parathion at 0·03%.

Spraying of insecticides once in 10 days (8 sprays).

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) 1/8 ha. (iii) 5. (iv) (a) and (b) 1/247 ha. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Aphids, Jassids, Thrips, Mite and Boll worm. Control measures as per treatments. (iii) Yield of *kapas*. (iv) (a) 1962—Contd. (Treatments modified every year). (b) No. (c) Nil. (v) Hagari and Gadag. (vi) Nil. (vii) N.A.

5. RESULTS :

(i) 425 Kg/ha. (ii) 53·7 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	T_5
Av. yield	345	247	577	437	479	464

C.D.=70·8 Kg/ha.

Crop :- Cotton (*Rabi*). **Ref :- Ms. 63(228).**

Site :- Agri. Res. Stn., Dharwar. **Type :- 'D'.**

Object :—To find out an effective insecticide for control of various Cotton pests.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) *Jowar*. (c) N.A. (ii) Black soil. (iii) 11.8.63. (iv) (a) Ploughing and harrowing 2 to 3 times. (b) Hand dibbling. (c) 10 to 12 Kg/ha. (d) 61 cm.×31 cm. (e) 1. (v) Nil. (vi) *Laxmi*. (vii) Unirrigated. (viii) Intercultivation by implements. (ix) 27 cm. (x) N.A.

2. TREATMENTS :

6 sprayings of insectides : T_0=Control (no insecticide), T_1=Carbaryl 0·2%, T_2=D.D.T. 0·1%+B.H.C. 0·1%, T_3=Endrine 0·02%, T_4=Parathion 0·03% and T_5=Control with water.

Insecticides sprayed once in 10 days.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 5. (iv) (a) and (b) 1/247 ha. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Aphids, Jassids, Thrips, Mites and Boll worm. Control measures as per treatments. (iii) Yield of *kapas*. (iv) (a) 1962—Contd. (Treatments modified every year). (b) No. (c) Nil. (v) Hagari. (vi) and (vii) N.A.

5. RESULTS :

(i) 408 Kg/ha. (ii) 64·2 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of *kapas* in Kg/ha.

T reatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. yield	275	1102	263	214	298	296

C.D.=84·7 Kg/ha.

———

Crop :- Cotton. **Ref :- Ref :- Ms. 64(197).**

Site :- Agri. Res. Stn., Dharwar. **Type :- 'D'.**

Object :—To find out an effective insecticide for controlling various Cotton pests.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) *Jowar*. (c) N.A. (ii) Black soil. (iii) N.A. (iv) (a) Ploughing and 2 to 3 harrowings. (b) Hand dibbling. (c) 10 to 12 Kg/ha. (d) 61 cm.×31 cm. (e) One. (v) Nil. (vi) *Laxmi*. (vii) Unirrigated. (viii) Interculturing by implements. (ix) 61 cm. (x) N.A.

2. TREATMENTS :

6 insecticides : T_0=Control, T_1=Carbaryl 0·2 %, T_2=Endrine 0·02%, T_3=Parathion 0·03% replaced by Endrine 0·02%, T_4=Theometon 0·05% replaced by Endrine 0·02% and T_5=D.D.T. 0·1% +B.H.C. 0·1%.

Spraying once in 10 days.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) and (b) 1/197·7 ha. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Aphids, Jassids, Thrips, Mites etc. Control measures as per treatments. (iii) Yield of *kapas*. (iv) (a) 62—contd. (Treatments modified every year). (b) No. (c) Nil. (v) Hagari and Gadag. (vi) and (vii) N.A.

5. RESULTS :

(i) 973 Kg/ha. (ii) 167·7 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	T_5
Av. yield	666	1205	1034	1188	1007	736

C.D.=226·0 Kg/ha.

———

Crop :- Cotton (*Rabi*). **Ref :- Ms. 62(272).**

Site :- Agri. Res. Stn., Dharwar. **Type :- 'D'.**

Object :—To find out an effective insecticide for control of various Cotton pests like Aphids, Jassids and Thrips.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) *Jowar*. (c) 12·4 C.L./ha. of F.Y.M. (ii) Black soil. (iii) 11.8.62. (iv) (a) Ploughing and harrowing 2 to 3 times. (b) Hand dibbling. (c) 10 to 12 Kg/ha. (d) 61 cm. between rows and 31 cm. within plants. (e) One. (v) Nil. (vi) *Laxmi* Cotton. (vii) Unirrigated. (viii) Inter-cultivation by implements. (ix) 48 cm. (x) 5.4.63

2. TREATMENTS :

6 insecticides : T_0=Control without water, T_1=Control with water, T_2=Sevin 0·02%, T_3=D.D.T. 0·1%+ B.H.C. 0·1%, T_4=Endrine 0·02% and T_5=Parathion 0·03%.
Spray once in 15 days (7 sprays).

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) ¼ha. (iii) 5. (iv) (a) and (b) 1/247 ha. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Aphids, Jassids, Thrips, Mite—control measures as per treatments. (iii) *Kapas* yield. (iv) (a) 1962 only. (b) No. (c) Nil. (v) Hagari. (vi) and (vii) N.A.

5. RESULTS :

(i) 698 Kg/ha. (ii) 42·5 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	T_5
Av. yield	409	483	949	738	882	729

C.D.=56·1 Kg/ha.

———

Crop :- Cotton (*Rabi*). **Ref :- Ms. 63(229).**

Site :- Agri. Res. Stn., Dharwar. **Type :- 'D'.**

Object :—To find out an effective insecticide for control of various Cotton pests.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) *Jowar*. (c) N.A. (ii) Black soil. (iii) 11.8.63. (iv) (a) Ploughing and 2 to 3 harrowings. (b) Hand dibbling. (c) 10 to 12 Kg/ha. (d) 61 cm.×30 cm. (e) One. (v) Nil. (vi) *Laxmi*. (vii) Unirrigated. (viii) Intercultivation by implements. (ix) 27 cm. (x) N.A.

2. TREATMENTS :

6 insecticides : T_0=Control (no insecticide), T_1=Control with water, T_2=Carbaryl 0·2%, T_3=D.D.T. 0·1%+B.H.C. 0·1% and T_4=Parathion 0·03%.
Insecticides sprayed once in 15 days.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 5. (iv) (a) and (b) 1/247 ha. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Aphids, Thrips, Jassids, Mites and Boll worm. (iii) *Kapas* yield. (iv) (a) 62. (b) No. (c) Nil. (v) Hagari. (vi) Nil. (vii) N.A.

5. RESULTS :

(i) 370 Kg/ha. (ii) 59·3 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	T_4	T_5
Av. yield	210	336	836	289	258	290

C.D.=78·2 Kg/ha.

———

Crop :- Cotton (*Rabi*). **Ref :- Ms. 64(193).**

Site :- Agri. Res. Stn., Dharwar. **Type :- 'D'.**

Object :—To find out an effective insecticide that can control various Cotton pests.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) *Jowar*. (c) N.A. (ii) Black soil. (iii) 13, 14.8.1964. (iv) (a) Ploughing and 2 to 3 harrowings. (b) Hand dibbling. (c) 10 to 12 Kg/ha. (d) 61 cm.×30 cm. (e) One. (v) Nil. (vi) *Laxmi*. (vii) Unirrigated. (viii) Intercultivation by implements. (ix) 51 cm. (x) N.A.

2. TREATMENTS :

7 insecticides : T_0=Control, T_1=Control with water, T_2=Carbaryl 0·2%, T_3=Endrine 0·2%, T_4=D.D.T. 0·1% +B.H.C. 0·1 %, T_5=Parathion 0·03% and T_6=Thiometon 0·05%.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 5. (iv) (a) and (b) 1/198 ha. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Aphids, Mites, Thrips, Boll worm and Jassids—Control measures as per treatments. (iv) (a) 62. (b) No. (c) Nil. (v) N.A. (vi) Nil. (vii) N.A.

5. RESULTS :

(i) 710 Kg/ha. (ii) 110·4 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	T_5	T_6
Av. yield	704	634	801	768	668	631	766

———

Crop :- Cotton (*Rabi*). **Ref :- Ms. 62(273).**

Site :- Agri. Res. Stn., Dharwar. **Type :- 'D'.**

Object :— To find out an effective insecticide for control of various Cotton pests.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) *Jowar*. (c) 12·4 Q/ha. of F.Y.M. (ii) Black soil. (iii) 11.8.62. (iv) (a) Ploughing and 2 to 3 times harrowing. (b) Hand dibbling. (c) 10 to 12 Kg/ha. (d) 61 cm. between rows and 30 cm. within plants. (e) One. (v) Nil. (vi) *Laxmi*. (vii) Unirrigated. (viii) Intercultivation by implements. (ix) 48 cm. (x) 5.4.63.

2. TREATMENTS :

6 insecticides : T_0=Control without water, T_1=Control with water, T_2=Sevin 0·02%, T_3=D.D.T. 0·1% +B.H.C. 0·1%, T_4=Endrine 0·02% and T_5=Parathion 0·03%.

Spraying once in 20 days (6 sprays).

3. DESIGN :

(i) R.B D. (ii) (a) 6. (b) 1/8 ha. (iii) 5. (iv) 1/247 ha. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Aphids, Jassids, Thrips, Mites and bollworm. Control measures as per treatments. (iii) *Kapas* yield. (iv) (a) 1962—64. (Treatments modified every year). (b) No. (c) Nil. (v) Hagari. (vi) and (vii) N.A.

5. RESULTS :

(i) 548 Kg/ha. (ii) 49·2 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	T_5
Av. yield	366	370	774	597	651	532

C.D.=64·9 Kg/ha,

Crop :- Cotton (*Rabi*). **Ref :- Ms. 63(230).**

Site :- Agri. Res. Stn., Dharwar. **Type :- 'D'.**

Object :— To find out an effective insecticide for control of various Cotton pests.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) *Jowar*. (c) N.A. (ii) Black soil. (iii) 11.8.1963. (iv) (a) Ploughing and 2 to 3 times harrowings. (b) Hand dibbling. (c) 10 to 12 Kg/ha. (d) 61 cm.×30 cm. (e) One. (v) Nil. (vi) *Laxmi*. (vii) Unirrigated. (viii) Interculturing by implements. (ix) 27 cm. (x) N.A.

2. TREATMENTS:

6 insecticides : T_0=Control, T_1=Control with water, T_2=Carboryal 0·2%, T_3=D.D.T. 0·1%+B.H.C. 0·1%, T_4=Endrine 0·02% and T_5=Parathion 0·03%,

Spraying once in 20 days.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 5. (iv) (a) and (b) 1/247 ha. (v) Nil. (vi) N.A.

4. GENERAL :

(i) Fair. (b) Aphids, Jassids, Thrip-Mites and Bollworm etc. Control measures as per treatments. (iii) Yield of *kapas*, (iv) (a) 1962—64 (treatments modified every year). (b) No.(c) Nil. (v) Hagari. (vi) Nil. (vii) N.A.

5. RESULTS :

(i) 389 Kg/ha. (ii) 96·4 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
Av. yield	271	315	846	311	313	275

C.D·=127·1 Kg/ha.

Crop :- Cotton (*Rabi*). **Ref :- Ms. 64(194).**

Site :- Agri. Res. Stn., Dharwar. **Type :- 'D'.**

Object :— To find out an effective insecticide that can control various Cotton pests.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) *Jowar*. (c) N.A. (ii) Black soil. (iii) 13, 14.8.1964. (iv) (a) Ploughing and harrowing 2 to 3 times. (b) Hand dibbling. (c) 10 to 12 Kg/ha. (d) 61 cm.×30 cm. (e) one. (v) Nil. (vi) *Laxmi*. (vii) Unirrigated. (viii) Interculturing by implements. (ix) 51 cm. (x) N.A.

2. TREATMENTS :

8 insecticides : T_0=Control, T_1=Control with water, T_2=Carbaryl 0·2%, T_3=Endrine=0·02%, T_4=D.D.T. 0·1%+B.H.C. 0·1%, T_5=Parathion 0·03%, T_6=Thiometion 0·05% and T_7=Carbaryl 10% dust (22·4 Kg/ha).

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 5. (iv) (a) and (b) 1/197·7 ha. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Aphids, Jassids, Thrips, Mites and Bollworm. Control measures as per treatments. (iii) *Kapas* yield. (iv) (a) 1962—64 (Treatments midified every year). (b) No. (c) Nil. (v) N.A. (vi) Nil. (vii) N.A.

5. RESULTS:

(i) 850 Kg/ha. (ii) 181·3 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	T_4	T_5	T_6	T_7
Av. yield	645	748	1208	880	724	781	864	946

C.D.=234·6 Kg/ha.

Crop :- Cotton (*Rabi*). **Ref :- Ms. 62(68).**

Site :- Agri. College Farm, Dharwar. **Type :- 'D'.**

Object :— To study suitable method of weed control for Cotton.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*. (b) *Jowar*, (c) N.A. (ii) Medium black. (iii) 6.9.62. (iv) (a) 2 ploughings and 3 harrowings. (b) to (e) N.A. (v) Nil. (vi) *Jayadhar*. (vii) Unirrigated. (viii) As per treatments. (ix) 6 cm. (x) 17.3.63 to 7.4.63.

2. TREATMENTS :

5 weedicidal treatments : W_0=Unweeded control, W_1=Local type of weeding (by hand and implements), W_2=Pre-emergence application of weedicide, W_3=Pre-emergence application of weedicide+cultural method of weeding (once with implements and once hand weeding) and W_4=Cultural methods of weeding (twice with implements and once hand weeding).

Formance 2, 4-D applied at 1·7 Kg. equivalent/ha. at 900 litres/ha. of water for pre-emergence application.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 7·0 m.×5·5 m. (v) 2 rows on all sides. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of *kapas*. (iv) (a) N.A. (b) No. (c) Nil. (v) Bagalkot, Gadag and Siruguppa. (vi) and (vii) Nil.

5. RESULTS :

(i) 484 Kg/ha. (ii) 52·0 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of *kapas* in Kg/ha.

Treatment	W_0	W_1	W_2	W_3	W_4
Av. yield	528	478	530	433	452

C.D.=69·9 Kg/ha.

Crop :- Cotton (*Rabi*). **Ref :- Ms. 63(123).**

Site :- Agri. Res. Stn., Dharwar. **Type :- 'D'.**

Object :— To determine a suitable method of controlling weeds for Cotton.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) *Jowar*. (c) 62·8 Q/ha. of F.Y.M. (ii) Deep black cotton soil. (iii) 23.8.63. (iv) (a) 2 ploughings and cross ploughing. (b) Dibbled in furrows. (c) to (e) N.A. (v) 62·8 Q/ha. of F.Y.M (vi) *Jayadhar*. (vii) Unirrigated. (viii) 2 times interculturing and levelling. (ix) 41 cm. (x) 1 to 30.3.1964.

2. TREATMENTS and 3. DESIGN :

Same as in Expt. no. 62(68) on page 446.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of *kapas*. (iv) (a) N.A. (b) No. (c) Nil. (v) Bagalkot, Gadag and Siruguppa. (vi) Rainfall poor and ill distributed. (vii) Nil.

5. RESULTS :

(i) 367 Kg/ha. (ii) 82·2 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of *kapas* in Kg/ha.

Treatment	W_0	W_1	W_2	W_3	W_4
Av. yield	340	389	345	361	401

Crop :- Cotton. **Ref :- Ms. 64(196).**

Site :- Agri. Res. Stn., Dharwar. **Type :- 'D'.**

Object :— To find out an effective insecticide for controlling various Cotton pests.

1. BASAL CONDITIONS :

(i) (a) *Jowar* – Cotton. (b) *Jowar*. (c) N.A. (ii) Black soil. (iii) N.A. (iv) (a) Ploughing, harrowing 2 to 3 times. (b) Hand dibbling. (c) 10 to 12 Kg/ha. (d) 61 cm. × 30 cm. (e) One. (v) Nil. (vi) *Laxmi*. (vii) Unirrigated. (viii) Interculturing by implements. (ix) 61 cm. (x) N.A.

2. TREATMENTS :

4 insecticides : T_0=Control, T_1=Carbaryl 0·2%, T_2=Endrine 0·02%, and T_3=D.D.T. 0·1%+B.H.C. 0·1%.
Spraying once in 15 days.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 5. (iv) (a) and (b) 1/197·7 ha. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Aphids, Thrip, Jassids, Mites, Bollworm etc. Control measures as per treatments. (iii) Yield of *kapas*. (iv) (a) 1962 only. (b) No. (c) Nil. (v) Hagari and Gadag. (vi) and (vii) N.A.

5. RESULTS :

(i) 920 Kg/ha. (ii) 211·0 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of *kapas* in Kg/ha.

Treatment	T_0	T_1	T_2	T_3
Av. yield	593	1423	1021	641

C.D.=290·8 Kg/ha.

Crop :- Cotton. **Ref :- Ms. 64(192).**

Site :- Agri. Res. Stn., Dharwar. **Type :- 'D'.**

Object :— To find out an effective insecticide that can control various Cotton pests.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) *Jowar*. (c) N.A. (ii) Black soil. (iv) (a) Ploughing and 2 to 3 harrowings. (b) Hand dibbling. (c) 10 to 12 Kg/ha. (d) 61 cm.×30 cm. (e) One. (v) Nil. (vi) *Laxmi*. (vii) Unirrigated. (viii) Intercultivation by implements. (ix) 51 cm. (x) N.A.

2. TREATMENTS :

7 insecticides : T_0=Control, T_1=Control with water, T_2=Carbaryl 0·2%, T_3=Endrine 0·02%, T_4=D.D.T. 0·1%+B.H.C. 0·1%, T_5=Parathion 0·03% and T_6=Thiometon 0·05%.

Spraying once in 10 days.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 5. (iv) (a) and (b) 1/197 7 ha. (v) Nil. (vi) Yes.

4. GENERAL ;

(i) Fair. (ii) Aphids, jassids, Thrips, Mites and Bollworm. (iii) Yield of *kapas*. (iv) (a) 1962 only. (b) No. (c) Nil. (v) Hagari. (vi) and (vii) N.A.

5. RESULTS :

(i) 817 Kg/ha. (ii) 107·4 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
Av. yield	620	686	1120	887	759	857	794

C.D.=140·1 Kg/ha.

Crop :- Cotton (*Rabi*). **Ref :- Ms. 62(70), 63(121), 64(211) 65(115).**

Site :- Agri. Res. Stn., Gadag. **Type :- 'D'.**

Object :— To determine a suitable method of controlling weeds for Cotton.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*. (b) *Jawar*. (c) N.A. (1962), Nil in 1963 ; 12·4 C.L./ha. of F.Y.M. (1964, 1965). (ii) Medium black. (iii) 15.9.1962 ; 25.9.1963 ; 23.9.1964 ; N.A. (iv) (a) 2 ploughings and 3 harrowings (1962) ; 2 ploughings and cross ploughing (1963) ; 2 wooden ploughings, 2 to 3 harrowings (1964, 1965). (b) Dibbling. (c) N.A. in 1962 and 1963 ; 11·2 Kg/ha. in 1964 and 1965. (d) N.A. in 1962 and 1963; 61 cm.× 31 cm. in 1964 and 1965. (e) N.A. in 1962 and 1963 ; 1 in 1964 and 1965. (v) Nil (1962, 1964 and 1965) ; 62·8 Q/ha. of F.Y.M. in 1963. (vi) *Laxmi*. (vii) Unirrigated. (viii) 3 weedings ; (As per treatments). (ix) 40 cm. ; 33 cm. ; N.A. ; N.A. (x) 24.8.1963 to 31.3.1963 ; 22.2.1964 to 17.3.1964 ; N.A. ; N.A.

2. TREATMENTS :

Same as in Expt. no. 62(68) conducted at Dharwar on page 446.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) N.A, (b) 7·9 m.×4·9 m. (v) 2 rows on all sides. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of *kapas*. (iv) (a) 1962—N.A. (b) No. (c) As under 5. Results. (v) Dharwar and Siruguppa. (vi) Nil. (vii) Error variances are heterogeneous. Treatments × years interaction is absent.

5. RESULTS :

62(70)

(i) 217 Kg/ha. (ii) 76·5 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of *kapas* in Kg/ha.

Treatment	W_0	W_1	W_2	W_3	W_4
Av. yield	215	234	164	198	276

63(121)

(i) 576 Kg/ha. (ii) 114·0 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of *kapas* in Kg/ha.

Treatment	W_0	W_1	W_2	W_3	W_4
Av. yield	595	649	494	555	570

64(211)

(i) 702 Kg/ha. (ii) 177·3 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of *kapas* in Kg/ha.

Treatment	W_0	W_1	W_2	W_3	W_4
Av. yield	487	861	540	762	860

C.D.=237·6 Kg/ha.

65(115)

(i) 696 Kg/ha. (ii) 127·0 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of *kapas* In Kg/ha.

Treatment	W_0	W_1	W_2	W_3	W_4
Av. yield	840	720	609	627	683

Crop :- Cotton (*Rabi*). **Ref :- Ms. 60(164).**

Site :- Agri. Res. Stn., Gadag. **Type :- 'D'.**

Object :—To find out the effect of different insecticidal sprayings at different periods on Cotton yield.

1. BASAL CONDITIONS :

(i) (a) *Jowar*- Cotton. (b) *Jowar*. (c) Nil. (ii) Medium black. (iii) 12.9.60. (iv) (a) 2 ploughings and 2 harrowings. (b) Dibbled in furrows. (c) to (e) N.A. (v) 50·2 Q/ha. of compost. (vi) *Laxmi*. (vii) Unirrigated. (viii) 3 weedings and 4 interculturings. (ix) 25 cm. (x) 27.3.61.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 insecticidal treatments : I_0=Control, I_1=Endrix, I_2=Geigy 1250 and I_3=Folidol.

(2) 3 intervals between spray : T_1=2, T_2=4 and T_3=6 weeks.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 6·4 m.×4·3 m. (v) 2 rows all-round. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) yield of *kapas*. (iv) (a) 1959 N.A. (b) No. (c) Nil. (v) to (vii) N.A.

5 RESULTS :

(i) 459 Kg/ha. (ii) 84·7 Kg/ha. (iii) Main effect of I is highly significant. Main effect of T and interaction 'control vs. others' are signigcant. (iv) Av. yield of *kapas* in Kg/ha.

	I_0	I_1	I_2	I_3	Mean
T_1	—	590	422	558	523
T_2	—	481	318	537	445
T_3	-	475	431	459	455
Mean	413	515	390	518	459

C.D. for I marginal means=70·5 Kg/ha.
C D. for 'control vs. others'=57·5 Kg/ha.

Crop :- Cotton. **Ref :- Ms. 61(262).**

Site :- Agri. Res. Stn., Hagari. **Type :- 'D'.**

Object :– To find out an effective insecticide for control of various Cotton pests.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) *Jowar*. (c) 12·4 C.L./ha. of F.Y.M. (ii) Black soil. (iii) 17.10.1961. (iv) (a) Ploughing and harrowing 2 to 3 times. (b) Hand dibbling. (c) 10 to 12 Kg/ha. (d) 61 cm. between rows and 30 cm. within plants. (e) One. (v) Nil. (vi) *Laxmi* Cotton. (vii) Irrigated. (viii) Intercultivation by implements. (ix) 28 cm. (x) N.A.

2. TREATMENTS :

7 insecticides : T_0=Control, T_1=0·25% sevin, T_2=0·04% Endrine, T_3=0·1% Malathion, T_4=0·1% D.D.T. +0·1% B.H.C., T_5=0·02% Parathion and T_6=0·04% Basudin.
6 sprays at 15 days interval.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 1/247 ha. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Aphids, jassids, thrips, mites and boll worm attack – control measures as per treatments. (iii) *kapas* yield. (iv) (a) 1961 only. (b) No. (c) Nil. (v) Dharwar and Gadag. (vi) Nil. (vii) N.A.

5. RESULTS :

(i) 552 Kg/ha. (ii) 52·4 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	T_5	T_6
Av. yield	479	831	575	485	479	477	537

C.D.=77·8 Kg/ha.

Crop :- Cotton (*Rabi*). **Ref :- Ms. 62(268), 62(269), 62(270).**

Site :- Agri. Res. Stn., Hagari. **Type :- 'D'.**

Object :—To find out an effective insecticide for control of various Cotton pests.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) *Jowar*. (c) 12·4 C.L./ha. of F.Y.M. (ii) Black soil. (iii) 3.9.62. (iv) (a) Ploughing and 2 to 3 times harrowings. (b) Hand dibbling. (c) 10 to 12 Kg/ha. (d) 61 cm. between rows and 30 cm. within plants. (e) One. (v) Nil. (vi) *Laxmi*. (vii) Unirrigated. (viii) Intercultivation by implements. (ix) 28 cm. (x) 11.2.63.

2. TREATMENTS:

6 insecticides : T_0=Control without water, T_1=Control sprayed with water, T_2=Sevin 0·02%, T_3=D.D.T. 0·1%+B.H.C. 0·1%, T_4=Endrin 0·02% and T_5=Parathion 0·03%.
Separate experiments conducted with spray once in 10 days, 15 days and 20 days. 7 sprays, 7 sprays, 6 sprays were given respectively.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) 1/8 ha. (iii) 5. (iv) (a) and (b) 1/247ha. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Fair (ii) Aphids, jassids, thrips and mites attack; control measures as per treatments. (iii) *Kapas* yield. (iv) (a) and (b) No. (c) Nil. (v) Dharwar and Gadag. (vi) and (vii) N.A.

5. RESULTS :

62(268)

Spray once in 10 days.
(i) 280 Kg/ha. (ii) 71·9 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	T_5
Av. yield	104	92	713	443	242	55

C.D.=94·7 Kg/ha.

62(269)

Spray once in 15 days.
(i) 214 Kg/ha. (ii) 121·0 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	T_5
Av. yield	62	68	514	308	262	69

C.D.=159·7 Kg/ha.

62(270).

Spray once in 20 days.
(i) 225 Kg/ha. (ii) 48·1 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	T_5
Av. yield	84	82	527	326	268	65

C.D.=56·1 Kg/ha.

———

Cotton (*Rabi*). **Ref :- Ms. 62(56), 63(59), 64(24).**

Site :- Agri. Res. Stn., Siruguppa. **Type :- 'D'.**

Object :—To determine a suitable method of controlling weeds for Cotton.

1. BASAL CONDITIONS :

(i) (a) *Jowar* Cotton. (b) *Jowar*. (c) 125·6 Q/ha. of F.Y.M.+44·8 Kg/ha. of N+22·4 Kg/ha. of P_2O_5 as basal dose. (ii) Black cotton soil. (iii) 31.8.1962 ; 2.9.1963 ; 30.8.1964. (iv) (a) Working victory plough, blade harrow and ridger in 1962 and 1963 ; ploughing in 1964. (b) Dibbling. (c) 15 to 20 Kg/ha. (d) 61 cm.× 23 cm. (e) 3 to 4 ; thinned to one only. (v) 125·6 Q/ha. of F.Y.M. as basal dressing+44 8 Kg/ha. of N as A/S after 40 days of sowing (All years) ; 322·4 Kg/ha. of P_2O_5 in 1964. (vi) *Laxmi* (medium). (vii) Irrigated. (viii) As per treatments. (ix) 34 cm ; 15 cm ; 24 cm. (x) 9.2.1963 to 6.4.1963 ; 29.2.1964 to 20.4.1964 ; 26.2.1965 to 19.3.1965.

2. TREATMENTS :

5 weedicidal treatments : W_0=Unweeded control, W_1=Local type of weeding (by hand and implements), W_2=Pre-emergence application of weedicide, W_3=Pre-emergence application of weedicide+cultural methods of weeding (once with implements and once hand weeding) and W_4=Cultural method of weeding (twice with implements and once hand weeding).

Faroxone 2,4−D applied at 1·7 Kg. equivalent/ha. at 900 litres. of water for pre-emergence application.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 1/198ha. (b) 1/247ha. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Heavy incidence of thrips, aphids, jassids and boll worm. Endrine sprayed 5 times at about 15 days. (iii) Yield of *Kapas*. (iv) (a) 1962 to 1964. (b) No. (c) As under 5. Results. (v) and (vi) N.A. (vii) Error are variances heterogeneous. Treatments×years interaction is present.

5. RESULTS :

(i) 572 Kg/ha. (ii) 347·2 Kg/ha. (based on 8 d.f. made up of Treatments×years interaction). (iii) Treatment differences are highly significant. (iv) Av. yield of *kapas* in Kg/ha.

Treatment	W_0	W_1	W_2	W_3	W_4
Av. yield	265	829	278	704	783

C.D.=292·4 Kg/ha.

Years	W_0	W_1	W_2	W_3	W_4	Sig.	G.M.	S.E./plot
1962	352	955	397	794	965	**	693	105·6
1963	194	419	190	348	479	**	326	81·2
1964	250	1113	246	969	905	**	697	208·8
Pooled	265	829	278	704	783	**	572	347·2

———

Crop :- Cotton (*Rabi*). **Ref :- Ms. 60(103).**

Site :- Agri. Res. Stn., Siruguppa. **Type :- 'D'.**

Object : —To find out a suitable insecticide that can control the different types of Cotton insects.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) *Jowar*. (c) 125·6 Q/ha. of F.Y.M.+44·8 Kg/ha. of N as A/S+22·4 Kg/ha. of P_2O_5 as Super. (ii) (a) Black cotton. (iii) 20.8.60. (iv) (a) 2 ploughings. (b) Dibbling by hand. (c) 11 Kg/ha. (d) 38 cm.×30 cm. (e) N.A. (vi) 125·6 Q/ha. of F.Y.M.+44·8 Kg/ha. of N as Urea one month after sowing. (vi) *Laxmi* (late). (vii) Irrigated. (viii) Working cultivator once and 3 hand weedings. (ix) 31 cm. (x) 2.2.61 to 23.3.61.

2. TREATMENTS :

5 insecticidal treatments : I_0=Control, I_1=3 c.c. of Folidol/4·5 litres of water, I_2=10 c.c. of Endrine/4·5 litres of water, I_3=10 c.c. of Basudin/4·5 litres of water and I_4=454 gm. of Geigy 1250/72·7 of litres water.

The above insecticides were sprayed 5 times at an interval of 15 days.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) and (b) 1/247. (v) Nii. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Attack of aphids, thrips and jassids and to some extent boll worms. (iii) Yield of *kapas*. (iv) (a) 1960 only. (b) No. (c) Nil. (v) Hagari. (vi) Nil. (vii) Due to continuous rains after 12 days of sowing some seeds wasted away.

5. RESUTTS :

(i) 2065 Kg/ha. (ii) 324·9 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of *kapas* in Kg/ha.

Treatment	I_0	I_1	I_2	I_3	I_4
Av. yield	1590	2000	2064	2100	2073

C.D.=500·4 Kg/ha.

———

Crop :- Cotton. **Ref :- Ms. 63(136).**

Site :- Agri. Res. Stn., Siruguppa. **Type :- 'D'.**

Object :—To find out a suitable method of controlling weeds in Cotton.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) *Jowar*. (c) 621 Q/ha. of F.Y.M. (ii) Heavy black soil. (iii) 5.9.63. (iv) (a) 2 ploughings, cross ploughing and levelling. (b) Dibbling. (c) 11 Kg/ha. (d) 60 cm.×23 cm. (e) 2. (v) 628 Q/ha. of F.Y.M. (vi) *Laxmi*. (vii) Irrigated. (viii) As per treatments. (ix) 41 cm. (x) 20.2.64 to 25.3.64.

2. TREATMENTS :

Same as in expt. no. 62(68) conducted at Dharwar on page 446.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 9·3 m.×8·3 m. (b) 6·9 m.×5·9 m. (v) 120 cm.×120 cm. (vi) Yes.

4. GENERAL :

(i) Poor. (ii) Boll worm attack. (iii) Yield of *kapas*. (iv) (a) N.A. (b) No. (c) Nil. (v) Bagalkot, Dharwar and Gadag. (vi) and (vii) Nil.

5. RESULTS :

(i) 413 Kg/ha. (ii) 108·6 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of *kapas* in Kg/ha.

Treatment	W_0	W_1	W_2	W_3	W_4
Av. yield	216	576	208	415	650

C.D.=145·7 Kg/ha.

———

Crop :- Cotton (*Rabi*). **Ref :- Ms. 62(67).**

Site :- Agri. College Farm, Dharwar. **Type :- 'DM'.**

Object :—To study the effect of different times of NAA spraying with different concentrations on *Jayadhar* Cotton.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*. (b) *Jowar*. (c) N.A. (ii) Medium black. (iii) 6.9.62, (iv) (a) 2 ploughings and 4 harrowings. (b) to (e) N.A. (v) Nil. (vi) *Jayadhar*. (vii) Unirrigated. (viii) 3 weedings and 3 inter-culturings. (ix) 6 cm. (x) 16.3.63 to 13.4.63.

2. TREATMENTS :

All combinations of (1), (2) and (3)+a control.

(1) 2 concentrations of harmones : C_1=10 and C_2=20 PPM of NAA.

(2) 3 times of spraying : S_1=At 4 to 5 leaf stage, S_2=At flowering stage and S_3=½ dose at 4 to 5 leaf stage+½ dose at flowering stage.

(3) 2 manurial treatments : M_1=22·4 Kg/ha. of N+22·4 Kg/ha. of P_2O_5+22·4 Kg/ha. of K_2O and M_2=44·8 Kg/ha. of N+44·8 Kg/ha. of P_2O_5+44·8 Kg/ha. of K_2O.

Spraying done at 900 litres/ha. of water.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 13. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 5·5 m.×3·7 m. (v) 2 rows on all sides. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of *kapas*. (iv) (a) N.A. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 737 Kg/ha. (ii) 47·0 Kg/ha. (iii) Main effect of M and 'coutrol *vs.* others' are highly significant. Interaction M×C×S is significant. (iv) Av. yield of *kapas* in Kg/ha.

Control=667 Kg/ha.

	S_1	S_2	S_3	C_1	C_2	Mean
M_1	719	745	713	724	727	726
M_2	766	746	769	769	752	760
Mean	743	746	741	746	740	743
C_1	747	752	741			
C_2	738	740	741			

C.D. for comparison of control *vs.* others means=49·7 Kg/ha.

———

Crop :- Cotton (*Rabi*). **Ref :- Ms. 63(129).**

Site :- Agri. Res. Stn., Dharwar. **Type :- 'DM'.**

Object :—To study the effect of different times and concentrations of N.A.A. and B.N.A. spraying on the yield of Cotton crop.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) *Jowar*. (c) 628 Q/ha. of F.Y.M. (ii) Deep black cotton soil. (iii) 18.8.63. (iv) (a) 2 ploughings, cross ploughing, 2 times harrowing and levelling. (b) Dibbled in furrows. (c) to (e) N.A. (v) 62·8 Q/ha. of F.Y.M. (vi) *Jayadhar*. (vii) Unirrigated. (viii) 3 interculturings and 3 weedings. (ix) 41 cm. (x) 17.2.64 to 20.3.64.

2. TREATMENTS :

All combinations of (1), (2) and (3)+2 control plots.

(1) 4 concentrations : C_1=10 PPM of NAA, C_2=20 PPM of NAA, C_3=10 PPM of BNA and C_4=20 PPM of BNA.

(2) 3 times of spraying : T_1=At 4 to 5 leaf stage, T_2=At flowering stage and T_3=½ dose at 4 to 5 leaf stage+½ dose at flowering stage.

(3) 2 manurial treatments : M_1=22·4 Kg/ha. of N+22·4 Kg/ha. of P_2O_5+22·4 Kg/ha. of K_2O and M_2=44·8 Kg/ha. of N+44·8 Kg/ha. of P_2O_5+44·8 Kg/ha. of K_2O.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 26. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 9·8 m.×2·4 m. (v) 2 rows on all sides. (vi) Yes.

4. GENERAL:

(i) Normal. (ii) Nil. (iii) Yield of *kapas*. (iv) (a) N.A. (b) No. (c) Nil. (v) N.A. (vi) Poor and ill distributed rain. (vii) Nil.

5. RESULTS :

(i) 861 Kg/ha. (ii) 55·9 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of *kapas* in Kg/ha.

Control=860 Kg/ha.

	M_1	M_2	T_1	T_2	T_3	Mean
C_1	836	891	876	821	893	863
C_2	850	888	872	855	879	869
C_3	840	848	846	867	819	844
C_4	868	872	840	901	869	870
Mean	848	875	858	861	865	861
T_1	838	879				
T_2	852	870				
T_3	855	875				

Crop :- Cotton (*Rabi*). **Ref :- Ms. 62(76).**

Site :- Agri. Res. Stn., Gadag. **Type :- 'DM'.**

Object : To find out the effect of foliar *vs.* soil application of fertilizers and the effect of harmones.

1. BASAL CONDITIONS :

(i) (a) *Jowar*– Cotton. (b) *Jowar*. (c) Nil. (ii) Medium black cotton soil. (iii) 15.9.62. (iv) (a) 2 ploughings, 3 harrowings and opening furrows. (b) Dibbling. (c) to (e) N.A. (v) Nil. (vi) *Laxmi*. (vii) Unirrigated. (viii) 3 weedings. (ix) 40 cm. (x) 24.2.63 to 23.3.63.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2)+one control.

(1) 2 levels of N as Urea : N_1=5·6 and N_2=11·2 Kg/ha.

(2) 3 methods of application ; M_1=Soil application, M_2=Foliar application and M_3=½ dose as soil application+½ dose as foliar application.

Sub-plot treatments :

All combinations of (3) and (4)

(3) 2 levels of harmones : H_1=10 and H_2=20 PPM of NAA.

(4) 2 times of application : T_1=At 4 to 5 leaf stage and T_2=At flowering stage.

3. DESIGN :

(i) Split-plot. (ii) (a) 7 main-plots/replication; 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) and (b) 7·9 m.×4·9 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of *kapas*. (iv) (a) N.A. (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 264 Kg/ha. (ii) (a) 75·2 Kg/ha. (b) 76·4 Kg/ha. (iii) N.A. (iv) Av. yield of *kapas* in Kg/ha.

Control

	H_1	H_2	Mean
T_1	245	220	232
T_2	192	196	194
Mean	218	208	213

	M_1	M_2	M_3	H_1	H_2	T_1	T_2	Mean
N_1	281	253	262	267	262	277	254	265
N_2	311	248	286	264	299	298	267	282
Mean	296	250	274	266	281	287	260	273
T_1	323	257	282	284	289			
T_2	269	243	267	247	272			
H_1	301	237	259					
H_2	290	264	289					

C.D. for T marginal means=31·2 Kg/ha.

Crop :- Cotton (*Rabi*). **Ref :- Ms. 63(130).**

Site :- Agri. Res. Stn., Siruguppa. **Type :- 'DM'.**

Object :- To study the effect of different times of spraying NAA and BNA on Cotton crop.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) *Jowar*. (c) 62·8 Q/ha. of F.Y.M. (ii) Black cotton soil. (iii) 3.9.63. (iv) (a) 2 ploughings, cross ploughing and levelling. (b) Dibbled in furrows. (c) to (e) N.A. (v) 62·8 Q/ha. of F.Y.M. (vi) *Laxmi*. (vii) Irrigated. (viii) 3 interculturings and weedings. (ix) 40 cm. (x) 9.3.64 to 3.4.64.

2. TREATMENTS :

All combinations of (1), (2) and (3)+2 control plots

(1) 4 concentrations : C_1=10 PPM of NAA, C_2=20 PPM of NAA, C_3=10 PPM of BNA and C_4=20 PPM of BNA.

(2) 3 times of sprayings : T_1=At 4 to 5 leaf stage, T_2=At flowering stage and T_3=½ dose at 4 to 5 leaf stage+½ dose at flowering stage.

(3) 2 manurial treatments: M_1=56 Kg/ha. of N+33·6 Kg/ha. of P_2O_5+33·6 Kg/ha. of K_2O and M_2= Twice of M_1.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 26. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 2·4 m.×8·3 m. (v) 2 rows on all sides. (vi) Yes.

4. GENERAL :

(i) Poor. (ii) Heavy boll worm attack. (iii) Yield of *kapas*. (iv) (a) N.A. (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 512 Kg/ha. (ii) 95·3 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of *kapas* in Kg/ha.

Control=561 Kg/ha.

	M_1	M_2	T_1	T_2	T_3	Mean
C_1	495	482	491	441	533	488
C_2	477	505	484	529	463	491
C_3	505	525	543	465	537	515
C_4	528	545	582	509	519	536
Mean	502	514	525	486	534	508
T_1	516	533				
T_2	473	499				
T_3	516	510				

Crop :- Cotton (*Rabi*). **Ref :- Ms. 63(44).**

Site :- Agri. Res. Stn., Siruguppa. **Type :- 'DM'.**

Object :—To study the effect of different times and concentrations of NAA and BNA spraying on yield of Cotton crop.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) Wheat. (c) 124 Q/ha. of F.Y.M.+44·8 Kg/ha. of N+22·4 Kg/ha. of P_2O_5. (ii) Black cotton soil. (iii) 5.9.63. (iv) (a) Working victory plough, hire kunte and sunna kunte. (b) Dibbling by hand. (c) 15 Kg/ha. (d) 61 cm.×30 cm. (e) 2 to 3. (v) As per treatments. (vi) *Laxmi* (late). (vii) Irrigated. (viii) 4 hand weedings, working with cultivator and ridger once. (ix) 15 cm. (x) 20.2.64 and 25.3.64.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2)+a control plot

(1) 4 concentrations : C_1=10 PPM of NAA, C_2=20 PPM of NAA, C_3=10 PPM of BNA and C_4= 20 PPM of BNA.

(2) 3 times of spraying : T_1=At 4 to 5 leaf stage, T_2=At flowering stage and T_3=½ dose at 4 to 5 leaf stage and ½ dose at flowering stage.

Sub-plot treatments :

2 manurial doses : M_1=56 Kg/ha. of N+33·6 Kg/ha. of P_2O_5+33·6 Kg/ha. of K_2O and M_2=Twice M_1.

3. DESIGN :

(i) Split-plot. (ii) (a) 13 main-plots/replication; 2 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 1/247 ha. (b) 1/494 ha. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Heavy incidence of aphids, thrips, jassids and boll worms. No insecticidal spray was given as per instruction of cotton specialist. (iii) Population count, percentage of boll worm infestation etc. are recorded in addition to yield data. (iv) (a) 1963—65 (Design modified in 64). (b) No. (c) Nil. (v) and (vi) N.A. (vii) Nil.

5. RELULTS :

(i) 430 Kg/ha. (ii) (a) 55·8 Kg/ha. (b) 46·3 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of *kapas* in Kg/ha,

Control=466 Kg/ha.

	C_1	C_3	C_2	C_4	M_1	M_2	Mean
T_1	419	423	453	519	452	454	453
T_2	383	391	379	425	382	406	394
T_3	435	423	430	451	433	437	435
Mean	412	412	421	465	422	432	427
M_1	417	401	415	455			
M_2	408	423	424	474			

Crop :- Cotton (*Rabi*). **Ref :- Ms. 64(28).**

Site :- Agri. Res. Stn., Siruguppa. **Type :- 'DM'.**

Object :—To find out the effect of Naphthalenic acid spraying on Cotton.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) *Jowar*. (c) 125·6 Q/ha. of F.Y.M.+44·8 Kg/ha. of N as A/S+22·4 Kg/ha. of P_2O_5 as Super. (ii) Black cotton soil. (iii) 30.8.64. (iv) (a) Working victory plough and harrowing. (b) Hand dibbling. (c) 6 Kg/ha. (d) 69 cm.×23 cm. (e) N.A. (v) Nil. (vi) Medium. (vii) Irrigated. (viii) 1 hand weeding. (ix) 24 cm. (x) 15.2.65 to 15.3.65.

2. TREATMENTS :

Main-plot treatments :

2 manurial treatments : M_1=56·0 Kg/ha. of N+33·6 Kg/ha. of P+33·6 Kg/ha. of K and M_2=121·1 Kg/ha. of N+67·2 Kg/ha. of P+67·2 Kg/ha. of K.

Sub-plot treatments :

All combinations of (1) and (2)+one control

(1) 4 concentrations : C_1=10 PPM of NAA alpha, C_2=20 PPM of NAA alpha, C_3=10 PPM of NAA beta and C_4=20 PPM of NAA beta.

(3) 3 times of application : T_1=At 4 to 5 leaf stage, T_2=At flowering stage and T_3=$\frac{1}{2}$ dose at 4 to 5 leaf stage+$\frac{1}{2}$ dose at flowering stage.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication; 13 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 1/247 ha. (b) 1/494 ha. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Aphids, jassids and boll worm. No control measures taken. (iii) Boll weight, yield of *kapas* and No. of seed/boll. (iv) (a) 1963–65. (b) No. (c) Nil. (v) (a) Dharwar, Gadag and Bagalkot. (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 1393 Kg/ha. (ii) (a) 698·8 Kg/ha. (b) 145·2 Kg/ha. (iii) Interaction M×T is highly significant and interaction M×C is significant. (iv) Av. yield of *kapas* in Kg/ha.

	C_1	C_2	C_3	C_4	T_1	T_2	T_3	Mean
M_1	1228	1216	1171	1295	1274	1222	1187	1228
M_2	1547	1537	1626	1574	1554	1619	1540	1571
Mean	1388	1376	1399	1435	1414	1420	1364	1399
T_1	1333	1355	1470	1497				
T_2	1468	1442	1373	1399				
T_3	1362	1332	1353	1408				

C.D. for C means at the same level of M=118·4 Kg/ha.
C.D. for M means at the same level of C=461·6 Kg/ha.
C.D. for T means at the same level of M=102·4 Kg/ha.
C.D. for M means at the same level of T=459·2 Kg/ha.

Crop : - Tobacco. **Ref :- Ms. 62(118),64(78).**

Site :- Agri. Res. Stn., Nipani. **Type :- 'M'.**

Object :—To study the effect of different placement methods of N, P and K fertilizers on the yield of Tobacco.

1. BASAL CONDITIONS :

(i) (a) Tobacco—Tobacco. (b) Tobacco. (c) Nil. (ii) Medium black. (iii) N.A. (iv) (a)to (c) N.A. (d) 1·0m.×1·0m. (e) N.A. (v) 12·35 C.L./ha. of F.Y.M. (vi) S—20. (vii) Unirrigated. (viii) Interculturing and stirring. (ix) N.A. ; 6·5 cm. (x) N.A. ; 12.2.1965.

2. TREATMENTS :

Main-plot treatments :

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

(1) 3 levels of N : N_0=0, N_1=148 3 and N_2=222.4 Kg/ha.

(2) 2 levels of P_2O_5 : P_0=0 and P_1=247·1 Kg/ha.

(3) 2 levels of K_2O : K_0=0 and K_1=148·3 Kg/ha.

Sub-plot treatments :

2 methods of placement : M_1=Drilling and M_2=Top dressing by hand around the plot.

3. DESIGN :

(i) Split-plot. (ii) (a) 12 main-plots/replication ; 2 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 12 m.× 12 m. (b) 40 Sq. m. in 1962 ; 10 m.×4 m. in 1964. (v) One row on both sides. (vi)Yes.

4. GENERAL :

(i) Normal. (ii) Nil in 1962 ; Aphid infestation controlled by the use of pesticides. (iii) Yield of tobacco. (iv) (a) 1962—N.A. (Expt. for 63—N.A.) (b) No. (c) Nil. (v) and (vi) N.A. (vii) Error variances of sub-plot treatments are heterogeneous. Individual results given.

5. RESULTS :

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(i) 1083 Kg/ha. (ii) (a) 197·2 Kg/ha. (b) 124·4 Kg/ha. (iii) Main effect of N is highly significant and interactions N×P and N×K are significant. (iv) Av. yield of tobacco in Kg/ha.

	P_0	P_1	K_0	K_1	M_1	M_2	Mean
N_0	849	1035	963	922	944	941	942
N_1	1170	1052	1177	1046	1069	1153	1111
N_2	1169	1221	1114	1275	1211	1178	1195
Mean	1063	1103	1084	1081	1075	1091	1083
M_1	1054	1095	1055	1095			
M_2	1071	1111	1114	1067			
K_0	1092	1077					
K_1	1033	1129					

C.D. for N marginal means =100·4 Kg/ha.

C.D. for body of N×P or N×K table=142·0 Kg/ha.

64(78)

(i) 664 Kg/ha. (ii)(a) 129·2 Kg/ha. (b) 77·0 Kg/ha. (iii) Main effect of N is highly significant. (iv) Av. yield of tobacco in Kg/ha.

	P_0	P_1	K_0	K_1	M_1	M_2	Mean
N_0	514	572	559	527	518	568	543
N_1	709	707	737	679	718	698	708
N_2	713	770	758	725	766	717	741
Mean	645	683	684	644	667	661	664
M_1	648	686	681	654			
M_2	642	680	688	634			
K_0	667	700					
K_1	622	666					

C.D. for N marginal means=65·8 Kg/ha.

Crop :- Tobacco (*Rabi*). **Ref :- Ms. 61(90).**

Site :- Agri. Res. Stn., Nipani. **Type :- 'M'.**

Object :—To study the effect of organic vs. inorganic fertilisers on Tobacco.

1. BASAL CONDITIONS :

(i) (a) Tobacco after tobacco. (b) Tobacco. (c) N A. (ii) Medium black. (iii) 9.8.61. (iv) (a) Ploughing with iron plough and harrowing with wooden harrow. (b) Transplanting. (c)—. (d) 107 cm. × 107 cm. (e) 1. (v) 12·4 C.L./ha. of F.Y.M. (vi) S—20. (vii) Unirrigated. (viii) 8to 10 days interculturing followed by hand weeding and suckering. (ix) 92 cm. (x) 1.2.62.

2. TREATMENTS :

7 sources of N at 44·8 Kg/ha. : So=Control (No N), S_1=A/S, S_2=Urea, S_3=C/A/N, S_4=A/S/N, S_5=$\frac{1}{2}$ as A/S+$\frac{1}{2}$ as Cake and S_6=$\frac{1}{2}$ as F.M.+$\frac{1}{2}$ as A/S.

Fish manure (F.M.) applied a week before planting and A/S 3 weeks after planting.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 6. (iv) (a) 14·9 m. × 6·4 m. (b) 12·8 m. × 4·3 m. (v) 107 cm. × 107 cm. (vi) Yes.

4. GENERAL. :

(i) Poor. (ii) Low infection of Aphids. No control measures taken. (iii) Yield of tobacco.(iv) (a) 1960—N.A. (b) Yes. (c) Nill. (v) and (vi) Nil. (vii) Heavy rains during Aug. & Sept. affected the yield to a considerable extent.

5. RESULTS :

(i) 408 Kg/ha. (ii) 59·2 Kg/ha. (iii) The treatment differences are highly significant. (iv) Av. yield of tobacco in Kg/ha.

Treatment	S_0	S_1	S_2	S_3	S_4	S_5	S_6
Av. yield	318	412	476	423	373	437	417

C.D.=69·6 Kg/ha.

Crop :- Tobacco (*Rabi*). **Res :- Ms. 63(93).**

Site :- Agri. Res. Stn., Nipani. **Type :- 'M'.**

Object :—To study the effect of organic vs. inorganic fertilizer on the yield and quality of Tobacco.

1. BASAL CONDITIONS :

(i) (a) Tobacco—tobabco. (b) Tobacco. (c) N.A. (ii) Medium deep. (iii) 10·8.1963. (iv) (a) Ploughing and harrowing. (b) Transplanting. (c) —. (d) 107 cm. × 107 cm. (e) 1. (v) 62·8 Q/ha. of F.Y.M. (vi) S—20. (vii) Unirrigated. (viii) Hoeing. (ix) 40 cm. (x) N.A.

2. TREATMENTS :

7 manurial treatments : T_0=Control (no manure), T_1=A/S, T_2=Urea, T_3=C/A/N, T_4=A/S/N, T_5=66 Kg/ha. of N+11·2 Kg/ha. of P_2O_5 and T_6=66 Kg/ha. of N.

Quantity of N applied for T_1 to T_4 N.A.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 6. (iv) (a) 6 m. × 14 m. (b) 4 m. × 12 m. (v) 1 m. × 1 m. (vi) Yes.

4 GENERAL :

(i) Gappy. (ii) Slight attack of Aphids. No control measure taken. (iii) Yield of tobacco. (iv) (a) 1963 only. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 784 Kg/ha. (ii) 210·0 Kg/ha. (iii) The treatment differences are not significant. (iv) Av. yield of tobacco in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	630	840	875	905	756	780	706.

Crop :- Tobacco. (*Rabi*). **Ref :- Ms. 62(95), 64(80), 65(113).**

Site :- Agri. Res. Stn., Nipani. **Type :- 'M'.**

Object :—To study the effect of different type of inorganic fertilizers on *Bidi* tobacco.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Tobacco. (c) N.A. (ii) Medium black (1962) ; Medium deep (1964) and black soil (1965). (iii) Sept. 1962 ; 6.8.1964 ; 18.8.1965. (iv) (a) Ploughing and harrowing. (b) Transplanting. (c) —. (d) 107 cm. × 107 cm. (e) 1. (v) 12·4 C.L./ha. of F.Y.M. (vi) S—20. (vii) Unirrigated. (viii) 12 hoeings and 12 interculsurings (1962) ; interculturing and stirring (1964) and weeding and topping etc. (1965). (ix) N.A ; 65 cm ; 77 cm. (x) N.A. ; 25.1.1965 ; 22.1.1966.

2. TREATMENTS :

7 sources of N at 67·2 Kg/ha. : S_0=Control (No N), S_1=A/S, S_2=Urea, S_3=C/A/N, S_4=A/S/N, S_5=$\frac{1}{2}$ as A/S+$\frac{1}{2}$ as G.N.C. and S_6=$\frac{1}{2}$ as A/S+$\frac{1}{2}$ as Fish manure.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 6. (iv) (a) 14·9 m. × 6·4 m. (b) 12·8 m. × 4·3 m. (v) 107 cm. × 107 m. (vi) Yes.

4. GENERAL:

(i) Fair ; Normal ; Normal. (ii) Nil (1962) ; Aphid infestation was controlled by the use of pesticides (1964 and 1965). (iii) Yield of tobacco. (iv) (a) 1962-68. (treatments modified in 1963). (b) N.A. (c) Nil. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

62(95)

(i) 811 Kg/ha. (ii) 97·3 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of tobacco in Kg/ha.

Treatment	S_0	S_1	S_2	S_3	S_4	S_5	S_6
Av. yield	537	876	923	919	858	751	816

C.D.=83·0 Kg/ha.

64(80)

(i) 47 Kg/ha. (ii) 11·0 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of *tobacco* in Kg/ha.

Treatment	S_0	S_1	S_2	S_3	S_4	S_5	S_6
Av. yield	37	53	52	56	49	43	40

C.D.=9·4 Kg/ha.

65(113)

(i) 610 Kg/ha. (ii) 126·3 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of *tobacco* in Kg/ha.

Treatment	S_0	S_1	S_2	S_3	S_4	S_5	S_6
Av. yield	635	605	506	717	649	572	586

Crop :- Tobacco. (*Kharif*). **Ref :- Ms. 60(116).**

Site :- Agri. Res. Stn., Nipani. **Type :- 'M'.**

Object :—To find the most suitable time of application of F.Y.M., N and K_2O for *Bidi* Tobacco.

1. BASAL CONDITIONS :

(i) (a) Tobacco after tobacco. (b) Tobacco. (c) N.A. (ii) Medium deep fairly well drained. (iii) N.A. (iv) (a) Ploughing and harrowing. (b) Transplanting. (c) —. (d) 107 cm.×107 cm. (e) 1. (v) Green manuring, (vi) S—20. (vii) Unirrigated. (viii) 8 hoeings and 12 interculturings. (ix) 74 cm. (x) N.A.

2. TREATMENTS :

Main-plot treatments :

2 levels of F.Y.M. : F_1=12·4 and F_2=24·7 C.L./ha.

Sub-plot treatments :

All combinations of (1) and (2)

(1) 3 sources of N at 44·8 Kg/ha. : S_1=Cake, S_2=A/S and $S_3=\frac{1}{2}$ as Cake+$\frac{1}{2}$ as A/S,

(2) 2 levels of K_2O : K_0=0 and K_1=67·2 Kg/ha.

Sub-sub-plot treatments :

2 times of applications of fertilizers : T_1=At 3 weeks after planting and $T_2=\frac{1}{2}$ at 3 weeks after planting+$\frac{1}{2}$ at 8 weeks after planting.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 6 sub-plots/main-plot and 2 sub-sub-plots/sub-plot. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 11·7 m.×2·1 m. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Yield of tobacco. (iv) (a) 1958-60. (b) Yes. (c) Nil. (v) N.A. (vi) Drought conditions just after sowing seeds and more rains in October and November. (vii) Nil.

5. RESULTS :

(i) 609 Kg/ha. (ii) (a) 206·0 Kg/ha. (b) 91·0 Kg/ha. (c) 238·0 Kg/ha. (iii) None of the effects is significant (iv) Av. yield of tobacco in Kg/ha.

	F_1	F_2	T_1	T_2	S_1	S_2	S_3	Mean
K_0	595	627	623	599	590	615	627	611
K_1	555	659	614	600	557	614	650	607
Mean	575	643	618	600	574	614	639	609
S_1	507	641	600	548				
S_2	597	632	616	613				
S_3	622	655	640	638				
T_1	587	650						
T_2	564	636						

Crop :- Tobacco. **Ref :- Ms. 62(116).**

Site :- Agri. Res. Stn , Nipani. **Type :- 'M'.**

Object :—To study the effect of green manuring with fertilizers dose on the yield of *Bidi* Tobacco.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Tobacco. (c) Nil. (ii) Medium deep. (iii) N.A. (iv) (a) to (c) N.A. (d) 2 m.×2 m. (e) N.A. (v) Nil. (vi) S—20. (vii) Unirrigated. (viii) Interculturing and stirring. (ix) and (x) N.A.

2. TREATMENTS :

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

(1) 3 G.M. Crops: M_0=Control (No. G.M.), M_1=*Udid* and M_2=*Sannehemp*.

(2) 2 levels of N : N_0=0 and N_1=98·8 Kg/ha.

(3) 2 levels of P_2O_5 : P_0=0 and P_1=247·1 Kg/ha.

4. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 3. (iv) (a) 8 m.×8 m. (b) 6 m.×6 m. (v) 1 m.×1 m. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of tobacco. (iv) (a) 1962 only. (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 2114 Kg/ha. (ii) 269·9 Kg/ha. (iii) Main effect of N alone is highly significant. (iv) Av. yield of tobacco in Kg/ha.

	M_0	M_1	M_2	P_0	P_1	Mean
N_0	1839	1842	1946	1877	1875	1876
N_1	2274	2262	2524	2305	2401	2353
Mean	2056	2052	2235	2091	2138	2114
P_0	2023	1934	2316			
P_1	2090	2170	2154			

C.D. for N marginal means=186·5 Kg/ha.

Crop :- Tobacco. (*Rabi*). **Ref :- Ms. 63(95).**

Site :- Agri. Res. Stn., Nipani. **Type :- 'M'.**

Object :—To find the most suitable green manure for this tract with fertilizers dose.

1. BASAL CONDITIONS :

(i) (a) Tobacco—Tobacco. (b) Tobacco. (c) N.A. (ii) Medium deep. (iii) 10.8.1963. (iv) (a) Ploughing and harrowing. (b) Transplanting. (c)—. (d) 107 cm ×107 cm. (e) one. (v) 62·8 Q/ha of F.Y.M. (vi) S—20. (vii) Unirrigated. (viii) 12 ploughings and 12 interculturings. (ix) 40 cm. (x) N.A.

2. TREATMENTS :

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

(1) 3 G.M. crops : M_0=Control, M_1=*Udid* and M_2=*Sannhemp*.

(2) 2 levels of N : N_0=0 and N_1=148·3 Kg/ha. [½ as A/S and ½ as G.N.C.].

(3) 2 levels of P_2O_5 as Super : P_0=0 and P_1=247·1 Kg/ha.

In case of G.M. crops ½ the dose will be drilled at sowing the crops and the remaining ½ at establishment.

The above 12 treatment combinations were applied in 3 sets of plots. All the plots receive G.M. in the first year and in the subsequent years alternate plots will receive G.M.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 36. (b) N.A. (iii) 4. (iv) (a) 8 m.×8 m. (b) 6 m.×6 m. (v) 1 m.×1 m. (vi) Yes.

4. GENERAL :

(i) Fairly good. (ii) Slight Aphid infection. No control measures taken. (iii) Yield of tobacco. (iv) (a) 1963 only. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 680 Kg/ha. (ii) 142·5 Kg/ha. (iii) None of the effects is significant. (v) Av. yield of tobacco in Kg/ha.

	N_0	N_1	P_0	P_1	Mean
M_0	704	713	707	709	708
M_1	593	710	665	638	652
M_2	642	718	733	627	680
Mean	646	714	702	658	680
P_0	686	717			
P_1	607	710			

Crop :- Tobacco (*Kharif*). **Ref :- Ms. 60(117).**

Site :- Agri. Res. Stn., Nipani. **Type :- 'M'.**

Object :—To find the suitable placement of fertilisers for *Bidi* Tobacco.

1. BASAL CONDITIONS :

(i) (a) Tobacco—Tobacco. (b) Tobacco. (c) 12·4 C.L./ha. of F.Y.M.+fertilisers as per treatments. (ii) Medium deep fairly well drained. (iii) N.A. (iv) (a) Ploughing and harrowing. (b) Transplanting. (c) —. (d) 107 cm.×107 cm. (e) 1. (v) 12·4 C.L./ha. of F.Y.M. (vi) S-20. (vii) Unirrigated. (viii) 8 hoeings and 12 interculturings. (ix) 74 cm. (x) N.A.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 manurial treatments : M_1=44·8 Kg/ha. of N (½ as Cake+½ as Sulphate) and M_2=M_1+112·1 Kg/ha. of P_2O_5+67·2 Kg/ha. of K_2O.

(2) 3 methods of placement : F_1=Usual method, F_2=Deep placement (15 cm. deep and 23 cm. away from plants) and F_3=¼ by usual method+3/4 by deep placement.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 18·1 m.×4·3 m. (b) 16 m.×2·1 m. (v) 107 cm.×107 cm. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of tobacco. (iv) (a) 1957 to 60. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 516 Kg/ha. (ii) 281·2 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of tobacco in Kg/ha.

	F_1	F_2	F_3	Mean
M_1	430	585	510	508
M_2	468	563	541	524
Mean	449	574	526	516

Crop :- Tobacco (*Rabi*). **Ref :- Ms. 62(96).**

Site :- Agri. Res. Stn., Nipani. **Type :- 'M'.**

Object :—To study the effect of rare elements on the yield of Bidi Tobacco.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Tobacco. (c) N.A. (ii) Medium black. (iii) October, 1972. (iv) (a) Ploughing and harrowing. (b) Transplanting. (c) —. (d) 107 cm.×107 cm. (e) 1. (v) 12·4 C.L./ha. of F.Y.M.+67·2 Kg/ha. of N. (vi) S—320. (vii) Unirrigated. (viii) 8 hoeings and 12 interculturings. (ix) and (x) N.A.

2. TREATMENTS :

8 micronutrients : M_0=Control, M_1=50 Kg/ha. of C/S, M_2=50 Kg/ha. of Manganese, M_3=30 Kg/ha. of Manganesium, M_4=8 Kg/ha. of Borax, M_5=8 Kg/ha. of Ammonium Molybdate, M_6= 15 Kg/ha. of Ferrous Sulphate and M_7=8 Kg/ha. of Cobalt Nitrate.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) and (b) 7 m.×3 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of tobacco. (iv) (a) 1962—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 839 Kg/ha. (ii) 129·4 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of toba cco in Kg/ha.

Treatment	M_0	M_1	M_2	M_3	M_4	M_5	M_6	M_7
Av. yield	818	693	870	808	944	868	837	877

Crop :- Tobacco (*Rabi*). **Ref :- Ms. 63(97).**

Site :- Agri. Res. Stn., Nipani. **Type :- 'M'.**

Object :—To find the optimum combination of N, P and K for Tobacco.

1. BASAL CONDITIONS :

(i) (a) Tobacco–Tobacco. (b) Tobacco. (c) N.A. (ii) Medium deep. (iii) 12.9.1963. (iv) (a) Ploughing and harrowing. (b) Transplanting. (c) —. (d) 107 cm.×107 cm. (e) 1. (v) 62·8 Q/ha. of F.Y.M. (vi) S—20. (vii) Unirrigated. (viii) 12 interculturings and 12 hoeings. (ix) 40 cm. (x) N.A.

2. TREATMENTS :

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

(1) 2 levels of N as A/S : N_1=60 and N_2=90 Kg/ha.

(2) 3 levels of P_2O_5 as Super : P_0=0, P_1=30 and P_2=60 Kg/ha.

(3) 3 levels of K_2O as Pot. Sul. : K_0=0, K_1=60 and K_2=100 Kg/ha.

3. DESIGN:

(i) Fact. in R.B.D. (ii) (a) 18. (b) 9·1 m.×8·2 m. (iii) 3. (iv) (a) and (b) 2·7 m.×1·5 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Slight attack of Aphids. No control measures taken. (iii) Yield of tobacco. (iv) (a) 1963—only. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 177 Kg/ha. (ii) 31·9 Kg/ha. (iii) Main effect of N alone is significant. (iv) Av. yield of tobacco in Kg/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_1	184	152	169	155	186	165	168
N_2	175	193	192	183	191	186	186
Mean	180	172	180	169	188	175	177
K_0	173	160	173				
K_1	182	187	196				
K_2	184	170	172				

C.D. for N marginal means=17·6 Kg/ha.

Crop :- Tobacco (*Kharif*). **Ref :- Ms. 60(115).**

Site :- Agri. Res. Stn., Nipani. **Type :- 'M'.**

Object : –To find the best green manure and optimum fertilizer dose for *Bidi* Tobacco.

1. BASAL CONDITIONS :

(i) (a) Tobacco—Tobacco. (b) and (c) As per treatments. (ii) Medium deep fairly well drained. (iii) N.A. (iv) (a) Ploughing and harrowing. (b) Transplanting. (c) —. (d) 107 cm.×107 cm. (e) N.A. (v) 12·4 C.L./ha. of F.Y.M. (vi) S–20. (vii) Unirrigated. (viii) 8 hoeings, 12 interculturings, weekly suckering, topping at central bud at 12 leaves and removal of lower leaves upto 15 cm. (ix) 74 cm. (x) N.A.

2. TREATMENTS :

Main-plot treatments :

4 G.M. crops : G_0=Control, G_1=*Udid*, G_2=*Charali* and G_3=*Sannhemp*.

Sub-plot treatments :

2 manurial treatments : M_0=Control, M_1=44·8 Kg/ha. of N ($\frac{1}{2}$ as Cake+$\frac{1}{2}$ as A/S).

Sub-sub-plot treatments :

4 periods for applying G.M. crops : S_1=1st season (1958-59), S_2=2nd season (1959-60), S_3=3rd season (1960-61) and S_4=4th season (1961-62).

3 DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication; 2 sub-plots/main-plot and 4 sub-sub-plots/sub-plot. (b) N.A. (iii) 2. (iv) (a) 14·9 m.×6·4 m. (b) 12·8 m.×4·3 m. (v) 107 cm.×107 cm. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of Tobacco. (iv) (a) 1958-60. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 606 Kg/ha. (ii) (a) 238·4 Kg/ha. (b) 130·7 Kg/ha. (c) 130·8 Kg/ha. (iii) Main effects of G, M, S and interaction G×S are significant. (iv) Av. yield of tobacco in Kg/ha.

	G_0	G_1	G_2	G_3	S_1	S_2	S_3	S_4	Mean
M_0	439	678	492	496	594	564	501	445	526
M_1	630	888	568	661	696	754	670	627	687
Mean	534	783	530	578	645	659	585	636	606
S_1	451	922	623	583					
S_2	598	892	540	608					
S_3	526	683	543	589					
S_4	563	635	413	584					

C.D. for G marginal means =268·2 Kg/ha.
C.D. for M marginal means =90·8 Kg/ha.
C.D. for S marginal means =75·7 Kg/ha.
C.D. for S means at the same level of G=151·5 Kg/ha.
C.D. for G means at the same level of S=293·2 Kg/ha.

Crop :- Tobacco (*Rabi*). **Ref :- Ms. 62(98), 63(98).**

Site :- Agri. Res. Stn., Nipani. **Type :- 'M'.**

Object :—To study the comparative merits of recommended dose with higher dose of fertilizer for *Bidi* Tobacco.

1. BASAL CONDITIONS :

(i) (a) Nil; Tobacco—Tobacco. (b) Tobacco. (c) N.A. (ii) Medium black; Medium deep. (iii) Sept. 1962; 12.9.63. (iv) (a) Ploughing and harrowing. (b) Transplanting. (c) —. (d) 107 cm.×107 cm. (e) 1. (v) 12·4 C.L./ha. of F.Y.M. (1962); 62·8 Q/ha. of F.Y.M. (1963). (vi) S—20. (vii) Unirrigated. (viii) 12 hoeings and 12 interculturings. (ix) N.A.; 40 cm. (x) N.A.

2. TREATMENTS :

4 manurial treatments : M_0=Control, M_1=44·8 Kg/ha. of N+22·4 Kg/ha. of P_2O_5+22·4 Kg/ha. of K_2O, M_2 =67·2 Kg/ha. of N+22·4 Kg/ha. of P_2O_5+22·4 Kg/ha. of K_2O and M_3=M_2 applied in 2 doses.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 11. (iv) (a) and (b) 20 m.×4 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of tobacco. (iv) (a) 1962 to 63. (b) No. (c) As under 5. Results. (v) and (vi) Nil. (vii) Error variances are heterogeneous. Treatments × years interaction is present.

5. RESULTS :

(i) 546 Kg/ha. (ii) 202·0 Kg/ha. (based on 3 d.f. made up of treatments × years interaction). (iii) Treatment differences are not significant. (iv) Av. yield of tobacco in Kg/ha.

Treatment	M_0	M_1	M_2	M_3
Av. yield	468	594	542	578

Years	M_0	M_1	M_2	M_3	Sig.	G.M.	S.E./plot
1962	219	254	292	289	*	264	57·0
1963	717	934	791	868	N.S.	828	112·2
Pooled	468	594	542	578	N.S.	546	202·0

Crop :- Tobacco (*Kharif*). **Ref :- Ms. 63,64 (S.F.T.).**

Site :- (District) : Mysore. **Type :- 'M'.**

Object:—Type A_1 : To study the response curves of important cereals, cash and oil seed crops to Nitrogen applied singly and in combination with other nutrients.

1. BASAL CONDITIONS :

(i) N.A. (ii) Red sandy. (iii) to (vi) N.A. (vii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments :

O =Control (no manure)
N_1 =15 Kg/ha. of N.
N_2 =30 Kg/ha. of N.
P_1 =30 Kg/ha. of P_2O_5.
N_1P_1 =15 Kg/ha. of N+30 Kg/ha of P_2O_5.
N_2P_1 =30 Kg/ha. of N+30 Kg/ha. of P_2O_5.
N_2P_2 =30 Kg/ha. of N+60 Kg/ha. of P_2O_5.
$N_2P_2K_1$=30 Kg/ha. of N+60 Kg/ha. of P_2O_5+30 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 oil seeds. 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. (iii) and (iv) N.A.

4. GENERAL:

(i) to (iii) N.A. (iv) (a) 1963 ot 1964 (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

63(S.F.T.)

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 tobacco in Kg/ha.	2029	2138	1245	1564	2326	2006	3340	515·8

Control yield=4207 Kg/ha. ; No. of trials=6.

64 (S.F.T.)

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 tobacco in Kg/ha.	289	1963	1910	4177	4111	4889	6378	929·3

Control yield=15965 Kg/ha. ; No. of trials=3.

Crop :- Tobacco (*Kharif*). **Ref :- Ms. 63, 64 (S.F.T.).**

Site :- (District) : Mysore. **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) N.A. (ii) Red sandy. (iii) to (vi) N.A. (vii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments :

O =Control (no manure).
N_1 =15 Kg/ha. of N.
P_1 =30 Kg/ha. of P_2O_5.
P_2 =60 Kg/ha. of P_2O_5.
N_1P_1 =15 Kg/ha. of N+30 Kg/ha. of P_2O_5.
N_1P_2 =15 Kg/ha. of N+60 Kg/ha. of P_2O_5.
N_2P_2 =30 Kg/ha. of N+60 Kg/ha. of P_2O_5.
$N_2P_2K_2$ =30 Kg/ha. of N+60 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 469.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1963 to 1964. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

63 (S.F.T.)

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 tobacco in Kg/ha.	2401	1146	1920	2217	2095	2576	3321	518·0

Control yield=3120 Kg/ha. ; No. of trials=6.

64(S.F.T.)

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 tobacco in Kg/ha.	3479	1739	1673	1133	4546	5811	7894	1182·6

Control yield=15893 Kg/ha. ; No. of trials=3.

Crop :- Tobacco (*Kharif*). **Ref :- Ms. 63,64(S.F.T.).**

Site :- (District) : Mysore **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) N.A. (ii) Red sandy (iii) to (vi) N.A. (vii) Unirrigated (viii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments :

O =Control (no manure).
N_1 =15 Kg/ha. of N.
K_1 =30 Kg/ha. of K_2O.
K_2 =60 Kg/ha. of K_2O.
N_1K_1 =15 Kg/ha. of N+30 Kg/ha. of K_2O.
N_1K_2 =15 Kg/ha. of N+60 Kg/ha. of K_2O.
N_2K_2 =30 Kg/ha. of N+60 Kg/ha. of K_2O.
$N_1P_1K_1$=15 Kg/ha. of N+30 Kg/ha. of P_2O_5+30 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 469.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1963 to 1964 (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

63 (S.F.T.)

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 tobacco in Kg/ha.	1792	876	487	1429	1360	1344	1136	431·4

Control yield=3096 Kg/ha. ; No. of trials=6.

64 (S.F.T.)

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 tobacco in Kg/ha.	−428	2082	−975	3222	5245	4467	7775	1329·3

Control yield=15728 Kg/ha.; No. of trials=3.

Crop :- Tobacco (*Rabi*). **Res :- Ms. 61(89), 62(117), 63(94).**

Site :- Agri. Res. Stn., Nipani. **Type :- 'C'.**

Object :—To study the effect of interculturing and hand stirring on *Bidi* Tobacco.

1. BASAL CONDITIONS :

(i) (a) Nil ; N.A., Tobacco—Tobacco (1963). (b) Tobacco. (c) 12·4 C.L./ha. of F.Y.M., N.A. (ii) Medium black (1961, 1962) ; Medium deep (1963). (iii) 24.8.1961 ; N.A. ; 10.8.1963. (iv) (a) Ploughing with iron plough and harrowing with wooden harrow (1961) ; N.A. (1962) ; ploughing and harrowing (1963) (b) Transplanting. (c) —. (d) 107 cm. × 107 cm (e) 1. (v) 12·4 C.L./ha. of F.Y.M. + 44 8 Kg/ha. of N (½ G.N.C. + ½ A/S) (1961) ; N.A. ; (1962) ; 62·8 Q/ha. of F.Y.M. (1963). (vi) S—20. (vii) Unirrigated. (viii) As per treatments. (ix) 91 cm. ; N.A. ; 40 cm. (x) 13.2.1962 ; N.A. for 1962 and 1963.

2. TREATMENTS :

Main-plot treatments.

3 levels of interculturing : I_1=10, I_2=15 and I_3=20 interculturings.

Sub-plot treatments.

3 Stirring treatments : S_0=N_0 Stirring, S_1=Stirring after every interculturing and S_2=Stirring after alternate interculturing.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 10·7 m × 8·5 m. (b) 8·5 m. × 6.4 m. (v) 107 cm. × 107 cm. (vi) Yes.

4. GENERAL :

(i) Normal (1961) ; Fair ; (1962) Fairly good (1963). (ii) Aphid infection was observed. insecticide were sprayed (1961) ; Nill (1962), Slight attack of aphids. No control measures taken (1963). (iii) Yield of tobacco. (iv) (a) 1961—1963. (b) No. (c) As under 5. Results. (v) and (vi) Nil. (vii) Both the error variances homogeneous. Main plots treatments × years and sub-plot treatments × years interactions are absent.

5. RESULTS :

(i) 702 Kg/ha. (ii) (a) 107·1 Kg/ha. (based on 34 d.f. made up of pooled error and years × main-plot treatments interaction). (b) 97·1 Kg/ha. (based on 102 d.f. made up of pooled error + years + sub plot × years × main × sub-plot treatments interaction. (iii) None of the effects is significant. (iv) Av. yield of tobacco in Kg/ha.

	I_1	I_2	I_3	Mean
S_0	699	696	708	701
S_1	705	668	737	703
S_2	681	724	703	703
Mean	695	696	716	702

Years	I_1	I_2	I_3	Sig.	S.E./plot	S_0	S_1	S_2	Sig.	G.M.	S.E./plot
1961	323	336	317	N.S.	77·2	308	337	330	N.S.	325	83·8
1962	944	971	997	N.S.	80·2	953	958	1001	N.S.	971	92·0
1963	818	780	835	N.S.	149·8	842	815	776	N.S.	811	105·2
Pooled	695	696	716	N.S.	107·1	701	703	703	N.S.	702	97·1

Crop :- Tobacco (*Rabi*). **Ref :- Ms. 62(97), 63(96).**

Site :- Agri. Res. Stn., Nipani. **Type :- 'C'.**

Object :—To study the effect of different depths of tillage on *Bidi* Tobacco.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Tobacco. (c) N.A. (ii) Medium black; medium deep. (iii) Sept 1962 ; 6.8.1963. (iv) (a) As per treatments. (b) Transplanting. (c) —. (d) 107 cm.×107 cm. (e) 1. (v) 12·35 C.L./ha. of F.Y.M. +124·6 Kg/ha. of N ; 62·8 Q/ha. of F.Y.M. (vi) S--20. (vii) Unirrigated. (viii) 8 to 12 hoeings and 12 interculturings. (ix) N.A.: 40 cm. (x) N.A.

2. TREATMENTS :

8 ploughing treatments : T_0=Control (no ploughing), T_1=wooden plough every year, T_2=Medium plough every year, T_3=Medium plough alternate year, T_4=Medium plough once in 3 years, T_5=Deep ploughing every year, T_6=Deep ploughing alternate year and T_7=Deep ploughing once in 3 years.

Depth of ploughing with wooden, medium and deep ploughing will be 8 to 10 cm., 10 to 15 cm. and 15 to 20 cm. respectively.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) 12 m.×12.m. (b) 10 m.×10 m. (v) 1 m.×1 m. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of tobacco. (iv) (a) 1962 to 1967 (treatments modified in 1964). (b) No. (c) As under 5 Results. (v) and (vi) Nil. (vii) Error variances are homogeneous. Treatments × years interaction is absent.

5. RESULTS :

(i) 752 Kg/ha. (ii) 70·4 Kg/ha. (based on 49 d.f. composed of pooled error and treatmen ts×years interaction). (iii) Treatment differences are not significant. (iv) Av. yield of tobacco in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Av. yield	696	770	726	808	786	744	719	750

Years	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	Sig.	G.M.	S.E./plot
1962	777	793	829	829	842	800	758	802	N.S.	808	65·1
1963	615	747	623	787	729	688	680	697	*	696	73·1
Pooled	696	770	726	808	786	744	719	750	N.S.	752	70·4

Crop :- Tobacco (*Rabi*). **Ref :- Ms. 64(79), 65(112).**

Site :- Agri. Res. Stn., Nipani. **Type :- 'C'.**

Object :—To study the effect of depth due to implements used, on growth yield and quality of *Bidi* Tobacco.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Tobacco. (c) N.A. (1964) ; 12·4 C.L./ha. of F.Y.M. (1965). (ii) Medium deep ; black soil. (iii) 19.8.1964 ; 19.8.1965. (iv) (a) N.A. (1964) ; harrowing and ploughing (1965). (b) Planting by hand. (c) N.A. (d) 1 m.×1 m. (e) 1. (v) 12·4 C.L./ha. of F.Y.M. (vi) S-20. (vii) Unirrigated. (viii) Interculturing and stirring (1964) ; weeding, lopping and desuckring ete. (1965). (ix) 65 cm. ; 77 cm. (x) 2.2.1965 ; 28.1.1966.

2. TREATMENTS :

8 ploughing treatments : T_0=Single harrowing every year, T_1=Wooden ploughing (8 to 10 cm.) every year, T_2=Deep ploughing (10 to 15 cm.) every year, T_3=Deep ploughing (10 to 15 cm.) alternate year, T_4=Deep ploughing (10 to 20 cm.) once in 3 years, T_5=Deep ploughing (15 to 20 cm.) by K-9 every year, T_6=Deep ploughing (15 to 20 cm.) alternate year and T_7=Deep ploughing (15 to 20 cm.) once in 3 years.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 12 m.×12 m. (b) 10 m.×10 m. (v) 1 m.×1 m. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Applied infestation controlled by the use of pesticides. (iii) Yield of tobacco. (iv) (a) 1962 to 1967 (modified in 1964). (b) Yes since 1964. (c) Nil. (v) N A. (vi) and (vii) Nil.

5. RESULTS :

64(79)

(i) 790 Kg/ha. (ii) 21·1 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of cured leaf in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Av. yield	714	899	788	713	863	850	682	811

65(112)

(i) 1069 Kg/h. (ii) 148·9 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of cured leaf in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Av. yield	1040	1016	1131	1034	947	1160	1058	1164

—=—

Crop :- Tobacco. **Ref :- Ms. 62(144), 63(146).**

Site :- Tobacco Res. Stn., Hansur. **Type :- 'D'.**

Object :—To control Cut worm damage in country Tobacco fields.

1. BASAL CONDITIONS :

(i) (a) to (c) Nil. (ii) Red loam to sandy loam; Red loam. (iii) 28.8.62; 21.8.63. (iv) (a) Ploughing. (b) Transplanting. (c) —. (d) and (e) N.A. (v) Nil. (vi) Country tobacco. (vii) Unirrigated. (viii) Weeding, gap filling. (ix) 7 cm.; 10 cm. (x) 6.9.62; 21 to 25.9.63.

2. TREATMENTS :

7 chemical treatments : T_0=Control, T_1=Endrine 20 E.C. 0·03%, T_2=Aldrine 20 E.C. 0·04%, T_3=Chlordane 70 E.C. 0·05%, T_4=Diazimon 20 E.C. 0·03%, T_5=Heptachlor 20 E.C. 0·03% and T_6=D.D.T. 50% W.P.O. 15%.

T_1, T_3, T_4 and T_5 chemicals dissolved 16 c.c. in 10 litres of water while T_2 as 8 c.c. in 10 litres of water and T_6 as 31 gm in 10 litres of water.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) and (b) 28·3 sq. m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) As per treatments. (iii) Percentage of cut worm damaged seedlings. (iv) (a) 1962 to 63. (b) No. (c) Nil. (v) and (vi) N.A. (vii) Error variances are heterogeneous. Treatments×years interaction is absent.

5. RESULTS :

62(144)

(i) 6·10%. (ii) 1·48%. (iii) Treatment differences are significant. (iv) Av. percent of cut worm damaged seedlings/plot.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6
Av. percent	11·9	5·8	4·0	4·4	6·5	5·4	4·8

C.D.=2·2 percent.

63(146)

(i) 4·9%. (ii) 2·4%. (iii) Treatment differences are significant. (iv) Av. percent incidence of cut worm/plot.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6
Av. percent	8·5	3·3	4·3	2·4	7·2	6·2	2·4

C.D.=3·6 percent.

Crop :- Tobacco. **Ref :- Ms. 61(169), 62(147), 63(149), 64(108).**

Site :- Tobacco Res. Stn., Hunsur. Type :- 'D'.

Object :—To control leaf spots in fields by priming leaves and spraying Dithane Z—78.

1. BASAL CONDITIONS

(i) (a) to (c) Nil. (ii) Red loam to sandy loam. (iii) 1.8.61: 3.8.62; 30.7.63; 19.8.64. (iv) (a) Ploughing and harrowing. (b) Transplanting in 61, 63 and 64; broadcasting in 62. (c) 4 Kg/ha. (d) 84 cm.×84 cm. (e) N.A. (v) 109 Q/ha. of Muncipal Compost+80 Kg/ha. of N+50 Kg/ha. of P_2O_5+25 Kg/ha. of K_2O. (vi) Virginia Gold. (vii) Unirrigated. (viii) Weedings and loosening the soil. (ix) 11 cm.; 25 cm.; 10 cm.; 20 cm. (x) 15.10.61; 17.10.62; 4.10.63; 21, 23.10.64.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 primings : P_0=No priming, P_1=Priming at 21 days after planting, P_2=Priming at 35 days after planting and P_3=Priming at 21 and 35 days after planting.

(2) 2 sprayings : S_0=No spraying and S_1=Spraying of Dithene Z—78.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) and (b) 39·4 Sq. m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) As per treatments. (iii) Frog eye spot count/leaf position. (iv) (a) 1961 to 64. (b) No. (c) As under 5. Results. (v) and (vi) Nil. (vii) Error variances are heterogeneous. Treatments×years interaction is present.

5. RESULTS :

(i) 21·6 frog eye spots/leaf. (ii) 12·8 frog eye spots/leaf (based on 21 d.f. made up of Treatments×years interaction). (iii) None of the effects is significant. (iv) Mean no. of frog eye spots/leaf position.

	P_0	P_1	P_2	P_3	Mean
S_0	20·1	20·8	23·7	16·6	20·3
S_1	22·3	22·1	25·0	22·2	22·9
Mean	21·2	21·4	24·4	19·4	21·6

Years	P_0	P_1	P_2	P_3	Sig.	S_0	S_1	Sig.	G.M.	S.E./plot
1961	10·2	5·3	5·0	4·8	*	5·7	7·0	N.S.	6·3	2·8
1962	24·8	31·2	43·2	38·3	*	32·9	35·9	N.S.	34·4	12·2
1963	44·4	42·7	41·7	29·9	N.S.	35·2	44·2	N.S.	39·7	19·1
1964	5.2	6·5	7·5	4·8	N.S.	7·5	4·5	*	6·0	3·7
Pooled	21·2	21·4	24·4	19·4	N.S.	20·3	22·9	N.S.	21·6	12·8

Crop :- Tobacco (*Rabi*). **Ref :- Ms. 61(94), 62(115).**

Site :- Agri. Res. Stn., Nipani. **Type :- 'D'.**

Object :—To study the feasibility of sucker control in *Bidi* Tobacco.

1. BASAL CONDITIONS :

(i) (a) Tobacco—Tobacco. (b) Tobacco. (c) 12·4 C.L./ha. of F.Y.M. (ii) Medium black; Medium deep. (iii) 23.8.61; N.A. (iv) (a) Ploughing with iron plough (1961) ; N.A. (1962). (b) Transplanting (1961) ; N.A. (1962). (c)—. (d) 107 cm. × 107 cm. (1961); N.A. (1962). (e) 1. (61); N.A. (62). (v) 12·4 C.L./ha. of F.Y.M. (vi) S—20. (vii) Unirrigated. (viii) Interculturing followed by hand weeding (61) ; Nil (62). (ix) 91 cm. ; N.A. (x) N.A.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 5 methods of application : A_0=No application (used hand suckering), A_1=Application of coconut oil after topping the tip and at each leaf axil, A_2=Alpha NAA applied to cut ends after topping, A_3=Melaic hydroxide to the top 6 leaves at the time of topping as spray and A_4=Melaic hydroxide (in water) applied as in A_3.

(2) 2 types of sucker : S_1=Top sucker and S_2=Bottom sucker.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 10. (b) N.A. (iii) 6. (iv) (a) and (b) 8·5 m. × 4·3 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Normal (1961) ; Good (62). (ii) Aphid infection. No control measures in 61; Nil in 62. (iii) Sucker weight. (iv) (a) 1961—62. (b) No. (c) As under 5. Results. (v) N.A. (vi) Nil. (vii) Error variances are heterogeneous. Treatments × years interaction is present.

5. RESULTS :

(i) 382 Kg/ha. (ii) 552·5 Kg/ha. (based on 9 d.f. made up of treatments × years interaction). (iii) None of the effects is significant. (iv) Av. yield of suckers in Kg/ha.

	A_0	A_1	A_2	A_3	A_4	Mean
S_1	203	462	496	714	808	537
S_2	166	398	113	276	190	229
Mean	184	430	304	495	499	382

Years	A_0	A_1	A_2	A_3	A_4	Sig.	S_1	S_2	Sig.	G.M.	S.E./plot
1961	82	177	142	210	214	**	207	124	**	165	34·7
1962	287	684	467	779	784	**	867	334	**	600	191·3
Pooled	184	430	304	495	499	N.S.	537	229	**	382	552·5

Crop :- Groundnut (*Kharif*). **Ref :- Ms. 60(81), 61(43).**

Site :- Agri. Res. Stn., Bailhongal. **Type :- 'M'.**

Object :—To find out the optimum combination of N, P and K for Groundnut crop.

1. BASAL CONDITIONS :

(i) (a) Gram—Groundnut. (b) Gram. (c) Nil. (ii) Light masari. (iii) 26.6.60; 16.6.61. (iv) (a) Harrowing. (b) Drilling. (c) 90 Kg/ha. (d) 30 cm. between rows and 10 to 15 cm. between plants. (e) N.A. (v) 12·4 C.L./ha. of F.Y.M. (vi) Spanish improved (early). (vii) Unirrigated. (viii) Weeding and interculturing. (ix) 79 cm. ; 38 cm. (x) 23, 24.10.60; 23.9.61.

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=22·4 Kg/ha.

(2) 3 levels of P_2O_5 as Super : P_0=0, P_1=112·1 and P_2=224·3 Kg/ha.

(3) 3 levels of K_2O as Pot. Sul. : K_0=0, K_1=112·1 and K_2=224·3 Kg/ha.

Manures applied in one dose by fertilizer-cum-seed drill at drilling.

3. DESIGN :

(i) 3^3 confd. (ii) (a) 3 blocks/replications, 9 plots/block. (b) N.A. (iii) 2. (iv) (a) 11·0 m.×6·4 m. (b) 9·1 m.×4·6 m. (v) 91 cm.×91 cm. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Tikka disease, no control measure taken. (iv) (a) 1956—61. (b) No. (c) As under 5. Results. (v) Bijapur, Annigiri and Dharwar in 1960 and Bijapur, Dharwar in 1961. (vi) Nil. (vii) Experiments with numbers 56(141), 56(127), 58(94) and 59(39) were also taken into consideration for pooling. Error variances are homogeneous and treatments×years interaction is present.

5. RESULTS :

(i) 711 Kg/ha. (ii) 148·0 Kg/ha. (based on 90 d.f. made up of treatments×years interaction). (iii) None of 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	660	694	729	645	722	716	694
N_1	700	709	692	685	708	708	700
N_2	690	755	770	730	734	752	738
Mean	683	719	730	687	721	725	711
K_0	643	712	706				
K_1	707	709	748				
K_2	701	738	736				

Years	N_0	N_1	N_2	Sig.	P_0	P_1	P_2	Sig.
1960	309	317	336	N.S.	295	338	330	N.S.
1961	889	851	897	N.S.	884	914	840	N.S.
Pooled	694	700	738	N.S.	683	719	730	N.S.

K_0	K_1	K_2	Sig.	G.M.	S.E./plot
306	335	322	N.S.	321	118·3
878	934	825	*	879	120·8
687	721	725	N.S.	711	148·0

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Crop :- Groundnut. (*Kharif*). **Ref :- Ms. 64(17).**

Site :- Reg. Sorghum Res. Stn., Bailhongal. **Type :- 'M'.**

Object : –To study the comparative effects of new fertilizers, Ammo. Phos. and Nitrophos. with A/S and Urea.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Groundnut– Wheat. (b) *Jowar*. (c) 12·4 C.L./ha. of F.Y.M. (ii) Light Masari. (iii) 2.7.1964. (iv) (a) One ploughing and 3 harrowing. (b) Dibbling. (c) 37 Kg/ha. (d) 46 cm.×30 cm. (e) Nil. (v) 12·4 C.L./ha. of F.Y.M. (vi) Erect type. (vii) Nil. (viii) 2 intercultivation and weeding (ix) 81 cm. (x) 20.10.64.

2. TREATMENTS :

All combinations of (1) and (2)+3 extra treatments

(1) 3 levels of manures : M_1=10 Kg/ha. of N+30 Kg/ha. of P_2O_5, M_2=20 Kg/ha. of N+30 Kg/ha. of P_2O_5 and M_3=20 Kg/ha. of N+60 Kg/ha. of P_2O_5.

(2) 4 sources : S_1=Ammo. phos.+Super, S_2=Nitrophos.+Super, S_3=A/S+Super and S_4=Urea+ Super.

3 extra treatments : P_0=0, P_1=30 and P_2=60 Kg/ha. of P_2O_5.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 15. (b) N.A. (iii) 3. (iv) (a) 11·0 m.×6·4 m. (b) 9·1 m.×4·6 m. (v) 91 cm. ×91 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Height of plants, No. of pods/plants and weight of pods. (iv) (a) and (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 998 Kg/ha. (ii) 111·6 Kg ha. (iii) S effect is significant. Extra vs. others effect is significant. (iv) Av. yield of pods in Kg/ha.

P_0=794, P_1=893 and P_2=1002 Kg/ha.

	S_1	S_2	S_3	S_4	Mean
M_1	1033	825	1125	1046	1007
M_2	1128	945	1158	1052	1071
M_3	945	1025	1084	926	995
Mean	1035	932	1122	1008	1024

C.D. for S marginal means=107·7 Kg/ha.
C.D. for Extra vs. others=85·2 Kg/ha.

Crop :- Groundnut. (*Kharif*). **Ref :- Ms. 61(144), 62(133).**

Site :- Agri. Res. Stn., Bijapur. **Type :- 'M'.**

Object :—To find out the effect of fertilizers on the yield of Groundnut.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Bajri*. (c) 12·4 C.L./ha. of F.Y.M.; 12·4 C.L./ha. of F.Y.M.+2·2 Kg/ha. of N as A/S. (ii) Medium to medium loamy. (iii) 26.6.61 ; 30.6.62. (iv) (a) 3 ploughings and harrowings. (b) Drilling. (c) 112 Kg/ha. (d) 30 cm. between rows. (e) Nil. (v) Nil. (vi) Spanish improved (early). (vii) Unirrigated. (viii) 1 to 2 hand weedings and 2 interculturings. (ix) 43 cm ; 70 cm. (x) 30.10.61 ; 11.11.62.

3. TREATMENTS :

3 times of application of 134·5 Kg/ha. of N as A/S.

T_0=Control, T_1=$\frac{1}{2}$ dose at the time of sowing and $\frac{1}{2}$ dose one month after sowing and T_2=Full dose at the time of sowing.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) 9·1 m.×7·3 m. (iii) 12. (iv) (a) 9·1 m.×2·4 m. (b) 7·9 m.×1·3 m. (v) 61 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Slight attack of Tikka disease. (iii) Yield of pods. (iv) (a) 1961 to 62. (b) No. (c) As under 5 Results. (v) N.A. (vi) Nil. (vii) Error variances are homogeneous and treatments×years interaction is absent.

5. RESULTS :

(i) 563 Kg/ha. (ii) 73·5 Kg/ha. (based on 46 d.f. made up of pooled error and treatments×years interaction). (iii) Treatment differences are significant. (iv) Av. yield of pods in Kg/ha.

Treatments	T_0	T_1	T_2
Av. yield	528	581	580

C.D.=42·8 Kg/ha.

	T_0	T_1	T_2	Sig.	G.M.	Mean
1961	656	660	684	N.S.	667	80·2
1962	401	502	475	**	459	59·8
Pooled	528	581	580	*	563	73·5

Crop :- Groundnut. (*Kharif*). **Ref :- Ms. 64(87).**

Site :- College of Agri., Dharwar. **Type :- 'M'.**

Object :—To find out suitable placement method and kind of fertilizers for application to Groundnut in red soil.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Jowar*. (c) N.A. (ii) Red Sandy loam. (iii) 29.6.1964. (iv) (a) Ploughing, grubbing, clod crushing and harrowing. (b) Dibbling. (c) 112 Kg/ha. (d) 30 cm.×6 cm. (e) 1. (v) Nil. (vi) Spanish improved (early). (vii) Unirrigated. (viii) Interculturing and weeding. (ix) 72 cm. (x) 17.10.64.

2. TREATMENTS :

All combinations of (1) and (2) + a control

(1) 4 sources of 13 Kg/ha. of N : S_1=A/S, S_2=Urea, S_3=C/A/N and S_4=A/S/N.

(2) 3 methods of placement : M_1=N and P applied 12 cm. deep by plough sole a week before sowing, M_2= P applied 12 cm. deep by plough sole and N 5 cm. deep and 5 cm. away from seed at sowing and M_3=N and P applied in seed drill and seeds sown through draw tubes.

3. DESIGN :

(i) R.B.D. (ii) (a) 13. (b) 24·4 m.×29·3 m. (iii) 4. (iv) (a) 7·3 m.×6·1 m. (b) 6·1 m.×4·9 m. (v) Two rows on either side. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of pods. (iv) (a) 1964. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1281 Kg/ha. (ii) 80·7 Kg/ha. (iii) Main effects of M, S and control vs. others are highly significant. (iv) Av. yield of pods in Kg/ha.

Control=976 Kg/ha.

	S_1	S_2	S_3	S_4	Mean
M_1	1333	1423	1260	1416	1358
M_2	1264	1261	1177	1160	1216
M_3	1337	1453	1324	1266	1345
Mean	1311	1379	1254	1281	1306

C.D. for M marginal means=57·9 Kg/ha.

C.D. for S marginal means=66·9 Kg/ha.

C.D. for control vs. others means=85·3 Kg/ha.

Crop :- Groundnut. **Ref :- Ms. 63(68), 64(41).**

Site :- Agri. College Farm, Dharwar. **Type :- 'M'.**

Object :—To find out suitable dose of fertilizer for erect type of Groundnut with F.Y.M.

1. BASAL CONDITIONS :

(i) (a) Cotton—Chilly—Groundnut—Jowar for 63(68); Cotton—Chilly—Groundnut for 64(41). (b) Cotton—Chilly for 63(68); Cotton for 64(41). (c) N.A. (ii) Medium black. (iii) 29.7.63; 4, 5.7.64. (iv) (a) N.A. for 63(68), up rooting of cotton sterbbles, loosening the soil with harrowing. (b) Drilling for 63(68); Dibbling for 64(41). (c) 247 Kg/ha. for 63(68), N.A. for 64(41). (d) 30 cm. between rows; N.A. for 64(41). (e) 1 for 63(68); N.A. for 64(41). (v) 12·4 C.L./ha. of F.Y.M. for 63(68); N.A. for 64(41). (vi) Spanish improved. (vii) Unirrigated. (viii) 1 weeding and 2 interculturings for 63(68); 3 hand weedings for 64(41). (ix) N.A. (x) 31.10.63; 23, 24.10.64.

2. TREATMENTS :

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

(1) 3 levels of N : N_0=0, N_1=22·2 and N_2=44·4 Kg/ha.

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

(3) 3 levels of K_2O : K_0=0, K_1=22·2 and K_2=44·4 Kg/ha.

Fertilizers placed with the help of seed bowl.

3. DESIGN :

(i) 3^3 confd. (ii) (a) 3 blocks/replication; 9 plots/block. (b) 27·4 m.×18·3 m. (iii) 2. (iv) (a) 9·1 m.×6·1 m. (b) 8·5 m.×5·5 m. (v) 30 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Poor for 63(68); Fair for 64(41). (ii) Nil. (iii) Weight of pods. (iv) (a) 1963 to 64. (b) No. (c) As under 5. Results. (v) and (vi) Nil. (vii) Error variances are homogeneous. treatments×years interaction is absent.

5. RESULTS :

(i) 1135 Kg/ha. (ii) 171·7 Kg/ha. (based on 62 d.f. made up of Treatments×years interaction and pooled error). (iii) Main effect of P 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	1050	1162	1159	1077	1115	1180	1124
N_1	1104	1200	1236	1155	1178	1207	1180
N_2	1051	1114	1138	1111	1083	1108	1101
Mean	1068	1158	1178	1114	1125	1165	1135
K_0	1077	1096	1171				
K_1	1052	1068	1156				
K_2	1075	1212	1207				

C.D. for P marginal means=80·8 Kg/ha.

Years	N_0	N_1	N_2	Sig.	P_0	P_1	P_2	Sig.
1963	1097	1162	1116	N.S.	1044	1153	1178	N.S.
1964	1150	1198	1085	N.S.	1093	1163	1177	N.S.
Pooled	1124	1180	1101	N.S.	1068	1158	1178	*

K_0	K_1	K_2	Sig.	G.M.	S.E./plot
1091	1163	1121	N.S.	1125	175·7
1137	1088	1208	N.S.	1144	177·9
1114	1125	1165	N.S.	1135	171·7

Crop :- Groundnut (*Kharif*). **Ref :- Ms. 63(67), 64(45).**

Site :- Agri. College, Dharwar. **Type :- 'M'.**

Object :—To test the efficiency of different seed treatments on getting better germination stand and yield of Groundnut.

1. BASAL CONDITIONS :

(i) (a) Cotton+Chilly; Groundnut. (b) Cotton+Chilly; Cotton. (c) Nil. (ii) Medium black. (iii) 18.7.63; 30.6 64. (iv) (a) Harrowings. (b) Drilling ; dibbling. (c) and (d) N.A. (e) One. (v) Nil. (vi) Spanish improved. (vii) Unirrigated. (viii) 1—2 hand weedings and 2 interculturings. (ix) N.A.; 93 cm. (x) 24.10.63; 18.10.64

2. TREATMENTS :

5 seed soaking treatments : T_0=Control, T_2=In water for 4 hours, T_2=In luke warm water for 4 hrs., T_3=In 2% Mono Amm. Phos. for 4 hrs. and T_4=In 1% Diammonium Phos. for 4 hrs.

3. DESIGN :

(i) L. Sq. (ii) (a) 5. (b) 45·7 m.×36·6 m. (iii) 5. (iv) (a) 9·1 m.×7·3 m. (b) 8·5 m.×6·7 m. (v) 30 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of pods. (iv) (a) 1963 to 65 [1965 N.A]. (b) No. (c) As under 5. Results. (v) and (vi) Nil. (vii) Error variances are homogeneous. Treatments×years interaction is absent.

5. RESULTS :

(i) 1417 Kg/ha. (ii) 126·4 Kg/ha. (based on 28 d.f. made up of pooled error and interaction of treatments with years). (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
Av. yield	1574	1388	1339	1368	1417

C.D.=114·7 Kg/ha.

Years	T_0	T_1	T_2	T_3	T_4	Sig.	G.M.	S.E./plot
1963	1491	1248	1191	1165	1298	*	1279	131.6
1964	1658	1529	1487	1570	1536	N.S.	1556	116·7
Pooled	1574	1388	1339	1368	1417	**	1417	126·4

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Crop :- Groundnut (*Kharif*). **Ref :- Ms. 63(69), 64(42).**

Site :- Agri. College Farm, Dharwar. **Type :- 'M'.**

Object :—To find out suitable dose of fertilizers without basal dose of F.Y.M. for Groundnut.

1. BASAL CONDITIONS :

(i) (a) Cotton—Chilly (mix)—Groundnut—*Jowar* for 63(69) ; Cotton—Chilly—Groundnut for 64(42). (b) Cotton+Chilly for 63(69) ; Cotton 64(42). (c) N.A. (ii) Medium black. (iii) 2.8.63 ; 5, 6.7.64. (iv) N.A. for 63(69) ; harrowing for 64(42). (b) Drilling for 63(69) ; dibbling for 64(42). (c) 247 Kg/ha. for 63(69) ; N.A. for 64(42). (d) 30 cm. between rows for 63(69) ; N.A. for 64(42). (e) 1 for 63(69), N.A. for 64(42). (v) Nil. (vi) Spanish improved (early). (vii) Unirrigated. (viii) 1 weeding and 2 interculturings for 63(69) ; 3 hand weedings and 2 interculturings for 64(42). (ix) N.A. (x) 31.10.63; 24 and 25.10.64.

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.

Fertilizers are placed within the rows with the help of seed bowl.

3. DESIGN :

(i) 3^3 confd. (ii) (a) 3 blocks/replication; 9 plots/block. (b) 27·4 m.×18·3 m. (iii) 2. (iv) (a) 9·1 m.× 6·1 m. (b) 8·5 m.×5·5 m. (v) 30 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Poor for 63(69) ; Fair for 64(42). (ii) Nil. (iii) Yield of pods. (iv) (a) 1963—64. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Error variances are heterogeneous. Treatments×years interaction is absent.

5. RESULTS :

63(69)

(i) 1080 Kg/ha. (ii) 148·2 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	991	1098	1133	1030	1135	1057	1074
N_1	1103	1057	1065	988	1076	1161	1075
N_2	966	1135	1173	1022	1101	1151	1091
Mean	1020	1097	1124	1013	1104	1123	1080
K_0	902	1063	1075				
K_1	1042	1135	1135				
K_2	1116	1092	1161				

64(42)

(i) 1495 Kg/ha. (ii) 269·7 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	1661	1260	1648	1517	1544	1508	1523
N_1	1501	1536	1404	1479	1471	1491	1480
N_2	1501	1372	1571	1266	1658	1526	1481
Mean	1554	1389	1541	1419	1558	1508	1495
K_0	1484	1400	1372				
K_1	1658	1347	1668				
K_2	1521	1421	1583				

Crop :- Groundnut (*Kharif*). **Ref :- Ms. 60(133), 61(109), 62(112), 63(53).**

Site :- Agri. College Farm, Dharwar. **Type :- 'M'.**

Object :—To find out suitable methods of placement of fertilizers to Groundnut in black soil.

1. BASAL CONDITIONS :

(i) (a) Groundnut+Wheat—*Jowar*—Chilly+Cotton for 63(53) ; N.A. for others. (b) Chilly+Cotton for 63(53), N.A. for others. (c) 5 C.L./ha. of F.Y.M.+30 Kg/ha. of N+20 Kg/ha. of P_2O_5. (ii) Deep black soil for 63(53) ; Black clayey for 60(133) ; Black clay loam for others. (iii) 6.7.60 ; 28.6.61; 17.7.62, 6.7.63. (iv) (a) Ploughing and harrowing for 60(133), 3 harrowings for 63(53) ; normal ploughings for others. (b) Drilling for 60(133), N.A. for others. (c) 247 Kg/ha. for 60(133) N.A. for others. (d) 30 cm. between rows. (e) N.A. (v) Nil. (vi) Spanish improved. (vii) Unirrigated. (viii) Nil for 63(53) ; interculturing and weeding for others. (ix) 39 cm. for 60(133) ; N.A. for others. (x) 15 and 16.10.60 ; 6.10.61 ; 25.10.62 and 19.10.63.

2. TREATMENTS :

All combinations of (1) and (2)+one control.

(1) 2 levels of fertilizers : L_1=22·4 Kg/ha. of N+22·4 Kg/ha. of P_2O_5 and L_2=33·6 Kg/ha. of N+33·6 Kg/ha. of P_2O_5.

(2) 4 methods of application of fertilizers : M_1=By plough sole method (12 cm. deep, one week before sowing), M_2=To drop the fertilizers in the same line where the seed is sown, M_3=To place the fertilizers 4 cm. deeper than the seed by draw tube and M_4=To drop the fertilizer 5 cm. away and 5 cm. deep from the seed.

Fertilizers were dropped by seed cum fertilizer drill.

3. DESIGN:

(i) Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 9·1 m.×7·8 m. (b) 7·3 m.×6·1 m. (v) 91 cm.×61 cm. (vi) Yes.

4. GENERAL :

(i) Good for 63(53) ; Normal for others. (ii) Nil. (iii) Yield of pods. (iv) (a) 1960 to 63. (b) No. (c) As under 5. Results. (v) and (vi) Nil. (vii) Error variances are homogeneous. Treatments×years interaction is present.

5. RESULTS :

(i) 2624 Kg/ha. (ii) 235·3 Kg/ha. (based on 21 d.f. made up of treatments×years interaction). (iii) Only the effect of control *vs.* others is significant. (iv) Av. yield of pods in Kg/ha.

Control mean=2245 Kg/ha.

	M_1	M_2	M_3	M_4	Mean
L_1	2647	2618	2598	2563	2607
L_2	2720	2739	2733	2747	2735
Mean	2684	2679	2665	2655	2671

C.D. for control *vs.* others=126·8 Kg/ha.

Years	Control	M_1	M_2	M_3	M_4	Sig.	L_1	L_2	Sig.	G.M.	S.E./plot
1960	1806	2190	2203	2153	2194	N.S.	2184	2187	N.S.	2143	149·9
1961	1945	2206	2276	2403	2410	*	2206	2441	**	2282	144·9
1962	2301	2972	2931	2752	2880	*	2815	2953	**	2819	143·8
1963	2929	3364	3302	3352	3138	N.S.	3220	3358	N.S.	3249	211·3
Pooled	2245	2684	2679	2665	2655	*	2607	2735		2624	235·3

Crop :- Groundnut (*Kharif*). **Ref :- Ms. 60(142), 61(110), 62(111), 63(54).**

Site :- Agri. College Farm, Dharwar. **Type :- 'M'.**

Object :—To find out suitable placement method of application of fertilizers to Groundnut in red soil.

1. BASAL CONDITIONS :

(i) (a) N.A. for 60(142), 61(110) and 62(111); Groundnut+Wheat—*Jowar*—Chillies (mixture) for 63(54). (b) Chilly—Cotton for 63(54); N.A. for others. (c) 12·4 C.L./ha. of F.Y.M. for 63(54); N.A. for others. (ii) Deep red sandy loam for 60(142); 61(110); red sandy loam for 62(111); Light red soil for 63(54). (iii) 6.7.60, 27.6.61, 16.7.62 and 4.7.63. (iv) (a) Ploughing and harrowing for 60(142), 61(110), 62(111), 3 harrowings for 63(54). (b) Drilling for 60(142), 61(110); N.A. for others. (c) 112 Kg/ha. for 60(142), N.A. for others. (d) 30 cm. between rows for 60(142), 61(110), N.A. for others. (e) N.A. (v) Nil. (vi) Nil. (vii) Spanish improved. (vii) Unirrigated. (viii) Intercuiturings and weedings. (ix) 39 cm. for 60(142); N.A. for others. (x) 10 to 12.10.60; 11.10.61; 7.10.62 and 9.10.63.

2. TREATMENTS :

Same as in Expt. nos. 60(133), 61(109), 62(112) and 63(53) on page 484.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 9·1 m.×6·1 m. for 63(54); 9·1 m.×7·3 m. for others. (b) 7·3 m.×4·9 m. for 63(54); 7·3 m.×6·1 m. for others. (v) 61 cm.×91 cm. for 63(54); 61 cm.×61 cm. for others. (vi) Yes.

4. GENERAL :

(i) Good for 63(54); normal for others. (ii) Nil. (iii) Yield of pods. (iv) (a) 1960—63. (b) No. (c) Nil. (v) and (vi) N.A. (vii) Error variances are heterogeneous. Treatments×years interaction is absent.

5. RESULTS :

60(142)

(i) 1788 Kg/ha. (ii) 394·7 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of pods in Kg/ha.

Control mean=1564 Kg/ha.

	M_1	M_2	M_3	M_4	Mean
L_1	1849	1803	1906	1636	1798
L_2	1958	1744	1946	1689	1834
Mean	1904	1774	1926	1662	1816

61(110)

(i) 1311 Kg/ha. (ii) 153·2 Kg/ha. (iii) Main effect of M is significant. (iv) Av. yield of pods in Kg/ha.

Control mean=1259 Kg/ha.

	M_1	M_2	M_3	M_4	Mean
L_1	1208	1259	1449	1132	1262
L_2	1265	1526	1373	1322	1372
Mean	1236	1392	1411	1227	1317

C.D. for M marginal means=158·1 Kg/ha.

62(111)

(i) 1511 Kg/ha. (ii) 128·8 Kg/ha. (iii) Main effect of L and control *vs.* others are significant. (iv) Av. yield of pods in Kg/ha.

Control mean=1214 Kg/ha.

	M_1	M_2	M_3	M_4	Mean
L_1	1386	1519	1475	1462	1460
L_2	1640	1596	1666	1638	1635
Mean	1513	1558	1570	1550	1548

C.D. for L marginal means=93·9 Kg/ha.
C.D. for control *vs.* others=141·0 Kg/ha.

63(54)

(i) 2717 Kg/ha. (ii) 282·1 Kg/ha. (iii) Only 'control *vs.* others' is significant. (iv) Av. yield of pods in Kg/ha.

Control mean=2411 Kg/ha.

	M_1	M_2	M_3	M_4	Mean
L_1	2676	2709	3026	2383	2698
L_2	2680	2922	2840	2804	2812
Mean	2678	2816	2933	2594	2755

C.D. for control *vs.* others=308·7 Kg/ha.

Crop :- Groundnut. **Ref :- Ms. 64(53).**

Site :- Agri. Res. Stn., Gangavati. **Type :- 'M'.**

Object :—To study the optimum combination of N, P and K for irrigated Groundnut.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Groundnut. (b) *Jowar*. (c) 12·4 C.L./ha. of F.Y.M. (ii) Slightly alkaline with calcium pebbles. (iii) 22.2.64. (iv) (a) Ploughing and harrowing. (b) Drilling. (c) to (e) N.A. (v) 12·4 C.L./ha. of F.Y.M. (vi) TMV—2 (early). (vii) Irrigated. (viii) Hand weeding and 2 interculturings. (ix) N.A. (x) 4.7.1964.

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=33·6 and P_2=67·2 Kg/ha.

(3) 3 levels of K_2O (source N.A.) 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) 2. (iv) (a) 9·1 m.×6·1 m. (b) 8·5 m.×5·5 m. (v) 30 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of Aphids—sprayed Endrin. (iii) No. of developed and undeveloped seeds and yield data. (iv) (a) 1964 only. (b) No. (c) Nil. (v) N.A. (vi) Nil. (vii) Expt. conducted by Asstt. Agronomist, Groundnut Scheme, Agri. College, Dharwar.

5. RESULTS :

(i) 1108 Kg/ha. (ii) 258·0 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	850	1143	1007	961	936	1103	1100
N_1	1135	1292	1139	1289	1086	1191	1189
N_2	1111	1264	1029	1011	1039	1354	1135
Mean	1032	1233	1058	1087	1020	1216	1108
K_0	982	1267	1012				
K_1	1057	1128	876				
K_2	1057	1304	1287				

Crop :- Groundnut (*Kharif*). **Ref :- Ms. 60(16), 61(65), 62(63).**

Site :- Agri. Res. Stn., Hebbal. **Type :- 'M'.**

Object :—To find out the optimum dose of N, P and K for Groundnut crop.

1. BASAL CONDITIONS :

(i) (a) *Ragi*—Groundnut. (b) *Ragi*. (c) 9·9 C.L./ha. of compost. (ii) Red loam for 61(65) ; sandy loam for others. (iii) 18.7.60; 22.6.61; 7.8.62. (iv) (a) Ploughing and harrowing for 60(16) ; passing chippa kunta for 61(65) ; ploughings for 62(53). (b) Dibbling for 60(16) ; drilling for others. (c) 112 Kg/ha. for 60(16) ; 89 Kg/ha. for others. (d) 30 cm.×15 cm. (e) 1. (v) 9·9 C.L./ha. of compost. (vi) H.G.—10 (Bunch late). (vii) Unirrigated. (viii) Hand weeding. (ix) 69 cm, 84 cm; 106 cm ; (x) 29.12.60 : 13.11.61 ; 18.12.62.

2. TREATMENTS :

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

(1) 3 levels of N as A/S : N_0=0, N_1=16·8 and N_2=33·6 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) 3^3 confd. (ii) (a) 3 blocks/replication ; 9 plots/block. (b) 44·5 m.×37·2 m. for 62(53) ; N.A. for others. (iii) 4. (iv) (a) 11·9 m.×4·6 m. for 60(16) ; 11·6 m.×4·3 m. for others. (b) 11·3 m.×4·0 m. for 60(16), 11·0 m.×3·7 m. for others. (v) 30 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Plant growth effected—due to lack of rain for 60(16) and 61(65) due to late sowing for 62(53). (ii) A mild attack of Tikka for 60(16), mild attack of leaf minor and Tikka for 61(65), no control measures taken ; Nil for 62(53). (iii) Yield of pods. (iv) (a) 1960 to 62. (b) No. (c) As under 5 results. (v) and (vi) Nil. (vii) Error variances are homogeneous. Treatments×years interaction is present.

5. RESULTS :

(i) 708 Kg/ha. (ii) 241·8 Kg/ha. (made up of 36 d.f. made up of interaction of treatments with years). (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	648	660	717	664	706	654	675
N_1	696	755	748	755	782	662	733
N_2	669	711	765	721	724	700	715
Mean	671	709	743	713	738	672	708
K_0	694	706	740				
K_1	688	743	782				
K_2	631	677	708				

Years	N_0	N_1	N_2	Sig.	P_0	P_1	P_2	Sig.
1960	520	463	387	*	482	430	458	N.S.
1961	1118	1269	1287	*	1128	1251	1295	*
1962	386	468	471	*	403	445	477	*
Mean	675	733	715	N.S.	671	709	743	N.S.

K_0	K_1	K_2	Sig.	G.M.	S.E./plot
454	433	482	N.S.	457	94·9
1241	1300	1133	*	1224	238·9
445	480	401	*	442	37·0
713	738	672	N.S.	708	241·8

Crop :- Groundnut (*Kharif*). **Ref :- Ms. 62(267), 64(191).**

Site :- Agri. Res. Stn., Raichur. **Type :- 'M'.**

Object :—To study the effect of phosphatic fertilizers on Groundnut and the residual effect on *Kharif Jowar*.

1. BASAL CONDITIONS :

(i) (a) Groundnut—*Jowar*. (b) *Jowar*. (c) N.A. ; 12·4 C.L./ha. of F.Y.M. (ii) Red soil. (iii) 30.6.62 ; N.A. (iv) (a) Ploughing and harrowing. (b) Dibbling. (c) and (d) N.A. (e) Nil. (v) 12·4 C.L./ha. of F.Y.M. (vi) TMV—2. (vii) Unirrigated. (viii) weeding and interculturing. (ix) 84 cm. ; 89 cm. (x) N.A.

2. TREATMENTS :

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

(1) 2 levels of N as A/S : N_1=65·1 and N_2=130·2 Kg/ha.
(2) 3 levels of P_2O_5 as Super : P_1=130·2, P_2=260·4 and P_3=390·6 Kg/ha.
(3) 2 levels of K_2O as Mur. of Pot. : K_0=0 and K_1=20·1 Kg/ha.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 7·6 m.×4·6 m. (v) 91 cm.×91 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of pods. (iv) (a) 1962 to 64 (1963 N.A.). (b) Yes. (c) As under 5. results. (v) N.A. (vi) Nil. (vii) Error variances are homogeneous and treatments×years interaction is present.

5. RESULTS :

(i) 1815 Kg/ha. (ii) 476·0 Kg/ha. (based on 9 d.f. made up of interaction of treatments with years). (iii) None of the effects is significant. (iv) Av. yield of pods in Kg/ha.

	P_1	P_2	P_3	K_0	K_1	Mean
N_1	1787	1952	1718	1807	1831	1819
N_2	1745	1890	1798	1787	1835	1811
Mean	1766	1921	1758	1797	1833	1815
K_0	1736	1910	1744			
K_1	1796	1932	1772			

Years	P_1	P_2	P_3	Sig.	K_0	K_1	Sig.
1962	2011	2257	1992	N.S.	1946	2227	*
1964	1521	1585	1524	N.S.	1648	1439	*
Mean	1766	1921	1758	N.S.	1797	1833	N.S.

N_1	N_2	Sig	G.M.	S.E./plot
2028	2145	N.S.	2087	348·6
1610	1477	N.S.	1543	292·1
1819	1811	N.S.	1815	476·0

Crop :- Groundnut (*Kharif*). **Ref :- Ms. 65(98).**

Site :- Agri. Res. Stn., Saundatti. **Type :- 'M'.**

Object :—To find out the optimum combination of N, P and K for Groundnut under dry conditions.

1. BASAL CONDITIONS :

(i) (a) Groundnut—*Jowar*. (b) *Jowar*. (c) 33·6 Kg/ha. of N+22·4 Kg/ha. of P_2O_5 while sowing. (ii) Medium black. (iii) 21.7.65. (iv) (a) Ploughing and harrowing 4 times. (b) Hand dibbling. (c) N.A. (d) 30 cm.×8 cm. (e) 2. (v) 5 C.L./ha. of F.Y.M. applied one month before sowing. (vi) Erect type. (vii) Unirrigated. (viii) 3 times interculturing with hoeing, 2 times hand weeding. (ix) 48 cm. (x) 17th and 18th November 65.

2. TREATMENTS:

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

(1) 3 levels of N : N_1=11·2, N_2=16·8 and N_3=22·4 Kg/ha.

(2) 3 levels of P_2O_5 : P_1=11·2, P_2=16·8 and P_3=22·4 Kg/ha.

(3) 3 levels of K_2O : K_1=5·6, K_2=11 2 and K_3=16·8 Kg/ha.

3. DESIGN :

(i) 3^3 confd. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 12·2 m.×4·9 m. (b) 11·0m.×3·7m. (v) Yes. (2 rows on each side). (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of pods. (iv) (a) 1965—N.A. (b) Yes. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

(i) 937 Kg/ha. (ii) 92·7 Kg/ha. (iii) Main effect of P and interaction NP are significant. (iv) Av. yield of pods in Kg/ha.

	P_1	P_2	P_3	K_1	K_2	K_3	Mean
N_1	802	1034	947	876	951	955	928
N_2	968	959	1001	955	984	988	976
N_3	889	856	980	914	939	872	908
Mean	886	950	976	915	958	938	937
K_1	856	951	939				
K_2	926	955	993				
K_3	876	943	997				

C.D. for P marginal means=64·1 Kg/ha.

C.D. for body of NP table=111·0 Kg/ha.

———

Crop :- Groundnut (*Kharif*). **Ref :- Ms.63(75), 63(72).**

Site :- Hangerki, Harabelawadi (Dharwar, *c.f.*). **Type :- 'M'.**

Object :—To find the suitable manurial doses for increasing the yield of Groundnut.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Black soil. (iii) Nil. (iv) Spanish improved, (v) (a) to (e) N.A. (vi) 15.7.63. 16.7.63. (vii) Unirrigated. (viii) 2 to 3 interculturings and hand weeding. (ix) N.A. (x) 20.10.63 ; 18.10.63.

2. TREATMENTS :

8 manurial treatments : T_0=Control, T_1=12·4 C.L./ha. of F.Y.M., T_2=22·4/Kg/ha. of N, T_3=33·6 Kg/ha. of P_2O_5, T_4=33·6 Kg/ha. of K_2O., T_5=22·4 Kg/ha. of N+33·6 Kg/ha. of P_2O_5, T_6= 22·4 Kg/ha. of N+33·6 Kg/ha. of P_2O_5+33·6 Kg/ha. of K_2O and T_7=12·4 C.L./ha. of F.Y.M.+22·4 Kg/ha. of N+33·6 Kg/ha. of P_2O_5+33·6 Kg/ha. of K_2O.

Fertilizers were placed in the row with the help of seed bowl.

3. DESIGN :

(i) R.B.D. with 8 plots/block and 4 replications. (ii) N.A. (iii) (a) 21·9 m ×9·1 m. (b) 21·0 m.× 8.4 m., 21·3 m.×8·5 m. (iv) N.A.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of pods. (iv) (a) 63 to 65 (64 & 65 N.A.) (b) N.A. (c) As under 5. results. (v) Distt. Raichur 64(37). (vi) N.A. (vii) Error variances are homogeneous. Treatments×years interaction is present.

5. RESULTS :

(i) 461 Kg/ha. (ii) 50·1 Kg/ha. (based on 7 d.f. made up of treatments×years interaction). (iii) Treatments 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	402	408	412	485	412	491	530	551

C.D.=59·2 Kg/ha.

Crop :- Groundnut. **Ref :- Ms. 64(37).**

Site :- Koppal (Raichur, *c.f.*) **Type :- 'M'.**

Object :—To find out suitable manurial dose for increasing the yield of Groundnut.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Jowar.* (c) 12·4 C.L./ha. of F.Y.M. (ii) Red soil. (iii) As per treatments. (iv) N.A. (v) (a) to (e) N.A. (vi) 27.6.1964. (vii) Unirrigated. (viii) 2 hand weedings and 1 interculturing. (ix) N.A. (x) 15.11.1964.

2. TREATMENTS :

Same as in expt. no. 63 (75), 63(72), on page 490.

3. DESIGN :

(i) R.B.D. with 8 plots/block and 4 replications. (ii) N.A. (iii) (a) 9·1 m.×7·3 m. (b) 8·4 m. 6·7 m. (iv) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of pods. (iv) (a) and (b) No. (c) Nil. (v) Viliages Hangerki and Harabelawadi (Distt Dharwar). (vi) Nil. (vii) Expt. conducted by Asstt. Agronomist, Groundunt scheme—Agri. College, Dharwar.

5. RESULTS :

(i) 1319 Kg/ha. (ii) 292·3 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of pods in Kg/ha.

Tteatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Av. yield	1170	1566	1281	1557	1281	1254	1276	1169

Crop :- Groundnut. **Ref :- Ms. 60, 62, 63, 64(M.A.E.).**

Site :- M.A.E. Centre, Gangavati. **Type :- 'M'.**

Object :—Type II : To study the residual effect of different levels of N, P and K and F.Y.M. on Groundnut.

1, BASAL CONDITIONS :

(i) (a) *Jowar*—Groundunt—Cotton. (b) *Jowar*. (c) As per treatments. (ii) Deep black for 60 ; Medium black for others. (iii) N.A. for 60 ; 22.1 1962 ; 15.1.1963 ; 1.2.1964. (iv) (a) Ploughing and harrowing. (b) By hand drill. (c) 89·7 Kg/ha. (d) 30 cm.×10 to 12 cm. (e) —. (v) Nil. (vi) T.M.V.—2. (vii) Irrigated. (viii) Weeding and interculturings. (ix) N.A. (x) N.A. for 60 ; 24, 25.5.1962 ; 21.5.1963 ; 14.6.1964.

2. TREATMENTS :

All combinations of (1), (2), (3) and (4).

(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.

(4) 2 levels of F.Y.M. : F_0=0 and F_1=5600 Kg/ha.

3. DESIGN :

(i) 3^3×2 Fact. confd. (ii) (a) 9 plots/block ; 6 blocks/replication. (b) N.A. (iii) I. (iv) (a) 15·5m.× 6·7 m. (b) 13·3 m.×6·1 m. (v) 113 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) N.A. for 60 ; attack of leaf minor forth. Folidol and Endrin sprayed. (iii) Yield of pods (iv) (a) 1957—contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

60(MAE).

(i) 519 Kg/ha. (ii) 139·7 Kg/ha. (iii) None of the effects is significant, (iv) Av. yield of pod in Kg/ha.

	N_0	N_1	N_2	P_0	P_1	P_2	K_0	K_1	K_2	Mean
F_0	599	526	609	535	581	618	627	553	554	578
F_1	461	470	452	406	452	525	470	443	470	461
Mean	530	498	530	470	516	572	548	498	512	519
K_0	609	526	509	461	563	620				
K_1	470	535	489	461	527	506				
K_2	511	433	592	488	458	590				
P_0	424	489	497							
P_1	553	498	497							
P_2	613	507	596							

62(MAE).

(i) 920 Kg/ha. (ii) 164·4 Kg/ha. (iii) Interaction N×K alone is significant. (iv) Av. yield of pods in Kg/ha.

	N_0	N_1	N_2	P_0	P_1	P_2	K_0	K_1	K_2	Mean
F_0	876	867	945	892	879	917	911	910	869	896
F_1	848	944	1038	858	940	1032	976	851	1003	943
Mean	862	905	992	875	910	975	943	880	936	920
K_0	981	831	1018	885	934	1011				
K_1	777	1001	862	819	929	893				
K_2	829	884	1095	921	866	1020				
P_0	733	842	1051							
P_1	861	801	967							
P_2	992	973	958							

C.D. for body of N×K table=195·9 Kg/ha.

63(MAE).

(i) 1092 Kg/ha. (ii) 275·1 Kg/ha. (iii) Main effects of F, N, P and K are highly significant. (iv) Av. yield of pods in Kg/ha.

	N_0	N_1	N_2	P_0	P_1	P_2	K_0	K_1	K_2	Mean
F_0	989	896	769	600	992	1062	806	805	1043	885
F_1	1561	1218	1118	1211	1381	1306	1221	1168	1508	1299
Mean	1275	1057	943	906	1186	1184	1014	986	1276	1092
K_0	1233	954	854	791	989	1262				
K_1	1181	989	789	750	1173	1036				
K_2	1411	1229	1187	1177	1396	1254				
P_0	993	883	841							
P_1	1450	1148	961							
P_2	1383	1140	1028							

C.D. for N, P or K marginal means=189·3 Kg/ha.

C.D. for F marginal means=154·6 Kg/ha.

64(MAE)

(i) 522 Kg/ha. (ii) 155·6 Kg/ha. (iii) Main effect of P alone is highly significant. (iv) Av. yield of pods in Kg/ha.

	N_0	N_1	N_2	P_0	P_1	P_2	K_0	K_1	K_2	Mean
F_0	563	538	471	479	544	549	553	536	483	524
F_1	503	478	578	359	584	615	492	467	600	520
Mean	533	508	524	419	564	582	522	501	542	522
K_0	553	555	459	420	581	566				
K_1	472	516	516	348	635	520				
K_2	573	454	598	489	476	660				
P_0	438	447	372							
P_1	545	510	637							
P_2	616	567	563							

C.D. for P marginal means=107·1 Kg/ha.

Crop :- Groundnut (*Rabi*). **Ref :- Ms. 62 (S.F.T.).**

Site :- (District) Mysore. **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) N.A. (ii) Red sandy. (iii) to (vi) N.A. (vii) Irrigatd. (viii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments :

O =Control (no manure).
N_1 =15 Kg/ha. of N.
N_2 =30 Kg/ha. of N.
P_1 =30 Kg/ha. of P_2O_5.
N_1P_1 =15 Kg/ha. of N+30 Kg/ha. of P_2O_5.
N_2P_1 =30 Kg/ha. of N+30 Kg/ha. of P_2O_5.
N_2P_2 =30 Kg/ha. of N+60 Kg/ha. of P_2O_5.
$N_2P_2K_1$ =30 Kg/ha. of N+60 Kg/ha. of P_2O_5+30 Kg/ha. of K_2O.

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

3. DESIGN :

(a) and (ii) 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. (iii) (a) 1/100 ha. (b) 1/200 ha. (iv) Yes.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1962—only. (b) N A. (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 pods in Kg/ha.	15	30	89	103	97	221	317	9·8

Control yield=549 Kg/ha. ; No. of trials=2.

———

Crop :- Groundnut (*Rabi*). **Ref :- Ms. 64, 65 (S.F.T.) for N. Kanara and 65 (S.F.T.) for Bellary.**

Site :- (District) : Bellary and N. Kanara. **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) N.A. (ii) Lateritef or N. Kanara and Red sandy for Bellary. (iii) to (vi) N.A. (vii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS : and 3. DESIGN :

Same as in Type A_1 (*Rabi* Irrigated) on page 494.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1964 to 1965 for N. Kanara and 1965—only for Bellary. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

Bellary

65(S.F.T.)

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 pods in Kg/ha.	322	537	373	490	703	692	720	114·9

Control yield=1245 Kg/ha. ; No. of trials=2.

N. Kanara

64 (S.F.T.)

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 pods in Kg/ha.	227	321	234	329	433	540	633	42·1

Control yield=1451 Kg/ha. ; No. of trials=8.

65(S.F.T.)

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 pods in Kg/ha.	42	329	131	625	578	945	975	143·8

Control yield=2274 Kg/ha. ; No. of trials=5.

Crop :- Groundnut (*Kharif*). **Ref. :- Ms. 64 (S.F.T.) for Mandya and Bangalore and 64, 65 (S.F.T.) for others.**

Site :- (District) : Bellary, Belgaum, Bangalore, Mysore & Mandya. **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) N.A. (ii) Red loamy for Bangalore; Deep black for Belgaum ; and Red sandy 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 =15 Kg/ha. of N.
N_2 =30 Kg/ha. of N.
P_1 =20 Kg/ha. of P_2O_5.
N_1P_1 =15 Kg/ha. of N+20 Kg/ha. of P_2O_5.
N_2P_1 =30 Kg/ha. of N+20 Kg/ha. of P_2O_5.
N_2P_2 =30 Kg/ha. of N+40 Kg/ha. of P_2O_5.
$N_2P_2K_1$=30 Kg/ha. of N+40 Kg/ha. of P_2O_5+20 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 (*Rabi* Irrigated) on page 494.

4. GENERAL INFORMATION:

(i) to (iii) N.A. (iv) (a) 1964 to 1966 [1965 N.A. for Bangalore] for Belgaum and Bangalore; 1964 to 1965 for Bellary and Mysore ; 1964—only for Mandya. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

Bellary

64(S.F.T.)

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 pods in Kg/ha.	192	285	114	282	364	415	533	61·5

Control yield=849 Kg/ha. ; No. of trials=4.

65(S.F.T.)

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 pods in Kg/ha.	38	85	25	107	133	144	142	52·2

Control yield=431 Kg/ha. ; No. of trials=3.

Belgaum

64(S.F.T.)

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 pods in Kg/ha.	148	355	388	395	450	540	708	53·9

Control yield=1156 Kg/ha. ; No. of trials=4.

65(S.F.T.)

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 pods in Kg/ha.	187	204	132	203	279	398	532	70·5

Control yield=1286 Kg/ha. ; No. of trials=4.

Banglore

64(S.F.T.)

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 pods in Kg/ha.	171	184	134	228	286	341	385	54·3

Control yield=1585 Kg/ha. ; No. of trials=3.

Mandya

64(S.F.T.)

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 pods in Kg/ha.	148	148	148	222	296	345	444	49·1

Control yield=642 Kg/ha. ; No. of trials=2.

Mysore

64(S.F.T.)

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 pods in Kg/ha.	1272	1275	130	1261	1446	1720	2072	358·9

Control yield=2185 Kg/ha. ; No. of trials=2.

65(S.F.T.)

Treatment	N_1	N_2	K_1	N_1K_1	N_2K_1	N_2K_2	$N_2P_2K_1$	S.E.
Av. response of pods in Kg/ha.	170	200	100	250	300	520	520	132·8

Control yield=525 Kg/ha. ; No. of trials=2.

Crop :- Groundnut (*Rabi*). **Ref :- Ms. 62 (S.F.T.) for Mysore ; 65 (S.F.T.) for Bellary.**

Site :- (District) : Mysore and Bellary. **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) N.A. (ii) Red sandy. (iii) to (vi) N.A. (vii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS ;

8 manurial treatments :

O =Control (no manure).
N_1 =15 Kg/ha. of N.
P_1 =30 Kg/ha. of P_2O_5.
P_2 =60 Kg/ha. of P_2O_5.
N_1P_1 =15 Kg/ha. of N+30 Kg/ha. of P_2O_5.
N_1P_2 =15 Kg/ha. of N+60 Kg/ha. of P_2O_5.
N_2P_2 =30 Kg/ha. of N+60 Kg/ha. of P_2O_5.
$N_2P_2K_2$=30 Kg/ha. of N+60 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 (*Rabi* Irrigated) on page 494.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1962 to 1966 [1963 to 1965 N.A.] for Mysore ; and 1965 to 1966 for Bellary. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

Mysore

62(S.F.T.)

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 pods in Kg/ha.	14	20	44	100	38	224	336	13·9

Control yield=552 Kg/ha. ; No. of trials=2.

Bellary

65(S.F.T.)

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 pods in Kg/ha.	383	596	617	624	685	840	932	85·4

Control yield=1270 Kg/ha. ; No. of trials=2.

Crop :- Groundnut (*Rabi*). **Ref :- Ms. 64, 65 (S.F.T.).**

Site :- (District) : N. Kanara. **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) N.A. (ii) Laterite. (iii) to (vi) N.A. (vii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS : and 3. DESIGN :

Same as in Type A_2 (*Rabi* Irrigated) on page 497.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1964 to 1966 (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

64(S.F.T.)

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 pods in Kg/ha.	284	252	331	379	451	581	773	33·1

Control yield=1329 Kg/ha. ; No. of trials=7.

65(S.F.T.)

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 pods in Kg/ha.	112	141	363	600	722	921	911	57·2

Control yield=2024 Kg/ha. ; No. of trials=5.

———

Crop :- Groundnut (*Kharif*). **Ref :- Ms. 65 (S.F.T.).**

Site :- (District) : Bellary. **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) N.A. (ii) Red sandy. (iii) to (vi) N.A. (vii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS and 3. DESIGN :

Same as in Type A_1 (*Rabi* Irrigated) on page 497.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1965 only. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

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 pods in Kg/ha.	−85	24	19	143	125	117	196	106·7

Control yield=530 Kg/ha. ; No. of trials=2.

———

Crop :- Groundnut (*Kharif*). **Ref :- Ms. 64 (S.F.T.) for Bellary and Mandya; 64,65 (S.F.T.) for others.**

Site :- (District) : Bangalore, Belgaum, Bellary, Mandya and Mysore. **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) N.A. (ii) Deep black for Belgaum, Red loamy for Bangalore, Red sandy 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 =15 Kg/ha. of N.
P_1 =20 Kg/ha. of P_2O_5.
P_2 =40 Kg/ha. of P_2O_5.
N_1P_1 =15 Kg/ha. of N+20 Kg/ha. of P_2O_5.
N_1P_2 =15 Kg/ha. of N+40 Kg/ha. of P_2O_5.
N_2P_2 =30 Kg/ha. of N+40 Kg/ha. of P_2O_5.
$N_2P_2K_2$=30 Kg/ha. of N+40 Kg/ha. of P_2O_5+40 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 (*Rabi*) on page 494.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1964 to 1966 for Banglore and Belgaum ; 1964 to 1965 for Mysore and 1964 only for others. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

Belgaum

64(S.F.T.)

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 pods in Kg/ha.	156	210	349	398	378	705	759	38·7

Control yield=1097 Kg/ha. ; No. of trials=4.

65(S.F.T.)

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 pods in Kg/ha.	145	92	151	260	150	417	420	76·3

Control yield=1205 Kg/ha. ; No. of trials=3.

Bangalore

64(S.F.T.)

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 pods in Kg/ha.	153	174	291	216	374	318	493	24·3

Control yield=1525 Kg/ha. ; No. of trials=3.

65(S.F.T.)

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 pods in Kg/ha.	204	224	224	284	470	574	549	66·3

Control yield=1526 Kg/ha. ; No. of trials=2.

Mandya

64(S.F.T.)

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 pods in Kg/ha.	148	98	98	345	345	345	741	146·7

Control yield=988 Kg/ha. ; No. of trials=2.

Mysore

64(S.F.T.)

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 pods in Kg/ha.	917	1181	1189	1209	1646	1720	2000	287·9

Control yield=2353 Kg/ha.; No. of trials=2.

65(S.F.T.)

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 pods in Kg/ha.	322	469	544	551	689	872	981	61·1

Control yield=661 Kg/ha. ; No. of trials=2.

Bellary

64(S.F.T.)

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 pods in Kg/ha.	238	338	414	414	477	537	590	46·6

Control yield=750 Kg/ha. ; No. of trials=4.

Crop :- Groundnut (*Rabi*). **Ref :- Ms. 65 (S.F.T.) for Bellary and 62 (S.F.T.) for Mysore.**

Site :- (District) : Bellary and Mysore. **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) N.A. (ii) Red sandy. (iii) to (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

8 manurial treatments :

O =Control (no manure).
N_1 =15 Kg/ha. of N.
K_1 =30 Kg/ha. of K_2O.
K_2 =60 Kg/ha. of K_2O.
N_1K_1 =15 Kg/ha. of N+30 Kg/ha. of K_2O.
N_1K_2 =15 Kg/ha. of N+60 Kg/ha. of K_2O.
N_2K_2 =30 Kg/ha. of N+60 Kg/ha. of K_2O.
$N_1P_1K_1$ =15 Kg/ha. of N+30 Kg/ha. of P_2O_5+30 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 (*Rabi*, Irrigated) on page 494.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1965 to 1966 for Bellary and 1962 to 1966 [1963 to 1965 N.A.] for Mysore. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

Bellary

65(S.F.T.)

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 pods in Kg/ha.	268	222	342	1572	674	905	917	522·6

Control yield=1109 Kg/ha.; No. of trials=2.

62(S.F.T.)

Mysore

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 pods in Kg/ha.	21	24	25	47	65	233	267	6·7

Control yield=549 Kg/ha. ; No. of trials=2.

Crop :- Groundnut (*Rabi*). **Ref :- Ms. 64, 65 (S.F.T.).**

Site :- (District) : N. Kanara. **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) N.A. (ii) Laterite. (iii) to (vi) N.A. (vii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS and 3. DESIGN:

Same as Type A_3 (*Rabi*, Irrigated) on page 500.

4. GENERAL :

(i) to (iii) N.A. (iv) (a) 1964 to 1966. (b) N.A. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

64(S.F.T.)

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 pods in Kg/ha.	120	80	130	300	340	480	480	25·0

Control yield=1450 Kg/ha. ; No. of trials=8.

65(S.F.T.)

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 pods in Kg/ha.	121	106	156	414	514	857	735	125·1

Control yield= 1952 Kg/ha. ; No. of trials=5.

Crop :- Groundnut (*Kharif*).

Ref :- Ms. 64, 65 (S.F.T.) for Bangalore, Belgaum, Bellary and Mysore.

Site :- (District) : Bangalore, Belgaum, Bellary and Mysore.

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) N.A. (ii) Deep black for Belgaum ; Red loamy for Bangalore and Red sandy for others. (iii) to (vi) N.A. (vii) Unirrigated. (viii) to (x) N.A.

2. TREATMENTS and 3. DESIGN :

Same as in Type A_2 (*Rabi*, Irrigated) on page 500.

4. GENERAL:

(i) to (iii) N.A. (iv) (a) 1964 to 1966 for Bangalore and Belgaum ; 1964 to 1965 for Bellary and Mysore. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

Bangalore

64(S.F.T.)

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 pods in Kg/ha.	292	159	330	317	454	471	534	33·8

Control yield=1714 Kg/ha. ; No. of trials=3.

65(S.F.T.)

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 pods in Kg/ha.	74	219	—246	194	249	319	284	221·2

Control yield=1806 Kg/ha. ; No. of trials=2.

Belgaum

64(S.F.T.)

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 pods in Kg/ha.	202	110	312	209	342	467	409	39·3

Control yield=1130 Kg/ha. ; No. of trials=4.

65 (S.F.T.)

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 pods in Kg/ha.	98	139	159	211	185	307	219	46 6

Control yield=1276 Kg/ha. ; No. of trials=4.

Bellary

64(S.F.T.)

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 pods in Kg/ha.	215	107	123	319	296	482	502	46 3

Control yield=819 Kg/ha. ; No. of trials=4.

65(S.F.T,)

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 pods in Kg/ha.	51	79	103	171	115	236	139	27·3

Control yield=952 Kg/ha.; No. of trials=7.

Mysore

64(S.F.T.)

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 pods in Kg/ha.	1154	624	1053	1255	1423	1069	2056	387·3

Control yield=1849 Kg/ha.; No. of trials=2.

65(S.F.T.)

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 pods in Kg/ha.	298	253	355	445	507	622	716	100·1

Control yield=700 Kg/ha.; No. of trials=2.

Crop :- Groundnut (*Kharif*). **Ref :- Ms. 63(66), 64(100).**

Site :- Agri College Farm, Dharwar. **Type :- 'C'.**

Object :—To find out suitable spacing between rows and between plants in the rows for erect type of Groundnut.

1. BASAL CONDITIONS :

(i) (a) N.A. for 63(66); Cotton and Chilli—Groundnut for 64(100). (b) N.A. for 63(66) : cotton and chilli for 64(100). (c) N.A. (ii) Black for 63(66) : Medium black for 64(100). (iii) 9.7.1963; 29.6.1964. (iv) (a) 2 to 3 harrowings. (b) Dibbling. (c) N.A. (d) As per treatments. (e) N.A. (v) Nil. (vi) Spanish improved (early). (vii) Unirrigated. (viii) 2 hand weedings and 1 intercultivation. (ix) N.A. for 63(66), 76 cm. for 64(100). (x) 12.10.63; 7.10.64.

2. TREATMENTS :

Main-plot treatments :

4 spacings between rows : R_1=23, R_2=30, R_3=38 and R_4=46 cm.

Sub-plot treatments :

4 plant spacings : P_1=8, P_2=15, P_3=23 and P_4=30 cm.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication; 4 sub-plots/main-plot. (b) 36·6 m.×29·3 m. for 63(66), N.A. for 64(100). (iii) 4. (iv) (a) 9·1 m.×7·3 m. for 63(66); 8·7 m.×6·7 m. for 64(100). (b) 8·2 m.×6·9 m. for 63(66); 8·7 m.×6·7 m. for 64(100). (v) 45 cm.×24 cm. for 63(66); Nil for 64(100). (vi) Yes.

4. GENERAL:

(i) Fair except 63(66) replication II. (ii) Tikka for 63(66), Nil for 64(100). (iii) Yield of pods. (iv) (a) 1963 to 64. (b) No. (c) As under 5. results. (v) and (vi) Nil. (vii) Both the error variances are homogeneous. Main-plot treatments×years and sub-plot treatments×years interactions are present.

5. RESULTS:

(i) 1449 Kg/ha. (ii) (a) 200·9 Kg/ha. (based on 3 d.f. made up of treatments×years interaction, (b) 258·6 Kg/ha. (based on 12 d.f. made up of treatments×year interactions). (iii) Main effects of R and P are significant. (iv) Av. yield of pods in Kg/ha.

	R_1	R_2	R_3	R_4	Mean
P_1	2049	1527	1348	1320	1561
P_2	1989	1769	1395	1425	1645
P_3	1789	1477	1280	1063	1402
P_4	1477	1086	1065	1115	1186
Mean	1826	1465	1272	1231	1449

C.D. for R marginal means=319·5 Kg/ha.
C.D. for P marginal means=281·7 Kg/ha.

Years	R_1	R_2	R_3	R_4	Sig.	S.E./ Main plot	P_1	P_2	P_3	P_4	Sig.	G.M.	S.E./Sub-plot
1963	2066	1640	1400	1304	**	445·1	1531	1906	1672	1302	**	1603	330·8
1964	1585	1289	1144	1157	**	253·4	1591	1383	1132	1069	**	1294	299·2
Pooled	1826	1465	1272	1231	**	200·9	1561	1645	1402	1186	**	1449	258·6

Crop :- Groundnut (*Kharif*). **Ref :- Ms. 64(44).**

Site :- Agri. College Farm, Dharwar. **Type :- 'C'.**

Object:—To find out suitable tillage practices for the cultivation of erect type of Groundnut.

1. BASAL CONDITIONS :

(i (a) Cotton Chilli—Groundnut (b) Cotton. (c) N.A. (ii) Medium black. (iii) 6.7.1964. (iv) (a) As per treatments. (b) Dibbling. (c) to (e) N.A. (v) Nil. (vi) Spanish improved (early). (vii) Unirrigated. (viii) 2 hand weedings and 2 interculturings. (ix) 70 cm. (x) 27.10.64.

2 TREATMENTS:

4 cultural treatments : T_1=Ploughing with mould board plough to a depth of 20 cm. followed by 4 harrowings, T_2=Ploughing with mould board plough to a depth of 15 cm. followed by 4 harrowings, T_3=Ploughing with indigenous wooden plough followed by 4 harrowings and T_4=4 harrowings only.

3. DESIGN:

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 9·1 m.×7·3 m. (b) 8·5 m.×6·7 m. (v) 30 cm.×30 cm. (vi) Yes.

4. GENERAL.

(i) Fair. (ii) Nil. (iii) No. of developed and undeveloped pods and yield of pods. (iv) (a) 1964 only. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS:

(i) 871 Kg/ha. (ii) 113·7 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	888	799	887	909

Crop :- Groundnut (*Kharif*). **Ref :- Ms. 64(43).**

Site :- Agri. College Farm, Dharwar. **Type :- 'C'.**

Object :—To find out suitable tillage practices for the cultivation of erect type of Groundnut in light red soil.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) N.A. (c) Nil. (ii) Light red soil. (iii) 6.7.64. (iv) (a) As per treatments. (b) Dibbling. (c) to (e) N.A. (v) Nil. (vi) Spanish improved (early). (vii) Unirrigated. (viii) 2 hand weedings and 2 interculturings. (ix) 70 cm. (x) 27.10 64.

2. TREATMENTS : to 4. GENERAL :

Same as in expt. no 64(44) on page 504.

5. RESULTS :

(i) 966 Kg/ha. (ii) 162·2 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	942	1040	955	928

Crop :- Groundnut (*Kharif*) **Ref :- Ms. 63(55).**

Site :- Agri. Res. Stn., Gangavati. **Type :- 'C'.**

Object :—To find suitable time of sowing for Groundnut under irrigated conditions.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Groundnut. (b) *Jowar*. (c) 12·4 C.L./ha. of F.Y.M. (ii) Black. (iii) As per treatments. (iv) (a) Ploughing with iron plough to a depth of 15 cm. (b) Dibbling. (c) to (e) N.A. (v) Nil. (vi) TMV—2 (early). (vii) Irrigated. (viii) 2 hand weedings, interculturing. (ix) N.A. (x) depending upon the dates of sowing.

2. TREATMENTS :

4 dates of sowing : T_1=2nd fortnight of May, T_2=1st fortnight of June, T_3=2nd fortnight of June and T_4= 1st fortnight of July, 1963.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) 18·3 m.×12·2 m. (iii) 6. (iv) (a) 9·1 m.×6·1 m. (b) 8·5 m.×5·5 m. (v) 30 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Medium. (ii) N.A. (iii) Yield of pods. (iv) (a) 1963—N A. (b) No. (c) Nil. (v) and (vi) Nil. (vii) This expt. was conducted by Asstt. Agronomist, Groundnut Scheme, Agri. College, Dharwar.

5. RESULTS :

(i) 895 Kg/ha. (ii) 265·5 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of pods in Kg/ha.

Treatment	T_1	T_2	T_3	T_4
Av. yield	1463	1014	947	157

C.D.=326·7 Kg/ha.

Crop :- Groundnut (*Summer*). **Ref :- Ms. 64(54).**

Site :- Agri. Res. Stn., Gangavati. **Type :- 'C'.**

Object : – To find out suitable time of sowing for cultivation of irrigated Groundnut.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Groundnut. (b) *Jowar*. (c) Nil. (ii) Medium black and alkaline soil. (iii) As per treatments. (iv) (a) Tractor ploughing once and wooden ploughing once. (b) to (e) N.A. (v) 11·2 Kg/ha. of N as A/S and 16·8 Kg/ha. of P_2O_5 as Super applied with the help of the drill. (vi) TMV–2 (Medium). (vii) Irrigated. (viii) 2 hand weedings. (ix) and (x) N.A.

2. TREATMENTS :

4 times of sowing : T_1=2nd fortnight of January. T_2=1st fortnight of February. T_3=2nd fortnight of February. and T_4=1st fortnight of March, 1964.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 6·4 m.×6·4 m. (b) 6·1 m.×6·1 m. (v) 15 cm.×15 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of aphids—No control measures taken. (iii) Yield of pods. (iv) (a) 1963—N.A. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 500 Kg/ha. (ii) 142·4 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of pods in Kg/ha.

Treatment	T_1	T_2	T_3	T_4
Av. yield	361	786	406	448.

C.D.=175·1 Kg/ha.

Crop :- Groundnut. **Res :- Ms. 64(51).**

Site :- Agri. Res. Stn., Gangavati. **Type :- 'C'.**

Object :—To find suitable time of sowing for irrigated Groundnut.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Groundnut. (b) *Jowar*. (c) 12·4 C.L./ha. of F.Y.M. (ii) Slightly alkaline clay with calcium pebbles. (iii) As per treatments. (iv) (a) Ploughing and harrowing. (b) Dibbling (c) to (e) N.A. (v) Nil. (iv) TMV – 2 (early). (vii) Irrigated. (viii) Hand weeding and 2 interculturings. (ix) N.A. (x) 15.5.64 to 17.7.64.

2. TREATMENTS :

4 dates of sowing : T_1=1st fortnight of Feb., T_2=2nd fortnight of Feb., T_3=1st fortnight of March., and T_4=2nd fortnight of March, 1964.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) 18·3 m.×12·2 m. (iii) 4. (iv) (a) 9·1 m.×6·1 m. (b) 8·5 m.×5.5 m. (v) 30 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of aphids. Endrine was sprayed twice (iii) No of developed and undeveloped seeds and yield of pods. (iv) (a) 1964—N.A. (b) No. (c) Nil. (v) N.A. (vi) Nil. (vii) This expt. was conducted by Asstt. Agronomist, (Groundnut Scheme) Agri. College, Dharwar.

5. RESULTS :

(i) 1807 Kg/ha. (ii) 331·1 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of pods in Kg/ha.

Treatment	T_1	T_2	T_3	T_4
Av. yield	2271	2050	1662	1246

C.D.=432·5 Kg/ha.

Crop :- Groundnut (*Summer*). **Ref :- Ms. 64(50).**

Site :- Agri. Res. Stn., Gangavati. **Type :- 'C'.**

Object :—To find a suitable row and plant spacing for erect type of irrigated Groundnut.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Groundnut. (b) Groundnut. (c) 12·4 C.L./ha. of F.Y.M. (ii) Slightly alkaline clay with calcium pebbles. (iii) 4.2.64. (iv) (a) Ploughing and harrowing. (b) Dibbling. (c) N.A. (d) As per treatments. (e) N.A. (v) Nil. (vi) TMV—2 (early). (vii) Irrigated. (viii) 2 hand weedings and interculturings. (ix) N.A. (x) 6.6.64.

2. TREATMENTS :

Same as in expt. no 63(66), 64(100) at Dharwar on page 503.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 9·1 m.× 7·3 m. (b) 8·7 m.×6·7 m. (v) 22 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Attack of aphids and leaf minor. Endrine was sprayd as control measure. (iii) No. of developed and undeveloped seeds and yield of pods. (iv) (a) 1964 only. (b) No. (c) Nil. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 948 Kg/ha. (ii) (a) 234·8 Kg/ha. (b) 226·1 Kg/ha. (iii) Main effects of R and P are highly significant. (iv) Av. yield of pods in Kg/ha.

	P_1	P_2	P_3	P_4	Mean
R_1	1515	1193	996	850	1138
R_2	1494	1142	811	824	1068
R_3	1176	850	682	554	816
R_4	1056	738	661	626	770
Mean	1310	981	788	714	948

C.D. for R marginal means=187·7 Kg/ha.
C·D. for P marginal means=162·3 Kg/ha.

Crop :-Groundnut (*Kharif*). **Ref : Ms. 62(46).**

Site :- Agri. College, Hebbal. **Type :- 'C'.**

Object :— To find out the optimum numbers of intercultivation to encourage greater pod formation in Groundnut.

1. BASAL CONDITIONS:

(i) (a) *Ragi* after *Ragi*. (b) *Ragi*. (c) Nil. (ii) Red loamy soil. (iii) N.A. (iv) (a) 2 ploughings with Mysore B.P. pough, passing Halube. (b) Drilled. (c) 90 Kg/ha. (d) 30 cm. between rows. (e) N.A. (v) 7·5 C.L./ha. of compost+125 Kg/ha. of P_2O_5 As Super+62·5 Kg/ha. of N as A/S. (vi) H.G. 10 (early). (vii) Unirrigated. (viii) As per treatments. (ix) 67 cm. (x) 27.11.62.

2. TREATMENTS :

4 intercultivation treatments : T_1=Once in 5 days, T_2=Once in 10 days, T_3=Once in 15 days and T_4= Once in 20 days.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 8. (iv) (a) 15·2 m.×6·7 m. (b) 14·6 m.×6·1 m. (v) 30 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Tikka disease. No control measures taken. (iii) Pods yield. (iv (a) 1962 only. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 749 Kg/ha. (ii) 226·2 Kg/ha (iii) Treatment differences are not significant. (iv) Av. yied of pods in Kg/ha.

Treatment	T_1	T_2	T_3	T_4
Av. yield	832	787	700	675

Crop :- Groundnut (*Kharif*). **Ref : Ms. 61(88), 62(93), 63(93).**

Site :- Agri. Res. Stn., Saundatti. **Type :- 'C'.**

Object :— To study the effect of double cropping in relation to the yield of suceeding crop of *Jowar* in dry tract.

1. BASAL CONDITIONS :

(i) (a) As per treatments. (b) *Jowar*. (c) 12·4 C.L./ha. of F.Y.M.+33·6 Kg/ha. of N+22·4 Kg/ha. of P_2O_5 (ii) Medium black. (iii) 9.6.61 ; 10.6.62 ; 28.6.63. (iv) (a) 2 to 3 harrowings. (b) Drilling. (c) 90 Kg/ha. (d) 30 cm. × 15 cm. (e) —. (v) 22·4 Kg/ha. of P_2O_5 as Super applied by means of continued seed drill at the time of sowing. (vi) Spanish improved. (vii) Unirrigated. (viii) Interculturing with hoe. (ix) 23 cm. ; 47 cm. ; 30 cm. (x) 21.9.61 ; 2.10.62. ; 14.10.63.

2. TREATMENTS :

5 previous crops : T_0=Fallow, T_1=Wheat, T_2=Gram, T_3=*Rabi Jowar* and T_4=Cotton.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) 13·7 m. × 32·0 m. (iii) 4. (iv) (a) 13·7 m. × 6·4 m. (b) 11·9 m. × 4·6 m. (v) 91 cm. × 91 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of pods. (iv) (a) 1961 to 1963. (b) No. (c) Nil. (v) N.A. (vi) Nil. (vii) Error variances are heterogeneous and treatments × years interaction is absent.

5. RESULTS :

61(88)

(i) 2258 Kg/ha. (ii) 261·0 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
Av. yield	2225	2246	2312	2208	2286

62(93)

(i) 1989 Kg/ha. (ii) 181·6 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
Av. yield	2096	2050	1946	2056	1798

63(92)

(i) 535 Kg/ha. (ii) 47·8 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
Av. yield	540	532	504	524	575

Crop :- Groundnut (*Kharif*). **Ref. :- Ms. 64(38).**

Site :- Bailhongal (Belgaum, *c.f.*). **Type :- 'C'.**

Object :— To find out suitable tillage practices for cultivation of erect type of Groundnut.

1. BASAL CONDITIONS.

(i) (a) N.A. (b) *Jowar*. (c) N.A. (ii) Medium black. (iii) N.A. (iv) Spanish improved. (v) (a) As per treatments. (b) to (e) N.A. (vi) 1.7.1964. (vii) Unirrigated. (viii) 1 hand weeding. (ix) N.A. (x) 25.10.1964.

2. TREATMENTS :

4 cultural treatments : T_1=Ploughing with mould board plough to a depth of 20 cm. followed by 4 harrowings, T_2=Ploughing with mould board plough to a depth of 15 cm. followed by 4 harrowings, T_3=Ploughing with indigenous wooden plough followed by 4 harrowings and T_4=4 harrowings only.

3. DESIGN :

(i) R.B.D. with 4 plots/block and 5 replications. (ii) N.A. (iii) (a) 7·3 m.×12·2 m. (b) 6·7 m.×11·0 m. (iv) Yes

4. GENERAL :

(i) Due to heavy rains, there was stunted growth. (ii) Nil. (iii) Yield of pods. (iv) (a) 63-N.A. (b) N.A. (c) Nil. (v) Nil. (vi) Nil. (vii) Experiment was conducted by Asstt. Agronomist, Groundnut Scheme, Agri. College Dharwar. Experiments conducted during 1963 and 1965 N.A.

5. RESULTS :

(i) 132 Kg/ha. (ii) 25·6 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of pods in Kg/ha.

Treatment	T_1	T_2	T_3	T_4
Av. yield	147	122	156	104

C.D.=31·4 Kg/ha.

Crop :- Groundnut (*Kharif*). **Ref :- Ms. 64(39).**

Site :- Bailhongal (Belgaum, *c.f.*). **Type :- 'C'.**

Object :— To find out suitable spacing for erect type of Groundnut.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Jowar*. (c) N.A. (ii) Medium black. (iii) N.A. (iv) Spanish improved (early). (v) (a) 2 ploughings with wooden plough and harrowing. (b) and (c) N.A. (d) As per treatments. (e) Nil. (vi) 1.7.64. (vii) Unirrigated. (viii) and (ix) N.A. (x) 25.10.64.

2. TREATMENTS :

4 spacings: S_1=23 cm.×6 cm., S_2= 30 cm.×6 cm., S_3=38 cm.×6cm. and S_4=46 cm.×6 cm.

3. DESIGN :

(i) R.B.D. with 4 plots/block and 4 replications. (ii) N.A. (iii) (a) N.A. (b) 6·7 m.×9·1 m. (iv) Yes.

4. GENERAL :

(i) Due to heavy rains, the growth was stunted. (ii) Nil. (iii) Yield of pods. (iv) (a) 64-N.A. (b) No. (c) Nil. (v) Koppal (Raichur). (vi) Nil. (vii) Experiment was conducted by Asstt. Agronomist, Groundnut scheme, Agri. College, Dharwar. Experiments conducted during 1963 and 65 N.A.

5. RESULTS :

(i) 133 Kg/ha. (ii) 24·3 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of pods in Kg/ha.

Treatment	S_1	S_2	S_3	S_4
Av. yield	155	137	113	128

Crop :- Groundnut (*Kharif*). **Ref :- Ms. 63(74), 63(71).**

Site :- Hangerki, Harabelawadi (Dharwar, *c.f.*). **Type :- 'C'.**

Object :—To find out optimum seed rate for erect type of Groundnut.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Black. (iii) 11·2 Kg/ha. of N+22·4 Kg/ha. of P_2O_5. (iv) Spanish improved. (v) (a) and (b) N.A. (c) As per treatments. (d) and (e) N.A. (vi) 14.7.63, 12.7.63 ; (vii) Unirrigated. (viii) 2 to 3 interculturings and 1 hand weeding. (ix) N.A. (x) 15.10.63 ; 14.10.63.

2. TREATMENTS :

5 seed rates : R_1=45, R_2=67, R_3=89, R_4=112 and R_5=134 Kg/ha.

3. DESIGN :

(i) R.B.D. with 5 plots/block, 4 replications. (ii) N.A. (iii) (a) 22·0 m.×9·1 m. (b) 21·3 m.×8·5 m. (iv) N.A.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of pods. (iv) (a) 1963 to 65 (Expts. for 64 and 65 N.A). (b) N.A. (c) As under 5. Results. (v) and (vi) N.A. (vii) Error variances are heterogeneous. Treatments×years interaction is absent.

5. RESULTS :

63(64) (At Hangerki)

(i) 507 Kg/ha. (ii) 55·6 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of pods in Kg/ha.

Treatment	R_1	R_2	R_3	R_4	R_5
Av. yield	437	553	573	495	475

C.D.=85·7 Kg/ha.

63(71) (At Harabelawadi)

(i) 483 Kg/ha. (ii) 27·7 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of pods in Kg/ha.

Treatment	R_1	R_2	R_3	R_4	R_5
Av. yield	436	548	548	461	423

C.D.=42·6 Kg/ha.

Crop :- Groundnut (*Kharif*). **Ref :- Ms. 63(73), 63(70).**

Site :- Hangerki, Harabalawadi, (Dharwar, *c.f.*). **Type :- 'C'.**

Object :—To find out suitable spacing for erect type of Groundnut.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Black. (iii) 11·2 Kg/ha. of N+22·4 Kg/ha. of P_2O_5 applied before sowing. (iv) Spanish improved. (v) (a) to (c) N.A. (d) As per treatments. (e) N.A. (vi) 10.7.63 ; 10.7.63. (vii) Unirrigated. (viii) 2 interculturings and 1 weeding. (ix) N.A. (x) 18.10.63 ; 15.10.63.

2. TREATMENTS :

4 spacing between rows : S_1=23, S_2=30, S_3=38 and S_4=46 cm.

3. DESIGN :

(i) R.B.D. with 4 plots/block and 4 replications. (ii) N.A. (iii) (a) 22·0 m.×9·1 m. (b) 21·0 m.×8·7 m. ; 21·3 m.×8·5 m. (iv) N.A.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of pods. (iv) (a) 1963 to 65. (Expts. for 64 and 65 N.A.). (b) N.A. (c) As under 5. Results. (v) Distt. Belgaum 64(39). (vi) N.A.(vii) Error variances are homogeneous. Treatments × years interaction is absent.

5. RESULTS :

(i) 453 Kg/ha. (ii) 31·9 Kg/ha. (based on 21 d.f. made up of pooled error and treatments×years interaction). (iii) Treatment differences are highly significant. (iv) Av. yield of pods in Kg/ha.

Treatment	S_1	S_2	S_3	S_4
Av. yield	475	492	431	413

C.D.=33·8 Kg/ha.

	S_1	S_2	S_3	S_4	Sig.	G.M.	S.E./plot.
1963 (73)	484	497	431	416	N.S.	457	42·2
1963 (70)	465	486	431	410	**	448	23·5
Pooled	475	492	431	413	**	553	31·9

Crop :- Groundnut (*Kharif*). **Ref :- Ms. 64(46).**

Site :- Ginigera (Raichur, *c.f.*). **Type :- 'C'.**

Object :—To find out optimum seed rate for spreading type of Groundnut.

1. BASAL CONDITIONS :

(i) (a) N A. (b) *Jowar*. (c) 12·4 C.L./ha. of F.Y.M. (ii) Medium red. (iii) Nil. (iv) P. No. 8. (v) (a) Ploughing with wooden plough and harrowing. (b) Dibbling. (c) As per treatments. (d) and (e) N.A. (vi) 28.6.1964. (vii) Unirrigated. (viii) and (ix) N.A. (x) 17.11.64.

2. TREATMENTS :

5 seed rates : R_1=17, R_2=34, R_3=50, R_4=67 and R_5=84 Kg/ha.

3. DESIGN .

(i) R.B.D. with 5 plots/block and 4 replications. (ii) N.A. (iii) (a) 9·1 m.×6·1 m. (b) 8·7 m.×5·5 m. (iv) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of pods. (iv) (a) 1963-65 (Expt. for 63 and 65 N.A. (b) No. (c) Nil. (v) N.A. (vi) Nil. (vii) Experiment conducted by Asstt. Agronomist, Groundnut scheme, Agri. College, Dharwar.

5. RESULTS :

(i) 1647 Kg/ha. (ii) 170·3 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of pods in Kg/ha.

Treatment	R_1	R_2	R_3	R_4	R_5
Av. yield	1571	1674	1794	1598	1598

Crop :- Groundnut (*Kharif*). **Ref :- Ms. 64(47).**

Site :- Koppal (Raichur, *c.f.*). **Type :- 'C'.**

Object :—To find out suitable spacing for spreading type of Groundnut.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Jowar*. (c) 12·4 C.L./ha. of F.Y.M. (ii) Red. (iii) 12·4 C.L./ha. of F.Y.M. (iv) P. No. 8. (v) (a) Ploughing with wooden plough and harrowing. (b) Dibbling. (c) N.A. (d) As per treatments. (e) N.A. (vi) 26.8.64. (vii) Unirrigated. (viii) and (ix) N.A. (x) 16.11.64.

2. TREATMENTS :

5 spacings : S_1=30 cm.×6 cm., S_2=38 cm ×6 cm., S_3=46 cm.×6 cm., S_4=53 cm.×6 cm. and S_5= 61 cm.×6 cm.

3. DESIGN:

(i) R.B.D. with 5 plots/block and 4 replications. (ii) N.A. (iii) 9·8 m.×7·3 m. to 10·4 m.×7·3 m. (b) 9·1 m.×6·7 m. (iv) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of pods. (iv) 1963-'65 (Expt. for 1963 and '65 N.A.) (b) No. (c) Nil. (v) Bailhongal (Belgaum). (vi) Nil. (vii) Experiment conducted by Asstt. Agronomist, Groundnut scheme, Agri. College, Dharwar.

5. RESULTS :

(i) 1213 Kg/ha. (ii) 102·5 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of pods in Kg/ha.

Treatment	S_1	S_2	S_3	S_4	S_5
Av. yield	1199	1407	1415	1109	938

C.D.=157·9 Kg/ha.

Crop :- Groundnut (*Kharif*). **Ref :- Ms. 60(112), 61(86), 62(85), 63(85), 64(59).**

Site :- Agri. Res. Stn., Saundatti. **Type :- 'CV'.**

Object :—To find out a suitable variety with proper spacing and seed rate.

1. BASAL CONDITIONS :

(i) (a) *Jawar*—Groundnut. (b) Groundnut for 60(112), *Jowar* for others. (c) Nil. (ii) Medium black. (iii) 5.7.60 ; 12.6.61 ; 29.6.62, 28.6.63 ; 2.7.64. (iv) (a) 3 harrowings for 60(112), 61(86), 64(59) and 2 harrowings for others. (b) N.A. for 60(112) ; drilling for others. (c) and (d) As per treatments. (e) N.A. (v) 22·4 Kg/ha. of P_2O_5 as Super at the time of sowing. (vi) As per treatments. (vii) Unirrigated. (viii) 2 interculturings and 2 hand weedings for 60(112), 61(85), 64(59) ; 3 interculturings and 2 hand weedings for others. (ix) 44 cm. ; 25 cm. ; 51 cm. ; 21 cm. ; 55 cm. (x) 2.11.60 ; 21.9..61 ; 18.10.62 ; 15.10.63 ; 22.10.64.

2. TREATMENTS :

Main-plot treatments :

2 varieties : V_1=local and V_2=Spanish improved.

Sub-plot treatments :

3 spacings : S_1=30, S_2=38 and S_3=46 cm.

Sub-sub-plot treatments :

3 seed rates : R_1=45, R_2=67 and R_3=89 Kg/ha.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 3 sub-plots/main-plot ; 3 sub-sub-plots/sub-plot. (b) 44·8 m.×33·4 m. (iii) 3. (iv) (a) 7·3 m.×11·0 m. for 60(112) ; 7·3 m.×11·0 m. for S_1 and S_3, 7·3 m.×11·4 m. for S_2 for other years. (b) 5·5 m.×9·1 m. for all. (v) 91 cm.×91 cm. for 60(112) ; 91 cm.×91 cm. for S_1 and S_3, 91 cm.×114 cm. for S_2, for others. (vi) Yes.

4. GENERAL :

(i) Unsatisfactory for 60(112) ; satisfactory for 62(85) ; fairly satisfactory for others. (ii) Nil for 63(85) ; attack of grass hoppers. 10% B.H.C. dusted for others. (iii) Yield of pods. (iv) (a) 1960 to 64. (b) No. (c) Nil. (v) and (vi) Nil. (vii) Sub-sub-plot error variances are heterogeneous.

5. RESULTS :

60(112)

(i) 360 Kg/ha. (ii) (a) 11·1 Kg/ha. (b) 50·6 Kg/ha. (c) 27·6 Kg/ha. (iii) Main effect of V, S, R and interaction V×R are highly significant. (iv) Av. yield of pods in Kg/ha.

	S_1	S_2	S_3	R_1	R_2	R_3	Mean
V_1	351	324	326	315	343	343	334
V_2	424	401	331	336	391	429	385
Mean	387	362	329	326	367	386	360
R_1	354	332	291				
R_2	396	370	334				
R_3	412	385	362				

C.D. for V marginal means=13·0 Kg/ha.

C.D. for S marginal means=38·9 Kg/ha.

C.D. for R marginal means=19·0 Kg/ha.

C.D. for R means at the same level of V=26·8 Kg/ha.

C.D. for V means at the same level of R=24·6 Kg/ha.

61(86)

(i) 654 Kg/ha. (ii) (a) 18·1 Kg/ha. (b) 68·9 Kg/ha. (c) 51·9 Kg/ha. (iii) Main effects of V and R are highly significant. (iv) Av. yield of pods in Kg/ha.

	S_1	S_2	S_3	R_1	R_2	R_3	Mean
V_1	631	558	513	446	578	677	567
V_2	754	721	748	605	760	857	741
Mean	693	640	631	526	669	768	654
R_1	542	529	506				
R_2	732	622	655				
R_3	805	767	732				

C.D. for V marginal means=21·2 Kg/ha.

C.D. for R marginal means=35·7 Kg/ha.

62(85)

(i) 418 Kg/ha. (ii) (a) 47·8 Kg/ha. (b) 49·3 Kg/ha. (c) 36·9 Kg/ha. (iii) Main effects of V and S are highly significant. (iv) Av. yield of pods in Kg/ha.

	S_1	S_2	S_3	R_1	R_2	R_3	Mean
V_1	397	347	367	297	377	437	370
V_2	503	471	422	385	478	533	465
Mean	450	409	394	341	427	485	418
R_1	382	321	319				
R_2	461	419	402				
R_3	507	486	463				

C.D. for V marginal means=56·0 Kg/ha.
C.D. for S marginal means=37·9 Kg/ha.

63(85)

(i) 428 Kg/ha. (ii) (a) 61·4 Kg/ha. (b) 86·3 Kg/ha. (c) 50·5 Kg/ha. (iii) Main effect of R is highly significant. (iv) Av. yield of pods in Kg/ha.

	S_1	S_2	S_3	R_1	R_2	R_3	Mean
V_1	447	386	415	330	426	491	416
V_2	400	447	476	359	452	512	441
Mean	423	417	445	344	439	502	428
R_1	316	345	372				
R_2	451	411	455				
R_3	503	494	509				

C.D. for R marginal means=34·8 Kg/ha.

64(59)

(i) 558 Kg/ha. (ii) (a) 24·4 Kg/ha. (b) 62·2 Kg/ha. (c) 44·5 Kg/ha. (iii) Main effect of V is significant, R effect is highly significant. (iv) Av. yield of pods in Kg/ha.

	S_1	S_2	S_3	R_1	R_2	R_3	Mean
V_1	574	584	588	512	591	644	582
V_2	534	552	514	465	540	595	533
Mean	554	568	551	488	566	620	558
R_1	461	510	492				
R_2	559	588	550				
R_3	643	606	610				

C.D. for V marginal means=28·6 Kg/ha.
C.D. for R marginal means=30·6 Kg/ha.

Crop :- Groundnut (*Summer*). **Ref :- Ms. 64(52).**

Site :- Agri. Res. Stn., Gangavati. **Type :- 'I'.**

Object :—To find the optimum no. of irrigation for Groundnut.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Groundnut. (b) *Jowar*. (c) 12·4 C.L./ha. of F.Y.M. (ii) Slightly alkaline with calcium pebbles. (iii) 3.2.1964. (iv) (a) Ploughing and harrowing. (b) Drilling. (c) to (e) N.A. (v) Nil (vi) TMV—2 (early). (vii) As per treatments. (viii) 2 hand weedings and 3 interculturings. (ix) N.A. (x) 4.6.1964.

2. TREATMENTS :

4 interval of irrigations : I_1=5, I_2=9, I_3=13 and I_4=17 days.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) 18·3 m.×12·2 m. (iii) 6. (iv) (a) 9·1 m.×6·1 m. (b) 8·5 m.×5·5 m. (v) 30 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of aphids—Sprayed Endrine. (iii) No. of developed and undeveloped seeds and yield of pods. (iv) (a) 1963 to 65. (expt. for 1963 and 65 N.A. (b) No. (c) Nil. (v) N.A. (vi) Nil. (vii) This expt. was conducted by the Asstt. Agronomist, Groundnut Scheme, Agri. College, Dharwar.

5. RESULTS :

(i) 1022 Kg/ha. (ii) 156·2 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of pods in Kg/ha.

Treatment	I_1	I_2	I_3	I_4
Av. yield	1085	1068	1043	893

Crop :- Groundnut (*Kharif*). **Ref :- Ms. 61(143), 62(132).**

Site :- Agri. Res. Stn., Bijapur. **Type 'D'.**

Object :—To find out the effects of different fungicides on the yield of Groundnut.

1. BASAL CONDITIONS :

(i) (a) Groundnut—*Jowar*. (b) *Jowar*. (c) 12·4 C.L./ha. of F.Y.M.+11·2 Kg/ha. of N as A/S. (ii) Medium Limy. (iii) 13.7.61 ; 4.7.62. (iv) (a) Ploughing and harrowings. (b) Drilling. (c) 112 Kg/ha.(d) 30 cm. between rows. (e) —. (v) Nil. (vi) Spanish improved. (vii) Unirrigated. (viii) Interculturings and weedings. (ix) 43 cm.; 70 cm. (x) 1.12.61; 12.11.62.

2. TREATMENTS:

4 fungicidal seed treatments : T_0=Control, T_1=Ceresan dry @ 2 gm./Kg. of seed, T_2=Ceresan wet @ 2 gm./Kg. of seed and T_3=Agroson G.N. @ 2 gm./Kg. of seed.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) 9·1 m.×9·8 m. (iii) 4. (iv) (a) 9·1 m.×2·4 m. (b) 7·9 m.×1·2 m. (v) 61 cm. ×61 cm. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Aphids attack to some extent and slight attack of Tikka. Spraying of Folidol (dilute). (iii) Pod yield. (iv) (a) 1958-62, (modified in 59. 60—N.A.). (b) No. (c) As under 5. Results. (v) N.A. (vi) Nil. (vii) Error variances are homogeneous. Treatments×years interaction is absent. Expt. no. 58(86) taken into account.

5. RESULTS :

(i) 529 Kg/ha. (ii) 61·2 Kg/ha. (based on 45 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
Av. yield	510	541	521	544

Years	T_0	T_1	T_2	T_3	Sig.	G.M.	S.E./plot
1961	475	558	510	538	N.S.	520	38·3
1962	416	500	448	445	N.S.	452	73·3
*Pooled	510	541	521	544	N.S.	529	61·2

*Includes results of Expt. no. 58(86).

Crop :- Groundnut (*Kharif*). **Ref :- Ms. 64(36), 65(94).**

Site :- Agri. Res. Stn., Siruguppa. **Type :- 'D'.**

Object :—To find out suitable insecticides that can control the Groundnut leaf minor.

1. BASAL CONDITIONS :

(i) (a) *Tur–Jowar—Tur*—Groundnut ; Cotton—*Jowar*—Groundnut. (b) Tur ; Cowpea. (c) 12·4 tonnes of F.Y.M.+44·8 Kg. of N+22·4 Kg. of P_2O_5/ha. (ii) Black cotton. (iii) 13.7.64 ; 25.6.65. (iv) (a) Ploughing and harrowing. (b) Hand dibbling. (c) 49 Kg/ha. ; 90 Kg/ha. (d) 30 cm.×15 cm. ; 30 cm.×10 cm. (e) 2 to 3 ; 1 to 2. (v) 12·4 tonnes of F.Y.M.+44·8 Kg. of P_2O_5/ha. ; 12·4 tonnes of F.Y.M.+44·8 Kg. of N+22·4 Kg. of P_2O_5/ha. (vi) TMV—2 (medium). (vii) Irrigated. (viii) Weeding and hoeing. (ix) 35 cm ; 27 cm. (x) 9.11.64 ; 5.11.65.

2. TREATMENTS:

8 chemical treatments : T_0=Control, T_1=D.D.T. 50% w.p., T_2=B.H.C. 50% w.p., T_3=Parathion 50%, T_4=Folidol E.C., T_5=Endrine 20 E.C., T_6=Sevin 85% Sp.. and T_7=Malathion 50%.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) and (b) 4·3 m.×11·0 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Yield of pods. (iv) (a) 1964 to 65. (b) N.A. (c) As under 5. results. (v) and (vi) Nil. (vii) Error variances are homogeneous and treatments×years interaction is absent.

5. RESULTS :

(i) 845 Kg/ha. (ii) 143·1 Kg/ha. (based on 49 d.f. made up of pooled error and interaction of treatments ×years). (iii) Treatment differences are 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	646	820	799	936	897	1030	863	768

C.D.=143·8 Kg/ha.

Years	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	Sig.	G.M.	S.E./plot
1964	538	814	676	810	764	895	777	529	**	725	114·6
1965	754	827	923	1063	1029	1166	950	1006	N.S.	965	154·0
Pooled	646	820	799	936	897	1030	863	768	*	845	143·1

Crop :- Groundnut (*Kharif*). **Ref :- Ms. 64(16).**

Site :- Reg. Sorghum. Res. Stn., Bailhongal. **Type :- 'DM'.**

Object :—To investigate the suitability of intercultivation practices on Groundnut under local conditions.

1. BASAL CONDITIONS :

(*i*) (a) Groundnut. (b) *Jowar*. (c) 12·4 C.L./ha. of F.Y.M. (ii) Blackish Masan. (iii) 2.7.64. (iv) (a) Iron ploughing once, clod crushing and harrowing twice. (b) Dibbling by hand. (c) 37 Kg/ha. (d) 46 cm. × 30 cm. (e) N.A. (v) Nil. (vi) Erect type. (vii) Nil. (viii) 3 interculturings. (ix) 81 cm. (x) 2.10.64.

2. TREATMENTS :

All combinations of (1), (2), (3) and (4)

(1) 2 levels of manuring : M_0=Local manuring with F.Y.M. at 12·4 C.L./ha. and M_1=Manuring with 11·2 Kg/ha. of N+22·4 Kg/ha. of P_2O_5.

(2) 2 seed treatments : S_0=Untreated and S_1=Treated with Agroson G.N.

(3) 2 methods of control of Aphids : A_0=No control measure and A_1=Dusting by 10% B.H.C.

(4) 2 methods of control of Tikka : T_0=No control measure and T_1=Dusting with sulphur.

3. DESIGN :

(i) 2^4 confd. (ii) (a) 8 plots/block ; 2 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 11·0 m.×6·4 m. (b) 9·8 m.×4·6 m. (v) 61 cm.×91 cm. (vi) Yes.

4. GENERAL :

(i) Good. (iii) Control measures as per treatments. (iii) Height of plant, no. of branches/plant, no. of pods and yield of pods. (iv) (a) and (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1181 Kg/ha. (ii) 95·3 Kg/ha. (iii) Main effect of S is significant. A effect is highly significant. Interactions M×S and M×A are significant. (iv) Mean and differential response table in Kg/ha.

	Mean response	Differential response							
		M		S		A		T	
		—	+	—	+	—	+	—	+
M	—29·2	—	—	44·9	—103·2	—4·5	—53·8	—168·2	109·9
S	85·2	159·2	11·2	—	—	35·9	134·5	125·6	44·9
A	24·7	—109·9	60·5	—74·0	24·7	—	—	—76·2	26·9
T	139·0	98·7	179·4	179·4	98·7	87·5	190·6		—

C.D. of mean response=72·5 Kg/ha.

C.D. of differential response=102·7 Kg/ha.

Crop :- Castor. **Ref :- Ms. 60(214), 61(215), 62(216).**

Site :- Agri. Res. Stn., Mandya. **Type :- 'M'.**

Object :—To study the effect of N,P and K fertilizers on the yield of Castor.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*. (b) Cotton. (c) 22·4 Kg/ha. of N+16·8 Kg/ha. of P_2O_5+16·8 Kg/ha. of K_2O (ii) Black soil. (iii) 24.5.60 ; 3.7.61. ; 3.7.62. (iv) (a) Ploughing and harrowing. (b) Drilling. (c) 9 Kg/ha. (d) 91 cm.×61. cm. (e) —. (v) 5 C.L./ha. of compost. (vi) Rosy castor. (vii) Unirrigated. (viii) 3 to 4 interculturings. (ix) 29·5 cm. ; 24·8 cm. ; 49·4 cm. (x) 10.12.60 ; N.A. ; 1.2.63.

2. TREATMENTS :

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

(1) 3 levels of N : N_0=0, N_1=16·8 and N_2=33·6 Kg/ha.

(2) 3 levels of P_2O_5 : P_0=0, P_1=11·2 and P_2=22·4 Kg/ha.

(3) 3 levels of K_2O : K_0=0,K_1=11·2 and K_2=22·4 Kg/ha.

3. DESIGN :

(i) 3^3 confd. (ii) (a) 9 plots/block ; 3 blocks/replication (b) N.A. (iii) 2. (iv) (a) 11·9 m.×11·3 m. (b) 10·1 m.×10·1 m. (v) 91 cm.×62 cm. (vi) yes.

4. GENERAL :

(i) Fair. (ii) N.A. (iii) Yield of castor seed. (iv) (a) 1960–1962. (b) No. (c) Nil. (v) N.A. (vi) Nil. (vii) Error variances are heterogeneous and treatments×years interaction is absent.

5. RESULTS :

60(214)

(i) 427 Kg/ha. (ii) 154·8 Kg/ha. (iii) P×K interaction is significant. (iv) Av. yield of castor seed in Kg/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	551	313	463	446	399	482	442
N_1	411	536	382	451	452	426	443
N_2	358	434	400	363	414	415	397
Mean	440	428	415	420	422	441	427
K_0	513	340	407				
K_1	329	590	346				
K_2	478	353	492				

C.D. for body of P×K table=184·5 Kg/ha.

61(215)

(i) 119 Kg/ha. (ii) 27·9 Kg/ha. (iii) P×K interaction is significant. (iv) Av. yield of castor seed in Kg/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	120	98	119	118	112	107	112
N_1	99	96	141	101	109	126	112
N_2	129	137	130	140	127	129	132
Mean	116	110	130	120	116	121	119
K_0	118	126	115				
K_1	103	122	123				
K_2	127	83	152				

C.D. for body of P×K table=33·2 Kg/ha.

62(216)

(i) 425 Kg/ha. (ii) 96·0 Kg/ha. (iii) Main effect of N is significant. (iv) Av. yield of castor seed in Kg/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	422	427	426	368	469	438	425
N_1	388	476	543	493	416	498	469
N_2	418	374	351	373	429	341	381
Mean	409	426	440	411	438	426	425
K_0	430	432	372				
K_1	417	397	500				
K_2	381	448	448				

C.D. for N marginal means=66·0 Kg/ha.

Crop :- Grass. **Ref :- Ms. 60(73), 61(77), 62(75).**

Site :- Agri. College, Dharwar. **Type 'M'.**

Object :— To study the fertility requirements of Grass under irrigated conditions.

1. BASAL CONDITIONS :

(i) Grass was sown after maize crop which was manured with 49·4 C.L./ha. of F.Y.M. (ii) Medium black. (iii) N.A. (iv) Hybrid Segregate No. 4 (cross between elephant grass × *Bajra*). (v) Transplanted on 27 to 30.6.61 with 61 cm. × 61 cm. spacing ; N.A. ; N.A. (vi) N.A. (vii) 49·4 C.L./ha. of F.Y.M. in 1960 ; 24·7 C.L./ha. of F.Y.M. in 1961, 62. (viii) 2 weedings and 6 interculturings in 1960 ; 5 interculturings in 1961, 62. (ix) Nil. (x) Irrigated. (xi) 99 cm. ; N.A. ; 87 cm. (xii) 4 cuttings during 1960 ; 3 on 15.9.1961, 27.11.1961 and 9.6.1962 ; 2 on 5.9.1962 and 19.11.1962.

2. TREATMENTS :

Main-plot treatments :

5 levels of N as Urea : N_0=0, N_1=33·6, N_2=67·2, N_3=100·9 and N_4=134·5 Kg/ha.

Sub-plot treatments :

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

3. DESIGN :

(i) Split-plot. (ii) (a) 5 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 6·1 m. × 4·9 m. (b) N.A. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of green matter, height spread and number of tillers. (iv) (a) 1960-63 (modified in 1963). (b) N.A. (c) Nil. (v) N.A. (vi) Nil. (vii) Sub-plot error variances are heterogeneous.

5. RESULTS :

60(73)

(i) 466·2 Q/ha. (ii) (a) 86·1 Q/ha. (b) 57·6 Q/ha. (iii) Main effect of N is highly significant and that of P is significant. (iv) Av. yield of grass in Q/ha.

	N_0	N_1	N_2	N_3	N_4	Mean
P_0	344·8	443·2	515·7	550·8	551·6	481·2
P_1	336·4	354·7	439·0	531·4	513·6	434·9
P_2	350·9	413·5	527·2	516·1	604·2	482·4
Mean	343·9	403·8	494·0	532·8	556·5	466·2

C D. for N marginal means=76·6 Q/ha.
C.D. for P marginal means=37·2 Q/ha.

61(77)

(i) 263·0 Q/ha. (ii) (a) 27·9 Q/ha. (b) 36·9 Q/ha. (iii) Main effects of N and P are highly significant. (iv) Av. yield of grass in Q/ha.

	N_0	N_1	N_2	N_3	N_4	Mean
P_0	217·0	259·8	301·3	329·2	320·0	285·5
P_1	180·8	199·9	251·8	275·0	291·0	239·7
P_2	193·0	206·4	296·4	287·2	336·0	263·8
Mean	196·9	222·0	283·2	297·1	315·7	263·0

C.D. for N marginal means=24·8 Q/ha.
C.D. for P marginal means=23·9 Q/ha.

62(75)

(i) 115·5 Q/ha. (ii) (a) 19·5 Q/ha. (b) 12·7 Q/ha. (iii) Main effect of N alone is highly significant. (iv) Av. yield of grass in Q/ha.

	N_0	N_1	N_2	N_3	N_4	Mean
P_0	83·5	104·5	110·6	132·4	127·4	111·7
P_1	89·3	96·5	117·9	132·4	142·3	115·7
P_2	90·8	106·0	131·2	129·7	I38·1	119·2
Mean	87·9	102·3	119·2	131·5	135·9	115·5

C.D. for N marginal means=17·3 Q/ha.

Crop :- Grass. **Ref :- Ms. 63(61).**

Site :- Agri. College, Dharwar. **Type :- 'M'.**

Object: — To study the fertility requirements of Grass under irrigated conditions.

1. BASAL CONDITIONS :

(i) N.A. (ii) Light red soil. (iii) N.A. (iv) Hybrid segregate No. 4. (v) 4 to 7.7.1963. (vi) and (vii) N.A. (viii) 7 intercult urings and 4 hand weedings. (ix) Nil. (x) Irrigated. (xi) N.A. (xii) 11.10.1963 and 4.12.1963.

2. TREATMENTS :

Main-plot treatments :

6 levels of N as A/S: N_0=0, N_1=33·6, N_2=67·2, N_3=100·9, N_4=134·5 and N_5=168·1 Kg/ha.

Sub-plot treatments :

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

3. DESIGN :

(i) Split-plot. (ii) (a) 6 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 6·7 m.× 4·3 m. (b) N.A. (v) N.A. (vi) Yes.

4. GENERAL ;

(i) Good. (ii) Nil. (iii) Height, width, number of tillers and yield of green matter. (iv) (a) 1960-63 (modified in 1963). (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 213·0 Q/ha. (ii) (a) 42·9 Q/ha (b) 30·6 Q/ha. (iii) Main effect of N is highly significant and that of P is significant. (iv) Av. yield of grass in Q/ha.

	N_0	N_1	N_2	N_3	N_4	N_5	Mean
P_0	108·5	137·5	211·9	159·5	333·8	330·3	213·6
P_1	99·7	133·6	204·0	160·6	294·9	315·8	201·4
P_2	94·4	182·6	218·9	173·9	318·0	356·5	224·0
Mean	100·9	151·2	211·6	164·7	315·6	334·2	213·0

C.D. for N marginal means=37·3 Q/ha.
C.D. for P marginal means=17·9 Q/ha.

Crop :- Grass. **Ref :- Ms. 61(76).**

Site :- Agri. College, Dharwar. **Type :- 'M'.**

Object :— To study the effect of nitrogenous fertilizers on the yield of Grass.

1. BASAL CONDITIONS :

(i) Grass of improved variety was sown for seed multiplication. (ii) Light red soil. (iii) N.A. (iv) Napier. (v) Planted in 1958 with spacing 61 cm.×61 cm. (vi) N.A. (vii) 12·4 C.L./ha. of F.Y.M. spread and mixed. (viii) 3 interculturings. (ix) Nil. (x) Unirrigated. (xi) N.A. (xii) 31.10.61 and 26.12.61.

2. TREATMENTS:

Main-plot treatments :

4 sources of N : S_1=A/S (20% N), S_2=C/A/N (20% N), S_3=Nitrophos. (16% N+14% P_2O_5) and S_4= Nitrophos. (20% N+20% P_2O_5).

Sub-plot treatments :

4 levels of N : N_0=0, N_1=22·4, N_2=44·8 and N_3=67·2 Kg/ha.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 4 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 6·7 m.× 4·9 m. (b) N.A. (v) 122 cm.×122 cm. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Height, breadth. number of tillers and yield of green matter. (iv) (a) 1961-N.A. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 125·8 Q/ha. (ii) (a) 46·0 Q/ha. (b) 16·4 Q/ha. (iii) Main effect of N alone is highly significant. (iv) Av. yield of grass in Q/ha.

	N_0	N_1	N_2	N_3	Mean
S_1	—	117·0	150·7	118·8	128·8
S_2	—	123·0	141·9	159·0	141·3
S_3	—	118·8	118·4	162·3	133·2
S_4	—	126·7	154·0	188·2	156·3
Mean	83·4	121·4	141·2	157·1	125·8

C.D. for N marginal means=13·8 Q/ha.

Crop :- Grass. **Ref :- Ms. 60(78).**

Site :- Agri. College, Dharwar. **Type :- 'MV'.**

Object: —To determine the effect of manurial and fertilizers treatments on growth, yield and chemical composition of different grass varieties.

1. BASAL CONDITIONS :

(i) Before planting in 1955, it was a waste land used as a grazing area and since 1956 manuring as per treatments. (ii) Red light soil. (iii) N.A. (iv) As per treatments. (v) Last week of July 1955. (vi) and (vii) N.A. (viii) 2 hallow ploughing with wooden plough, in between the lines which act as earthing operation, 2 or 3 intercultures during the year. Hand weeding once or twice. Gap filling whenever it is necessary. (ix) Nil. (x) Unirrigated. (xi) 99 cm. (xii) 3 cuttings during the year.

2. TREATMENTS:

Main-plot treatments :

All combinations of (1) and (2)

(1) 3 varieties of grass : V_1=Thin napier, V_2=Rhodes and V_3=Marval.

(2) 2 levels of F.Y.M.: F_0=0 and F_1=12·4 C.L./ha.

Sub-plot treatments :

All combinations of (1) and (2)

(1) 4 levels of N : N_0=0, 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=22·4 and P_2=44·8 Kg/ha.

3.. DESIGN :

(i) Split-plot. (ii) (a) 6 main-plots/replication ; 12 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 6·1 m. ×4·3 m. (b) N.A. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of grass matter. (iv) (a) 1955 to 60. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 380·0 Q./ha. (ii) (a) 80 5 Q./ha. (b) 25·3 Q/ha. (iii) Main effects of F, V, N, P and interaction N×P, F×N, V×N and V×P are highly significant. Interaction F×V is significant. (iv) Av. yield of grass in Q/ha.

	N_0	N_1	N_2	N_3	P_0	P_1	P_2	V_1	V_2	V_3	Mean
F_0	308·5	343·0	332·0	386·3	333·9	343·0	350·5	529·2	204·8	293·3	342·5
F_1	350·7	410·9	424·9	483·7	399·3	420·3	433·0	637·3	305·9	309·4	417·5
Mean	329·6	377·0	378·4	435·0	366·6	381·6	391·8	583·2	255·4	301·4	380·0
V_1	475·4	568·5	602·0	687·0	555·6	590·2	603·9				
V_2	231·7	255·0	250·7	284·1	246·0	250·0	270·1				
V_3	281·7	307·4	282·6	333·8	298·1	304·7	301·3				
P_0	299·4	366·3	380·3	420·3							
P_1	348·3	391·9	373·1	413·3							
P_2	341·1	372·7	381·8	471·4							

C.D. for F marginal means=24·4 Q/ha.
C.D. for V marginal means=29·9 Q/ha.
C.D. for N marginal means=9.6 Q/ha.
C.D. for P marginal means=8·3 Q/ha.
C.D. for N means at the same level of F=13·6 Q/ha.
C.D. for F means at the same level of N=27·1 Q/ha.
C.D. for N means at the same level of V=16·7 Q/ha.
C.D. for V means at the same level of N=33·2 Q/ha.
C.D. for P means at the same level of V=14·4 Q/ha.
C.D. for V means at the same level of P=32·1 Q/ha.
C.D for body of N×P table=11·8 Q/ha.
C.D. for body of F×V table=42·3 Q/ha.

Crop :- Grass. **Ref :- Ms. 62(74), 63(62).**

Site :- Agri. College, Dharwar. **Type :- 'C'.**

Object :—To find out the optimum spacing for Grass to get the maximum yield.

1. BASAL CONDITIONS :

(i) N.A. (ii) Light red soil. (iii) N.A. (iv) Hybrid no. 4. (v) Transplanted on 6 and 7.8.1961. Spacing as per treatments. (vi) N.A. (vii) 12·4 C.L./ha. of F.Y.M. spread and mixed ; N.A. (vii) 3 interculturings and 2 weedings ; 3 interculturings and 1 weeding. (ix) Nil. (x) Unirrigated. (xi) 87 cm. ; N.A. (xii) 24.9.1962 ; 24.10.1963.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 row spacings : R_1=30, R_2=61, R_3=91 and R_4=122 cm.

(2) 4 plant spacings : S_1=30, S_2=61, S_3=91 and S_4=122 cm.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 7·3 m.×3·7 m. (b) N.A. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Height, width, number of tillers and leaves and yield of green matter. (iv) (a) 1962 to 63. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

62(74)

(i) 48·8 Q/ha. (ii) 12·4 Q/ha. (iii) Main effect of R alone is significant. (iv) Av. yield of grass in Q/ha.

	S_1	S_2	S_3	S_4	Mean
R_1	61·9	47·0	49·2	58·5	54·2
R_2	57·2	49·6	50·4	49·6	51·7
R_3	40·3	44·9	42·8	39·0	41·7
R_4	47·0	42·4	47·5	53·4	47·6
Mean	51·6	46·0	47·5	50·1	48·8

C.D. for R marginal means=8·8 Kg/ha.

63(62)

(i) 30·9 Q/ha. (ii) 8·3 Q/ha. (iii) None of the effects is significant. (iv) Av. yield of grass in Q/ha.

	S_1	S_2	S_3	S_4	Mean
R_1	30·4	27·1	29·4	38·3	31·3
R_2	33·6	32·7	34·5	26·2	31·8
R_3	27·1	29·9	31·8	25·7	28·6
R_4	31·8	29·9	32·2	33·6	31·9
Mean	30·7	29·9	32·0	31·0	30·9

———

Crop :- Grass. **Ref. :- Ms. 60(72), 61(75), 62(72), 63(58).**

Site :- Agri. College, Dharwar. **Type :- 'C'.**

Object :— To find the best method of establishing the Grass by different methods of planting.

1. BASAL CONDITIONS :

(i) Improved grass grown for multiplication, manured with 12·4 C.L /ha. of F.Y.M. (ii) Red light soil. (iii) N.A. (iv) Thin napier. (v) August 1960. Spacing and methods of planting as per treatments. (vi) N.A. (vii) 12·4 C.L./ha. of F.Y.M. spread and mixed. (viii) Hand weeding and gap filling in 1960 ; 3 interculturings, one hand weeding and gap filling whenever necessary in 1961, 1962 and 6 interculturings and 2 weedings in 1963. (ix) Nil. (x) Unirrigated. (xi) 99 cm. ; N.A. for others. (xii) 2 to 5 cuttings during Oct. to Dec. for 1960, 1961 ; 17.10.1962 and 20.11.1962 ; 27.8.1993 to 3.11.1963.

2. TREATMENT :

4 methods of planting : M_1=Hand broadcasting at 6 Kg/ha. of seed, M_2=Sown by country drill with 46 cm. spacing between rows, M_3=Transplanting of seedlings with 61 cm.×61 cm. spacing and M_4=Transplanting of Tussocks with 61 cm.×61 cm. spacing.

3. DESIGN :

(i) R·B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) 14·0 m.×7·9 m. in 1960 and 1961 ; 14·3 m.×8·2 m. in 1962 and 1963. (b) N.A. (v) 61 cm.×61 cm. in 1960 and 1961 and 46 cm.×46 cm. in 1962 and 1963. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of green grass. (iv) 1960—contd (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

60(72)

(i) 43·0 Q/ha. (ii) 6·1 Q/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grass in Q/ha.

Treatment	M_1	M_2	M_3	M_4
Av. yield	64·5	50·1	32·0	25·2

C.D.=9·7 Q/ha.

61(75)

(i) 233·4 Q/ha. (ii) 38·9 Q/ha. (iii) Treatment differences are not significant. (iv) Av. yield of grass in Q/ha.

Treatment	M_1	M_2	M_3	M_4
Av. yield	210.2	199·4	248·9	275·0

62(72)

(i) 118·9 Q/ha. (ii) 12·2 Q/ha. (iii) Treatment differences are significant. (iv) Av. yield of grass in Q/ha.

Treatment	M_1	M_2	M_3	M_4
Av. yield	97·4	122·7	127·5	128·0

C.D.=19·5 Q/ha.

63(58)

(i) 112·7 Q/ha. (ii) 13·8 Q/ha. (iii) Treatment differences are significant. (iv) Av. yield of grass in Q/ha.

Treatment	M_1	M_2	M_3	M_4
Av. yield	93·7	122·5	111·6	123·0

C.D.=22·1 Q/ha.

Crop :- Grass. **Ref :- Ms. 62(73).**

Site :- Agri. College, Dharwar. **Type :- 'CV'.**

Object :—To find out the optimum spacing of different varieties of Grass.

1. BASAL CONDITIONS :

(i) N.A (ii) Light red soil. (iii) N.A. (iv) As per treatments. (v) 18 and 19.7.1962. (vi) N.A. (vii) 12·4 C.L./ha. of F.Y.M. spread and mixed. (viii) 2 wooden ploughings and once *gura* operation. (ix) Nil. (x) Unirrigated. (xi) 87 cm. (xii) 24.10.1962.

2. TREATMENTS :

All combinations of (1) and (2)

(i) 2 varieties of grass : V_1=Thin napier and V_2=Guinea grass.

(2) 4 spacings : S_1=30 cm.×30 cm. ; S_2=46 cm.×46 cm. ; S_3=61 cm ×61 cm. and S_4=91 cm.×91 cm.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 3. (iv) (a) 7·3 m.×5·5 m. (b) N.A. (v) Nill. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Height, breadth, number of tillers and yield of green matter. (iv) 1962—contd (modified in 1963). (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 92·0 Q/ha. (ii) 21·4 Q/ha. (iii) Main effect of S is highly significant and that of V is significant. (iv) Av. yield of grass in Q/ha.

	S_1	S_2	S_3	S_4	Mean
V_1	146·2	114·1	89·3	64·4	103·5
V_2	90·0	89·7	64·8	77·2	80·4
Mean	118·1	101·9	77·0	70·8	92·0

C.D. for S marginal means=26·5 Q/ha.
C.D. for V marginal means=18·8 Q/ha.

Crop :- Grass. **Ref :- Ms. 63(60).**

Site :- Agri. College, Dharwar. **Type :- 'CV'.**

Object :—To find the optimum spacing for different varieties of Grass.

1. BASAL CONDITIONS :

(i) N.A. (ii) Light red soil. (iii) N.A. (iv) As per treatments. (v) 18 and 19.7.1962. (vi) and (vii) N.A. (viii) 4 interculturings and 2 hand weedings. (ix) Nil. (x) Unirrigated. (xi) N.A. (xii) 17.8.1963 and 26.10.1963.

2. TREATMENTS :

Main-plot treatments :

2 varieties of grass : V_1=Thin napier and V_2= Guinea grass.

Sub-plot treatments :

4 spacings : S_1=30 cm.×30 cm., S_2=46 cm.×46 cm., S_3=61 cm.×61 cm., and S_4=91 cm.×91 cm.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 4 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 7·3 m. ×5·5 m. (b) N.A. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Height, width, number of tillers and yield of green grass. (iv) 1962—contd. (modified in 1963). (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 115·6 Q/ha. (ii) (a) 16·5 Q/ha. (b) 15·7 Q/ha. (iii) None of the effects is significant. (iv) Av. yield of grass in Q/ha.

	S_1	S_2	S_3	S_4	Mean
V_1	146·9	144·7	108·5	126·2	131·6
V_2	99·8	95·3	101·0	102·5	99·6
Mean	123·4	120·0	104·8	114·4	115·6

Crop :- Grass. **Ref :- Ms. 60(71).**

Site :- Agri. College, Dharwar. **Type :- 'CV'.**

Object :—To study the effect of varying number of cuttings on the yield of different species of Grass.

1. BASAL CONDITIONS :

(i) Until 1955, it was a grazing land and since 1956 F.Y.M. at 12·4 C.L./ha. was applied. (ii) Red light soil. (iii) N.A. (iv) As per treatments. (v) Transplanted in Aug. 1955. (vi) N.A. (vii) 12·4 C.L./ha. of F.Y.M. was given during June 1960. Spreading and mixing. (viii) Interculturing, band weeding and gap filling. (ix) Nil. (x) Unirrigated. (xi) 99 cm. (xii) N.A.

2. TREATMENTS

Main-plot treatments :

5 species of grass : S_1=Elephant grass, S_2=Segregate no. 4, S_3=Segregate no. 9, S_4=Segregate no. 5 and S_5=Segregate no. 3.

Sub-plot treatments ;

4 cuttings : C_1=Single cutting, C_2=2, C_3=3 and C_4=4 cuttings.

3. DESIGN :

(i) Split-plot. (ii) (a) 5 main-plots/replication ; 4 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 6·1 m. ×4·3 m. (b) N.A. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of green matter. (iv) (a)1955 to 60. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 69·9 Q/ha. (ii) (a) 20·6 Q/ha. (b) 8·8 Q/ha. (iii) Main effects of S, C and interaction S×C are highly significant. (iv) Av. yield of grass in Q/ha.

	S_1	S_2	S_3	S_4	S_5	Mean
C_1	54·0	72·6	22·7	36·1	38·9	44·9
C_2	60·4	103·5	36·0	54·1	58·1	62·4
C_3	75·6	115·1	56·4	69·8	84·3	80·2
C_4	101·2	139·5	39·5	79·6	100·0	92·0
Mean	72·8	107·7	38·6	59·9	70·3	69·9

C.D. for S marginal means=19·3 Q/ha.
C.D. for C marginal means=6·5 Q/ha.
C.D. for C means at the same level of S=14·6 Q/ha.
C.D. for S means at the same level of C=23·1 Q/ha.

Crop :- Grass. **Ref :- Ms. 60(70).**

Site :- Agri. College, Dharwar. **Type :- 'CV'.**

Object :—To study the effect of varying the number of cuttings on the yield of different species of Grass.

1. BASAL CONDITIONS :

(i) Until 1955, the land was used as a grazing land. Since 1955, manured at 12·4 C.L./ha. of F.Y.M. (ii) Red light soil having depth 25 cm. to 30 cm. (iii) N.A. (iv) As per treatments. (v) Transplanting in July 1955. (vi) N.A. (vii) 12·4 C.L./ha. of F.Y.M. was given during June 1960, spreading and mixing. (viii) Interculture, hand weedings and gap filling. (ix) Nil. (x) Unirrigated. (xi) 99 cm. (xii) N.A.

2. TREATMENTS :

Main-plot treatments :

6 species of grass : S_1=Thin Napier, S_2=Rhodes, S_3=Blue panic, S_4=Aujan, S_5=Mared and S_6= Amphilophis glabra.

Sub-plot treatments :

3 cuttings : C_1=Single cutting, C_2=2 and C_3=3 cuttings.

3. DESIGN :

(i) Split-plot. (ii) (a) 6 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 6·1 m. ×4·3 m. (b) N.A. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Not good. (ii) Nil. (iii) Yield of green matter. (iv) 1955 to 60. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS ;

(i) 72·9 Q/ha. (ii) (a) 26·6 Q/ha. (b) 14·2 Q/ha. (iii) Main effects of S, C and interaction S×C are significant. (iv) Av. yield of grass in Q/ha.

	S_1	S_2	S_3	S_4	S_5	S_6	Mean
C_1	103·8	22·2	5·7	52·8	43·6	67·1	49·2
C_2	124·7	45·8	22·2	73·2	78·9	72·4	69·5
C_3	158·2	62·3	42·3	102·4	132·1	102·4	100·0
Mean	128·9	43·4	23·4	76·1	84·9	80·6	72·9

C.D. for S marginal means=23·1 Q/ha.
C.D. for C marginal means=8·3 Q/ha.
C.D. for C means at the same level of S=20·4 Q/ha.
C D. for S means at the same level of C=28·5 Q/ha.

Crop :- Cardamom. **Ref :- Ms. 63(178), 64(136).**

Site :- Reg. Spices Res. Stn., Chethally. **Type :- 'C'.**

Object : To find out optimum spacing for Cardamom under malnad conditions in Mysore State.

1. BASAL CONDITIONS :

(i) Forest area. (ii) Medium black. (iii) Seedlings. (iv) Manjarabad. (v) June 1961. (vi) N.A. (vii) Nil. (viii) Weeding, digging etc. (ix) Nil. (x) Unirrigated. (xi) 158 cm. ; 231 cm. (xii) N.A.

2. TREATMENTS :

7 spacings in cm. : S_1=120×120, S_2=180×180, S_3=240×240, S_4=300×300, S_5=370×370, S_6=430×430 and S_7=490×490.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 3. (iv) (a) and (b) 14·6 m.×19·5 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of dried cured cardamom. (iv) 1963 –contd. (v) Nil. (vi) to (vii) Nil.

5. RESULTS :

63(178)

(i) 76·9 Kg/ha. (ii) 48·7 Kg/ha. (iii) Treatments differences are significant. (iv) Av. yield of cured cardamom in Kg/ha.

Treatment	S_1	S_2	S_3	S_4	S_5	S_6	S_7
Av. yield	181·0	133·7	85·4	59·6	24·2	32·0	22·5

C.D.=86·7 Kg/ha.

64(136)

(i) 42·3 Kg/ha. (ii) 16·6 Kg/ha. (iii) Treatments differences are highly significant. (iv) Av. yield of cured cardamom in Kg/ha.

Treatment	S_1	S_2	S_3	S_4	S_5	S_6	S_7
Av. yield	80·9	60·6	29·8	57·1	27·9	25·7	14·4

C.D.=29·6 Kg/ha.

Crop :- Cardamom. **Ref :- Ms. 64(134).**

Site :- Reg. Spices Res. Stn., Chethally. **Type :- 'C'.**

Object :—To determine the optimum spacing and size of the seedlings for transplanting in second nursery bed.

1. BASAL CONDITIONS :

(i) Forest area. (ii) Medium black. (iii) Seedlings. (iv) Manjarabad. (v) 21st January, 1963. (vi) N.A. (vii) Nil. (viii) Weedings. (ix) Nil. (x) Pot watering. (xi) 231 cm. (xii) Observation taken during May, 1964.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 spacings : S_1=15 cm.×15 cm., S_2=23 cm.×23 cm. S_3=30 cm.×30 cm. and S_4=38 cm.×38 cm.

(2) 3 sizes of the seedlings : L_1=Seedlings with 2 leaves, L_2=Seedlings with 3 leaves and L_3=Seedlings with 4 leaves.

3. DESIGN :

(i) Fact. in R.B.D (ii) (a) 12. (b) N.A. (iii) 3. (iv) 12·2 m.×12·2 m. (v) Nil. (vi) Yes.

4. GENERAL:

(i) Fair. (ii) Nil. (iii) Height in cm./plant. (iv) (a) 1963 only. (b) N.A. (c) Nil. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 17·7 cm./plant. (ii) 3·76 cm./plant. (iii) No effect is significant. (iv) Mean height in cm./plant.

	S_1	S_2	S_3	S_4	Mean
L_1	18·8	14·9	14·4	15·1	15·8
L_2	20·9	19·3	16·5	17·7	18·6
L_3	19·9	19·5	17·3	18·4	18·8
Mean	19·9	17·9	16·1	17·1	17·7

Crop :- Cardamom. **Ref :- Ms. 62(180).**

Site :- Reg. Spices Res. Stn., Chethally. **Type :- 'C'.**

Object : —To determine the viability of Cardamom seeds.

1. BASAL CONDITIONS :

(i) Forest area. (ii) Medium black. (iii) Seedlings. (iv) Manjarabad. (v) June 1962. Spacing 25 cm. ×25 cm. (vi) and (vii) Nil. (viii) Weeding. (ix) Nil. (x) Pot watering. (xi) 206 cm. (xii) Observation taken 35 days after sowing.

2. TREATMENTS :

6 cultural treatments : T_1=Sown in nursery beds immediately after extraction, T_2=Stored for 3 days after extraction and sown in nursery bed, T_3=Stored for 6 day after extraction and sown in nursery bed, T_4=Stored for 9 days after extraction and sown in nursery bed, T_5=Stored for 12 days after extraction and sown in nursery bed and T_6=Stored for 15 days after extraction and sown in nursery bed.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) 100 seeds/treatment. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) % of germination. (iv) (a) 1962 only. (b) —. (c) —. (v) No. (vi) to (vii) Nil.

5. RESULTS :

(i) 42·3 degrees. (ii) 9·1 degrees. (iii) Treatment differences are not significant. (iv) Mean percentage of germination.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6
Mean angle in degrees	43·0	40·5	40·9	43·1	43·1	43·1
Percentage transformed	46·5	42·2	42·9	46·7	46·7	46·7

Crop :- Cardamon. **Ref :- Ms. 63(177).**

Site :- Reg. Spices Res. Stn., Chethally. **Type :- 'C'.**

Object : —To determine the optimum mulch for nursery beds.

1. BASAL CONDITIONS :

(i) Forest area. (ii) Medium black. (iii) Seedlings. (iv) Manjarabad. (v) 26.1.63. spacing 15 cm. ×15 cm. (vi) Nursery. (vii) Nil. (viii) Weeding. (ix) Nil. (x) Pot watering. (xi) 158 cm. (xii) 2.3.63.

2. TREATMENTS :

6 cultural treatments : T_1=Seed bed covered with paddy husk, T_2=Seed bed covered with paddy mulch, T_3=Seed bed covered with paddy straw, T_4=Seed bed covered with saw dust, T_5=Seed bed covered with Coffee husk and T_6=Seed bed covered with polythene sheet.

3. DESIGN :

(i) R.B.D. (ii) 6. (b) N.A. (iii) 4. (iv) 100 seeds/treatment. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) % of germination. (iv) (a) 1962—only. (b) N.A. (c) Nil. (v) N.A. (vi) an (vii) Nil.

5. RESULTS :

(i) 22·5 degrees. (ii) 11·0 degrees. (iii) Treatment differences are highly significant. (iv) Mean % of germination in degrees.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6
Mean angle in degrees	17·9	12·8	52·3	18·3	20·4	12·9
Percentage (Transformed back)	9·4	4·9	62·6	9·9	12·2	5·0

C.D.=16·6 degrees.

Crop :- Cardamon. **Ref :- Ms. 64(70 to 76).**

Site :- Cardamon Res. Stn., Mudigere. **Type :- 'D'.**

Object :—To find out the effect of treating the seed with different alkaline and acidic treatments on seedlings.

1. BASAL CONDITIONS :

(i) Grass growing land. (ii) Sandy loam. (iii) By seedlings. (iv) Local. (v) 1964. (vi) Only seeds were sown. (vii) to (ix) Nil. (x) Unirrigated. (xi) 227 cm. (xii) N.A.

2. TREATMENTS :

5 periods of treating the seeds : T_0=Control (no treatment), T_1=3, T_2=8, T_3=13 and T_4=18 minutes. Seeds were treated with 50% Sulphuric acid, 50% Hydrochloric acid, 50% Nitric acid, 25% Sulphuric acid, 25% Hydrochloric acid, 20% K_0H and 10% Glucical ascetic acid in expt nos. 64(70), 64(71), 64(72), 64(73), 64(74), 64(75) and 64(76) respectively.

3, DESIGN :

(i) L. Sq. (ii) (a) 5 (b) N.A. (iii) 5. (iv) 100 seeds/plot. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) No. of seedlings/plot. (iv) (a) 1964 N.A. (b) N.A. (c) Nil. (v) and (vi) Nil. (vii) Results given for different acidic and alkaline treatments separately.

5. RESULTS :

64(70) 50% Sulphuric acid

(i) 25 seedlings/plot. (ii) 9·1 seedlings/plot. (iii) Treatment differences are highly significant. (iv) Av. number of seeds germinated/plot.

Treatment	T_0	T_1	T_2	T_3	T_4
Av. number	35	20	29	27	12

C.D.=12·5 seedlings/plot.

64(71) 50% Hydrochloric acid

(i) 2 seedlings/plot. (ii) 8·4 seedlings/plot. (iii) Treatment differences are not significant. (iv) Av. number of seedlings germinated/plot.

Treatment	T_0	T_1	T_2	T_3	T_4
Av. number	6	1	1	2	1

64(72) 50% Nitric acid

(i) 17 seedlings/plot. (ii) 8·5 seedlings/plot. (iii) Treatment differences are not significant. (iv) Av. number of seeds germinated/plot.

Treatment	T_0	T_1	T_2	T_3	T_4
Av. number	15	16	21	26	9

64(73) 25% Sulphuric acid

(i) 15 seedlings/plot. (ii) 9·5 seedlings/plot. (iii) Treatment differences are not significant. (iv) Av. number of seeds germinated/plot.

Treatment	T_0	T_1	T_2	T_3	T_4
Av. number	19	16	15	13	12

64(74) 25% Hydrochloric acid

(i) 7 seedlings/plot. (ii) 8·3 seedlings/plot. (iii) Treatment differences are not significant. (iv) Av. number of seeds germinated/plot.

Treatment	T_0	T_1	T_2	T_3	T_4
Av. number	15	7	5	5	5

64(75) 20% K_0H

(i) 5 seedlings/plot. (ii) 2·4 seedlings/plot. (iii) Treatment differences are highly significant. (iv) Av. number of seeds germinated/plot.

Treatment	T_0	T_1	T_2	T_3	T_4
Av. numbrr	11	4	3	2	6

C.D.=3·3 seedlings/plot.

64(75) 10% Glucical Ascetic acid

(i) 8 seedlings/plot. (ii) 0·5 seedlings/plot. (iii) Treatment differences are highly significant. (iv) Av. number of seeds germinated/plot.

Treatment	T_0	T_1	T_2	T_3	T_4
Av. number	10	7	8	7	7

C.D.=0·7 seedlings/plot.

Crop :- Pepper. **Ref :- Ms. 64(135).**

Stte :- Reg. Spices Res. Stn., Chethally. **Type :- 'C'.**

Object :—To determine the kind of cutting to be selected for planting.

1. BASAL CONDITIONS :

(i) Forest area. (ii) Medium black. (iii) By planting cutting (unrooted cuttings) (iv) *Kallu valli*. (v) 18.1.64. (vi) Cuttings. (vii) Nil. (viii) Weeding. (ix) Nil. (x) Unirrigated. (xi) 231 cm. (x) 18.5.64.

2. TREATMENTS :

5 kinds of cuttings : T_1=1, T_2=2. T_3=3, T_4=4 and T_5=5 node cuttings.

3. DESIGN:

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) 50 cuttings. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Sprouting percentage. (iv) (a) 1964—only. (b) N.A. (c) Nil. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 32·3 degrees. (ii) 7·2 degrees. (iii) Treatment differences are highly significant. (iv) Means of sprouting in degrees and percentages.

Treatment	T_1	T_2	T_3	T_4	T_5
Mean angle in degrees	6·8	23·8	46·2	37·3	47·1
Percentage (Transformed back)	1·4	16·3	52·1	37·2	53·7

C.D.=8·6 degrees.

Crop :- Chillies (*Kharif*). **Ref :- Ms. 60(113).**

Site :- Agri. Res. Stn., Dharwar. **Type :- 'M'.**

Object :—To study the response of Chillies crop at different levels of N, P and K.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—chillies. (b) *Jowar*. (c) 12·4 C.L./ha. of F.Y.M. as basal dose and 28 Kg/ha. of N+16·8 Kg/ha. of P_2O_5 in two equal doses. First half at the time of sowing and second half 1 month after sowing. (ii) Black soil. (iii) 4th week of June 1960. (iv) (a) 2 harrowings, tractor ploughing. (b) Transplanting. (c) —. (d) 91 cm.×91 cm. (e) 2. (v) Spot manuring of F.Y.M.—one handful/hill before transplanting chillies seedlings. (vi) Chillies (*Byadgi*). (vii) Unirrigated. (viii) 6 to 7 interculturings, 2 weedings. (ix) 71 cm. (x) 4 pickings from 5.11.1960. to 8.1.1961.

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. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N A. (iii) 2. (iv) (a) 11·0 m.×7·3 m. (b) 9 1 m.×5·5 m. (v) 91 cm.×91 cm. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Regular spraying was taken up against pests and '*murda*' disease at an internal of 8 to 10 days thrice. A mixture of Hexedol ·950 (50% wettable BHC)+wettable sulphur, 454 gm. each in 1,4 litres of water sprayed. (iii) Height, spread, no. of fruits/plant, weight of dry fruits. (iv) (a) 1957 to 1960 (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 1161 Kg/ha. (ii) 243·0 Kg/ha. (iii) N effect is highly significant. P effect is significant. (iv) Av yield of chillies in Kg/ha.

	N_0	N_1	N_2	K_0	K_1	K_2	Mean
P_0	849	1145	1151	1050	907	1187	1048
P_1	997	1366	1460	1444	1241	1137	1274
P_2	1006	1099	1374	1091	1218	1170	1160
Mean	951	1203	1328	1195	1122	1165	1161
K_0	988	1233	1363				
K_1	877	1179	1311				
K_2	988	1198	1310				

C.D. for N or P marginal means=168·0 Kg/ha.

Crop :- Chillies (*Kharif*). **Ref :- Ms. 63(77).**

Site :- Agri. Res. Stn., Hebbal. **Type :- 'MV'.**

Object :—To study the effect of N,P and K fertilizers and the most suitable time of transplanting for different varieties of Chillies.

1. BASAL CONDITIONS :

(i) (a) *Ragi*—Chillies. (b) *Ragi*. (c) 12·4 C.L./ha. of F.Y.M. (ii) Red sandy soil. (iii) As per treatments. (iv) (a) to (e) N.A. (v) 24·7 C.L./ha. of F.Y.M. (vi) As per treatments. (vii) Unirrigated (viii) 4 inter-cultivations. (ix) 60 cm. (x) 23.10.63, 11.11.63 and 2.12.63.

2. TREATMENTS :

All combinations of (1), (2), (3), (4) and (5)

(1) 2 varieties : V_1=Guntur and V_2=Goribidanur.
(2) 2 dates of transplanting : D_1=First fortnight of July and D_2=2nd fortnight of July.
(3) 2 levels of N : N_1=33·6 and N_2=67·2 Kg/ha.
(4) 2 levels of P_2O_5 : P_1=22·4. and P_2=44·8 Kg/ha.
(5) 2 levels of K_2O : K_1=22·4 and K_2=44·8 Kg/ha.

3. DESIGN :

(i) 2^5 Fact. (ii) (a) 32. (b) N.A. (iii) 1. (iv) (a) 5·0 m.×6·1 m. (b) 4·4 m.×4·9 m. (v) 30 cm.×61 cm. (vi) Yes.

GENERAL :

(i) Fair. (ii) Affected by virus to some extent. No control measures taken. (iii) No. of fruits/picking and yield data. (iv) (a) 1963 only. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 303·3 Kg/ha. (ii) 102·8 Kg/ha. (iii) Only K effect is significant. (iv) Mean and differential response table in Kg/ha.

		Differential response									
	Mean response	V		D		N		P		K	
		−	+	−	+	−	+	−	+	−	+
V	−75·2	−	−	−51·6	−98·6	−84·5	−65·7	−51·6	−98·6	−65·7	−84·5
D	−39·9	−14·1	−65·7	−	−	−4·7	−75·1	−42·2	−37·6	−56·3	−23·5
N	+54·0	46·9	61·0	89·2	18·8	−	−	37·6	70·4	98·6	9·4
P	18·8	42·2	−4·7	14·1	23·5	4·7	32·9	−	−	−42·2	79·8
K	−89·2	−98·6	−79·8	−103·3	−75·1	−46·9	−131·4	−150·2	−28·2	−	−

C.D. for mean response of K=76·6 Kg/ha.

Crop :- Citrus. **Ref :- Ms. 60(261), 61(252), 62(253).**

Site :- Horticultural Farm, Gonicoppal. **Type :- 'M'.**

Object :—To study the effect of spraying micro-nutrients on the plants showing symptoms of chlorosis.

1. BASAL CONDITIONS :

(i) Jungle. (ii) Black loam. (iii) Seedlings. (iv) Coorg mandarin. (v) Old garden. (vi) One year. (vii) 0·4 Kg. of N+0·2 Kg. of P_2O_5+0·2 Kg. of K_2O/plant in two doses. (viii) Weeding twice prunning and mulching. (ix) Nil. (x) Unirrigated. (xi) 266 cm. ; 285 cm. ; 402 cm. (xii) April 1960 ; May 1961 ; May 1962.

2. TREATMENTS :

All combinations of (1), (2), (3) and (4)

(1) 2 levels of Zinc : A_0=0 and A_1=Zinc.

(2) 2 levels of Manganese : B_0=0 and B_1=Manganese.

(3) 2 levels of Copper: C_0=0 and C_1=Copper.

(4) 2 levels of Iron : D_0=0 and D_1=Iron.

Control plot with '0000' treatments was sprayed by water while other micro-nutrients were sprayed twice during the year.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 3. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) As per treatments. (iii) % of chlorosis. (iv) 1955 to 62. (v) to (vii) Nil. (viii) Data analysed after transformation of percentages into degrees.

5. RESULTS :

60(261)

(i) 26·2 degrees/tree. (ii) 4·7 degrees/tree. (iii) Main effect of A is highly significant. Interaction ABC and ABD are significant. (iv) Mean and differential responses in degrees/tree (Percentage of chlorotic leaves on whole tree basis—mean of 3 plants).

		Differential response							
Effect	Mean response	A		B		C		D	
		—	+	—	+	—	+	—	+
A	−5·43	—	—	−5·62	−5·24	−7·25	−3·61	4·35	−6·52
B	−1·12	−1·31	−0·94	—	—	−3·24	0·98	−0·46	−1·78
C	−0·30	−2·12	1·51	−2·42	1·81	—	—	2·57	−3·18
D	1·02	2·10	−0·05	1·68	0·36	3·90	−1·85	—	—

C.D. for mean response of A=2·8 degrees.

61(252)

(i) 35·6 degrees/tree. (ii) 4·6 degrees/tree. (iii) Interaction ABD alone is significant. (iv) Mean and differential responses in degrees/tree (Percentage of chlorotic leaves on whole trees basis—mean of 3 plants).

		Differential response							
Effect	Mean response	A		B		C		D	
		—	+	—	+	—	+	—	+
A	−2·25	—	—	−3·82	−0·68	−0·91	−3·59	−4·08	−0·42
B	0·42	1·14	1·99	—	—	−1·38	2·23	1·27	−0·43
C	0·76	2·11	−0·57	−1·04	2·57	—	—	2·73	−1·19
D	0·82	−1·00	2·65	1·67	−0·02	2·79	−1·14	—	—

62(253)

(i) 26·4 degrees/tree. (ii) 4·9 degrees/tree. (iii) Only A effect is highly significant. (iv) Mean and differential responses in degrees/tree (Percentage of chlorotic leaves on whole trees basis—Mean of 3 plants).

Effect	Mean response	Differential response A		B		C		D	
		—	+	—	+	—	+	—	+
A	—5·72	—	—	—5·62	—5·82	—7·83	—3·61	—4·93	—6·52
B	—0·84	—0·74	—0·94	—	—	—2·67	0·98	0·10	—1·78
C	—0·59	—2·70	1.51	2·42	1·23	—	—	1·99	—3·18
D	—0·73	1·53	—0·05	1·68	—0·20	3·33	—1·85	—	—

C.D. for mean response of A=2·9 degrees

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Crop :- Citrus. **Ref :- Ms. 60(257), 61(248), 65(14).**

Site :- Horticultural Farm, Gonicoppal. **Type :- 'C'.**

Object :—To study the influence of various root stocks on Citrus.

1. BASAL CONDITIONS :

(i) Jungle. (ii) Black loam. (iii) Buddings. (iv) Coorg—Orange. (v) July 1956. spacing 6·1 m. between two plants. (vi) 2 years after sowing. (vii) 0·7 Kg. of N+0·5 Kg. of P_2O_5+0·3 Kg. of K_2O/tree in two doses as C/A/N, Super and Mur. Pot. respectively in 1960 ; 0·8 Kg. of N+0·6 Kg. of P_2O_5+1·0 Kg. of K_2O/tree in 3 split doses in organic and inorganic form+9·1 Kg/tree of dolomit in 1965 ; 41 Kg. of C.M./tree basal dressed in 1961. (viii) 4 weedings around the trees, scrapping, mulching, prunning and clean cultivation. (ix) Nil. (x) Unirrigated. (xi) Nil. (xii) Nov. to Dec. 1960 ; Nov. 1961 to Feb. 62 ; and Nov. 1965 to Feb. 66.

2. TREATMENTS :

8 varieties of root stocks : T_1=Pumclo-c-grandis (Linn) oslack, T_2=Lime Sadaphal- C- species, T_3=Grape fruits -C- paxadisi Macf, T_4=Kodeki Thuli-C- species, T_5=Rough lemon-C-Jamburi Lusington, T_6=Seedlings-C- reticulato Swingle (control), T_7=Lemon-C- (Linn) Osbeck and T_8=Molepuli-C-species.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 6. (v) One row of seedlings around each replication. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Aphids, mealy bug and stem borer. Control measures taken. (iii) Height and girth in 1960, 1961 and 1965 ; Fruit yield in 1965. (iv) (a) 1956—indefinite. (b) N.A. (c) Nil. (v) Nil. (vi) No. (vii) N.A.

5. RESULTS :

60(257)

Girth in cm./tree

(i) 28·3 cm./tree. (ii) 3·5 cm./tree. (iii) Treatment differences are highly significant. (iv) Av. girth in cm./tree.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Av. girth	26·4	28·1	26·4	29·7	36·9	28·5	24·3	26·1

C.D.=5·2 cm./tree.

Height in m./tree

(i) 2·9 m./tree. (ii) 0·4 m./tree. (iii) Treatment differences are highly significant. (iv) Av. height in m./tree.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Av. height	2·6	3·1	2·4	3·4	3·5	3·1	2·8	2·5

C.D.=0·6 m./tree.

61(248)

Girth in cm./tree

(i) 28 4 cm./tree. (ii) 3·4 cm./tree. (iii) Treatment differences are highly significant. (iv) Av. girth in cm./tree.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Av. girth	24·1	27·1	25·0	32·1	37·6	35·5	23·1	22·8

C.D.=4·9 cm./tree.

Height in m./tree

(i) 3·3 m./tree. (ii) 0 2 cm./tree. (iii) Treatment differences are highly significant. (iv) Av. height in m./tree.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Av. height	2·8	3·2	2·7	3·7	4·0	3·7	3·0	3·0

C.D.=0·3 m./tree.

65(14)

Fruit yield

(i) 295 fruits/tree. (ii) 124 fruits/tree. (iii) Treatment differences are highly significant. (iv) Av. no. of fruits/tree.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Av. number	103	148	279	566	534	477	134	117

C.D.=182·4 fruits/tree.

Crop : Citrus. **Ref :- Ms. 60(185), 61(183), 62(167), 63(170).**

Site :- Reg. Fruit. Res. Stn., Chethally. **Type :- 'C'.**

Object :- To establish the superiority of budded mandarin plants over the practice of raising seedlings plants.

1. BASAL CONDITIONS :

(i) *Forest area.* (ii) *Medium black.* (iii) *By buddings.* (iv) *Coorg Medium* (v) September 1953 (planted in pits) ; 6 m.×6 m. (vi) Age of budding 1 year and 7 months. (vii) 0·7 Kg. of N as organic manure+0·7 Kg. of P_2O_5+0·54 Kg. of K_2O given for each plant in Sept, March and May. (viii) Weeding, scrapping and mulching the beds. (ix) Nil. (x) Unirrigated. (xi) 164 cm. ; 275 cm. ; 198 cm. and 146 cm. (xii) October to March.

2. TREATMENTS :

11 root stocks : R_0=Coorg orange seedlings (control—2 plots), R_1=Citron, R_2=Grape fruit, R_3=Coorg Sathgudi, R_4=Lemon, R_5=Coong Orange, R_6=Rough lemon, R_7=Baduvapuli R_8=*Pummelo*, R_9=Sour Orange and R_{10}=Sweet lime.

3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 6. (v) and (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Leaf fall and aphids and powdery mildew. Control measures taken—details N.A. (iii) Av. number of fruits/plant. (iv) (a) 1953—Contd. (b) N.A. (c) Nil. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

60(185)

(i) 270 fruits/tree. (ii) 83·3 fruits/tree. (iii) Treatment differences are highly significant. (iv) Av. number of fruits/tree.

Treatment	R_0	R_1	R_2	R_3	R_4	R_5	R_6	R_7	R_8	R_9	R_{10}
Av. yield	178	84	385	357	169	249	307	305	346	364	322

C.D. for the comparison of R_0 with other treatments =103·9 fruits.
C.D. for the comperison of any two treatments other than R_0=119·9 fruits.

61(183)

(i) 306 fruits/tree. (ii) 113·8 fruits/tree. (iii) Treatment differences are not significant. (iv) Av. number of fruits/tree.

Treatment	R_0	R_1	R_2	R_3	R_4	R_5	R_6	R_7	R_8	R_9	R_{10}
Av. yield	272	177	433	331	332	235	293	367	336	282	343

62(167)

(i) 180 fruits/tree. (ii) 80·8 fruits/tree. (iii) Treatments differences are significant. (iv) Av. number of fruits/tree.

Treatment	R_0	R_1	R_2	R_3	R_4	R_5	R_6	R_7	R_8	R_9	R_{10}
Av. number	118	89	334	134	153	184	213	218	228	169	199

C.D. for the comparison of R_0 with other treatments=100·7 fruits
C.D. for the comparison of any two treatments other than R_0=116·3 fruits.

63(170)

(i) 356 fruits/tree. (ii) 169·0 fruits/tree. (iii) Treatment differences are significant. (iv) Av. number of fruits/tree.

Treatment	R_0	R_1	R_2	R_3	R_4	R_5	R_6	R_7	R_8	R_9	R_{10}
Av. number	206	258	438	358	407	132	372	491	598	372	433

C.D. for the comparison of R_0 with other treatment=210·7 fruits.
C.D. for the comparison of any two treatments other than R_0=243·3 fruits.

Crop :- Citrus. **Ref :- Ms. 60(187), 61(185), 62(169), 63(171).**

Site :- Reg. Fruit Res. Stn., Chethally. **Type :- 'C'.**

Object :—To determine the most desirable method of cultivation against the popular method of digging.

1. BASAL CONDITIONS :

(i) Forest area. (ii)Medium black. (iii) Seedlings. (iv) Coorg mandarin. (v) Sept. 1954. (vi) One year. (vii) 0·7 Kg of N as organic manure+0·7 Kg of P_2O_5+0·54 Mur. Pot. for each plant given in Sept., March and May. (viii) Weeding, scrapping and mulching of beds and plant protection operations. (ix) Nil. (x) Unirrigated. (xi) 164 cm. ; 275 cm. ; 198 cm. and 146 cm. (xii) Not started bearing in 1960 ; October to March in other years.

2. TREATMENTS :

5 cultural treatments : T_1=Digging once in a year (control), T_2=Clean cultivation, T_3=Sod culture and mulching with dry leaves, T_4=Sod culture and T_5=No cultivation (spraying the area with 2,4—D to control weeds).

3. DESIGN .

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) N.A. (b) 2. (v) One row for each treatment. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Leaf fall, aphids and powdery mildew, control measures taken (details N.A.) (iii) Girth, height, volume and number of fruits/tree. (iv) (a) 1960—Contd. (b) N.A. (c) Nil. (v) Not known. (vi) and (vii) Nil.

5. RESULTS :

60(187)

(i) 41·4 cm./tree. (ii) 6·0 cm./tree. (iii) Treatment differences are not significant. (iv) Av. girth at the stem in cm./tree.

Treatment	T_1	T_2	T_3	T_4	T_5
Av. girth	45·8	43·3	40·5	37·0	40·3

61(185)

(i) 37 fruits/tree (ii) 16·0 fruits/tree. (iii) Treatment differences are not significant. (iv) Av. number of fruits/tree.

Treatment	T_1	T_2	T_3	T_4	T_5
Av. number	44	37	31	35	37

62(169)

(i) 44·4 fruits/tree. (ii) 26·2 fruits/tree. (iii) Treatment differences are not significant. (iv) Av. number of fruits/tree.

Treatment	T_1	T_2	T_3	T_4	T_5
A v. number	55	32	55	39	41

63(171)

(i) 37 fruits/tree. (ii) 22·6 fruits/tree. (iii) Treatment differences are not significant. (iv) Av. number of fruits/tree.

Treatment	T_1	T_2	T_3	T_4	T_5
Av. number	49	23	47	27	39

Crop :- Citrus. **Ref :- Ms. 61(187), 62(175), 63(173).**

Site :- Reg. Fruit Res. Stn., Chethally. **Type :- 'C'.**

Object :—To study the effect of interplanting Coffee with orange in malnad area.

1. BASAL CONDITIONS :

(i) Forest area. (ii) Medium black. (iii) Seedlings. (iv) Coorg—mandarin. (v) Sept. 1961 (6 m. between plants). (vi) One year. (vii) 136 gm. each of N, P_2O_5 and K_2O/tree in 1961, 270 gm. each of N and P_2O_5 and 180 gm. of K_2O tree in 1962 and 400 gm. each of N and P_2O_5 and 270 gm. of K_2O/tree in 1963 in the form of organic manures in 3 instalments. Coffee plants received ½ the quantity of manure applied to Citrus in 1961 to 63. (viii) Nutritional sprays and tree production operations, weeding and scrapping. (ix) Coffee plant. (x) Unirrigated. (xi) 275 cm. ; 198 cm. ; 146 cm. (xii) Not started bearing in 1961 to 63.

2. TREATMENTS :

3 cultural treatments : T_1=Pure Orange, T_2=Orange+Coffee arabica with usual shade for coffee and T_3=Orange+Coffee robusta with usual shade for coffee.

Coffee arabica and coffee robusta are planted in between orange plants at a distance of 2·4 m. and 3·7 m. respectively.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 4. (v) One row around each treatment. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Aphids and leaf fall. Control measures taken. (iii) Girth, height and volume. (iv) (a) 1961—N.A. (b) N.A. (c) Nil. (v) No. (vi) and (vii) Nil.

5. RESULTS :

61(187)

(i) 6·2 cm./tree. (ii) 0·8 cm./tree. (iii) Treatment differences are not significant. (iv) Av. girth/tree in cm.

Treatment	T_1	T_2	T_3
Av. girth	6·2	6·2	6·3

62(175)

(i) 8·4 cm./tree. (ii) 1·1 cm./tree. (iii) Treatment differences are not significant. (iv) Av. girth/ tree in cm.

Treatment	T_1	T_2	T_3
Av. girth	8·4	8·5	8·2

63(173)

(i) 10·8 cm./tree. (ii) 1·1 cm./tree. (iii) Treatment differences are not significant. (iv) Av. girth/tree in cm.

Treatment	T_1	T_2	T_3
Av. girth	11·3	10·6	10·6

Crop :- Citrus. **Ref :- Ms. 60(188), 61(186), 62(170), 63(172).**

Site :- Reg. Fruit Res. Stn., Chethally. **Type :- 'C'.**

Object :—To study the effect of mulching and providing shade on Mandarin.

1. BASAL CONDITIONS :

(i) Forest area. (ii) Medium black. (iii) Seedlings. (iv) Coorg—mandarin. (v) Sept. 1956. (vi) One year. (vii) 0·7 Kg. of N in the form of organic manure+0·7 Kg. of P_2O_5+0·5 Kg. of K_2O/tree given in 3 instalments. (viii) As per treatments and plant protection operations done. (ix) Nil. (x) Unirrigated. (xi) 164 cm. ; 275 cm. ; 198/cm. (xii) Not started bearing in 1960 ; Oct. to March in other years.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 levels of shade : S_0=No shade and S_1=Shade.

(2) 2 levels of mulching : M_0=No mulching and M_1=Mulching.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 4. (v) One guard row around each plot. (vi) Yes.

4 GENERAL :

(i) Fair. (ii) Aphids and leaf fall—control measures taken. (iii) Girth, height and volume measurements and fruits/tree. (iv) (a) 1960 to 63. (b) N.A. (c) Nil. (v) No. (vi) and (vii) Nil.

5. RESULTS :

60(188)

(i) 31·1 cm./tree. (ii) 2 8 cm./tree. (iii) None of the effects is significant. (iv) Av. girth/ tree in cm.

	S_0	S_1	Mean
M_0	31·4	31·5	31·4
M_1	30·5	30·9	30·7
Mean	30·9	31·2	31·1

61(186)

(i) 99 fruits/tree. (ii) 40·0 fruits/tree. (iii) Interaction M×S is significant. (iv) Av. yield of fruits/tree in number.

	S_0	S_1	Mean
M_0	63	152	108
M_1	103	79	91
Mean	83	116	99

C.D. for the body of table=64·0 fruits/tree.

62(170)

(i) 204 fruits/tree. (ii) 142·0 fruits/tree. (iii) None of the effects is significant. (iv) Av. yield of fruits/tree in number.

	S_0	S_1	Mean
M_0	202	280	241
M_1	158	176	167
Mean	180	228	204

63(172)

(i) 117 fruits/tree. (ii) 61·2 fruits/tree. (iii) None of the effects is significant. (iv) Av. yield of fruits/tree in number.

	S_0	S_1	Mean
M_0	105	76	90
M_1	109	179	144
Mean	107	128	117

Crop :- Citrus. **Ref :- Ms. 62(248), 63(215), 64(181), 65(15).**

Site :- Horticultural Farm, Gonicoppal. **Type :- 'C'.**

Object :—To study the effect of different root stocks on Citrus.

1. BASAL CONDITIONS :

(i) Jungle. (ii) Black loam. (iii) Buddlings. (iv) Coorg—Orange. (v) June 1961 (6·6 m. between lines). (vi) 2 years after sowing. (vii) 113 gm. of N+22·7 gm. of P_2O_5+9·1 gm. of K_2O/plant in 1962 ; 182 gm. of N+90·8 gm. of P_2O_5+136 gm. of K_2O/tree in the form of organic and inorganic manures and 2·3 Kg. of dolomite was sprayed in 1963 ; 454 gm. of N+363 gm. of P_2O_5+363 gm. of K_2O both in organic and inorganic form+4·4 Kg. of dolomite/tree spread uniformly in 1964 and 540 gm. of N+360 gm. of P_2O_5+590 gm. of K_2O both in organic and inorganic form+6·8 Kg. of dolomite/tree spread uniformly in 1965. N, P and K applied in split doses during all the years. (viii) Weeding around the trees and mulching the beds and scrapping. (ix) Nil. (x) Unirrigated. (xi) 402 cm. ; 243 cm. ; 200 cm. and 152 cm. (xii) June for 1962 to 64 ; N.A.

2. TREATMENTS ;

11 sources of root stocks : T_0=Coorg mandarin seedlings C reticulata Blanco. (Control), T_1=Rubidoux—Poncirus trifoliate (California), T_2=Ponaeroy—P trifoliata (California), T_3=P—Trifoliata (Florida), T_4=P—Trifoliata (Australia), T_5=Troyer citrange—a hybrid (California), T_6=Cleopatra mandarin C. reticulata Blanco (California), T_7=Kinnow mandarin C. reticulata Blanco (Florida), T_8=Mexican key lime C. Curantifenia Swingle (Florida), T_9=West Indian mexican lime C. Curantifenia Swingle (California) and T_{10}=Kara mandarin C. reticulata Blanco (California).

3. DESIGN:

(i) R.B.D. (ii) (a) 11. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 3 plants/plot. (v) One row of seedlings all round. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Hand picking of leaf eating catterpillars, control of aphids, mites etc. (iii) Height and girth. (iv) (a) 1962—N.A. (b) N A. (c) Nil. (v) No. (vi) and (vii) Nil.

5. RESULTS :

Stock girth in cm./plant (mean of 3 plants).

62(248)

(i) 9·4 cm./plant. (ii) 1·5 cm./plant. (iii) Treatment differences are highly significant. (iv) Mean girth/plant in cm.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9	T_{10}
Mean girth	7·0	8·6	9·4	9·3	13·8	9·2	9·9	8·9	10·5	7·3	9·8

C.D.=2·5 cm./plant.

63(215)

(i) 14·0 cm./plant. (ii) 2·4 cm./plant. (iii) Treatment differences are significant. (iv) Mean girth/plant in cm.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9	T_{10}
Meanh	10·0	14·6	15·6	14·3	18·4	14·5	15·5	13·1	12·2	11·4	14·1

C.D.=4·0 cm./plant.

64(181)

(i) 17·9 cm./plant. (ii) 3·3 cm./plant. (iii) Treatment differences are not significant. (iv) Mean girth/plant in cm.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9	T_{10}
Mean girth	12·7	18·9	21·1	18·4	22·3	18·5	19·9	18·4	14·9	14·6	16·8

65(15)

(i) 22·2 cm./plant. (ii) 4·7 cm./plant. (iii) Treatment differences are significant. (iv) Mean girth/plant in cm.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9	T_{10}
Mean girth	15·8	23·7	27·2	22·5	27·9	23·1	26·3	24·2	16·5	17·2	20·1

C.D.=8·1 cm./plant.

Height in cm./plant (mean of 3 plants).

62(248)

(i) 1·2 m./plant. (ii) 0·2 m./plant. (iii) Treatment differences are significant. (iv) Mean height/plant in m.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9	T_{10}
Mean height	1·2	1·0	1·1	1·1	1·5	1·1	1·3	1·1	1·2	0·8	1·4

C.D.=0.3 cm./plant.

63(215)

(i) 1·5 m./plant. (ii) 0·3 m./plant. (iii) Treatment differences are not significant. (iv) Mean height/plant in m.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9	T_{10}
Mean height	1·4	1·5	1·5	1·5	1·6	1·5	1·7	1·4	1·3	1·2	1·7

64(181)

(i) 1·8 m./plant. (ii) 0·3 m./plant. (iii) Treatment differences are not significant. (iv) Mean height/plant. in m.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9	T_{10}
Mean height	1·7	1·8	1·9	1·9	2·1	1·9	2·0	1·9	1·5	1·4	1·9

65(15)

(i) 2·1 m./plant. (ii) 0·5 m./plant. (iii) Treatment differences are not significant. (iv) Mean height/plant in m.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	T_9	T_{10}
Mean height	1·9	2·1	2·3	2·1	2·9	2·2	2·3	2·2	1·7	1·6	2·1

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Crop :- Citrus. **Ref :- Ms. 60(256), 61(247), 62(246), 63(213), 64(179), 65(13).**

Site :- Horticultural Farm, Gonicoppal. **Type :- 'C'.**

Object :—To study the influence of various root stocks.

1. BASAL CONDITIONS :

(i) Jungle. (ii) Black loam. (iii) Buddings. (iv) Coorg orange (Citrus reticulate). (v) August 1955 (6·1 m. between 2 plants). (vi) 2 years after sowing. (vii) 0·5 Kg./plant of N as C/A/N+0·3 Kg./plant of P_2O_5 as Super+0·3 Kg./plant of K_2O as Mur. Pot.+41 Kg./plant of C.M. (viii) 4 weedings, scrapping, mulching, prunning and clean cultivation. (ix) Nil. (x) Unirrigated. (xi) N A, (xii) November and February.

2. TREATMENTS :

8 varieties of root stocks : T_1=Mandarin (control), T_2=Lime, T_3=Buduvapali, T_4=Balladakithuli, T_5=Naicha kotha, T_6=Rough lemon, T_7=Sour orange and T_8=Khatta.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 6 trees/plot. (v) Yes ; details N.A. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Aphids, mealy bug and stem borer—control measures taken ; details N.A. (iii) Height, girth and no. of fruits/tree. (iv) (a) 1955—indefinite. (b) N.A. (c) Nil. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

60(256)

(i) 3·0 m./tree. (ii) 0·3 m./tree. (iii) Treatment differences are highly significant. (iv) Av. height in m./tree.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Av. height	3·2	2·6	3·1	3·1	3·0	3 3	2·4	3·1

C.D.=0·4 m./tree.

61(247)

(i) 75 fruits/tree. (ii) 41 fruits/tree. (iii) Treatment differences are highly significant. (iv) Av. no. of fruits/tree.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Av. number	7	77	118	30	100	49	62	154

C.D.=60 fruits/tree.

62(246)

(i) 242 fruits/tree. (ii) 103 fruits/tree. (iii) Treatment differences are highly significant. (iv) Av. no. of fruits/tree.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Av. number	66	171	446	308	252	277	85	331

C.D.=152 fruits/tree.

63(213)

(i) 800 fruits/tree. (ii) 254 fruits/tree. (iii) Treatment differences are not significant. (iv) Av. no. of fruits/tree.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Av. number	661	720	1087	978	678	903	514	860

C.D.=374 fruits/tree.

64(179)

(i) 581 fruits/tree. (ii) 186 fruits/tree. (iii) Treatment differences are highly significant. (iv) Av. no. of fruits/tree.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Av. number	459	311	773	1065	393	947	94	606

C.D.=274 fruits/tree.

65(13)

(i) 250 fruits/tree. (ii) 89 fruits/tree. (iii) Treatment differences are highly significant. (iv) Av. no. of fruits/tree.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Av. number	256	133	339	384	249	395	32	210

C.D.=131 fruits/tree.

Crop :- Citrus. **Ref :- Ms. 60(258), 61(249), 62(249), 63(216),64(182),65(18).**

Site :- Horticultural Farm, Gonicoppal. **Type :- 'C'.**

Object :—To study the influence of different orchard practices.

1. BASAL CONDITIONS :

(i) Jungle. (ii) Black loam. (iii) Seedlings. (iv) Coorg Mandarin. (v) August 1955 (6·1 m. between 2 plants). (vi) One year. (vii) 454 gm. of N as C/A/N+290 gm. of P_2O_5 as Super+341 gm. of K_2O as Mur. Pot+68 Kg. of C.M. per plant. (viii) 4 weedings, scrapping, mulching, prunning and clean cultivation. (ix) and (x) Nil. (xi) 266 cm. ; 285 cm. ; 402 cm. ; 243 cm. ; 200 cm. ; 152 cm. (xii) June 1960 ; June 1961 ; Nov. to Feb. for 62 to 65.

2. TREATMENTS :

5 cultural practices : C_0=Control, C_1=Providing soil mulch by hoeing, C_2=Mulching with dry leaves, C_3=Shading the plants on south-west direction and C_4=Soraying the ground with 2, 4—D to keep down the weeds.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 4 trees/plot. (v) One row of seedling around every plot. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Aphids. (iii) Girth, height and no. of fruits. (iv) (a) August 1955—indefinite. (b) N.A. (c) Nil. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

Treatments	Girth in cm./tree				Height in m./tree				Cholorosis %	Volume in cubic m./tree	
	1960	1961	1962	1963	1960	1961	1962	1963	1961	1962	1963
C_0	33·65	41·29	45·90	54·16	3·71	4·36	4·53	4·60	30·0	31·25	35·26
C_1	35·02	42·58	48·32	56·03	3·58	4·25	4·60	4·66	31·0	33·94	36·79
C_2	34·15	41·24	44·37	53·77	3·67	4·10	4·35	4·44	38·0	29·61	37·54
C_3	32·36	39·54	43·99	52·10	3·64	3·96	4·33	4·36	31·0	28·34	31·49
C_4	27·70	35·46	40·20	47·40	3·38	3·97	4·33	4·38	36·0	21·78	27·97
G. M.	32·57	40·02	44·56	52·69	3·59	4·13	4·42	4·49	33·0	28·98	33·81
S.E./plot	3·47	4·34	5·63	5·69	0·37	0·32	0·30	0·27	12·4	10·59	9·37
Sig.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.

Fruits/tree.

62(249)

(i) 94 fruits/tree. (ii) 83 fruits/tree. (iii) Treatment differences are not significant. (iv) Av. number of fruits/tree.

Treatment	C_0	C_1	C_2	C_3	C_4
Av. number	106	133	95	117	17

63(216)

(i) 482 fruits/tree. (ii) 187 fruits/tree. (iii) Treatment differences are not significant. (iv) Av. number of fruits/tree.

Treatment	C_0	C_1	C_2	C_3	C_4
Av. number	574	497	508	453	380

64(182)

(i) 484 fruits/tree. (ii) 163 fruits/tree. (iii) Treatment differences are not significant. (iv) Av. number of fruits/tree.

Treatment	C_0	C_1	C_2	C_3	C_4
Av. number	577	579	497	523	244

65(18)

(i) 732 fruits/tree. (ii) 322 fruits/tree. (iii) Treatment differences are not significant. (iv) Av. number of fruits/tree.

Treatment	C_0	C_1	C_2	C_3	C_4
Av. number	811	839	895	817	299

Crop :- Citrus. **Ref :- Ms. 60(186), 61(184), 62(168), 63(174).**

Site :- Reg. Fruit Res. Stn., Chethally. **Type :- 'IM'.**

Object :—To study the effect of irrigation with and without N on Orange.

1. BASAL CONDITIONS :

(i) Forest area. (ii) Medium black. (iii) Seedlings. (iv) Coorg mandarin. (v) August 1954, 6 m.×6 m. (vi) One year. (vii) Nil. (viii) Plant protection operation done. (ix) Nil. (x) Irrigated. (xi) 163 cm. ; 275 cm. ; 198 cm. ; 146 cm. (xii) Not started bearing for 1960 and 61 ; Oct. to March for 62 and 63.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of irrigation : I_0=No irrigation, I_1=Once a week and I_2=Once in two weeks.

(2) 2 levels of N : N_0=0 and N_1=0·9 Kg./plant of N as A/S.

N applied in two instalments in August and May.

Irrigation 727 litres of water/tree from 4th week of January to 1st week of May.

3. DESIGN:

(i) Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 2. (v) One row around each plot. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Leaf fall and aphids affected. (iii) Girth and height measurements, yield of fruits per tree. (iv) (a) 1954-63. (b) N.A. (c) Nil. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

60(186)

Girth

(i) 43·9 cm./tree. (ii) 5·3 cm./tree. (iii) I effect is highly significant. (iv) Av. girth in cm./tree.

	I_0	I_1	I_2	Mean
N_0	34·5	47·8	47·8	43·4
N_1	40·8	48·2	44·5	44·5
Mean	37·6	48·0	46·2	42·9

C.D. for I marginal means=5·6 cm./tree.

61(184)

Girth

(i) 30·6 cm./tree. (ii) 17·4 cm./tree. (iii) None of the effects is significant. (iv) Av. girth in cm./tree.

	I_0	I_1	I_2	Mean
N_0	22·0	35·0	24·8	27·3
N_1	45·0	33·0	24·0	34·0
Mean	33·5	34·0	24·4	30·6

Fruits/tree
62(168)

(i) 181 fruits/tree. (ii) 108 fruits/tree. (iii) None of the effects is significant. (iv) Av. number of fruits/tree.

	I_0	I_1	I_2	Mean
N_0	135	216	187	179
N_1	291	134	123	183
Mean	213	175	155	181

Fruits/tree
63(174)

(i) 341 fruits/tree. (ii) 150 fruits/tree. (iii) Main effect of I is significant. (iv) Av. number of fruits/tree.

	I_0	I_1	I_2	Mean
N_0	154	441	467	354
N_1	256	470	257	328
Mean	205	456	362	341

C.D. for I marginal means=160 fruits/tree.

Crop :- Citrus. **Ref :- Ms. 60(259), 61(250), 64(183), 65(17).**

Site :- Horticultural Farm, Gonicoppal. **Type :- 'IC'.**

Object :— To study the effect of irrigation and micro-nutrients spray on Citrus.

1. BASAL CONDITIONS :

(i) Jungle. (ii) Black loam. (iii) Seedlings. (iv) Coorg mandarin. (v) August 1955 (6·1 m. between 2 plants). (vi) One year. (vii) 680 gm. of N as C/A/N+450 gm. of P_2O_5 as Super+340 gm. of K_2O as Mur. Pot (viii) Weeding around the trees, scrapping, mulching, prunning and clean cultivation. (ix) Nil. (x) As per treatments. (xi) 266 cm. ; 285 cm. ; 200 cm. ; 152 cm. (xii) Nov. to Feb. every year.

2. TREATMENTS :

Main-plot treatments :

3 levels of irrigation : I_0=No irrigation, I_1=Irrigation once in a week and I_2=Irrigation once in two weeks.

Sub-plot treatments :

8 micro-nutrients : S_0=Control (only water spray), S_1=Spray zinc as 2·27 Kg. as Zn. Sul.+1·14 Kg. of lime, S_2=Spray iron 2·27 Kg. as Fe. Sul.+1·14 Kg. of lime, S_3=Spray manganese 2·27 Kg. as Mn. Sul.+1·14 Kg. of lime, S_4=Spray 2·27 Kg. of Mg. Sul.+1·14 Kg. of lime, S_5=Spray 2·27 Kg. of Cu. Sul.+1·14 Kg. of lime, S_6=Spray 1·14 of boric acid and S_7=Spray of Ammo. Molybdate.

All the micro-nutrients sprayed twice during the year in 228 litres of water during the year 1960 to 1963 and 1965 and once during 1964.

Irrigation at the rate of 364, 364, 1365 and 1456 litres of water/tree was given during the years 1960, 1961, 1964 and 1965 respectively from Ist. March to 12th April.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 8 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 2. (v) One guard row of seedlings. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Aphids, mealy bug and stem borer. Control measures taken. (iii) Chlorosis %, no. of fruits/plant. (iv) (a) 1955-contd. (b) N.A. (c) Nil. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

Chlorosis %

60(259)

(i) 56·6 degrees. (ii) (a) 7·7 degrees. (b) 11·2 degrees. (iii) None of the effects is significant. (iv) Av. % of chlorosis (in degrees).

	S_0	S_1	S_2	S_3	S_4	S_5	S_6	S_7	Mean
I_0	71·9	53·1	66·5	55·6	56·0	53·4	58·1	54·5	58·6
I_1	48·8	60·4	63·7	56·4	61·0	51·4	66·0	59·1	58·3
I_2	51·5	43·9	58·0	53·3	63·2	45·2	53·5	56·0	53·1
Mean	57·4	52·4	62·7	55·1	60·1	50·0	59·2	56·5	56·7

61(250)

(i) 44·6 degrees. (ii) (a) 8·9 degrees. (b) 9·4 degrees. (iii) I effect is significant. (iv) Av. % of chlorosis (in degrees).

	S_0	S_1	S_2	S_3	S_4	S_5	S_6	S_7	Mean
I_0	49·5	29·5	51·5	40·5	35·1	30·2	39·0	34·9	38·8
I_1	48·2	43·1	55·0	45·6	53·0	42·2	53·0	52·5	49·3
I_2	47·6	36·3	52·6	45·6	54·6	32·0	45·6	51·0	45·7
Mean	48·4	36·3	53·0	43·9	47·6	35·5	45·9	46·1	44·6

C.D. for I marginal means=7·1 degrees.

Fruits/tree

64(183)

(i) 409 fruits/tree. (ii) (a) 409 fruits/tree. (b) 211 fruits/tree. (iii) None of the effects is significant. (iv) Av. number of fruits/tree.

	S_0	S_1	S_2	S_3	S_4	S_5	S_6	S_7	Mean
I_0	259	312	440	397	699	372	654	264	425
I_1	581	430	283	375	243	381	344	229	358
I_2	524	404	246	485	573	577	338	405	444
Mean	455	382	323	419	505	444	445	299	409

65(17)

(i) 519 fruits/tree. (ii) (a) 380 fruits/tree. (b) 220 fruits/tree. (iii) None of the effects is significant. (iv) Av. yield of citrus is fruits/tree.

	S_0	S_1	S_2	S_3	S_4	S_5	S_6	S_7	Mean
I_0	551	686	521	755	699	510	1087	654	683
I_1	516	365	291	485	381	515	396	393	418
I_2	410	643	310	651	370	433	383	450	456
Mean	492	465	374	630	483	486	622	499	519

Crop :- Citrus. **Ref :- Ms. 60(260), 61(251), 62(251), 63(218), 64(184), 65(16).**

Site :- Horticultural Farm, Gonicoppal. **Type :- 'D'.**

Object :— To find out whether multiple micronutrient spray has a salutary effect on growth and prevention of chlorosis of plants.

1. BASAL CONDITIONS :

(i) Jungle. (ii) Black loam. (iii) Seedlings. (iv) Coorg mandarin. (v) August 1957 (6·1 m. between plants). (vi) One year. (vii) 0·68 Kg. of N as C/A/N+0·45 Kg. of P_2O_5 as Super+0·34 Kg. of K_2O as Mur. Pot. in two doses. (viii) Weeding, mulching and prunning. (ix) Nil. (x) Unirrigated. (xi) 266 cm. 285 cm ; 402 cm ; 243 cm ; 200 cm and 142 cm. (xii) June-July 1960 ; May 1961 ; N.A. for others.

2. TREATMENTS :

9 multiple micro-nutrient sprays : T_0=Control (no micro-nutrients), T_1=All micro-nutrients, T_2=All but Zn. T_3=All but Mn., T_4=All but Mg. T_5=All but Mo, T_6=All but B, T_7=All but Cu. and T_8=All but Fe.

All the trees receiving Zn. were sprayed with Zn. on one day and the next day all those receiving Mn. when sprayed with Mn. and so on. This was to prevent any effect of selective absorption bythe leaves and to avoid any autagenistic action of any element from a mixture of these elements in one spray. The spraying was done once during the year.

Doses of different micro-nutrients are—Zn. is 2·25 Kg. of Zn. Sul.+1·13 Kg. hydrated lime in 227 3 litres of water. Mn. is 1·35 Kg. of Mn. Sul. in 454·6 litres of water, Mg. is 0·9 Kg. of Mg. Sul. in 454 6 litres of water. Mo is 28·4 gm. of Sodium molybdate in 454·6 litres of water, B is 0·45 Kg. of Borax in 454 6 litres of water, Cu. is 3·6 Kg. of Cu. Sul.+3·6 Kg. of hydrated lime in 454·6 litres of water and Fe. is 0·9 Kg. of Fe. Sul. in 454·6 litres of water.

3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 4 trees/plot. (v) One guard row. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Girth, height, volume, % of chlorosis and fruits/plant. (iv) (a) 1957-N.A. (b) N.A. (c) Nil. (v) N.A. (vi) and (vii) Nil.

5. RESULTS:

Av. girth in cm.

	Treatment										
Year	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	G.m.	S.E./plot	Significance
1960	15·6	19·7	18·0	18·1	17·1	19·2	19·2	17·9	17·7	18·1	2·27	N.S.
1961	21·0	26·6	24·9	23·7	22·4	25·9	26·3	23·7	24·3	24·3	3·36	N.S.
1962	23·6	29·7	26·0	26·8	25·8	29·2	30·5	27·0	28·0	27·4	4·07	N.S.
1963	26·5	34·5	31·0	31·0	30·5	34·5	34·8	30·8	32·8	31·8	4·46	N.S.
1964	30·7	38·7	36·3	37·2	36·5	37·6	39·3	35·0	36·1	36·4	3·85	N.S.

Height in metres

	Treatment										
Year	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	G.M.	S.E./plot	Significance
1960	2·4	2·7	2·5	2·5	2·4	2·9	2·8	2·7	2·7	2·6	0·23	N.S.
1961	2·4	3·1	3·0	2·9	2·8	3·2	3·1	3·1	3·0	2·9	0·25	N.S.
1962	3·0	3·4	3·1	3·2	3·0	3·4	3·4	3·3	3·3	3·2	0·27	N.S.
1963	3·4	3·7	3·7	3·5	3·6	3·8	3·8	3·7	3·6	3·6	0·25	N.S.
1964	3·6	3·8	3·9	3·9	3·8	4·0	4·0	4·0	3·7	3·9	0·20	N.S.

Volume in Cubic metres

	Treatment										
Year	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	G.M.	S.E./plot	Significance
1960	2·5	3·9	3·3	2·8	2·6	3·4	3·6	3·4	3·1	3·2	0·70	N.S.
1961	3·7	7·5	6·0	5·9	5·1	7·8	6·8	5·7	6·0	6·1	1·68	N.S.
1962	6·3	11·5	7·9	8·7	7·3	10·7	14·3	8·9	10·0	9·5	3·72	N.S.
1963	8·8	15·1	12·3	12·6	13·0	16·9	17·3	13·1	15·0	13·8	3·30	N.S.
1964	10·7	16·2	15·4	15·4	16·1	18·1	17·7	15·6	16·0	15·7	3·21	N.S.

Chlorosis %

	Treatment										
Year	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	G.M.	S.E./plot	Significance
1960	76·0	33·0	44·0	46·0	51·0	45·0	38·0	51·0	42·0	47·4	19·30	N.S.
1961	66·0	29·0	49·0	48·0	53·0	36·0	29·0	50·0	42·0	44·6	10·77	*
1962	78·0	37·0	59·0	56·0	54·0	47·0	42·0	56·0	48·0	52·9	14·20	N.S.
1963	82·3	61·3	72·3	80·7	62·0	67·3	55·0	58·0	72·0	67·9	7·95	**
1964	66·0	34·7	57·3	46·0	41·3	39·7	37·3	41·0	48·0	45·7	8·33	**

Av. number of fruits/tree

	Treatment										
Year	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	G.M.	S.E./plot	Significance
1964	52	85	63	36	55	52	59	56	52	57	45·3	N.S.
1965	77	174	174	107	114	123	230	170	120	143	54·0	N.S.

Crop :- Coffee. **Ref :- Ms. 62(196), 62(194), 62(195), 62(191), 62(192).**

Site :- Central Coffee Res. Instt. Balehonnur. **Type :- 'M'.**

Object :— To study the effect of N alone and in combination with P and K in various soil and climatic regions growing Coffee.

1. BASAL CONDITIONS :

(i) and (ii) N.A. (iii) Seedlings. (iv) to (vi) N.A. (vii) 67·2 Kg/ha. of N applied in 3 doses. (viii) Weeding and digging. (ix) Nil. (x) Unirrigated. (xi) 328 cm. (xii) N.A.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 levels of P_2O_5 : P_0=0 and P_1=33·6 Kg/ha.

(2) 2 levels of K_2O : K_0=0 and K_1=44·8 Kg/ha.

P and K applied in 2 doses.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 4. (b) N.A. (iii) 6 for 62(196), 62(194), 62(195), 5 for 62(191), 62(192). (iv) (a) and (b) N.A. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Fair to good. (ii) Nil. (iii) Yield of ripe cherry. (iv) (a) 1961-contd. (b) N.A. (c) Nil. (v) Experiments conducted at Nilgiri zone, Yercand zone, Pulneys zone, South coorg and Wynad zone, Koopa zone respectively. (vi) and (vii) Nil.

5. RESULTS :

Nilgiri Zone 62(196)

(i) 4700 Kg/ha. (ii) 822·0 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of ripe cherry in Kg/ha.

	K_0	K_1	Mean
P_0	4370	4436	4403
P_1	4950	5043	4996
Mean	4460	4739	4700

Yercand Zone 62(194).

(i) 2516 Kg/ha. (ii) 569·0 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of ripe cherry in Kg/ha.

	K_0	K_1	Mean
P_0	2377	2409	2393
P_1	2615	2665	2640
Mean	2496	2537	2516

Pulneys Zone 62(195)

(i) 3167 Kg/ha. (ii) 629·3 Kg/ha. (iii) None of the effects is significant, (iv) Av. yield of ripe cherry in Kg/ha.

	K_0	K_1	Mean
P_0	3407	2905	3156
P_1	3061	3294	3177
Mean	3234	3100	3167

South coorg and Wynad Zone 62(191)

(i) 6594 Kg/ha. (ii) 1123·8 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of ripe cherry in Kg/ha.

	K_0	K_1	Mean
P_0	7134	6372	6753
P_1	6324	6548	6436
Mean	6729	6460	6594

Koppa Zone 62(192)

(i) 4845 Kg/ha. (ii) 828·2 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of ripe cherry in Kg/ha.

	K_0	K_1	Mean
P_0	4758	4931	4844
P_1	5348	4342	4845
Mean	5053	4636	4844

Crop :- Coffee. **Ref :- Ms. 60(31).**

Site :- Central Coffee Res. Instt., Balehonnur. **Type :- 'M'.**

Object :— To find the effect of applying N alone and in combination with varying doses of P and K.

1. BASAL CONDITIONS :

(i) All the Coffee plants and shade trees were uprooted and removed from site Plants were raised from suckers obtained from S·46, B. A.B., B.A. 17 and B.A. 22—which were resistant to leaf disease. Dry leaf mulch was applied uniformly for production during hot weather. (ii) Reddish loams. (iii) and (iv) As in (i). (v) April 1953 with 183 cm. × 183 cm. spacing. (vi) 8 months. (vii) Nil. (viii) Manuring, weeding, handling to shade. (ix) Nil. (x) Irrigated. (xi) 301 cm. (xii) Nov. to Dec.

2. TREATMENTS :

All combinations of (1) and (2)+2 extra treatments.

(1) 2 levels of P_2O_5 : P_1=33·6 and P_2=50·4 Kg/ha.

(2) 2 levels of K_2O : K_1=44·8 and K_2=67·2 Kg/ha.

Extra treatments : E_0=Control and E_1=89·7 Kg/ha. of N.
89·7 Kg/ha. of N applied to all PK treatments.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) N.A. (b) Gross 35 and net 15 plants. (v) One border row around each plot and the general guard row around the whole experimental plot. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Gammaxene applied against borer attack. (iii) Yield of ripe cherry and clean Coffee. (iv) (a) 1954-N.A. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2205 Kg/ha. (ii) 122·2 Kg/ha. (iii) All the effects are highly significant. (iv) Av. yield of Coffee in Kg/ha.

E_0=1944 Kg/ha. and E_1=2313 Kg/ha.

	K_1	K_2	Mean
P_1	2473	2395	2434
P_2	1229	2874	2052
Mean	1851	2635	2243

C.D. for any marginal means=130·2 Kg/ha.
C D. for body of table =184·1 Kg/ha.

Crop :- Coffee. **Ref :- Ms. 60(32).**

Site :- Central Coffee Res. Instt., Balehonnur. **Type :- 'M'.**

Object :— To find out the maximum economic dose of N and the role of P and K in balancing the N utilization.

1. BASAL CONDITIONS :

(i) Coffee plants were 40 years old. Bulk manuring at 95·3 kg/ha. of N+44·8 Kg/ha of P_2O_5 and 67·2 kg/ha. of K_2O was being given before the experiment was started. (ii) Reddish clayey loam. (iii) By seedlings. (iv) Coorg Arabica. (v) N. A. ; 152 cm. × 152 cm. (vi) 8 months. (vii) As per treatments. (viii) Shade loping, weeding and handling the plants. (ix) No. (x) Irrigated. (xi) 301 cm. (xii) Nov. and Dec.

2. TREATMENTS :

Main-plot treatments :

6 manurial treatments : M_0=Control, M_1=56·0 Kg/ha. of N+44·8 Kg/ha. of P_2O_5+44·8 Kg/ha. of K_2O, M_2=112·1 kg/ha. of N+50·4 Kg/ha. of P_2O_5+67·2 Kg/ha. of K_2O, M_3=224·2 Kg/ha. of N+100·9 Kg/ha. of P_2O_5+134·5 Kg/ha. of K_2O, M_4=448·3 Kg/ha. of N+201·8 Kg/ha. of P_2O_5+269·0 Kg/ha. of K_2O and M_5=896·7 Kg/ha. of N+403·5 Kg/ha. of P_2O_5+538·0 Kg/ha. of K_2O.

Sub-plot treatments :

4 applications : T_1=N with P_2O_5 and K_2O, T_2=T_1+basal dressing of 1 kg./ha. of finely ground rock phosphate/plant applied at the commencement of the experiment, T_3=N only+basal dressing of rock phospate applied as above and T_4=N only.

3. DESIGN :

(i) Split-plot. (ii) (a) 6 main-plots/replication; 4 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) N.A (b) 45 plots in a net sub-plot with common border in between adjacent sub-plots in strips of 3 rows of 15 plants splitting 4th, 8th and 12th respectively for the sub treatments. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Spraying with bordeaux mixture against leaf disease and application of gammaxene to the stems was done against borer attack during the season. (iii) Yield of fresh cherry and clean coffee. (iv) (a) 1956—N A. (b) Yes. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

(i) 2521 kg./ha. (ii) (a) 1237·4 kg/ha. (b) 1240·8 kg/ha. (iii) None of the effects is significant. (iv) Av. dyiel of coffee in Kg/ha.

	M_0	M_1	M_2	M_3	M_4	M_5	Mean
T_1	2264	3384	2459	2279	2901	4000	2881
T_2	2126	2264	2604	2683	1960	2149	2298
T_3	2394	2930	3870	2438	1330	2459	2570
T_4	1678	2771	2503	1772	2560	2734	2326
Mean	2116	2837	2859	2293	2188	2836	2521

Crop. :- Coffee. **Ref :- Ms. 60(27).**

Site :- Central Coffee Res. Instt., Balehonnur. **Type :- 'M'.**

Object: —To study the effect of varying doses of N with constant levels of P and K on the growth of Coffee.

1. BASAL CONDITIONS :

(i) Old coffee was cut and removed. Natural shade is provided by planting the same number of *dadap* stakes. Drains 46 cm. deep have been dug. Liming done after finding out its requirements. Dry leaf mulch was uniformly applied during hot weather. (ii) Reddish loams. (iii) By cuttings and seedlings. (iv) Kent cloves. (v) 1952 with 183 cm. × 183 cm. as spacing. (vi) 8 months. (vii) Liming was done. 33·6 Kg/ha. of P_2O_5 and 44·8 kg./ha. of K_2O. (viii) Spraying, manuring, weeding and handling. (ix) Nil. (x) Irrigated (xi) 301 cm. (xii) Oct. to Dec.

2. TREATMENTS :

5 levels of N : N_0=0, N_1=44·8, N_2=67·2, N_3=89·7 and N_4=112·1 Kg/ha.
Manures applied in 4 doses at pre-blossom, post blossom, pre-monsoon and post monsoon stages.

3. DESIGN :

(i) L. sq. (ii) (a) 5. (b) N. A. (iii) 5. (iv) (a) N. A. (b) Gross 49 plants ; net 25 plants. (v) 24 plants. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Gammaxene application was done to prevent stem borer attack. (iii) Yield of ripe cherry and clean coffee. (iv) (a) 1952—N.A. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 4172 Kg/ha. (ii) 1163·1 Kg/ha. (iii) Treatments differences are not significant. (iv) Av. yield of cherry in Kg/ha.

Treatment	N_0	N_1	N_2	N_3	N_4
Av. yield	4599	4266	3176	4476	4341

Crop :- Coffee. **Ref :- Ms. 60(236), 61(232), 62(231), 63(205).**

Site :- Central Coffee Res. Instt., Balehonnur. **Type :- 'M'.**

Object :—To study the effect of N, P and K on the yield of Coffee.

1. BASAL CONDITIONS :

(i) Forest. (ii) N.A. (iii) Seedlings. (iv) Robusta. (v) Old coffee garden. (vi) N.A. (vii) Nil. (viii) Weeding and digging. (ix) Nil. (x) Unirrigated. (xi) More than 254 cm. approximately. (xii) December to March.

2. TREATMENTS :

6 manurial treatments : M_1=44·8 Kg/ha. of N+33·6 Kg/ha. of P_2O_5+44·8 Kg/ha. of K_2O, M_2=67·3 Kg/ha. of N+33·6 Kg/ha. of P_2O_5+44·8 Kg/ha. of K_2O, M_3=67·3 Kg/ha. of N+50·4 Kg/ha. of P_2O_5+67·3 Kg/ha. of K_2O, M_4=89·7 Kg/ha. of N+67·3 Kg/ha. of P_2O_5+89·7 Kg/ha. of K_2O, M_5=67·3 Kg/ha. of N+67·3 Kg/ha. of P_2O_5+89·7 Kg/ha. of K_2O and M_6=44·8 Kg/ha. of N+67·3 of P_2O_5+89·7 Kg/ha. of K_2O.

N applied as A/S in three doses at pre-blossom, post blossom and at post monsoon periods. P and K applied as phosphoric acid and Potash respectively in two equal doses during pre-blossom and post monsoon periods.

3. DESIGN :

(i) R.B D. (ii) (a) 6. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 20 (5×4). (v) One row around each plot. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) N.A. (iii) Ripe cherry. (iv) (a) 1956 to 1963. (b) N.A. (c) Nil. (v) and (vi) Nil. (vii) Expt. conducted at Panchura estate, Kelpetta Wynad.

5. RESULTS :

60(236)

(i) 3309 Kg/ha. (ii) 436·4 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of ripe cherry in Kg/ha.

Treatment	M_1	M_2	M_3	M_4	M_5	M_6
Av. yield	3632	3692	2784	3147	2966	3632

C.D.=575·6 Kg/ha.

61(232)

(i) 3561 Kg/ha. (ii) 275·3 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of ripe cherry in Kg/ha.

Treatment	M_1	M_2	M_3	M_4	M_5	M_6
Av. yield	3487	3276	3527	4150	3558	3367

C.D.=363·1 Kg/ha.

62(231)

(i) 4981 Kg/ha. (ii) 370·1 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of ripe cherry in Kg/ha.

Treatment	M_1	M_2	M_3	M_4	M_5	M_6
Av. yield	4802	4649	4954	5526	5297	4657

C.D.=488·2 Kg/ha.

63(205)

(i) 8335 Kg/ha. (ii) 498·4 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of ripe cherry in Kg/ha.

Treatment	M_1	M_2	M_3	M_4	M_5	M_6
Av. yield	8371	7444	8333	8587	8892	8384

C.D.=657·4 Kg/ha.

Crop :- Coffee. **Ref :- 60(233), 61(229), 62 228), 63(203).**

Site :- Central Coffee Res. Instt, Balehonnur. **Type :- 'M'.**

Object :—To study the effect of N, P and K on the yield of Coffee.

1. BASAL CONDITIONS :

(i) Forest. (ii) N.A. (iii) Seedlings. (iv) Robusta. (v) Old Coffee plants. (vi) N.A. (vii) Nil. (viii) Weeding and digging. (ix) Nil. (x) Unirrigated. (xi) 299 cm ; 361 cm. ; 328 cm. and 250 cm. (xii) December to March.

2. TREATMENTS to 4 GENERAL :

Same as in Expt. nos. 60(236), 61(232), 62(231), 63(205) on page 555.
(Expt. was conducted at Yemmengudi estate—South Coorg.

5. RESULTS :

60(233)

(i) 1591 Kg/ha. (ii) 346·7 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of ripe cherry in Kg/ha.

Treatment	M_1	M_2	M_3	M_4	M_5	M_6
Av. yield	779	2591	1677	1753	1448	1296

C.D.=457·3 Kg/ha.

61(229)

(i) 5245 Kg/ha. (ii) 349·8 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of ripe cherry in Kg/ha.

Treatment	M_1	M_2	M_3	M_4	M_5	M_6
Av. yield	5534	5351	5053	5183	5053	5297

62(228)

(i) 2705 Kg/ha. (ii) 175·0 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of ripe cherry in Kg/ha.

Treatment	M_1	M_2	M_3	M_4	M_5	M_6
Av. yield	3078	2616	2782	2904	2347	2485

C.D.=230·8 Kg/ha.

63(203)

(i) 9500 Kg/ha. (ii) 1555·2 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of ripe cherry in Kg/ha.

Treatment	M_1	M_2	M_3	M_4	M_5	M_6
Av. yield	11100	9348	9054	9278	9054	9166

Crop :- Coffee. **Ref :- Ms. 60(234), 61(230), 62(229), 63(204).**

Site :- Central Coffee Res. Instt., Balehonnur. **Type :- 'M'.**

Object : To study the effect of N, P and K on the yield of Coffee.

1. BASAL CONDITIONS :

(i) Forest. (ii) N. A. (iii) Seedlings. (iv) Robusta. (v) Old coffee plants. (vi) N.A. (vii) Nil. (viii) Weeding and digging. (ix) Nil. (x) Unirrigated. (xi) 299 cm. ; 361 cm. ; 328 cm. ; 250 cm. (xii) December to March.

2. TREATMENTS to 4. GENERAL :

Same as in expt. nos. 60(236), 61(232), 62(231), 63(205) on page 555.
Expt. conducted at Havinkadu estate, South Coorg.

5. RSSULTS :

60(234)

(i) 3392 Kg/ha. (ii) 451·1 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of ripe cherry in Kg/ha.

Treatment	M_1	M_2	M_3	M_4	M_5	M_6
Av. yield	3658	3354	3354	2744	4039	3201

C.D.=595·0 Kg/ha.

61(230)

(i) 5782 Kg/ha. (ii) 415·1 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of ripe cherry in Kg/ha.

Treatment	M_1	M_2	M_3	M_4	M_5	M_6
Av. yield	5856	6376	6224	5513	5450	5271

C.D.=547·5 Kg/ha.

62(229)

(i) 3229 Kg/ha. (ii) 123·0 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of ripe cherry in Kg/ha.

Treatment	M_1	M_2	M_3	M_4	M_5	M_6
Av. yield	4040	3544	2210	3628	2942	3011

C.D.=162·2 Kg/ha.

63(204)

(i) 2036 Kg/ha. (ii) 347·1 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of ripe cherry in Kg/ha.

Treatment	M_1	M_2	M_3	M_4	M_5	M_6
Av. yield	1907	2479	1780	2289	2161	1602

C.D.=457·8 Kg/ha.

Crop :- Coffee. **Ref :- 60 (237), 61(233), 62(232).**

Site :- Central Coffee Res. Instt., Balehonnur. Type :- 'M'.

Object :—To study the effect of N, P and K on the yield of Coffee.

1. BASAL CONDITIONS :

(i) Forest. (ii) N.A. (iii) Seedlings. (iv) Robusta. (v) Old plantation. (vi) and (vii) N.A. (viii) Weeding and digging. (ix) Nil. (x) Unirrigated. (xi) More than 254 cm. approximately; N.A. for others. (xii) December to March.

2. TREATMENTS :

As in expt. nos. 60(236), 61(232), 62(231), 63(205) on page 555.
Expt. conducted at Maniangoda estate, Wynad.

5. RESULTS

60(237)

(i) 2816 Kg/ha. (ii) 218·5 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of ripe cherry in Kg/ha.

Treatment	M_1	M_2	M_3	M_4	M_5	M_5
Av. yield	2603	2542	3208	2614	3208	2724

C.D.=288·2 Kg/ha.

61(233)

(i) 7517 Kg/ha. (ii) 935·8 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of ripe cherry in Kg/ha.

Treatment	M_1	M_2	M_3	M_4	M_5	M_6
Av. yield	7757	8414	7031	6890	7414	7596

62(232)

(i) 3912 Kg/ha. (ii) 307·9 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of ripe cherry in Kg/ha.

Treatment	M_1	M_2	M_3	M_4	M_5	M_6
Av. yield	3582	3963	4039	4573	3430	3887

C.D.=406·1 Kg/ha.

Crop :- Coffee. **Ref :- Ms. 60(235), 61(231), 62(230).**

Site :- Contral Coffee Res. Instt., Balehonnur. **Type :- 'M'.**

Object : -To study the effect of N, P and K on the yield of Coffee.

1. BASAL CONDITIONS :

(i) Forest. (ii) N.A. (iii) Seedlings. (iv) Robusta. (v) Old plantation. (vi) N.A. (vii) Nil. (viii) Weeding and digging. (ix) Nil. (x) Unirrigated. (xi) 299 cm.; 361 cm.; 328 cm. (xii) December to March.

2. TREATMENTS & 3. DESIGN :

Same as in expt. nos. 60(236), 61(232), 62(231), 63(205) on page 555.

4. GENERAL :

(i) Fair. (ii) N.A. (iii) Ripe cherry (iv) (a) 1956—1962. (b) N.A. (c) Nil.. (v) N.A. (vi) Nil. (vii) Expt. conducted at Bankel estate, Mudegere.

5. RESULTS :

60(235)

(i) 5939 Kg/ha. (ii) 411 Kg/ha. (iii) Treatments differences are highly significant. (iv) Av. yield of ripe cherry in Kg/ha.

Treatment	M_1	M_2	M_3	M_4	M_5	M_6
Av. yield.	6653	4954	5297	5869	6331	6532

C.D.=542·1 Kg/ha.

61(231)

(i) 5035 Kg/ha. (ii) 447·5 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of ripe cherry in Kg/ha.

Treatment	M_1	M_2	M_3	M_4	M_5	M_6
Av. yield	5462	4942	4484	4370	5209	5742

C.D.=590·2 Kg/ha.

62(230)

(i) 1742 Kg/ha. (ii) 298·0 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of ripe cherry in Kg/ha.

Treatment	M_1	M_2	M_3	M_4	M_5	M_6
Av. yield	1783	2172	1608	1601	1601	1684

C.D.=393·1 Kg/ha.

Crop :- Coffee. **Ref :- Ms. 60(243), 61(240), 62(238), 63(207).**

Site :- Central Coffee Res. Instt., Balehonnur. **Type :- 'M'.**

Object :—To study the effect of different manures on the yield of Coffee.

1. BASAL CONDITIONS :

(i) Forest. (ii) N.A. (iii) Seedlings. (iv) Robusta. (v) Old plantation. (vi) N.A. (vii) B.D. of finely ground lime stone applied, broadcast and stirred with the top soil soon after marking out the plots. (viii) Weeding and digging. (ix) Nil. (x) Unirrigated. (xi) N.A. (xii) Dec. and March.

2. TREATMENTS :

6 manurial treatments : M_0=Control (no manure), M_1=67·3 Kg/ha. of N, M_2=67·3 Kg/ha. of N+50·4 Kg/ha. of P_2O_5, M_3=67·3 Kg/ha. of N+67·3 Kg/ha. of K_2O, M_4=50·4 Kg/ha. of P_2O_5+67·3 Kg/ha. of K_2O and M_5=67·3 Kg/ha. of N+50·4 Kg/ha. of P_2O_5+67·3 Kg/ha. of K_2O.

N applied as A/S in three doses during pre-blossom, post blosom and post monsoon periods. P_2O_5 and K_2O as Hyper phos. and Mur. Pot. respectively applied in two equal doses during pre-blossom and post monsoon periods.

3. DESIGN :

(i) L. Sq. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 20. (v) One row around each plot. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) N.A. (iii) Ripe cherry (iv) (a) 1956 to 63. (b) N.A. (c) Nil. (v) Bankal estate. (vi) Nil. (vii) Expt. conducted at Punchura estate, Kalpetta, Wynad.

5. RESULTS :

60(243)

(i) 2862 Kg/ha. (ii) 200·9 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of ripe cherry in Kg/ha.

Treatment	M_0	M_1	M_2	M_3	M_4	M_5
Av. yield	1828	3347	2802	2887	3311	2996

C.D.=242·0 Kg/ha.

61(240)

(i) 2856 Kg/ha. (ii) 242·2 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of ripe cherry in Kg/ha.

Treatment	M_0	M_1	M_2	M_3	M_4	M_5
Av. yield	2613	2553	2825	3076	3195	2875

C.D.=291·7 Kg/ha.

62(238)

(i) 3786 Kg/ha. (ii) 165·8 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of ripe cherry in Kg/ha.

Treatment	M_0	M_1	M_2	M_3	M_4	M_5
Av. yield	3285	3620	3781	4390	3887	4954

C.D.=199·7 Kg/ha.

63(207)

(i) 6338 Kg/ha. (ii) 704·8 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of ripe cherry in Kg/ha.

Treatment	M_0	M_1	M_2	M_3	M_4	M_5
Av. yield	7401	5861	5457	6379	6372	6562

C.D.=848·9 Kg/ha.

Crop :- Coffee. **Ref :- Ms. 60(241), 61(238), 62(236).**

Site :- Central Coffee Res. Instt., Balehonnur. **Type :- 'M'.**

Object :—To study the effect of different manures on the yield of Coffee.

1. BASAL CONDITONS to 3. DESIGN :

Same as in experiment no. 60(243), 61(240), 62(238), 63(207) on Coffee crop on page 560.

4. GENERAL :

(i) Fair. (ii) N.A. (iii) Yield of ripe cherry. (iv) (a) 1956 to 62. (b) N.A. (c) Nil. (v) N.A. (vi) Nil. (vii) Experiment conducted at Bankal estate, Mudegere.

5. RESULTS :

60(241)

(i) 4141 Kg/ha. (ii) 397·1 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of ripe cherry in Kg/ha.

Treatment	M_0	M_1	M_2	M_3	M_4	M_5
Av. yield	4192	4268	4497	4116	3735	4039

61(238)

(i) 3008 Kg/ha. (ii) 379·3 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of ripe cherry in Kg/ha.

Treatment	M_0	M_1	M_2	M_3	M_4	M_5
Av. yield	3049	2718	3417	3151	2439	3277

C.D.=456·8 Kg/ha.

62(236)

(i) 4341 Kg/ha. (ii) 710·4 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of ripe cherry in Kg/ha.

Treatment	M_0	M_1	M_2	M_3	M_4	M_5
Av. yield	3941	4039	4497	3963	4116	5488

C.D.=855·6 Kg/ha.

Crop :- Coffee. **Ref :- Ms. 60(242), 61(239), 62(237).**

Site :- Central Coffee Res. Instt., Balehonnur. **Type :- 'M'.**

Object :—To study the effect of different manures on the yield of Coffee.

1. BASAL CONDITIONS : to 3. DESIGN :

Same as in experiment no. 60(243), 61(240), 62(238), 63(207) on Coffee crop on page 560.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of ripe cherry. (iv) (a) 1956 to 62. (b) N.A. (c) Nil. (v) Nil. (vi) N.A. (vii) Expts. conducted at Maniangod estate, Kelpetta, Wynad.

5. RESULTS:

60(242)

(i) 2442 Kg/ha. (ii) 201·2 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of ripe cherry in Kg/ha.

Treatment	M_0	M_1	M_2	M_3	M_4	M_5
Av. yield	1495	2766	2814	2222	2615	2742

C.D.=242·3 Kg/ha.

61(239)

(i) 6274 Kg/ha. (ii) 624·3 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of ripe cherry in Kg/ha.

Treatment	M_0	M_1	M_2	M_3	M_4	M_5
Av. yield	3813	5508	7505	6759	6819	7243

C.D.=751·9 Kg/ha.

62(237)

(i) 3691 Kg/ha. (ii) 315·2 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of ripe cherry in Kg/ha.

Treatment	M_0	M_1	M_2	M_3	M_4	M_5
Av. yield	3582	3300	4062	4116	3582	3506

C.D.=379·6 Kg/ha.

Crop :- Coffee. **Ref :- Ms. 60(232), 61(228), 62(227), 63(202).**

Site :- Central Coffee Res. Instt., Balehonnur. **Type :- 'M'.**

Object :—To study the effect of different sources of N on the growth and yield of mature Coffee.

1. BASAL CONDITIONS :

(i) Forest. (ii) Reddish brown. (iii) Seedlings. (iv) Coorg. (v) Old Coffee (15 cm.×15 cm.). (vi) N.A. (vii) 50·4 Kg/ha. of P_2O_5 applied in 2 equal doses and 67·3 Kg/ha. of K_2O in 2 doses. (viii) Weeding and digging. (ix) Nil. (x) Unirrigated. (xi) 299 cm ; 361 cm ; 328 cm ; 250 cm. (xii) Dec. to March.

2. TREATMENTS :

6 sources of 89·7 Kg/ha. of N : M_0=Control (no manure), M_1=C/A/N, M_2=A/S, M_3=Urea, M_4=C/N and M_5=A/S/N.

N applied in 3 doses in a year.

3. DESIGN :

(i) L. Sq. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 5×8=40 net. (v) Yes, one row around. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) N.A. (iii) Yield of ripe cherry. (iv) (a) 1956 to 63. (b) N.A. (c) Nil. (v) N.A. (vi) Nil. (vii) Experiment conducted at Shigode estate.

5. RESULTS :

60(232)

(i) 3053 Kg/ha. (ii) 337·4 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of ripe cherry in Kg/ha.

Treatment	M_0	M_1	M_2	M_3	M_4	M_5
Av. yield	2941	3073	3111	3428	2864	2901

61(228)

(i) 3005 Kg/ha. (ii) 146·2 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of ripe cherry in Kg/ha.

Treatment	M_0	M_1	M_2	M_3	M_4	M_5
Av. yield	2716	2613	2892	4027	2740	3044

C.D.=176·0 Kg/ha.

62(227)

(i) 3404 Kg/ha. (ii) 292·4 Kg/ha. (iii) Trcatment differences are not significant. (iv) Av. yield of ripe cherry in Kg/ha.

Treatment	M_0	M_1	M_2	M_3	M_4	M_5
Av. yield	3671	3007	3886	3514	3339	3007

63(202)

(i) 3657 Kg/ha. (ii) 319·2 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of ripe cherry in Kg/ha.

Treatment	M_0	M_1	M_2	M_3	M_4	M_5
Av. yield	3872	2641	4048	4065	3918	3400

C.D.=384·4 Kg/ha.

Crop :- Coffee. **Ref :- Ms. 60(201), 61(206), 62(188), 63(184), 64(144).**

Site :- Central Coffee Res. Instt., Balehonnur. **Type :- 'M'.**

Object :—To study the effect of constant levels of N, P and K with varying sources of N.

1. BASAL CONDITIONS :

(i) Under tea prior to 1937. (ii) Reddish brown to dark red. (iii) Seedlings. (iv) Arabica. (v) Planted in 1953 with natural mixed shade (1·8 m.×1·8 m.). (vi) N.A. (vii) Nil. (viii) Weeding, digging and interculturing. (ix) Nil. (x) Irrigated. (xi) 299 cm ; 361 cm ; 328 cm ; 250 cm ; 281 cm. (xii) Oct. to Dec.

2. TREATMENTS :

5 sources of N : S_0=Control (no manure), S_1=C/N, S_2=A/S, S_3=C/A/N and S_4=Urea.
89·7 Kg/ha. of N+33·6 Kg/ha. of P_2O_5+44·8 Kg/ha. of K_2O applied annually.
N applied in 3 doses—pre-blossom 22·4 Kg/ha., post-blossom 22·4 Kg/ha. and post monsoon 44·8 Kg/ha ; P and K applied in two equal doses at pre-blossom and post-blossom.

3. DESIGN :

(i) L. Sq. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 20 net. (v) One row around each plot. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) N A. (iii) Yield of ripe cherry. (iv) (a) 1960—contd. (b) N.A. (c) Nil (v) Not known. (vi) and (vii) Nil.

5. RESULTS :

60(201)

(i) 1582 Kg/ha. (ii) 438·6 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of ripe cherry in Kg/ha.

Treatment	S_0	S_1	S_2	S_3	S_4
Av. yield	867	1977	2845	1015	1204

C.D.=604·4 Kg/ha.

61(206)

(i) 5087 Kg/ha. (ii) 496·5 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of ripe cherry in Kg/ha.

Treatment	S_0	S_1	S_2	S_3	S_4
Av yield	5230	3268	5341	5354	6242

C.D.=684·1 Kg/ha.

62(188)

(i) 6104 Kg/ha. (ii) 859·4 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of ripe cherry in Kg/ha.

Treatment	S_0	S_1	S_2	S_3	S_4
Av. yield	5760	5203	7228	6590	5740

C.D.=1184·1 Kg/ha.

63(184)

(i) 1569 Kg/ha. (ii) 567·2 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of ripe cherry in Kg/ha.

Treatment	S_0	S_1	S_2	S_3	S_4
Av. yield	1345	1196	1540	1524	2242

64(144)

(i) 6553 Kg/ha. (ii) 1739·0 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of ripe cherry in Kg/ha.

Treatment	S_0	S_1	S_2	S_3	S_4
Av. yield	4560	5412	8065	8051	6675

C.D.=2396·2 Kg/ha.

Crope :- Coffee. **Ref :- Ms. 60(248), 61(245), 62(245), 63(210), 64(169).**

Site :- Central Coffee Res. Instt., Balehonnur. **Type :- 'M'.**

Object :—To study the effect of N, P and K on Coffee yield.

1. BASAL CONDITIONS :

(i) Forest. (ii) Reddish brown to dark red. (iii) Seedlings. (iv) Arabica Coffee. (v) Planted in 1950 (2·3 m.×2·3 m.) (vi) N.A. (vii) Nil. (viii) Weeding and digging. (ix) Nil. (x) Unirrigated. (xi) 299 cm. ; 361 cm. ; 328 cm. ; 250 cm. ; 281 cm. (xii) December to March.

2. TREATMENTS :

6 manurial treatments : M_1=22·4 Kg/ha. of N+33·6 Kg/ha. of P_2O_5+44·8 Kg/ha. of K_2O, M_2=33·6 Kg/ha. of N+33·6 Kg/ha. of P_2O_5+44·8 Kg/ha. of K_2O, M_3=50·4 Kg/ha. of N+33·6 Kg/ha. of P_2O_5+44·8 Kg/ha. of K_2O, M_4=33·6 Kg/ha. of N+50·4 Kg/ha. of P_2O_5 +44·8 Kg/ha. of K_2O, M_5=33·6 Kg/ha. of N+50·4 Kg/ha. of P_2O_5+67·3 Kg/ha. of K_2O and M_6=50·4 Kg/ha. of N+75·7 Kg/ha. of P_2O_5+100·9 Kg/ha. of K_2O.

3. DESIGN :

(i) L. Sq. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) N.A. (b) One ; 1838 plants/ha. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of ripe cherry. (iv) (a) 1950—N.A. (b) N.A. (c) Nil. (v) Not known. (vi) to (vii). Nil.

5. RESULTS :

60(248)

(i) 4712 Kg/ha. (ii) 2964 Kg/ha. (iii) The treatment differences are not significant. (iv) Av. yield of ripe cherry in Kg/ha.

Treatment	M_1	M_2	M_3	M_4	M_5	M_6
Av. yield	3635	4277	5353	5049	5179	4780

61(145)

(i) 3042 Kg/ha. (ii) 377·7 Kg/ha. (iii) The treatment differences are highly significant. (iv) Av. yield of ripe cherry in Kg/ha.

Treatment	M_1	M_2	M_3	M_4	M_5	M_6
Av. yield	3713	3592	3036	2420	2820	2672

C.D.=454·8 Kg/ha.

62(245)

(i) 5465 Kg/ha. (ii) 3069 Kg/ha. (iii) The treetment differences are not significant. (iv) Av. yield of ripe cherry in Kg/ha.

Treatment	M_1	M_2	M_3	M_4	M_5	M_6
Av. yield	5774	6424	6443	5487	4531	4130

63(210)

(i) 5490 Kg/ha. (ii) 3070 Kg/ha. (iii) The treatment differences are not significant. (iv) Av. yield of ripe cherry in Kg/ha.

Treatment	M_1	M_2	M_3	M_4	M_5	M_6
Av. yield	5927	6424	6443	5487	4531	4130

64(169)

(i) 1236 Kg/ha. (ii) 826·4 Kg/ha. (iii) The treatment differences are not significant. (iv) Av. yield of ripe cherry in Kg/ha.

Treatment	M_1	M_2	M_3	M_4	M_5	M_6
Av. yield	880	1358	19:2	1071	956	1243

Crop :- Coffee. **Ref :- Ms. 60(199), 61(201), 62(182), 63(181), 64(139).**

Site :- Central Coffee Res. Instt., Balehonnur. **Type :- 'M'.**

Object :—To study the effect of varying combinations of N, P and K on the yield of Coffee.

1. BASAL CONDITIONS :

(i) Forest area. (ii) Reddish brown to dark red. (iii) Seedlings. (iv) Coorg Arabica. (v) Old garden (vi) Old garden. (vii) Nil. (viii) Weeding, digging and intercultivation. (ix) Nil. (x) Unirrigated. (xi) 299 cm. ; 361 cm. ; 328 cm. ; 250 cm. ; 281 cm. (xii) N.A.

2. TREATMENTS :

5 manurial treatments : M_0=Control (no manure), M_1=89·7 Kg/ha. of N, $M_2=M_1+50·4$ Kg/ha. of P_2O_5, $M_3=M_1+67.2$ Kg/ha. of K_2O and $M_4=M_2+67·2$ Kg/ha. of K_2O

N applied in three equal doses, P_2O_5 and K_2O applied in two equal doses.

3. DESIGN :

(i) L. Sq. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 20. (v) and (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of ripe cherry. (iv) (a) 1937—contd (modified in 1959). (b) N.A, (c) N.I. (v) Not known. (vi) and (vii) Nil.

5. RESULTS :

60(199)

(i) 377·0 Kg/ha. (ii) 96 0 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of ripe cherry in Kg/ha.

Treatment	M_0	M_1	M_2	M_3	M_4
Av. yield	152	381	379	461	512

61(201)

(i) 6035 Kg/ha. (ii) 423·1 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of ripe cherry in Kg/ha.

Treatment	M_0	M_1	M_2	M_3	M_4
Av. yield	4683	5889	7263	5681	6661

C.D.=583·0 Kg/ha.

62(182)

(i) 910 Kg/ha. (ii) 48·1 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of ripe cherry in Kg/ha.

Treatment	M_0	M_1	M_2	M_3	M_4
Av. yield	501	910	950	1037	1153

63(181)

(i) 2046 Kg/ha. (ii) 583·7 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of ripe cherry in Kg/ha.

Treatment	M_0	M_1	M_2	M_3	M_4
Av. yield	1406	1816	2627	2055	2324

64(139)

(i) 355 Kg/ha. (ii) 193·3 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of ripe cherry in Kg/ha.

Treatment	M_0	M_1	M_2	M_3	M_4
Av. yield	205	383	473	311	400

Crop :- Coffee. **Ref :- Ms. 60(200), 61(202), 62(183), 63(182), 64(140).**

Site :- Centrel Coffee Res. Instt., Balehonnur. **Type :- 'M'.**

Object :— To study the effect of varying doses of N with constant level of P and K on the yield of Coffee.

1. BASAL CONDITIONS :

(i) Forest area. (ii) Reddish brown to dark red. (iii) Seedlings. (iv) Kent's clones. (v) Planted in 1952 (2·3 m.×2·3 m.). (vi) N.A. (vii) Nil. (viii) Weeding, digging and intercultivation. (ix) Nil. (x) Un-irrigated. (xi) 299 cm. ; 361 cm. ; 328 cm. ; 250 cm. ; 281 cm. (xii) N.A.

2. TREATMENTS :

5 levels of N : N_0=0, N_1=44·8, N_2=67·2, N_3=89·6 and N_4=112·1 Kg/ha.
33·6 Kg/ha. of P_2O_5 and 44·8 Kg/ha. of K_2O applied to all plots with N.

3. DESIGN :

(i) L. Sq. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 25. (v) and (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of ripe cherry. (iv) (a) 1952-contd. (b) N.A. (c) Nil. (v) Non known. (vi) and (vii) Nil.

5. RETULTS :

60(200)

(i) 1704 Kg/ha. (ii) 370·0 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of ripe cherry in Kg/ha.

Treatment	N_0	N_1	N_2	N_3	N_4
Av. yield	1291	1493	1987	1256	2492

61(202)

(i) 4193 Kg/ha. (ii) 903·2 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of ripe cherry in Kg/ha.

Treatment	N_0	N_1	N_2	N_3	N_4
Av. yield	4599	4266	3176	4584	4341

62(183)

(i) 1341 Kg/ha. (ii) 221·9 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of ripe cherry in Kg/ha.

Treatment	N_0	N_1	N_2	N_3	N_4
Av. yield	842	1 82	1300	1339	1844

63(182)

(i) 3084 Kg/ha. (ii) 1236 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of ripe cherry in Kg/ha.

Treatment	N_0	N_1	N_2	N_3	N_4
Av. yield	2160	2597	2977	3842	3843

C.D.=1703·2 Kg/ha.

64(140)

(i) 1123 Kg/ha. (ii) 199 1 Kg/ha (iii) Treatment differences are not significant. (iv) Av. yield of ripe cherry in Kg/ha.

Treatment	N_0	N_1	N_2	N_3	N_4
Av. yield	757	1073	1140	1267	1378

Crop :- Coffee. **Ref :- Ms. 60(202), 61(207), 62(189), 63(185), 64(145).**

Site :- Central Coffee Res. Instt., Balehonnur. **Type :- 'M'.**

Object : — To study the effect of N, P and K on the yield of Coffee.

1. BASAL CONDITIONS :

(i) Forest area. (ii) Reddish brown to dark red. (iii) Seedlings. (iv) Arabica. (v) Planted in 1954 (1·8 m. 1.8 m.). (vi) 8 months. (vii) N.A. (viii) Weeding, digging and interculturing. (ix) Nil. (x) Unirrigated. (xi) 299 cm.; 361 cm. ; 328 cm. ; 250 cm. ; 281 cm. (xii) Oct. to Dec.

2. TREATMENTS :

6 manurial treatments : T_0=Control, T_1=89·7 Kg/ha. of N, $T_2=T_1+50·4$ Kg/ha. of $P_2O_5+67·3$ Kg/ha. of K_2O, $T_3=T_1+50·4$ Kg/ha. of $P_2O_5+44·8$ Kg/ha. of K_2O, $T_4=T_1+33·6$ Kg/ha. of $P_2O_5+44·8$ Kg/ha. of K_2O and $T_5=T_1+33·6$ Kg/ha. of $P_2O_5+67·3$ Kg/ha. of K_2O.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 15. (v) One row around each plot. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) N.A. (iii) Yield of ripe cherry. (iv) (a) 1960-contd. (b) N.A. (c) Nil. (v) Not known. (vi) and (vii) Nil.

5. RESULTS :

60(202)

(i) 2703 Kg/ha. (ii) 477·1 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of ripe cherry in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. yield	2300	3118	2186	2591	3340	2685

C.D.=719·0 Kg/ha.

61(207)

(i) 2223 Kg/ha. (ii) 151·6 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of ripe cherry in Kg/ha

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. yield	1960	2494	2415	1238	2897	2332

C.D.=228·5 Kg/ha.

62(189)

(i) 3341 Kg/ha. (ii) 564·3 Kg/ha. (iii) Treatment differences are not significant (iv) Av. yield of ripe cherry in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. yield	3868	3496	3209	3221	2694	3560

63(185)

(i) 3587 Kg/ha. (ii) 1762 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of ripe cherry in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. yield	2920	3635	3464	3565	3214	4722

64(145)

(i) 4280 Kg/ha. (ii) 1624 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of ripe cherry in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. yield	3625	3506	5282	5006	4236	4024

Crop :- Coffee. **Ref :- Ms. 60(215), 61(205), 62(187), 63(183), 64(142).**

Site :- Central Coffee Res. Instt., Balehonnur. **Type :- 'M'.**

Object :— To find out the effect of minor elements on the growth and yield of Coffee.

1. BASAL CONDITIONS :

(i) Forest area. (ii) Reddish brown to dark red. (iii) Seedlings. (iv) Arabica. (v) Planted in 1957 (1·8 m. ×1·8 m.). (vi) and (vii) N.A. (viii) Weeding, digging and interculturing. (ix) Nil. (x) Unirrigated. (xi) 299 cm. ; 361 cm. ; 328 cm. ; 250 cm. ; and 281 cm. (xii) Dec. to March in 1960 and Oct. to Dec. for other years.

2. TREATMENTS :

6 treatments : M_1=12 gm./plant of Sequestrant NaNe, M_2=12 gm./plant of NaCu, M_3=12 gm./plant of NaCa, M_4=12 gm./plant of Metaquest (EDTA), M_5=12 gm./plant of essential mineral elements and M_6=40 gm. of N+30 gm. of P_2O_5+40 gm. of K_2O mixture only.

The names of treatments are trade names of chemicals used.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) 3·7 m.×3·7 m. (b) 4. (v) One row around each plot. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) N.A. (iii) Yield of ripe cherry. (iv) (a) 1959-contd. (b) Yes. (c) Nil. (v) Not known. (vi) and (vii) Nil.

. RESULTS :

60(215)

(i) 637 Kg/ha. (ii) 394·6 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of ripe cherry in Kg/ha.

Treatment	M_1	M_2	M_3	M_4	M_5	M_6
Av. yield	635	919	735	558	594	381

61(205)

(i) 3·17 Kg/plot. (ii) 1·0 Kg/plot. (iii) Treatment differences are significant. (iv) Av. yield of ripe cherry in Kg/plot.

Treatment	M_1	M_2	M_3	M_4	M_5	M_6
Av. yield	3·60	4·32	2 64	2·38	2·67	3·42

C.D.=1·19 Kg/plot.

62(187)

(i) 5·80 Kg/plot. (ii) 4 57 Kg/plot. (iii) Treatment differences are not significant. (iv) Av. yield of ripe cherry in Kg/plot.

Treatment	M_1	M_2	M_3	M_4	M_5	M_6
Av. yield	3·13	6·52	8·99	4·96	6·86	4·35

63(183)

(i) 38·72 Kg/plot. (ii) 20 40 Kg/plot. (iii) Treatment differences are not significant. (iv) Av. yield of ripe cherry in Kg/plot.

Treatment	M_1	M_2	M_3	M_4	M_5	M_6
Av. yield	36·25	50·50	28·45	36·10	30·25	50·75

64(142)

(i) 1·11 Kg/plot. (ii) 1·11 Kg/plot. (iii) Treatment differences are not significant. (iv) Av. yield of ripe cherry in Kg/plot.

Treatment	M_1	M_2	M_3	M_4	M_5	M_6
Av. yield	0·48	1·49	0·99	0·94	1·40	1·34

Crop :- Coffee. **Ref :- Ms. 60(134), 61(121), 62(126), 63(115), 64(81).**

Site :- Central Coffee Res. Stn., Chethally. **Type :- 'M'.**

Object :—To find out the best combination of N, P and K for Robusta Coffee.

1. BASAL CONDITIONS :

(i) Laterite and red loamy. (ii) Forest. (iii) Seedlings. (iv) Robusta coffee. (v) Planted in 1954. (vi) 9 months old. (vii) 2·5 tonne/ha. of lime. (viii) N.A. (ix) Nil. (x) Unirrigated. (xi) 243 ; 228 ; 206 ; 158 and 231 cm. (xii) N.A.

2. TREATMENTS :

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

(1) 4 levels of N : N_0=0, N_1=67·2, N_2=100·8 and N_3=134·4 Kg/ha.
(2) 2 levels of P_2O_5 : P_0=0 and P_1=50·4 Kg/ha.
(3) 2 levels of K_2O : K_0=0 and K_1=67·2 Kg/ha.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 16 plots/block. (b) N.A. (iii) 3. (iv) 20 plants/plot. (v) One common guard row around the plot. (vi) Yes,

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Yield of ripe cherry. (iv) (a) 1954–contd. (b) Yes. (c) Nil. (v) N.A. (vi) Nil. (vii) and Nil.

5. RESULTS :

60(134)

(i) 937 Kg/ha. (ii) 417·8 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of coffee seed in Kg/ha.

	N_0	N_1	N_2	N_3	K_0	K_1	Mean
P_0	694	1032	974	781	911	829	870
P_1	926	854	1312	923	965	1042	1004
Mean	810	943	1143	852	938	936	937
K_0	853	801	1205	894			
K_1	767	1085	1081	810			

61(121)

(i) 1388 Kg/ha. (ii) 869·4 Kg/ha. (iv) None of the effects is significant. (iv) Av. yield of coffee seed in Kg/ha.

	N_0	N_1	N_2	N_3	K_0	K_1	Mean
P_0	1029	1228	1403	1340	1242	1258	1250
P_1	1377	1312	1613	1804	1318	1734	1526
Mean	1203	1270	1508	1572	1280	1496	1388
K_0	1150	1023	1434	1512			
K_1	1256	1517	1582	1632			

62(126)

(i) 806 Kg/ha. (ii) 396·4 Kg/ha. (iii) Main effect of K is significant. (iv) Av. yield of coffee seed in Kg/ha.

	N_0	N_1	N_2	N_3	K_0	K_1	Mean
P_0	622	875	1186	791	1023	713	868
P_1	606	751	860	757	829	659	744
Mean	614	813	1023	774	926	686	806
K_0	805	916	969	1012			
K_1	423	710	1077	536			

C.D. for K marginal means=233·6 Kg/ha.

63(115)

(i) 2530 Kg/ha. (ii) 654·7 Kg/ha (iii) None of the effects is significant. (iv) Av. yield of coffee seed in Kg/ha.

	N_0	N_1	N_2	N_3	K_0	K_1	Mean
P_0	2150	2560	2575	2875	2464	2616	2540
P_1	2516	2180	2809	2575	2544	2496	2520
Mean	2333	2370	2692	2725	2504	2556	2530
K_0	2189	2030	2768	3029			
K_1	2477	2710	2616	2421			

64(81)

(i) 1567 Kg/ha. (ii) 473·2 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of coffee seed in Kg/ha.

	N_0	N_1	N_2	N_3	K_0	K_1	Mean
P_0	1225	1702	1736	1665	1615	1549	1582
P_1	1707	1220	1786	1495	1561	1543	1552
Mean	1466	1461	1761	1580	1588	1546	1567
K_0	1654	1499	1557	1642			
K_1	1278	1423	1965	1518			

Crop :- Coffee. **Ref :- Ms. 65(86).**

Site :- Coffee Res. Stn., Chethally. **Type :- 'M'.**

Object :—To find out optimum dose of balanced fertiliser and its time of application.

1. BASAL CONDITIONS :

(i) Jungle. (ii) Clay type. (iii) Seedlings. (iv) S. 795. (v) 1960 (2·1 m.×2·1 m.). (vi) 9 months. (vii) Nil. (viii) Digging, caffling and plant training. (ix) Nil. (x) Unirrigated. (xi) N.A. (xii) Jan.-Feb.

2. TREATMENTS :

Main-plot treatments :

5 doses of fertilizers : F_1=67·2 Kg/ha. of N+33·6 Kg/ha. of P_2O_5+44·8 Kg/ha. of K_2O, F_2=112·0 Kg/ha. of N+67·2 Kg/ha. of P_2O_5+89·6 Kg/ha. of K_2O, F_3=156·8 Kg/ha. of N+100·8 Kg/ha. of P_2O_5+134·4 Kg/ha. of K_2O, F_4=201·6 Kg/ha. of N+134·4 Kg/ha. of P_2O_5+179·2 Kg/ha. of K_2O, and F_5=246·4 Kg/ha. of N+168.0 Kg/ha. of P_2O_5+224·0 Kg/ha. of K_2O.

Sub-plot treatments :

3 times of application (split dose) : T_1=Twice a year (pre and post monsoon), T_2=Thrice a year (pre blossom, pre monsoon and post monsoon) and T_3=4 times a year (pre blossom, pre monsoon mid monsoon and post monsoon).

3. DESIGN :

(i) Split plot. (ii) (a) 5 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 8·5 m.× 8·5 m. (b) 16. (v) and (vi) Yes.

4. GENERAL :

(i) Fair. (ii) N.A. (iii) Ripe cherry—yield data. (iv) to (vii) Nil.

5. RESULTS :

(i) 1885 Kg/ha. (ii) (a) 1369·7 Kg/ha. (b) 895·4 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of ripe cherry in Kg/ha.

	F_1	F_2	F_3	F_4	F_5	Mean
T_1	1407	1107	1665	1716	1708	1521
T_2	1270	2557	2918	1802	1476	2005
T_3	1699	2231	2188	2223	2300	2128
Mean	1459	1965	2257	1914	1828	1885

Crop :- Coffee. **Ref :- Ms. 65(84).**

Site :- Coffee Res. Stn., Chethally. **Type :- 'M'.**

Object :—To find the best combination of N, P and K for Robusta Coffee.

1. BASAL CONDITIONS :

(i) Jungle. (ii) Dark brown sandy loam. (iii) Seedlings. (iv) Robusta. (v) Planted in 1954 (4 m.×4 m.). (vi) 9 months old. (vii) Nil. (viii) Weeding, digging, scuffling and plant training. (ix) Nil. (x) Unirrigated. (xi) Nil. (xii) Jan.—Feb.

2. TREATMENTS :

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

(1) 4 levels of N : N_0=0, N_1=67·2, N_2=100·8 and N_3=134·4 Kg/ha.

(2) 2 levels of P_2O_5 : P_0=0 and P_1=50·4 Kg/ha.

(3) 2 levels of K_2O : K_0=0 and K_1=67·2 Kg/ha.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 3. (iv) (a) 22·9 m.×15·9 m. (b) 20 plants/plot. (v) and (vi) Yes.

4. GENERAL :

(i) Poor. (ii) Shot hole borer—cutting and removing. (iii) Ripe cherry yield data. (iv) (a) 1957—contd. (b) Yes. (c) Nil. (v) and (vi) Nil. (vii) Experiment conducted at Shigoda.

5. RESULTS:

(i) 316 Kg/ha. (ii) 212·8 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of ripe cherry in Kg/ha.

	N_0	N_1	N_2	N_3	K_0	K_1	Mean
P_0	221	242	430	409	335	316	326
P_1	217	353	401	252	282	330	306
Mean	219	297	415	330	309	323	316
K_0	213	273	325	421			
K_1	225	321	505	240			

Crop :- Coffee. **Ref :- Ms. 65(87).**

Site :- Coffee Res. Stn., Chethally. **Type :- 'M'.**

Object :—To find out a suitable source of phosphate and study its interaction with N and liming.

1. BASAL CONDITIONS :

(i) Jungle. (ii) Black loam. (iii) Seedlings. (iv) S. 795. (v) 1957 (2 m.×2 m.). (vi) 9 months. (vii) 44·8 Kg ha. of N+36·6 Kg/ha. of P_2O_5+44·8 Kg/ha. of K_2O. (viii) Digging, scuffling and plant training etc. (ix) and (x) Nil. (xi) N.A. (xii) Jan.-Feb.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2)

(1) 2 fertilizers : L_1=12·6 Q/ha. of lime and L_2=12·6 Q/ha. of rock phosphate.

(2) 3 sources of N : S_1=A/S/N, S_2=Urea and S_3=A/S.

Sub-plot treatments :

6 sources of phosphate : P_0=Control (no phosphate), P_1=Rock phosphate, P_2=Rock phosphate, P_3=Super complex, P_4=A/P and P_5=Basic slag.

Doses of N and P applied are not available.

3. DESIGN :

(i) Split plot. (ii) (a) 6 main-plots/replication ; 6 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 7·9 m.× 11·9 m. (b) 24. (v) One border row. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Bordeaux mixture sprayed. (iii) Ripe cherry yield data. (iv) (a) 1965—contd. (b) Yes. (c) Nil. (v) to (vii) N.A.

5. RESULTS :

(i) 5390 Kg/ha. (ii) (a) 1539·9 Kg/ha. (b) 1307·4 Kg/ha. (iii) Interaction L×S and main effect of P are significant. (iv) Av. yield of ripe cherry in Kg/ha.

	L_1	L_2	P_0	P_1	P_2	P_3	P_4	P_5	Mean
S_1	4330	6219	6426	5476	5822	4839	3790	5297	5275
S_2	5936	5384	6051	5651	5904	5509	5254	5591	5660
S_3	5126	5344	5065	5012	6318	4543	5023	5449	5235
Mean	5131	5649	5847	5380	6015	4964	4689	5446	5390
P_0	5446	6249							
P_1	5200	5559							
P_2	5776	6254							
P_3	4852	5075							
P_4	4714	4664							
P_5	4797	6094							

C.D. for P marginal means =871·6 Kg/ha.

C.D. for body of L×S table=1143·6 Kg/ha.

Crop :- Coffee. **Ref :- Ms. 60(194).**

Site :- Central Coffee Res. Instt., Balehonnur. **Type :- 'C'.**

Object :— To study the influence of topping on growth and yield of robusta Coffee.

1. BASAL CONDITIONS :

(i) Old garden. (ii) Reddish brown to dark red. (iii) Seedlings. (iv) Robusta. (v) to (vii) Old (2·7 m.×2 7 m.). (viii) Weeding and digging. (ix) Nil. (x) Unirrigated. (xi) 299 cm. (xii) Dec. to March.

2. TREATMENTS :

2 cultural treatments : T_1=Topped at 91 cm. height and T_2=Topped at 122 cm. height.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 12. (iv) (a) N.A. (b) 32 (gross) and 12 (net). (v) Nil. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Weight of ripe cherry. (iv) (a) 1951 to 1960. (b) N.A. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2980 gm./plant. (ii) 869·4 gm./plant. (iii) Treatment difference is not significant. (iv) Av. yield of ripe cherry in gm./plant.

Treatment	T_1	T_2
Av. yield	3314	2646

Crop :- Coffee. **Ref :- Ms. 60(28).**

Site :- Central Coffee Res. Instt., Balehonnur. **Type :- 'C'.**

Object : — To study the effect of various grades of cultivation on old Coffee during different seasons as reflected by yield.

1. BASAL CONDITIONS :

(i) Variety of coffee is old Arabica of Coorg of age 30 to 40 years. (ii) Brown soil. (iii) N.A. (iv) Arabica Coffee (Coorg). (v) N.A. with spacing 152 cm.×152 cm. (vi) 8 months. (vii) Nil. (viii) Weeding, manuring and shade regulation. (ix) Nil. (x) Irrigated. (xi) 301 cm. (xii) Nov. to Dec. 1960.

2. TREATMENTS :

7 cultural treatments : T_1=Deep digging in August, T_2=Light digging in August, T_3=Deep digging in November, T_4=Light digging in November, T_5=Deep digging in April, T_6=Scuffling in April and T_7=Weeding only.

3. DESIGN:

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 80 plants. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Stem borer and leaf disease. Swabbling with B.H.C. and spraying with B. mixture. (iii) Yield of ripe cherry and clean coffee. (iv) (a) 1954—N.A. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 2183 Kg/ha. (ii) 596·7 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of coffee in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Av. yield	2230	2170	2105	2363	2451	2133	1827

Crop .- Coffee. **Ref :- 60(198), 61(200).**

Site :- Central Coffee Res. Instt., Balehonnur. **Type :- 'C'.**

Object :— To study the effect of varying soil cultivation practices on the yield of Coffee.

1. BASAL CONDITIONS :

(i) Forest area. (ii) Reddish brown to dark red (moderately grannular). (iii) Seedlings. (iv) Coorg arabica. (v) 30 years old garden (1 5 m.×1·5 m.). (vi) and (vii) N.A. (viii) As per treatments. (ix) Nil. (x) Unirrigated. (xi) 299 cm. ; 361 cm. (xii) N.A.

2. TREATMENTS :

7 cultural treatments : T_1=Deep digging in August, T_2=Light digging in August, T_3=Deep digging in November, T_4=Light digging in November, T_5=Deep digging in April, T_6=Scuffling in April and T_7=Weeding only.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 80 plants. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of ripe cherry. (iv) (a) 1954 to 1961. (b) Nil. (v) (a) Not known. (b) Nil. (vi) and (vii) Nil.

5. RESULTS:

60(198)

(i) 3144 Kg/ha. (ii) 867 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of ripe cherry in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Av. yield	3218	3123	3034	3399	3527	3072	2633

61(200)

(i) 2065 Kg/ha. (ii) 689 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of ripe cherry in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Av. yield	2281	2474	1956	2201	2048	1632	1865

Crop :- Coffee. **Ref :- Ms. 63(212), 64(172).**

Site :- Central Coffee Res. Instt., Balehonnur. **Type :- 'C'.**

Object :— To determine the optimum spacing for planting Coffee.

1. BASAL CONDITIONS :

(i) Forest. (ii) N.A. (iii) Seedlings. (iv) Arabica S-795. (v) to (vii) N.A. (viii) Weeding and digging. (ix) Nil. (x) Unirrigated. (xi) More than 152 cm. (xii) Dec. and March.

2. TREATMENTS :

6 spacings : S_1=7·6 cm.×7·6 cm., S_2=10·2 cm.×10·2 cm., S_3=15·2 cm.×7·6 cm., S_4=15·2 cm.×10·2 cm., S_5=15·2 cm.×15·2 cm. and S_6=15.2 cm.×22·9 cm.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) 1/62·2 ha. (b) N.A. (v) Yes. Details N.A. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Weight of ripe cherry. (iv) (a) 1963 to 1964. (b) Yes. (c) Nil. (v) Not known. (vi) Nil. (vii) Experiment conducted at Private estate, Kalpetta.

5. RESULTS :

63(212)

(i) 4384 Kg/ha. (ii) 215·1 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of ripe cherry in Kg/ha.

Treatment	S_1	S_2	S_3	S_4	S_5	S_6
Av. yield	5558	4235	4918	3757	3133	4706

64(172)

(i) 4726 Kg/ha. (ii) 219·8 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of ripe cherry in Kg/ha.

Treatment	S_1	S_2	S_3	S_4	S_5	S_6
Av. yield	6336	4647	5388	4493	3591	3902

C.D.=261·3 Kg/ha.

Crop :- Coffee. **Ref :- 60(193), 61(203),62(184).**

Site :- Central Coffee Res. Instt., Balehonnur. **Type :- 'C'.**

Object :—To study the influence of varying soil cultivation practices on the yield of Coffee.

1. BASAL CONDITIONS :

(i) 40 years old garden. Land slopy and facing east, north-east. (ii) Reddish brown to dark red. (iii) Seedlings. (iv) Arabica coffee. (v) Age old (1·5 m.×1·5 m.) (vi) Age old. (vii) Nil. (viii) As per treatments. (ix) Nil. (x) Unirrigated. (xi) 299 cm. ; 361 cm. ; 328 cm. (xii) December to March.

2. TREATMENTS :

6 cultural treatments : T_0=Control (weeding only), T_1=Trenching 46 cm.×23 cm.×152 cm. in May, T_2=Trenching 23 cm.×23 cm.×152 cm. in May, T_3=Renovation pitting 46 cm.×23 cm.×91 cm. in May, T_4=Deep Digging in Nov. and T_5=Light digging in Nov.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 80. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Weight of ripe cherry. (iv) (a) 1954 to 1962. (b) Yes. (c) Nil. (v) Chethalli. (vi) and (vii) Nil.

5. RESULTS :

60(193)

(i) 723 gm./plant. (ii) 240·4 gm./plant. (iii) Treatment differences are not significant. (iv) Av. yield of ripe cherry in gm./plant.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av.yield	716	662	852	706	674	726

61(203)

(i) 564 gm./plant. (ii) 161·2 gm./plant. (iii) Treatment differences are not significant. (iv) Av. yield of ripe cherry in gm /plant.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. yield	574	481	757	633	473	465

62(184)

(i) 498 gm./plant. (ii) 182·3 gm./plant. (iii) Treatment differences are not significant. (iv) Av. yield of ripe cherry in gm./plant.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. yield	432	520	610	455	465	506

Crop :- Coffee. **Ref :- Ms. 60(137), 61(124).**

Site :- Coffee Res. Sub-Stn., Chethally. **Type :- 'C'.**

Object :—To find out the effect of different cultural operations on the yield of Coffee.

1. BASAL CONDITIONS :

(i) Forest area. (ii) Lateritic. (iii) By seedlings. (iv) Coorg Arabica. (v) 30 years old with spacing 183 cm. ×183 cm. (vi) 1 year. (vii) N.A. (viii) As per treatments. (ix) Nil. (x) Unirrigated. (xi) 243 cm. ; 228 cm. (xii) N.A.

2. TREATMENTS :

6 cultural treatments : T_1=Trenching 45 cm. deep, T_2=Trenching 23 cm. deep, T_3=Renovation pitting, T_4=Light digging, T_5=Deep digging and T_6=Weeding only.

3. DESIGN :

(i) L. Sq. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) N.A. (b) Gross 160 plants/plot and net 112 plants/plot. (v) One row on all sides. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of coffee. (iv) (a) 1954 to 1963. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

60(137)

(i) 5834 Kg/ha. (ii) 86·8 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of coffee in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	5934	5868	5139	6120	6064	5878

C.D.=97·0 Kg/ha.

61(124)

(i) 2016 Kg/ha. (ii) 29·9 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of coffee in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	2028	2070	2420	2097	1770	1714

C.D.=35·4 Kg/ha.

Crop :- Coffee. **Ref : Ms. 61(156), 62(139).**

Site :- Coffee Res. Sub-Stn., Chethally. **Type :- 'C'.**

Object :—To find out the most suitable method of soil management in old Coffee plantation.

1. BASAL CONDITIONS :

(i) About 30 years old coffee plants. (ii) Latrite; red loamy. (iii) Seedlings. (iv) Arabica (Coorgs). (v) and (vi) 30 years old coffee plants. (vii) 60 Kg/ha. of N as A/S+30 Kg/ha. of P_2O_5 as Super + 40 Kg/ha. of K_2O as Mur. Pot. (viii) As per treatments. (ix) Nil. (x) Unirrigated. (xi) 228 cm, ; 205 cm. (xii) N.A.

2. TREATMENTS :

6 cultural treatments : T_1=Trenching 46 cm. deep. T_2=Trenching 23 cm. deep, T_3=Renovation pitting 46 cm. deep, T_4=Light digging about 10 cm. deep, T_5=Deep digging about 17 cm. deep and T_6=Weeding only.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) 19·5 m.×14·6 m. (b) Gross 160 plants and net 112 plants. (v) and (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of ripe cherry. (iv) (a) 1954—contd. (b) yes. (c) Nil. (v) and (vi) Nil.. (vii) Date for 1960 N.A.

5. RESULTS :

61(156)

(i) 2633 Kg/ha. (ii) 565·9 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of coffee in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	2809	2851	3051	2660	2251	2174

62(139)

(i) 5880 Kg/ha. (ii) 1947 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of coffee in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	5249	5313	5605	5379	7498	6239

Crop :- Coffee. **Ref :- Ms. 65 (85).**

Site :- Coffee Res. Sub-Stn., Chethally. **Type :- 'C'.**

Object :—To determine the optimum spacing for Coffee.

1. BASAL CONDITIONS :

(i) Jungle. (ii) Clay type. (iii) Seedling. (iv) S—795. (v) Year 1960. (vi) 9 months. (vii) N.A. (viii) Digging, scaffling and plant training etc. (ix) Nil. (x) Unirrigated. (xi) N.A. (xii) Jan. to Feb.

2. TREATMENTS :

6 Spacings (in cm.) : T_1=91×91, T_2=122×122, T_3=183×91, T_4=183×122, T_5=183×183 and T_9=183×274.

3. DESIGN:

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) 14·6 m.×10·9 m. (b) N.A. (v) Yes.

4. GENERAL:

(i) Fair. (ii) Borer shebling B.H.C. sprayed, Bordeaux to spray to contol berry blotch. (iii) Ripe cherry yield data. (iv) (a) 1964—N.A. (b) yes. (c) Nil. (v) and (vi) Nil. (vii) Experiment conducted at Kalpetta.

5. RESULTS:

(i) 5040 Kg/ha. (ii) 1339·5 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of ripe cherry in Kg/ha.

Treatment	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	7104	5679	5658	5113	4135	2554

C.D.=1593·0 Kg/ha.

Crop :- Coffee. **Ref :- Ms. 60(29).**

Site :- Central Coffee Res. Instt., Balehonnur. **Type :- 'CM'.**

Object :—To find out the effect of different types of mulching with the addition to manures on the growth and yield of Coffee.

1. BASAL CONDITIONS:

(i) Old Arabica was uprooted and planted seedlings in 1954. Permanent shade was retained. (ii) Brown soil. (iii) By seed. (iv) Coffee Arabica (selections). (v) Date of sowing N.A., spacing 18 m.×1·8 m. (vi) 8 months. (vii) Nil. (viii) Weeding, suckering, swabbing and shade regulation. (ix) Nil. (x) Irrigated. (xi) 301 cm. (xii) Oct. to Dec. 1960.

2. TREATMENTS:

All combinations of (1) and (2)

(1) 2 doses of manures : D_1=22·4 Kg/ha. of N+33·6 Kg/ha. of P_2O_5+44·8 Kg/ha. of K_2O and D_2=44·8 Kg/ha. of N+33·6 Kg/ha. of P_2O_5+44·8 Kg/ha. of K_2O.

(2) 3 mulchings at 75·3 Q/ha. : M_0=No mulching, M_1=With dry leaf and M_2=With cherry husk.

Manures were applied in two doses in pre blossom and post blossom periods.

3. DESIGN:

(i) Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 35 plants (grass), 15 plants (net). (v) 20 plants. (vi) Yes.

4. GENERAL:

(i) Fairly satisfactory. (ii) Incidence of "Cercospora" disease, spraying of bordeaux mixture. (iii) Yield of ripe cherry and clean Coffee. (iv) (a) 1956—contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS:

(i) 6950 Kg/ha. (ii) 195 8 Kg/ha. (iii) Main effect of M and interaction D×M are highly significant. (iv) Av. yield of ripe cherry in Kg/ha.

	M_0	M_1	M_2	Mean
D_1	5889	7683	7395	6989
D_2	6046	6364	8323	6911
Mean	5968	7024	7859	6950

C.D. for M marginal means=208·5 Kg/ha.
C.D. for body of the table=295·0 Kg/ha.

Crop :- Coffee. **Ref :- Ms. 60(30).**

Site :- Central Coffee Res. Instt., Balehonnur. **Type :- 'CM'.**

Object :—To find out the effect of mulching, cover cropping and G.M. on the stand and growth of Coffee plants

1. BASAL CONDITIONS :

(i) Old Arabica was uprooted and planted with seedlings in 1954. The silver oaks in the blocks were uprooted and other shade trees were retained. (ii) Brown soil. (iii) By seed. (iv) Coffee Arabica (selections). (v) March 1953, spacing 1·8 m.×1·8 m. (vi) 8 months. (vii) 89·7 Kg/ha. of N+50·4 Kg/ha. of P_2O_5+67·2 Kg/ha. of K_2O. N applied in 3 doses in 3 : 2 : 3 ratios in pre blossom, pre monsoon and post monsoon periods. P and K applied in two equal doses in pre blossom and post monsoon periods. (viii) Weeding, suckering, swabbing and shade regulation. (ix) Nil. (x) Irrigated. (xi) 301 cm. (xii) Nov. and Dec. 1960.

2. TREATMENTS :

6 cultural treatments : T_0=No mulching, T_1=Mulching with dry leaves, T_2=Mulching with dry husk, T_3=Cover cropping, T_4=G.M. before monsoon and T_5=G.M. after monsoon.

T_1 and T_2 applied at 75·3 Q/ha. Crotolania was used as G.M.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 35 plants (gross), 15 plants (net). (v) 20 plants. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Incidence of leaf disease. Spraying with bordeaux mixture. (iii) Yield of ripe cherry and clean coffee. (iv) (a) 1956—contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 4899 Kg/ha. (ii) 283·7 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of coffee in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. yield	3814	4648	6570	6446	3818	4099

C.D.=427·3 Kg/ha.

Crop :- Coffee. **Ref :- Ms. 60(195), 61(198), 62(185).**

Site :- Central Coffee Res. Instt., Balehonnur. **Type :- 'CM'.**

Object:—To find out the effect of mulching and different levels of manures on the yield of Coffee.

1. BASAL CONDITIONS :

(i) Old arabica was uprooted and newly planted with selections in 1954. Permanent shade was retained. (ii) Reddish brown to dark red. (iii) Seedlings. (iv) Arabica selection. (v) and (vi) Age old (1·8 m.× 1·8 m.). (vii) 33·6 Kg/ha. of P_2O_5+44·8 Kg/ha. of K_2O. (viii) Weeding and digging. (ix) Nil. (x) Un-irrigated. (xi) 299 cm; 361 cm ; 328 cm. (xii) Dec. to March.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 doses of N : N_1=22·4 and N_2=44·8 Kg/ha.

(2) 3 mulchings at 75 Q./ha. : M_0=No mulching, M_1=With dry leaf and M_2=With cherry husk.

N applied in two equal doses in pre blossom and post monsoon periods.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) N.A. (b) Gross 35 plants ; net 15 plants. (v) and (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Weight of ripe cherry. (iv) (a) 1956—contd. (treatments modified in 1963). (b) Yes. (c) Nil. (v) and (vi) Nil. (vii) The mulch material could not be applied to the exptl. plots in time due to local difficulties in 1960.

5. RESULTS :

60(195)

(i) 2326 gm./plant. (ii) 653·2 gm./plant. (iii) None of the effects is significant. (iv) Av. yield of ripe cherry in gm./plant.

	M_0	M_1	M_2	Mean
N_1	1970	2570	2473	2338
N_2	2022	2127	2792	2314
Mean	*1996*	*2348*	*2632*	*2326*

61(198)

(i) 878 gm./plant. (ii) 306·6 gm./plant. (iii) N effect is significant. (iv) Av. yield of ripe cherry in gm./plant.

	M_0	M_1	M_2	Mean
N_1	762	463	881	702
N_2	1429	926	810	1055
Mean	1096	694	846	878

C.D. for N marginal means=gm./plant.

62(185)

(i) 1836 gm./plant. (ii) 587·5 gm./plant. (iii) None of the effects is significant. (iv) Av. yield of ripe cherry in gm./plant.

Effect	M_0	M_1	M_2	N_1	N_2	Mean
Av. yield	1648	1753	2108	1715	1958	1836

Crop :- Coffee. **Ref :- Ms. 63(179), 64(137).**

Site :- Central Coffee Res. Instt., Balehonnur. **Type :- 'CM'.**

Object :—To study the effect of two types of mulches in relation to fertilization on the yield of young Coffee.

1. BASAL CONDITIONS:

(i) Old Arabica was uprooted and newly planted with selections in 1954. Permanent shade was retained. (ii) Reddish brown to dark red. (iii) Seedlings. (iv) Arabica selections. (v) and (vi) Age old with 1·8 m.×1·8 m. spacing. (vii) 33·6 Kg/ha. of P_2O_5+44·8 Kg/ha. of K_2O applied in two doses—pre blossom and post monsoon. (viii) Weeding and digging. (ix) Nil. (x) Unirrigated. (xi) 250 cm. ; 281 cm. (xii) Dec. to March.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 mulching treatments : M_0=No mulch (control), M_1=Leaf mulch at 125 Q/ha. and M_2= Pulper husk mulch at 125 Q/ha.

(2) 2 levels of N : N_1=44·8 and N_2=89·6 Kg/ha.

3. DESIGN:

(i) Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) N.A. (b) Gross 35 plants, net 15 plants. (v) and (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Weight of ripe cherry. (iv) 1956—contd (modified in 1963 and 65). (b) Yes. (c) Nil. (v) and (vi) Nil. (vii) Trend of response to mulch is reversed due to biennial bearing habit of coffee in 1963.

5. RESULTS:

63(179)

(i) 1944 gm./plant. (ii) 441·3 gm./plant. (iii) None of the effect is significant. (iv) Av. yild of ripe cherry in gm./plant.

	M_0	M_1	M_2	ean
N_1	1830	201	1813	1887
N_2	2320	1906	1778	2001
Mean	2075	1962	1796	1944

64(137)

(i) 948 gm./plant. (ii) 246·8 gm./plant. (iii) None of the effects is significant. (iv) Av. yield of ripe cherry in gm./plant.

	M_0	M_1	M_2	Mean
N_1	828	998	670	832
N_2	902	1200	1090	1064
Mean	865	1099	880	948

Crop :- Coffee. **Ref :- Ms. 65(88).**

Site :- Central Coffee Res. Instt., Balehonnur. **Type :- 'CM'.**

Object :—To study the effect of mulching on the yield of Coffee.

1. BASAL CONDITIONS :

(i) Jungle. (ii) Reddish brown to dark red. (iii) Seedlings. (iv) Arabica. (v) Planted in 1954. (vi) 9. months. (vii) N.A. (viii) Digging interculturing etc. (ix) Nil. (x) Unirrigated. (xi) N.A. (xii) Jan. to Feb.

2. TREATMENTS :

6 mulching with manurial treatments : T_0=No mulch, T_1=Mulch with dry leaves @ 123·5 Q/ha., T_2=Mulch with cherry husk @ 123·5 Q/ha., T_3=Mulch with cherry husk @ 247·1 Q/ha., T_4=Mulch with cherry husk @ 247·1 Q/ha. in alternate rows and T_5=F.Y.M. @ 247·1 Q/ha.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 5 5 m.×9·1 m. (b) 15 (Net). (v) and (vi) Yes.

4. GENERAL :

(i) Fair. (ii) N.A. (iii) Yield of ripe cherry. (iv) (a) 1960-contd (modified in 1963 and 1965). (b) No. (c) Nil. (v) to (vii) Nil.

RESULTS :

(i) 5138 Kg/ha. (ii) 1726·4 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of ripe cherry in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. yield	4233	5534	4908	5284	5223	5646

———

Crop :- Coffee. **Ref :- Ms. 60(197), 61(199), 62(186).**

Site :- Central Coffee Res. Instt., Balehonnur. **Type :- 'CM'.**

Object :—To study the effect of N, P and K and prunning on the yield of Coffee.

1. BASAL CONDITIONS :

(i) Experiment laid out in sept. 1952 on coffee of 15-20 years age. The aspect is westren. Silver oak is the main shade with dadap lower canopy. (ii) Reddish brown. (iii) Seedlings. (iv) Coorg robusta. (v) and (vi) Age old (2·4 m.×2·4 m.) (vii) N.A. (viii) Weeding and digging. (ix) Nil. (x) Unirrigated. (xi) 299 cm. ; 361 cm. ; 328 cm. (xii) December to March.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 levels of prunning : P_0=0 and P_1=Prunning.

(2) 3 levels of fertilizars : F_0=0, F_1=44 8 Kg/ha. of N +33·6 Kg/ha. of P_2O_5+44·8 Kg/ha. of K_2O an F_2=89 6 Kg/ha. of N+33·6 Kg/ha of P_2O_5+44·8 Kg/ha. of K_2O.

3. DESIGN :

(i) L. Sq. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) N.A. (b) Gross 60 : Net 32. (v) and (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of ripe cherry. (iv) (a) 1952 to 1962. (b) Yes. (c) Nil. (v) and (vi) Nil. (vii) The superiority of yield may be attributed to the biennial bearing habit of coffee plant in 1961. In 1962, though response to prunning was not significant the yields were quite higher.

5. RESULTS :

60(197)

(i) 1947 gm./plant. (ii) 603·3 gm./plant. (iii) None of the effects is significant. (iv) Av. yield of ripe cherry in gm./plot.

	F_0	F_1	F_2	Mean
P_0	1885	1687	1827	1800
P_1	2056	2125	2103	2095
Mean	1970	1906	1965	1947

61(199)

(i) 6966 gm./plant. (ii) 1587·5 gm./plant. (iii) Main effect of F alone is highly significant. (iv) Av. yield of ripe cherry in gm./plot.

	F_0	F_1	F_2	Mean
P_0	6456	6146	5980	6194
P_1	7152	8203	7862	7739
Mean	6804	7174	6921	6966

C.D. for F marginal means=503·9 gm./plant

62(186)

(i) 3254 gm /plant. (ii) 683·3 gm./plant. (iii) None of the effects is significant. (iv) Av. yield of ripe cherry in gm./plant.

	F_0	F_1	F_2	Mean
P_0	3036	3229	3431	3232
P_1	2958	3619	3250	3276
Mean	2997	3424	3340	3254

Crop :- Coffee. **Ref :- Ms. 60(196), 61(204), 62(181).**

Site :- Central Coffee Res. Instt., Balehonnur. Type :- 'CM'.

Object :—To study the effect of mulching, cover cropping and G.M. on the growth and yield of Coffee.

1. BASAL CONDITIONS :

(i) Old arabica was uprooted and planted with selections in 1954. The silver oak in the block was uprooted but other shade trees were retained. (iii) Reddish brown to dark red. (iii) Seedlings. (iv) Arabica selections. (v) and (vi) Age old (1·8 m.×1·8 m.) (vii) N.A. (viii) Weeding and digging. (ix) Nil. (x) Unirrigated. (xi) 299 cm. ; 361 cm. ; 328 cm. (xii) Dec. to March.

2. TREATMENTS :

6 cultural and manurial treatments : T_0=No mulching, T_1=Mulching with dry levels at 75·3 Q/ha., T_2= Mulching with cherry husk at 75·3 Q/ha,, T_3=Cover cropping, T_4= G.M. before monsoon and T_5=G.M. after monsoon.

Quantity of G.M. N A.

3. DESIGN:

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 15 plants (net). (v) Nil. (vi) Yes.

4. GENERAL:

(i) Fair. (ii) Nil. (iii) Yield of ripe cherry. (iv) (a) 1956 —contd. (modified in 1953). (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS:

60(196)

(i) 1160 gm./plant. (ii) 689·5 gm./plant. (iii) Treatment differences are not significant. (iv) Av. yield of ripe cherry in gm./plant.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. yield	1149	1278	1837	794	1111	790

61(209)

(i) 368 gm./plant. (ii) 114·9 gm./plant. (iii) Treatment differences are not significant. (iv) Av. yield of ripe cherry in gm./plant.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. yield	249	386	499	318	378	378

62(181)

(i) 923 gm./plant. (ii) 310·7 gm./plant. (iii) Treatment differences are not significant. (iv) Av. yield of ripe cherry in gm./plant.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. yield	758	854	1317	680	951	979

Crop :- Coffee. **Ref :- Ms. 63(180), 64(141).**

Site :- Central Coffee Res. Instt., Balehonnur. **Type :- 'CM'.**

Object :—To study the effect of mulching on the yield of Coffee.

1. BASAL CONDITIONS :

(i) Old arabica was uprooted and planted with selections in 1954. The silver oak in the block was uprooted but other shade trees were retainted. (ii) Reddish brown. (iii) Seedlings. (iv) Arabica selections. (v) and (vi) Age old (1·8 m.×1·8 m.) (vii) N.A. (viii) Weeding and digging. (ix) Nil. (x) Unirrigated. (xi) 250 cm. ; 281 c.m.. (xii) Dec. to March.

2. TREATMENTS:

6 cultural and manurial treatments : T_0=No mulching, T_1=Mulching with dry leaves at 125 Q/ha., T_2=Mulching with cherry husk at 125 Q/ha., T_3=Mulching with cherry husk at 250 Q/ha., T_4=Mulching with cherry husk at 250 Q/ha. in alternate rows and T_5=F.Y.M. at 250 Q/ha.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 15 plants. (Net) (v) Nil. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of ripe cherry. (iv) (a) 1956-contd. (modified in 1963). (b) Yes. (c) Nil. (v) and (vi) Nil. (vii) Low yield in 1964 probably due to partial failure of blossom showers.

5. RESULTS :

63(180)

(i) 1421 gm./plant. (ii) 338·2 gm./plant. (iii) Treatment differences are not significant. (iv) Av. yield of ripe cherry in gm./plant.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. yield	1345	1596	1535	1346	1392	1310

64(141)

(i) 446 gm./plant. (ii) 244·4 gm./plant. (iii) Treatment differences are not significant. (iv) Av. yield of ripe cherry in gm./plant.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. yield	276	526	644	358	394	480

Crop :- Coffee. **Ref :- Ms. 64(138), 65(89).**

Site :- Central Coffee Res. Instt., Balehonnur. **Type :- 'IM'.**

Object :—To study the response of young Coffee to sprinkler irrigation when applied at different times in relation to fertilizer application.

1. BASAL CONDITIONS :

(i) Jungle was cleand in 1955, terraced and planted Coffee S—795. (ii) Laterite. (iii) Seedlings. (iv) S—795 Arabica. (v) Planted in 1955 (1·5 m.×1·5 m.) (vi) One year. (vii) 50 Kg/ha. of P_2O_5+67 Kgs./ha. of K_2O all plots. (viii) Weeding, shading and digging. (ix) Nil. (x) As per treatments. (xi) 281 cm.; N.A. (xii) October to December 1964 ; Jan. Feb. 1966.

TREATMENTS :

Main plot treatments :

4 irrigational treatments : I_0=N_0 irrigation, I_1=March irrigation, I_2=Feb.+March irrigation and I_3=Jan.+Feb.+March irrigation.

Sub-plot treatments :

3 levels of N : N_1=44·8, N_2=89·6 and N_3=134·4 Kg/ha.

One sprinkle unit was set up in each plot—2.5 cm. water applied through sprinkle each time.

3. DESIGN :

(i) Split plot. (ii) (a) 4 main plots/replication ; 3 sub-plots/main plot. (b) N.A. (iii) 4. (iv) (a) 3.7 m. ×14·6 m. (b) 16. (v) and (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of ripe cherry. (iv) (a) 1964 to 1968. (b) Yes. (c) Nil. (v) to (vii) Nil.

5, RESULTS :

64(138)

(i) 197 Kg/plot. (ii) (a) 139·7 Kg/plot. (b) 94·8 Kg/plot. (iii) None of the effects is significant. (iv) Av. yield. of ripe cherry in Kg/plot.

	I_0	I_1	I_2	I_3	Mean
M_1	210	191	189	208	200
M_2	209	196	149	270	206
M_3	233	171	172	169	186
Mean	217	186	170	216	197

65(89)

(i) 25·4 Kg/plot. (ii) (a) 6·5 Kg/plot. (b) 1·4 Kg/plot. (iii) None of the effects is significant. (iv) Av yield of ripe cherry in kg/plot.

Treatment	I_0	I_1	I_2	I_3	M_1	M_2	M_3	G.M.
Av. yield.	29·4	29·4	21·7	20·0	26·5	27·2	22·4	25·4

———

Crop :- Coffee. **Ref :- Ms. 61(246).**

Site :- Central Coffee Res. Instt., Balehonnur. **Type :- 'D'.**

Object :—To study the effect of insecticides on the mealy bug.

1. BASAL CONDITIONS :

(i) Jungle. (ii) N.A. (iii) Seedlings. (iv) Coorg Arabica. (v) to (vii) N.A. (viii) Weeding and digging. (ix)Nil. (x) Unirrigated. (xi) and (xii) N.A.

2 TREATMENTS :

9 insecticides : I_0=Control, I_1=Fosefesno 50 EC, I_2=Paramar 50 EC, I_3=Basudin 20 EC, I_4=Dieldrex 18 EC, I_5=Ekatox 50 EC, I_6=Malathion 53 EC, I_7=Gusathion 20 EC. and I_8=W.L. 1650 15 EC.

Treatments given separately at 0·02 % and 0·04 %a.c.

3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 4 plants/plot (Series I) and 3 plants/plot (Series II) (v) Nil. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) As per treatments (iii) Following the initial population recordings, observations on the intensity of bug population 5 cm. to 8 cm. below ground level were conduted during the intervals 7, 10 and 15 days after applying treatment. (iv) (a) No. (b) and (c) Nil. (v) No. (vi) Nil. (vii) Expt. conducted at Appies estate, S. Coorg.

5. RESULTS :

Mean percentage of bug population recorded after 15 days.

Series I (low concentration 0·02 a.c.)

(i) 52·0 % (ii) 8·1 % (iii) Treatment differences are highly significant. (iv) Av. percent of bug population.

Treatment	I_0	I_1	I_2	I_3	I_4	I_5	I_6	I_7	I_8
Av. percent	100.0	29·2	35·4	39·6	43·7	55·0	47·9	82·0	35·4

C.D.=14·02 percent.

Series II (high concentration 0 04 a.c.)

(i) 41·9 % (ii) 8·4 % (iii) Treatment differences are highly significant. (iv) Av. percent of bug population.

Treatment	I_0	I_1	I_2	I_3	I_4	I_5	I_6	I_7	I_8
Av. percent.	100·0	27·8	25·0	27·1	38·2	39·4	40·9	43·0	36·1

C.D.=14·6 percent.

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Crop :- Coffee. **Ref :- Ms. 64(170).**

Site :- Central Coffee Res. Instt., Balehonnur. **Type :- 'D'.**

Object :—To study the effect of insecticides on mealy bug.

1. BASAL CONDITIONS :

(i) Jungle. (ii) N.A. (iii Seedlings. (iv) Arabica (S—795). (v) N.A. (vi) ½ to 3 years old. (vii) N.A. (viii) Weeding and digging. (ix) Nil. (x) Unirrigated. (xi) 152 cm. (xii) December to March.

2. TREATMENTS :

4 insecticides : I_0=Control, I_1=Dimecron, I_2=Telodrin and I_3=Folidol.

[Treatments I_1 and I_2 supplimented with B.H.C. 5 % dust to control ants].

Two concentrations viz 0·01% and 0·02 % a.i. of the insecticides were tested in two adjacent but independent series. The diluted insecticides were applied as drench to the drip circle of the plants (2·5 litres/plant).

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 10. (iv) (a) N.A. (b) 3. (v) Nil. (vi) yes.

4. GENERAL :

(i) Fair. (ii) As per treatments. (iii) % of infestation of mealy bug. (iv) (a) 1964—N.A. (b) and (c) Nil. (v) No. (vi) N.A. (vii) Expt. conducted at Chelangi estate, South Coorg.

5. RESULTS :

Mean % of infestation.

0·01 % a.i. 10 days.

(i) 27·7 % (ii) 1·1 % (iii) Treatment differences are significant. (iv) Av. percent of infestation.

Treatment	I_0	I_1	I_2	I_3
Av. percent	49·0	30·3	31·1	0·6

C.D.=1·0 %

0·01 % a.i. 21 days.

(i) 21·0 % (ii) 2·2 % (iii) Treatment differences are significant. (iv) Av. percent of infestation.

Treatment	I_0	I_1	I_2	I_3
Av. percent	40·8	9·3	32·4	1·5

C.D.=2·0 percent.

0·02 % a.i. 10 days.

(i) 18 6 % (ii) 1·8 % (iii) Treatment differences are significant. (iv) Av. percent of infestation.

Treatment	I_0	I_1	I_2	I_3
Av. percent	43·6	25·9	4·4	0·3

C.D.=1·7 percent.

0·02 % a.i. 21 days.

(i) 14·4 % (ii) N.A. (iii) Treatment differences are significant. (iv) Av. percent of infestation.

Treatment	I_0	I_1	I_2	I_3
Av. percent	44·9	0·4	12·0	0·2

Crop :- Coffee. **Ref :- Ms. 60(250).**

Site :- Central Coffee Res. Instt., Balehonnur. **Type :- 'D'.**

Object :— To study the effect of insecticides on the incidence of shot hole borer.

1. BASAL CONDITIONS :

(i) Jungle. (ii) Nil. (iii) Seedlings. (iv) Robusta. (v) and (vi) N.A. (vii) Nil. (viii) Weeding and digging. (ix) Nil. (x) Unirrigated. (xi) N.A. (xii) Nil.

2. TREATMENTS :

5 insecticides : I_0=Control (no insecticides), I_1=Dixldrin 0·2 a.c., I_2=Dixldrin 0·4 a.c., I_3= Gusathion 0·05 a.c. and I_4=Gusathion 0·1 a.c.

Six sprays during Sept., Oct.; Nov., Dec. and Jun. 61 with Boadeaux mixture 2-2-40, ½%.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 1 plant. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) As per treatments. (iii) Infestation perecentage. (iv) (a) to (c) Nil. (v) N.A. (vi) N.A. (vii) 50 tertiary branches of similar age were selected at random/plant for exhaustive counts on the total number of infestation and the stages intervals.
The effect of a particular treatment was assessed not only in terms of the degree of damage tunnels producted by the beetles, but also in terms of the number of stages developing with in such tunnels. Expt. conducted at Madbur estate, Koppa zone.

5. RESULTS :

(i) 3·5 %. (ii) 1 5%. (iii) Treatment differences are highly significant. (iv) Mean % of infestation.

Treatment	I_0	I_1	I_2	I_3	I_4
Mean percentage	5·7	2·7	3·2	2·2	3·7

C.D.=1·9 percent.

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Crop :- Coffee. **Ref :- Ms. 60(251).**

Site :- Central Coffee Res. Instt., Balehonnur. **Type :- 'D'.**

Object :—To compare the efficacy of proprietary fungicides with Bordeanx mixture.

1. BASAL CONDITIONS :

(i) Jungle. (ii) N.A. (iii) Seedlings. (iv) Robusta. (v) to (vii) N.A. (viii) Weeding and digging. (ix) Nil. (x) Unirrigated. (xi) N.A. (xii) Dec. to March.

2. TREATMENTS :

4 fungicides : T_1=Colloidal Copper 0·45 Kg. in water —2 sprays, T_2=Bordeaux 0·5 %+Tenac sticker-2 sprays, T_3=Cobredon 500 gm. in 18.2 litres of water-2 sprays and T_4=Bordeaux 0·5 %—2 sprays.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 64 plants (net). (v) Yes (Details N.A.). (vi) Yes.

4. GENERAL :

(i) Fair. (ii) As per treatmenls. (iv) (a) 1958 to 1960.(b) and (c)Nil. (v) No. (vi) Nil. (vii) Raw data N.A,

1. RESULTS:

Effective % of leaf survival (Sept. 1960).

(i) 47·0 %. (ii) 12·2 %. (iii) Treatment differences are not significant. (iv) Av. % of leaf survival.

Treatment	T_1	T_2	T_3	T_4
Av. percentage	41·7	45·9	51·8	48·9

Crop :- Coffee. **Ref :- Ms. 60(255).**

Site :- Coffee Res. Stn., Balehonnur. **Type :- 'D'.**

Object :— To compare the efficacy of proprietary fungicides with Bordeaux mixture.

1. BASAL CONDITIONS :

(i) Jungle. (ii) N.A. (iii) Seedlings. (iv) Robusta. (v) Old plantation. (vi) and (vii) N.A. (viii) Weeding and digging. (ix) Nil. (x) Unirrigated. (xi) N.A. (xii) Dec. to March.

2. TREATMENTS :

4 fungicides : T_1=Flit 406 0·4% —2 sprays, T_2=Bordeaux mixture 0·5% —2 sprays, T_3=As in T_2+ Tenac sticker —2 sprays and T_4=Cupricol 0·5 Kg. in 18·2 litres of water —2 sprays.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 54 (18×3). (v) 2 rows around each plot. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) As per treatments. (iii) Effective % of leaf survival. (iv) (a) 1959 to 1960. (b) Yes. (c) Nil. (v) No. (vi) N.A. (vii) Raw data N.A. Expt. conducted at Cheekanahally estate, Chikmagalur zone.

5. RESULTS :

Effective % of leaf survival (Feb. 1960).

(i) 56·5 %. (ii) 9·6 %. (iii) Treatment differences are not significant. (iv) Av. % of leaf survival.

Treatment	T_1	T_2	T_3	T_4
Av. percentage	60·6	51·9	58·5	55·0

Crop -- Coffee. **Ref :- Ms. 60(253).**

Site :- Central Coffee Res. Instt., Balehonnur. **Type :- 'D'.**

Object :—To compare the efficacy of proprietary fungicides with Bordeaux mixture.

1. BASAL CONDITIONS :

(i) Jungle. (ii) N.A. (iii) Seedlings. (iv) Robusta. (v) Old plantation. (vi) and (vii) N.A. (viii) Weeding and digging. (ix) Nil. (x) Unirrigated. (xi) N.A. (xii) Dec. to March.

2. TREATMENTS :

4 fungicides : T_1=Cupricol 0·5 Kg. in 18 litres of water—2 sprays, T_2=Kirti copper 0 5 Kg. in 18 litres of water—2 sprays, T_3=Micro Cop. 0·5 Kg. in 18 litres of water—2 sprays and T_4=Bordeaux mixture 2—2—40—2 sprays.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 54 (18×3). (v) and (vi) Yes.

4. GENERAL :

(i) Fair. (ii) As per treatments. (iii) Effective % of leaf survival. (iv) (a) 1958 to 60. (b) Yes. (c) Nil. (v) No. (vi) N.A. (vii) Raw data N.A. Expt. conducted at Wood Pandi estate, Coonoor.

5. RESULTS :

Effective % of leaf survival.

(i) 56·5%. (ii) 8·7 %. (iii) Treatment differences are not significant. (iv) Av. % of leaf survival.

Treatment	T_1	T_2	T_3	T_4
Av. percentage	57·5	51·2	54·5	62·8

Crop :- Coffee. **Ref :- Ms. 60(254).**

Site :- Central Coffee Res. Instt., Balehonnur. **Type :- 'D'.**

Object :—To compare the efficacy of proprietary fungicides with Bordeaux mixture.

1. BASAL CONDITIONS :

(i) Jungle. (ii) N.A. (iii) Seedlings. (iv) Robusta. (v) to (vii) N.A. (viii) Weeding and digging. (ix) Nil. (x) Unirrigated. (xi) N.A. (xii) Dec. to March.

2. TREATMENTS :

4 fungicides : T_1=Parry Copper 50—0·5 Kg. in 182 litres of water—2 sprays, T_2=Bordeaux mixture 0·5% in 182 litres of water—2 sprays, T_3=Cobredon 0·5 Kg. in 182 litres of water 2 sprays and T_4=Kirti copper 0·5 Kg. in 182 litres of water—2 sprays.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 54 (18×3). (v) 2 rows around each plot. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) As per treatments. (iii) Effective % of leaf survival. (iv) (a) 1959 to 61. (b) Yes. (c) Nil. (v) No. (vi) Nil. (vii) Raw data N.A. Expt. conducted at Vasanthacool estate, Chickmagalur.

5. RESULTS :

Effective % of leaf survival Feb. 1960.

(i) 48·2 %. (ii) 8·9 %. (iii) Treatment differences are not significant. (iv) Av. % of leaf survival.

Treatment	T_1	T_2	T_3	T_4
Av. percent	41·2	49·0	53·9	48·6

Post monsoon 1961

(i) 34·7 %. (ii) 10·2 %. (iii) Treatment differences are not significant. (iv) Av. % of leaf survival.

Treatment	T_1	T_2	T_3	T_4
Av. percent	22·8	31·0	41·7	43·3

Crop :- Coffee. **Ref :- Ms. 60(252).**

Site :- Central Coffee Res. Instt., Balehonnur. **Type :- 'D'.**

Object :—To compare the efficacy of proprietory fungicides with Bordeaux mixture.

1. BASAL CONDITIONS :

(i) Jungle. (ii) N.A. (iii) Seedlings. (iv) Robusta. (v) to (vii) N.A. (viii) Weeding and digging. (ix) Nil. (x) Unirrigated. (xi) N.A. (xii) Dec. to March.

2. TREATMENTS :

3 fungicides : T_1=Bordeaux mixture 0·5 %—2 sprays, T_2=Flit 406 0·4 %—2 sprays, T_3=Parry cop. 50—0·45 Kg. in 188 litres of water—2 sprays.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 54 (18×3) net. (v) Yes (details N.A.) (vi) Yes.

4. GENERAL :

(i) Fair. (ii) As per treatments. (iii) % of leaf survival. (iv) (a) 1958 to 61. (b) Yes. (c) Nil. (v) No. (vi) Nil. (vii) Experiment conducted at Bonaventinga estate

5. RESULTS :

Effective % of leaf survival.

Sept. 1960

(i) 58·2 %. (ii) 6·5 %. (iii) Treatment differences are not significant. (iv) Mean % of leaf survival.

Treatment	T_1	T_2	T_3
Av. percentage	63·1	60·5	51·0

Pre monsoon 1961

(i) 7·3 %. (ii) 7·2 %. (iii) Treatment differences are not significant. (iv) Mean % of leaf survival.

Treatment	T_1	T_2	T_3
Av. percentage	9·1	6·9	5·9

Crop :- Coffee. **Ref :- Ms. 60(249).**

Site :- Central Coffee Res. Instt., Balehonnur. **Type :- 'D'.**

Object :—To study the effect of insecticides on green bug (0·02 % and 0·04 %).

1. BASAL CONDITIONS :

(i) Jungle. (ii) N.A. (iii) Seedlings. (iv) Robusta. (v) to (vii) N.A. (viii) Weeding and digging. (ix) Nil. (x) Unirrigated. (xi) 254 cm. (xii) Nil.

2. TREATMENTS :

9 insecticides : T_0=Control (no insecticide), T_1=Basudin 2 EC., T_2=Malathion 53 EC., T_3=Paramar 50 EC., T_4=Fosferro 50 EC., T_5=Meta-150- Systex 25 EC., T_6=Ekatin 20 EC., T_7=Ekatox 50 EC., and T_8=Rogor 40 EC.

Treatments at high and low concentration separately (0·02 a.c. and 0·04 a.c.)

3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 2. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) As per treatments. (iii) % reduction. (iv) (a) to (c) Nil. (v) No. (vi) N.A. (vii) On each plant 3 pairs of leaves carrying heavy infestation of green bug were selected at random in each pair, one leaf was used for vertical population count on the petiole, upper and lower surfaces during initial and post treatment observations. Thus 6 leaves were counted per treatment in an observation. Post treatment observations were conducted at the periods 10, 20 and 30 days. Expt. conducted at Madbur estate, Koppa zone.

5. RESULTS :

Mean % reduction obtained at 30 days after treatment.

Low concentration 0·02 a.c.

(i) 88·1 %. (ii) 8·8 %. (iii) Treatment differences are highly significant. (iv) Av. % of reduction.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Av. Percentage	0·0	97·6	98·6	100·0	100·0	99·5	99·1	99·9	98·8

C.D.=10 3 %.

High concentration 0·04 a.c.

(i) 86·2 %. (ii) 6·1 %. (iii) Treatment differences are highly significant. (iv) Av. % of reduction.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8
Av. percentage	0·0	96·8	99·9	100·0	99·9	89·9	96·5	100·0	92·3

C.D.=7·1 %.

———

Crop :- Coffee. **Ref :- Ms. 60(139, 141), 61(126 to 128).**

Site :- Central Coffee Res. Stn., Chethally. **Type :- 'D'.**

Object :— To compare the efficacy of proprietory fungicides with Bordeaux mixture.

1. BASAL CONDITIONS :

(i) Forest area. (ii) Laterite, Sandy loam. (iii) By seedlings. (iv) Local. (v) Transplanting ; N.A. (vi) to (viii) N.A. (ix) Nil. (x) Unirrigated. (xi) 242 cm. ; 228 cm. (xii) N.A.

2. TREATMENT :

8 fungicidal treatments : T_0=Control, T_1=500 gm. of cobredon, T_2=500 gm. of cuprical Hb., T_3=500 gm. of parry cop, T_4=Dithane M-22-0·4%, T_5=Bordeaux mixture—·5%, T_6=Bordeaux mixture ·5%+Titron X-114, and T_7=Dithane M-22 0·4%+Titron X-114.

The above fungicides were applied in 18·8 litres of water and 3 sprayings.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 9 plants (gross), middle plants (net). (v) N.A. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) As per treatments. (iii) Effective % of leaves/plant survived. (iv) (a) 1959-N.A. (b) Yes. (c) Nil. (v) and (vi) Nil. (vii) Plot wise yield data were not available at the Res. Stn.

5. RESULTS :

60(139) February.

(i) 49·1 % of leaves/plant. (ii) 4·9 % of leaves/plant. (iii) Treatment differences are not significant. (iv) Av. % of leaves/plant survived.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Av. percent	49·2	45·8	52·5	42·5	52·9	44.1	57·8	48·7

60(141) September

(i) 33·4 % of leaves/plant. (ii) 6·6 % of leaves/plant. (iii) Treatment differences are not significant. (iv) Av. percent of leaves/plant survived.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Av. percent	28·9	40·3'	25·0	40·8	35·2	45·4	42·8	29·1

61(126) February.

(i) 76·6 % of leaves/plant. (ii) 10·4 % of leaves/plant. (iii) Treatment differences are not significant. (iv) Av. % of leaves/plant survived.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Av. percent	78·2	76·5	73·5	79·2	73·7	79·6	77·5	74·5

61(127) Pre-monsoon

(i) 61·3 % of leaves/plant. (ii) 9·5 % of leaves/plant. (iii) Treatment differences are not significant. (iv) Av. % of leaves/plant survived.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Av. percent	62·1	57·0	72·0	65·3	78·8	55·7	49·8	50·0

61(128) Post-monsoon.

(i) 80·9 % of leaves/plant. (ii) 6·7 % of leaves/plant. (iii) Treatment differences are not significant. (iv) Av. % of leaves/plant survived.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6	T_7
Av. percent	99·3	89·3	86·9	71·7	85·6	63·6	80·4	70·7

Crop :- Coffee. **Ref :- Ms. 60(140), 61(129).**

Site :- Central Coffee Res. Stn., Chethally: **Type :- 'D'.**

Object :— To study the effect of spraying fungicides on Berry Blotch disease.

1. BASAL CONDITIONS :

(i) Forest area. (ii) Lateritic ; Sandy loam. (iii) By seedlings. (iv) Local. (v) Transplanting. (vi) to (viii) N.A. (ix) Nil. (x) Unirrigated. (xi) 243 cm. ; 228 cm. (xii) N.A.

2. TREATMENTS :

5 fungicidal treatments : T_0=Control, T_1=Bordeaux 0·5 %, T_2=Bordeaux 1 %, T_3=Bordeaux 2 % and T_4=Flit 406-0·4'%.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) and (v) N.A. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) As per treatments. (iii) Percentage of disease incidence/plant. (iv) (a) 1960-N.A. (b) Yes. (c) Nil. (v) and (vi) N.A. (vii) Raw data were not available at the Res. Stn.

5. RESULTS :

60(140)

(i) 15·6 % disease/plant. (ii) 1·7 % disease/plant. (iii) Treatment differences are significant. (iv) Av. % disease incidence/plant.

Treatment	T_0	T_1	T_2	T_3	T_4
Av. percentage	34·8	10·7	17·3	5·9	19·2

C.D.=2·7 %

61(129)

(i) 26·2 % of disease/plant. (ii) 7·7 % of disease/plant. (iii) Treatment differences are highly significant. (iv) Av. percentage of disease incidence/plant.

Treatment	T_0	T_1	T_2	T_3	T_4
Av. precentage	64·0	16·2	8·4	5·0	37·6

C.D.=11·8 %

Crop :- Coffee. **Ref :- Ms. 60(138), 61(125, 130, 131).**

Site :- Central Coffee Res. Stn., Chethally. **Type :- 'D'.**

Object : — To compare the efficacy of proprietory fungicides with Bordeaux mixture.

1. BASAL CONDITIONS :

(i) Forest area. (ii) Lateritic ; Sandy loam. (iii) By seedlings. (iv) Local. (v) to (viii) N.A. (ix) Nil. (x) Unirrigated. (xi) 343 cm. ; 228 cm. (xii) N.A.

2. TREATMENTS :

4 fungicidal treatments : T_1=454 gm. of microp in 18·8 litres of water, T_2=Bordeaux mixture 0·5 %, T_3= 454 gm. of colloidol cooper in 18·8 litres of water and T_4=454 gm. of ultra sulphur in 273 litres of water.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 100 plants (groos) ; 54 plants (net). (v) N.A. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) As per treatments. (iii) Effective percentage of leaf survival. (iv) (a) 1958-N.A. (b) Yes. (c) Nil. (v) and (vi) Nil. (vii) Plot wise yield data were not available at the Res. Stn.

5. RESULTS :

60(138)

(i) 37·0 % of leaves/plant. (ii) 5·7 % of leaves/plant. (iii) Treatment differences are not significant. (iv) Av. percentage of leaf survival/plant

Treatment	T_1	T_2	T_3	T_4
Av. percentage	36·4	37·2	4·4	32·9

61(125) February

(i) 84·0 % of leaves/plant. (ii) 2·6 % of leaves/plant. (iii) Treatment differences are not significant. (iv) Av. percentage of leaf survival/plant.

Treatment	T_1	T_2	T_3	T_4
Av. percentage	81·5	83·4	86·I	85·1

6(130) pre-monsoon

(i) 41·9 % of leaves/plant. (ii) 11·0 % of leaves/plant. (iii) Treatment differences are not significant. (iv) Av. percentage of leaf survival/plant.

Treatment	T_1	T_2	T_3	T_4
Av. percentage	48·6	36·2	45·7	37·1

61(131) Post-monsoen.

(i) 86·0 % of leaves/plant. (ii) 3·7 % of leaves/plant. (iii) Treatment differences are not significant. (iv) Av. % of leaf survival/plant.

Treatment	T_1	T_2	T_3	T_4
Av. percentage	89·4	76·6	88·9	89·3

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Crop :- Cashewnut. **Ref :- Ms. 62(100), 63(100), 64(69), 65(83).**

Site :- Central Cashewnut Res. Stn., Ullal. **Type :- 'C'.**

Object :— To devise a suitable method of training Cashewnut trees so as to get a strong and permanent frame work.

1. BASAL CONDITIONS :

(i) Fallow grass growing land. (ii) Latritic. (iii) By seedlings. (iv) Local. (v) Date of sowing N.A., raising seedlings, preparation of polythene bags for sowing of seeds with soil mixture and seeds were soaked in water. (vi) 2 to 3 months. (vii) A/S, Super, Mur. Pot. (doses N.A.) were applied. (viii) Loosening the soil, digging pits, spreading soil around the plants. Removal of diseased and dead wood from established plants. (ix) Nil. (x) Unirrigated. (xi) 407 cm.; 360 cm.; 282 cm.; 303 cm. (xii) March, April for 62, 63, 64 ; Feb. to May for 65.

2. TREATMENTS :

3 types of trainning trees : T_0=Control, T_1=Modified leader and T_2=Leader type.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) 24·4 m × 6·1 m. (b) N.A. (v) 40 trees. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of cashewnut. (iv) (a) 1958-contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

62(100)

(i) 25·6 Kg/ha. (ii) 16·7 Kg/ha. (iii) Treatment differences are significant. (iv) Av. yield of cashewnut in Kg/ha.

Treatment	T_0	T_1	T_2
Av. yield	38·6	8·8	29·4

C.D.=21:5 Kg./ha.

63(100)

(i) 24·8 Kg/ha. (ii) 72·8 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of cashewnut in Kg/ha.

Treatment	T_0	T_1	T_2
Av. yield	46·5	3·3	24·5

64(69)

(i) 134·1 Kg/ha. (ii) 75·2 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of cashewnut in Kg/ha.

Treatment	T_0	T_1	T_2
Av. yield	194	106	101

65(83)

(i) 356 Kg/ha. (ii) 268·9 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of cashewnut in Kg/ha.

Treatment	T_0	T_1	T_2
Av. yield	455	335	277

Crop :- Cashewnut. **Ref :- Ms. 61(16), 62(99), 63(101), 64(68), 65(82).**

Site :- Central Cashewnut Res. Stn., Ullal. **Type :- 'C'.**

Object :—To study the orchard performance of layers, grafts and seedlings.

1. BASAL CONDITIONS:

(i) Fallow grass growing land. (ii) Laterite. (iii) As per treatments. (iv) Local. (v) 22.6.1957 ; with spacing 6·1 m.×6·1 m. (vi) 2 to 3 months. (vii) 1 Kg/pit of ash was applied at the time of refilling of pits for 61 ; A/S, Super, Mur. Pot. (dose N.A.) for 62, 63, 64; 79 Kg/ha. of A/S+124 Kg/ha. of Super+28 Kg/ha. of Mur .pot. for 65. (viii) Nil for 61, 65 ; loosening the soil and spreading the soil around the plants for others. (ix) Nil. (x) Unirrigated. (xi) 357 cm. ; 407 cm. ; 360 cm. ; 282 cm. ; 303 cm. (xii) Feb. to May for 61, 65 ; March—April for others.

2. TREATMENTS:

3 methods of propagation : M_1=Layers, M_2=Grafts and M_3=Seedlings.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) 36·6 m.×6·1 m. (b) 6. (v) 46 guard trees kept around the entire area. (vi) Yes.

4. GENERAL ;

(i) Good. (ii) Nil. (iii) Yield of cashewnut, height and spread of plants. (iv) (a) 1957—contd. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

61(16)

(i) 101 Kg/ha. (ii) 53·3 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of cashewnut in Kg/ha.

Treatment	M_1	M_2	M_3
Av. yield	129	158	17

C.D.=68·6 Kg/ha.

62(99)

(i) 244 Kg/ha. (ii) 70·3 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of cashewnut in Kg/ha.

Treatment	M_1	M_2	M_3
Av. yield	361	251	120

C.D.=90·5 Kg/ha.

63(101)

(i) 235 Kg/ha. (ii) 90·6 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of cashewnut in Kg/ha.

Treatment	M_1	M_2	M_3
Av. yield	327	309	70

C.D.=116·5 Kg/ha.

64(68)

(i) 202 Kg/ha. (ii) 65·1 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of cashewnut in Kg/ha.

Treatment	M_1	M_2	M_3
Av. yield	272	250	83

C.D.=83·8 Kg/ha.

65(82)

(i) 305 Kg/ha. (ii) 192·5 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of cashewnut in Kg/ha.

Treatment	M_1	M_2	M_3
Av. yield	334	348	233

Crop :- Cashewnut, **Ref :- Ms. 61(95), 62(101), 63(99), 64(67).**

Site :- Central Cashewnut Res. Stn., Ullal. **Type :- 'IM'.**

Object :—To accelerate the growth of Cashewnut seedlings by manurial and irrigational treatments.

1. BASAL CONDITIONS ;

(i) Grass growing fallow land. (ii) Laterite. (iii) By seedlings. (iv) Local. (v) Raising, seedlings, preparation of polythene bags, sowing of seeds, filling with soil mixture and seeds were soaked in water. (vi) 2 to 3 months. (vii) A/S, Super and Mur. pot were applied (doses N.A.). (viii) Loosening the soil, digging pits, spreading soil around the plants, removal of diseased and dead wood in established plants. (ix) Nil. (x) As per treatments. (xi) 576 cm. ; 407 cm. ; 360 cm. ; 282 cm. (xii) March—April.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 manurial treatments : M_0=Control, M_1=113 gm. of N+57 gm. of P_2O_5+57 gm. of K_2O and M_2=227 gm. of N+113 gm. of P_2O_5+113 gm. of K_2O.

(2) 2 irrigational treatments : I_0=No irrigation and I_1=Irrigation thrice a week from January to April.

Each of the above treatment combination were applied to two rows of 5 seedlings each.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 2. (iv) (a) 30·5 m.×6·1 m. (b) 5. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Copper fungicide were sprayed with combination spray and insecticides like folidol. 605 EC. and B.H.C. 50% WP. against control of fungal disease. (iv) (a) 1958–contd. (b) Yes. (c) Nil. (v) and (vi) Nil. (vii) Data were not recorded for 1960.

5. RESULTS :

61(95)

(i) 174 Kg/ha. (ii) 108·7 Kg/ha. (iii) Main effect of M alone is significant. (iv) Av. yield of cashewnut in Kg/ha.

	M_0	M_1	M_2	Mean
I_0	0	108	381	163
I_1	0	219	333	184
Mean	0	164	357	174

C.D. for M marginal means=197·6 Kg/ha.

62(101)

(i) 87 Kg/ha. (ii) 75·7 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of cashewnut in Kg/ha.

	M_0	M_1	M_2	Mean
I_0	0	82	111	64
I_1	27	130	171	109
Mean	14	106	141	87

63(99)

(i) 112 Kg/ha. (ii) 79·1 Kg/ha. (iii) Main effect of M alone is significant. (iv) Av. yield of cashewnut in Kg/ha.

	M_0	M_1	M_2	Mean
I_0	0	214	142	119
I_1	0	92	227	106
Mean	0	153	184	112

C.D. for M marginal means=143·8 Kg/ha.

64(67)

(i) 229 Kg/ha. (ii) 144·8 Kg/ha. (iii) Main effect of M alone is significant. (iv) Av. yield of cashewnut in Kg/ha.

	M_0	M_1	M_2	Mean
I_0	4	401	191	199
I_1	6	311	462	260
Mean	5	356	326	229

C.D. for M marginal means=263·3 Kg/ha.

Crop :- Arecanut. **Ref :- 60(176), 61(177), 62(159), 63(159).**

Site :- Reg. Arecanut Res. Stn., Thirthahally. **Type :- 'M'.**

Object :—To find out the effect of application of lime with manures on the yield of Arecanut.

1. BASAL CONDITIONS :

(i) Under arecanut cultivation. (ii) Laterite. (iii) Seedlings. (iv) Local. (v) Old garden with spacing 305 cm. × 244 cm. (vi) 2½ years. (vii) Nil in 1960, 1961 ; 22·7 Kg/ha. of N+18·1 Kg. of P_2O_5+34·0 Kg. of K_2O per 500 palm+13·6 Kg. of F.Y.M.+13·6 Kg. of G.L./palm in 1962 and F.Y.M. applied in 1963 (details N.A.) (viii) Light digging and weeding. (ix) Banana. (x) Irrigated. (xi) 277 cm. ; 500 cm. ; 355 cm. ; 287 cm. (xii) 1.11.1960 to 2.1.61 ; Nov. 1961 to Jan. 1962 ; Nov. 1962 ; Sep. 1963 to Jan. 64.

2. TREATMENTS :

2 Treatments :

Main-plot treatments :

3 manurial treatments : M_1=Bulk manure once in 3 years, M_2=Fertilizers every year and M_3=M_1+M_2.

Sub-plot treatments :

2 levels of lime : L_0=No lime and L_1=0·45 Kg. of lime/tree.

Bulk manure : 13·6 Kg. of F.Y.M.+13·6 Kg. of green leaves/palm and Fertilizers : 56·0 Kg/ha. of N. ($\frac{1}{2}$ as G.N.C. and $\frac{1}{2}$ as A/S) +84·0 Kg/ha. of P_2O_5 as Super+112·1 Kg/ha. of K_2O as Mur. Pot.

3. DESIGN :

(i)Split-plot. (ii) (a) 3 main-plots/replication ; 2 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 121·4 sq. m. (b) 12. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. Bordeaux mixture sprayed in 1960 ; Nil in 1961 and 1963 ; and plants affected with Kalerogam. Bordeaux mixture sprayed in 1962. (iii) Dry arecanut yield. (iv) (a) 1954 to 1963. (b) Yes. (c) Nil. (v) No. (vi) and (vii) Nil.

5. RESULTS :

60(176)

(i) 0·75 Kg/tree. (ii) (a) 0·19 Kg/tree. (b) 0·13 Kg/tree. (iii) Main effect of L is highly significant. (iv) Av. yield of arecanut in Kg/tree.

	M_1	M_2	M_3	Mean
L_0	0·65	0·62	0·59	0·62
L_1	0·75	0·90	0·99	0·88
Mean	0·70	0·76	0·79	0·75

C.D. for L marginal means=0·11 Kg/ha.

61(177)

(i) 1·13 Kg/tree. (ii) (a) 0·33 Kg/tree. (b) 0·15 Kg/tree. (iii) Main effect of M is significant. (iv) Av. yield of arecanut in Kg/ tree.

	M_1	M_2	M_3	Mean
L_0	0·87	1·08	1·39	1·11
L_1	0·80	1·22	1·41	1·14
Mean	0·84	1·15	1·40	1·13

C.D. of M marginal means=0·39 Kg/ha.

62(159)

(i) 0·86 Kg/tree. (ii) (a) 0·20 Kg/tree. (b) 0·18 Kg/tree. (iii) Main effect of M is significant. (iv) Av. yield of arecanut in Kg/tree.

	M_1	M_2	M_3	Mean
L_0	0·66	0·89	1·02	0·86
L_1	0·64	0·90	1·04	0·86
Mean	0·65	0·90	1·03	0·86

C.D. of M marginal means=0·24 Kg/tree.

63(159)

(i) 0·90 Kg/tree. (ii) (a) 0·20 Kg/tree. (b) 0·13 Kg/tree. (iii) None of the effects is significant. (iv) Av. yield of arecanut in Kg/tree.

	M_1	M_2	M_3	Mean
L_0	0·84	0·81	0·98	0 88
L_1	0·76	1·08	0·96	0·93
Mean	0·80	0·94	0·97	0·90

Crop :- Arecanut. **Ref :- Ms. 60(174), 61(175), 62(162).**

Site :- Reg. Arecanut Res. Stn., Thirthahally. **Type :- 'M'.**

Object :—To study the residual effect of of N, P and K applied during 1959 on the yield of Arecanut.

1. BASAL CONDITIONS :

(i) Land was under arecanut for a long time. (ii) Laterite. (iii) Seedlings. (iv) Local. (v) Old age garden. (vi) 2½ years. (vii) Bulk manure at 14 Kg. of F.Y.M. and 14 Kg. of G.L./palm in 1960, 1961 ; and 22·7 Kg/ha. of N+18·1 Kg of P_2O_5+34·0 Kg of K_2O per 500 palms+13·6 Kg. of F.Y M. and G.L./palm. (viii) Weeding once a month and light digging. (ix) Banana. (x) Irrigated. (xi) 277 cm. ; 500 cm. ; 355 cm. (xii) 1.2.60 to 2.1.1961 ; N.A ; Nov. 1962.

2. TREATMENTS :

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

(1) 3 levels of N (½ as A/S+ ½ as G.N.C.) : N_0=0, N_1=33·6 and N_2=67·2 Kg/ha.

(2) 3 levels of P_2O_5 as Super : P_0=0, P_1=44·8 and P_2=89·7 Kg/ha.

(3) 3 levels of K_2O as Mur. Pot. : K_0=0, K_1=56·0 and K_2=112·1 Kg/ha.

3. DESIGN :

(i) 3^3 confd. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A. (iii) 3 for 60 and 4 for 61 and 62. (iv) (a) 121·4 Sq. m. (b) 12. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. Bordeaux mixture sprayed against ply. (iii) Dry weight of arecanut. (iv) (a) 1954 to 62. (b) Yes. (c) Nil. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

60(174)

(i) 749 Kg/ha. (ii) 220·5 Kg/ha. (iii) None of the effects is significant. (iv) Av. yield of arecanut in Kg/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	843	778	768	849	701	838	796
N_1	704	717	693	722	768	625	705
N_2	724	746	764	713	742	779	745
Mean	757	747	742	761	737	747	749
K_0	875	756	652				
K_1	658	801	752				
K_2	737	684	821				

61(175)

(i) 801 Kg/ha. (ii) 265·2 Kg/ha. (iii) Interaction P×K alone is significant. (iv) Av. yield of arecanut in Kg/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	897	664	780	888	677	776	780
N_1	870	690	829	744	829	819	796
N_2	852	838	793	816	865	803	828
Mean	873	731	801	816	790	798	801
K_0	924	749	776				
K_1	717	825	829				
K_2	977	619	798				

C.D. for the body of P×K table=88·3 Kg/ha.

62(162)

(i) 663 Kg/ha. (ii) 197·6 Kg/ha. (iii) Interaction N×P×K alone is significant. (iv) Av. yield of arecanut in Kg/ha.

	P_0	P_1	P_2	K_0	K_1	K_2	Mean
N_0	652	652	633	662	662	613	646
N_1	593	702	662	702	633	623	652
N_2	741	622	672	712	692	672	692
Mean	662	672	656	692	662	636	663
K_0	662	702	712				
K_1	613	771	603				
K_2	712	544	652				

Crop :- Arecanut. **Ref :- Ms. 60(175), 61(176), 62 (158).**

Site :- Arecanut Res. Stn., Thirthahally. Type :- 'M'.

Object :—To study the effect of organic and inorganic manures at different intervals of application.

1. BASAL CONDITIONS:

(i) Under arecanut cultivation for a long time. (ii) Laterite. (iii) Seedlings. (iv) Local. (v) Old garden. (vi) 2½ years. (vii) Nil in 1960, 1961 ; 56 Kg. of N+84 Kg. of P_2O_5+112 kg. of K_2O per 500 palm +13·6 Kg. F.Y.M. per palm applied uniformly during 1962. (viii) Light digging and weeding. (ix) Banana. (x) Irrigated. (xi) 277 cm. ; 500 cm. ; 355 cm. (xii) 1.12.1960. to 2.1.1961 ; Nov. 1961 to Jan. 1962; Nov. 1962.

2. TREATMENTS :

Main-plot treatments :

4 organic manurial treatments : M_0=No bulk manure, M_1=Bulk manure every year, M_2=Bulk manure once in 2 years and M_3=Bulk manure once in 3 years.

Sub plot treatments :

4 inorganic manurial treatments : T_0=No artificial manure, T_1=Manure once in a year, T_2=Once in 2 years and T_3=Once in 3 years.

Bulk manure : 13·6 Kg. of F.Y.M.+13·6 Kg. of G. L. per palm and artificial manure : 56·0 Kg/ha. of N (28·0 Kg/ha. as G.N.C.+28·0 Kg/ha. as A/S)+84·0 Kg/ha. of P_2O_5 as Super+112·1 Kg/ha. of K_2O as Mur. Pot.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication and 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 121·4 Sq. m. (b) 12. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Bordeaux mixture sprayed against ply to pethore arecanut in 1960 ; N.A. for others. (iii) Green and dry weight of arecanut. (iv) (a) 1954 to 1962. (b) Yes. (c) Nil. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

60(175)

(i) 0.57 Kg/tree. (ii) (a) 0·29 Kg/tree. (b) 0·13 Kg./tree. (iii) Main effect of T is highly significant and interaction T × M is significant. (iv) Av. yield of dry arecanut in Kg/tree.

	T_0	T_1	T_2	T_3	Mean
M_0	0·46	0·40	0·62	0·49	0·49
M_1	0·62	0·71	0·53	0·60	0·62
M_2	0·47	0·62	0·66	0.63	0·60
M_3	0·50	0·72	0·67	0.40	0·57
Mean	0·51	0·61	0·62	0·53	0·57

C.D. for T marginal means=0·08 Kg./tree.
C.D. for T means at the same level of M=0·18 Kg/tree.
C.D. for M means at the same level of T=0·28 Kg/tree.

61(176)

(i) 0·90 Kg/tree. (ii) (a) 0·27 Kg/tree. (b) 0·34 Kg/tree. (iii) None of the effects is significant. (iv) Av. yield of dry arecanut in Kg/tree.

	T_0	T_1	T_2	T_3	Mean
M_0	0·85	1·21	0·73	10·3	0·95
M_1	1·01	0·81	1·10	1·07	1·00
M_2	0·74	0·91	0·89	0·84	0·85
M_3	0·78	0·93	0·76	0·78	0·81
Mean	0·85	0·96	0·87	0·93	0·90

62(158)

(i) 0·90 Kg/tree. (ii) (a) 0·28 Kg/tree. (b) 0·83 Kg/tree. (iii) None of the effects is significant. (iv) Av. yield of dry arecanut in Kg/tree.

	T_0	T_1	T_2	T_3	Mean
M_0	0·61	0·69	0·78	0·65	0·68
M_1	0·82	0·95	0·75	0·93	0·86
M_2	0·98	1·03	1·20	0·92	1·03
M_3	0·91	0·93	1·20	1·03	1·02
Mean	0 83	0·90	0·98	0·88	0·90

Crop :- Arecanut. **Ref :- Ms. 65(58).**

Site :- Arecanut Res. Stn., Vittal. **Type :- 'M'.**

Object :—To study the effect of applying N, P and K' fertilizers in organic and inorganic forms on palm performance.

1. BASAL CONDITIONS :

(i) Fallow land. (ii) Laterite. (iii) Seedlings. (iv) Areca Catechu. (v) Planted in Oct. 1958 (3·7 m.× 3·7 m). (vi) 1½ years. (vii) 12 Kg. of G.L.+12 Kg. of compost/palm. (viii) Weeding and digging. (ix) Nil. (x) Irrigated. (xi) 264 cm. (xii) N.A.

2. TREATMENTS :

4 different methods of application of manures : T_1=In organic form from 6th to 15th year, T_2=In inorganic form from 6th to 15 years, T_3=In organic form from 6th to 10th year and then in inorganic form upto 15th year and T_4=In inorganic form from 6th to 10th year and then in organic form up to 15th year.

Manures applied : 25 Kg. of N+25 Kg. of P_2O_5+40 Kg. of K_2O per 500 palms per year.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) 0·01 Ha. (b) 6. (v) One raw. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Sprayed Bordeaux mixture as a precautionary measure. (iii) Arecanut yield data. (iv) (a) 1963 to 1970 (b) Yes. (c) Nil. (v) No. (vi) and (vii) Nil.

5. RESULTS :

(i) 4198 Kg/ha. (ii) 867·1 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of arecanut in Kg/ha.

Treatment	T_1	T_2	T_3	T_4
Av. yield	4484	3972	3661	4676

Crop :- Arecanut. **Ref :- Ms. 65(3).**

Site :- Arecanut Res. Stn., Hirehally. **Type :- 'C'.**

Object :—To determine optimum spacing in the main field for Arecanut.

1. BASAL CONDITIONS :

(i) Fallow. (ii) Clayey to clayey loam. (iii) Seedlings. (iv) Areca catichu. (v) 25.9.1961. (vi) 1½ year. (vii) N, P, K in the ratio of 61·7 : 61·7 : 98·8 Kg/ha. respectively (viii) Digging and weeding once in a year. (ix) Nil. (x) Irrigated. (xi) 79 cm. (xii) July to December 65(observation taken).

2. TREATMENTS :

6 spacings : S_1=1·8 m.×1·8 m., S_2=1·8 m.× 2·7 m., S_3=1·8 m.×3·7 m., S_4=2·7 m.×2·7 m., S_5=2·7 m × 3·7 m. and S_6=3·7 m.×3·7 m.

3 DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) 11·0 m.×22·0 m. (b) 20. (v) One common row all-round. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Mites in the summer season controlled by spraying of Trithion or Kethan (dose 1·3 m.l. in 1 litre of water). (iii) Girth and no. of leaves/palm. (iv) (a) 1961—contd. (b) Yes (c) Nil. (v) No. (vi) and (vii) Nil.

5. RESULTS :

Leaves/palm

(i) 6·6 leaves/palm. (ii) 0·4 leaves/palm. (iii) Treatment differences are not significant. (iv) Av. no of leaves/palm.

Treatment	S_1	S_2	S_3	S_4	S_5	S_6
Av. number	6·8	6·9	6·8	6·6	6·2	6·3

Grith in cm./palm

(i) 37·4 cm./palm. (ii) 3·0 cm./palm. (iii) Treatment differences are not significant. (iv) Av. girth in cm./palm.

Treatment	S_1	S_2	S_3	S_4	S_5	S_6
Av. girth	37·9	38·2	36·8	38·6	37·9	34·7

—·—

Crop :- Arecanut. **Ref :- Ms. 61(174), 62(156), 63(160), 64(126), 65(67).**

Site :- Reg. Arecanut Res. Stn., Thirthahally. **Type :- 'C'.**

Object :—To investigate the possibilities of growing inter crops with Arecanut and their economics.

1. BASAL CONDITIONS :

(i) Old garden. (ii) Laterite with mixture of sand. (iii) Seedlings. (iv) Local. (v) and (vi) Old garden. (vii) 22·7 Kg. of N+18·1 Kg. of P_2O_5+34·0 Kg. of K_2O per 500 palm+14 Kg. of F.Y.M. palm in the month of May 1961, 1962 ; 22·7 Kg. of N+18·1 Kg. of P_2O_5+34·0 Kg. of K_2O for 400 palms applied during 1963 ; 25·3 Kg. of N+20·8 Kg. of P_2O_5+36·7 Kg. of K_2O per 500 palms in June 1964 and 1965 ; half the dose applied in 1965 to inter crops in 1965. (viii) Weeding once in two weeks. (ix) As per treatments. (x) Irrigated. (x) 500 cm. ; 355 cm. ; 287 cm. ; 314 cm. and about 200 cm. (xii) N.A. ; Dec. 1962 ; Nov. 1963 to Jan. 1964 ; Oct. to Dec. 1964 and Oct. to Dec. 1965.

2. TREATMENTS :

6 inter crops : T_0=Control, T_1= Banana, T_2=Pineapple, T_3=Cardamom, T_4=Pepper and T_5=Betal-vine.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) N.A. for the years 1961 to 1964 and 243·8 m. × 914·4 m. for 1965. (b) N.A. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Affected with "Kalerogam", sprayed bordeaux mixture in 1961 ; Nil in 1962 ; N.A. for others. (iii) Dry weight of arecanut. (iv) (a) 1961 –contd. (b) Yes. (c) Nil. (v) No. (vi) and (vii) Nil.

5. RESULTS :

61(174)

(i) 0·8 Kg/tree. (ii) 0.2 Kg/tree. (iii) Treatment differences are significant. (iv) Av. yield of arecanut in Kg/tree.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. yield	1·0	0·7	0·7	0·8	0.5	1·1

C.D.=0·4 Kg/tree.

62(156)

(i) 0·9 Kg/tree. (ii) 0·3 Kg/tree. (iii) Treatment differences are not significant. (iv) Av. yield of arecanut in Kg/tree.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. yield	1·1	0·8	0·7	1·0	0·7	1·0

63(160)

(i) 1·1 Kg/tree. (ii) 0·3 Kg/tree. (iii) Treatment differences are not significant. (iv) Av. yield of arecanut in Kg/tree.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. yield	1·3	0·9	1·1	1·2	0·9	1·4

64(126)

(i) 1·1 Kg/tree. (ii) 0·3 Kg/tree. (iii) Treetment differences are not significant. (iv) Av. yield of arecanut in Kg/tree.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. yield	1·3	0·9	1·1	1·1	0·8	1·3

65(67)

(i) 428·7 Kg/ha. (ii) 243·0 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of arecanut in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5
Av. yield	770·4	290·4	400·3	361·0	454·1	296·0

Crop :- Arecanut. **Ref :- Ms. 61(173), 62(157), 63(163), 64(121), 65(66).**

Site :- Reg. Arecanut Res. Stn., Thirthahally. **Type :- 'C'.**

Object :—To study the suitability of growing G.M. and cover crops in the arecanut garden and their effect on the yield of Arecanut.

1. BASAL CONDITIONS :

(i) Old age garden, manures applied once in 2 years. (ii) Laterite. (iii) Seedlings. (iv) Local. (v) Old age garden ; G.M. seeds by broadcasting on 22.9.1961. (vi) Old garden. (vii) 22·7 Kg. of N+18·1 Kg. of P_2O_5+34·0 Kg. of K_2O per 500 palm in 1961, 63 ; nil in 1962 ; 13·6 Kg. of F.Y.M. per palm during July 1963 and 1965 ; 25·3 Kg. of N+20·8 Kg. of P_2O_5+36·7 Kg. of K_2O per 500 palms in 1964 and 65. (viii) Weeding once in a fortnight and digging. (ix) As per treatments. (x) Irrigated. (xi) 500 cm. ; 355 cm. ; 287 cm. ; 314 cm. ; 200 cm. (xii) 18.12.1961 ; Dec. 1962 ; Nov. 1963 to Jan. 1964 ; Nov. to Dec 1964.

2. TREATMENTS :

7 intercropping of G.M. : T_0=Control, T_1=Pharoria phosedloides, T_2=Calapagonium mucunoides, T_3=Centroseme pubeaseens, T_4=Tephrosia candida, T_5=Crotalaria stricata and T_6=Crotalaria anagyroides.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 12·2 m.×2·4 m. (b) N.A. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Affected with Kalerogam—bordeaux mixture sprayed in 1961, 62; N.A. for others. (iii) Dry weight of arecanut. (iv) (a) 1961—contd. (b) Yes. (c) Nil. (v) No. (vi) N.A. (vii) Nil.

5. RESULTS :

61(173)

(i) 4·3 Kg/tree. (ii) 1·4 Kg/tree. (iii) Treatment differences are not significant. (iv) Av. yield of dry arecanut in Kg/tree.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	5·2	4·4	3·7	3·9	4·1	4·2	4·5

62(157)

(i) 0·7 Kg/tree. (ii) 0·2 Kg/tree. (iii) Treatment differences are not significant. (iv) Av. yield of dry arecanut in Kg/tree.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	0·6	0·7	0·7	0·7	0·7	0·6	0·6

63(163)

(i) 0·9 Kg/tree. (ii) 0·6 Kg/tree. (iii) Treatment differences are not significant. (iv) Av. yield of dry arecanut in Kg/tree.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	1·0	1·0	1·1	0·9	0·8	1·0	0·9

64(121)

(i) 0·8 Kg/tree. (ii) 0·2 Kg/tree. (iii) Treatment differences are not significant. (iv) Av. yield of dry arecanut in Kg/tree.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	0·7	0·8	0·8	0·7	0·7	1·1	0·8

65(66)

(i) 271·9 Kg/ha. (ii) 105·9 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of dry arecanut in Kg/ha.

Treatment	T_0	T_1	T_2	T_3	T_4	T_5	T_6
Av. yield	312·9	251·5	312·9	284·3	270·0	224·5	247·2

Crop :- Coconut. **Ref :- Ms. 64(173), 64(174).**

Site :- Coconut Res. Stn., Arsikere. **Type :- 'CM'.**

Object :—To study the effect of different spacings and manures on Coconut seedlings.

1. BASAL CONDITIONS :

(i) Jungle. (ii) Red ; Medium black. (b) N.A. (iii) Seedlings. (iv) Local tall. (v) 19.8.64 ; 24.8.1964. Spacings as per treatments (vi) One year. (vii) Nil. (viii) Ploughing and interculturing. (ix) G.M. crop. (x) Unirrigated. (xi) 768 cm. (xii) 25.8.65 ; 31.8.1965.

2. TREATMENTS :

All combinations of (1) and (2).

(1) 2 spacings : S_1=7·3 m.×7·3 m. and S_2=9·8 m.×9·8 m.

(2) 3 manures : M_0=Control (no manure), M_1=0·112 Kg. of N+0·112 Kg. of P_2O_5 and 0·224 Kg. of K_2O per seedling and M_2=Twice of M_1.

3. DESIGN :

(i) Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 4 to 9. (v) One row alround. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Height of coconut seedlings. (iv) (a) 1964—contd. (b) N.A. (c) Nil. (v) No. (vi) and (vii) Nil.

5. RESULTS :

64(173)

(i) 109 cm./plant. (ii) 12·8 cm./plant. (iii) None of the effects is significant. (iv) Av. height/plant in cm.

	M_0	M_1	M_2	Mean
S_1	·113	99	119	110
S_2	107	107	110	108
Mean	110	103	114	109

64(174)

(i) 113 cm./plant. (ii) 13·3 cm./plant. (iii) None of the effects is significant. (iv) Av. height/plant in cm.

	M_0	M_1	M_2	Mean
S_1	125	112	112	116
S_2	111	170	96	109
Mean	118	116	104	·113

Crop :- As Per Treatments (*Rabi*). **Ref :- Ms. 63(249), 65(81).**

Site :- Agri. Res. Stn., Bagalkot. **Type :- 'X'.**

Object :—To study the effect of mixed cropping along with Cotton.

1. BASAL CONDITIONS :

(i) (a) and (b) *Jowar*. (c) N.A. (ii) Deep black. (iii) N.A. (iv) (a) Ploughing and harrowing. (b) Dibbling. (c) 7·4 Kg/ha. (d) 45 cm.×61 cm. (e) N.A. (v) 12·4 C.L./ha. of F.Y.M. for all crops, 25 Kg/ha. of N+25 Kg/ha. of P_2O_5 for Cotton, 15 Kg/ha. of N+15 Kg/ha. of P_2O_5 for Setaria and 10 Kg/ha. of N+10 Kg/ha. of P_2O_5 for Suyadhar. (vi) Cotton—Suyadhar ; Sateria–H-2. (vii) Unirrigated. (viii) Weeding, interculturing etc. (ix) 43 cm ; 26 cm. (x) N.A.

2. TREATMENTS :

6 mixed croppings : T_1=Entire Cotton, sown in normal, time, T_2=Entire groundnut followed by wheat in the same year, T_3=Cotton and groundnut in 1 : 1 ratio, T_4=Cotton and groundnut in 1 : 2 ratio, T_5=Cotton and *Korra* in 1 : 1 ratio and T_6=Cotton and *Korra* in 1 : 2 ratio.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) 9·1 m.×5·5 m. (b) 8·5 m.×4·9 m. (v) 30 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield data. (iv) (a) 1963 to 65. (b) No. As under 5. Results. (v) and (vi) N.A. (vii) Data for 1964 N.A. Error variances are homogeneous. Treatments×years interaction is present.

5. RESULTS :

(i) 294 Kg/ha. (ii) 269·2 Kg/ha. (based on 5 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
Av. value	330	177	336	296	346	282

Years	T_1	T_2	T_3	T_4	T_5	T_6	Sig.	G.M.	S.E./plot
1963	464	119	379	297	280	228	**	294	51.8
1965	197	235	293	296	411	337	**	295	66·3
Pooled	330	177	336	296	346	282	N.S.	29:	269·2

Crop :- Groundnut and Jowar (*Kharif*). **Ref -: Ms. 64(18).**

Site :- Reg. Sorghum Res. Stn., Bailhongal. **Type :- 'X'.**

Object :—To study the effect of intercropping hybrid *Jowar* with Groundnut.

1. BASAL CONDITIONS:

(i) (a) N.A. (b) *Bengal* gram. (c) 12·4 C.L./ha. of F.Y.M. (ii) Light Masari. (iii) 3.7.1964. (iv) (a) One ploughing and 6 harrowings. (b) Drilling. (c) to (e) N.A. (v) 12·4 C.L./ha. of F.Y.M. prior to sowing, 22·4 Kg/ha. of N+22·4 Kg/ha. of P_2O_5 as Nitro Phos. at the time of sowing. (vi) Groundnut : Spanish improved (early) ;Hybrid *Jowar* : MS×IS.–3691 (early). (vii) Unirrigated. (viii) 2 intercultivations and 2 weedings. (ix) 81 cm. (x) *Jowar* : 6.11.64 ; Groundnut : 23.10.64.

2. TREATMENTS:

8 ratios of rows for sowing (Groundnut : *Jowar*) : R_1=1 : 0, R_2=0 : 1, R_3=1 : 1, R_4=2 : 2, R_5=2 : 1, R_6=4 : 2, R_7=3: 1 and R_8=6 : 2.

3. DESIGN

(i) R.B.D. (ii) (a) 8. (b) 87·8 m.×9·8 m. (iii) 4. (iv) (a) 11·0 m.×9·8 m. (b) 9·1 m.×7·3 m. (v) 91 cm.×122 cm. (vi) Yes.

4. GENERAL:

(i) Normal growth for Groundnut. Due to asmy worm *Jowar* crop suffered. (ii) *Jowar* was attacked with asmy worm. Folidol 4 cc. in 18 litres of water was sprayed at first time. B.H.C. 10% and folidol 2% dust with ratio of 3 : 1 was dusted @ 22·4 Kg/ha. (iii) Yield of grain and pods. (iv) (a) and (b) No. (c) Nil (v) N.A. (vi) and (vii) Nil.

5. RESULTS:

(i) 580 Rs./ha. (ii) 113·8 Rs./ha. (iii) Treatment differences are highly significant. (iv) Av. value of produce in Rs./ha.

Treatment	R_1	R_2	R_3	R_4	R_5	R_6	R_7	R_8
Av. value	779	259	523	452	591	623	685	776

C.D.=167·4 Rs./ha.

Crop :- Jowar and Bengal gram (*Rabi*). **Ref :- Ms. 64(156).**

Site :- Soil Conservation Res. Stn., Bellary. **Type :- 'X'.**

Object: —To study the economic feasibility of mixed sowing *Jowar* and Bengal gram.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Setaria. (c) Nil. (ii) Deep black cotton soil. (iii) *Jowar* on 3.10.64; Bengal gram on 4.10.64. (iv) (a) Light harrowing. (b) Dibbling. (c) N.A. (d) 45 cm.×23 cm. (e) One. (v) Nil. (vi) *Jowar* M-47-3 (early) and Bengal gram BG-482. (vii) Unirrigated. (viii) Weeding and hand hoeing. (ix) 16 cm. (x) *Jowar* on 6.2.65 and Bengal gram on 23.1.65.

2. TREATMENTS :

4 mixed cropping treatments : T_1=*Jowar* at 91 cm. apart with one row of Bengal gram, T_2=Pure *Jowar* at 91 cm. apart, T_3=Pure *Jowar* at 46 cm. apart and T_4=Pure Bengal gram at 46 cm. apart.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) 14·6 m.×9·1 m. (iii) 6. (iv) (a) and (b) 7·3 m.×4·6 m. (v) Nil. (vi) Yes.

4. GENERAL :

(i) *Jowar*—Satisfactory ; Bengal gram—poor. (ii) Nil. (iii) *Jowar*—height, no. of leaves, leaf area, yield; Bengal gram—no. of pods and pod yield. (iv) (a) 1963 to 64. (b) Yes. (c) Nil. (v) and (vi) Nil. (vii) Expt. failed in 1963.

5. RESULTS :

(i) 479 Rs./ha. (ii) 97·4 Rs./ha. (iii) Treatment differences are highly significant. (ix) Av. value of produce in Rs./ha.

Treatment	T_1	T_2	T_3	T_4
Av. value	480	558	712	167

C.D.=119·9 Rs./ha.

Crop :- Cotton & Bengal gram (*Rabi*). **Ref :- Ms. 64(155).**

Site :- Soil Conservation Res. Stn., Bellary.

Object :—To find out the possibility of introducing intercropping in this tract.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Setaria. (c) Nil. (ii) Deep black cotton soil. (iii) Cotton on 20.9.64 and Bengal gram on 4.10.64. (iv) (a) Light harrowing. (b) Sowing by dibbling. (c) N.A. (d) Cotton—91 cm. × 30 cm.; Bengal gram—46 cm. × 23 cm. (v) Nil. (vi) Cotton—Western—1 (*Rabi*) ; Bengal gram—B.G. 482. (vii) Unirrigated. (viii) Weeding and hoeing. (ix) Cotton 21 cm. and Bengal gram 14 cm. (x) Bengal gram on 23.1.65 ; Cotton N.A.

2. TREATMENTS :

5 mixed cropping treatments : T_1=Cotton 122 cm. apart with two rows of Bengal gram, T_2=Cotton 91 cm. apart with one row of Bengal gram, T_3=Pure Cotton 91 cm. apart, T_4=Pure Cotton 122 cm. apart and T_5=Pure Bengal gram 46 cm. apart.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) 20·0 m. × 22·9 m. (iii) 4. (iv) (a) and (b) 11·0 m. × 4·6 m. (v) Nil (vi) Yes.

4. GENERAL :

(i) The condition was not quite satisfactory. (ii) Nil. (iii) Yield of produce. (iv) (a) 1963-64. (b) Yes. (c) Nil. (v) and (vi) Nil. (vii) Expt. failed in 1963.

5. RESULTS :

(i) 205 Rs./ha. (ii) 40·8 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
Av. value	248	202	241	239	95

C.D.=62·9 Rs./ha.

———

Crop :- Grass & Legume. **Ref :- Ms. 61(78), 62(94), 63(59).**

Site :- Agri. College, Dharwar. **Type :- 'X'.**

Object :—To find the suitable association of Grass and Legumes.

1. BASAL CONDITIONS :

(i) Black kulti during previous season. (ii) Red light soil. (iii) N.A. (iv) Grass—Thin Napier ; Legumes—Centrosema. (v) Transplanting on 14, 15.8.61. (vi) N.A. (vii) 12·4 C.L./ha. of F.Y.M. Spread and mixed by means of a harrow. (viii) 1 to 2 hand weedings and 2 to 4 interculturings. (ix) Nil. (x) Unirrigated. (xi) N.A. ; 87 cm. ; N.A. (xii) 3 cuttings on 24.11.1961, 30.12.1961 and 11.6.1962 ; 17.10.1962 and 18.1.1963 ; 27.8.1963 and 4.11.1963.

2. TREATMENTS :

4 Grass—Legume mixtures : C_1=Mixed sowing of grass one row and legume one row, C_2=One grass and one legume within the row, C_3=Legume seeds dibbled 15 cm. away from the grass seedlings within the row and C_4=Entire grass.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) 11·0 m.×3·7 m. (b) N.A. (v) 61 cm.×61 cm. (vi) Yes.

4. GENERAL:

(i) Normal. (ii) Nil. (iii) Height, breadth, no. of tillers, leaf to stem ratio and monetary value. (iv) (a) 1961—contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

61(78)

(i) 265 Rs./ha. (ii) 7·1 Rs./ha. (iii) Treatment differences are not significant. (iv) Av. value of produce in Rs./ha.

Treatment	C_1	C_2	C_3	C_4
Av. value	269	222	250	318

62(94)

(i) 803 Rs./ha. (ii) 148·5 Rs./ha. (iii) Treatment differences are not significant. (iv) Av. value of produce in Rs./ha.

Treatment	C_1	C_2	C_3	C_4
Av. value	810	717	840	843

63(59)

(i) 539 Rs./ha. (ii) 36·7 Rs./ha. (iii) Treatment differences are not significant. (iv) Av. value of produce in Rs./ha.

Treatmcnt	C_1	C_2	C_3	C_4
Av. value	552	572	503	528

Crop :- Grass and Legume. **Ref :- Ms. 60(80).**

Site :- Agri. College, Dharwar. **Type :- 'X'.**

Object :—To study the effective method of establishing the land with suitable Grass and Legume mixtures.

1. BASAL CONDITIONS :

(i) Since 1954 to 1958, the land was under grass museum and manured. (ii) Red light soil. (iii) N.A. (iv) As per treatments. (v) August 1958 ; method of sowing as per treatments. (vi) N.A. (vii) 12·4 C.L./ha. of F.Y.M. and 33·6 Kg/ha. of N+22·4 Kg/ha. of P_2O_5 as top dressing—hand spread and mixed by means of hoes. (viii) Light ploughing, interculturings and hand weeding. (ix) As per treatments. (x) N.A. (xi) 99 cm. (xii) 2 to 3 cuttings were taken according to seasonal varieties.

2. TREATMENTS :

Main-plot treatments :

2 methods of sowing : M_1=Sowing by seed drill and M_2=Broadcasting.

Sub-plot treatments :

All combinations of (1) and (2)

(1) 3 species of grasses : G_1=Thin napier, G_2=Rhodes and G_3=Blue panic.

(2) 3 species of legumes : L_1=Calapogonium arecunoides, L_2=Centrosome and L_3=Borbada.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 9 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 4·6 m.× 3·7 m. (b) N.A. (v) N.A. (vi) Yes.

4. GENERAL :

(i) and (ii) Nil. (iii) Grass and legumes yield and money value of the produce. (iv) (a) 1958—contd. (b) No. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 214 Rs./ha. (ii) (a) 73 2 Rs./ha. (b) 44·8 Rs./ha. (iii) Main effects of L and G are highly significant. (iv) Av. value of produce in Rs./ha.

	G_1	G_2	G_3	L_1	L_2	L_3	Mean
M_1	445	174	130	213	334	203	250
M_2	312	127	94	155	214	163	178
Mean	379	150	112	184	274	183	214
L_1	351	131	71				
L_2	426	195	200				
L_3	259	125	66				

C.D. for L or G marginal means=30·3 Rs./ha.

Crop :- Grass and Legume. **Ref :- Ms. 60(79).**

Site :- Agri. College, Dharwar. **Type :- 'X'.**

Object :—To determine the effect on the yield of growing Grass and Legume as mixture in different proportions.

1. BASAL CONDITIONS :

(i) Land used as a grazing land until 1955 when the grass was planted. Since 1955, no manuring was done. (ii) Red light soil. (iii) N.A. (iv) Grass—Thin napier ; Legumes—Calapogonium. (v) August 1955. (vi) N.A. (vii) Nil. (viii) Interculturing, hand weeding and gap filling. (ix) Nil. (x) Unirrigated (xi) 99 cm. (xii) 2 to 3 cuttings.

2. TREATMENTS :

6 ratios of grass and legume mixture: R_1=Grass alone, R_2=Legume alone, R_3=Grass and legume in the ratio 1 : 1, R_4=Grass and legume in the ratio 2 : 1, R_5=Grass and legume in the ratio 3 : 1 and R_6=Grass and legume in the ratio 5 : 1.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 6·1 m.×4·3 m. (b) N.A. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Not satisfactory. (ii) Nil. (iii) Yield and money value of the produce. (iv) (a) 1955 to 1960. (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

(i) 384 Rs./ha. (ii) 50·1 Rs./ha. (iii) Treatment differences are highly significant. (iv) Av. value of produce Rs./ha.

Treatment	R_1	R_2	R_3	R_4	R_5	R_6
Av. value	406	58	462	449	421	508

C.D.=75·3 Rs./ha.

Crop :- As Per Treatments. **Ref :- Ms. 63(76), 64(55).**

Site :- Agri. College, Dharwar. **Type :- 'X'.**

Object :—To study suitable crops which can be grown as mixed crops with errect type of Groundnut.

1. BASAL CONDITIONS :

(i) (a) Cotton, chilly, groundnut. (b) Chilly—cotton. (c) Chilly—22·4 Kg/ha. of N+16·8 Kg/ha. of P_2O_5 and Cotton—11·2 Kg/ha. of N+16·8 Kg/ha. of P_2O_5. (ii) Medium black. (iii) 16.7.1963; 3.7.1964. (iv) (a) One ploughing with wooden plough. (b) to (e) N.A. (v) Nil. (vi) Spanish improved (medium). (vii) Unirrigated. (viii) 2 interculturings and 2 hand weedings. (ix) 69 cm.; 69 cm. (x) 24.10.1963; 24.10.1964.

2. TREATMENTS :

7 cultural operations : C_1=Groundnut alone 30 cm. apart, C_2=Groundnut alone 61 cm. apart, C_3=Groundnut+Cotton, C_4=Groundnut+*Rala*, C_5=Groundnut+*Tur*, C_6=Groundnut+*Bajra* and C_7=Groundnut+*Jowar*.

From C_3 to C_7, crops were mixed in 2 : 1 ratio. Distance between cotton plants was 91 cm.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 9·1 m.×7·3 m. (b) 8·5 m.×6·7 m. (v) 30 m.×30 m. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination count, no of braches and yield data. (iv) (a) 1963—contd. (b) no. (c) As under 5. Results. (v) and (vi) Nil. (vii) Error variances are homogeneous. Treatments×Years interaction is present.

5. RESULTS :

(i) 932 Rs./ha. (ii) 342·8 Rs./ha. (based on 6 d.f. made up of Treatments×years interaction). (iii) Treatment differences are significant. (iv) Av. value of produce in Rs./ha.

Treatment	C_1	C_2	C_3	C_4	C_5	C_6	C_7
Av. value	1028	843	1404	736	1034	649	832

C.D.=419·4 Rs./ha.

Years	C_1	C_2	C_3	C_4	C_5	C_6	C_7	Sig.	G.M.	S.E./plot
1963	990	902	1698	805	1136	634	1058	**	1032	191·4
1964	1065	784	1111	668	931	664	606	**	833	151·4
Pooled	1028	843	1404	736	1034	649	832	*	932	342·8

Crop :- Ragi. and Legumes (*Kharif*). **Ref :- Ms. 60(24), 61(67).**

Site :—Agri. Res. Stn., Hebbal. **Type :- 'X'.**

Object :—To find out suitable legume mixture for *Ragi*.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Ragi. (b) 9·9 C.L./ha. of F.Y.M. in 1960 ; 7·1 C.L./ha. of compost in 1961. (ii) Sandy loam. (iii) 18.7.1960 ; 21.7.1961. (iv) (a) Ploughing and harrowing in 1960 ; 3 ploughings and 2 harrowings in 1961. (b) Drilling. (c) 7 Kg/ha. (d) 25 cm. between rows. (e) N.A. (v) 14·8 C.L./ha. of compost in 1960 and 7·4 C.L./ha. of compost in 1961 and 11·2 Kg/ha. of P_2O_5 before sowing+16·8 Kg/ha. of N one month after sowing as top dressing in both the years. (vi) H-22. (vii) Unirrigated. (viii) Weeding in 1960 ; thinning with Chippa kunta and hand weeding. (ix) 82 cm. ; 72 cm. (x) 29.11.1960 ; 7.12.1961.

2. TREATMENTS :

5 mixed cropping : T_1=Ragi+Horse gram, T_2=Ragi+Green gram, T_3=Ragi+Dholicose lab-lab (Avare), T_4=Ragi+Jhoga and C_5=Ragi alone.

3. DESIGN:

(i) R.B.D. in 1960 and L. sq. in 1961. (ii) (a) 5. (b) 29·9 m.×11·0 m. (iii) 5. (iv) (a) N.A., ; 12·2 m.× 5·5 m. (b) 11·0 m.×5·5 m. ; 21·2 m.×5·5 m. (v) N.A. ; Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Tiller count and yield data in monetary value. (iv) (a) 1960 to 1962. (b) No. (c) As under 5. Results. (v) and (vi) Nil. (vii) Error variances are himogeneous. Treatments × Years interaction is present.

5. RESULTS :

(i) 999 Rs./ha. (ii) 379·0 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. value	936	1040	1020	1024	974

Years	T_1	T_2	T_3	T_4	T_5	Sig.	G.M.	S.E./plot
1960	753	995	1112	1085	1053	**	1000	117·3
1961	1120	1086	927	995	863	N.S.	998	149·5
Pooled	936	1040	1020	1024	974	N.S.	999	379·0

Crop :- Jowar and Groundnut (*Kharif*). **Ref :- 62(265), 63(225), 64(189).**

Site :- Agri. Res. Stn., Raichur. **Type :- 'X'.**

Object :—To study the economic feasibility of mixed cropping of *Jowar* and Groundnut.

1. BASAL CONDITIONS:

(i) (a) *Jowar*, Groundnut. (b) *Jowar*. (c) N.A. (ii) Red soil. (iii) 3.6.1962 ; 30.6.1963 ; N.A. (iv) (a) 2 wooden ploughings and 3 to 4 harrowings. (b) Drilling. (c) *Jowar*—6 to 7 Kg/ha; Groundnut—67 Kg/ha. (d) N.A. (e) —. (v) 12·4 C.L./ha. of F.Y.M. (vi) *Jowar*—D-3-40 ; Groundnut—TMV-2. (vii) Unirrigated. (viii) Weeding and interculturing. (ix) 84 cm. ; 64 cm. ; 89 cm. (x) N.A. ; 17.12.1963 ; N.A.

2. TREATMENTS :

8 mixed cropping treatments : T_1=*Jowar* and Groundnut mixed in the ratio 1: 1, T_2=*Jowar* and Groundnut mixed in the ratio 2 : 1, T_3= *Jowar* and Groundnut mixed in the ratio 3 : T^4=*Jowar* and Groundnut 1 row each, T_5=2 rows of *Jowar* and 1 row of Groundnut, T_6=3 rows of *Jowar* and 1 row of Groundnut, T_7=Groundnut entire and T_8=*Jowar* entire.

3. DESIGN :

(i) R.B D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) and (b) 8.2 m.×12·2 m. in 1962 ; 5·5 m.×7·3 m. in 1963 and 1964. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Grain and pod yield. (iv) (a) 1962—N.A. (b) No. (c) As under 5. Results, (v) No. (vi) Nil. (vii) Error variances are heterogeneous. Treatments×years interaction is present.

5. RESULTS :

(i) 482 Rs./ha. (ii) 259·3 Rs./ha. (based on 14 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	T_8
Av. value	542	552	433	474	417	526	596	320

Years	T_1	T_2	T_3	T_4	T_5	T_6	T_7	T_8	Sig.	G.M.	S.E./plot
1962	150	777	368	355	396	290	207	416	**	370	111·3
1963	518	465	412	529	457	488	504	495	N.S.	471	98·6
1964	739	795	680	604	438	673	506	415	N.S.	606	290·0
Pooled	542	552	433	474	417	526	596	320	N.S.	482	259·3

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Crop :- Jowar and Tur (*Kharif*). **Ref :- Ms. 62(266), 63(226), 64(190).**

Site :- Agri. Res. Stn., Raichur. **Type :- 'X'.**

Object :—To find out the best and most economical mixture of *Tur* and *Jowar* for dry cultivation.

1. BASAL CONDITIONS :

(i) (a) *Jowar*, *Tur*. (b) *Jowar*. (c) N A. (ii) Red soil. (iii) 22.6.1962 ; 2.7.1963. (iv) (a) 2 wooden ploughings and 3 to 4 harrowings. (b) Drilling. (c) *Jowar*-6·7 Kg/ha; *Tur* 9-Kg/ha. (d) and (e) N.A. (v) 12·4 C L./ha. of F.Y.M. (vi) Tur—C. 28 ; *Jowar* D-3-40. (vii) Unirrigated. (viii) Weeding and interculturing. (ix) 84 cm. ; 64 cm. ; 89 cm. (x) 15.1.1963 ; 13.1.1964 ; N.A.

2. TREATMENTS :

7 mixed cropping : T_1=12 rows of *Kharif Jowar* alone, T_2=12 rows of *Tur* alone, T_3=Alternate rows of *Jowar* and *Tur*, T_4=2 rows of *Jowar* and 1 row of *Tur*, T_5=3 rows of *Jowar* and 1 row of *Tur*, T_6=3/4 *Jowar*+1/4 *Tur* mixed (*Jowar* and *Tur* in 284 gm. : 35 gm.) and T_7=½ *Jowar*+½ *Tur* mixed (*Jowar* and *Tur* in 14 gm. : 21 gm.)

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 22·7 m.×5·5 m. ; 7·3 m.×5 5 m. in 1963, 1964. (b) 22·1 m.×4·6 m. ; 7·3 m.×5·5. in 1963, 1964. (v) 30 cm. ×46 cm. for 63 ; Nil for 64. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield data. (iv) (a) 1961—N.A. (b) No. (c) As under 5. Results. (v) N.A. (vi) Nil. (vii) Error variances are heterogeneous. Treatments × Years interaction is present. Only the expt. for 63 and 64 have been pooled. Expt. for 1962 has not pooled as the treatment no. 4, failed.

5. RESULTS :

(i) 618 Rs./ha. (ii) 479·2 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_7
Av. value	501	586	690	834	683	347	686

Years	T_1	T_2	T_3	T_4	T_5	T_6	T_7	Sig.	G.M.	S.E./plot
1962	28	649	503	—	336	332	365	**	369	69·7
1963	242	396	417	464	487	487	345	**	405	79·6
1964	760	776	962	1204	878	207	1027	**	831	309·8

Crop :- Jowar, **Groundnut and Cotton.** **Ref :- Ms. 60(105), 61(79), 62(91), 63(90).**

Site :- Agri. Res. Stn., Saundathi **Type :- 'R'.**

Object :—To find out a suitable rotation for cotton with and without a lagume in the rotation.

1. BASAL CONDITIONS :

(i) (a) to (c) As per treatments. (ii) Medium black. (iii) *Jowar* and Groundnut 9.7.60., cotton N.A. ; 6.7.61 to 23.8.61 ; *Jowar* 5.7.62, Groundnut 4.7.62, cotton 22.8.62 ; *Jowar* 30.6.63; Groundnut 30.6.63; cotton 24.8.63. (iv) (a) 3 harrowings for *Jowar* and Groundnut and 4 harrowings for cotton. (b) Sown by drill (c) *Jowar* 7 Kg/ha., groundnut 112 Kg/ha., cotton 11 Kg/ha. (d) *Jowar* 30 cm. × 10 cm. ; groundnut 30 cm. × 15 cm. ; cotton 61 cm. × 15 cm. (e) N.A. (v) Nil. (vi) *Jowar*-Fulgar white ; Groundnut—spanish improved—Cotton—Jayodhar. (vii) Unirrigated. (viii) 3 to 4 interculturings. (ix) N.A. (x) *Jowar* 27.12.60, groundnut 3.11.60, cotton N.A. ; 31.12.61 to 21.4.62. ; 4.1.63 to 15.3.63 ; N.A.

2. TREATMENTS :

Treatment No.	The cycle of rotations 1960	1961	1962	1963	1964	Treatment No.	The cycle of rotations				
1.	Cm	Cm	Cm	Cm		17.	G	Jm	G	Jm	
2.	C	Cm	C	Cm		18.	Jm	G	Jm	G	
3.	Cm	C	Cm	C		19.	Gp	J	Gp	J	
4.	Jm	Jm	Jm	Jm		20.	J	Gp	J	Gp	
5.	J	Jm	J	Jm		21.	C	Jm	G	C	
6.	Jm	J	Jm	J		22.	Jm	G	C	Jm	
7.	Jm	C	Jm	C		23.	G	C	Jm	G	
8.	C	Jm	C	Jm		24.	Jm	C	G	Jm	
9.	G	C	G	C		25.	C	G	Jm	C	
10.	C	G	C	G		26.	G	Jm	C	G	
11.	G	Cm	G	Cm		27.	C	Jm	Gp	C	
12.	Cm	G	Cm	G		28.	Jm	Gp	C	Jm	
13.	Gp	C	Gp	Cp		29.	Gp	C	Jm	Gp	
14.	C	Gp	C	G		30.	Jm	Cp	Gp	Jm	
15.	G	J	G	J		31.	C	G	Jm	C	
16.	J	G	J	G		32.	Gp	Jm	C	Gd	

C=Cotton, J=*Jowar*, G=Groundnut, m= 12·35 C.L./ha. of F.Y.M. and p= 44·8 Kg/ha. of P_2O_5. Details of treatments for the years 1951 to 1953 and 1954 to 1959 may please be referred to on page 441 of Vol. IX, part I and on page 738 of vol. IX part II respectively.

3. DESIGN :

(i) R.B.D. (ii) (a) 32. (b) 141 m.×57·3 m. (iii) 6. (iv) (a) 17·6 m.×8·2 m. (b) Varying from treatment to treatment. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) Yield of *Jowar*, Groundnut and Cotton. (iv) (a) 1951—63. (b) As per rotations. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

60(105)

Groundnut

(i) 827 Kg/ha. (ii) 92·5 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of pods in Kg/ha.

Treatment No.	9	11	13	15	17	19	23	26	29	32
Av. yield	768	826	907	682	855	833	788	818	937	853

C.D.=107·8 Kg/ha.

Jowar

(i) 1679 Kg/ha. (ii) 345·8 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment No.	4	5	6	7	16	18	20	22	24	28	30
Av. yield	1274	786	1014	1654	801	2564	1958	1606	2638	1382	2786

C.D.=401·4 Kg/ha.

Cotton

(i) 777 Kg/ha. (ii) 197·6 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of *Kapas* in Kg/ha.

Treatment No.	1	2	3	8	10	12	14	21	25	27	31
Av. yield	1050	946	697	739	479	690	894	746	746	822	733

C.D.=229·4 Kg/ha.

61(79)

Groundnut

(i) 1808 Kg/ha. (ii) 218·9 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of pods in Kg/ha.

Treatment No.	10	12	14	16	18	20	22	25	28	31
Av. yield	1405	2096	1778	1269	1900	1853	1895	1659	2025	2205

C.D.=254.6 Kg/ha.

Jowar

(i) 1863 Kg/ha. (ii) 573·8 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment No.	4	5	6	8	15	17	19	21	26	27	32
Av. yield	1824	1425	1422	1910	992	2374	1490	2055	2457	2173	2369

C.D.=665·7 Kg/ha.

Cotton

(i) 246 Kg/ha. (ii) 93·8 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of *Kapas* in Kg/ha.

Treatment No.	1	2	3	7	9	11	13	23	24	29	30
Av. yield	214	236	229	249	210	229	362	340	171	291	177

C.D.=108·9 Kg/ha.

62(91)

Groundnut

(i) 1075 Kg/ha. (ii) 143·8 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of pods in Kg/ha.

Treatment No.	9	11	13	15	17	19	21	24	27	30
Av. yield	901	1194	1045	888	1024	1020	1109	1059	1216	1292

C.D.=167·4 Kg/ha.

Jowar

(i) 1781 Kg/ha. (ii) 427·8 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment No.	4	5	6	7	16	18	20	23	25	29	31
Av. yield	1895	1265	1366	1911	1028	2372	1685	1517	2407	1636	2505

C.D.=496·3 Kg/ha.

Cotton

(i) 558 Kg/ha. (ii) 164·6 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of *Kapas* in Kg/ha.

Treatment No.	1	2	3	8	10	12	14	22	26	28	32
Av. yield	745	570	432	544	364	546	632	475	540	690	603

C.D.=191·0 Kg/ha.

63(90)

Groundnut

(i) 455 Kg/ha. (ii) 60·0 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of pods in Kg/ha.

Treatment No.	10	12	14	16	18	20	23	26	29	32
Av. yield	327	509	428	340	452	462	507	414	586	522

C.D.=69·8 Kg/ha.

Jowar

(i) 737 Kg/ha. (ii) 166·1 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment No.	4	5	6	8	15	17	19	22	24	28	30
Av. yield	755	514	500	694	497	1032	779	690	999	652	992

C.D.=192·7 Kg/ha.

Cotton

(i) 266 Kg/ha. ii) 64·4 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of *Kapas* in Kg/ha.

Treatment No.	1	2	3	7	9	11	13	21	25	27	31
Av. yield	369	357	236	273	185	256	246	258	213	299	236

C.D.=74·8 Kg/ha.

Crop :- As Per Rotation. **Ref :- Ms. 63(120).**

Site :- Agri. Res. Stn., Dharwar. **Type :- 'R'.**

Object :—To find out suitable crops that can be rotated with Cotton.

1. BASAL CONDITIONS :

(i) (a) and (b) As per treatments. (c) 62·8 Q/ha. of F.Y.M. (ii) Deep black cotton soil. (iii) Cotton 1.8.63 ; Groundnut 1.7.63 ; *Jowar* 11.7.63 and wheat 10.2.64. (iv) (a) 2 ploughings, cross ploughing and 3 harrowings. (b) to (e) N.A. (v) Nil. (vi) Cotton—Jayadhar, N.A. for others (vii) Unirrigated. (viii) 3 interculturings and 3 weedings. (ix) 50 cm. (x) 18.12.63 to 10.2.64.

2. TREATMENTS :

9 crop rotations : R_1=*Jowar*-cotton, R_2=Cotton-*Jowar*, R_3=*Jowar*-cotton, R_4=Groundnut-*Jowar*, R_5=Cotton-groundnut, R_6=*Jowar*-cotton, R_7=Groundnut-*Jowar*, R_8=Wheat-groundnut and R_9=Cotton-wheat.

62·8 Q/ha. of F.Y.M. applied to *Jowar* at preparatory tillage, top dressing of *Jowar* at 28·0 Kg/ha. of N as A/s+28·0 Kg/ha. of P_2O_5 as Super, cotton at 22·4 Kg/ha. of N as A/S+11·2 Kg/ha. of P_2O_5 as Super and groundnut at 11·2 Kg/ha. of N as A/S+28·0 Kg/ha. of P_2O_5 as Super.

3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 6·1 m.×7·0 m. (v) 2 rows alround. (vi) Yes.

4. GENERAL :

(i) Fair (ii) Nil. (iii) Yield of grain, pods and *Kapas*. (iv) (a) N.A. (b) and (c) Nil. (v) to (vii) N.A.

5. RESULTS :

Cotton

(i) 514 Kg/ha. (ii) 179·2 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of *Kapas* in Kg/ha.

Treatment	R_1	R_3	R_6
Av. yield	481	527	533

Jowar

(i) 1656 Kg/ha. (ii) 297·2 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield of grain in Kg/ha.

Treatment	R_2	R_4	R_7
Av. yield	2099	1543	1327

C.D.=433·6 Kg/ha.

Groundnut

(i) 2440 Kg/ha. (ii) 463·7 Kg/ha. (iii) Treatment differences are not significant. (iv) Av. yield of pods in Kg/ha.

Treatment	R_5	R_8
Av. yield	2385	2496

Wheat

Treatment	R_9
Av. yield in Kg/ha.	393

Crop :- As Per Rotation. **Ref :- Ms. 63(124).**

Site :- Agri. Res. Stn., Gadag. **Type :- 'R'.**

Object :—To determine a suitable crop that can be grown in rotation with Cotton.

1. BASAL CONDITIONS :

(i) (a) and (b) As per treatments. (c) 62·8 Q/ha. of F.Y.M. (ii) Medium black cotton soil. (iii) Setaria —29.10.63; Groundnut—30.10.63; *Jowar*—17.12.63 and Cotton—N.A. (iv) (a) 4 harrowings and opening furrows. (b) Dibbled in furrows. (c) N.A. (d) 30 cm. between rows. (e) N.A. (v) 62·8 Q/ha. of F.Y.M. (vi) Cotton—*Laxmi*, N.A. for others. (vii) Unirrigated. (viii) Weeding. (ix) 53 cm. (x) 29.10.63 to 17.3.64.

2. TREATMENTS:

6 crop rotations : R_1=*Jowar*—Cotton, R_2=Cotton—*Jowar*, R_3=Groundnut—Cotton, R_4=Cotton—Groundnut, R_5=Setaria—Cotton and R_6=Cotton—Setaria.

62·8 Q/ha. of F.Y.M. applied to *Jowar* in preparatory tillage. Top dressing after sowing for *Jowar*+Setaria—16·8 Kg/ha. of N as A/S, for Groundnut—11·3 Kg/ha. of N as A/S+22·6 Kg/ha. of P_2O_5 as Super and for Cotton—28·0 Kg/ha. of N as A/S+28·0 Kg/ha. of P_2O_5 as Super.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) 12·2 m.×5·5 m. (b) 11·6 m.×4·5 m. (v) 30 cm.×30 cm. (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield of grain, pods and *kapas*. (iv) (a) and (b) N.A. (c) Nil. (v) Dharwar and Bagalkot. (vi) Scarcity of rainfall. (vii) As the analysis is possible for cotton crop only, for other crops the average yield has been given in 5. Results.

5. RESULTS:

Cotton

(i) 257 Kg/ha. (ii) 82·1 Kg/ha. (iii) Treament differences are not significant. (iv) Av. yield of *kapas* in Kg/ha.

Treatment	R_1	R_3	R_5
Av. yield	298	272	201

Jowar : R_1=462 Kg/ha. ; Groundnut : R_4=240 Kg/ha. ; Setaria : R_6=182 Kg/ha.

Crop :- As Per Rotation. **Ref :- Ms. 63(125).**

Site :- Agri. Res. Stn., Bagalkot. **Type :- 'R'.**

Object :—To determine suitable crops that can be grown in rotation with Cotton.

1. BASAL CONDITIONS :

(i) (a) and (b) As per treatments. (c) 62·8 Q/ha. of F.Y.M. (ii) Medium black cotton soil. (iii) Cotton—4.9.63; Groundnut, Setaria and *Jowar*—13.8.63. (iv) (a) Ploughing and cross ploughing twice, harrowing and levelling. (b) Dibbled in furrows. (c) and (d) 30 cm. between rows. (e) N.A. (v) 62·8 Q/ha. of F.Y.M. applied at tillering stage. (vi) Suyodhar. (vii) Unirrigated. (viii) 2 intercultivations and 3 weedings. (ix) 40 cm. (x) Groundnut 12.11.63; Setaria 11.11.63; *Jowar* 19.2.64 and Cotton 3.3.64 and 31.3.64.

2. TREATMENTS and 3. DESIGN :

Same as in expt no. 63(124) on page 622.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Yield data. (iv) (a) N.A. (b) No. (c) Nil. (v) N.A. (vi) and (vii) N.A.

5. RESULTS :

(i) 338 Kg/ha. (ii) 61·7 Kg/ha. (iii) Treatment differences are highly significant. (iv) Av. yield in Kg/ha.

Treatment	R_1	R_2	R_3	R_4	R_5	R_6
Av. yield	374	397	383	165	355	354

C.D.=73·3 Kg/ha.

Crop :- Cotton (*Rabi*). **Ref :- Ms. 64(115).**

Sitc :- Agri. Res. Stn., Naragund. **Type :- 'M'.**

Object : -To study the effect of different doses of Sulphur with and without F.Y.M. for the reclamation of alkaline soils on the yield of Cotton and Wheat grown in rotation.

1. BASAL CONDITIONS :

(i) (a) Wheat-Cotton. (b) Wheat. (c) As per treatments under item 2. (ii) Light to medium black. (iii) 23.9.64. (iv) (a) Harrowing. (b) Seed drilling. (c) 11·2 Kg/ha. (d) 76 cm. (e) N.A. (v) 56 Q./ha. F.Y.M. (vi) Jayadhar. (vii) Unirrigated. (viii) Hand weeding and 4 times interculturing by entire hoe. (ix) 107 cm. (x) 5, 15.3.65, 5.4.65.

2. TREATMENTS:

Main-plot treatments

2 rotation treatments : R_1=Sulphur applied to both the crops, R_2=Sulphur applied to cotton only,

Sub-plot treatments

All combinations of (1) and (2)

(1) 3 doses of Sulphur : S_0=0, S_1=168 and S_2= 336 Kg/ha.

(2) 2 doses of F.Y.M. : F_0=0 and F_1=56 Q/ha.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 6 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 6·1 m. ×11·0 m. (b) 4·6 m.×9·8 m. (v) 76 cm.×61 cm. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) No. of plants, boll count and yield data. (iv) (a) 1959, 60(147), 61(145), 62(135), 63(119) contd. (b) Yes. (c) Nil. (v) to(vii) Nil.

5. RESULTS :

(i) 486 Kg/ha. (ii) (a) 209·3 Kg/ha. (b) 113·6 Kg/ha. (iii) F effect is significant. S effect is highly significant. (iv) Av. yield of grain in Kg/ha.

	F_0	F_1	S_0	S_1	S_2	Mean
R_1	439	546	393	509	575	492
R_2	454	505	365	525	549	480
Mean	446	526	379	517	562	486
S_0	373	385				
S_1	459	575				
S_2	507	617				

C.D. for S marginal means =82·1 Kg/ha.
C.D. for F Marginal means=67·0 Kg/ha.

Crop :- Cotton & Wheat (*Rabi*). **Ref :- Ms. 65(103).**

Site :- Agri. Res. Stn., Naragund. **Type :- 'X'.**

Object :—To study the effect of different doses of sulphur with and without F.Y.M. for the reclamation of karl soil.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Wheat and cotton respectively. (c) As per treatments. (ii) Alkaline. (iii) Cotton 22.9.65; wheat 3.11.65. (iv) (a) Harrowing 2 times for wheat and 3 times for cotton plots. (b) Seed drill sowing. (c) Cotton 11·2 Kg/ha; wheat 44·8 Kg/ha. (d) Cotton 76 cm. and wheat 36 cm. between lines. (e) N.A. (v) Nil. (vi) Wheat —Amrut (90 to 100 days) ; cotton—Jayadhar (140 days). (vii) Unirrigated. (viii) Interculturing to cotton only by hoe. (ix) 36·8 cm. (x) Wheat 20.2.66; cotton 18.2.66 to 26.3.66.

2. TREATMENTS :

Main-plot treatments

2 rotational treatments : R_1=Cotton and wheat R_2=Cotton only.

Sub-plot treatments

All combinations of (1) and (2)

(1) 2 levels of F.Y.M. : F_0=0 and F_1=12·4 C.L./ha.

(2) 3 doses of Sulphur : S_0=0, S_1=168, and S_2=336 Kg/ha.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 6 sub plots/main plot. (b) N.A. (iii) 4. (iv) (a) 6·1 m.× 11·0 m. (b) 4·6 m.×9·8 m. (v) 76 cm.×61 cm. (vi) Yes.

4. GENERAL :

(i) Normal for cotton. N.A. for wheat. (ii) Nil. (iii) Yield data. (iv) (a) 64-contd. 64(92). (b) Yes. (c) Nil. (v) to (vii) Nil.

5. RESULTS :

Cotton

(i) 303 Kg/ha. (ii) (a) 271·7 Kg/ha. (b) 84·0 Kg/ha. (iii) Main effect of S alone is highly significant. (iv) Av. yield of *Kapas* in Kg/ha.

	S_1	S_2	S_3	F_0	F_1	Mean
R_1	162	277	359	228	304	266
R_2	252	345	421	329	349	339
Mean	206	311	390	279	326	302
F_0	197	287	351			
F_1	216	335	429			

C.D. for S marginal means=49·4 Kg/ha.

Wheat

(i) 159 Kg/ha. (ii) (a) 148·8 Kg/ha. (b) 62·7 Kg/ha. (iii) Main effect of S alone is significant. (iv) Av. yield of grain in Kg/ha.

	S_1	S_2	S_3	R_0	R_1	Mean
R_1	126	159	207	163	164	164
R_2	114	203	147	158	152	155
Mean	120	181	176	160	158	159
F_0	118	173	191			
F_1	122	189	162			

C.D. for S marginal means =36·9 Kg/ha.

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