INSTITUTE OF AGRICULTURAL RESEARCH STATISTICS

NATIONAL INDEX

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AGRICULTURAL

FIELD

EXPERIMENTS

VOL. 5 PART 1

KERALA

1948—53

सत्यमेव जयते

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FOREWORD

It is a well recognized fact that the level of agricultural production in India is one of the lowest in the world and it is only by the exploitation of scientific methods of agriculture that we can hope to increase our agricultural production to the level necessary for providing a reasonable standard of living to the country's population. Properly planned and conducted field experiments provide a reliable basis for propagating improved agricultural techniques among farmers. A number of research institutes and other experimental centres are functioning under the Central Ministry of Agriculture, the Commodity Committees and the State Governments, in which research on agricultural problems is going on. The need for an integrated account of the researches done in these organisations and institutions in the country has been felt for a long time, particularly in the context of planning. The absence of such a unified account has often led to duplication of work and delay in the utilisation of the results for practical farming. The Institute of Agricultural Research Statistics of the Indian Council of Agricultural Research has, therefore, rendered a most timely service by preparing a compendium of all agricultural field experiments conducted in India upto 1953 and similar compendia are under preparation by the Institute for subsequent years.

The present compendium contains critical summaries of results of experiments bearing on important agronomic factors such as the responses of crops to fertilizers and manures, inter-relationship of fertilizers, varieties and cultivation practices and other information of value for giving sound advice to farmers in different regions. I am sure that these results will be fully utilised by agricultural institutions, research workers, planners and extension organisations. The chief merit of the present publication is that it brings together in one place the results of experimentation carried out under diverse soil, climatic and agricultural conditions obtaining in India. Workers in one State can thus supplement data for their own area by results from other regions where conditions may be similar and thereby re-inforce their own conclusions. For the same reason I hope that this publication will be of use to workers in other countries also.

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

A.D. PANDIT
Vice-President,
Indian Council of Agricultural Research.

NEW DELHI,
August 20, 1962.

PREFACE

A large number of agricultural field experiments on different problems is being conducted in the country by Central and State Governments, Research Institutes, Commodity Committees and other organisations engaged in agricultural research. In addition, a number of schemes involving field experimentation is sponsored by the Indian Council of Agricultural Research in different States. The absence of a unified record of the results of these various experiments has considerably handicapped planning of further research and development and has often led to duplication of efforts.

Vaidyanathan brought out in 1933 a useful catalogue of manurial experiments conducted in India till then. Considering that Vaidyanathan's work was confined to manurial experiments and the fact that an enormous increase has taken place in the number and scope of agronomic experiments in recent years in India, the Indian Council of Agricultural Research launched the scheme of National Index of Field Experiments in 1954. The object of the scheme was two-fold :

(i) the preparation of compendium of all the field experiments for the period 1935-53 and

(ii) the preparation of index cards for individual experiments from 1954 onwards.

Under the scheme, results of all agricultural field experiments other than purely varietal trials were to be consolidated. Subsequently at the time of the extension of the scheme in 1959 it was decided that the compendium would be prepared in the first instance for the period 1948-53 and a similar compendium would be prepared for the period 1954-59. The present series for the period 1948-53 has been prepared in pursuance of this decision.

The compendium is divided into 15 volumes one each for (1) Andhra Pradesh (2) Assam, Manipur and Tripura (3) Bihar (4) Gujarat (5) Kerala (6) Madhya Pradesh (7) Madras (8) Maharashtra (9) Mysore (10) Orissa (11) Punjab, Jammu & Kashmir and Himachal Pradesh (12) Rajasthan (13) Uttar Pradesh (14) West Bengal and (15) all Central Institutes. In each volume back-ground information of the respective State regarding its physical features, soils, rainfall and climate, agricultural production and area under different crops is given. A map showing different regions of the State, soils and agricultural research farms is also included. The experiments reported in each volume have been arranged cropwise for each State. All the experiments belonging to a particular crop at various research stations are grouped together. For a particular crop, experiments are arranged according to the following classification :

Manurial (M), Cultural (C), Irrigational (I), Diseases, Pests and Chemicals other than fertilisers (D), Rotational (R), Mixed Cropping (X) and combinations of these wherever they occur (e.g., CM as Cultural-cum-Manurial). Experiments in which crop varieties also form a factor are denoted by adding V to their symbol and are given together (e.g., MV as Manurial-cum-Varietal). The results of an experiment are given along with other basic information such as rotation of crops followed, cultural practices adopted, etc.

For making maximum use of the experimental data all the important tables giving the average yields of various treatments along with the appropriate standard errors have been presented. No attempt has, however, been made to summarise the data of groups of experiments on any particular item and to draw any general conclusions. This will be done for the period 1948-59 while publishing the compendium for the period 1954-59.

This publication is the result of the co-operative endeavour of a large number of persons both at the Centre and in the States. I should particularly mention in this connection, guidance and help rendered in the formulation of the scheme by Dr. D.J. Finney F.R.S. of Aberdeen University, Scotland, during his stay at the Institute of Agricultural Research Statistics as an F.A.O. Statistical Expert in 1952-53.

At the Institute of Agricultural Research Statistics, the work under the scheme was carried out under the supervision and guidance of Shri T.P. Abraham, Assistant Statistical Adviser. Shri G.A. Kulkarni, Statistician, looked after the detailed working of the scheme. These officers have been largely responsible for the preparation of the manuscript of the compendium and it is a pleasure to thank them for the hard work they have put in for getting this compendium ready. Messrs O.P. Kathuria, B.V. Srikantiah, M.L. Sahni, B.P. Dyundi, S.D. Bal and P.K. Jain of the statistical staff of the Institute deserve special mention for their careful scrutiny of the data and preparation of the material for the compendium. Thanks are also due to Dr. Uttam Chand, Professor of Statistics, now with the Central Statistical Orgainsation, Shri K.S. Avadhany, Assistant Statistician, also now with the Central Statistical Organisation, and Shri K.C. Raut, Statistician in this office who were associated with the scheme in its initial stages.

The burden of collecting data from original records by visiting different research stations and the analysis of a large number of experiments, only the primary data for which had been recorded in the files, fell on the regional staff appointed by the Indian Council of Agricultural Research in different States. They deserve to be congratulated for the patient work they have put in. The State Departments of Agriculture, Central Institutes and Commodity Committees made data for the experiments conducted within their jurisdiction readily available. The Indian Council of Agricultural Research acknowledges this willing co-operation without which the consolidation of the results would not have been possible. Various State officers who helped the project by making the data accessible to the satistical staff of the project and worked as the regional supervisors for the scheme also deserve thanks by the Council for their active help. The list of names of the regional supervisors is given on the following page.

V.G. Panse

Statistical Adviser

Institute of Agricultural Research Statistics

(I.C.A.R.)

New Delhi,

August 16, 1962.

REGIONAL SUPERVISORS FOR THE NATIONAL INDEX OF FIELD EXPERIMENTS

	Region and headquaters	Regional Supervisors :
1.	ANDHRA PRADESH (HYDERABAD)	SHRI D.V.G. KRISHNAMOORTHY, Deputy Director of Food Production, Andhra Pradesh. SHRI JAGANNATH RAO, Joint Director of Agriculture (Research), Andhra Pradesh. DR. KHADRUDDIN KHAN, Joint Director of Agriculture (Research), Andhra Pradesh. DR. WAHIUDDIN, Headquarters Deputy Director of Agriculture (Research), Andhra Pradesh.
2.	ASSAM, MANIPUR AND TRIPURA (SHILLONG)	SHRI L.K. HANDIQUE, Director of Agriculture, Assam. SHRI S. MAJID, Director of Agriculture, Assam. DR. S.R. BAROOHA, Director of Agriculture, Assam.
3.	BIHAR (SABOUR)	DR. R. RICHARIA, Principal, Agriculture College, Sabour. SHRI R.S. ROY, Principal, Agriculture College, Sabour.
4.	KERALA (TRIVANDRUM)	SHRI N. SHANKARA MENON, Director of Agriculture, Kerala. SHRI P.D. NAIR, Director of Agriculture, Kerala.
5.	MADHYA PRADESH (GWALIOR)	DR. T.R. MEHTA, Principal, Agriculture College, Gwalior.
6.	MADRAS (COIMBATORE)	SHRI C.R. SHESHADRI, Vice-Principal & Secretary, Research Council, Agriculture College, Coimbatore. SHRI P.A. VENKATESWARAN, Vice-Principal & Secretary, Research Council, Agriculture College, Coimbatore. LATE SHRI M. BHAVANI SANKARA RAO, Vice-Principal & Secretary, Research Council, Agriculture College, Coimbatore. SHRI T. NATARAJAN, Agronomist & Secretary, Research Council, Agriculture College, Coimbatore. SHRI A.H. SARMA, Extension Specialist & Secretary, Research Council, Agriculture College, Coimbatore.
7.	MAHARASHTRA & GJUARAT (FORMER BOMBAY STATE) (POONA)	SHRI D.S. RANGA RAO, Statistician, Department of Agriculture, Poona.

*Owing to transfers and other changes more than one Regional Supervisor have been shown against several states as these officers have acted as Regional Supervisors during different periods from 1955 to 1962.

8.	Mysore (Bangalore)	Shri A. Anant Padmanabha Rau, State Statistician, Mysore State.
9.	Orissa (Bhubaneshwar)	Dr. U.N. Mohanty, Dy. Director of Agriculture (H.Q.), Orissa.
10.	Punjab, Jammu & Kashmir and Himachal Pradesh (Chandigarh)	Shri P.S. Sahota, Satistician, Department of Agriculture, Punjab.
11.	Rajasthan (Jaipur)	Shri H.C. Kothari, Satistician, Department of Agriculture, Rajasthan.
12.	Uttar Pradesh (Lucknow)	Dr. K. Kishen, Chief Statistician to Govt. of U.P. Department of Agriculture, U.P.
13.	West Bengal (Calcutta)	Shri S.N. Mukherjee, Statistical Officer, Directorate of Agriculture, West Bengal. Dr. S. Basu, Statistical Officer, Directorate of Agriculture, West Bengal.

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

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

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

Abbreviations adopted for States are as follows :-

A.P.	Andhra Pradesh	Mn.	Manipur
As.	Assam	Mh.	Maharashtra
Bh.	Bihar	Ms.	Mysore
Dl.	Delhi	M.P.	Madhya Pradesh
Gj.	Gujarat	Or.	Orissa
H.P.	Himachal Pradesh	Pb.	Punjab
J.K.	Jammu & Kashmir	Rj.	Rajasthan
K.	Kerala	Tr.	Tripura
M.	Madras	U.P.	Uttar Pradesh
		W.B.	West Bengal

Repetition of the experiment in other years is indicated in the same line against 'reference' by stating the year and serial number for each repetition side by side *e.g.* U.P. 53(19)/52(42)/51(20) etc.

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

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

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

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

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

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

Abbreviations used in the text of the experiments :-

ac.—acre.	C.L.—Cart load.
Ammo. Phos.—Ammonium Phosphate.	C.M.—Cattle Manure.
A/N—Ammonium Nitrate.	C/N—Chilean Nitrate.
A/S—Ammonium Sulphate.	C/S—Copper Sulphate.
B.D.—Basal Dressing.	F.M.—Fish Meal or Fish Manure.
B.M.—Bone Meal.	F.W.C.—Farm Waste Compost.

F.Y.M.—Farm Yard Manure.	N.—Nitrogen.
G.M.—Green Manure.	Nitro phos—Nitro phosphate.
G.N.C.—Groundnut cake.	P.—Phosphate.
K.—Potash.	Pot. Sul.—Potassium Sulphate.
lb.—Pounds.	Super—Super Phosphate.
M.C.—Municipal Compost.	T.C.—Town compost.
Mur. Pot.—Muriate of Potash.	Zn. Sul.—Zinc Sulphate.

BASAL CONDITIONS

Information under the above heading to be read against the following items :

A. For annual crops :

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

B. For perennial crops :

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

C. For experiments on cultivators' fields :

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

DESIGN

Information under this heading to be read against the following items :

A. For annual crops :

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

B. For perennial crops :

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

C. For experiments on cultivators' fields :

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

GENERAL

Information under this heading to be read against the following items :—

A. For annual crops :

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

B. For perennial crops :

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

C. For experiments on cultivators' fields :

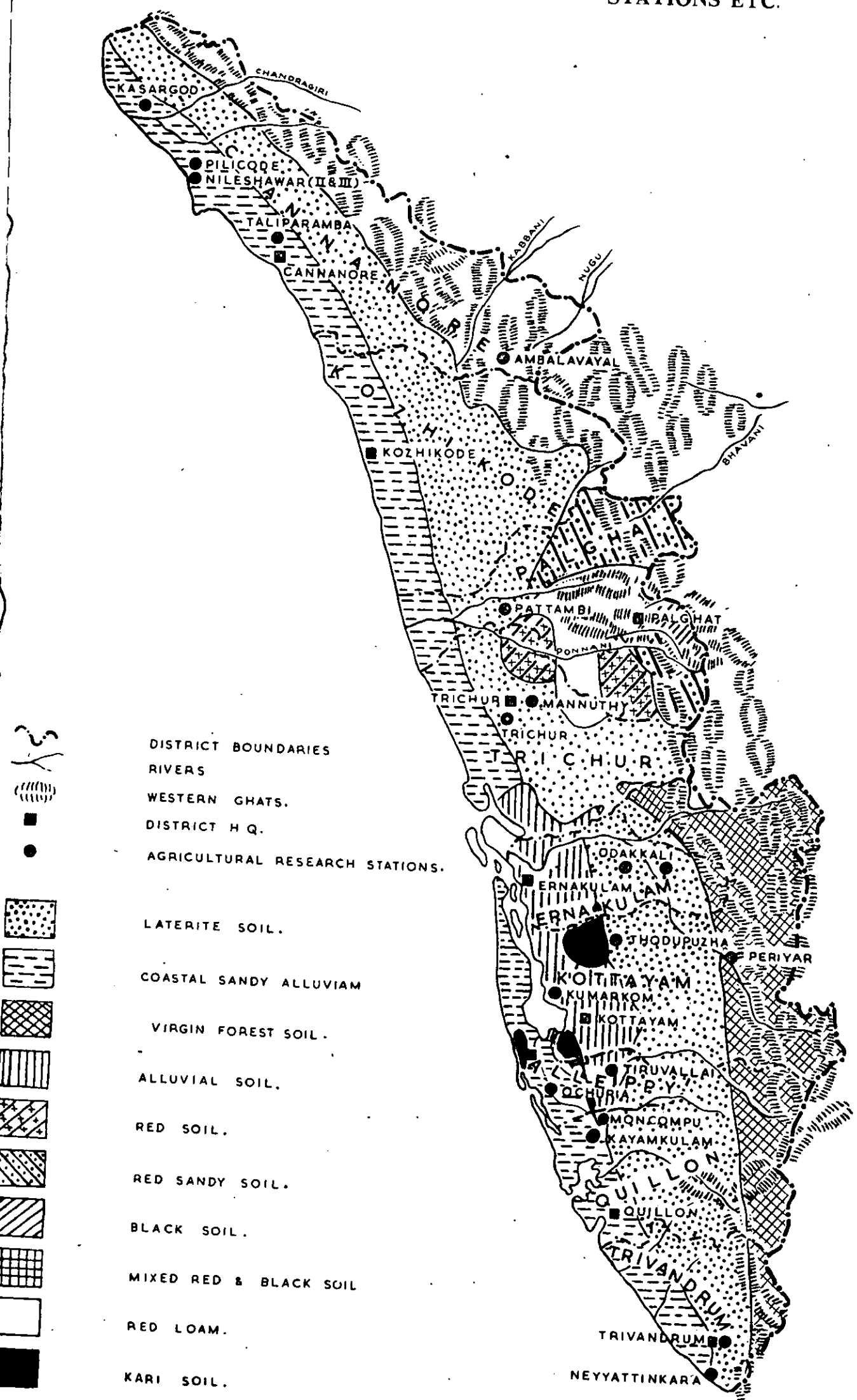
(i) Crop condition during growth. (ii) Incidence of pests and diseases with control measures taken. (iii) Quantitative observations taken. (iv) In case of reptition in successive years (a) from what year to what year, (b) whether treatments were assigned to the same plots in the same manner every year,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

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.	Rice, Paddy.	*Oryza sativa L.*	Dhan	Dhan	Dhano	Vadlu, Biyyamu	Nel	Nellu	Bhatta	Bhat	Dangar	Dhan ; Chawal	Chaul ; Dhan
2.	Tapioca.	*Manihot utilissima ; Manihot esculenta* Crantz	Simolu Alu	Shimul Alu	—	Karra Penda-lamu	Maravalli Kizhangu ; Kuchi Kizhangu	Marach-eeni	Maragen-asu	Tapioca	—	Topioca	Topioca
3.	Sugarcane.	*Saccharum officinarum L.*	Kuhiar	Akh	—	Cheruku	Karumbu	Karimbu	Kabbu	Oos	Sherdi	Ganna ; Kamad ; Naishakar	Kamad ; Ganna ; Eakh
4.	Chillies.	*Capsicum frutescens L.*	Jalakiya	Lanka ; Marich	Lanka	Mirapak-aya	Milakai	Mulaku	Menasina kayi	Mirchi	Marcha	Lalmirch	Lalmirch
5.	Sweet potato.	*Ipomoea batatas* Lam.	Mitha Aloo	Mishti Alu	Kanda-mula	Chilaga-dadumpa	Seeni kilangu	Cheeni kizangu	Genasu	Ratalu	Shakaria	Shakar-kandi	Shakarkandi
6.	Coconut.	*Cocos nucifera L.*	Narikol	Narikel	Nadia	Tenkaya ; Kobbari	Thennai	Thengu	Thengu	Naral	Nalieri	Gola ; Narial	Naryal
7.	Cashewnut.	*Anacardium occidentale L.*	Kaju	Kaju Badam	Lanka-amba	Jeedim-amidi	Mundiri	Kasu-mavu	Godambi	Kaju	Kaju	Kaju	Khaja
8.	Banana.	*Musa paradisiaca L.*	Kol	Paka-kala	Kadali	Arati	Vazhai-pazam	Vazha	Bale	Kele	Kela	Kela	Kela
9.	Ginger.	*Zingiber officinale* Rose.	Ada	Ada	Ada	Allamu	Inji	Inchi	Shunti ; Alla	Ale	Adu	Adrakh	Adrakh
10.	Lemon Grass.	*Cymbopogon flexuosus* Stapf.											
11.	Crotalaria Straita.	*Crotalaria straita*											
12.	Vettivert.	N.A.											
13.	Sesbania.	*Sesbania speciosa*										Daincha	
14.	Yam.	N.A.											

CONTENTS

MAP OF KERALA STATE SHOWING AGRO-CLIMATIC REGIONS, SOILS AND AGRICULTURAL RESEARCH STATIONS ETC.



KERALA STATE

1. GENERAL

The former Travancore-Cochin State alongwith the Malabar district and the Kasaragod taluka of South Kanara district of erstwhile Madras state after the reorganisation of states in 1956 form the present Kerala state. It is located between 8°—18′ and 12°—48′ north latitudes and between 74°—52′ and 77°—22′ east longitudes. The state is divided into 9 districts. The area of the state is about 9.6 million acres of which the total cropped area is about 5.5 million acres—the area under foodcrops covering about 70%, the rest being under non-food crops. The net area sown in 1955-56 was about 4.5 million acres and about 2.4 million acres was under forests.

2. PHYSICAL FEATURES & CLIMATE

The Kerala state—a strip of land running almost in south-north direction is situated between the vast Arabian Sea on the West and ranges of Western Ghats and Nilgiri hills on the East, both running parallel to each other. From the Western Ghats the country undulates to the west and presents a series of hills and valleys intersected by numerous rivers. On the west the country is more or less flat. These characteristics demarcate the State into three natural regions—the highland, the midland and the low land.

Highland:—The highland on the eastern portion of the state and containing most of the reserve forests occupies nearly 45% of the total area of the state. The annual rainfall ranges between 100″ in the south and 200″ in the north. The climate is cool and bracing. Means of communications are poor and cultivation is largely limited to plantation crops like tea, rubber and cardamom.

Midland.—The midland consists of uplands of varying elevations through which rivers have carved out long narrow valleys. It covers an area of nearly 37%. Rainfall ranges from 55″ to 155″. Rice is grown in the valleys while tapioca, coconut, pepper, ginger and rubber are cultivated on the hill slopes.

Low land:—The low land covering about 18% of the total area is narrow and irregular in shape. It has an almost continuous line of lagoons and backwaters receiving the drainage of several rivers. The rainfall ranges from 35″ in the extreme south to 140″ in the north. The soil is peculiarly suited to cultivation of rice and coconut.

3. SOILS

Trivandrum District:—The soil in the high land region is clay loam and rests on a bed of rocks. It is black in colour and rich in organic matter, nitrogen and potash and is slightly acidic. In the midland the soil is clay loam of lateritic origin, with an admixture of gravel and sand. The valleys of the midland have loamy clay soil with high sand content. The coastal strip is sandy with laterite foundation.

Quilon & Alleppey Districts:—The soil in the coastal tracts consists mainly of pure crystalline sands. The swamp paddy fields of the districts contain clay soil of different depths, mixed with varying proportions of organic matter in different stage of decay. The soils in the valleys and deltas of rivers are alluvial in nature, and consist mainly of fine silt. The soils in the hills are loamy in nature with a great admixture of humus. The soils in this region are generally deficient in nitrogen and phosphorus while the sandy soils along the coast are deficient in potash also.

Kottayam District:—Swamp peaty soil occurs generally in the low areas of the District. The soils in the hills are loamy with a great admixture of humus. The soils in this District are generally deficient in nitrogen, phosphorous and lime.

Ernakulam & Trichur Districts :—In the low land the soil is arenaceous consisting mainly of recent deposits of sand, and mud due to river alluvium. In the midland region, the soil is lateritic varying in quality from rich loam to unculturable laterite. On the slopes of Ghats in several places there is an overlying layer of black mould, formed of decayed vegetable matter.

Palghat, Kozhikode & Cannanore Districts :—In the narrow coastal belt the soil is arenaceous. In the plains, the soil is of the red ferruginous type composed of a mixture of clay and river sand. In the Ponnani Taluk (Palghat District) the clay content is high. In Chittur (Palghat District) a layer of black cotton soil is found in certain areas. The loamy soils of the table land are laterite in their origin. Laterite is a form of decomposed gneiss, and in itself a soil rather than a rock and is sensitive to weather conditions. The most valuable of these soils, from the point of view of fertility is the white or yellow clay which fills the tubular hollows that run through the laterite in every direction. This clay contains both iron and potash. In Wynad (Highland) the soils are of red ferruginous series, the fertility varying with the quantity of carbonaceous matter formed by the decomposition of organic substances.

4. IRRIGATION AND RAINFALL

Total irrigated area by various sources by the end of the First Five Year Plan was nearly 0.81 million acres. The various sources of irrigation and the area irrigated by them are given in Table below.

TABLE 1.

Area irrigated by different sources

Source	Area at the end of First Five Year Plan.	percent of the total area irrigated	percent of total cultivated area.
1. Govt. Canals	327,671	40.4	7.3
2. Private Canals	68,113	8.4	1.5
3. Tanks	77,400	9.5	1.7
4. Wells	28,499	3.6	0.6
5. Other sources	309,380	38.1	7.0
Total	811,063	100.0	18.1

From the table above it is seen that nearly 18 percent of the net area sown (i.e.4.5 million acres) is irrigated and 40 percent of the irrigated area is mainly through Government canals, the rest being irrigated by private canals, tanks or wells.

The normal annual rainfall throughout the state is about 122 inches. The state receives majority of the rainfall during the south-west monsoon. The south-west monsoon sets in early June and continues upto the end of September. The normal rainfall during this period is about 63 inches. During the months October to January the normal rainfall is about 20 inches.

5. AGRICULTURAL PRODUCTION

The most important crops of state are paddy, coconut and tapioca which comprise nearly 36, 20 & 10 percent respectively of the total cropped area in the state.

Rice and tapioca are the chief food crops and coconut besides being a food crop is also a commercial one. Besides these, Kerala holds practically a monopoly in the cultivation of rubber, cardamom, pepper etc. which cannot be easily grown elsewhere.

The following table gives the area under principal food crops, and average yield per acre for 1957-58.

TABLE 2

Table showing area under principal crops and average yield in lb./ac.

Name of the crop	Area (000 acres)	Production (000 tons)	Av. yield lb./ac
1. Paddy	1,912	874	1,024
2. Pulses	110	17	346
3. Tapica	558	1,569	6,298
4. Bananas	116	311	6,005
5. Sugarcane (gur)	22	35	3,564
6. Pepper	223	25.9	260
7. Ginger	23	9.2	900
8. Cardamom	69	0.99	32
9. Arecanut	144	—	45,000 (nuts)
10. Cashewnut	93	56	1,349
11. Coconut	1,107	—	2,800 (nuts)
12. Groundnut	33	—	950
13. Rubber	160	—	294
14. Coffee	41	—	164
15. Tea	99	—	679

6. AGRICULTURAL EXPERIMENTATION AND RESEARCH STATIONS

The experimentation is mainly concentrated on important food crops, such as Paddy and Tapioca and also on Cocount which is partly a food crop and a cash crop. Out of 238 experiments conducted on various crops during the period 1948-53 more than 60 percent were mainly on paddy. Out of these experiments on Paddy as much as 68 percent were manurial experiments.

The distribution of these 238 experiments conducted on different crops according to the type of treatments tried and crop is given in table below.

TABLE 3

Distribution of the experiments according to crops and types of treatments tried

Crop	M	MV	C	MC	VC	MVC	IC	D	Total
1. Paddy.	111	1	7	3	7	2	1	11	143
2. Tapioca	16	—	24	—	1	—	—	—	41
3. Sugarcane	2	—	—	—	—	—	—	—	2
4. Chillies	3	—	6	—	—	—	—	1	10
5. Sweet Potato	2	—	1	—	—	—	—	—	3
6. Coconut	6	—	14	—	—	—	—	—	20
7. Others (Ginger Gingelly etc.)	11	—	5	—	1	—	—	2	19
Total	151	1	57	3	9	2	1	14	238

+16 T.C.M. Trials on Cultivators, Fields

In most of the manurial experiments conducted on Paddy and Tapioca, treatments consisted of both the organic and inorganic manures. The organic manures were tested against the artificial manures such as Amonium Sulphate, Superphosphate etc. The organic manures were either groundnut cake or green manures to supply nitrogen.

The levels of nitrogen tried in the form of Amonium Sulphate generally vary from 0 to 40 lb N./ac. and that of P_2O_5 in the form of Super Phosphate vary similarly. The

amount of greenleaf in most of the experiments varied from 4000 to 6000 lb./ac. The groundnut cake as source of nitrogen was used to give about 20 to 40 lb. of nitrogen per acre.

There were no experiments of long term nature nor any rotational experiments. Some of the experiments on paddy continued on the same plots for 3 years at the most, there being two seasons in a year.

The design adopted for experiments was usually one of Randomised Blocks and in a few cases split plot was used. In randomised block designs, number of plots per block ranges from 6 to 9 while in split plot designs, there were usually 2 main-plots per replication with 3 to 5 sub-plots per main plot. The net plot size varied from nearly 1/200th of an acre to 1/40th of an acre. In few cases it was as small as 1/800th of an acre and also as large as 1/40th of an acre.

Experimental Stations.—A tabular statement giving details of experimental stations from where the experiments for the period 1948-53 were available is appended. Agricultural Research Station at Pattambi had maximum number of experiments on paddy. Out of 131 experiments reported from Pattambi 115 were on paddy alone, and out of these 85 were manurial experiments. The treatments tried in these experiments were of the nature as already discussed.

Research stations at Kasaragod, Kumarakom, Neyattinkara, Nileshwar II, Nileshwar III, Ochira, Pilicode & Thodupuzha are conducting experiments on coconut alone. During the period 1948-53 three experiments (two cultural and one manurial cum-cultural) on coconut were in progress at the Agricultural Research Station, Pilicode for manurial trials. Nitrogen was supplied in the forms of green leaf, Groundnut cake or Amonium sulphate, Phosphorus as Bonemeal or Superphosphate and Potash as Woodash, Sulphate or Muriate of potash. Usual dose of manures for coconut trees was 0.5 lb N+0.5 lb P+1.0 lb K per tree per year over and above 50 to 100 lb. greenleaf. Experiments were generally laidout in randomised blocks, the number of plots varying from 2 to 8. The number of trees in an experimental plot varied from 6 to 12.

STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS

Sl. No.	Name of the Experimental Station.	District in which located	Tract it represents	Year of establishment.	Major crops	Soil type & Soil analysis if available.	Normal Rainfall (inches)	Irrigation facilities	No. of experiments	General topography of the experimental area
1	2	3	4	5	6	7	8	9	10	11
(1)	Ambalavayal. Agri. Res. Station.	Cannanore. 62 miles from Calicut Rly. Station.	Hilly tract of Wynad.	1954	Paddy & Fruit crops.	Clayey loam and Red loam. *Depth*—Fairly deep. *Colour*—Brownish and black clay. *Structure*—Good. (*b*) Chemical Analysis—Refer soil analysis on page (6)	June 15.28 July 20.40 Aug. 11.76 Sept. 6.22 Oct. 9.98 Nov. 4.40 Dec. 0.44 Jan. 0.22 Feb. 0.59 Mar. 1.33 April 5.31 May 8.09 Total 84.02 Av. for 10 years (1947-56).	Nil. No proper drainage system.	3—Paddy	Information not available.
(2)	Kasaragod. Central Coconut Res. Station.	Cannanore. Kudlu Rly. Stn. Kasaragod.	Coastal belt.	(1916-1917) Madras Govt. The Indian Cent. Coc. Committee took over in 1947.	Coconut.	Types. Depth (1) Sandy Deep (2) Sandy loam ,, (3) Red loam ,, (4) Laterite (2′ to 3′) (1) *Colour* *Structure* Sandy to yellowish very light (2) Sandy to light red. light. (3) Reddish light (4) Greyish. light. For chemical analysis and Mechanical analysis, see page 7.	June 41.05 July 40.79 Aug. 11.36 Sep. 9.58 Oct. 8.03 Nov. 2.14 Dec. 0.97 Jan. — Feb. — Mar. — April 2.25 May 8.14 Total 124.31 Average for 20 years.	A few wells of not assured water supply.	1—Coconut 1—Paddy 2—Sugar cane 1—Tapioca 1—Lemon Grass 6—Total	Sloping gradually from East to West. The land had been properly terraced.

Soils of Agricultural Research Station—Ambalavayal.

(a) Broad soil types———Red loam and clay loam.

(i) Depth———Fairly deep (more than 15 feet).
(ii) Colour———Brownish and black clay.
(iii) Structure——Good.

(b) Chemical analysis (As percentage of various constituents analysed)

Particulars.	Wet land		Wet land Marshy area,	
	0—9″	9″—18″	0—9″	9—18″
Moisture	1.37	2.54	1.11	0.54
Loss on Ignition	9.04	3.50	3.66	2.15
Lime (CaO)	0.092	0.064	0.078	0.063
Potash (K_2O)	0.132	0.183	0.225	0.119
Phosphoric acid (P_2O_5)	0.058	0.050	0.051	0.024
Nitrogen (N)	0.107	0.085	0.130	0.056
Available potash (K_2O)	0.081	0.021	0.014	0.011
Available phosphoric acid (P_2O_5)	0.004	0.005	0.015	0.007
Mechanical analysis of wet-land soil.				
Clay	16.93	18.13	13.80	7.28
Silt	8.97	7.62	7.43	4.08
Fine sand	50.47	30.99	53.69	45.41
Coarse sand	28.85	42.17	25.15	43.37
Acid solubles.	——	1.09	——	——
Radicals	**Alkalinity**			
Water soluble salts	0.003	0.040	0.130	0.206
Carbonate ($C0_3$)	——	——	——	——
Bicarbonate (HCO_3)	——	——	0.009	0.0061
Sulphate ($S0_3$)	——	——	0.075	0.104
Chloride (Cl_2)	——	——	0.007	0.0160
Lime (CaO)	——	——	0.008	0.0126
Magnesia (MgO)	——	——	Traces.	0.0011
Calculated salts				
Calcium carbonate	——	——	0.0120	0.0081
Calcium sulphate			0.0170	0.0238
Magnesium sulphate			——	0.0129
Sodium sulphate			0.0932	0.1442
Sodium chloride			0.0120	0.0264
		Total	0.1342	0.2154

KASARAGOD

Fertility status and Mechanical composition of the main soil types at the Central Coconut Research Station, Kasaragod.

Soil Types	Depths	Fertility Status					Lime CaO	Iron (Fe_2O_3)	Mechanical Composition				pH
		N percent	P_2O_5 percent		K_2O percent				Coarse sand percent	Fine sand percent	Silt percent	Clay percent	
			Total	Available	Total	Available							
Sandy Loam	0—12"	0.04	Trace	Trace	0.13	0.004	0.02	4.00	75.60	10.52	1.00	12.75	5.6
	12—24"	0.03	0.003	,,	0.11	Trace	Trace	4.50	68.20	8.80	2.00	16.00	4.2
	24—48"	0.03	0.040	,,	0.70	,,	,,	7.12	86.75	2.00	3.15	10.90	4.4
Red Loam	0—12"	0.03	Trace	Trace	0.08	Trace	Trace	2.72	80.25	7.28	4.50	2.25	5.6
	12—24"	0.03	0.004	,,	0.07	,,	Nil	3.20	83.00	6.64	1.00	1.25	4.2
	24—48"	0.04	0.060	,,	0.03	,,	Trace	4.08	81.50	3.00	0.30	11.40	4.2
Sandy Soil	0—12"	0.04	0.070	0.010	0.11	Trace	Nil	2.48	81.50	2.50	4.60	10.05	4.2
	12"—24"	0.04	0.050	0.010	0.07	,,	,,	2.48	83.25	3.00	2.95	11.20	5.4
	24"—48"	0.04	0.060	0.005	0.03	,,	,,	3.12	87.50	3.00	1.48	10.30	4.3
Laterite Gravelly Soil	0—12"	0.03	0.060	0.020	0.24	,,	0.03	9.92	51.75	13.50	2.20	32.25	4.4
	12"—24"	0.03	0.070	0.020	0.23	,,	0.04	10.96	32.50	11.75	1.25	51.30	4.2
	24"—48"	0.05	0.060	Trace	1.29	0.03	0.02	3.84	15.00	35.00	3.55	47.00	5.4

STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS

1	2	3	4	5	6	7	8	9	10	11
(3)	Kayamkulam, Paddy Breeding Station.	Quilon. 26 miles from Quilon Rly. Stn.	Sandy Coastal.	1939	Paddy	1. Sandy loam Depth—10'—15' 2. *Colour* White sand with black clay. 3. (a) *Chem. Analysis.* N.A. (b) *Mech. Analysis.* N.A.	June 29.7 July 12.5 Aug. 9.8 Sept. 2.3 Oct. 11.9 Nov. 6.3 Dec. 1.2 Jan. Nil Feb. Nil Mar. 1.1 April 3.3 May 12.8 Total 90.9 Av. of previous three years.	Nil No proper drainage system.	4-Paddy	Sandy coastal area ; Entirely rainfed. Paddy lands interspersed with coconut gardens. No irrigation is possible.
(4)	Kayamkulam, (Ochira P.O.) Central Coconut Res. Stn.	Alleppy. 22 miles from Quilon Rly. Stn.	Sandy tract.	1948	Coconut	(1) Sandy Loam (2) *Depth* —3'—13' (3) *Colour*—Brown to Grey loam. (4) *Structure*—Single grained. (5) *Soil Analysis.*	June 24.01 July 8.45 Aug. 5.63 Sept. 7.30 Oct. 8.23 Nov. 6.81 Dec. 1.13 Jan. 1.21 Feb. 2.20 Mar. 0.62 April 5.33 May 6.34 Total 77.26 (Average for the period 1951 June to 1953 May.)	Pot watering since 1948	1 (Coconut) started from 1953 (not included)	Level plain Land

(i) *Chemical Analysis* :—

Horizon	N%	P_2O_5%	K_2O%	CaO%	MgO%	Avl. P_2O_5	Avl. K_2O	pH
A	0.029	0.023	0.039	0.053	0.036	0.012	0.009	6.6
B	0.026	0.020	0.038	0.035	0.035	0.007	0.007	6.5
C	0.026	0.036	0.036	0.037	0.037	0.006	0.008	6.4

(ii) Mech. Analysis :—N.A.

STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS

1	2	3	4	5	6	7	8	9	10	11
(5)	Kumarakom, Reg. Coc. Res. Stn.	Kottayam. near Kottayam Rly. Stn.	Reclaimed clayey soils of the back water area subjected to occasional flood during rainy seasons. (2) Depth (3) Colour (4) Structure (5) Soil Analysis (i) Chem. Anl. N.A. (ii) Mech. Anl. N.A.	1948 0—9″ Gray Friable clay	Coconut 9″—24″ Blackish gray Shift clay	Type :— (1) Reclaimed clayey soil of the back water area. 24″—46″ Black Shift sticky clay	June 24.28 July 21.60 Aug. 15.10 Sept. 2.15 Oct. 10.00 Nov. 6.80 Dec. 2.10 Jan. 0.13 Feb. 0.39 March 1.59 April 4.72 May 5.86 Total 94.72 Av. of 1957 & 1958.	Nil The deep channels are connected to the adjacent lake and they act as the drainage system in the area.	2—Coconut-Both started from 1953, hence not included	Trees are planted in single or double rows on narrow bunds separated by deep linear channels. Bunds with one row of trees range in width from 8-10 feet while the bunds with two rows of trees, range from 25′—35′; water level in the area is very high often two to three ft. from the surface.
(6)	Mannuthy Tapioca & Sweet Potato Res. Station.	Trichur 5 miles from Trichur Rly. Stn.	Trichur tract gravelly soil.	1952	Tapioca & Sweet potato	(1) Depth 8′—10′ (2) Colour—Redsoil. (3) Structure—Gravelly & loamy (4) Soil Analysis (i) *Chem. Anl.* N.A. (ii) *Mech. Anl.* N.A.	June 32.68 July 27.82 Aug. 18.07 Sept. 1.27 Oct. 4.62 Nov. 11.80 Dec. Nil Jan. Nil Feb. Nil Mar. Nil April 5.05 May 9.05 Total 110.36 **Figures for June '58 to May '59.**	Peechy Irrigation from 1955-1956—Drainage not necessary.	1—Tapioca 2—Sweet potato 3—Total	The exprimental area consists of 6 terraces. All the individual terraces are almost level but all the terraces are not of the same type. The third and fourth terraces have a slight sloping along East-West direction.

STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS

1	2	3	4	5	6	7	8	9	10	11
(7)	Mannuthy. Agri. Res. Station	Trichur 5 miles from Trichur Rly. Stn.	Laterite soil of the hill slopes.	1915	2 crops of paddy in wet lands. Mango, Banana and other fruit crops in garden land.	(1) Laterite soil and sandy loam (2) Depth—2' (3) Structure—Coarse. (4) Colour. (5) Soil Analysis. (i) *Chem. Anal.* N.A. (ii) *Mech. Anal.* N.A. Deficient in N, available K and available P.	June 29.53 July 30.35 Aug. 14.75 Sept. 9.51 Oct. 10.08 Nov. 4.98 Dec. 0.44 Jan. Nil Feb. 0.54 Mar. 0.74 April 4.06 May 7.73 Total 112.71 Av. for 1948 to 53	Peechi canal and two tanks on the farm. Irrigation facilities from 1955 made available. Drainage channels provided in paddy lands only.	15-Paddy	The area is nearly undulating except in wet lands where the land is level. The garden land where the fruit crops are grown, comprises of almost level land. The area of mango orchard is slopy as it is in hill slopes.
(8)	Moncompu, Paddy Breeding Station.	Quillon 50 miles from Ernakulam Rly Stn.	Kuttanad area: Paddy lands 2'—10' below mean sea level. Cultivation is done after dewatering. Soil clayey and acidic, liable to incursion of saline water from sea.	1940	Paddy	(1) Alluvial (2) Depth—2' (3) Colour—Black (4) Structure—Heavy (5) Soil Analysis (i) *Chem Anal.* N.A. (ii) *Mech. Anal.* N.A.	June 23.9 July 16.6 Aug. 8.4 Sept. 7.1 Oct. 13.0 Nov. 14.4 Dec. 1.7 Jan. 0.3 Feb. 0.9 Mar. 2.9 April 1.3 May 10.0 Total 100.5 Av. of the years 1943, '44 and '45.	Nil	4-Paddy	Level lands about four feet below mean sea level.

STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS

1	2	3	4	5	6	7	8	9	10	11
(9)	Neyattinkara, Regional Coconut Research Station.	Trivandrum. Vellayani P.O. Nemom.	Deep red loamy soil with poor rainfall.	1948	Coconut	(1) Loamy (2) Depth—12' (3) Deep red (4) Structure Loamy (5) Soil Analysis (i) Chem. Analysis Moisture 4.63% Loss on ignition 4.70% CaO 0.036% MgO 0.044% P_2O_5 0.005% K_2O 0.024% Fe_2O_3 4.51% N 0.046% Avl. P_2O_5 Trace Avl. K_2O Trace pH 6.9 (ii) Mech. Analysis N.A. (Averaged over 15 laboratory values).	June 21.48 July 8.86 Aug. 3.44 Sept. 0.26 Oct. 7.14 Nov. 6.29 Dec. 3.32 Jan. 0.46 Feb. 0.41 Mar. 0.99 April 5.90 May 9.45 Total 67.99 for the year 1957—58	Nil Natural drainage	2 expts. both started from 1952 onwards. hence not included	The area is plain land with deep red loam allowing nearly all kinds of vegetation. The crop in the area is coconut. The watertable is very low.
(10)	Nileshwar II Coconut Res. Stn.	Cannanore. 1 mile from Nileshwar Rly. Station.	Red sandy loam soils of the northern half of Cannanore Dist. where the plantation is mainly coconut crop.	1916	Coconut	(1) Red sandy loam (2) Depth 15'—20' (3) Colour—Red. (4) Structure-Compound grain & friable. (5) Soil Analysis (i) Chem. Analysis Top soil (0—12") % / Sub soil (12"—24") % Organic matter 2.48 / 2.72 Total P_2O_5 0.068 / 0.068 Total K_2O 0.51 / 0.75 Avl. P_2O_5 0.0213 / 0.0219 Avl. K_2O 0.0035 / 0.0024 (ii) Mech. Analysis—N.A.	June 44.29 July 47.91 Aug. 21.00 Sept. 11.12 Oct. 9.75 Nov. 2.23 Dec. 0.31 Jan. 0.15 Feb. 0.03 Mar. 0.18 April 2.75 May 11.95 Total 151.67	Nil The soil is well drained but during the south west monsoon period water stagnation is observed in a few fields for some days.	Nil	The fields at the station are almost in level.

STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS

1	2	3	4	5	6	7	8	9	10	19
(11)	Nileshwar III, Coconut Res. Station.	Connanore. 2 miles from Nileshwar Rly. Stn.	Sandy soils near the sea coast.	1916	Cocount	(1) Pure littoral (2) Depth—20" (3) Colour—White. (4) Structure—Coarse sand with admixture of small percent of clay. (5) Soil Analysis:- (i) Chemical Analysis Top soil (0-6") % Subsoil 3' % (i) Organic matter 0.75 0.47 (ii) Total $P_2 0_5$ 0.015 0.013 (iii) " $K_2 0$ 0.042 0.044 (iv) N 0.026 0.018 (v) Avl. $P_2 0_5$ 0.000 0.004 (vi) Avl $K_2 0$ 0.0008 0.0029 (ii) Mech. Analysis. N.A.	N.A.	There are 4 filter points from where the water is pumped out for irrigating nursery areas, coconut seedlings & grown-up trees. The soil is well drained.	3—Cashewnut 14—Coconut 17-Total	The fields are level. Bunds and cross bunds have been provided.
12	Odakkali, P.O. Asamanoor. Lemon Grass Research Station.	Ernakulam. via. Parambavoor.	Sloping hilly tract.	1951	Perennial crop.	(1) Laterite (2) Depth—6"-10" (3) Colour—Reddish brown. (4) Structure—Grain. (5) Soil Analysis (i) *Chem Analysis.* N 0.08% $P_2 0_5$ 0.05% $K_2 0$ 0.23% Ca0 Trace PH 6.4 (ii) *Mech. Analysis* N.A.	June— 26.59 July. 24.04 Aug. 28.87 Sept. 5.51 Oct. 14.82 Nov. 7.40 Dec. 0.68 Jan. NIL Feb. 0.68 March. 2.61 April. 14.64 May. 22.24 Total. 148.01 (Figures for the year 1957—58).	Nil	Nil	Hillocks with plains of more or less undulating topography. *Rocky surfaces* found here and there.

STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS.

1	2	3	4	5	6	7	8	9	10	11
(13)	Pattambi, Agri. Res. Station.	Palghat 1 mile from Pattambi Rly. Station.	The soil is of laterite origin, the soil of modernor dry lands being of red gravely nature and that of single crop and double crop wet land being of sandy loam to loam in character.	1927	Paddy	(1) Laterite (2) Red to Reddish brown. (3) Soil Analysis.	June. 28.16 July. 9.85 Aug. 6.37 Sep. 13.80 Oct. 14.80 Nov. 4.58 Dec. 0.36 Jan. 0.16 Feb. 0.93 March. 0.06 April. 4.39 May. 12.03 Total 95.19 (Figures for the year 1955—56)	NIL Properly drained.	115—Paddy 6—Tapioca 1—Sweet Potato 1—Gingelly 2—Crotolaria Striata 1—Sesbania 1—Vettivert 1—Yam 3—Bananas 131 total.	The land consists of uplands where dry paddy is raised, terraced level type of lands where a single sworn/paddy is grown and the flat-typical wet land paddy areas where two or three crops are raised in a year.

(i) *Chemical Analysis.* (As percentage of various constituents analysed)

	Moisture	Org. matter	Sand	Fe_2O_3	Al_2O_3	Lime	Mg	K_2O	P_2O_5	N	Avl. K_2O	Avl P_2O_5	pH
Wet land	2.33	10.06	57.40	11.52	16.78	0.081	0.068	0.210	0.269	0.120	0.0062	0.0036	7.54
Modan land or dry land.	2.17	9.35	58.40	10.73	18.57	0.018	0.085	0.292	0.407	0.198	0.0163	0.00114	7.5

(ii) *Mech Analysis.*

	Fine gravel	Coarse sand	Silt	Fine silt	clay.
Wet land.	11.07	18.44	7.60	20.32	22.10
Dry land.	10.48	13.25	7.34	21.08	29.80

STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS

1	2	3	4	5	6	7	8	9	10	11
(14)	Pilicode, Coconut Research Station.	Cannanore. 1 mile from Charvaltain Rly. Stn.	Gravely laterite soil of the West Coast.	1916	Coconut	(1) Gravely laterite soil. (2) Depth 4′—6′ (3) Brownish red. (4) Structure Sticky when wet and hard when dry. (5) Soil Analysis	June 40.20 July. 43.53 Aug. 20.76 Sept. 10.35 Oct. 10.53 Nov. 2.33 Dec. 0.49 Jan. 0.25 Feb. 0.02 March. 0.14 April. 2.61 May. 10.60 Total 141.81 (Av. of 10 years 1948—1957)	Nil. There are proper facilities for drainage.	5-Coconut	The station is situated on the top of a small hill and the land is gradually sloping toward south. Bunds & cross bunds have been laid-out to prevent soil erosion.
	(i) Chemical Analysis :—									
		Org. matter	Total P_2O_5	N	Total K_2O	Avl P_2O_5	Avl K_2O			
	Top Soil (0—12″)	5.39	0.081	0.085	0.17	0.0066	0.0025			
	Sub Soil (12—24″)	5.76	0.064	0.071	0.20	0.0069	0.0018			
	(ii) Mech. Analysis.									
		Clay	Silt	Fine sand		Coarse sand.				
	Top Soil	27.73	6.90	22.43		44.35				
	Sub Soil	32.41	7.60	18.26		42.70				
(15)	Taliparamba. Agri. Res. Station.	Cannanore, 11 miles from Pappinisseri. Rly. Stn.	The station is situated in the sub-mountain tract of Cannanore Dist. and is fairly representative of conditions in such areas of the West Coast. The soils of this station are sandy loam in some places and decomposed laterite in other portions.	1905	4.50 acres under Paddy. Rest of the land of under Mango, Cocoa, Jack, Sapota etc.	(1) Red laterite. (2) Depth—6′—9′ (3) Colour Red. (4) Soil Analysis (i) Chem. Analysis. N. A (ii) Mech. Analysis. N.A	June 48.20 July. 42.13 Aug. 21.88 Sep. 4.65 Oct. 6.79 Nov. 6.66 Dec. Nil Jan. 0.64 Feb. Nil March. Nil April. 1.08 May. 10.53 Total 142.56 (Figures for 1959).	Nil	1—Paddy 10—Chillies 6—Ginger 17—Total	The experimental area is undulated and the perennial crops entirely depend on rainfall.

STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS

1	2	3	4	5	6	7	8	9	10	11
(16)	Thodpuzha, Regional Coconut Research Station.	Ernakulam.	Laterite soil of the hill slopes.	1948	Coconut	(1) Type : Laterite (2) Colour :— — (3) *Soil Analysis.* (i) Chem. Analysis. See page for chemical analysis of Thodpuzha, (i) *Mech. Analysis* N.A.	Monthwise figures N.A. Av. 125″ of rainfall per year.	Nil. No drainage system.	Nil.	The whole area under manurial as well as the cultural experiments is uneven and undulating. Water level is very low. Certain areas in the station are completely rocky.
(17)	Tiruallai, Tapioca Research Station.	Alleppy	Midland tract.	1952	Tapioca.	(1) Laterite (2) Depth 5'-15' (3) Colour-Red (4) Structure-Hard. (5) Soil Analysis	June. 32.80 July. 17.25. Aug. 20.61 Sep. 4.76 Oct. 9.66 Nov. 0.96 Dec. 2.14 Jan. —— Feb. 2.58 March. 0.28 April. 7.00 May. 22.10 Total. 120.17 (Figures for June to May 1959).	Nil. No drainage system.	5-Tapioca	A small hillock sloping on all sides which are protected from erosion by small mud walls (kayyalas).

(i) Chemical Analysis.

		pH	loss on ignition	N%	P_2O_5%	K_2O%	Lime	Total salts	Chlorides	Sulphate
Surface soil	0″—12″	6.9	12.1	0.11	0.03	0.22	0.03	0.62	0.04	Nil.
Subsoil	12″—24″	6.7	11.2	0.07	0.01	023	0.03	0.43	0.04	Nil.

(ii) Mechanical Analysis—N.A.

Thodpuzha :— Chemical Analysis.

Locality	Horizon	Moisture %	Loss on ignition %	CaO %	MgO %	P_2O_5 %	K_2O %	Fe_2O_3 %	N %	Available P_2O_5 %	Available K_2O%	PH
Hill	0-12"	3.82	13.56	Trace	0.044	0.051	0.116	11.76	0.046	Trace	0.007	7.0
Slope	12-24"	3.66	13.50	,,	0.042	Trace	0.166	11.04	0.119	,,	0.008	7.2
Nursery area	24-36"	3.81	13.83	,,	0.098	0.046	0.103	13.12	0.070	,,	0.003	7.2
Hill top	0-9"	4.41	13.24	,,	0.052	0.052	0.061	8.64	0.162	,,	Trace	6.8
	9-18"	4.23	12.75	,,	0.068	0.053	0.134	8.56	0.074	,,	,,	7.0
	18-36"	4.05	11.65	,,	0.052	0.063	0.118	6.96	0.091	,,	,,	7.0
Hill slope	0-9"	4.60	13.00	,,	0.042	Trace	0.172	9.28	0.008	,,	,,	7.4
N. E. Corner	9-18"	4.73	13.61	,,	0.040	,,	0.155	9.60	0.111	,,	,,	7.2
	18-36"	4.70	12.21	,,	0.032	0.042	0.185	11.28	0.066	,,	,,	6.4

Note (1) Low Calcium status-Addition of lime recommended 1-2 lb. per tree.

(2) High fixation of P_2O_5 and K_2O-Addition of organic fertile Farm Yard Manure or compost or green manure.

STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS

1	2	3	4	5	6	7	8	9	10	11
18)	Trivandrum Tapioca Research Station.	Trivandrum 3 miles from Trivandrum Rly. Stn.	Lowland	1945	Tapioca	(1) Laterite (2) Colour-Red. (3) Soil Analysis. (i) Chemical Analysis. (%) Moisture 2.84 — Insoluable mineral matter 71.34 Avl. P_2O_5 0.0003 — Avl. K_2O 0.0004 — PH 7.5 (ii) Mechnical Analysis. % Sand 33.79 — Fine 19.97 — Clay 33.35 — Silt 8.65 — Moisture. 3.06	67"	Pot watering in summer months.	28-Tapioca	Information not available.

N	P_2O_5	K_2O	Lime
0.094	0.047	0.66	0.043

Crop :-Paddy (1st crop) Ref :-K. 49(12)

Site :-Agri. Res. Stn. Ambalavayal Type :-'M'

Object :—To find out if application of slaked lime to marshy wet land will increase the productivity of such lands.

1. BASAL CONDITIONS :

(i) (a) NIL (b) Paddy (c) G.L. at 5000 lb. /ac. + Super at 150 lb. / ac. + A/S at 75 to 150 lb. /ac. *(ii) (a) Brown-red clayey soil (b) Refer soil analysis* Ambalavayal *(iii)* May-June & June-July, 1949. (iv)(a) Two ploughings soon after the harvest of the standing crop and leaving it fallow for 5 to 6 months. Again 2 ploughings are given. Green leaf applied and covered by giving two more ploughings. Two ploughings are again given after the decomposition of leaf. Final two ploughings are given just before planting. (b) Planting in lines (c)—(d) 6" between plants and 8-11" between rows. (e) 3 to 4. (v) N. A. (vi) MTU 19 *Improved, long. (vii) Rainfed. (viii) One weeding 1½ to 2 months after planting. (ix)* 66.35" (May to December 1949) (x) December 1949.

2. TREATMENTS:

1. No Lime.
2. Lime 1000 lb./ac.
3. Lime 2000 lb/ac.
4. Lime at 3000 lb/ac.

Lime applied one week before planting as basal dressing.

3. DESIGN :

(i) R. B. D. (ii) (a) 4 (b) N.A. (iii) 4 (iv) (a) (b) 24'×24' (v) Nil (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil (iii) Grain weight (iv) (a) 1949 1st crop, 1950 1st crop (b) Yes. (c) N.A. (v) (a) (b) N.A. *(vi) & (vii)* N.A.

5. RESULTS:

(i) 2764 lb./ac.
(ii) 630.0 lb./ac.
(iii) The treatments do not differ significantly.
(iv) Grain weight in lb./ac.

Treatment	Mean.
1.	2655
2.	2840
3.	2911
4.	2650

S. E. of treatment means=315.0 lb./ac.

Crop :-Paddy (1st crop) Ref :-K. 50(19)/49(12)

Site :-Agri. Res. Stn. (Ambalavayal) Type :-'M'

Object:—To find out if application of fresh slaked lime to marshy, wet land will increase the productivity of such lands.

1. BASAL CONDITIONS:

(i) (a) NIL (b) Paddy (c) Same experiment was conducted in these plots. (ii) (a) Brown red clayey soil (b) Refer soil analysis, Ambalavayal (iii) 20.6.50 (iv) (a) Two ploughings soon after harvest of the standing crop and leaving the field fallow for 5 to 6 months. Two ploughings each are given before and after the application of leaf. Two more ploughing are given when the leaves get decomposed. Final 2 ploughings are given just before planting (b) planting in lines (c)— (d) 6" between plants and 8-11" between rows. (e) 3 to 4 (v) N.A (vi) MTU 19; Improved, long (vii) Rainfed, (viii) One weeding 1½ to 2 months after planting. (ix) 71.08" (20.6.50 to 19.12.50) (x) 18.12.1950,

2. TREATMENTS :

1. No lime
2. Lime 1000 lb/ac.
3. Lime 2000 lb/ac.
4. Lime 3000 lb/.ac.

Lime applied one week before planting as basal dressing.

3. DESIGN :

(i) R. B. D. (ii) (a) 4 (b) N. A. (iii) 4 (iv) (a) (b) 24' x 24' (v) Nil (vi) Yes.

4. GENARAL :

(i) Satisfactory. (ii) NIL (iii) Grain weight. (iv) (a) 1949-1st crop to 1950 1st crop (b) Yes (c) N. A. (v) (a)(b) N. A. (vi) & (vii) Nil.

5. RESULTS.

(i) 2424 lb/ac.
(ii) 330 lb/ac.
(iii) The treatments are not significantly different.
(iv) *Grain weight in lb/ac.*

Treatment	Mean
1.	2356
2.	2595
3.	2321
4.	2424

S. E. of treatment means = 165 lb/ac.

Crop :-Paddy (1st crop) Ref :-K. 49 (1)

Site :-Paddy Breeding Stn. Kayan Kulam Type :-'M'

Object :—To investigate the effect of treating seeds with nutrient solution as a means of supplying the required nutrients.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) 1000 lb./ac. of fresh Cowdung Top dressing with ash at the rate of 35 tins/ac. (Standard Kerosene tins) (ii) (a) Sandy loam (b) Refer Soil Analysis (iii) 18. 4. 1949. (iv) (a) one ploughing with iron plough and 2 with desi plough. Levelling and breaking clots. (b) Dibbling seeds in furrows. (c) 100 lb./ac. (d)—(e)—(v) 2 cwt of B.M./ac. and top dressing with ash at the rate of 35 tins/ac. (vi) "Kotchu Vitthu" Local short duration variety (85 to 90 days.) (vii) Unirrigated (viii) Two intercultivations first 21 days and 2nd 30 days after planting. Weeding along with intercultivation. (ix) About 100" (18. 4. '49 to 3. 8. 1949) (x) 3. 8. 1949.

2. TREATMENTS :

1. Adding super to the soil.
2. 5 per cent super, seed-treatment for 12 hours.
3. 5 per cent M.O.P., seed treatment for 12 hours.
4. 5 per cent Potassium phosphate, seed treatment for 12 hours.
5. Adding M.O.P. to the soil.
6. Seed treated in plain water for 12 hours.
7. Untreated (Control).

3. DESIGN :

(i) R.B.D. (ii) (a) 7 (b) N.A. (iii) 6 (iv) (a) 20'×10' (b) 19'×9' (v) A border of 2' between plots and between blocks was left. One row of 6" width was discarded all round each net plot. (vi) Yes.

4. GENERAL :

(i) Satisfactory, No lodging. (ii) Nil. (iii) Grain and straw weight. (iv) (a) No (b) No (c) No (v) (a), (b) Nil. (vi) & (vii) NIL.

5. RESULTS :

(i) 840 lb./ac.
(ii) 244 lb./ac.
(iii) The treatment differences are not significant.
(iv) *Grain yield in lb. per acre.*

Treatment	Mean.
1.	696
2.	908
3.	940
4.	940
5.	749

6.		821
7.		826
S.E. of treatment means	=	99 lb./ac.

Crop :-Paddy (2nd crop) **Ref :-K. 49 (2)**

Site :-Paddy Breeding Stn. Kayan Kulam **Type :-'M'**

Object:— To investigate the effect of treating seedlings with Bindolye acetic acid as a means of increasing yield.

1. BASAL CONDITIONS:

(i) (a) Nil (b) Paddy (c) 2 cwt Bonemeal + Ash 35 tons /ac. (ii) (a)[Sandy loam, (b) Soil analysis N. A. (iii) 17-7-1949 : 30-8-1949. (iv) (a) 2 ploughings with iron plough and 3 with desi plough. One leveling (b) Transplanting in lines (c)—(d) 6″×6″ (e) One (v) Fresh Cowdung at the rate of 1000 lb./ac. (vi) "Chamba" late (6 months) local. (vii) Unirrigated. (viii) Two weedings one 25 days and the other 40 days after planting. (ix) About 90″ (17-7.1949 to 15-1-1950) (x) 15.1.1950.

2. RTETMENTS

(1) Spraying water on seedlings (Control)
(2) Dissolving 1 miligram of Bindolye acetic acid. in 1000 c. c. of water and dividing the solution into 7 groups. Spraying the solution at the rate of one group/day for 7 days with an atomiser.
(3) Same as (2) using 5 milligrams of Bindolye acetic acid.
(4) ... ... do ... 10 ... ... do ... ...
(5) ... ... do ... 25 ... ... do ... ...

3. DESIGN:

(i) R. B. D. (ii) (a) 5 (b) N. A. (iii) 4 (iv) (a) 8′ × 7′ (b) 7′ × 6′ (v) A border of 2′ between plots and 2′ between blocks was kept. A guard row of 6″ width was discarded all round each net plot. (vi) Yes.

4. GENERAL:

(i) Satisfactory. No lodging. (ii) Nil (iii) Grain weight (iv) (a) 1949& 1950 (b) The experiment was conducted for two seasons and the treatments were assigned to the same plots during both seasons (c) N. A. (v) (a,b) Nil (vi) & (vii) Nil.

5. RESULTS:

(i) 1406 lbs./ac
(ii) 358 lbs./ac.
(iii) The treatments differences are not significant.
(iv) Grain yield in lb. ac.

Treatment	Mean
1	1439
	1037
3	1523
4	1439
5	1588

S. E. of treatment means: = 179 lb./ac.

Crop :-Paddy (2nd crop) **Ref :-K. 50 (1)**

Site :-Paddy Breeding Stn. Kayan Kulum **Type :-'M'**

Object:— To investigate the effect of treating the seeds with Bindolye acetic acid as a means of increasing yield.

1. BASAL CONDITIONS:

(i) (a) Nil (b) Paddy (c) 2 cwts of B. M./ac and top dressing with 35 tins of ash/ac. (Standard Kerosene tins)
(ii) (a) Sandy loam (b) N. A. (iii) 20-6-50 (iv) (a) 2 ploughings with iron plough and 3 with desi plough.

One levelling and breaking clots (b) transplanting in lines. (c)—(d) 6" × 6" (bothways) (e) single seedlings/hole. (v) Fresh Cowdung at 1000 lb./ac. (vi) Local and late Variety. (vii) Rainfed. (viii) Two weedings first after 25 days and the other after 40 days of planting (ix) About 100" (20-6-1950 to 20.2-51). (x) 20-2-1951.

2. TREATMENTS:

1. Spraying water on seedlings (Control)
2. Dissolving 1 milligrams of Bindolye acetic acid in 1000 c. c. of water and dividing the solution in 7 groups. Spraying the solution at the rate of one group/day for 7 days with an atomiser.
3. Same as (2) using 5 milligrams of Bindolye acetic acid.
4. ... 10 do ...
5. do 15 do ...
6. do 25 do ...

3. DESIGN:

(i) L. Sq. (ii) (a) 6 (b) N. A. (iii) 6 (iv) (a) 7′ × 7′ (b) 6′ × 6′ (v) A border of 2′ between plots and 2′ between blocks was kept. A guard row of 6" width was discarded all round each net plot. (vi) Yes.

4. GENERAL:

(i) Satisfatory, No lodging. (ii) NIL (iii) Grain weight (iv) (a) 1949 2nd crop 1950 2nd crop. (b) No (c) Nil (v) (a)&(b) Nil (vi) & (vii) Nil.

5. RESULTS:

(i) 634 lb./ac.
(ii) 90 lb./ac.
(iii) The treatments differ highly significant.
(iv) Grain yield in lb./ac.

Treatment	Mean.
1	529
2	630
3	643
4	592
5	706
6	706

S. E. of treatment means = 37 lb/ac.

Crop :-Paddy (2nd crop) Ref :-K. 50 (4)

Site :-Central Farm, Munnuthy Type:- 'M'

Object :—To find out the most beneficial dosage of manures containing N and P_2O_5, either alone or in combination.

1. BASAL CONDITIONS

(i) (a) Nil (b) Paddy (c) Green leaf 1 ton/ac. Ash 1 ton/ac. (ii) (a) Sandy loam, (b) Refer soil analysis (iii) 15.9.1950. (iv) (a) 3 ploughings with country plough and levelling (b) transplanting in lines (c)—(d) About 6"×6" (e) 2 to 3 (v) As under treatments (vi) Chembavu local, Medium (4 months). (vii) Rainfed. (viii) Single weeding 20 to 30 days after transplanting. (ix) 12.94" (15.9.50 to 11.1.51) (x) 11.1.1951.

2. TREATMENTS :

All Combinations of (1), (2)

(1) 3 levels of N as G.N.C. :—15, 22½ and 30 lb. N/ac.
(2) 2 levels of P_2O_5 as B.M. :—10, 15 lb. P_2O_5/ac. and
2 Selective treatments are,
(a) Control (No manure).
(b) 15 lb. N/ac. as G.N.C.

All treatments including Selective treatments received a basal dressing of G.L. at 1 ton/ac+F.Y.M. at 1 ton/ac.+Ash at 1/2 ton/ac.

Green leaf and F.Y.M. applied before transplanting.

Ash at the time of transplanting. Other manures within 2 to 3 weeks after transplanting along with weeding.

3. DESIGN :

(i) R.B.D. (ii) (a) 8 (b) N.A. (iii) 4 (iv) (a) Plot size varied (b) 2½ cents (v) A central area of 2½ cents was harvested from each plot leaving the rest for border effects (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) Grain yield. (iv) (a) 1950 (2nd crop) to 1952 (2nd crop.) (b) Yes (c) N.A. (v) (a) Nil (b) Nil. (vi) & (vii) Nil.

5. RESULTS :

(i) 2419 lb./ac.

(ii) 206.4 lb./ac.

(iii) Main effect of P alone is significant. Others are not significant.

(iv) Mean Grain yield in lb./ac.

(a) = 2378 lb/ac.
(b) = 2272 lb/ac.

N / P	15	22½	30	mean
10	2480	2603	2541	2541
15	2333	2324	2422	2360
mean	2407	2464	2482	2451

S.E. for the marginal mean of P = 59.6 lb./ac.

S.E. foa marginal mean af N = 72.9 lb./ac.

S.E. for the body of table = 103.2 lb./ac.

Crop :-Paddy (1st crop) Ref :-K. 51(4)/50(4)

Site :-Central Farm, Mannuthy Type :-'M'

Object :—To find-out the most beneficial dosage of measures containing N and P_2O_5 either alone or in combination.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) Same experiment in these plots. (ii) (a) Sandy loam (b) Refer soil analysis Mannuthy. (iii) 24.4.1951. (iv) (a) 3 ploughing with country plough (b) transplanting in lines (c)—(d) 6" × 6" (e) 2 or 3. (v) Pl. See Treatments (vi) Chembavu, Local Medium (4 months). (vii) Rainfed.(viii) Single weeding just at the time of application of manures. (ix) 71.77" (24.4.1951 to 23.8.1951). (x) 23.8.1951.

2. TREATMENTS :

All Combinations of (1), (2)

(1) 3 levels of N as G.N.C. :—15, 22½ and 30 lb. N/ac.

(2) 2 levels of P_2O_5 as B.M. :—10, 15 lb. P_2O_5/ac.
and 2 Selective treatments.
(a) Control (No manure).
(b) 15 lb. N/ac. as G.N.C.

All treatments including Selective treatments received a basal dressing of (G.L. at 1 ton/ac.+F.Y.M.at 1 ton/ac.+Ash at 1/2 ton/ac.

3. DESIGN :

(i) R.B.D. (ii) (a) 8 (b) N.A. (iii) 4 (iv) (a) Plot size varied (b) 2½ cents. (v) A central area of 2½ cents was harvested from each plot leaving the rest for border effects. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) Grain yield. (iv) (a) 1950(2nd crop) to 1952 (2nd crop) (b) Yes (c) N.A. (v) (a) (b) Nil. (vi) & (vii) Nil.

5. RESULTS :

(i) 1523 lb/ac.

(ii) 286.4 lb/ac.

(iii(None of the treatment effects is significant.

(iv) Mean Grain yield in lb/ac.

(a) = 1618 lb./ac.
(b) = 1483 lb/ac.

N / P	15	22½	30	mean
10	1340	1628	1473	1480
15	1588	1325	1728	1547
mean	1464	1477	1601	1514

S.E. for marginal mean of P = 82.7 lb./ac.
S.E. for marginal mean of N = 101.2 lb./ac.
S.E. for the body of table = 143.2 lb./ac.

Crop :-Paddy (2nd crop) Ref :-K. 51(6)/51(4)/50(4)
Site :.Central Farm, Mannuthy Type :-'M'

Object :—To find out the most beneficial dosage of manures containing N and P_2O_5 either alone or in combination.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) Same experiment was in these plots (ii) (a) Sandy loam (b) Refer soil analysis Mannuthy (iii) 6.9.1951. (iv) (a) 3 ploughing with country plough, levelling (b) Transplanting in lines (c)—(d) 6"×6" (e) 2 to 3 (v) As under treatments. (vi) Chembavu Local Medium (4 months) (vii) Rainfed (viii) Single weeding just before the application of manures. (ix) 17.0" (6.9.1951 to 9.1.1952) (x) 9.1.1952.

2. TREATMENTS.

All Combinations of (1) and (2)
(1) 3 levels of N as G.N.C:—15, 22½ and 30 lb. N/ac.
(2) 2 levels of P_2O_5 as B.M:—10, 15 lb. P_2O_5/ac. and
2 selective treatments.
(a) Control (No manure).
(b) 15 lb. N/ac. as G.N.C.

All treatments including selective treatments received a basal dressing of G.L. at 1 ton/ac.+F.Y.M. at 1 ton/ac.+Ash at 1/2 ton/ac.
Green leaf and F.Y.M. at the time of ploughing. Ash before planting. G.N.C. and B.M. a month after planting.

3. DESIGN :

(i) R.B.D. (ii) (a) 8 (b) N.A. (iii) 4 (iv) (a) Plot Size varied (b) 2½ cents. (v) A central area of 2½ cents was harvested from each plot leaving the rest for border effects. (vi) Yes.

4. GENERAL :

(i) Satisfactory ; (ii) N.A. ; (iii) Grain yield ; (iv) (a) 1950 (2nd crop) to 1952 (2nd crop) (b) Yes (c) N.A. ; (v) (a), (b) Nil ; (vi) & (vii) Nil.

RESULTS :
(i) 1894 lb./ac.
(ii) 145.2 ,,
(iii) Main effect of P alone is significant. Others are not significant.
(iv) Mean grain yield in lb./ac.
(a) =1848 lb./ac.
(b) =1798 ,,

N / P	15	22½	30	Mean
10	1972	1952	2048	1991
15	1790	1880	1865	1845
Mean	1881	1916	1957	1918

S.E. for the marginal mean of N=51.3 lb./ac.
S.E. for ,, ,, of P=41.9 ,,
S.E. for the body of table =72.6 ,,

Crop : Paddy (1st crop) Ref : K. 52(13)/51(4,6)/50(4)

Site : Central Farm, Mannuthy Type : 'M'

Object :—To find-out the most beneficial dosage of manures containing N and P_2O_5 either alone or in combination.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) Same experiment was on these plots. (ii) (a) Sandy loam (b) Refer soil analysis (iii) 22.4.52. (iv) (a) 3 ploughings with country plough. (b) Transplanting in lines. (c)—(d)6"×6"(e) 2 to 3 (v) As under Treatments (vi) Chembavu, local, medium (4 months) (vii) Rainfed (viii) Single weeding just before applying manures. (ix) 61.13" (22.4.1952 to 23.8.1952) (x) 23.8.1952.

2. TREATMENTS :

All Combinations of (1), (2)

(1) 3 levels of N as G.N.C. :—15. 22½ and 30 lb. N/ac.

(2) 2 levels P_2O_5 as B.M:—10. 15 lb. P_2O_5/ac. and

2 selective treatments

(a) Control (No manure).

(b) 15 lb. N/ac. as G.N.C.

All treatments including selective treatments received a basal dressing of G.L. at 1 ton/ac. +F.Y.M. at 1 ton/ac. +Ash at 1/2 ton/ac.

Manures applied on 27.5.1952.

3. DESIGN :

(1) R.B.D. (ii) (a) 8 (b) N.A. (iii) 4 (iv) (a) Varied slightly (b) About 2½ cents. (v) A central area of 2½ cents from each plot was harvested and the rest discarded for border effects (vi) Yes.

4. GENERAL :

(i) Satisfactory (ii) N.A. (iii) Grain yield. (vi) (a) 1950 (2nd crop) to 1952 (2nd crop) (b) Yes. (c) N.A. (v) (a), (b) Nil (vi) & (vii) Nil.

5. RESULTS :

(i) 2053 lb./ac.

(ii) 285.6 ,,

(iii) Main effect of N alone is significant.
Others are not significant.

(iv) Mean grain yield in lb./ac.
(a) =1916 lb./ac.
(b) =2071 ,,

N / P	15	22½	30	Mean
10	2072	1984	2278	2111
15	1867	1874	2360	2034
mean	1970	1929	2319	2073

S. E. for the marginal mean of N=100.9 lb./ac.

S. E. for the marginal mean of P=82.4 ,,

S. E. for body of table =142.8 ,,

Crop :-Paddy (2nd crop) Ref :-K. 52(15)/52(13)/51(4,6)/50(4)

Site :-Central Farm, Mannuthy Type :-'M'

Object :— To find-out the most beneficial dosage of manures containing N and P_2O_5 either alone or in combination

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) Same experiment was on these plots. (ii) (a) Sandy loam (b) Refer soil analysis (iii) 15.9.1950. (iv) (a) 3 ploughings with country plough and levelling (b) transplanating in lines (c)—(d) 6"×6" (e) 2 to 3. (v) As under Treatments (vi) Chembavu, Local Medium (4 months.) (vii) Rainfed. (viii) Single weeding at the time of application of manures. (ix) 17.80" (15.9.1950 to 11.1.1951). (x) 11.1.1951.

2. TREATMENTS :

All Combinations of (1). (2)

(1) 3 levels of N as G.N.C. :—15, 22 1/2 and 30 lb. N/ac.

(2) 2 levels of P_2O_5 as B.M :— 10, 15 lb. P_2O_5/ac. and

2 Selective treatments.

(a) Control (No manure).

(b) 15 lb. N/ac. as G.N.C.

All treatments including Selective treatments received a basal dressing of G.L. at 1 ton/ac.+F.Y.M. at 1 ton/ac.+Ash at 1/2 ton/ac.

Manures applied on 30.8. 1952.

3. DESIGN :

(i) R.B.D. (ii) (a) 8 (b) N.A. (iii) 4 (iv) (a) Plot size varied (b) 2½ cents. (v) A central area of 2 1/2 cents was harvested from each plot leaving the rest for border effects. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) Grain yield. (iv) (a) 1950 (2nd crop) to 1952 (2nd crop) (b) Yes (c) N.A. (v) (a) (b) Nil. (vi) & (vii) Nil.

5. RESULTS :

(i) 1729 lb./ac.

(ii) 142.4 lb./ac.

(iii) *Main effect of P alone is significant. Others are not significant.*

(iv) Mean grain yield in lb./ac.

(a) = 1726 lb./ac.

(b) = 1809 lb./ac.

N / P	15	22 1/2	30	mean
10	1738	1830	1763	1777
15	1593	1652	1719	1655
mean	1666	1741	1741	1716

S.E. for the the marginal mean of N = 50.3 lb./ac.

S.E. for the marginal mean of P = 41.1 lb./ac.

S.E. for tbody of the table = 71.2 lb./ac.

Crop :-Paddy (2nd crop) Ref :-K. 50 (3)

Site :-Central Farm, Mannuthy Type :-'M'

Object :—To find out the maximum potential yield with N obtained from G.N.C. or A/S and P_2O_5 fro; B.M.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) Green leaf at 1 ton/ac. (ii) (a) Sandy loam (b) Refer Soil Analysis (iii) 30.8.1950. (iv) (a) 3 ploughing with country plough and levelling (b) transplanting in lines (c)— (d) 6" × 6" (e) 2 to 3. (v) Green leaf 1 ton/ac. F.Y.M. 1 ton/ac. (at the time of ploughing) Ash at 1/2 ton/ac. at the time of transplanting. (vi) Chittini, Local Medium (4 months). (vii) Rainfed. (viii) One weeding just before application of G.N.C. or A/S and B.M. (ix) 12.94" (30.8.50 to 9.1.1951). (x) 9.1.1951.

2. TREATMENTS :

All possible combinations of

1. 2 levels of N viz N_1=40 N_2=50 lb./ac.
2. 2 sources of N viz. G.N.C. & A/S.
3. 2 levels of P_2O_5 as B.M. viz. P_1=20 P_2=30 lb./ac.

Treatments top-dressed one month after planting.

3. DESIGN :

(i) 2^3 fact. in R.B.D. (ii) (a) 8 (b) N.A. (iii) 4 (iv) (a) Varied slightly (b) 2½ cents. (v) A central area of 2 1/2 cents was harvested leaving the rest for border effects. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) Grain yield. (iv) (a) 1950 (2nd crop) to 1952 (2nd crop) (b) Yes (c) N A. (v) (a) NIL (b) Nil. (vi) Nil. (vii) Nil.

5. RESULTS :

(i) 2275 lb./ac.

(ii) 240 lb./ac.

(iii) Neither main effects nor interactions are significant.

(iv) Av. grain yield in lb./ac.

	N_1	N_2	Mean
G.N.C.	2229	2402	2315
A.S.	2234	2235	2234
Mean	2232	2318	2275
P_1	2205	2384	2294
P_2	2258	2252	2256

	P_1	P_2	Mean
G.N.C.	2373	2258	2315
A.S.	2216	2254	2234
Mean	2294	2256	2275

S.E. of body of table = 85 lb./ac.

S.E. of marginal means = 60 lb./ac.

Crop :-Paddy (1st crop) Ref :-K. 51(3)/50(3)

Site :-Central Farm Mannuthy Type :-'M'

Object:—To find out maximum potential yield with N obtained from G.N.C or A/S, and P_2O_5 from B. M.

1. BASAL CONDITIONS:

(i) (a) Nil (b) Paddy (c) Same experiment was in these plots. (ii) (a) Sandy loam (b) Refer soil analysis (iii) 25.4.1951. (iv) (a) 3 ploughings with country plough. (b) Transplanting. (c)—(d) 6"×6" (e) 2 or 3 (v) *Green leaf 1 ton/ac. along with ploughing + Ash 1/2 ton/ac. after planting (vi)* Vattan. Local Medium (4 months) (vii) Rainfed (viii) Single weeding just before applying the manures. (ix) 71.77" (25.4.1951 to 22.8.1951) (x) 22.8.1951.

2. TREATMENTS-

All Combinations of

(i) Two levels of N:— 40 (N_1), 50 (N_2) lb/ac.

(ii) Two sources of N:—G.N.C., and A/S.

(iii) Two levels of P_2O_5:—20 (P_0). 30(P_2)lb/ac.

Applied on 25.6.1951.

3. DESIGN:

(i) 2^3 faction R.B.D. (ii) (a) 8 (b) N.A. (iii) 4 (iv) (a) Slightly varied (b) 2½ cents. (v) A central area of 2½ cents from each plot was harvested leaving the rest for border effects. (vi) Yes.

4. GENERAL:

(i) Satisfactory (ii) N.A. (iii) Grain yield. (iv) (a) 1950 (2nd crop) to 1952 (2nd crop) (b) Yes. (c) N.A. (v) (a), (b) N.A (vi) & (vii) N.A.

5. RESULTS:

(i) 1808 lb/ac.

(ii) 204 lb/ac.

(iii) Neither main effect nor their interactions are significant.

(iv) Grain yield in lb/acre.

	N_1	N_2	Mean
G.N.C.	1729	1950	1839
A/S.	1822	1729	1776
Mean	1776	1839	1808

	P_1	P_2	Mean
G.N.C.	1909	1770	1839
A/S.	1849	1702	1776
N_1	1882	1669	1776
N_2	1875	1804	1839
Mean	1879	1736	1808

S.E. of body of table = 73 lb/ac.

S.E. of marginal means = 51 lb/ac.

Crop :-Paddy (2nd crop) Ref :-K. 51(5)/51(3)/50(3)

Site :-Central Farm, Mannuthy Type .-'M'

Object:— To find-out the maximum potential yield with N obtained from G.N.C. or A/S and P_2O_5 from B.M.

1. BASAL CONDITIONS:

(i) (a) NIL (b) Paddy (c) Same experiment was in these plots. (ii) (a) Sandy loam. (b) Refer soil analysis (iii) 28.8.1951. (iv) (a) 3 ploughings with country plough, levelling. (b) Transplanting in lines. (c)—(d) 6"×6" (e) 2 to 3 (v) G.L. 1 ton/ac. F.Y.M. 1 ton/ac. (at the time of ploughing) .Ash ½ ton/ac. at the time of transplanting. (vi) Chittini, local Medium (4 months) (vii) Rainfed. (viii) One weeding just befor application of G.N.C. or A/S and B.M. (ix) 17.1" (28.8.51 to 4.1.52.) (x) 4.1.1952.

2. TREATMENTS:

All combinations of

(i) 2 levels of N - 40 (N_1), 50 (N_2) lb/ac.

(ii) 2 sources of N- G.N.C & A/S.

(iii) 2 levels of P_2O_5 - 20 (P_1), 30 (P_2) lb/ac. as B.M.

3. DESIGN:

(i) 2^2 fact. in R.B.D. (ii) (a) 8 (b) N.A. (iii) 4 (iv) (a) Varied slightly. (b) 2½ cents. (v) A central area of 2½ cents was harvested leaving the rest for border effects. (vi) Yes.

4. GENERAL:

(i) N.A. (ii) Not recorded (iii) Grain yield. (iv) (a) 1950 (2nd crop) to 1952 (2nd crop) (b) Yes (c) N.A. (v) (a), (b) Nil. (vi) & (vii) N.A.

5. RESULTS:

(i) 2101 lb/ac.

(ii) 156 lb/ac.

(iii) The 'forms of N' are significant, the interaction between 'forms of N' and 'levels of N' is significant. Other main effects and ineractions are not significant.

(iv) Mean yield in lb./ac.

	N_1	N_2	Mean
G.N.C.	2055	2298	2176
A/S.	2062	1990	2026
P_1	2064	2139	2101
P_2	2054	2149	2101
Mean	2059	2144	2101

	P_1	P_2	Mean
G.N.C.	2168	2185	2176
A/S.	2035	2018	2026
Mean	2101	2101	2101

S.E. of body of table = 56 lb/ac
S.E. of marginal means = 39 lb/ac.

Crop :-Paddy (1st crop) Ref :-K. **52(12)/51(3,5)/50(3)**

Site :-Central Farm, Mannuthy. Type :-'M'.

Object :—To find-out the best combination of N obtained from G.N.C. or A/S and P_2O_5 obtained from B.M. for obtaining the maximum yield.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) Same experiment was in these plots. (ii) (a) Sandy loam (b) Refer soil analysis (iii) 21.4.1952. (iv) (a) 3 ploughings with country plough (b) Transplanting in lines (c)—(d)6″×6″ (e) 2 or 3 (v) G.L. 1 ton/ac.+Ash 1/2 ton/ac. after planting. (vi) Local medium (4 months) (vii) Rainfed. (viii) Singleweeding just at the time of applying manures. (ix) 61.13″ (21.4.1952 to 20.8.1952.) (x) 20.8.52.

2. TREATMENTS :

All combinations of
(i) 2 levels of N—40 (N_1), 50 (N_2) lb/ac.
(ii) 2 source of N—G.N.C., A/S. and
(iii) 2 levels of P_2O_5 as B.M.—20(P_1), 30 (P_2) lb/ac.
Manures applied on 27.5.1952.

3. DESIGN :

(i) 2^3 fact. in R.B.D. (ii) (a) 8 (b) N.A. (iii) 4 (iv) (a) Varying slightly (b) 2½ cents. (v) A central area of 2½ cents from each plot was harvested leaving the rest for border effects. (vi) Yes.

4. GENERAL :

(i) Satisfactory (ii) N. A. (iii) Grain yield (iv) (a) 1950-2nd crop to 1952-2nd crop (b) Yes (c) N.A. (v) (a), (b) Nil(vi) & (vii) N.A.

5. RESULTS :

(i) 2150 lb/ac.
(ii) 296 lb/ac.
(iii) Neither main effects nor interactions are significant.
(iv) Table of means in lb/ac.

	N_1	N_2	Mean
G.N.C.	2154	2237	2196
A/S	2145	2062	2103
Mean.	2150	2149	2150

	P_1	P_2	Mean
G.N.C.	2324	2068	2196
A/S	2077	2130	2103
N_1	2195	2104	2150
N_2	2206	2093	2149
Mean.	2200	2099	2150

S. E. of body of table = 105 lb/ac.
S. E. of marginal mean = 74 lb/ac.

Crop :-Paddy (2nd crop) Ref :-52(14)/52(12)/51(3,5)/50(3)
Site :-Central Farm, Manuthy. Type :-'M'.

Object :—To find-out the best combination of N obtained from G.N.C. or A/S and P_2O_5 obtained from B.M.for obtaining the maximum yield.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) Same experiment was in these plots. (ii) (a) Sandy loam (b) Refer soil analysis (iii) 28.8.52 (iv) (a) 3 ploughings with country plough, levelling (b) Transplanting in lines. (c)—(d) 6"×6" (e) 2 to 3. (v) Green leaf 1 ton+F.Y.M. 1 ton/ac. + Ash 1/2 ton/ac. at the time of transplanting. (vi) Local, Medium (4 months) (vii) Rainfed. (viii) One weeding just before application of manures. (ix) 17.80" (28.8.1952 to 5.1.1953) (x) 5.1.1953.

2. TREATMENTS :

All combinations of
(i) 2 levels of N—40 (N_1), 50 (N_2)lb/ac.
(ii) 2 sources of N—G.N.C., A/S.
(iii) 2 levels of P_2O_5—20 (P_1), 30 (P_2) lb/ac. as B.M.

3. DESIGN :

(i) 2^3 fact in R.B.D. (ii) (a) 8 (b) N.A. (iii) 4 (iv) (a) Vary slightly. (b) 2½ cents. (v) A central area of 2½ cents was harvested leaving the rest for border effects. (vi) Yes.

4. GENERAL :

(i) Satisfactory (ii) (a) N. A. (iii) Grain yield. (iv) (a) 1950-2nd crop to 1952-2nd crop (b) Yes. (c) N.A. (v) (a), (b) Nil. (vi) & (vii) N.A.

5. RESULTS :

(i) 1854 lb/ac.
(ii) 128 lb/ac.
(iii) Only the main effect of levels of N and interection levels of N×P are significant.
(iv) Table of means lb/ac.

	N_1	N_2	Mean
G.N.C.	1790	1862	1826
A/S.	1796	1965	1881
Mean.	1793	1914	1854

	P_1	P_2	Mean
G.N.C	1833	1820	1826
A/S.	1842	1920	1881
N_1	1729	1858	1793
N_2	1946	1882	1914
Mean	1837	1870	1854

S. E. of body of table = 46 lb/ac.
S. E. of marginal means = 32 lb/ac.

Crop :-Paddy (1st crop) Ref :-K. 48(1)

Site :-Chemical Section, Central Farm Ollukara, Mannuthy. Type :-'M'

Object :—To find out the best time for application of Oilcake to paddy crop.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) Same experiment was in these plots. (ii) (a) Sandy loam (b) Refer soil analysis (iii) 22.6.48. (iv) (a) 3 ploughings with country plough, levelling (b) Transplanting in lines (c)—(d) 6"×6" (e) 2 to 3. (v) Green leaf at 1 ton/ac. at the time of ploughing; Ash at 1 ton/ac. at the the time of transplanting. (vi) Chembavu local Medium, (vii) Rainfed. (viii) Single weeding 20 to 30 days after transplanting. (ix) 104.00" (22.6.48 to 23.9.1948). (x) 23.9.1948.

2. TREATMENTS :

1. 15 lb./ac. of N as G.N.C. (powdered) at the time of transplanting.
2. " " " " " " " " 8 days after transplanting.
3. " " " " " " " " 16 " " "
4. " " " " " " " " 24 " " "
5. " " " " " " " " 32 " " "
6. " " " " " " " " 40 " " "
7. " " " " " " " " 48 " " "
8. " " " " " " " " 56 " " "

3. DESIGN :

(i) R.B.D. (ii) (a) 8 (b) N.A. (iii) 4 (iv) (a) Size of plots varied slightly. Maximum size being about 3.3 cents (64'×22') (b) 3 cents. (v) A central area of 3 cents was harvested from each plot & the rest if any discarded for border effect. (vi) Yes.

4. GENERAL :

(i) Poor. (ii) N.A. (iii) Grain & straw yield. (iv) (a) 1947-1st crop to 1949-2nd crop (b) Yes. (c) N.A. (v) (a) Nil (b) Nil. (vi) Nil. (vii) Nil.

5. RESULTS :

(i) 916 lb./ac.
(ii) 81 lb./ac.
(iii) The treatment differences are not significant.
(iv) Grain yield in lb./ac.

Treatment	Mean yield
1.	962
2.	857
3.	927
4.	973
5.	931
6.	893
7.	944
8.	843

S.E. of treatment mean = 41 lb./ac.

Crop :-Paddy (2nd crop) Ref :-K. 48(3)

Site :-Chemical Section, Central Farm, Mannuthy. Type :-'M'

Object :—To find out the best time for application of Oil cakes to paddy crop.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) Same experiment was in these plots. (ii) (a) Sandy loam (b) Refer soil analysis. (iii) 27.9.48. (iv) (a) 3 ploughings with country plough, and levelling (b) Transplanting in lines (c)—(d) 6"×6" (e) 2 to 3. (v) Green leaf 1 ton/ac. ; F.Y.M. 1 1/2 ton/ac. at the time of ploughing. Ash 1 ton/ac. on 25.9.48 at the time of transplanting. (vi) Athian, local, Medium. (vii) Rainfed. (viii) Single weeding 20 to 30 days after transplanting. (ix) 12.86" (27.9.48 to 11.1.1949). (x) 11.1.49.

2. TREATMENTS :

1. 15 lb./ac. N as powdered G.N.C. at the time of transplanting as top dressing.
2. 15 lb./ac. N as powdered G.N.C. 8 days after transplanting as top dressing.
3. " " " " " " 16 " " " " " "
4. " " " " " " 24 " " " " " "

5 :— ,, ', ,, ,, ,, ,, 32 ,, ,, ,, ,, ,, ,,
6 :— ,, ,, ,, ,, ,, ,, 40 ,, ,, ,, ,, ,, ,,
7 :— ,, ,, ,, ,, ,, ,, 48 ,, ,, ,, ,, ,, ,,
8 :— ,, ,, ,, ,, ,, ,, 56 ,, ,, ,, ,, ,, ,,

3. DESIGN :

(i) R.B.D. (ii) (a) 8 (b) N.A. (iii) 4 (iv) (a) Size of plots varied slightly, maximum size being about 3.3 cents (64′×22′) (b) 3 cents. (v) A central area of 3 cents was harvested from each plot and the rest if any was discarded for border effects. (vi) Yes.

4. GENERAL :

(i) Satisfactory(ii) N.A. (iii) Grain and strain yield. (iv) (a) 1947-1st crop to 1949-2nd crop (b) Yes (c) N.A. (v) (a) Nil (b) Nil. (vi) Nil. (vii) Nil.

5. RESULTS :

(i) 1377 lb./ac.
(ii) 174 lb./ac.
(iii) The treatment differences are not significant.
(iv) Grain yield in lb./ac.

Treatment	Mean yield
1.	1373
2.	1314
3.	1335
4.	1430
5.	1411
6.	1402
7.	1347
8.	1405.

S.E. of treatment mean = 87 lb./ac.

Crop :-Paddy (1st crop) Ref :-K. 49(3)

Site :-Central Farm, Mannuthy. Type :-'M'

Object:—To find-out the best time of application of Oil cakes to paddy crop.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Paddy (c) Same experiment was in these plots. (ii) (a) Sandy loam. (b) Refer soil analysis (iii) 12.6.1949. (iv) (a) 3 ploughings with country plough and levelling. (b) Transplanting (c)—(d) 6×6″ (e) 2 to 3 (v) G.L. at the rate of 1 ton/ac. at the time of ploughing on 26.5.1949. Ash 1ton/ac at the time of transplanting. (vi) Chembavu, Local, Medium (4 months) (vii) Rainfed. (viii) Single weeding 20 to 30 days after transplanting. (ix) 116.42″ (12.6. 1949 to 11.9.1949) (x) 11.9.1949.

2. TREATMENTS:

1. 15 lb/ac. N as powdered G.N.C. as the time of transplanting at top dressing.
2. ... ... 8 days after transplanting ... ... do... ... ...
3. ... ... 16 days after transplanting ... ... do... ... ...
4. ... ... 24 days after transplanting ... ... do... ... ...
5. ... ... 32 days after transplanting ... ... do... ... ...
6. ... ... 40 days after transplanting ... ... do... ... ...
7. ... ... 48 days after transplanting ... ... do... ... ...
8. ... ... 56 days after transplanting ... ... do... ... ...

3. DESIGN:

(i) R.B.D. (ii) (a) 8 (b)N.A. (iii) 4 (iv) (a) Size of plots varied slightly, maximum size being about 3.3 cents (64′ × 22′) (b) 3 cents (v) A central area of 3 cents was harvested from each plot and the rest if any was discarded for border effect. (vi) Yes.

4. GENERAL:

(i) N.A. (ii) N.A. (iii) Grain and Straw yield. (iv) (a) 1947- 1st crop to 1949-2nd crop (b) Yes. (c) N.A. (v) (a), (b) Nil. (vi) & (vii) N.A.

5. RESULTS:

(i) 1118 lb./ac.
(ii) 157 lb./ac.

(iii) The treatments differrences are not significant.
(iv) Grain yield in lb/ac.

Treatment	Mean
1	1179
2	1117
3	1092
4	1206
5	1146
6	1131
7	1023
8	1054

S.E. of treatment mean = 79.0 lb./ac.

Crop :-Paddy (2nd crop) Ref :-K. 49(4)
Site :-Central Farm, Mannuthy. Type :-'M'

Object :—To find out the best time for application of Oil cakes to paddy crop.

1. BASAL CONDITIONS:

(i) (a) Nil (b) Paddy (c) same expt. was in these plots. (ii) (a) Sandy loam (b) Refer soil analysis (iii) 29.9.1949. (iv) (a) 3 ploughings with country plough and levelling (b) Transplanting in lines (c)—(d) 6"×6" (e) 2 to 3 (v) G.L. 1 ton/ac. F.Y.M. 1½ tons/ac., and Ash at 1 ton/ac. at the time of transplanting (G.L. & F.Y.M. at the time of ploughing on 12.9.1949) (vi) Athian, Medium, local (4 months) (vii) Rainfed. (viii) Single weeding 20 to 30 days after transplanting. (ix) 10.48" (27.9.1949 to 9.1.1950) (x) 9.1.1950.

2. TREATMENTS:

1 15 lb./ac. N as powdered G.N.C. at the time of transplanting as top dressing.
2 ... ... do ... ... 8 days after trans planting ... ...do ... ...
3 ... ... do ... ... 16 ... ... do ... ...do ... ...
4 ... ... do ... ... 24 ... ... do ... ...do ... ...
5 ... ... do ... ... 32 ... ... do ... ...do ... ...
6 ... ... do ... ... 40 ... ... do ... ...do ... ...
7 ... ... do ... ... 48 ... ... do ... ...do ... ...
8 ... ... do ... ... 56 ... ... do ... ...do ... ...

3. DESIGN:

(i) R.B.D. (ii) (a) 8 (b) N.A. (iii) 4 (iv) (a) size of plots varied slightly; maximum size being about 3.3 cents (64'×22') (b) 3 cent (v) A central area of 3 cents was harvested from each plot and the rest if any was discarded for border effects. (vi) Yes.

4. GENERAL:

(i) N.A. (ii) N.A. (iii) Grain and Straw yield. (iv) (a) 1947-1st crop to 1949 2nd crop (b) Yes. (c) N.A. (v) (a), (b) Nil. (vi) & (vii) Nil.

5. RESULTS:

(i) 1427 lb./ac.
(ii) 167.0 lb./ac.
(ii) The treatment differences are not significant.
(iv) Grain yield in lb/ac.

Treatment	Mean
1	1508
2	1387
3	1423
4	1444
5	1554
6	1463
7	1329
8	1306

S.E. of treatment mean = 84.0 lb./ac.

Crop :-Paddy (2nd crop) Ref :-K. 53(20)

Site :-Central Farm, Mannuthy. Type :-'M'

Object :—To evolve the best and most economic combination of A/S, B, M., Ash and F.Y.M. to get the highest yield of paddy.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) G. L. 1 ton/ac. F.Y.M. 1 ton/ac, Ash 1/2 ton/ac. (ii) (a) Sandy loam (b) Refer soil analysis. (iii) 19 to 25.9.1953 (iv) (a) 3 ploughings with country plough, levelling. (b) Transplanting in lines. (c)—(d) 6"×6" (e) 2 to 3. (v) Nil (vi) Cochin 1, local, medium. (vii) Rainfed. (viii) Weeding on 19.10.1953. A/S was top dressed immediately after weeding on 20th and 21st Oct. 1953. (ix) 14.45" (19.9.1953 to 11.1.1954) (x) 11.1.1954.

2. TREATMENTS :

1. Control.
2. Ash at 1 ton/ac.
3. F. Y. M. at 2½ ton/ac. +G.L. 2½ ton /ac.
4. (2) +(3).
5. (4) +A/S at 20 lb/ac. N
6. (4) +A/S at 40 lb N/ac.
7. (4) +A/S at 60 lb N/ac.
8. (5) +B.M. at 20 lb P_2O_5/ac.
9. (6) +B.M. at 20 lb P_2O_5/ac.
10. (7) +B.M. at 20 lb P_2O_5/ac.
11. (5) +B.M. at 40 lb P_2O_5/ac.
12. (6) + — — do — — — .
13. (7) + — — do — — — .
14. (5) +B.M. at 60 lb P_2O_5/ac.
15. (6) + — — do — — — .
16. (7) + — — do — — — .

Ash, F.Y.M. G.L., and B.M. applied while ploughing before planting.
A/S applied as top dressing about 4 weeks after transplanting when a weeding is carried out.

3. DESIGN :

(i) R.B.D. (ii) (a) 16 (b) N.A. (iii) 4 (iv) (a) Vary from 2½ to 3 cents approximately. (b) 2½ cents (v) A central area of 2½ cents from each plot was harvested leaving the rest for border effects. (vi) Yes.

4. GENERAL :

(i) Satisfactory (ii) N.A. (iii) Grain yield. (iv) (a) 1953—2nd crop. to 1955—2nd crop (b) Yes. (c) N.A. (v) (a) & (b) Nil (vi) & (vii) Nil.

5. RESULTS :

(i) 1703 lb./ac.
(ii) 199.0 lb./ac.
(iii) The treatment difference are not significant.
(iv) Grain yield in lb./ac.

Treatment	Mean.	Treatment	Mean
1.	1646	9.	1751
2.	1772	10.	1826
3.	1657	11.	1827
4.	1794	12.	1750
5.	1735	13.	1380
6.	1567	14.	1801
7.	1578	15.	1790
8.	1801	16.	1570

S. E. of treatement mean = 100.0 lb./ac.

Crop :-Paddy (2nd crop) Ref :-K. 52(2)

Site :-Paddy Breeding Station, Monkompu. Type :-'M'.

Object :—To test the efficacy of Hyperphosphate over Bone meal.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) Nil (ii) (a) Clayey in nature (b) N.A. (iii) 14.11.1952. (iv) (a) 2 types of ploughings (Dry and wet ploughings) and levelling (b) Sprouted seeds sown by broadcast (c) 130 lb/ac. (d)—(e)—(v) Nil. (vi) MO_2 Variety Early, Improved (vii) Irrigated. (viii) 2 weedings. (ix) Nil. (x) 7.2.1953.

2. TREATMENTS :

1. 2 cwts of Hyper phosphate/ac.
2. 2 cwts of Bone meal/ac.

Applied on the 22nd day after sowing.

3. DESIGN :

(i) two 2×2 Lat Sq. (ii) (a) 2 (b) N.A. (iii) 4 (iv) (a) 68′×30′ (b) 66′×28′ (v) 1 foot border round the plot was discarded. (vi) Yes.

4. GENERAL :

(i) Excellent growth in Hyper phosphate plots, partial lodging on 10.1.1953. (ii) Slight attack of rice hispa. Spraying of insecticides done. (iii) Weight of grain. (iv) (a) 1952 to 1954 (b) Yes. (c) N.A. (v) (a), (b) Nil. (vi) & (vii) Nil.

5. RESULTS :

(i) 646 lb/ac.
(ii) 29 lb/ac.
(iii) The treatment are not significant.
(iv) Av. yield in lb/ac.

Treatment	Mean.
1.	704
2.	588
S. E. of treatment means	±14 lb/ac.

Crop :-Paddy (2nd crop) Ref :-K. 53(4)/52(2)
Site :-Paddy Breeding Stn. Monkompu. Type :-'M'

Object :—To test the efficacy of Hyper phosphate over Bonemeal.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) Nil (ii) (a) Clayey in nature (b) N.A. (iii) 18.11.1953 (iv) (a) The field is ploughed twice (dry and wet ploughing) and levelled (b) Sprouted seeds are sown by broadcast (c) 130 lb/ac. (d) —(e)—(v) Nil (vi) MO_4 Variety early, Improved (vii) Irrigated. (viii) 2 weedings. (ix) Nil (x) 21.2.1954.

2. TREATMENTS :

(1) Hyper phosphate at 2 cwt./ac.
(2) Bonemeal at 2 cwt./ac.
Applied 3 weeks after sowing.

3. DESIGN :

(i) Two (2×2) L. Sqs. (ii) (a) 2 (b) N.A. (iii) 4 (iv) (a) 68′×30′ (b) 66′×28′ (v) 1 foot border all round the plot was discarded. (vi) Yes.

4. GENERL :

(i) Excellent growth in Bonemeal plots, partial lodging on 7.1.1954 (ii) Slight attack of rice hispa. Spraying of insecticides done. (iii) Weight of grain. (iv) (a) 1952 to 1954 (b) Yes. (c) N.A. (v) (a), (b) Nil. (vi) & (vii) Nil.

5. RESULTS :

(i) 725 lb./ac.
(ii) 5.0 lb./ac.
(iii) Treatment differences are significant
(iv) Yield of grain in lb./ac.

Treatments	Mean.
1.	751
2.	700
S. E. of treatments means	±2.0 lb./ac.

Crop :-Paddy (2nd crop) Ref :-K. 53(27)
Site :-Agri. Res Stn. Pattambi. Type :-'M'.

Object :—To find out the direct manurial value of fertilizers and effect of lime in correcting soil acidity.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) 4,000 lb. G.L.+75 lb A/S/ac. (ii) (a) Laterite loam (b) Refer soil analysis Pattambi (iii) 14.8.53/23.9.53. (iv) (a) 7 ploughings (b) Transplanted in lines (c)—(d) 6"x6" (e) 2 (v) Nil (vi) PTB—18 (medium 130 days). (vii) Unirrigated. (viii) 2 weedings. (ix) 22.80" (14.8. 1953 to 13.1.1954). (x) 13.1.1954.

2. TREATMENTS :

Main plot treatments :—1. No Nitrogen.
2. 60 lb. N/ac. as A/S
3. ,, ,, as Compost.
4. ,, ,, as C.M.
5. ,, ,, as G. L.

Sub plot treatments :—All Combination of (1), (2) & (3)

(1) P_0=No P_2O_5
P_1=60 lb/ac. P_2O_5 as super
(2) K_0=No Potash
K_1=60 lb. K_2O/ac. as Pot sulphate.
(3) L_0=no lime.
L_1=1500 lb. lime/ac.

A/S top dressed one month after planting. Compost, Cattle Manure and G.L. at the time of puddling. Super before planting. Lime one month before planting.

3. DESIGN :

(i) Split plot. (ii) (a) 5 main plots ; 8 sub-plots/main plot. (b) N.A (iii) 4 (iv) (a), (b) 16'×25' (v) Nil (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Grain weight (iv) (a) No (b) No. (c) Nil (v) (a), (b) Nil (vi) & (vii) Nil.

5. RESULTS :

(i) 2404 lb./ac.
(ii) (a) = 251.5 lb./ac.
(b) = 192.8 lb./ac.
(iii) Main plot treatments and Main effect of P are highly significant. Other effects and interactions are not significant.
(iv) grain weight in lb./ac.

Main.	1	2	3	4	5	Mean
Sub.						
$P_0K_0L_0$	2205	2178	2151	2287	2124	2189
$P_0K_1L_0$	1960	2096	2042	2205	2314	2123
$P_1K_0L_0$	2259	2641	2450	2559	2614	2505
$P_1K_1L_0$	2232	2614	2314	2447	2777	2477
$P_0K_0L_1$	2014	2287	2178	2450	2913	2368
$P_0K_1L_1$	2178	2505	2369	2660	2450	2432
$P_1K_0L_1$	2314	2668	2559	2586	2668	2559
$P_1K_1L_1$	2450	2559	2614	2614	2614	2570
Mean	2201	2444	2335	2476	2559	

1. S.E. for the diff. of 2 main treat. means = 62.9 lb./ac.
2. ,, ,, ,, 2 Sub-plot treat ,, = 61.0 lb./ac.
3. ,, ,, ,, ,, ,, at the same level of main plot treatment. = 136.8 lb./ac
4. S.E. for the diff of 2 main plot treatment means at the same level of sub-plot treatment. = 142.8 ,, ,,

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Crop :-Paddy (2nd crop) Ref :-K. 48(23)

Site :-Agri. Res. Stn. Pattambi. Type :-'M'.

Object : To find out the effect of Cake, Ash and Super applied alone or in combination.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) G.L. about 5,000 lb/ac. + A/S. 100 to 150/ac. (ii) (a) Laterite Loam (b) Refer Soil Analysis for Pattambi (iii) 18.8.48 & 27.10.1948. (iv) (a) 6 ploughings +2 puddlings (b) Transplanting in lines (c)—(d) 5" to 6" between plants and about 10" between rows (e) Three to four (v) 2000 lb/ac. G.L. at the time of padding. (vi) PTB 20, Medium, Improved (vii) Rainfed (viii) One or two weedings if required at an interval of one month from the date ofplanting (ix) 30.90" (1.8.48. to 1.2.1949). (x) 1.2.1949.

2. TREATMENTS :

All combinations of Cake, Super and Ash each at two levels.

Cake	0 and 500 lb./ac.	one week after planting as top dressing.
Super	0 ,, 200 ,,	along last puddling as basal
Ash	0 ,, 4,000 ,,	after super just before planting as basal.

3. DESIGN :

(i) 2^3 fact in R.B.D. (ii) (a) 8 (b) N.A. (iii) 4 (iv) (a), (b) 12½′×35′ (v) Nil. (iv) Yes.

4. GENERAL :

(i) Satisfactory (ii) Nil (iii) Grain weight. (iv) 1948-2nd crop to 1951-2nd crop (b) No (c) N.A. (v) (a) Nil (b) Nil (vi) & (vii) Nil.

5. RESULTS :

(i) 2163 lb/ac.
(ii) 94 lb/ac.
(iii) Main effect of ash and cake only are highly significant.
(vi) Grain weight in lb/ac.

Cake	0	500	Mean
Super			
0	1997	2284	2141
200	2103	2265	2184
Mean	2050	2274	2163

Cake	0	500	Mean
Ash			
0	1991	2196	2094
4000	2110	2352	2231
Mean	2050	2274	2163

Super	0	200	Mean
Ash			
0	2066	2122	2094
4000	2215	2246	2231
Mean.	2141	2184	2163

S.E. of body of table : 33 lb./ac.
S.E. of marginal means : 23 lb./ac.

Crop :-Paddy (1st crop) Ref :-K. 49(33)
Site :-Agri. Res. Stn. Pattambi. Type :-'M'

Object:—To find out the effect of Cake, Ash and Super applied alone or in combination.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) G.L. about 5,000 lb./ac.+A/S.100 to 150 lb./ac. (ii) (a) Laterite loam (b) Refer soil analysis Pattembi (iii) 31.5. 1949 ; 13.7.1949 ; (iv) (a) 6 ploughings and 2 puddlings (b) Transplanted in lines (c)—(d) 4" to 6" between plants and 10" between rows. (e) 3 to 4 (v) Green Leaf at 2000 lb/ac. at the time of ploughing. (vi) PTB 2, Medium, Improved. (vii) Rainfed (viii) one or two weedings if required at an interval of one month from planting. (ix) 77.46" (31.5.49 to 25.10.1949) (x) 25.10.1949.

2. TREATMENTS :

All possible combinations of 2 levels of G.N.C., 2 levels of Super and 2 levels of Wood Ash.

G.N.C.	0 & 500 lb./ac.
Super	0 & 200 lb./ac.
Wood ash.	0 & 4,000 lb./ac.,

Super applied along with last ploughing and ash applied after the application of super just before planting. G.N.C. applied as top dressing one week after planting.

3. DESIGN :

(i) 2^3 Fact in R.B.D. (ii) (a) 8 (b) N.A. (iii) 4 (iv) (a) (b) 17'×20' (v) Nil (vi) Yes.

4. GENERAL :

(i) Satisfactory (ii) Nil (iii) Grain weight (iv) (a) 1948-2nd crop to 1951-2nd crop (b) No. (c) N.A. (v) (a), (b) Nil (vi) & (vii) Nil.

5. RESULTS :

(i) 2716 lb./ac.

(ii) 154.0 lb/.ac.

(iii) Main effect of Cake is highly significant. Interaction of Cake with Ash is significant.

(iv) Grain weight in lb./ac.

G.N.C.	0	500	Mean
Super			
0	2562	2806	2684
200	2626	2870	2748
Wood ash			
0	2562	2921	2742
4000	2626	2754	2690
Mean	2594	2838	2716

Super	0	200	Mean
Wood ash			
0	2690	2793	2742
4000	2678	2703	2690
Mean	2684	2748	2716

S. E. of body of table = 54.0 lb/ac.
S.E. of marginal means = 38.0 lb./ac.

Crop :-Paddy (2nd crop) Ref :-K. 49(39)

Site :-Agri. Res. Stn, Pattambi. Type :-'M'

Object :—To find out the effect of Cake, Ash and Super applied alone or in combination.

1. BASAL CONDITIONS :

(i) (a) Nil (b) paddy (c) G.L. about 5000 lb./ac.+A/S 100 to 150 lb./ac. (ii) (a) Laterite loam (b) Refer soil analysis Pattambi (iii) 13. 10. 49 ; 12.11.1949 (iv) (a) 6 ploughings and 2 puddlings (b) Transplanted in lines (c)—(d) 4" to 6" between plants and 10" between rows. (e) 3 to 4 (v) Leaf at 2000 lb./acre at

at the time of ploughing. (vi) PTB 20 ; Medium, Improved, (vii) Rainfed. (viii) One or two weedings if required at an interval of one month from planting. (ix) 10.43" (13.10.1949 to 20.2.1950) (x) 20.2. 1950.

2. TREATMENTS :

All possible combinations of 2 levels of G.N.C., 2 levels of Super and 2 levels of Wood Ash.

G.N.C.	0 & 500 lb./acre.
Super	0 & 200 lb./acre.
Wood ash	0 & 4,000 lb./acre.

Super applied along with last ploughing and ash applied after application of super just before planting. G.N.C. applied as top dressing one week after planting.

3. DESIGN :

(i) 2^3 Factorial in R.B.D. (ii) (a) 8 (b) N.A. (iii) 4 (iv) (a), (b) 17' x 20' (v) Nil ; (vi) Yes.

4. GENERAL :

(i) Satisfactory (ii) Nil (iii) Grain Weight (iv) (a) 1948-2nd crop to 1951-2nd crop (b) No (c) N.A. (v) (a), (b) Nil (vi) & (vii) Nil.

5. RESULTS :

(i) 1764 lb./ac.
(ii) 270·0 lb./ac.
(iii) Main effects and interaction are not significant.
(iv) Grain weight in lb./ac.

G.N.C.	0	500	Mean
Super			
0	1617	1809	1714
200	1809	1818	1814
Wood ash			
0	1622	1730	1676
4000	1805	1897	1851
Mean.	1714	1814	1764

Super	0	200	Mean
Wood ash			
0	1617	1733	1676
4000	1809	1894	1851
Mean.	1714	1814	1764

S.E. of body of table : = 95.0 lb./ac.
S.E. of marginal means : = 68.0 lb./ac.

Crop :-Paddy (1st crop) **Ref :-K. 50(13)/49(39)**
Site :-Agri. Res. Stn. Pattambi. **Type :-'M'**

Object :—To find out the effect of Cake, Ash and Super applied alone or in combination.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) 2000 lb G.L/ac (ii) (a) Laterite loam (b) Refer soil analysis for Pattambi (iii) 2.6.1950; 7.7.1950. (iv)(a) Puddling 10 times, levelling three times. (b) Seedlings aged one month transplanted (c)—(d) in bulk (e) 2 to 3 (v) Nil (vi) PTB 20 Short (4 months) Improved. (vii) Rainfed (viii) One weeding 3 or 4 weeks after planting. (ix) 96.42" (2.6.1950 to 27.9.1950) (x) 27.9.1950.

2. TREATMENTS :

All combinations of N, P, K each at two levels.

G.N.C. O (N_0), 500 (N_1) lb/ac.

Super O (P_0), 200 (P_1), lb/ac.

Ash O (K_0), 4000 (K_1) lb/ac.

Super applied at the time of final planghing ; Ash applied just after the application of super. G.N.C. applied as top dressing one week after planting.

3. DESIGN :

(i) 2^3 fact, in R.B.D. (ii) (a) 8 (b) N.A. (iii) 4 (iv) (a), (b) 16′ x 27′ (v) Nil : 2′ interspace between plots. (vi) Yes.

4. GENERAL :

(i) Satisfactory (ii) Nil (iii) Grain weight (iv) (a) 1948 2nd crop to 1951-2nd crop-both seasons every year (b) Yes (c) N.A. (v) (a), (b) Nil (vi) & (vii) Nil.

5. RESULTS :

(i) 1487 lb/ac.

(ii) 191 lb/ac.

(iii) Main effects of N. and K alone are highly significant

(iv) Grain wight in lb/ac.

	No	N_1	Mean
P_0	1250	1812	1531
P_1	1275	1610	1442
K_0	1105	1641	1373
K_1	1420	1780	1600
Mean	1262	1711	1487

	P_0	P_1	Mean
K_0	1420	1325	1372
K_1	1641	1559	1600
Mean	1531	1442	1487

S.E. of body of table =68 lb/ac

S.E. of marginal means =47 lb/ac

Crop :-Paddy (2nd crop) Ref :-K. 50(31)/50(13)/49(39)

Site :-Agri. Res. Stn. Pattambi. Type :-'M'

Object :—To find out the effect of Cake, Ash and Super applied alone or in combination.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) As per treatments and basal dressing of K. 50 (13) (ii) (a) Laterite loam (b) Refer soil analysis Pattambi (iii) 13.9. 50 ; 31.10.1950. (iv) (a) Pudling 6 times, levelling 3 times (b) seedlings aged one month transplanted (c)—(d) in bulk (e) 2 to 3 (v) G.L. 2000 lb/ac at the time of planting. (vi) PTB 20, Short (4 months), Improved (vii) Rainfed. (viii) One weeding 3 to 4 weeks after planting (ix) 16.36″ (13.9.50 to 7.2.1951)(x) 7.2.1951.

2. TREATMENTS :

All possible combinations of

(i) G.N.C. at 0 (No), 500 (N_1) lb/ac.

(ii) Super at 0 (P_0), 200 (P_1) lb/ac.

(iii) Ash at 0 (K_1), 4000 (K_1) lb/ac.

G.N.C. applied one week after planting as top dressing.

Super as basal dressing after leaf at the time of planting.

Ash as basal dressing after super at the time of planting.

3. DESIGN :

(i) 2^3 feet in R.B.D. (ii) (a) 8 (b) N.A. (iii) 4 (iv) (a),(b) 16′×27′ (v) Nil, ½′ bund and 1′ furrow between plots (vi) Yes.

4. GENERAL :

(i) Satisfactory (ii) Nil (iii) Grain weight ; Straw weight (iv) (a) 1948-2nd crop to 1951-2nd crop (b) Yes (c) N.A. (v) (a), (b) Nil (vi) & (vii) Nil.

5. RESULTS :

(i) 1265 lb/ac.
(ii) 171 lb/ac.
(iii) Main effect of N alone is highly significant.
(iv) Grain weight in lb/ac.

	N_0	N_1	Mean
P_0	1115	1361	1238
P_1	1216	1367	1292
Mean	1166	1364	1265

	K_0	K_1	Mean.
P_0	1216	1260	1238
P_1	1204	1380	1292
Mean	1210	1320	1265

	N_0	N_1	Mean.
K_0	1160	1260	1210
K_1	1172	1468	1320
Mean	1166	1364	1265

S.E. of body of table = 60 lb/ac.
S.E. of marginal means = 42 lb/ac.

Crop :- Paddy (1st crop) Ref :- 51(9)/50 (13, 31)/49 (39)
Site :- Agri. Res. Stn. Pattambi Type :- 'M'

Object:— To find-out the effect of Cake, Ash and Super applied alone or in combination.

1. BASAL CONFDITIONS:—

(i) (a) Nil (b) Paddy. (c) As per treatments. (ii) (a) Laterite loam (b) Refer soil analysis Pattambi (iii) 2·6.51. ;3.7.51 (iv) (a) Puddling 6 times, levelling 3 times. (b) Seedlings transplanted from wet nursery. Average age of seedling about one month. (c)—(d) Planted in bulk (e) 2 to 3 (v) 2000 lb of G.M. applied at the time of puddling. (vi) PTB. 2 Medium (4 to 5 months), Improved. (vii) rain fed (viii) One weeding 3 to 4 weeks after planting and another weeding if necessary. (ix) 50.25" (2.6.51 to 19.10.51) (x) 19.10.51.

2. TREATMENTS:—

All Combinations of
(i) Cake 0 (N_0), 500 (N_1) lb/ac.
(ii) Super 0 (P_0), 200 (P_1) lb/ac.
(iii) Ash 0 (K_0), 4000 (K_1) lb/ac.

Cake and ash at the time of transplanting by broadcast. Super at the time of last puddling by broadcast.

3. DESIGN:—

(i) 2^3 factorial in R.B.D. (ii) (a) 8 (b) N.A. (iii) 4 (iv) (a), (b) 16′×27′ (v) Nil. (vi) Yes.

4. GENERAL:—

(i) Plots manured with G.N.C. showed a better growth of deep green foliage than with other treatments. (ii) Nil. (iii) Grain weight. (iv), (a) 1948-2nd crop to 1951-2nd crop (b) Yes. from 1949-2nd crop on wards. (c) N.A. (v) (a), (b) Nil. (vi) Nil. (vii) The rain-fall (S.W. Monsoon) was deficient by about 20" from normal and the distribution was erratic.

5. RESULTS:—

(i) 1717 lb/ac.
(ii) 203 lb/ac.
(iii) The main effects of N and K alone are significant.
(vi) Grain yield in lb/ac.

	N_0	N_1	Mean
K_0	1500	1775	1638
K_1	1769	1825	1797
Mean	1634	1800	1717

	N_0	N_1	Mean
P_0	1544	1762	1653
P_1	1725	1838	1781
Mean	1634	1800	1771

	P_0	P_1	Mean
K_0	1519	1756	1638
K_1	1788	1805	1797
Mean	1653	1781	1717

S.E. of body of table = 72 lb/ac.
S.E. of marginal means = 51 lb/ac.

Crop Paddy (2nd crop) Ref : K. 51(13)/51(9),50/(13,31)/49(39)
Site : Agr. Res. Stn. Pattambi. Type :- 'M'

Object:— To find out the effect of Cake, Ash and Super applied alone or in combination.

1. BASAL CONDITIONS :—

(i) (a) Nil (b) Paddy (c) As per treatments and basal dressing in K. 51 (9) (ii) (a) Laterite loam (b) Refer soil analysis Pattambi. (iii) 27.9.51; 2.11.51. (iv) (a) Puddling 6 *times*, levelling 3 *times* (b) Seedlings transplanted from wet nursery. Average age of seedlings about one month. (c)—(d) planted in bulk. (e) 2 to 3 (v) G.M. 2000 lb/ac. applied at the time of puddling. (vi) PTB 20, *Improved, short duration (4 months.) (vii) Rainfed. (viii) One weeding 3 to 4 weeks after planting* and another weeding when necessary. (ix) 23.76" (27.9.1951. to 9.2.1952) (x) 9.2.1952.

2. TREATMENTS:—

All combinations of
(i) Cake 0 (N_0), 500 (N_1) lb/ac.
(ii) Super 0 (P_0), 200 (P_1) lb/ac.
(iii) Ash 0 (K_0), 4000 (K_1) lb/ac.
Cake and Ash broadcast at the time of transplanting.
Super at the time of last puddling by broadcast.

3. DESIGN:—

(i) 2^3 factorial in R.B.D. (ii) (a) 8 (b) N.A. (iii) 4 (iv) (a), (b) 16'×27' (v) Nil. (vi) Yes.

4. GENERAL:—

(i) Rrain fall and its distribution was erratic. Plots manured with G.N.C. showed a better growth with deep green foliage than with other treatments. (ii) Nil. (iii) Grain and straw weight. (iv) (a) 1948 2nd corp. to 1951—2nd crop (b) Yes. from 1949 2nd crop onward. (c) N.A. (v) (a), (b) Nil. (vi) & (vii) Nil.

5. RESULTS:—

(i) 2146 lb/ac.

(ii) 128 lb/ac.

(iii) The main effects of N and P are significant and of K higly significant.None of the interactions is significant.

(iv) Grain weight in lb/ac.

	N_0	N_1	Mean
P_0	1912	2281	2097
P_1	1975	2416	2195
K_0	1797	2284	2041
K_1	2091	2412	2252
Mean	1944	2348	2146

	P_0	P_1	Mean
K_0	1948	2097	2041
K_1	2209	2294	2252
Mean	2097	2195	2146

S.E. of body of table = 45 lb/ac.
S.E. of marginal means = 32 lb/ac.

Crop :- Paddy (1st crop) Ref : K. 48 (20).
Site : Agri. Res. Stn. Pattambi. Type : 'M'

Object:—To find-out the best proportion of G.N.C., G.L. & A/S for maximum economic return.

1. BASAL CONDITIONS:—

(i) (a) Nil (b) Paddy (c) About 5000 lb/ac. G.L.+ A/S. 100 to 150 lb/ac. (ii) (a) Laterite Loam (b) Refer soil analysis Pattambi. (iii) 5.5.48. 12 & 13.7.48. (iv) (a) 6 ploughings, 2 puddlings. (b) Transplanting in lines. (c)—(d) 4 to 6" between plants and about 10" between rows. (e) 3 to 4 (v) Nil (vi) PTB 2. Medium. Improved (vii) Rainfed. (viii) One or two weedings if required at an interval of one month from planting (ix) 82.61" (5.5.48 to 24.10.48.) (x) 24.10.48.

2. TREATMENTS:—

	Treatment								
Proportion of	1	2	3	4	5	6	7	8	9
G.N.C. 400 lb/ac	0	1	0	0	¾	¾	½	½	½
G.L. 4000 lb/ac.	0	0	1	0	¼	0	¼	0	½
A/S. 150 lb/ac	0	0	0	1	0	¼	0	¼	½

G.N.C. ..... One week after planting as top dressing.
G.L. ..... At the time of puddling as basal dressing.
A/S. ..... One month after planting as top dressing.

3. DESIGN

(i) R.B.D. (ii) (a) 9 (b)N.A. (iii) 6 (iv) (a), (b) 11'×8' (v) Nil (vi) Yes.

4. GENERAL:—

(i) Satisfactory (ii) Nil (iii) Grain weight (iv) (a) 1948 - 1st crop to 1952 - 1st crop (b) NO (c) N.A. (v) (a), (b) Nil (vi) & (viii) Nil.

5. RESULTS:—

(i) 2170 lb/ac.

(ii) 266 lb/ac.

(iii) Treatments are not significantly different.
(iv) Grain weight in lb/ac.

Treatment	Mean
1	1946
2	2310
3	2045
4	2128
5	2119
6	2258
7	2314
8	2219
9	2192

S.E. of treatment means: = 108 lb/ac.

Crop : Paddy (2nd crop) Ref : K. 48 (29)

Site . Agri. Res. Stn. Pattambi. Type 'M'

Object :—To find out the best proportion of G.N.C., G.L. & A/S for maximum economic return.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) G.L. about 5000 lb./ac. +A/S. 100 to 150 lb./ac. (ii) (a) Laterite loam (b) Refer soil analysis Pattambi. (iii) 24.9.48 & 9.11.1948. (iv) (a) 6 ploughings, 2 puddlings. (b) Transplanting in lines. (c)—(d)4" to 6" between plants and about 10" between rows. (e) 3 to 4. (v) Nil (vi) PTB 21, Medium improved. (vii) Rainfed (viii) One or two weedings if required at an interval of one month from planting. (ix) 13.81" (24.9.48 to 12.2.49) (x) 12.2.1949.

2. TREATMENTS :

	Treatment								
	1	2	3	4	5	6	7	8	9
Proportion of G.N.C. 400 lb /acre.	0	1	0	0	½	½	½	½	½
G.L. 4000 lb./ac.	0	0	1	0	½	0	½	0	½
A/S at 150 lb /ac.	0	0	0	1	0	½	0	½	½

G.N.C. :— One week after planting as top dressing.
G.L. :— At the time of puddling as basal dressing.
A/S. :— As top dressing one month after planting.

3. DESIGN :

(i) R.B.D. (ii) (a) 9 (b) N.A. (iii) 6 (iv) (a), (b) 12'×30' (v) Nil. (vi) Yes.

4. GENERAL :

(i) Satisfactory (ii) Nil (iii) Grain weight (iv) (a) 1948-1st crop to 1952-1st crop. (b) No. (c) N.A. (v) (a) Nil (b) N.A. (vi) & (vii) Nil.

5. RESULTS :

(i) 2494 lb./ac.
(ii) 139 lb/ac.
(iii) The treatment differences are higly significant.
(iv) Grain weight in lb/ac.

Treatment	Mean
1	2078
2	2501
3	2460
4	2672
5	2430
6	2602
7	2490
8	2632
9	2581

S. E. of treatment means : = 57 lb./ac.

Crop : Paddy (1st crop) Ref : K. 49 (34)

Site :- Agri. Res. Stn. Pattambi. Type : 'M'

Object :—To find out the best properties of G.N.C, G.L. and A/S for maximum economic return.

1. BASAL CONDITIONS:

(i) (a) Nil (b) Paddy (c) Same experiment was in these plots. (ii) (a) Laterite loam (b) Refer soil analysis Pattambi. (iii) 31.5.1949 : 11.7.1949 (iv) (a) 6 ploughings and 2 puddlings (b) Transplanted in lines (c)—(d) 4" to 6" between plants and 10" between rows. (e) 3 to 4 (v) Nil (vi) PTB 2 Medium, Improved. (vii) Rainfed. (viii) One or two weedings if required at an interval of one month from planting. (ix) 79.22" (31.5.1949 to 27.10.1949. (x) 27.10.1949.

2. TREATMENTS :

	Treatment								
	1	2	3	4	5	6	7	8	9
Proportion of G.N.C. 400 lb./ac.	0	1	0	0	⅓	⅓	½	½	½
G. L. 4000 lb./ac.	0	0	1	0	½	0	⅓	0	½
A/S. 150 lb./ac.	0	0	0	1	0	½	0	½	½

G.N.C. one week after planting as top dressing.

G.L. : At the time of puddling as basal.

A/S. One month after planting as top dressing.

3. DESIGN :

(i) R.B.D. (ii) (a) 9 (b) N.A. (iii) 6 (iv) (a) (b) 12'×30' (v) Nil (vi) Yes.

4. GENERAL :

(i) Satisfactory (ii) Nil (iii) Grain weight (iv) (a) 1948-1st crop to 1952-1st crop. The experiment was modified in 1950-2nd crop and then it was repeated in the same field. During 1948 2nd crop and 1949-1st crop it was conducted in another field. (b) No (c) N.A. (v) (a) (b) Nil (vi) & (vii) Nil

5. RESULTS :

(i) 2599 lb./ac.

(ii) 213.0 lb./ac.

(iii) The treatments do not differ significantly.

(ix) Grain weight in lb./ac.

Treatment	Mean.
1.	2460
2.	2683
3.	2520
4.	2541
5.	2722
6.	2581
7.	2622
8.	2762
9.	2501

S. E. of treatment means : ±87.0 lb./ac.

Crop :- Paddy (2nd crop) Ref : K. 49 (41)

Site :- Agri. Res. Stn. Pattambi. Type :- 'M'

Object :—To find out the best proportion of G.N.C., G.L. and A/S to get maximum economic return.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) G.L. about 5000 lb./ac. +A/S 100 to 150 lb. /ac. (ii) (a) Laterite loam (b) Refer soil analysis Pattambi. (iii) 17.10.1949 ; 11.11.1949. (iv) (a) 6 ploughings and 2 puddlings. (b) Transplanted in lines (c)—(d) 4" to 6" between plants and 10" between rows. (e) 3 to 4 (v) Nil (vi) PTB 20, Medium Improved (vii) Rainfed. (viii) One or two weedings if required at an interval of one month from planting. (ix) 10.43" (17.10.1949 to 18.2.50) (x) 18.2.1950.

2. TREATMENTS :

	Treatments								
	1	2	3	4	5	6	7	8	9
Proportion of									
G.N.C. 400 lb. /ac.	0	1	0	0	⅔	⅔	⅓	⅓	⅓
G. L. 4000 lb. /ac.	0	0	1	0	⅓	0	⅔	0	⅓
A/S. 150 lb./ac.	0	0	0	1	0	⅓	0	⅔	⅓

G.N.C. : one week after planting as top dressing.
G.L. : At the time of puddling as basal.
A/S. : One month after planting as top dressing.

3. DESIGN :

(i) R.B.D. (ii) (a) 9 (b) N.A. (iii) 4 (iv) (a, b) 12′×30′ (v) Nil (vi) Yes.

4. GENERAL

(i) Satisfactory (ii) Nil (iii) Grain weight (iv) (a) 1948-1st crop to 1952-1st crop. The experiment was modified in 1950-2nd crop and then it was repeated in the same field. During 1948-2nd crop and 1949 1st crop it was conducted in another field. (b) No (c) N.A. (v) (a, b) Nil (vi) & (vii) Nil.

5. RESULTS :

(i) 2563 lb./ac.
(ii) 197.0 lb./ac.
(iii) The treatments differ significantly
(iv) Grain weight in lb./ac.

Treatment	Mean.
1.	2238
2.	2692
3.	2526
4.	2662
5.	2639
6.	2390
7.	2609
8.	2616
9.	2692

S. E. of treatment means : ±99.0 lb./a

Crop :-Paddy (1st crop) Ref :-K. 50 (29)

Site :-Agri. Res. Stn. Pattambi. Type :-'M'

Object :—To find out the best proportion of G.N.C., GL. & A/S as manure to paddy crop for maximum economic return.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c)G.L. 5000 lb/ac. and A/S100 to 150 lb/ac (ii) (a) Laterite loam (b) Refer soil analysis for Pattambi (iii) 5.6. 1950; 7.7. 1950. (iv) (a) 6 puddlings and 3 levellings (b) Seedlings transplanted from wet nursery at the age of one month (c)—(d) planted in bulk (e) 2to 3 (v) Nil. (vi) PTB 2, Medium 4 to 5 months (vii) Rainfed (iii) One weeding 3 or 4 weeks after planting (ix) 96.42" (5.6 50 to 25.10 1950) (x) 25.10.1950.

2. TREATMENTS :

	Treatment								
Proportion	1	2	3	4	5	6	7	8	9
G.N.C. (400 lb/ac.)	0	1	0	0	2/3	2/3	1/3	1/3	0
Green Leaf (4000 lb/ac.)	0	0	1	0	1/3	0	2/3	0	2/3
A/S. (150 lb/ac.)	0	0	0	1	0	1/3	0	2/3	1/3

G.L applied at the time of puddling as basal dressing.
G.N C. applied one week after planting as top dressing A/S applied 1 month after planting. as top dressing.

3. DESIGN :

(i) R.B.D. (ii) (a) 9 (b) N.A. (iii) 6 (iv) (a) (b) 11½′×20′ (v) Nil. ½ feet bund ; 1 foot furrow (vi) Yes.

4. GENERAL :

(i) Satisfactory (ii) Nil (iii)Grain weight (iv) (a) 1948-1st crop to 1952-1st crop (b) No (c) N.A. (v) (a) (b) Nil (vi) & (vii) Nil

5. RESULTS

(i) 1860 lb/ac.
(ii) 190 lb/ac.
(iii) The treatments are highly significant
(iv) Grain weight in lb/ac.

Treatment.	Mean
1	1713
2	2007
3	1677
4	1866
5	1758
6	2026
7	1768
8	1931
9	1994

S.E. of treatment means = 78 lb/ac.

Crop :-Paddy (2nd crop) **Ref :-K. 50 (30)**

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

Object :—To find out the best proportion of the 3 sources of N Viz G.N.C 400 lb/ac. G.L. 4000 lb/ac and A/S 150 lb/ac. for maximum economic return.

1. BASAL CONDITIONS :

(I) (a) Nil (b) Paddy (c) 5000 lb G.L/ac. and 100 to 150 lb A/S/ac (ii) (a) Laterite loam (b) Refer soil analysis Pattambi (iii) 13.9.50 ; 31.10.50. (iv) (a) Puddling 6 times, levelling 3 times (b) seedlings transplanted from a wet nursery at the age of one month (c)—(d) planted in bulk (e) 2 to 3. (v) Nil. (vi) PTB 20-Short duration-4 months Improved. (vii) Rainfed (viii) One weeding 3 to 4 weeks after planting. (ix) 16.36" (13.9.50 to 5.2.1951) (x) 5.2.1951.

2. TREATMENTS :

	Treatments										
Proportions	1	2	3	4	5	6	7	8	9	10	11
G.N.C. 400 lb/ac	0	1	0	0	½	½	½	½	0	0	½
G.L 4000 lb/ac	0	0	1	0	½	0	½	0	½	½	½
A/S 150 lb/ac.	0	0	0	1	0	½	0	½	½	½	½

G.L applied at the times of puddling as basal dressing.
G.N.C. one week after planting as top dressing.
A/S one month after planting as top dressing.

3. DESIGN :

(i) R.B.D. (ii) (a) 11 (b) N.A. (iii) 6 (iv) (a) (b) 10'×14' (v) Nil ; ½' Bund and 1' furrow between plots. (vi) Yes.

4. GENERAL :

(i) Satisfactory (ii) Nil (iii) Grain & Straw weight (iv) (a) 1948-1st crop to 1952 1st crop (b) from 1950-2nd crop (c) N.A. (v) (a) Nil (b) Nil (vi) & (vii) Nil.

5. RESULTS :

(i) 1509 lb/ac.
(ii) 181 lb/ac.
(iii) The treatments differences are higly significant.
(iv) Grain weight in lb/ac.

Treatment	Mean	Treatment	Mean
1	1117	7	1556
2	1441	8	1698
3	1288	9	1660
4	1758	10	1721
5	1415	11	1492
6	1457		

S E. of treatment means : 74 lb/ac.

Crop :- Paddy (1st crop) Ref :-K. 51 (25)/50 (30)

Site :-Agri. Res. Stn. Pattambi. Type :-'M'

Object :—To find out the best proportion of G.N.C. G.L and A/S as manure to paddy crop for maximum cconomic return.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) As per treatments. (ii) (a) Laterite loam (b) Refer soil analysi sPattambi (iii) 2.6.1951 : 4.7.1951. (iv) (a) Puddling 6 times and levelling 3 times. (b) Seedlings transplanted from wet nursery. Average age of seedlings about one month'c)—(d) Planted in bulk (e) 2 to 3 (v) Nil (vi) PTB 2 Medium 4 to 5 months. Improved. (vii) Rainfed. (viii) One weeding 3 to 4 weeks after planting ; Another weeding if required one month after Ist weeding (ix) 50.25" (2.6.1951 to 25.10.1951) (x) 25.10.1951.

2. TREATMENTS :

	Treatments										
Proportion. of	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
G.N.C. 400 lb/ac	0	1	0	0	½	½	½	½	0	0	½
G.L 4000 lb/ac	0	0	1	0	½	0	½	0	½	½	½
A/S 150 lb/ac.	0	0	0	1	0	½	0	½	½	½	½

G.N.C. applied one week after planting as top dressing.
G.L applied at the time of preparatory cultivation as basal dressing.
A/S one month after planting as top dressing.

3. DESIGN :

(i) R.B.D. (ii) (a) 11 (b) N.A. (iii) 6 (iv) (a) (b) 10'×11' (v) Nil (vi) yes.

4. GENERAL :

(i) Satisfactory (ii) Nil (iii) Grain weight (iv) (a) 1948-1st crop to 1952-1st crop (b) Yes. (c) N.A. (v) (a) (b) Nil (vi) The rainfall (S.W. Monsoon) was in deficit by about 20 inches from normal and the distribution was erratic. The monsoon failed at critical times and gained strength at in-opportune moments making the crop growth from bad to worse. (vii) Nil.

5. RESULTS :

(i) 1768 lb/ac.
(ii) 208 lb/ac.
(iii) The treatments are significantly different.
(iv) (Grain weight in lb/ac).

Treatment.	Mean.
1.	1697
2.	1714
3.	1630
4.	1898
5.	1574
6.	1892
7.	1690
8.	1934
9.	1729
10.	1859
11.	1828

S.E. of treatment means = 85 lb/ac.

Crop :- Paddy (2nd crop) Ref :- K 51(26)/51(25)/50 (30)

Site :- Agri. Res. Stn. Pattambi. Type :- 'M'

Object : To find out the best proportion of G.N.C. G.L. and A/S. as manures to paddy crop for maximum return.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) As per treatment (ii) (a) Laterite loam (b) Refer soil analysis Pattambi (iii) 27.9.51 : 3.11.51. (iv) (a) Puddling 6 times and levelling 3 times (b) Seedlings transplanted from wet nursery. Average age of seedlings about one month (c)—(d) Planted in bulk (e) 2 to 4 (v) Nil. (vi) PTB 20 Short duration (4 months) Improved. (vii) Rainfed. (viii) One weeding

3 to 4 weeks after planting. Another weeding done if required one month after 1st weeding. (ix) 23.76" (27.9.51 to 11.2. 1952) (x) 11.2.1952.

2. TREATMENTS :

	Treatments										
Proportion of	1	2	3	4	5	6	7	8	9	10	11
G. N. C. 400 lb./ac.	0	1	0	0	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	0	0	$\frac{1}{4}$
G. L. 4000 lb./ac.	0	0	1	0	$\frac{1}{4}$	0	$\frac{3}{4}$	0	$\frac{3}{4}$	$\frac{1}{4}$	$\frac{1}{4}$
A/S. 150 lb./ac.	0	0	0	1	0	$\frac{1}{4}$	0	$\frac{3}{4}$	$\frac{1}{4}$	$\frac{3}{4}$	$\frac{1}{4}$

G.N.C. applied one week after planting as top dressing.
G.L. applied at the time of preparatory cultivation as basal dressing.
A/S. one month after planting as top dressing.

3. DESIGN :

(i) R.B.D. (ii) (a) 11 (b) N.A. (iii) 6 (iv) (a) (b) 10'×14' (v) Nil (vi) Yes.

4. GENERAL :

(i) Satisfactory. Plots with A/S. in full and $\frac{3}{4}$ dose had good growth. The rain fall distribution was erratic and uneven. Crop did not suffer for want of rain during its fag end. (ii) Nil. (iii) Grain & straw weight. (iv) (a) 1948-1st crop to 1952-1st crop (b) Yes. (c) N.A. (v) (a) (b) Nil (vi) & (vii) Nil.

5. RESULTS :

(i) 2035 lb./ac.
(ii) 150 lb./ac.
(iii) The treatments differences are higly significant
(iv) Grain weight in lb./ac.

Treatment.	Mean.
1.	1608
2.	2011
3.	1981
4.	2201
5.	2013
6.	2099
7.	1954
8.	2136
9.	2108
10.	2221
11.	2053

S. E. of treatment means =61 lb./ac.

Crop :- Paddy (1st crop) Ref :-K. 52 (29)/51 (25,26)/50(30)
Site :- Agri. Res. Stn. Pattambi. Type :- 'M'

Object :—To find out the best proportion of G.N.C.; G.L and A/S as manures to paddy.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) As under treatments (ii) (a) Laterite ioam (b) Refer Soil analysis Pattambi. (iii) 26.5.1952 ; 11.7.1952. (iv) (a) 6 Puddlings; 3 levellings. (b) Transplanting in lines (c)—(d) 6"×4" (e) 3 to 4 (v) Nil (v) PTB 2, medium, improved (vii) Rainfed. (viii) 1st weeling one month after planting; another weeding one month after 1st weeding. (ix) 57.96" in 79 rainy days.(26.5. 1952 to 20.10.1952). (x) 20.10.1952.

2. TREATMENTS :

	Treatments										
Proportions	1	2	3	4	5	6	7	8	9	10	11
G.L. 4,000 lb/ac.	0	0	1	0	$\frac{1}{4}$	0	$\frac{3}{4}$	0	$\frac{3}{4}$	$\frac{1}{4}$	$\frac{1}{4}$
G. N. C. 400 lb/ac.	0	1	0	0	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	0	0	$\frac{1}{4}$
A/S. 150.lb./ac.	0	0	0	1	0	$\frac{1}{4}$	0	$\frac{3}{4}$	$\frac{1}{4}$	$\frac{3}{4}$	$\frac{1}{4}$

G.N.C. applied one week after planting as top dressing.
G.L. applied at the time of puddling as basal dressing.
A/S applied one month after planting as top dressing.

3. DESIGN :

(i) R.B.D. (ii) (a) 11 (b) N.A. (iii) 6 (iv) (a, b) 10'×14' (v) Nil. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Grain & straw weight. (iv) (a) 1948-1st crop to 1952-1st crop (In the same field from 1950-2nd crop) (b) Yes. (c) N.A. (v) (a, b) Nil. (vi) & (vii) Nil.

5. RESULTS :

(i) 2190 lb./ac.

(ii) 257 lb./ac.

(iii) The treatments do no differ significantly.

(iv) (Grain weight in lb./ac.)

Treatment	Mean.
1.	2075
2.	2252
3.	2246
4.	2077
5.	2266
6.	2369
7.	2072
8.	2323
9.	2197
10.	2106
11.	2105

S. E. of treatment means = 105 lb./ac.

Crop :-Paddy. (1st crop) Ref:-K. 48 (34).

Site :-Agri. Res. Stn. Pattambi. Type :-'M'.

Object :—To maximise the yield of paddy by application of N as well as P alone and in combinations at higher levels than the maximum so far tried.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy. (c) 200 lb. G.L.+2 cwt G.N.C.+56 lb. A/S/ac. (ii) (a) Laterite loam (b) Refer Soil analysis Pattambi. (iii) 11.5.48/2.7.48. (iv) (a) 6 puddlings; 3 levellings (b) Transplanting in lines (c) —(d) 6"×6" (e) 2. (v) Nil. -(vi) PTB 2 'improved' 135 days duration. (vii) Rainfed. (viii) Two weedings at intervals of one month from planting. (ix) 80.77" in 87 rainy days (11.5.48 to 24.10.1948) (x) 24.10.1.48.

2. TREATMENTS -

All combinations of 6 levels of N, 3 levels of P_2O_5 and 2 levels of K_2O.

Levels of N

N_1 : Control.

N_2 : Green leaf 6000 lb./ac.

N_3 : N_2+30 lb. N/ac, as G.N.C.

N_4 : N_2+60 lb. ,, ,, ,,

N_5 : N_2+90 lb. ,, ,, ,,

N_6 : N_2+120 lb. ,, ,, ,,

Levels of P_2O_5

P_0 : No super.

P_1 : 30 lb. P_2O_5/ac. as Super

P_2 : 60 lb. ,, ,, ,,

Levels of K_2O

K_0 : No Potash.

K_1 : 60 lb; K_2/ac. as pot. sulphate.

Green leaf applied at the time of puddling, G.N.C. applied at the time planting ; P_2O_5 before planting K_2O at the time of planting.

3. DESIGN :

(i) 6×3×2 factorial in R.B.D.(ii) (a) 36 (b) N.A. (iii) 4 (iv) (a,b) 17½'×11½' (v) Nil. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil (iii) Grain weight. (iv) (a) 1947 1st crop to 1949 2nd crop. (b) No (c) N.A. (v) (a,b) Nil (vi) & (vii) Nil.

5. RESULTS :

(i) 1821 lb /ac.

(ii) 344 lb./ac;

(iii) Main effect of N alone is highly significent.

(iv) Grain weight in lb./ac.

	N_1	N_2	N_3	N_4	N_5	N_6	Mean.
P_0	1413	1874	1853	1874	1866	1968	1808
P_1	1597	1766	1928	1935	1922	1913	1844
P_2	1535	1894	1866	1853	1745	1968	1810
K_0	1582	1816	1814	1948	1840	1965	1828
K_1	1448	1872	1952	1827	1848	1935	1814
Mean	1515	1844	1883	1887	1844	1950	1821

	P_0	P_1	P_2	Mean
K_0	1788	1824	1871	1828
K_1	1829	1863	1750	1814
Mean	1808	1844	1810	1821

S.E. of body of table :	N×P	=	121 lb./ac.
—do—	N×K	=	100 ,, ,,
—do—	P×K	=	69 ,, ,,
S.E. of marginal means	N	=	69 ,, ,,
—do—	P	=	50 ,, ,,
—do—	K	=	40 ,, ,,

Crop :-Paddy. (2nd crop). Ref :-K. 48(35).

Site :-Agri. Res. Stn. Pattambi. Type :-'M'

Object :—To maximise the yield of paddy by application of N as well as P manures alone and in combinations at higher levels than the maximum so far tried.

1. BASAL CONDITIONS :

(1) (a) Nil (b) Paddy. (c) G.L. 3000 lb. /ac.(ii) (a) Laterite loam. (b) Refer Soil anaysis, Pattambi (iii) 24.9.48/9.11.1948. (iv) (a) 6 puddlings 3; levellings (b) Transplanting in lines (c)—(d) 6″×6″ (v) Nil (iv) PTB 21 Improved 125 days duration. (vii) Rainfed. (viii) Two weedings at an interval of one month from planting. (ix) 14.51″ in 16 rainy days. (24.9.48 to 10.2.1949) (x) 9 & 10.2.1949.

2. TREATMENTS :

All combinations of 6 levels of N, 3 levels of P_2O_5 and 2levels of K_2O

Level of N

N_1 : Control.

N_2 : G.L. at 6000 lb./ac.

N_3 : N_2+30 lb. N/ac. as G.N.C.

N_4 : N_2+60 ,, ,, ,, ,,

N_5 : N_2+90 ,, ,, ,, ,,

N_6 : N_2+120 ,, ,, ,, ,,

Levels of P_2O_5

P_0 : No P_2O_5

P_1 : 30 lb. P_2O_5/ac.as Super

P_2 : 60 ,, ,, ,,

Levels of K_2O

K_0 : No K_2O

K_1 : 60 lb. K_2O/ac. as pot sulphate.

G.L. applied at the time of puddling, G.N.C. and K_2O applied at the time of planting and super before planting.

3. DESIGN :

(i) 6×3×2 Factorial in R.B.D. (ii) (a) 36 (b) N.A. (iii) 4 (iv) (a,b)11½′×17½′ (v) Nil(vi) Yes.

4. GENERAL :

(i) Satisfactory (ii) Nil (iii) Grain weight (iv) (a) 1947-1st crop. to 1949-2nd crop (b) No. (c) N.A. (v)(a,b) Nil (vi) & vii) Nil.

5. RESULTS :

(i) 2803 lb./ac.

(ii) 290 lb./ac.

(iii) Main effect of N alone highly significant

(iv) Grain weight lb/ac.

	N_1	N_2	N_3	N_4	N_5	N_6	Mean
P_0	2340	2651	2678	3003	2881	3017	2762
P_1	2313	2665	2773	2908	3044	3138	2807
P_2	2232	2706	2881	2854	3152	3206	2839
K_0	2246	2634	2660	2859	3067	3084	2758
K_1	2344	2715	2895	2985	2985	3156	2847
Mean	2295	2674	2777	2922	3026	3120	2803

	P_0	P_1	P_2	
K_0	2728	2710	2836	2758
K_1	2796	2904	2841	2847
Mean	2762	2807	2839	2803

S.E. of body of table. N×P = 102 lb./ac.
—do— N×K = 84 ,, ,,
—do— P×K = 58 ,, ,,
S.E. of Marginal means. N = 58 ,, ,,
—do— P = 42 ,, ,, .
—do— K = 33 ,, ,, .

Crop :-Paddy. (1st crop). **Ref :-K. 49 (46).**

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

Object :-To maximise the yield of paddy by the application of N as well as P_2O_5 in combinations at higher levels than the maximum tried so far.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy (c) As under treatments (ii) (a) Lateritic loam (b) Refer Soil analysis Pattambi. (iii) 2.6.1949 and 8.7.1949. (iv) (a) 6 puddlings ; 3 levelings (b) transplanted (c)—(d) planted in bulk (e) 3 to 4 (v) Nil. (vi) PTB 2 medium ; improved 135 days. (vii) Rainfed. (viii) One weeding 3 or 4 weeks after planting. (ix) 77.46" in 79 rainy days. (2.6.49 to 19.10.1949) (x) 19.10. 1949.

2. TREATMENTS :

All combinations of 6 levels of N, 3 levels of P_2O_5 &2 level of K_2O

Levels of N
N_1 : Control.
N_2 : G.L. 6000 lb./ac.
N_3 : N_2+30 lb. N/ac. as G.N.C.
N_4 ; N_2+60 lb. N/ac. as G.N.C.
N_5 : N_2+90 lb. N/ac. as G.N.C.
N_6 : N_2+120 lb. N/ac. as G.N.C.

Level P_2O_5
P_0 : No P_2O_5
P_1 : 30 lb. P_2O_5/ac. as super
P_2 : 60 lb. ,, ,, .
Levels of K_2O
K_0 : No Potash.
K_1 : 60 lb. K_2O/ac. as pot. sulphate.

G. L. applied at the time of 1st puddling. G.N.C. applied one week after planting as basal dressing super at the time of last puddling and K_2SO_4 at the time of planting as basal dressing.

3. DESIGN :
(i) 6×3×2 factorial in R.B.D. (ii) (a) 36 (b) N.A. (iii) 4 (iv) (a,b) 11½'×17½' (v) Nil. (vi) Yes.

4. GENERAL :
(i) Satisfactory. (ii) Nil (iii) Grain and straw weight. (iv) (a) 1947 1st crop to 1949 2nd crop (b) Yes (1948 2nd crop to 1949 2nd crop,) (c) N.A. (v) (a,b) Nil. (vi) & (vii) Nil.

5. RESULTS :
(i) 2463 lb./ac.
(ii) 214 lb./ac.
(iii) Main effect of 'N' alone highly significant
(iv) Grain weight in lb./ac

	N_1	N_2	N_3	N_4	N_5	N_6	Mean
P_0	1805	2199	2442	2550	2766	2732	2416
P_1	1914	2190	2537	2623	2794	2807	2178
P_2	1974	2320	2407	2693	2827	2747	2495
K_0	1867	2260	2476	2584	2706	2810	2450
K_1	1930	2214	2448	2660	2885	2714	2475
Mean.	1898	2236	2462	2622	2796	2762	2463

	P_0	P_1	P_2	Mean.
K_0	2381	2498	2471	2450
K_1	2451	2457	2518	2475
Mean.	2416	2478	2495	2463

S.E. of body of table N×P = 76 lb./ac.
—do— N×K = 62 ,,
S.E. of body of table P×K = 43 ,,
S.E. of marginal means N = 43 ,,
—do— P = 31 ,,
=do= K = 25 ,,

Crop :- Paddy. (2nd crop). Ref :- K. 49 (56)
Site :- Agri. Res. Stn. Pattambi. Type :- 'M'

Object:— To maximise the yield of paddy by application of N, as well as P alone and in combinations at higher levels than the maximum so far tried.

1. BASAL CONDITIONS:—
(i) (a) Nil (b) Paddy (c) As under treatments (ii) (a) Laterite loam (b) Refer soil analysis Pattambi. (iii) 14.10.49. & 9.11.49. (iv) (a) 6 puddlings ; 3 Levelling. (b) Transplanting in lines. (c)—(d 6"×6" (e) 2. (v) Nil. (v) PTB 4 Improved 140 days duration. (vii) Rainfed. (viii) Two weedings at intervals of one month from planting. (ix) 15". (14.10.49 to 24.2.50) (x) 24.2.50.

2. TREATMENTS:—
All combinations of 6 levels of N, 3 levels of P_2O_5 and 2 levels of K_2O.

Levels of N			Levels of P_2O_5		Levels of K_2O
N_1		O lb/ac.	P_0=O lb/ac		K_0O lb/ac.
N_2	G.L.	6000 lb. / ac.	P_1=30 lb. / ac		
N_3	G.L. 6000	+ 30 lb. N /ac	P_2=60 lb. / ac	×	K_1 60 lb/ac.
N_4	,,	+ 60 lb. N /ac	×		
N_5	,,	+ 90 lb. N /ac			
N_6	,,	+ 120 lb. N /ac			

G.L. applied at the time of puddling. N as G.N.C. applied at the time of planting. P_2O_5 as super applied befor planting. K_2O as Pot. Sulphate. at planting

3. DESIGN:—
(i) 6×3×2 fact in R.B.D. (ii) (a) 36 (b) N.A. (iii) 4 (iv) (a) & (b) 11½'×17½'. (v) Nil (v) Yes.

4. GENERAL:—

(i) Satifactory (ii) Nil (iii) Grain weight. (iv) (a) 1947-1st crop to 1949-2nd crop (b) Yes. (c) N.A. (v) (a,b) Nil (vi) Nil. (vii) No orginal yield data available for this experiment.

5. RESULTS:—

Results as presented in the Annual report of the station:

Grain weight lb/ac.

Treatment	P_0	P_1	P_2	Mean.
Mean.	3624	3473	3639	3579

S.E. of diff. of P marginal means = 100 lb. / ac.

The treatments are not significantly different.

Treatment	N_1	N_3	N_4	N_5	N_6	Mean
Mean	3536	3666	3497	3582	3612	3579

S.E. of diff. of N marginal means = 131 lb. / ac.

The treatments are not significantly different.

Treatment	K_0	K_1	Mean.
Mean	3584	3574	3579

S.E. of diff. of K Marginal means = 83 lb. / ac.

The treatments are not significantly different.

(average over 5 levels of N with leaf as basal dressing).

	P_0	P_1	P_2	Mean.
K_0	3588	3481	3682	3584
K_1	3661	3465	3596	3574
Mean.	3624	3473	3639	3579

S.E. of diff. of two body means = 144 lb. / ac.

PK in.teraction is not significant.

Leaf 6000 +	N	N_2	N_3	N_4	N_5	N_6	Mean.
K	K_0	3587	3621	3459	3580	3671	3584
	K_1	3486	3711	3535	3585	3554	3574
	Mean.	3536	3666	3497	3582	3612	3579

S.E. of difference of two body means = 185 lb./ac.

NK interaction is not significant.

N+Leaf 6000		N_2	N_3	N_4	N_5	N_6	Mean
P	P_0	3747	3734	3605	3396	3640	3624
	P_1	3202	3646	3355	3555	3606	3473
	P_2	3659	3618	3531	13795	3592	3639
	Mean	3536	3666	3497	3582	3612	3579

S.E. of diff. of two body means = 228 lb./ac.

NP interaction in not significant.

Treatments receiving leaf as basal dressing.

	P_0	P_1	P_2	Mean.
Mean.	3378	3368	3342	3363

S.E. of difference of two means = 149 lb./ac.

The treatments are not significantly different.

	K_0	K_1	Mean.
Mean.	3415	3310	3363

S.E. of difference of two Means. : = 118 lb./ac,

The treatments are not significantly different.

	P_0	P_1	P_2	Mean.
K_0	3428	3409	3409	3415
K_1	3328	3328	3274	3310
Mean	3378	3368	3342	3363

S.E. of diff. of two means in the body of table : = 363 lb./ac.

PK, intraction is not significant.

Crop:- Paddy (2nd crop) Ref:- K. 48 27)

Site:- Agri. Res. Stn. Pattambi. Type:- 'M'

Object:- To find out the effect of C.M. 5 tons/ac. and Super 40 lb P_2O_5/ac alone and in combinations.

1. BASA CONDITIONS:—

(i) (a) Nil (b) Paddy (c) G.L. about 5000 lb/ac+A/S. 100 to 150 lb/ac. (ii) (a) Laterite loam. (b) Refer soil analysis for Pattambi. (iii) 9.9.48, 20.10.1948. (iv) (a) 6 ploughings; 2 puddlings. (b) planting

In lines. (c)—(d) 4" to 6" between plants and about 10" between rows. (e) 3 to 4.(v) Nil (vi) PTB 21. Improved - Medium. (vii) Rainfed. (viii) One or two weedings at an interval of one month from planting if required (ix) 14.84" (9.9.48 to 20.1.1949) (x) 20.1.49.

2. TREATMENTS:—

All Combinations of (1) & (2)
(1) 0 & 5 tons C.M./ac.
(2) 0 & 40 lb P_2O_5 / ac as super
C.M. applied along with 1st puddlings and super at time of the final ploughing and levelling.

3. DESIGN:—

(i) 2^2 factorial in R.B D. (ii). (a) 4 (b) N.A. (iii) 6 (iv) (a) (b) 14'×30' (v) Nil (vi) Yes.

4. GENERAL:—

(i) Satisfactory. (ii) Nil (iii) Grain weight (iv) (a) 1948 2nd crop to 1950 - 1st crop (b) No (c) N.A. (v) (a) Nil. (b) Nil (vi) & (vii) Nil.

5. RESULTS:—

(i) 1977 lb/ac.
(ii) 90 lb/ac.
(iii) Main effects of both Super and C.M. are highly significant.
(iv) Grain weight in lb/ac.

C.M. / P_2O_5	0 tons	5 tons	mean.
0	1863	1983	1923
40	1988	2074	2031
mean.	1925	2029	1977

S.E. of marginal means= 26 lb/ac.
S.E. of body of tble. = 37 ,,

Crop :—Paddy (1st crop) Ref:—K. 49 (26)
Site :- Agri. Res. Stn. Pattambi. Type :- 'M'

Object :—To find out the effect of C.M, 5 tons/ac. and Super 49 lb/ac. P_2O_5 alone and in combination.

1. BASAL CONDITION :

(i) (a) Nil (b) Paddy (c) G.L. 5000 lb.+A/S 100 to 150 lb. of per acre. (ii) (a) Laterite loam (b) Refer soil analysis Pattambi. (iii) 21.5.1949: ; 25.6.1949. (iv) (a) 6 puddlings; 3 levellings (b) transplanting in bulk (c)—(d) 6"×4" (e) 3 to 4 (v) Nil (vi) PTB 32. Medium 4 to 5 months. (vii) Rainfed. (viii) One weeding three to four weeks after planting. (ix) 88.92" in 88 rainy days. (21.5.1949 to 12.10.1949) (x) 12.10.1949.

2. TREATMENTS :

All Combinations of (1) & (2)
(1) 0 and 5 tons/ac of CM
(2) O and 40 lb P_2O_5/ac. as super
CM applied along with 1st puddling.
Super applied at the time of final ploughing and levelling.

3. DESIGN :

(i) 2^2 Factorial in R.B.D. (ii) (a) 4 (b) N.A. (iii) 6 (iv) (a,b) 15'×20' (v) Nil (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil (iii) Grain and Straw weight. (iv) (a) 1949 1st crop to 1950 1st crop (b) No (c) N.A. (v) (a,b) Nil (vi) & (vii) Nil.

5. RESULTS :

(i) 2661 lb./ac.
(ii) 203.0 " "
(iii) Main effect of C.M. alone is significant
(iv) Grain weight in lb/ac.

C.M	0 tons	5 tons	Mean
P_2O_5			
0 lb.	2510	2722	2616
40 lb.	2625	2786	2706
Mean	2568	2754	2661

S.E. of marginal means : 57.5 lb/ac
S.E. of of body of table : 81.3 lb/ac.

Crop :-Paddy (2nd crop) **Ref :-K. 49 (38)**
Site :- Agri. Res. Stn. Pattambi **Type :- 'M'**

Object :—To findout the effect of CM 5 tons/ac. and super 40 lb. P_2O_5/ac. alone and in combinations.

1. BASAL CONDITIONS :
(i) (a) Nil (b) Paddy (c) G.L. about 5000 lb./ac. +A/S. 100 to 150 lb./ac. (ii) (a) Laterite loam (b) Refer soil analysis Pattambi. (iii) 25.9.1949 : 8.11.1949. (iv) (a) 6 ploughings and 2 puddlings (b) Transplented in lines (c)—(d) 4" to 6" between plants 10" between rows. (e) 3 to 4 (v) Nil (vi) PTB 20. Medium. Improved. (vii) Rainfed. (viii) One on two weedings at intervals of one month from planting if required (ix) 7.26" (25.9.1949 to 28.1.1950) (x) 28.1.1950.

2. TREATMENTS :
All combinations of (1) and (2)
(1) 0 and 5 tons/ac.C.M.
(2) 0 and 40 lb/ac. P_2O_5 as Super
C.M. applied as basal dressing at the time of puddling.
Super applied as basal dressing before planting.

3. DESIGN :
(i) 2^2 factorial in R.B.D. (ii) (a) 4 (b) N.A. (iii) 6 (iv) (a.b) 15'×20' (v) Nil (vi) Yes.

4. GENERAL :
(i) Satisfactory (ii) Nil (iii) Grain weight (iv) (a) 1948-2nd crop to 1950-1st crop (b) No (c) N.A. (v) (a, b) Nil (vi) & (vii) Nil.

5. RESULTS :
(i) 779 lb./ac.
(ii) 134.0 lb./ac.
(iii) Main effect of CM alone is significant
(iv) Grain weight in lb./ac.

C.M.	0 tons	5 tons	Mean.
P_2O_5			
0 lb.	648	810	729
5 lb.	762	896	829
Mean.	705	853	779

S.E. of body of table =54.0 lb./ac.
S.E. of marginal means. =38.0 ,,

Crop :- Paddy (1st crop) **Ref :- K. 50 (22)**
Site :- Agri. Res. Stn. Pattambi. **Type :- 'M'**

Object :—To verify whether C.M. acts best in the presence of a P fertiliser.

1. BASAL CONDITIONS :
(i) (a) Nil (b) Paddy (c) G.L. 5000 lb. and A/S. 100 to 150 lb /ac. (ii) (a) Laterite loam (b) Refer soil analysis for Pattambi. (iii) 3.6.1950 ; 4.7.1950. (iv) (a) Puddling 6 times ; levelling 3 times (b) Transplanting in lines (c)—(d)6"×4" (e) 3 to 4 (v) Nil. (vi) PTB 2; Improved Medium 4 to 5 months. (vii) Rainfed (viii) One weeding 3 to 4 weeks after planting. (ix) 96.42" (3.6.1950 to 25.10.1950 (x) 25.10.1950.

2. TREATMENTS :

All possible combinations of (1) and (2)

1. 0 and 5 ton/ac. of C. M.
2. 0 and 40 lb./ac. P_2O_5 as Super

C. M. applied at the time of puddling as basal and super also applied at the time of puddling before planting.

3. DESIGN :

(i) 2^2 factrial in R.B.D. (ii) (a) 4 (b) N.A. (iii) 6 (iv) (a) (b) 25'×18' (v) Nil ; 1½' to 2' interspace between plots. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil (iii) Grain weight. (iv) (a) 1948-2nd crop to 1950-1st crop (b) No (c) N.A. (v) (a) (b) N.A. (vi) & (vii) Nil.

5. RESULTS :

(i) 1673 lb./ac.
(ii) 179 lb./ac.
(iii) Main effect of C. M. alone is significant
(iv) (Grain weight in lb./ac.)

C.M.	0 tons	5 tons	Mean.
P_2O_5			
0 lb.	1549	1710	1629
40 lb.	1597	1835	1716
Mean.	1573	1773	1673

S. E. of the body of table : 73 lb./ac
S. E. of marginal means : 52 lb.ac.

Crop :- Paddy (1st crop) Ref : K. 48 (19)
Site :- Agri. Res. Stn. Pattambi. Type : 'M'

Object :—To find out the effect of Reno Hyperphosphate (a new rock phosphate ground to extreme fineness) with Super and Bonemeal.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) G.L. 5000 lb./ac. + A/S.100 to 150 lb./ac. (ii) (a) Laterite loam (b) Refer Soil analysis for Pattambi. (iii) 5.5.1948. 12.7.1948. (iv) (a) 6 ploughings. 2 puddlings (b) Transplanting in lines (c)—(d) 4" to 6" between plants and about 10" between rows (e) 3 to 4 (v) Green manure crop of Dhaincha at 5000 lb./ac. at the time of puddlings. (vi) PTB 2, Medium Improved. (vii) Rainfed. (viii) One or two weedings at an interval of one month from planting if required (ix) 82.61" (5.5. 48 to 24.10.1948. (x) 24.10.1948.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 levels of P_2O_5 :—30, 45 lb./ac.
(2) 4 sources of P_2O_5 (a) Reno Hyper (26/27)
(b) ,, ,, (28/29)
(c) Super
(d) C. M.
and one control (No manure)

All applied along with last ploughing.

3. DESIGN :

(i) R.B.D. (ii) (a) 9 (b) N.A. (iii) 4 (iv) (a) (b) 10'×22' (v) Nil. (vi) Yes.

1. GENERAL :

(i) Satisfactory (ii) Nil (iii) Grain weight. (iv) (a) 1948 1st crop to 1949 2nd crop, (b) No. (c) N.A. (v) (a) (b) Nil (vi) & (vii) Nil.

5. RESULTS :

(i) 2697 lb./ac.
(ii) 190.0 lb./ac.

(iii) Main effects, interaction and control vs. others are not significant.

(vi) (Mean grain yield in lb.ac.)

Control =2635 lb./ac.

Source	Hyper (26/27)	Hyper (28/29)	Super	B.M.	Mean
level					
30 lb.	2673	2772	2562	2810	2704
45 lb.	2598	2624	2859	2748	2707
Mean.	2636	2698	2711	2779	2706

S. E. for marginal mean of levels of P_2O_5=47.5 lb./ac.

S. E. for ,, ,, sources ,, =67.5 ,,

S. E. for body of table ,, =95.0 ,,

S. E. for control vs any other mean in the body of the table =135.0 ,,

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Crop :-Paddy (2nd crop) Ref :- K. 48(24)

Site :-Agri. Res. Stn. Pattambi. Type :-'M'

Object :—To find out the effect of Reno Hyperphosphate (a new rock phosphate ground to extreme fineness) with Super and Bonemeal.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) G.L. 5000 lb./ac.+A/S.100 to 150 lb./ac (ii) (a) Laterite Loam (b) Refer soil analysis Pattambi. (iii) 1.8.48. and 12.9.1948. (iv) (a) 6 ploughings, 2 puddlings. (b) Transplanting in lines (c)—(d) 4" to 6" between plants and 10" between rows. (e) 3 to 4 (v) Green manure crop of Dhaincha at 5000 lb./ac. at the time of puddling. (vi) PTB 20. Medium, Improved. (vii) Rainfed. (viii) One or two weedings if required at an interval of one month from planting. (ix) 30.9" (1.8.48 to 14.1.1949) (x) 14.1.1949.

2. TREATMENTS :

All combinations of (1) & (2)

(1) 2 levels of P_2O_5 :—30,45 lb./ac.

(2) 4 sources of P_2O_5 :—(a) Reno Hyper (26/27.)
(b) Reno Hyper (28/29.)
(c) Super.
(d) B. M.
and one control (no manure)

All applied as basal dressing at planting.

3. DESIGN :

(i) R.B.D. (ii) (a) 9 (b) 4 (iii) 4 (iv) (a) (b) 10'×22' (v) Nil. (vi) Yes.

4. GENERAL :

(i) Satisfactory (ii) Nil (iii) Grain weight. (iv) (a) 1948-1st crop to 1949-2nd crop. (b) No. (c) Nil (v) (a) Nil. (b) Nil. (vi) & (vii) Nil.

5. RESULTS :

(i) 3016 lb./ac.

(ii) 94.00 ,,

(iii) Main effects, interaction and control *vs* others are not significant.

(iv) (Mean grain yield in lb./ac)

Control=2970 lb./ac.

Source	Hyper (26/27)	Hyper (28/29)	Super	B.M.	Mean
Levels					
30	3020	2978	2962	2995	2989
45	3118	3028	3028	3044	3055
Mean	3069	3003	2995	302	3022

S. E. for the marginal mean of level of P_2O_5 = 23.50 lb./ac.
S. E. for ,, ,, source = 33.00 ,,
S. E. for the body of table ,, = 47.00 ,,
S. E. for control *vs* any other mean in the body of table = 66.00 ,,

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Crop:- Paddy (1st crop) Ref:- K. 49 (32)

Site:- Agri. Res. Stn. Pattambi. Type:- 'M'

Object:- To find out the efiect of Reno Hyperphophate (a new Rock phosphate ground to extreme fineness) with Super and Bonemeal.

1. BASAL CONDITIONS:—

(i) (a) Nil (b) Paddy (c) G.L. 5000 lb/ac. +A/S100 to 150 lb./ac. (ii) (a) Laterite loam (b) Refer soil analysis Pattambi (iii) 31.5.1940 ; 1.7.1949. (iv) (a) 6 ploughings and 2 puddlings (b) Transplanted in lines (c)—(d) 4" to 6" between plants and 10" between rows. (e) 3 to 4 (v) G.L. 5000 lb./ac- as basal dressing at the time of puddling. (vi) PTB 2. Medium. Improved. (vii) Rainfed. (viii) One or two weedings if required at an interval of one month from planting. (ix) 77.46" (31.5.49. to 24.10 1949) (v) 24.10.1949.

2. TREATMENTS:—

All combinations of (1) & (2)
(1) 2 levels of P_2O_5:-30, 45 lb/ac.
(2) 4 sources of P_5O_5 (a) Reno hyper (26/27)
(b) Reno Hyper (28/29)
(c) Super
(d) B.M.
and one Control (no manure)
All manures applied as basal before planting.

3. DESIGN:—

(i) R.B.D. (ii) (a) 9 (b) N.A. (iii) 4 (iv) (a), (b) 13'×23' (v) Nil (vi) Yes.

4. GENERAL:—

(i) Satisfactory. (ii) Nil (iii) Grain weight. (iv) (a) 1948 1st crop to 1949 2nd crop (b) Nil (c) N.A. (v) (a,b) Nil (vi) & (vii) Nil.

5. RESULTS:—

(i) 2721. lb/ac.
(ii) 175.0 ,,
(iii) Only the interaction of source × levels of P_2O_5 is significant.
(iv) (Mean grain yield in lb/ac.)
Conttrol = 2850 lb/ac.

Source	Hyper (26/27)	Hyper (28/29)	Super.	B.M.	mean.
Levels					
30	2796	2477	2704	2768	2686
45	2668	2858	2622	2750	2725
Mean.	2732	2668	2663	2759	2705

S.E. for the marginal means of levels of P_2O_5 = 43.5 lb/ac.
S.E. for ,, ,, ,, of sources of P_2O_5 = 62.0 ,,
S.E for the body of table = 87.0 ,,
S.E. for control *vs*. any other means in the table. = 124.0 ,,

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Crop:- Paddy (2nd crop) Ref:- K. 49 (36)

Site:- Agri. Res. Stn Pattambi. Type:- 'M'

Object:- To find out the effect of Reno Hyperphosphate (a new rock phosphate ground to extreme finencss) with Super and Bonemeal.

1. BASAL CONDITIONS:—

(i) (a) Nil (b) Paddy. (c) G.L. 5000 lb./ac. + A/S 100 to 150 lb./ac. (ii) (a) Laterite loam (b) Refer Soil analysis Pattambi (iii) 20.9.49 ; 8.11.1949. (iv) (a) 6 ploughings and 2 puddlings (b) Transplanted in lines (c) — (d) 4 to 6" between plants and 10" between rows. (e) 3 to 4 (vi) G.L. at 5000 lb/ac. as basal dressing at the time of puddling. (vi) PTB 20. Medium. Improved. (vii) Rainfed. (viii) One or two weedings if required at an interval of one month from planting. (ix) 14.93" (20.9.1949. to 17.2.1950) (x) 17.2.1950.

2. TREATMENTS:—

All combinations of (1) and (2)

(1) 2 levels of P_2O_5:- 30,45 lb/ac.

(2) 4 sources of P_2O_5:- (a) Hyper (26/27)
(b) Hyper (28/29)
(c) Super
(d) B.M.
and one Control (no manure)

All manures applied as Basal before planting.

3. DESIGN:-

(i) R.B.D. (ii) (a) 9 (b) N.A. (iii) 4 (iv) (a,b) 11'×19' (v) Nil (vi) Yes.

4. GENERAL:—

(i) Satisfactory (ii) Nil (iii) Grain weight (iv) (a) 1948 1st crop to 1949 2nd crop (b) No (c) N.A. (v) (a) & (b) Nil (vi) & (vii) Nil.

5. RESULTS:—

(i) 1649 lb/ac
(ii) 138.0 ,,
(iii) only 'Control *vs.* others is significant.
(iv) (Mean grain yield in lb/ac.)
Control = 1484 lb/ac.

Source	Hyper 26/27	Hyper 28/29	Super.	B.M.	Mean.
Levels. 30	1642	1719	1576	1667	1651
45	1655	1642	1642	1811	1688
Mean.	1649	1681	1609	1739	1669

S.E. for marginal means of levels of P_2O_5 = 34.5 lb/ac.
S.E. for ,, ,, of source of P_2O_5 = 49.0 ,,
S.E. for the body of table = 69.0 ,,
S.E. for Control *vs.* any mean in the body of the table = 98.0 ,,

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Crop:- Paddy (2nd crop) Ref:- K. 48(22)

Site:- Agri. Res. Stn. Pattambi. Type:- 'M'

Object:- To assess the comparative efficancy of different kinds of green leaves.

1. BASAL CONDITIONS:—

(i) (a) Nil (b) Paddy (c) G.L 5000 lb/ac. + A/S. 100 to 150 lb/ac. (ii) (a) Laterite loam (b) Refer soil analysis for Pattambi. (iii) 1.8.48. 21.9.1948. (iv) (a) 6 dry ploughings and 2 puddlings (b) Transplanted in lines. (c)—(d) 4" to 6" between plants and about 10" between rows. (e) 3 to 4(v) Nil. (vi) PTB18, Medium Improved. (vii) Rainfed. (viii) One or two weedings if required at an interval of one month from planting. (ix)30.90" (1.8.48. to 13.1.1949.) (x) 13.1.1949.

2. TREATMENTS:—

1. No manure
2. Hyperphoshptate 5000 lb / ac.
3. Vengair (Ptero carpus Marsupium) 5000 lb / ac.
4. Mango leaves 5000 lb / ac.

Applied as basal dressing at the time of puddling

3. DESIGN :

(i) R.B.D. (ii) (a) 4 (b) N.A. (iii) 6(iv) (a) (b) 5'×40' (v) Nil (vi) Yes

4. GENERAL :

(i) Satisfactory. (ii) Nil (iii) Grain and straw weight. (iv) (a) 1948 - 2nd crop to 1949 - 2nd crop. (b) No. (c) Nil (v) (a),(b) Nil (vi) & (vii) Nil.

5. RESULTS :

(i) 2801 lb/ac.
(ii) 318 lb/ac
(iii) The treatments are not significantly different.
(iv) Grain weight in lb/ac.

Treatment	Mean.
1.	2631
2.	2868
3.	2760
4.	2949

S.E. of treatment means = 131 lb/ac.

Crop :- Paddy (1st crop) **Ref.-K. 49(35)**
Site :- Agri. Res. Stn. Pattambi. **Type :- 'M'**

Object :—To assess the comparative merit of seven different kinds of green leaves.

BASAL CONDITIONS :
(i) (a) Nil (b) Paddy (c) G.L. 5000 lb./ac. +A/S. 100 to 150 lb./ac. (ii) (a) Laterite loam(b) Refer soil analysis Pattambi (iii) 2.6.1949 : 20.7.1949. (iv) (a) 6 ploughings and 2 puddlings (b) Transplanting in lines (c)—(d) 4" to 6" between plants and 10" between rows. (e) 3 to 4 (v) Nil (vi) P.T.B. 2. Medium Improved. (vii) Rainfed. (viii) One or two weedings if required at intervals of one month from planting. (ix) 77.46" (2.6.1949 to 25.10.49) (x) 25.10.1949.

2. TREATMENTS :
1. Hyptis-sva-veolens 4000 lb./ac.
2. Vengai 4000 lb./ac.
3. Mango 4000 lb./ac.
4. Crotoloaria Straita 4000 lb./ac.
5. Kolinji 4000 lb./ac.
6. Dhaincha 4000 lb./ac.
7. Sesbania speciosa 4000 lb./ac.

All as basal dressing at the time of puddling.

3. DESIGN :
(i) R.B.D. (ii) (a) 7 (b) N.A. (iii) 4 (iv) (a.b) 12'×25' (v) Nil (vi) Yes.

4. GENERAL :
(i) Satisfactory. (ii) Nil (iii) Grain weight (iv) (a) 1948-2nd crop to 1949-2nd crop (b) No (c) N.A. (v) (a,b) Nil (vi) & (vii) Nil.

5. RESULTS :
(i) 2246 lb./ac.
(ii) 245.0 lb./ac.
(iii) The treatments do not differ significantly.
(iv) (Grain weight in lb./ac.)

Treatments	Mean.
1.	2259
2.	2268
3.	2169
4.	2251
5.	2314
6.	2259
7.	2206

S.E. of treatment means =123.0 lb/ac.

Crop :- Paddy (2nd crop) **Ref :- K. 49(40)**
Site :- Agri. Res. Stn. Pattambi. **'Type :- M'**

Object :—To assess the comparative merit of seven different kinds of green leaves.

1. BASAL CONDITIONS :
(i) (a) Nil (b) Paddy (c) G.L. about 5000 lb./ac. + A/S 100 to 150 lb./ac. (ii) (a) Laterite loam (b) Refer soil analysis Pattambi. (iii) 17.10.49 ; 11.11.1949. (iv) (a) 6 ploughings and 2 puddlings (b)

Transplanted in lines (c)—(d) 4" to 6" between plants and 10" between rows (e) 3 to 4 (v) Nil (vi) PTB 20. Medium. Improved (vii) Rainfed. (viii) One or two weedings if required at intervals of one month from planting. (ix) 5.54" (17.10.1949 to 8.2.1950) (x) 8.2.1950

2. TREATMENTS :

1. Hyptis svaveolens 4000 lb./ac.
2. Vengai 4000 lb./ac.
3. Mango 4000 lb./ac.
4. Crotoloaria Straita 4000 lb./ac.
5. Kolinji 4000 lb./ac.
6. Dhaincha 4000 lb./ac.
7. Control (no leaf)

All as basal dressing at the time of puddling.

3. DESIGN :

(i) R.B.D. (ii) (a) 7 (b) N.A. (iii) 4 (iv) (a.b.) 12'×25' (v) Nil (vi) Yes.

4. GENERAL :

(i) Satisfactory (ii) Nil (iii) Grain weight (iv) (a) 1948-2nd crop to 1949-2nd crop (b) No (c) N.A. (v) (a,b.) Nil (vi) & (vii) Nil.

5. RESULTS :

(i) 2888 lb./ac.
(ii) 463.0 lb./ac.
(iii) The treatments do not differ significantly.
(iv) (Grain weight in lb./ac.)

Treatment	Mean.
1.	3013
2.	2921
3.	3086
4.	2913
5.	2904
6.	2814
7.	2569

S.E. of treatment means =232.0 lb./ac.

Crop:- Paddy (2nd crop) Ref :- K. 48(25)
Site:- Agri. Res. Stn. Pattambi. Type:- 'M'

Object:—To find out the effect of applying Super before and after final ploughing.

1. BASAL CONDITIONS

(i) (a) Nil (b) Paddy (c) About 5000 lb./ac. of G.L.+100 to 150 lb./ac. of 'A/S' (ii) (a) Laterite loam (b) Refer soil analysis for Pattambi. (iii) 18.8.48/27.9.1948. (iv) (a) 6 ploughings. 2 puddlings (b) Planting in lines (c)—(d) 4" to 6" between plants and about 10" between rows (e) 2 to 3 (v) Nil (vi) PTB 18. Medium Improved (vii) Rainfed (viii) One or two weedings if required at an interval of one month from planting. (ix) 23.15" (18.8.1948 to 18.1.1949) (x) 18.1.1949.

2. TREATMENTS :

1. Super at 150 lb./ac. before final ploughing and levelling.
2. Super at 150 lb./ac. after final ploughing and levelling.
3. No super.

3. DESIGN :

(i) R.B.D. (ii) (a) 3 (b) N.A. (iii) 6 (iv) (a) (b) 21'×38' (v) Nil. About 1½' to 2' interspace between plots. (vi) Yes.

4. GENERAL :

(i) Satisfactory (ii) Nil (iii) Grain weight. (iv) (a) 1948-2nd crop to 1950-1st crop (b) No (c) N.A. (v) (a) (b) Nil (vi) & (vii) Nil.

5. RESULTS :

(i) 2306 lb./ac.
(ii) 117 lb./ac.
(iii) The treatments are not significantly different.
(iv) Grain weight lb./ac.

Treatments	Mean
1	2293
2	2356
3	2270
S.E. of treatment mean	±48 lb./ac.

Crop :-Paddy (1st crop) Ref :-K.49 (27)

Site :-Agri. Res. Stn. Pattambi. Type :-'M'

Object :—To find out the effect of applying Super before and after final ploughing.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) 5000 lb. G.L/ac+100 to 150 lb. A/S/ac (ii) (a) Laterite loam (b) Refer soil analysis Pattambi (iii) 21.5.49 ; 25.6.1949. (iv) (a) 6 puddlings and 3 levellings (b) bulk tranplanted (c)—(d) 6″×4″ (e) 3 to 4 (v) G.L 2000 lb/ac at the time of 1st puddling (vi) PTB 2. Medium 4 to 5 months (vii) Rainfed (viii) One weeding three to four weeks after planting. (ix) 81.46″ (21.5.1949 to 12.10.1949, (x) 12.10.1949.

2. TREATMENTS :

1. Super at 150 lb./ac before final ploughing.
2. Super at 150 lb./ac after final ploughing.
3. No super (Control)

Applied by broadcasting.

3. DESIGN :

(i) R.B.D. (ii) (a) 3 (b) N.A. (iii) 4 (iv) (a,b) 25′×25′ (v) Nil (vi) Yes.

4. GENERAL :

(i) Satisfactory (ii) Nil (iii) Grain and straw weight. (iv) (a) 1948-2nd crop to 1950-1st crop (b) No. (c) N.A. (v) (a,b) Nil (vi) & (vii) Nil.

5. RESULTS :

(i) 2133 lb./ac.
(ii) 168.0 ,,
(iii) The treatments do not differ significantly.
(iv) (Grain weight lb./ac.)

Treatment	Mean.
1.	2216
2.	2056
3.	2126
S.E. of treatment meants	±84.0 lb./ac.

Crop :-Paddy (2nd crop) Ref :-K. 49 (42)

Site :-Agri. Res. Stn. Pattambi. Type :-'M'

Object :—To find-out the effect of applying Super before and after final ploughing.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) About 5000 lb./ac. of G.L+100 to 150 lb./ac. A/S (ii) (a) Laterite loam (b) Refer soil analysis Pattambi (iii) 17.10.49 : 11.11.1949 (iv) (a) 6 ploughings and 2 puddlings (b) Transplanted in lines (c)—(d) 4″ to 6″ between plants and 10″ between rows. (e) 3 to 4 (v) Nil (vi) PTB 20. Medium. Improved. (vii) Rainfed (viii) One or two weedings if required at intervals of one month from planting. (ix) 10.43″ (17.10.49 to 23.2.1950) (x) 23.2.1950.

2. TREATMENTS :

1. Super at 150 lb./ac before final ploughing.
2. Super at 150 lb./ac after final ploughing.
3. Control (no Super)

3. DESIGN :

(i) R.B.D. (ii) (a) 3 (b) N.A. (iii) 4 (iv) (a,b) 15′×40′ (v) Nil (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil (iii) Grain weight (iv) (a) 1948-2nd crop to 1950-1st crop (b) No (c) N.A. (v (a,b) Nil (vi) & (vii) Nil.

5. RESULTS :

(i) 2314 lb./ac.
(ii) 171.0 lb./ac.
(iii) The treatments do not differ significantly.
(iv) (Grain weight in lb./ac.)

Treatment	Mean
1.	2269
2.	2351
3.	2323

S.E. of treatment means = 86.0 lb./ac.

Crop :- Paddy (1st crop) Ref :-K. 50 (21)
Site :-Agri. Res. Stn. Pattambi. Type :-'M'.

Object :—To find out the effect of applying super before and after final ploughing.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) G.L. 5000 lb/ac. +100 to 150 lb of ac./A/S (ii) (a) Laterite loam (b) Refer soil analysis Pattambi (iii) 3.6.1950. : 3.7.1950. (iv) (a) Puddling 6 times levelling 3 times. After the first ploughing green manure is in corporated and trampled (b) transplanted in bulk (c)—(d) 4"×6" (e)2 to 3 (v) 2000 lb of G.L applied on 18.6.50 at the time of puddling. (vi) PTB 2 ; Improved. Medium 4 to 5 months. (vii) Rainfed. (viii) One weeding three to four weeks after planting. (ix) 96.42" (3.6.50 to 16.10.1950) (x) 16. 10.1950.

2. TREATMENTS :

1. Super 150 lb/ac before final ploughing as basal dressing.
2. Super 150 lb/ac. after final ploughing as top dressing.
3. Control. (no Super)

3. DESIGN :

(i) R.B.D. (ii) (a) 3 (b) N.A. (iii) 8 (iv) (a) (b) 10'×21' (v) Nil ; 1½' to 2' interspace between plots (vi) Yes.

4. GENERAL :

(i) Satisfactory (ii) Nil (iii) Grain weight (iv) (a) 1948-2nd crop to 1950-1st crop (b) No. (c) N.A. (v) (a) (b) Nil (vi) & (vii) Nil.

5. RESULTS :

(i) 2226 lb/ac.
(ii) 300 lb/ac.
(iii) The treatments are not significantly different.
(iv) (Grain weight in lbs/acre.)

Treat.	Mean.
1.	2287
2.	2192
3.	2197

S.E. of the treatment means = 106 lb/ac.

Crop :-Paddy (2nd crop) Ref :-K. 49 (37)
Site :-Agri. Res. Stn. Pattambi. Type :-'M'

Object :—To find out whether Engrais Fertilizer which contains 10%N and 14% P_2O_5 can be used as a substitute for A/S and Super.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) GL About 5000 lb./ac.+100 to 150 lb. ac./A/S (ii) (a) Laterite loam, (b) Refer soil analysis Pattambi (iii) 29.9.1949 ; 9.11.1949. (iv) (a) 6 ploughings and 2 puddlings (b) Transplanted in lines (c)—(d) 4" to 6" between plant and 10" between rows. (e) 3 to 4 (v) GL 2000 lb/ac. at the of time of puddling. (vi) PTB 12, Medium. Improved. (vii) Rainfed. (viii) One or two weedings if required at intervals of one month from planting. (ix) 7.18" (29.9.1949 to 29.1.1950) (x) 29.1.50

2. TREATMENTS :

1. Engrais Fertiliser 300 lb/ac. as basal dressing at the time of puddling.

2. 25 lb./ac. N as A/S top dressing one month after planting + 40 lb. P_2O_5/ac. as super as basal dressing along with final ploughing.
3. Control. (no manure)

3. DESIGN :

(i) R.B.D. (ii) (a) 3 (b) N.A. (iii) 8 (iv) (a,b) 15′×2′ (v) Nil (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil (iii) Grain weight (iv) (a) 1949-2nd crop to 1950-1st crop (b) No (c) N.A. (v) (a,b) Nil (vi) & (vii) Nil.

5. RESULTS :

(i) 1872 lb./ac.
(ii) 97.0 lb./ac.
(iii) The treatment differences are highly significant.
(iv) (Grain weight in lb./ac.)

Treatment	Mean.
1.	1996
2.	2060
3.	1556

S.E. of treatment means=35.0 lb./ac.

Crop :- Paddy (1st crop) **Ref :- K. 50 (20)**

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

Object :—To compare 'Engrais' fertiliser mixture which contains 10% N and 14% P_2O_5 with A/S and Super to supply equal quantities of N and P applied individually.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) G.L. About 5000 lb./ac.+100 lb. A/S/ac. (ii) (a) Lateritic loam (b) Refer soil analysis Pattambi (iii) 3.6.50. : 4.7.1950. (iv) (a) Puddlings 6 times levelling 3 times. After first ploughing G.L. is incorporated and trampled. 3 or 4 days after, 4 ploughings are given (b) Seedlings transplanted(c)— (d) 6′×4′ (e) 2 to 3. (v) G.L. 2000 lb./ac. at the time of puddling. (vi) P.T.B. 2. Medium. 4 to 5 months Improved. (vii) Rainfed. (viii) One weeding. 3 or 4 weeks after planting. (ix) 96.42″ (3.6.50 to 16.10.50.) (x) 16.10.50.

2. TREATMENTS :

1. Engrais fertiliser 300 lb./ac. as basal dressing at the time of puddling.
2. 25 lb./ac. N as A/S top dressing one month after planting+40 lb. P_2O_5/ac. as Super as basal dressing along with final ploughing.
3. Control. (no manure)

3. DESIGN :

(i) R.B.D. (ii) (a) 3 (b) N.A. (iii) 8 (iv) (a) (b) 15′×25′ (v) Nil 1½′ to 2′ interspace between plots (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil (iii) Grain weight. (iv) (a) 1949-2nd crop to 1950-1st crop. (b) No. (c) N.A. (v) (a) (b) Nil. (vi) & (vii) Nil.

5. RESULTS :

(i) 2297 lb./ac.
(ii) 213 lb./ac.
(iii) The treatment differ highly significantly.
(iv) (Grain weight in lb./ac.)

Treatments	Mean.
1.	2461
2.	2393.
3.	2038

S.E. of treatment means =75 lb./ac.

Crop :- Paddy (1st crop) Ref :- K. 49(20)

Site:- Agri. Res. Stn. Pattambi. Type :- 'M'

Object :—To find-out the comparative response of F.Y.M. and Compost to paddy.

1. BASAL CONDITIONS:

(i) (a) Nil (b) Paddy (c) F.Y.M. 5 C.L. /ac.+Ash. 1000 lb. /ac. (ii) (a) Laterite loam (b) Refer soil analysis Pattambi. (iii) 1.5.1949. (iv) (a) 10 to 12 ploughings (b) Seeds broadcast (c) 75 to 100 lb./ac. (d)—(e)—(v) Nil (vi) Kattamodan, Improved, Medium-125 days. (vii) Rainfed. (viii) One weeding 3 to 4 weeks after planting. (ix) 78.00" (1.5.1949 to 3.9.1949) (x) 3.9.1949.

2. TREATMENTS:

1. No Manure
2. Compost to supply 60 lb. N/ac.
3. F.Y.M. to supply 60 lb. N/ac.
   Applied as basal at the time of ploughing.

3. DESIGN :

(i) R.B.D. (ii) (a) 3 (b) N.A. (iii) 6 (iv) (a),(b) 38'×29' (v) Nil (vi) Yes.

4. GENERAL :

(i) Satisfactory (ii) Nil (iii) Grain & Straw weight. (iv) (a) 1949 to 1951 (1st crop only). 1952 Residual effect studied. (b) Yes. (c) N.A. (v) (a) (b) Nil. (vi) & (vii) Nil.

5. RESULTS :

(i) 1172 lb./ac.
(ii) 230.0 lb./ac.
(iii) The treatments do not differ significantly.
(iv) Grain weight in lb./ac.

Treatment	Mean
1.	1015
2.	1245
3.	1255

S.E. of treatment means =94.0 lb./ac.

Crop:- Paddy 1st) Crop Ref:- K. 50 (14)/49 (20)

Site:- Agri. Res, Stn. Pattambi. Type:- 'M'

Object:—To study the comparative response of dry paddy to the application of F.Y.M. and compost.

1. BASAL CONDITIONS:

(i) (a) NIL (b) Paddy (c) As per transments and basal dressing of K49(20)(ii) (a) Laterite loam (b) Refer soil analysis Pattambi (iii) 30.5.50, 13.6.50 (iv) (a) 10-12 ploughings (b) Transplanted (c)—(d) bulk. (e) 2 to 3 (v) Nil (vi) PTB 28; short duration; (120 days.) Improved (vii) Rainfed (viii) One weeding three to four weeks after planting. (ix) 96.42" (30.5.1950 to 12.10.1950) (x) 12.10.1950.

2. TREATMENTS:

1. No manure.
2. Compost to supply 60 lb N/ac.
3. F.Y.M. to supply 60 lb N/ac.
   Applied as basal dressing at the time of ploughing.

3. DESIGN:

(i) R.B.D. (ii) (a) 3 (b) NA (iii) 6 (iv) (a) (b) 29'×38'. (v) No; 1/2' to 2' interspace between plots. (vi) Yes.

4. GENERAL:

(i) Satisfactory (ii) NIL (iii) Grain weight (iv) (a) 1949-Ist crop to 1951—Ist crop (one crop only per year) ; during 1952 esidual effect studied (b) Yes (c) N.A. (v) (a) (b) Nil. (vi) & (vii) Nil.

5. RESULTS:

(i) 1024 lb/ac.
(ii) 113 lb/ac.
(iii) The treatments do not differ significantly.
(iv) Grain weight in lb/ac.

Treatment	Mean
1.	978
2.	1055
3.	1040

S.E. of *treatment means* = *46 lb/ac.*

Crop -: Paddy (1st crop) **Ref:K.51(7) /50 (14)/49 (20)**

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

Object:—To evaluate the comparative merits of F.Y.M. and compost of farm wastes.

1. BASAL CONDITIONS:

(i) (a) Nil (b) Paddy (c) As per treatments and basal dressing K. 50 (14) (ii) (a) Laterite loam (b) Refer soil analysis, Pattambi (iii) 4.5.1951 (iv) (a) Puddling 6 times, levelling 3 times. After first ploughing G.M. is incorporated and trampled, 4 to 5 ploughings given (b) transplanted from wet nursery (c)—(d) bulk planting *3 or 4 days later. (e) 2 to 3 (v). Nil (vi). PTB 28, Short 120 days Improved (vii) Rainfed. (viii)* One weeding 3 to 4 weeks after planting and another weeding if necessary one month after 1st weeding (ix) 50.25" (4.5.51 to 29.8.1951) (x) 29.8.1951.

2. TREATMENTS:

1. No manure
2. Compost to supply 60 lb N/ac.
3. F.Y.M. to supply 60 lb N/ac.

All manures applied at the time of puddling.

3. DESIGN:

(i) R.B.D. (ii) (a) 3 (b) N.A. (iii) 6 (iv) (a), (b) 38′×29′ (v) Nil; (vi) Yes.

4. GENERAL:

(i) Practically there was no difference among the various treated plots; Growth Satisfactory (ii) Nil (iii) Grain and straw weight (iv) (a) 1949-1st crop 1951-1st crop (1st crop only) during 1952 residual effect studied (b) Yes (c) N.A. (v) (a) (b) Nil (vi) & (vii) Nil.

5. RESULTS:

(i) 1727 lb/ac.
(ii) 20 lb/ac.
(iii) Treatment differences are significant.
(iv) (Grain weight in lb/ac.)

Treat.	Mean.
1.	1522
2.	1693
3.	1967

S.E. of treatment means = 8 lb/ac.

Crop :- Paddy (1st crop) **Ref :- K. 52 (28)/51(7)/50 (14)/49(20)**

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

Object :—To study the residual effect of the application of F.Y.M. and compost.

1. BASAL CONDITIONS:

(i) (a) Nil (b) Paddy (c) As under treatments and basal dressing of K·51 (7). (ii) (a) Laterite loam (b) Refer soil of analysis, Pattambi (iii) 23.5.1952 ; 30.6.1952. (iv) (a) Puddling 6 times, levelling 3 times (b) Transplanted (c)—(d) 6"×4" (e) 2 to 3 (Age of seedlings one month.) (v) Nil (vi) PTB—28, Short (120 days) Improved, (vii) Rainfed. (viii) One weeding 3 to 4 weeks after planting and another weeding after a month if required. (ix) about 67" (23.5.1952 to 11. 9. 1952) (x) 11. 9. 1952.

2. TREATMENTS:

Residual effect of

1. No. manure.
2. Compost to supply 60 lb N/ac.
3. F.Y.M. to supply 60 lb N/ac.

Applied during the past 3 years.

DESIGN:

(i) R.B.D. (ii) (a) 3 (b) N.A. (iii) 6 (iv) (a),(b) 38′×29′ (v) Nil (vi) Yes.

4. GENERAL:

(i) Not satisfactory. (ii) Nil (iii) Grain & Straw weight. (iv) (a) 1949 to 1951. In 1952 residual effects studied (b) Yes. (c) N.A. (v) (a), (b) Nil (vi) & (vii) Nil.

5. RESULTS:

(i) 453 lb/ac.
(ii) 196 lb/ac.
(iii) The treatments do not differ significantly.
(iv) (Grain weight in lb/ac.)

Treatment	Mean.
1.	384
2.	479
3	496

S.E. of treatment mean. = 80 lb/ac.

Crop :- Paddy (1st crop) Ref :- K. 49 (19)

Site :- Agri. Res. Stn. Pattambi. Type :- 'M'

Object:—To know whether the radioactive stimulant Alphatron will give increased yield of paddy.

1. TREATMENTS:

(i) (a) Nil (b) Paddy (c) 5000 lb. G.L/ac.+100 to 150 lb. A/S/ac. (ii) (a) Laterite loam (b) Refer soil analysis, Pattambi. (iii) 9.5.1949 (iv (a) 10 to 12 ploughings (b) Seeds broadcast and covered by shallow ploughing (c) 75 lb/ac.(d),—(e)— (v) Nil (vi) PTB 22, Improved, Medium (vii) Rainfed. (viii) One weeding three to four weeks after planting. (ix) 76.18" in 68 rainy days. (9.5.1949 to 23.8. '49) (x) 23. 8. '49.

2. TREATMENTS:

Treated with

1. Alphatron 5 lb./ac.
2. Alphatron 10 lb./ac.
3. Alphatron 20 lb./ac.
4. Control (untreated)

Applied Mixing with 100 lb. of surface soil/ac. and placing along furrows before sowing and covered by bush harrow.

3. DESIGN:

(i) R.B.D. (ii) (a) 4 (b) N.A. (iii) 6 (iv)(a),(b) 32′×28′ (v) Nil; 2′ interspace between plots. (vi) Yes.

4. GENERAL:

(i) Satisfactory (ii) Nil (iii) Grain Straw weight. (iv)(a) 1949-1st crop to 1950-1st crop (1st crop only) (b) No (c) N.A. (v) (a),(b) Nil. (vi) & (vii) Nil.

5. RESULTS :

(i) 1333 lb./ac.
(ii) 124.0 lb./ac.
(iii) The treatments are not significantly different.
(iv) Grain weight in lb./ac.

Treatment	Mean
1.	1258
2.	1329
3.	1453
4.	1290

S.E. of treatment means = 50.0 lb./ac.

Crop :- Paddy (1st crop) Ref :- K. 50 (11)

Site :- Agri. Res. Stn. Pattambi. Type :- 'M'

Object:—To know whether the radiocative stimulant Alphatron will give increased yield of paddy.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) G.L. 5000 lb/ac+A/S. 100 to 150 lb/ac. (ii) (a) Laterite loam (b) Refer soil analysis, Pattambi. (iii) 2.5.1950 (iv)(a) Puddling 6 times, levelling 3 times. Afte first ploughing G.L. (about 4000 lb/ac) incorporated and trampled 4 to 5 ploughings given after 3 or 4 days ; plot levelled. (b) Transplanted (c)—(d) in bulk. (e) 2 to 3. (v) About 4000 lb G.L./ac. applied after the first ploughing. (vi) PTB 22Improved, Medium (vii) Rainfed (viii) one weeding 3 to 4 weeks after planting. (ix) 96.42" (2·5 1950 8.9.1950) (x) 8.9.1950.

2. TREATMENTS :

1. Control.
2. Alphatron 10 lb/ac.
3. Alphatron 20 lb/ac.

Top dressing one month after planting.

3. DESIGN:

(i) R.B.D. (ii) (a) 3 (b) N.A. (iii) 8 (iv)(a)(b) 25'×17½' (v) Nil ; 2' interspace between plots (vi) Yes.

4. GENERAL :

(i) Satisfactory (ii) Nil (iii) Grain weight (iv)(a) 1949-1950 (only during 1st crop seasons) (b) Yes. (c) N.A. (v)(a),(b) Nil (vi) & (vii) Nil.

5. RESULTS :

(i) 1473 lb/ac.
(ii) 280 lb/ac.
(iv) The treatments are not significant.
(iv) Grain weight in lb./ac.

Treatment	Mean
1.	1520
2.	1480
3.	1420

S.E. of treatment means = 100 lb/ac.

Crop :- Paddy (1st crop) Ref :- K. 50 (18)

Site :- Agri. Res. Stn. Pattambi. Type :- 'M'

Object:—To find the effect of application of phosphates to leguminous crops on the following paddy crop.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) 5000 lb. G.L/ac. and 100 to 150 lb A/S/ac. (ii)(a) Laterite loam (b) Refer soil analysis, Pattambi. (iii) 23.5.50 ; 23.6.50 (iv) (a) Puddling 6 times, levelling 3 times, Green manure trampled. (b) Transplanted (c)—(d) bulk (e) 2 to 3 (v) Nil (vi) PTB 9 : Medium 130 days. (vii) Rainfed (viii) One weeding 3 or 4 weeks after planting. (ix) 96.42" (23.5.50 to 13.10.1950) (x) 13.10.1950.

2. TREATMENTS :

1. 30 lb P_2 O_5/ac. as super—basal dressing at the time of puddling.
2. 30 lb P_2O_5/ac. as B M.—basal dressing at the time of puddling.
3. Control.

Above treatments applied to Dhanicha crop sown on 1.2.50 and ploughed in situ on 20.6.1950.

3. DESIGN :

(i) R.B.D. (ii) (a) 3 (b) N.A. (iii) 8 (iv) (a)(b) 18'×17' (v) Nil : 1½' to 2' interspace between plots (vi) Yes.

4. GENERAL :

(i) Satisfatory. (ii) Nil (iii) Grain and Danicha weight (iv) (a) 1950-1st crop (only during 1st-crop) (b) No. (c) Nil (v) (a), (b) Nil (vi) & (vii) Nil.

5. RESULTS :

(i) 2313 lb/ac.
(ii) 222 lb/ac.
(iii) The treatments are not significant.
(iv) Grain weight in the lb/ac.

Treatment	Mean
1.	2344
2.	2282
3.	2313

S.E. of treatment means : 80 lb/ac.

Crop:- Paddy (1st crop) Ref:- K. 50(16)

Site:- Agri. Res. Stn. Pattambi. Type:- 'M'

Object :- To find out the effect of application of phosphate to leguminous crops on the following paddy crop

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy (c) 5000 lb G.L/ac and 100 to 150 lb A/S /ac. (ii) (a) Lateritic loam (b) Refer soil analysis, Pattambi (iii) 2.6.50., 15.7.50. (iv) (a) Puddling 6 times levelling, 3 times G.L. trampled (b) transplanted in line (c)—(d) 6" × 4" (e) 2 to 3 (v) Nil (vi) PTB 10, Short ; 100 days, Improved (vii) Rainfed. (viii) One weeding, three or four weeks after planting. (ix) 96.42" (2.6.50 to 29.9.50.) (x) 29.9.50.

2. TREATMENTS :

Following treatments applied to Kolinji sown on 24.10.1949. Trampled on 10.7.50.

1. 30 lb. P_2O_5 / ac. as super Basal dressing at the time of puddling.
2. 30 lb. P_2O_5 / ac as B.M. ,, ,,
3. Control.

3. DESIGN :

(i) R.B.D. (ii) (a) 3 (b) N.A. (iii) 6 (iv) (a) (b) 24' × 28' (v) Nil ; 1½' to 2' interspace between plots. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil (iii) Grain and of Kolinji weight (iv) (a) 1950-1st crop. only during the 1st crop season (b) No. (c) N.A. (v) (a, b) Nil (vi) & (vii) Nil.

5. RESULTS :

(i) 1062 lb/ac.
(ii) 130 lb/ac.
(iii) The treatments are not significant.
(iv) (Grain weight in lb./ac.)

Treat.	Mean.
1.	1037
2.	1155
3.	993

S.E. of treatment means : 52 lb/ac.

Crop:- Paddy (1st crop) Ref:- K. 50(15)

Site:- Agri. Res. Stn. Pattambi. Type:- 'M'

Object :- To compare the efficacy of Fused phosphate which contain 22% P_2O_5 with Super over a basal dressing of green manure.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) 5000 lb /ac. G.L. + 100 to 150 lb/ac. A/S (ii) (a) Laterite loam (b) Refer soil analysis, Pattambi. (iii) 2.6.50 ; 8.7.1950. (iv) (a) Puddling 6 times, leveling 3 times. After first ploughing green leaf incorporated and trampled 4 ploughing given after 3/4 days ; Plots levelled. (b) transplanted from nursery (c)—(d) in bulk (e) 2 to 3 (v) N.A. (vi) PTB 7, Improved, Short 120 days (vii) Rainfed (viii) One weeding 3 or 4 weeks after planting. (ix) 96.42" (2.6.1950 to 29.9.1950.) (x) 29.9.1950.

2. TREATMENTS :

1. G.L. 2500 lb/ac. as basal dressing at the time of puddling.
2. A/S to supply 30 lb N/ac. as top dressing one month after planting.
3. G.L 3500 lb/ac. + Supper to supply 30 lb P_2O_5 / ac as basal dressing along with final ploughing and levelling.

4. G.L 3500 lb/ac. + Fused phosphate to supply 30 lb. P_2O_5 /ac. as basal dressing along with final ploughing and levelling.
5. A/S 30 lb. N / ac. + Super 30 lb. P_2O_5 / ac.
6. A/S. 30 lb N/ac. + Fused phosphate 30 lb. P_2G_5 / ac.
7. G. L 2500 lb/ac. + A/S 30 lb. N/ac
8. G.L 2500 lb / ac. + A/S 30 lb N/ac. + Super 30 lb P_2O_5 /ac.
9. G.L 2500 lb / ac. + A/S 30 lb N /ac. + Fused phosphate 30 lb P_2O_5 /ac.

3. DESIGN :

(i) R B.D. (ii) (a) 9. (b) N.A. (iii) 4 (iv) (a), (b) 13′×20′ (v) Nil ; 1½′ to 2′ interspace between plots. (vi) Yes.

4. GENERAL :

(i) Satisfactory (ii) Nil (iii) Grain weight. (iv) (a) 1950 1st crop to 1951 2nd crop (both seasons in a year) (b) Yes (c) N.A. (v) (a), (b) Nil (vi) &(vii) Nil.

5. RESULTS :

(i) 1844 lb/ac.
(ii) 489 lb/ac.
(iii) The treatments are not significant.
(iv) Grain weight in lb/ac.

Treatment	Mean.
1.	1884
2.	1832
3.	1842
4.	1926
5.	1591
6.	1591
7.	2052
8.	2020
9.	1863

S.E. of treatment mean = 244 lb/ac.

Crop:- Paddy (2nd crop) Ref:-K. 50 (35)/50 (15)

Site:- Agri. Res. Stn. Pattambi. Type:- 'M'

Object:- To compare the efficacy of fused phosphate which contains 22% P_2O_5 with super over a basal dressing of green manure.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) As per treatments (ii) (a) Latertite loam (b) Refer soil analysis, Pattambi (iii) 13.9.50. 3.10.50. (iv) (a) Puddling 6 times, levelling 3 times ; after first ploughing green leaf in-corporated and trampled (b) transplanted from wet nursery at the age of one month (c)—(d) Planted in bulk (e) 2 to 3 (v) Nil; (vi) PTB 20; Short 4 months. (vii) Rainfed (viii) One weeding 3 to 4 weeks after planting; (ix) 19.36" (13.9.1950 to 8.2.1951) (x) 8.2.1951.

5. TREATMENTS :

1. G.L 2500 lb/ac.
2. A/S to supply 30 lb N/ac.
3. G.L 3500 lb / ac + super to supply 30 lb P_2O_5 /ac.
4. G.L 3500 lb/ac + fused phosphate to supply 30 lb P_2O_5 /ac.
5. A/S to supply 30 lb N + Supper to supply 30 lb P_2O_5 /ac.
6. A/S 30 lb N/ac. + fused phosphate to supply 30 lb P_2O_5 /ac.
7. G L 2500 lb/ac. + A/S to supply 30 lb N/ac.
8. G.L 2500 lb/ac. + super to supply 30 lb P_2O_5 /ac.
9. G.L 2500 lb/ac + fused phosphate to supply 30 lb P_2O_5 /ac.

Green leaf applied at the time of puddling as basal dressing.
A/S top. dressed one month after planting.
Super as basal dressing at the time of final ploughing.

3. DESIGN ;

(i) R.B.D. (ii) (a) 9 (b) N.A. (iii) 4 (iv) (a), (b) 13′ × 20′ (v) Nil, ½′ bund and 1′ furrow between plots. (vi) Yes.

4. GENERAL ;

(i) Satisfactory (ii) Nil (iii) Grain and straw weight (iv) (a) 1950—1st crop to 1951—2nd crop (b) Yes (c) N.A. (v) (a), (b) Nil (vi) & (vii) Nil.

5. RESULTS :

(i) 1752 lb/ac.

(ii) 627 lb/ac.

(iii) The treatments are not significantly different.

(iv) Grain weight in lb/ac.

Treatmeant	Mean.
1.	1696
2.	1592
3.	1717
4.	1612
5.	1444
6.	1634
7.	2094
8.	2158
9.	1823

S.E. of treatment means = 313 lb/ac.

Crop :-Paddy (1st crop) Ref :-K. 51 (10)/50 (15, 35)

Site :-Agri. Res. Stn. Pattambi. Type :-'M'

Object :—To compare the efficacy of fused phosphate which contains 22% P_2O_5 with super phosphate.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) As per treatments (ii) (a) Laterite loam (b) Refer soil analysis Pattambi (iii) 2.6.51 ; 5.7.1951. (iv) (a) Puddling 6 times levelling 3 times. (b) 4 to 5 ploughings are given (b) seedlings transplanted from wet nursery. Average age of seedlings is about one month. (c)—(d) Planted in bulk (e) 2 to 3 (v) Nil. (vi) PTB 2 Medium 4 to 5 months Imroved. (vii) Rainfed (viii) One weeding 3 to 4 weeks after planting Another weeding if necessary. (ix) 50.25" (2.6.51 to 24.10.51) (x) 24.10.1951.

2. TREATMENTS :

1. G.L. 2500 lb/ac.
2. A/S to supply 30 lb N/ac.
3. G.L. 3500 lb/ac.+Super to supply 30 lb P_2O_5/ac.
4. G.L. 3500 lb./ac.+fused phosphate to supply 30 lb. P_2O_5/ac.
5. A/S to supply 30 lb N/ac+Super to supply 30 lb. P_2O_5/ac.
6. A/S to supply 30 lb. N/ac.+Fused phosphate to supply 30 lb. P_2O_5/ac.
7. G.L. 2500 lb./ac.+A/S to supply 30 lb. N/ac.
8. G.L. 2500 lb./ac.+A/S to supply 30 lb.N/ ac.+Super to supply 30 lb P_2O_5/ac.
9. G.L. 2500 lb./ac.+A/S at 30 lb. N/ac.+Fused phosphate at 30 lb. P_2O_5/ac. G.L. applied at the time of puddling on 20.6.1951. Fused phosphate and Super on 5.7.1951 at the time of final puddling and levelling, by broadcast. A/S. applied on 5.8. 1951 as top dressing one month after planting.

3. DESIGN :

(i) R.B.D. (ii) (a) 9 (b) N.A. (iii) 4 (iv) (a), (b) 13'×20' (Nil (vi) Yes.

4. GENERAL :

(i) The rainfall (S.W. Monsoon) was deficient by about 20" from normal and the distribution was erratic. (ii) Nil (iii) Grain weight (iv) (a) 1950-1st crop to 1951-2nd crop (1) Yes (c) N.A. (v) (a), (b) Nil. (vi) & (vii) Nil.

5. RESULTS :

(i) 2205 lb./ac.

(ii) 326 lb./ac.

(iii) The treatment differences are not significant.

(iv) Grain yield in lb./ac.

Treatment	Mean.
1.	2310
2.	2121
3.	2331
4.	2142
5.	1809
6.	2373
7.	2268
8.	2226
9.	2184

S.E. of treatment means =163 lb./ac.

Crop :- Paddy (2nd crop) Ref :- K. 51 (14)/51 (10)/50 (15,35)

Site :- Agri. Res. Stn. Pattambi. Type :- 'M'

Object :—To compare the efficacy of fused phosphate which contains 22% P_2O_5 with super.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) As per treatments (ii) (a) Laterite loam (b) Refer soil analysis Patambi (iii) 27.9.1951 ; 3.11.1951. (iv) (a) Puddling 6 times levelling 3 times (b) Seedlings transplanted from wet nursery. Average age of seedlings about one month (c)—(d) Planted in bulk (e) 2 to 3 (v) Nil (vi) PTB 20 Improved short (120 days) (vii) Rainfed. (viii) One weeding 3 to 4 weeks after planting. Another weeding if necessrry. (ix) 23.76" (27.9.51 to 20.2.2952) (x) 20.2.1952.

2. TREATMENTS :

1. G.L. 2500 lb./ac.
2. A/S to supply 30 lb. N/ac.
3. G.L. 3500 lb./ac.+Super to supply 30 lb. P_2O_5/ac.
4. G.L. 350 ; lb./ac.+fused phosphate to supply 30 lb. P_2O_5/ac.
5. A/S to supply 30 lb. N/ac.+Super to supply 30 lb. P_2O_5/ac.
6. A/S to supply 30 lb. N/ac.+fused phosphate to supply 30 lb. P_2O_5/ac.
7. G.L. 2500 lb./ac+A/S to supply 30 lb.N/ac.
8. G.L. 2500 lb./ac.+A/S to supply 30 lb. N/ac.+Super to supply 30 lb. P_2O_5/ac.
9. G.L. 2500 lb./ac.+A/S 30 lb. N/ac.+fused phosphate 30 lb P_2O_5/ac.

G.L. applied on 3.10.1951 at the time of puddling.
Fused phosphate and super applied on 3.11.51 at the time of final puddling and levelling by broadcast.
A/S applied on 5.8.1951 as top dressing on 3.12.51 one month after planting.

3. DESIGN :

(i) R.B.D. (ii) (a) 9 (b) N.A. (iii) 4 (iv) (a) (b) 13'×20' (v) Nil (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil (iii) Grain weight (iv) (a) 1950 1st crop to 1951-2nd crop (b) Yes (c) N.A (v) (a) (b) Nil. (vi) & (vii) Nil.

5. RESULTS :

(i) 1979 lb./ac.
(ii) 694 lb./ac.
(iii) The treatment differences are not significant.
(iv) Grain yield in lb./ac.

Treatment.	Mean.
1.	1868
2.	2058
3.	2142
4.	1764
5.	1616
6.	1838
7.	2164
8.	2416
9.	1952

S.E. of treatment means =346 lb./ac.

Crop :- Paddy (1st crop) Ref :- K. 50 (28)

Site :- Agri. Res. Stn. Pattambi. Type :- 'M'

Object :—To evaluate the effect of Super with and without G.L.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) 5000 lb./ac. G.L. and 150 lb./ac. A/S (ii) (a) Laterite loam (b) Refer soil analysis Pattambi (iii) 19.5.1950 ; 3.6.1950. (iv) (a) Puddling 6 times, levelling 3 times (b) Seedlings transplanted from wet nursery at the age of one month. (c)—(d) Planted in bulk (e) 2 to 3 (v) Nil (vi) PTB 2. Improved, Medium 4 to 5 months (vii) Rainfed (viii) One weeding 3 to 4 weeks after planting (ix) 96.42" (19.5.1950 to 16.10.1950) (x) 16.10.1950.

TREATMENTS :

All combinations of (1) & (2)
(1) G.L. at 4 levels :— 0, 2000, 4000 and 6000 lb/ac.
(2) Super at 3 levels :—0, 30 and 60 lb. P_2O_5/ac.

G.L. applied as basal dressing at the time of puddling.
Super applied as basal dressing at puddling after G.L.

3. DESIGN :

(i) 4×3 factorial in R.B.D. (ii) (a) 12 (b) N.A. (iii) 4 (iv) (a), (b) 13′×17′ (v)Nil ; ½′ furrow between plots (vi) Yes.

4. GENERAL :

(i) Satisfactory (ii) Nil (iii) Grain weight (iv) (a) 1951-1st crop to 1952-1st crop (Repeated both seasons) (b) Yes (c) N.A. (v) (a) (b) Nil (vi) & (vii) Nil.

5. RESULTS :

(i) 2159 lb/ac.
(ii) 292 lb/ac.
(iii) Only the G.L. effect is significant
(iv) (Grain weight in lb/ac.)

Leaf lb./ac. / P_2O_5 lb/ac.	0	2000	4000	6000	Mean
0	1882	2111	2245	2284	2130
30	2049	2018	2274	2174	2128
60	1952	2308	2182	2421	2218
Mean	1963	2146	2234	2293	2159

S.E. of body of table : 146 lb./ac.
S.E. of Marginal means (Super) : 73 lb./ac.
S.E. of Marginal means (Leaf) : 84 „ „

Crop :- Paddy (2nd crop) Ref :- K. 50.32)/50(28)
Site :- Agri. Res. Stn. Pattambi. Type :- 'M'

Object:—To evaluate the effect of Super with and without G.L.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) As per treatments (ii) (a) Laterite loam (b) Refer soil analysis Pattambi. (Iii) 13.9.1950: 31.10.1950. (iv) (a) Puddling 6 times, levelling three times (b) transplanted from wet nursery at the age of one month (c)—(d) planted in bulk (e) 2 to 3. (v) Nil. (vi) PTB 20: Short 4 months Improved. (vii) Rainfed (viii) One weeding 3 to 4 weeks after planting. (ix) 16.36″ (13.9.1950 to 8.2.1951. (x) 8.2.1951.

2. TREATMENTS :

All combinations of (1) & (2)
(1) G.L. at 4 levels :—O, 2000, 4000 & 6000 lb/ac.
(2) Super at 3 levels :—O,30 & 60 lb/ac. P_2O_5.
G.L. applied as basal dressing at the time of pudding.
Super applied as basal dressing at puddling after G.L.

3. DESIGN :

(i) 4×3 factorial in R.B.D. (ii) (a) 12 (b) N.A. (iii) 4 (iv) (a) (b) 13′×17′ (v) Nil; ½′ bund and 1′ furrow between plots. (vi) Yes.

4. GENERAL :

(i) Satisfactory (ii) Nil (iii) Grain and straw weight (iv) (a) 1950-1st crop to 1952-1st crop (b) Yes (c) N.A. (v) (a), (b) Nil (vi) & (vii) Nil.

5. RESULTS :

(i) 1342 lb./ac.
(ii) 268 lb./ac.
(iii) Neither main effects nor their interaction is signficant.
(iv) Grain weight in lb./ac.

Leaf lb./ac. / P_2O_5 lb./ac.	0	2000	4000	6000	Mean.
0	1305	1403	1232	1478	1355
30	1293	1356	1257	1417	1331
60	1206	1403	1232	1528	1342
Mean	1268	1387		1474	1342

S.E. of body of table =134 lb./ac.
S.E. of marginal means (leaf) =77 lb./ac.
S.E. of marginal means (P_2O_5) =67 lb./ac.

Crop :- Paddy (1st crop) Ref :- K. 51 (11)/50 (28,32)
Site :- Agri. Res. Stn. Pattambi. Type :- 'M'

Object :—To evaluate the effect of Super with and without G.L.

1. BASAL CONDITIONS :

(i) Nil (ii) Paddy (c) As per treatments (ii) (a) Laterite loam (b) Refer soil analysis Pattambi. (iii) 2.6.1951 : 4.7.51 (iv) (a) Puddling 6 times levelling 3 times. 4 to 5 ploughings are given after 3 or 4 days (b) Seedlings transplanted from wet nursery. Average age of seedling is about one month(c)—(d) Planted in bulk (e) 2 to 3 (v) Nil (vi) [PTB 2 Medium, 4 to 5 months; [Improved (vii) Rainfed (viii) One weeding 3 or 4 weeks after planting Another if necessary one month after 1st. weeding. (ix) 50.25" (2.6.51 to 24.10.51.) (x) 24.10.1951.

2. TREATMENTS ;

All combinations of (1) & (2)
(1) Leaf at 4 levels :- O (N_0). 2000 (N_1) 4000 (N_2) and 6000 (N_3) lb./ac.
(2) P_2O_5 as super at levels O(P_0). 30(P_1) and 60 (P_2) lb. P_2O_5/ac.
Manures applied at the time of puddling.

3. DESIGN :

(i) 3×4 fact in R.B.D. (ii) (a) 12 (b) N.A. (iii) 4 (iv) (a), (b) 13'×17' (v) Nil (vi) Yes.

4. GENERAL :

(i) The rainfall (S.W. Monsoon) was deficient by about 20" from normal and the distribution was erratic. (ii) Nil (iii) Grain yield. (iv) (a) 1950 1st crop to 1952 (1st crop) (b) Yes. (c) N.A. (v) (a), (b) Nil. (vi) & (vii) Nil.

5. RESULTS :

(i) 2287 lb./ac.
(ii) 195 lb./ac.
(iii) The effect of N is significant ; that of P is highly significant ; interaction N×P is not significant.
(iv) Grain yield in lb /ac.

	N_0	N_1	N_2	N_3	Mean
P_0	1872	2167	2352	2179	2142
P_1	2254	2352	2451	2352	2352
P_2	2080	2340	2585	2462	2367
Mean	2069	2286	2463	2331	2287

S.E. of body of table =98 lb./ac.
S.E. of marginal means (N) =56 lb./ac.
S.E. of marginal means (P) =48 lb./ac.

Crop :- Paddy (2nd crop) Ref :- K. 51 (15)/51 (11)/50 (28,32)
Site :- Agri. Res. Stn. Pattambi. Type:- 'M'

Object :- To evaluate the effect of Super with and without G.L.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) As per treatments (ii) (a) Laterite loam (b) Refer soil analysis Pattambi. (iii) 27.9.51; 2.11.51; (iv) (a) Puddling 6 times, levelling 3 times (b) Seedlings trans-planted from wet nursery. Average age of seedlings is about one month (c)—(d) Planted in bulk (e) 2 to 3 (v) Nil (vi) PTB

20- Improved Short 120 days (vii) Rainfed (viii) One weeding three to four weeks after planting. Another weeding if necessary. (ix) 23.76" (27.9.51 to 8.2.52) (x) 8.2.1952.

2. TREATMENTS :

All combinationg of (1) & (2)
(i) G.L. at 4 levels :- O (N_0), 2000 (N_1), 4000 (N_2), and 6000 (N_3) lb/ac.
(ii) $P_2 O_5$ as super at 3 levels O (P_0), 30 (P_1), and 60 (P_2) lb P_2O_5/ac. Manures applied at the time of puddling.

3. DESIGN :

(i) 3x4 fact in R.B.D. (ii) (a) 12 (b) N.A. (iii) 4 (iv) (a) (b) 13 'x 17' (v) Nil ;(vi) Yes.

4. GENERAL :

(i) Plots with 4000 lb to 6000 lb/ac. G.L.+60 lbs $P_2 O_5$/ac. as super had good growth in all replications. (ii) Nil (iii) Grain and straw weight (iv) (a) 1950-1st crop to 1952 (1st crop.) (b) Yes (c) N.A- (v) (a) Nil. (vi) &(vii) Nil

5. RESULTS :

(i) 2307 lb/ac.
(ii) 215 lb/ac.
(iii) Effect of N is significant and of P is highly significant; interaction N P is not significant.
(iv) (Grain yield in lb/ac.)

	N_0	N_1	N_2	N_3	Mean
P_0	1921	2068	2266	2561	2204
P_1	2045	2130	2327	2648	2287
P_2	2118	2327	2474	2807	2431
Mean	2028	2175	2356	2672	2307

S.E. of body of table =108 lb/ac.
S.E, of Marginal means (N) =62 lb/ac.
S.E. of marginal means (P) =54 lb/ac.

Crop :- Paddy (1st crop) **Ref :- K. 52 (30)/51 (11,15) /50 (28,32)**
Site :- Agri. Res. Stn. Pattambi. **Type:- 'M'**

Object :- To evaluate the effect of Super in two doses at 30 lb & 60 lb /ac. with green leaf in 4 doses.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) As under treatments, (ii) (a) Laterite loam (b) Refer soil analysis Pattambi. (iii) 26.5.1952 : 11.7.1952. (iv) (a) 6 puddlings, 3 levellings (b) Transplanting (c)—(d) 6" × 4" (e) 3 to 4 (v) Nil (vi) PTB 2, Medium 4 to 5 months Improved. (vii) Rainfed. (viii) One weeding one month after planting. Another weeding a month afterwards if required. (ix) 60.86" in 84 rainy days. (26.5.1952 to 21.10.1952) (x) 21.10.1952.

2. TREATMENTS :

All combinations of (1) and (2)
(1) 3 levels of $P_2 O_5$ Super :- 0,30,60 lb/ac.
(2) 4 levels of G.L. :- 0,2000,4000 and 6000 lb/ac.
Both applied at the time of puddling as basal.

3. DESIGN :

(i) 3×4 Fact R.B.D. (ii) (a) 12 (b) N.A. (iii) 4 (iv) (a), (b) 13'×17' (v) Nil (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil (iii) Grain weight (iv) (a) 1950-1st-crop to 1952 1st crop (b) Yes. (c) N.A. (v) (a,b) Nil (vi) & (vii) Nil

5. RESULTS :

(i) 2381 lb /ac.
(ii) 290 lb /ac.
(iii) Main effects of G.L. and P are highly significant. Interactions not significant.

(iv) (Grain weight in lb/ac)

Leaf (lb/ac.) / P_2O_5 (lb/ac)	0	2000	4000	6000	Mean
0	1823	2107	2267	2255	2113
30	2180	2389	2771	2539	2470
60	2093	2623	2820	2698	2558
Mean	2032	2373	2619	2497	2381

S.E. of body of table =144 lb/ac.
S,E. of marginal means (Leaf)=83 lb/ac.
S.E. of marginal means (P_2O_5)=73 lb/ac.

Crop :-Paddy (1st crop) **Ref : K. 51 (32)**

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

Object :—To find-out if heavy manuring of the transplanted second crop would obviate the necessity of basal manuring for the following broadcast crop of paddy and maintained the fertility of the soil.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) 4000 lb/ac. GL+100 to 150 lb. A/S/ac. (ii) Laterite loam (b) Refer soil analysis Pattambi (iii) 20.4.1951. (iv) (a) 10 ploughings (b) Seeds are sown by broadcast. They are covered by another ploughing (c) about 75 lb./ac. (d)&(e)—(v) Nil (vi) PTB 2 ; Medium 4 to 5 months Improved. (vii) Rainfed (viii) One weeding 3 to 4 weeks after sowing. Another weeding if necessary one month after 1st weeding. (ix) 50.25" (20.4.51 to 26.9.1951) (x) (26.9.1951.).

TREATMENTS :

Main plot treatments

(1) 6000 lb/ac.
(2) C.M. 10 tons/ac.
(3) No manure.

G.L. and Cowdung applied at the time of puddling in the second crop season of the previous year.

Sub-plot treatments.

(1) Green leaf 3000 lb./ac.+super to supply 30 lb. P_2O_5/ac.+A/S 150 lb./ac.
(2) No manure.

Applied during the 1st crop season of 1951. G.L. and super (applied in subplots) are given on 20.4.51, A/S (subplots) applied on 10.7.1951.

DESIGN :

(i) Split plot design (ii) (a) 3 main plots/block and two sub plots/main plot. (b) N.A. (iii) 4 (iv)(a) (b) Sub plot 36½'×32½' Main plot 36½'×65' (v) Nil ; (vi) Defective randomisation

4. GENERAL :

(i) Satisfactory. (ii) (Nil) (iii) Grain weight (iv) (a) 1951 1st crop to 1953 1st crop (b) Yes (c) N.A. (v) (a,b) Nil (vi) & (vii)Nil.

5. RESULTS :

(i) 2087 lb./ac.
(ii) (a) 108 lb./ac.
(b) 202 lb/ac.
(iii) Main treatments are significant .Sub treatments are highly significant. Interaction not significant.
(iv) (Grain weight in lb./ac.)

Main plot / Sub plot	1	2	3	Mean
1	2359	2506	2387	2417
2	1744	1900	1625	1756
Mean.	2052	2203	2006	2087

S.E. of diff. of two marginal means (mainplot)=54 lb./ac.
do (subplot)=82 lb./ac.
S.E. of diff of two main plots means for same subplot treatment.=114 lb./ac.
S.E. of diff. of two subplot means for the same main plot treatment.=143 lb./ac.

Crop : Paddy (2nd crop) Ref :- K. 51 (34)

Site :-Agri. Res. Stn. Pattambi. Type :-'M'

Object :— To find out if heavy manuring of previous transplanted second crop would obviate the necessity of basal manuring of the next 1st crop.

1. BASAL CONDITINOS :

(i) (a) Nil (b) Paddy (c) As per treatment (ii) (a) Laterite loam (b) Refer soil analysis Pattambi. (iii) 27.951 ; 29.10.1951. (iv) (a) puddling 6 times. levelling 3 times. (b) Seedlings transplanted from wet nursery (c)—(d) 6"×6" (e) 2. (v) Nil (vi) PTB 20 Short duration (4 months) Improved. (vii) Rainfed (viii) One weeding 3 or 4 weeks after planting. Another weeding if necessary one month after 1st weading. (ix) 23.73" (27.9.51 to 30.1.1952) (x) 30.1.52.

2. TREATMENTS :

Main plot treatments.

(1) G.L. 6000 lb./ac.
(2) C.M. 10 tons /ac.
(3) No manure

Applied during the second crop season of this year. Green leaf and Cowdung applied at the time of puddling.

Sub plot treatments.

(1) G.L. 2000 lb./ac.+super to suply 30 lb: P_2O_5/ac.+A/S 150 lb./ac.
(2) No Manure.

These treatments were applied during the 1st crop season of 1951. G.L. and super (applied in subplots) were given on 20.4.51 and ploughed in. A/S (sub plots) applied on 10.7.1951.

3. DESIGN :

(i) Split plot design . (ii) (a) 3 main plots/block and two sub plots/main plot. (b) N.A. (iii) 4 (iv) (a) (b) sub plot 36½' ×32½' main plot 36½'×65' (v) Nil. (vi) Defective Rendomisation.

4. GENERAL :

(i) Satisfactory. (ii) Nil (iii) Grain and straw weight (iv) (a) 1951 1st crop to 1953 (1st crop) (b) Yes (c) N.A. (v) (a) (b) Nil. (vi) & (vii) Nil.

5. RESULTS :

(i) 2258 lb./ac.
(ii) (a) 62 lb./ac.
(b) 143 lb./ac.
(iii) Main plot treatment alone differ higly significantly
(iv) Grain weight lb./ac.)

Main plot / Sub plot	1	2	3	Mean
1	2332	2424	1992	2249
2	2322	2124	2036	2267
Mean	2327	2419	2029	2258

S.E. of difference of two

marginal means (main plot) =31 lb./ac.
do (sub plot) =58 lb./ac
main plot means for the
same level of sub plot =78 lb./ac.
S.E. of diff. of two sub plot means for the same level of main plot=101 lb/ac.

Crop :- Paddy (1st crop) Refer :- K. 52 (33)/51 (32, 34)

Site :- Agri. Res. Stn. Pattambi. Type :- 'M'

Object :— To find-out if manuring of transplanted second crop would obviate the necessity of basal manuring for the following broadcast crop of paddy and maintain the soil fertility.

1. BASAL CONDITIONS.

(i) (a) Nil (b) Paddy (c) As under treatments (ii) (a) Laterite loam (b) Refer soil analysis pattambi (iii) 21.5.1952 (iv) (a) 8 ploughings and levellings (b) seed broadcast (c) 36 lb/ac. (d)—(e) (v) Nil (vi) PTB

2 Improved 125 days durations. (vii) Rainfed. (viii) 2 weedings at intervals of one month from sowing (ix) 58.60" in 80 rainy days (21.5.1952 to 8.10.1952) (x) 8.10.1952.

2. TREATMENTS :

Main plot (applied to the 1st crop) Leaf and super applied on 16.5.1952.
1. No manure
2. G.L. 2000 lb/ac. at the time of puddling.+P_2O_5 30 lb/ac. as super as basal+A/S 150 lb/ac. top dressed.

A/S on 25.7.1952 two months after sowing.

Sub plot (*Applied to the 1951 2nd crop*)
1. G.L. 6000 lb/ac. at the time of puddling.
2. C.M. 10 cartloads/ac. at the time of puddling.
3. No manure.

3. DESIGN.

(i) Split plot design with defective randomisation (ii) (a) 2 main plots and 3 sub plots/main plot (b) N.A. (iii) 4 (iv) (a, 35'×36.5' (b) 32 5'×65.5'. (v) Nil (vi) Defective randomisation.

4. GENERAL :

(i) Satisfactory (ii) Nil (iii) Grain weight (iv) (a) 1951-1st crop to 1953-1st crop (b) Yes. (c) N.A. (v) (a, (b) Nil. (vi) & (vii) Nil.

5. *RESULTS :*

(i) 1451 lb./ac.
(ii) (a) 326 lb./ac.
(b) 123 lb /ac.
(iii) Both main and sub plot treatments are significant Interaction is not significant.
(iv) Grain weight in lb./ac.

Main. / Sub	1	2	3	Mean
1	1703	1781	1634	1706
2	1226	1294	1069	1196
Mean	1538	1464	1352	1451

S.E. of diff. of two marginal means (mainplot) =133 lb./ac.
... do ... (subplot) =62 ,, ,,
S. E. of diff of two mainplot means for the same sub-plot. =151 lb./ac.
S.E. of diff. of two sub plot means for the same main plot =88 lb./ac.

Crop :—Paddy (2nd crop) **Ref :—K. 52 (34)/52 (33)/51 (32,34)**

Site :—Agri Res. Stn. Pattambi. **Type :—'M'**

Object :—To find out if heavy manuring of the previous transplanted 2nd crop would obviate the necessity of basal manuaring for the following broadcast crop of paddy so as to maintain the fertility of the soil.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy (c) As under treatments and basal dressing of K 52.(33) (ii) Laterite loam (b) Refer Soil analysis Pattambi. (iii) 13.9.1957 : 30.10.195 (iv) (a) 4 ploughings, 1 digging (b) planting in lines (c)—(d)6"×6" (e) 2 (v) Nil (vi) PTB-20 Improved, 125 days duration (ix) 16.10" in 18 rainy days (13.9.1952 to 28.1.1953) (x) 28.1.1953.

2. TREATMENTS :

Main plot treatment : (Effect of 1952 1st crop)
1. No manure.
2. G.L. 2000 lb./ac. at the time of ploughing+Super 30 lb P_2O_5/ac. at the time of ploughing before planting+A/S 150 lb/ac. top dressed one month after planting.

Sub-plot treatments : (Effect of 2nd crop)
1. G.L. 6000 lb./ac. at the time of ploughing.
2. C.M. 10 C.L./ac. at the time of ploughing.
3. No manure.

Applied on 14.10.1952.

3. DESIGN :

(i) Split plot (ii) (a) 2 main-plots and 3 sub-plots/main plot. (b) N.A. (iii) 4 (iv) (a) 36.5'× 65.'0 (b)×36.5'×32.5' (v) Nil. (vi) Defective randomisation.

4. GENERAL :

(i) Satisfactory (ii) Nil (iii) [Grain weight (iv) (a) 1951-1st crop to 1953-1st crop (b) Yes (c) N.A. (v) (a), (b) Nil (vi) & (vii) Nil.

5. RESULTS :

(i) 1805 lb./ac.
(ii) (a) 112 lb./ac.
(b) 155 lb./ac.
(iii) Main plot treatments are significant. Sub plot treatments are highly significant. Interaction is not significant.
(iv) Grain weight in lb./ac.

Main \ Sub	1	2	3	Mean
1	1827	1818	1506	1717
2	2001	2075	1606	1894
Mean	1914	1946	1596	1805

S. E. of diff. of two marginal means (main-plot) =46 lb./ac.
do (sub-plot) =78 ,,
S. E. of diff. of two main plot means for the same sub-plot- =101 lb./ac.
S. E. of diff, two sub-plot means for the same main-plot. =109 lb./ac.

Crop :—Paddy. (1st crop). Ref :—K. 53(36) 52(33,33) 51(32,34).
Site :—Agri. Res. Stn. Pattambi. Type :—'M'.

Object :—To study the residual effect of manures given to the 2nd crop of the previous year.

1. BASAL CONDITINNS :

(i) (a) Nil. (b) Paddy (c) As under treatments and basal dressing K 52 (34) (ii) (a) Laterite loam (b) Refer soil analysis Pattambi. (iii) 7.5.1953. (iv) (a) 7 ploughings (b) broadcast (c) 36 lb/ac. (d)—(e).(vii) Unirrigated (viii) 2 weedings. (ix) 66.86" in 74 rainy days. (7.5.1953 to 9.10.1953) (x) 9.10.1953.

2. TREATMENTS :

Main plot treatments :

(1) No manure.
(2) G.L. 2000 lb./ac.+Super 30 lb. P_2O_5/ac+A/S 150 lb./ac.

Sub-plot treatments (applied to 1952 2nd crop) :—

(1) C.M. 10 C.L./ac.
(2) G,L. 6000 lb./ac:
(3) No manure.

G. L. applied at the time of puddling. Super before and after ploughing. A/S top dressed one month after planting.

3. DESIGN :

(i) Split plot (ii) (a) 2 main-plots ; 3 sub-plots per main-plot. (b) N.A. (iii) 4 (iv) (a) 36½'×65' (b) 36½' ×32½' (v) Nil. (vi) Yes.

4. GENERAL :

(i) Satisfactory (ii) Nil (iii) Grain weight (iv) (a) 1951-1st crop to 1953-1st crop. (b) Yes (c) N.A. (v) (a, b) Nil (vi) & (vii) Nil.

5. RESULTS :

(i) 1783 lb./ac.
(ii) (a) 649.6 lb./ac.
(b) 151.5 lb./ac.
(iii) None of the main and sub-plot effects and their interaction is significant.
(iv) A>. grain weight lb./ac.

Main. / Sub.	1	2	Mean.
1	2047	1753	1905
2	2102	1350	1726
3	2084	1354	1719
Mean.	2078	1489	1783

(1) S. E. for the diff. of 2 main treatment means =265.3 lb/ac.
(2) ,, ,, 2 sub ,, ,, =75.8 ,,
(3) ,, ,, ,, ,, ,, at the same level of main treatment. =107.2 ,,
(4) ,, ,, ,, main treatment at the same evel of sub-plot treatment =279.5 ,,

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Crop :– Paddy (1st crop) **Ref :–K 51 (31)**

Site :—Agri. Res. Stn. Pattambi. **Type :–'M'**

Object —:To find out the efficacy of application of super to leguminous green manure crops like Dhaincha, in the double crop land.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) G.L. 5000 lb./ac.+A/S. 100 to 150 lb./ac. (ii) (a) Laterite loam (b) Refer soil analysis Pattambi. (iii) 5.6.51, 7.7.1951. 'iv) (a) Puddling 6 times, levelling-3 times (b) Seedlings transplanted from wet nursery. Average age of seedlings is about one month (c)—(d) planting in bulk (e) 2 to 3(v) Nil (vi) PTB 3, Medium 4 to 5 months, Improved (vii) Rainfed (viii) One weeding 3 to 4 weeks after planting and another weeding if necessary one month after the 1st weeding (ix) 50.25" (5.6.1951 to 19.10.1951) (x) 19.11.1951.

2. TREATMENTS :

Dhiancha sown on 31.1.1951. Trampled on 1:7.1951.

1. G.M. without phosphate.
2. Do +super to supply 30 lb. P_2O_5/ac. to G.M. crop.
3. Do +super to supply 60 lb. P_2O_5/ac. to G.M. crop.
4. G.L. as in (2)+super at 30 lb. P_2O_5/ac. to paddy.
5. G.L. as in (3)+super at 60 lb. P_2O_5/ac. to paddy.
6. G.L. alone as in (2)
7. G.L. alone as in (3)

Super was applied to green manure on 31:1:51 and to paddy on 7.7.51:
Time of application final puddling and levelling.

3. DESIGN :

(i) R:B.D. (i) (a) 7 (b) N.A. (iii) 4 (iv) (a). (b) 15'×20' (v) Nil (vi) Yes.

4. GENERAL :

(i) Poor (ii) Nil (iii) Grain weight (iv) (a) (b) No (c) Nil (v) (a) (b) Nil (vi) Nil (vi) The rainfall (S.W. Monsoon) was deficit by about 20" from normal and the distribution was erratic.

5. RESULTS :

(i) 1873 lb./ac.
(ii) 145 lb./ac.
(iii) The treatment differences are significant
(iv) Grain weight in lb./ac.

Treatments.	Mean.
1.	1634
2.	1787
3.	2033
4.	1824
5.	1978
6.	1851
7.	2005

S. E. of treatment means : =73 lb./ac.

Crop :-Paddy (1st crop.) Ref :-K. 51 (30)

Site :-Agri. Res. Stn. Pattambi. Type :-'M'

Object :-To find out the efficacy of application of super to leguminous green manure crops like wild, indigo in the single crop land.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 5000 G.L. lb./ac.+A/S 100 to 150 lb./ac. (ii) (a) Laterite loam (b) Refer soil analysis, Pattambi. (iii) 2.6.51; 27.7.51 (iv) (a) Puddling 6 times, levelling 3 times (b) Seedlings transplanted from wet nursery. Average age of seedlings is about one month (c)—(d) planted in bulk (e) 2 to 3 (v) Nil. (vi) PTB 7, Improved 120 days duration-short. (vii) Purely rainfed (viii) One weeding 3 or 4 weeks after planting and another weeding if necessary one month after 1st weeding. (ix) 50.25" (2.6.51 to 18.10.51) (x) 18.10.51.

2. TREATMENTS :

(1) G.M. without phosphate.
(2) G.M.+super to supply 30 lb. P_2O_5/ac. to G.M. Crop.
(3) do +super to supply 60 lb. P_2O_5/ac. to G.M. Crop.
(4) G.L. manuring as in (2) +super 30 lb. P_2O_5/ac. to paddy.
(5) G.L. as in (3) +super 60 lb. P_2O_5/ac. to paddy.
(6) G.L. alone as in (2).
(7) G.L. alone as in (3).

3. DESIGN :

(i) R.B.D. (ii) (a) 7 (b) N.A. (iii) 4 (iv) (a),(b) 15'×18' (v) Nil (vi) Yes.

4. GENERAL :

(i) Plots manured with phosphates had a better stand with good growth of green manure. Though the result did not satisfy the test of significance increased yield of G.L. and paddy was obtained with the application of super. (ii) Nil (iii) Grain weight (iv) (a) (b) No. (c) Nil. (v) (a), (b) Nil. (vi) & (vii) Nil.

5. RESULTS :

(i) 989 lb./ac.
(ii) 258 lb./ac.
(iii) The treatments are not significantly different.
(iv) Average grain yield in lb./ac.

Treatment	Mean
1.	1094
2.	1016
3.	1119
4.	1064
5.	872
6.	867
7.	895

S. E. of treatment means =129 lb./ac.

Crop :—Paddy (1st crop) Ref :—K. 51 (12)

Site :—Agri. Res. Stn., Pattambi. Type :— 'M'

Object :- To compare the efficacy of a Semiacidulated phosphate (Dicalcium phosphate) against Super over a basal dressing of G.N.C

1. BASAL DRESSING :

(i) (a) Nil (b) Paddy (c) G.L 500 lb./ac+A/S 100 to 150 lb./ac (ii) (a) Lateritie loam : (b) Refer to soil analysis Pattambi (iii) 13-7-1951 ; 4-9-1951. (iv) (a) Puddling 6 times, levelling 3 times (c) Seedlings transplanted from wet nursery. Average age of seedlings about one month (c)—(d) Planted inbulk (e) 2 to 3 (v) Nil (vi) PTB 2, Medium 4 to 5 month, Improved (vii) Rainfed (viii) One weeding 3 to 4 weeks after planting and another if necessary. (ix) 50·25" (13.7.1951 ; to 15.11.1951) (x) 15.11.1951 :

2. TREATMENT :

1. Control.
2. G.N.C. to supply 40 lb. N/ac.
3. G.N.C. to supply 40 lb. N/ac+Super to Supply 80 lb. P_2O_5/ac by broadcast.

4. G.N.C. to supply 40 lb. N/ac+Semiacidulate Phosphate to supply 80 lb. P_2O_5/ac. by broadcast.
5. G.N.C. to supply 40 lb. N/ac.+Super to supply 80 lb. P_2O_5/ac. by placement.
6. G.N.C. to supply 40 lb. N/ac.+Semiacidulated phosphate at 80 lb. P_2O_5/ac. by placement.
   G.N.C. was applied at the time of planting by broadcast.
   Super and Semiacidulated phosphite applied at the time of last puddling.

3. *DESIGN :*
   (i) R.B.D. (ii) (a) 6 (b) N.A. (iii) 5 (iv) (a), (b) 32'×27' (v) Nil (vi) Yes.

4. *GENERAL :*
   (i) Satisfactory (ii) Nil (iii) Grain Weight (iv) (a) 1951-1st crop to 1953-1st crop (b) Yes (c) N.A. (v) (a), (b) Nil (vi) & (vii) Nil.

5. RESULTS :
   (i) 1126 lb. / ac.
   (ii) 145 lb. / ac.
   (iii) The treatments differences are not significant.
   (iv) Grain yield in lb. / ac.

Treatment	Mean.
1	988
2	1205
3	1180
4	1130
5	1165
6	1185

S.E. of treatment means =65 lb. /ac.

Crop :—Paddy (2nd crop) Ref :—K. 5I (16) / 51 (12)
Site : —Agri. Res. Stn. Pattambi Type :—'M'

Object :— To compare the efficacy of a Semiacidulated phosphate (Dicalcium phosphate) against Super over a basal dressing of G.N.C.

1. BASAL CONDITIONS :
   (i) (a) Nil (b) Paddy (c) As per treatments. and basal dressing K 51 (12) (ii) (a) Lateritic loam (b) Refer soil analysis, Pattambi (iii) 5.10.51; 3.12.1951 (iv (a) Puddling 6 times levelling 3 times (b) Seedling transplanted from wet nursery. Average age of seedlings about one month (c) N.A. (d) Planted in bulk (e) 2 to 3 (v) Nil (vi) PTB 10-Short-duration 100 days, Improved (vii) Rainfed (viii) One weeding three or four weeks after planting and another if necessary. (ix) 23·76" (5.10.51 to 25.2.52) (x) 25.2.1952.

2. TREATMENTS :
   1. Control
   2. G.N.C. to supply 40 lb. N/ac.
   3. G.N.C. to supply 40 lb. N/ac.+Super to supply 80 lb. P_2O_5/ac applied by Broad-cast.
   4. G.N.C. to supply 40 lb. N/ac. + Semiacidulated phosphate to supply 80 lb. P_2O_5/ac. applied broadcast.
   5. G.N.C. to supply 40 lb. N/ac.+Super to supply 80 lb. P_2O_5/ac. applied by placing.
   6. G.N.C. to supply 40 lb. N/ac. applied placing.
   G.N.C. was applied at the time of planting by broadcast.
   Super and Semiacidulated phosphate applied at the time of last puddling.

3. DESIGN :
   (i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 5 (iv) (a) (b) 32'×27' (v) Nil (vi) Yes
4. GENERAL :
   (i) Satisfactory (ii) Nil (iii) Grain Weight (iv) (a) 1951-1st crop to 1953-1st crop (b) Yes. (c) N.A. (v) Nil (vi) & (vii) Nil

5. RESULTS :
   (i) 1225 lb. / ac
   (ii) 143 lb. / ac.
   (iii) The treatment differences are higly significant
   (iv) Grain yield in lb./ac.

Treatment	Mean
1	870
2	1105
3	1368
4	1282
5	1342
6	1382

S.E. of treatment means =64 lb. / ac.

Crop :—Paddy (1st crop) Ref :—K. 52 (21) 51 (12,16)

Site :—Agri. Res. Stn. Pattambi Type :—'M'

Object :—To compare the efficacy of Dicalcium phosphate with Super over a basal dressing of G.N.C.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Pad dy (c) As per treanments. (ii) (a) Lateritie loam (b) Refer soil analysis Pattambi (iii) 26.5.1952 ; 10.7.1953 (iv) (a) 7 ploughings (b) broadcast (c) 36 lb./ac. (d) 6″×6″ (e) 2 to 3 (v) Nil (vi) PTB - 2 (medium) 135 days duration. (vii) Unirrigated. (viii) 2 weedings. (ix) 60·77″ in 74 rainy days. (x) 24.10.52

2. TREATMENT :

1. Control.
2. G.N.C. 40 lb. N/ac.
3. (2)+Super to supply 80 lb. P_2O_5/ac by broadcast
4. (2)+Dicalcium phosphate 80 lb. P_2O_5/ac. by broadcast
5. (2)+Super 80 lb P_2O_5/ac. by place ment.
6. (2)+Dicalcium phosphate 80 lb. P_2O_5/ac by place ment.

Treatments applied at planting.

3. DESIGN :

(i) R.B.D. (ii) (a) (b) N A. (iii) 5 (iv) (a), (b) 32′×57′ (v) NIL (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil (iii) Grain and Straw Weight. (iv) (a) 1951-1st crop to 1953-1st crop (b) Yes. (c) N A. (v) (a), (b) Nil (vi) & (vii) Nil.

5. RESULTS :

(i) 2404 lb /acre
(ii) 141.2 lb./ac.
(iii) The treatments differ highly significantly
(iv) Ggrain weight in lb./ac.

Treatments.

1	1885
2	2420
3	2540
4	2490
5	2580
6	2510

S.E. per treatment mean =63·1 lb./ac.

Crop :- Paddy (2nd crop) Ref :- K. 52(19)/52(21)/51(12) ,16

Site :- Agri, Res. Stn. Pattambi. Type ; 'M'

Object:—To compare the efficacy of Dicalcium phosphate with Super over a basal dressing of G.N.C.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) As per treatments and basal dressing in K 1952 (21) (ii) (a) Lateritie loam (b) Refer soil analysis Pattambi (iii) 24.9.52 : 10.11.52. (iv)(a) 7 ploughings and levelling (b) Transplanting (c)—(d) 6″×6″ (e) 2 (v) Nil (vi) PTB 20, Medium. (vii) Rainfed (viii) 2 weedings (ix) 16.04″ in 18 rainy days (24.9.52 to 3.2.53) (x) 3.2. 1953.

2. TREATMENTS :

1. Control.
2. G.N.C. at 40 lb. N/ac.
3. (2)+ Super 80 lb.P_2 0_5/ac by broadcast
4. (2)+ Dicalcium phosphate 80 lb. P_2 0_5/ac by broadcast
5. (2)+ Super 80 lb. P_2 0_5/ac by placement.
6. (2)+ Dicalcium Phorphate 80 lb. P_2O_5/ac. by placement.

Applied before planting.

3. DESIGN :

(i) R.B.D. (ii) (a) 6 (b) N.A. (iii) 5 (iv)(a,b) 32′×27′ (v) Nil (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil (iii) Grain and straw weight. (iv) (a) Yes 1951 1st crop to 1953 1st crop. (b) Yes (c) N.A. (v) (a,b) Nil (vi) & (vii) Nil.

5. RESULTS :

(i) 1637 lb./ac
(ii) 14411.6 lb./ac.
(iii) The treatment differ highly significantly.
(iv) Grain weiight is lb./ac.

Treatments.	Mean
1.	1139
2.	1524
3.	1775
4.	1765
5.	1764
6.	1755

S.E. of treatment means = 64.7 lb./ac.

Crop :- Paddy (1st crop) Ref :—K. 53(33)/52(19,21)/51 (12,16)

Site :—Agri. Res. Stn., Pattambi. Type :— 'M'

Object:—To compare the efficacy of Dicalcium phosphate with Super over a basal dressing of G.N.C.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) As under treatments and basal dressing K 52 (19) (ii) (a) Laterite loam (b Refer soil analysis Pattambi. (iii) 19.6.1953 ; 25.7.1953. (iv) (a) 7 ploughings and levelling (b) broadcast (c) 36 lb./ac. (d)—(e)—(v) Nil (vi) PTB 2 Medium 135 days, (vii) un-irrigated; (viii) 2 weedings (ix) 74.46″ in 78 rainy days. (10.6.1953 to 26.10.1953) (x) 26.10.1953.

2. TREATMENTS :

1. Control (No manure)
2. G.N;C. at 40 lb. N/ac.
3. G.N.C. at 40 lb. N/ac- + Super 80 lb. $P_2 0_5$/ac. by broadcast.
4. G.N.C. at 40 lb. N/ac. + Dicalieum phosphate, 80 lb $P_2 0_5$/ac. by broadcast.
5. G;N.C. at 40 lb. N/ac. + Super 86 lb. $P_2 0_5$/ac. by placement.
6. G.N.C at 40 lb. N/ac. + Dicalcium phosphate at 80 lb. P_2O_5/ac. by placement.

Treatments applied at planting.

3. DESIGN :

(i) R.B.D. (ii) (a) 6 (b) N.A. (iii) 5 (iv) (a), (b) 32″×27″ (v) Nil (vi) Yes.

4. GENERAL :

(i) Satisfactory; (ii) Nil (iii) Grain weight (iv) (a) 1951—(1st crop) to 1953—(1st crop) (b) Yes. (c) N.A. (v) (a), (b) Nil (vi) & (vii) Nil.

5. RESULTS :

(i) 2138 lb./ac.
(ii) 166.9 lb./ac.
(iii) Treatments differ highly significantly.
(iv) Grain yield in lb./ac.

Treatment	Mean
1.	1634
2.	1976
3.	2339
4.	2319
5.	2188
6.	2369

S.E. of treatment mean = 74.7 lb./ac.

Crop :—Paddy (1st crop) **Ref :— K. 52 (26).**

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

Object:—To find-out the comparative effect of C/N as against A/S on the yield of paddy.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) 4000 lb./ac. G.L. + 100 lb./ac. A/S (ii) (a) Laterite loam (b) N.A. (iii) 28.5.1952. (v) (a) 7 ploughings (b) transplanting (c)—(d) 6″×6″. (e) 2 or 3 (v) Nil (vi) PTB-2 Medium ; 135 days. (vii) Unirrigated. (viii) 2 weedings. (ix) 58.80″ in 78 rainy days (28.5.1952 to 24.10.52) (x) 24.10.52.

2. TREATMENTS :

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

(1) 2 levels of N :—40, 60 lb/ac.
(2) 2 sources of N :—A/S & C/N.
(3) 2 basal dressing :— (a) No basal dressing. (b) Lime 450 lb./ac. + F.Y.M. 3 tons/ac. + Super to give P_2O_5 30 lb /ac

One extra treatment: Lime 4 50 lb/ac + F.Y.M.3 tons/ac. +Super to give P_2O_5 30 lb/ac.
F.Y.M. applied at the time of ploughing, Lime one month before, A/S and C/N. one month after planting.

DESIGN :

(i) R.B.D. (ii) (a) 9 (b) N.A. (iii) 5 (iv)(a,b) 18′ × 23′ (v) Nil (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Grain and straw weight (iv) (a) 1952-1st crop to 1954-2nd crop, experiment failed during 1953-2nd crop. (b) Yes (c) N.A. (v) (a,b) Nil. (vi) & (vii) Nil.

5. RESULTS :

(i) 2642 lb./ac.
(ii) 130.9 ,,
(iii) Main effect of basal dressing (*i.e.* in presence of other treatments), basal dressing *vs.* other treatments and main effect of N are highly significant; others are not significant.
(iv) Mean Grain yield in lb./ac.
Basal dressing alone =2356 lb./ac.

	Levels of N		Source of N		
	40	60	A/S	C/N	Mean
Basal dressing (a)	2428	2586	2675	2341	2508
(b)	2796	2901	3041	2667	2149
Source/N A/S	2757	2029			2858
C/N	2167	2530			2499
Mean	2612	2745			2678

S.E. far B.D. alone *vs* any other mean = 52.9 lb./ac.
S.E. for marginal mean = 41.4 ,,
S.E. for body of table = 58.6 ,,

Crop :- Paddy (2nd crop) **Ref :- K. 52 (18)/52(26**

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

Object :—To find-out the comparative effect of C/N as against A/S on the yield of paddy.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) As per treatments and basal dressing K 52(26) (ii) (a) Laterite loam (b) Refer Soil analysis Pattambi (iii) 24.9.1952 : 10.11.1952. (iv) (a) 7 ploughings (b) Transplanted in lines (c) spacing 6″×6″. (d) 2 (v) Nil. (vi) PTB 20 (Medium) (vii) Unirrigated. (viii) 2. weedings. (ix) 16.04″ (24.9.1952 to 3.2.1953.) (x) 3.2.1953.

2. TREATMENTS :

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

(1) 2 levels of N :—40,60 lb/ac.
(2) 2 Sources of N :—A/S, C/N.
(3) 2 Basal dressings :—(a) No B.D. (b) Lime 450 lb/ac.+F.Y.M. 3 tons/ac.+Super 30 lb./ac. P_2O_5

One extra treatment : Lime 450 lb/ac+F.Y.M. 3 tons/ac + Super 30 lb/ac P_2O_5.

Lime one month before planting : F.Y.M. at the time of ploughing ; Super at the time of puddling before planting. A/S and C/N top dressed one month after planting.

3. DESIGN :

(i) R.B.D. (ii) (a) 9 (b) N.A. (iii) 5 (iv) (a), (b) 18′×23′ (v) Nil (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil (iii) Grain and straw weight. (iv) (a) 1952 (1st crop) to 1954 (2nd crop) Failed during 1953 (2nd crop) (b) Yes. (c) N.A. (v) (a), (b) Nil (vi) & (vii) Nil.

5. RESULTS :

(i) 1485 lb./ac.
(ii) 390.4 ,, ,,
(iii) Main effect of B.D. is highly significant. Others are not significant.
(iv) Mean grain yield in lb./ac.
Basal dressing alone =1570 lb./ac.

	Levels of N		Source of N		
	40	60	A/S	C/N	Mean
Basal dressing (a)	1195	998	1037	1155	1096
(b)	1859	1849	1980	1728	1854
Source of N A/S	1562	1455			1508
C/N	1491	1392			1441
Mean	1527	1423			

S.E. for B.D. alone *vs.* any other mean =246.8 lb./ac.
S.E. for marginal means =143.4 ,,
S.E for body of table =174.6 ,,

Crop :- Paddy (1st crop) **Ref :- K. 53 (32)/52 (26.18)**

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

Object :—To find-out the comparative effect of C/N as against A/S.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) Same experiment was in these plats. (ii) (a) Laterite loam (b) Refer soil analysis Pattambi. (iii) 10.6.1953 : 15.7.1953. (iv) (a) 7 ploughings and levelling (b) Transplanting in lines. (c)— (d)6″×6″ (e) 2 (v) Nil (vi) PTB-2 ; Medium 135 days duration. (viii) Not irrigated (vii) 2 weedings. (ix) 74.46″ in 78 rainy days. (10.6.1953 to 27.10.1953) (x) 27.10.1953.

2. TREATMENTS :

All combinations of (1), (2) & (3)
(1) 2 levels of N :—40, 60 lb./ac.
(2) 2 Sources of N :—A/S, C/N
(3) 2 Basal dressings :—(a) No B.D. (b) Lime 450 lb./ac.+F.Y.M. 3 ton./ac.+Super 30 lb./ac. P_2O_5
One extra treatment :— Lime 450 lb/ac+F.Y.M. 3 tons/ac+Super + 30 lb/ac. P_2O_5
Lime one month before planting. F.Y.M. at the time of ploughing, Super before planting. A/S and C/N. one month after planting.

3. DESIGN :

(i) R.B.D. (ii) (a) 9 (b) N.A. (iii) 5 (iv) (a), (b) 18′×23′ (v) Nil (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil (iii) Grain weight (iv) (a) 1952 (1st crop) to 1954 (2nd crop) (b) Yes, Failed in 1953 2nd crop (c) N.A. (v) (a), (b) Nil (vi) & (vii) Nil.)

5. RESULTS :

(i) 2447 lb./ac.
(ii) 205.9 ,,
(iii) Main effect of (source of N) and B.D. are highly significant. Others are not significant.
(iv) Mean grain yield in lb./ac.

Basal dressing alone =2399 lb/ac.

	Levels of N		Source of N		Mean
	40	60	A/S	C/N	
Basal dresing (a)	2307	2283	2391	2199	2295
(b)	2694	2609	2694	2609	2651
Sourcoof N A/S	2602	2483			2542
C/N	2399	2409			2404
Mean	2500	2446			247

S.E. for B.D. alone *vs.* others =92.1 lb./ac.
S.E. for marginal means =46.0 ,,
S.E. for the body of table =65.1 ,,

Crop :- Paddy (1st crop) **Ref :- K. 49 (30)**

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

Object :—To find-out the effect of Ultraphos fertiliser which contains 22% P_2O_5 on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (3) 5000 lb./ac. of G.L.+100 to 150 lb./ac. of A/S (ii) (a) Laterite loam (b) Refer soil analysis Pattambi (iii) 15.5.1949 : 20.6.1949 (iv) (a) Puddling ; 3 levellings (b) Transplanted in bulk (c)—(d) 6"×6" (e) 3 to 4. (v) 5000 lb/ac. G.L. as basal at the time of puddling. (vi) PTB 9 (vii) Rainfed. (viii) One weeding three to four weeks after planting. (ix) 88.93" (15.5.49 to 15.10.1949) (x) 15.10.1949.

2. TREATMENTS :

All combinations of (1)&(2)
(1) 2 levels of P_2O_5 :—30, 60 lb./ac.
(2) 2 Sources of P_2O_5 :—Super & Ultraphos
Control (No manure)
Applied at the time of final ploughing and levelling.

3. DESIGN :

(i) R.B.D. (ii) (a) 5 (b) N,A. (iii) 6 (iv) (a,b) 20'×22' (v) Nil : (vi) Yes.

4. GENERAL :

(i) Satisfactory (ii) Nil (iii) Grain weight (iv) (a) 1949-1st crop ; (during 1949-2nd crop expt. failed) (b) Yes. (c) N.A. (v) (a,b) Nil. (vi) & (vii) Nil

5. RESULTS :

(i) 1624 lb./ac.
(ii) 158.0 ,,
(iii) Main effects, interaction and control *vs.* others are not significant.
(iv) (Mean grain yield in lb./ac.)

Control =1634 lb/ac.

Source	Super	Ultra phos	mean
Level 30	1653	1634	1644
60	1653	1564	1609
mean	1653	1599	1626

S.E. for marginal means = 44.5 lb/ac.
S.E. for the body of table = 63.0 ,,
S.E. for control *vs.* any mean in the body of table = 89.0 ,,

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Crop :- Paddy (1st crop)
Site :- Agri. Res. Stn. Pattambi.

Ref :-K. 52 (24)
Type :- 'M'

Object :—To find-out how far the calcium carbonate slurry compares with slaked lime, when applied to paddy crop at different doses over a basal dressing of 5000 lb./ac. of G.L.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) 4000 lb./ac. of G.L.+100 lb/ac. of A/S (ii) (a) Laterite loam (b) Refer soil analysis Pattambi (iii) 28.5.1952 ; 23.7.1952. (iv) (a) 7 ploughings and leveling of field. (b) Transplanting (c)—(d) 6″×6″ (e) 2 (v) Green manure at 5000 lb/ac. (vi) PTB-2 Medium 135 days duration. (viii) Unirrigated. (viii) 2 weedings. (ix) 57.24″ in 78 rainy days. (28.5.1952 to 20.10.1952) (x) 20.10.1952.

2. TREATMENTS :

1. No manure.
2. Lime 1 ton/ac.
3. ,, 2 ,, ,,
4. ,, 3 ,, ,,
5. Calcium Carbonate slurry 1 ton/ac.
6. ,, ,, ,, 2 ,, ,,
7. ,, ,, ,, 3 ,, ,,

G.L. at the time of puddling ; Lime and Cal. Car. applied one month before planting.

3. DESIGN :

(i) R.B.D. (ii) (a) 7 (b) N.A. (iii) 4 (iv) (a,b) 20′×50′ (v) Nil (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Grain and straw weight (iv) (a) 1952 1st crop to 1953 1st crop (b) Yes (c) N.A. (vi) & (vii) Nil.

5. RESULTS :

(i) 2795 lb/ac.
(ii) 275.6 lb/ac.
(iii) The treatments do not differ significantly.
(iv) Grain yield in lb/ac.

Treatments	Mean
1.	2542
2	2800
3.	3025
4.	3133
5.	2642
6.	2725
7.	2701
S.E. of treatment means	137.8 lb./ac.

Crop :- Paddy (2nd crop)
Site :- Agri. Res. Stn. Pattambi.

Ref :- K. 52 (20)/52 (24).
Type :- 'M'

Objects:—To find-out how far the calcium carbonate slurry compares with slaked lime when applied to paddy crop at different doses over a basal dressing of 5000 lb/ac. of G.L.

BALAL CONDITIONS :

(i) (a) Nil. (b) Paddy (c) As under treatments and basal dressing K 52 (24) (ii) (a) Laterite loam (b) Refer soil analysis Pattambi (iii) 24.9.1952 : 21.11.1952 (iv) (a) 7 ploughings and levelling (b) Transplanted (c)—(d) 6″×6″ (e) 2 (v) G.L. 5000 lb./ac. as basal dressing on 17.11.1952. (vi) PTB-20 (Medium) (vi) Unirrigated. (viii) 2 weedings. (ix) 16.04″ in 18 rainy days (24.9.1952 to 14.2.1953). (x) 14.2.1953.

2. TREATMENTS :

1. No lime (unmanured)
2. Lime 1 ton/ac.
3. ,, 2 ,, ,,
4. ,, 3 ,, ,,
5. Calcium Carbonate slurry 1 ton/ac.
6. 2 ,, ,,
7. ,, ,, ,, 3 ,, ,,

Lime and Calcium Carbonate slurry applied on 6.11.52.

3. DESIGN :

(i) R.B.D. (ii) (a) 7 (b) N.A. (iii) 4 (iv) (a,b) 26′ × 50′ (v) Nil. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil (iii) Grain and straw weight (iv) (a) Yes 1952—1st crop to 1953—1st crop (b) Yes (c) N.A. (v) (a,b) Nil. (vi) & (vii) Nil.

5. RESULTS :

(i) 2104 lb./ac.
(ii) 257.5 lb./ac.
(iii) The treatments differ highly significantly.
(iv) Grain weight in lb./ac.

Treatments	Mean
1.	1775
2.	1896
3.	2410
4.	2762
5.	1898
6.	1919
7.	2070

E.S. per treatment mean = 128.8 lb./ac.

Crop :- Paddy (1st crop) Ref :- R 53 (30)/52 (24,20)

Sitc :- Agri. Res. Stn. Pattambi. Type :- 'M'

Object :—To find-out how far the calcium carbonate slurry would compare with slaked lime when applied to paddy at different doses.

1. BASAL CONDITIONS :

(i) (a) Nil (b)Paddy (c) As under treatments and basal dressing K 52 (20) (ii) (a) Laterite loam (b) Refer soil analysis Pattambi (iii) 10.6.1953 ; 17.7.1953 (iv) (a) 7 ploughings and levelling (b) Transplanting (c)—(d)6″ × 6″ (e) 2 (v) Green leaf 5000 lb./ac. at the time of puddling. (vi).PTB-2. Medium 135 days duration. (vii) Not irrigated (viii) 2 weedings. (ix) 74.46″ in 78 rainy days (10.6.1953 to 28.10.1953) (x) 28.10.1953.

2. TREATMENTS :

1. Control (No lime)
2. Lime at 2 tons/ac.
3. ,, ,, at 1 ,,
4. ,, ,, at 3 ,,
5. Cal. Car. Slurry 1 ton/ac.
6. ,, ,, 2 ,,
7. ,, ,, 3 ,,

Lime and Cal. Car. one month before planting.

3. DESIGN :

(i) R.B.D. (ii) (a) 7 (b) N.A. (iii) 4 (iv) (a,b) 26′ × 50′ (v) Nil (vi) Yes.

4. GENERAL :

(i) Satisfactory (ii) Nil (iii) Grain weight (iv) (a) 1952—1st crop to 1953—1st crop (b) Yes. (c) N.A. (v) (a,b) Nil (vi) & (vii) Nil.

5. RESULTS :

(i) 2444 lb./ac.
(ii) 233.2 lb./ac.
(iii) Treatments differ highly significantly.
(iv) Grain weight in lb./ac.

Treatment	Mean
1.	2078
2.	2470
3.	2753
4.	2782
5.	2232
6.	2428
7.	2362

S.E. of treatment mean = 116.6 lb./ac.

Crop:- paddy (1st crop) Ref:- K 52 (23)

Site :- Agri. Res. Stn. Pattambi. Type:- 'M'

Object :- To study the effect of application of phosphate through green manure as compared to direct application to paddy crop (single crop land).

1. RASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) 400 lb./ac. G.L. + 100 lb/ac. A/S as basal dressing. (ii) (a) Laterite loam (b) Refer soil analysis Pattambi (iii) 2 6.1952; 22.7. 1952. (iv) (a) 7 ploughings (b) transplanted (c)—(d)6″×6″. 2 (v) Nil (vi) PTB—7 ; Early ; 125 days duration. (vii) Unirrigated. (viii) 2 weedings. (ix) 56. 17″ in 74 rainy days. (2.6.1952 to 9.10.1952) (x) 9.10.1952.

2. TREATMENTS:

1. Control.
2. G.M. crop.
3. Super 30 lb $P_2 0_5$/ac to green manure crop.
4. G.M and Super 30 lb $P_2 0_5$/ac. direct to paddy.
5. Super 45 lb $P_2 0_5$/ac. to G.M. crrop.
6. Green manure and Super 45 lb $P_2 0_5$/ac direct to paddy.
7. Super 60 lb $P_2 0_5$/ac. to G.M. crop.
8. G.M. and Super 60 lb $P_2 0_5$/ac direct to paddy. (G.M. wild indigo)

Note :- For treatments (2) to (8) a green manure crop of wild indigo will be grown in the exprimental plots. The G.M. crop will be trampled and planghed in. In treatments (3), (5) and (7) $P_2 0_5$ to paddy is supplied through the green manure crop while in treatments (4), (6) and (8) $P_2 0_5$ is supplied direct to paddy.

3. DESIGN :

(i) R.B.D. (ii) (a) 8 (b) N.A. (iii) 4 (iv) (a,b) 18′ × 39′ (v) Nil (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) NIL (iii) Grain and straw weight, (iv) (a) 1952 (1st crop) (b) No, (c) Nil, (v) (a,b) Nil (vi) & (vii) Nil

5, RESULTS :

(i) 1274 lb/ac.
(ii) 157·9 ,, ,,
(iii) The treatments do not differ significantly.
(iv) Grain yield in lb/ac.

Treatments	Mean
1.	1193
2.	1317
3.	1115
4.	1379
5.	1255
6.	1332
7.	1509
8.	1394
S.E. per treatment mean	79.0 lb/ac.

Crop :- Paddy (1st crop) Ref:- K, 53 (22)

Site :- Agri. Res. Stn. Pattambi. Type :-'M'

Object :- To study the effect of application of phosphate through green manure a scompared to the direct application to paddy (double crop land).

1: BASALE CONDITIONS :

(i) (a) Nil (b) Paddy (c) About 4000 lb/ac. G.L + 100 lb/ac A/S (ii) (a) Laterite loam (b) Refer soil analysis Pattambi (iii) 20.5.1952: 5.7.1952. (iv) (a) 7 ploughing and levelling (b) Transplanting in lines (c)—(d) 6″ × 6″ (e) 2 (v) PTB—28 Medium ; 125 days duration. (vi) Unirrigated. (vii) 2 weedings, (viii) 51.58″ in 83 rainy days (20.2.1952 to 9.10.52) (x) 9.10.1952.

2, TREATMENTS :

1. Control
2. G M.
3. Super 30 lb $P_2 0_5$/ac to G.M. crop
4. Green manure and Super 30 lb $P_2 0_5$/ac direct to paddy.
5. Super 45 lb $P_2 0_5$/ac to G.M. crop

6. G.M. and Supsr 45 lb $P_2 0_5$/ac direct to paddy.
7. Super 60 lb $P_5 0_5$/ac to G.M. crop
8. G.M. and Super 6o lb $P_2 0_5$/ac direct to paddy
(G.M. Daincha sown on 13.2.1952 and trampled on 28.6 19.52

Note: For treatments (2) to (8) a green manure crop of Daincha will be grown on experimental plots, The green manure crop will be trampled and ploughed in. In treatments (3), (5) and (7) $P_2 0_5$ is supplied through the green manure crop while in treatments (4), (6) and (8) $P_2 0_5$ is suplied direct to paddy.

3, DESIGN :

(i) R.B.D (ii) (a) 8 (b) N.A. (iii) 4 (iv) (a,b) 14′ × 46′ (v) Nil (vi) Yes.

4, GENERAL :

(i) Satisfactory (ii) NIL (iii) 4 (iv) Grain and straw weight, (iv) (a) 1952 (1st crop) (b) No (c) Nil (v) (a), (b) Nil (vi) & (vii) Nil

5, RESULTS :

(i) 1552 lb/ac.
(ii) 180.3 lb/ac.
(iii) The treatment differences are highly significant,
(vi) Grain weight lb/ac.

Treatments	
1.	1199
2.	1386
3.	1672
4.	1403
5.	1622
6.	1438
7.	1892
8.	2807

S.E. per treatment means = 90.2 lb/ac.

Crop:- Paddy (1st crop) Ref:- K 53(29)
Site:- Agri. Res. Stn. Pattambi. Type:- 'M'

Object:— To determine the best method of application of phosphate manures either as direct application to paddy or as indirect application through the preceding green manure crop.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) 3000 lb/ac G.L + 75 lb./ac A/S (ii) (a) Laterite loam. (b) Refer soil analysis Pattambi. (iii) 10.6.1953 ; 17.7.1953. (iv) (a) 7 ploughings and levelling the plots. (b) Transplanting in lines (c)—(d) 6″ × 6″ (e) 2 (v) Nil. (vi) PTB. - 2 Medium 135 days duration (vii) Un irrigated. (viii) 2 weedings (ix) 74·46″ in 78 rainy days- (10.6.1953. to 19.10.1953) (x) 19.10.1953.

2. TREATMENTS :

All combinations of (a) & (b)
(a) Three G.M. crops *viz.*
(1) Wild indigo
(2) Daincha
(3) Sesbaina
(b) Three methods of applying P_2O_5 *viz.*
(1) at 45 lb/ac. as super through the green manure.
(2) green manure + Super 45 lb P_2O_5 /ac. direct to paddy.
(3) green manure + Super 60 lb P_2O_5/ac. direct to paddy.

3. DESIGN :

(i) 3×3 factorial in R.B.D. (ii) (a) 9 (b) N.A. (iii) 4 (iv) (a,b) 28′ × 16′ (v) Nil (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Grain weight (iv) (a) No (b) No (c) Nil. (v) (a,b) Nil. (vi) & (vii) Nil

5; RESULTS :

(i) 2388 lb/ac.
(ii) 289.3 lb/ac.
(iii) Neither the main effects nor their Interaction is significant;

a	1	2	3	Mean
b				
(1)	2382	2649	2341	2487
(2)	2261	2528	2309	2366
(3)	2261	2407	2267	2310
Mean	2301	2528	2334	2388

S.E. of body of table = 144.6 lb./ac.
S.E. of marginal means = 83.5 lb./ac.

Crop:- Paddy (1st crop) **Ref:-K. 53 (26)**
Site:- Agri. Res. Stn. Pattambi. **Type:- 'M'**

Object:— To determine the organic matter requirments of soil in the form of G.M. over a basal dressing of 60 lb. P_2O_5 /ac. as super applied by plaement and 45 lb. N/ac. A/S. as top dressing.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) 4000 lb/ac. green leaf + 75 lb. A/S /ac. (ii) (a) Laterite loam (b) Refer soil analysis Pattambi. (iii) 10.6.53 ; 15.7.1953 (iv) (a) 7 ploughings and levelling (b) transplanting (c)—(d) 6″×6″ 2 (e) (v) 60 lb. P_2O_5 /ac. super by placement + A/S 45 lb. N/ac as top dressing one month after planting. (vi) PTB. - 2 Medium. (vii) Not irrigated. (viii) 2 weedings. (ix) 71.46″ in 78 rainy days. (10.6.1953 to 30.10.1953.) (x) 30.10.1953.

2. TREATMENTS :

All combinations of (1)& (2)
(1) 3 levels of C.M. :- 2500, 5000, 7500 lb/ac.
(2) 3 sources of organic matter:- C.M, G.L. and Compost and
Control (no manure).
G.L and Compost applied in terms of equivalent organic matter of C.M
Treatments applied at the time of planting.

3. DESIGN :

(i) R.B.D. (ii) (a) 10 (b) N.A. (iii) 4' (iv) (a),(b) 14'×44' (v) Nil (v) (a), (b) Nil (vi) & (vii) Nil.

5. RESULTS :

(i) 2494 lb./ac.
(ii) 157.7 lb./ac.
(iii) Only control *vs* others is significant.
Others are not significant.
(iv) Mean grain yield in lb/ac:
Control = 2316 lb./ac.

Source / Levels	C.M.	G.L.	Compost	Mean
2500	2510	2490	2663	2521
5000	2386	2615	2475	2492
7500	2439	2651	2490	2527
Mean.	2445	2585	2509	2513

S.E. for marginal means = 45.5 lb/ac.
S.E. for the body of the table = 78.8 lb/ac.
S.E. for control *vs* any mean in body of table = 111.4 ,,

Crop :-Paddy. (1st crop). **Ref :-K. 53 (28).**
Site :-Agri. Res. Stn. Pattambi. **Type :-'M'**

Object :—To find-out the economic dose of N and P_2O_5 required for paddy.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) 4000 lb./ac G.L.+100 lb./ac. A/S (ii) (a) Laterite loam (b) Refer soil ana ysis Pattambi (iii) 10.6.53/18.7.1953. (iv) (a) 7 ploughings (b) Transplanting in lines (c)—(d) 6"×6". (e) (2) (v) Nil (vi) PTB-2 Medium 135 days (vii) Unirrigated (viii) 2 weedings. (ix) 74·46" in 78 rainy days. (10.6.53 to 30.10.53) (x) 30.10.1953.

2. TREATMENTS :

All combinations of (1) and (2).
(1) 4 levels of N :-0, 30, 45 and 60 lb. N/ac. as A/S.
(2) 4 levels of P_2O_5 :- 0, 30, 45 and 60 lb. P_2O_5/ac. as Super.
Super applied before planting and A/S one month after planting.

3. DESIGN :

(i) 4^2 factorial in R.B.D. (ii) (a) 16 (b) N.A. (iii) 4 (iv) (a), (b) 10'×48'. (v) Nil (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil (iii) Grain & Straw weight. (iv) (a) No (b) No (c) Nil (v) (a), (b) Nil (vi) & (vii) Nil.

5. RESULTS :

(i) 2503 lb./ac
(ii) 327·6 lb./ac.
(iii) Neither main effects nor interaction is significant.
(iv) Average grain yield in lb./ac.

P / N	0	30	45	60	Mean
0	2609	2496	2496	2859	2615
30	2223	2541	2541	2586	2472
45	2382	2291	2700	2541	2478
60	2182	2382	2336	2686	2446
Means	2399	2427	2518	2668	2503

S.E. of marginal means = 81.9 lb./ac.
S.E. of body of table = 163.8 lb./ac.

Crop :-Paddy (1st crop) Ref :-K. 51 (60)
Site :-Agri. Res. Stn. Pattambi. Type :- 'M'

Object :—To find-out how far paddy crop will respond to the P manures in laterite soil in presence of iron and alumina.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) 5000 lb./ac. of G.L. at the time of puddling+100 to 150 lb./ac. A/S top dressed one month before flowering. (ii) (a) Laterite loam, (b) Refer. soil analysis Pattambi, (iii) 13.7.1951. (iv) (a) Puddling 6 times, levelling 3 times. (b) The plots levelled and seedling transplanted from wet nursery. Av. age of seedlings is about one month, (c)—(d) 6"×4" (e) 2 to 3. (v) Nil. (vi) P.T.B. 9 Medium. 125 days-Improved. (vii) Purely Rainfed. (viii) One weeding one month after planting and another weeding if needed. (ix) 50·25" (13.7.1951 to 13.11.1951) (x) 13.11.1951.

2. TREATMENTS :

All Combinations of (1), (2) and (3).
(1) 3 levels of G.L. :- O (L_0), 5000 (L_1), 7500 (L_2) lb./ac.
(2) , 4 levels of P_2O_5 as Super :—0 (P_0), 30 (P_1), 45 (P_2), and 60 (P_3) lb. P_2O_5/ac.
(3) 3 levels of lime :—0 (C_0), 1500 (C_1), 3000 (C_2) lb./ac.
G.L. applied at the time of puddling as basal dressing. Lime applied one month before planting by broadcasting. Super at the time of last puddling by broadcast.

3. DESIGN :

(i) 4×3×3 factorial in R.B.D. (ii) (a) 36 (b) N.A. (iii) 2 (iv) (a) N.A. b) 19'×20½' (1/112 ac.) Compact block. (v) Nil (vi) Yes.

GENERAL :

(i) Satisfactory. (ii) Nil (iii) Grain yield in lb./plot. (iv) (a) 1951—1st crop—Viruppu ; 1953—2nd crop—Mundakan. (b) Yes (c) N.A. (v) (a), (b) N.A. (vi) Nil (viii) Nil.

5. RESULTS :

(i) 1053 lb./ac.
(ii) 777·9 lb./ac.
(iii) Main effect of L alone is highly significant. Others are not significant.
(iv) Average grain yield in lb./ac.

	L_0	L_1	L_2	Mean
P_0	780	757	1295	944
P_1	804	1207	1060	1024
P_2	655	1044	2111	1270
P_3	571	927	1423	974
Mean	702	284	1472	1053

	C_0	C_1	C_2	Mean
P_0	1107	890	836	944
P_1	732	1207	1132	1024
P_2	1074	1743	992	1270
P_3	612	1020	1077	974
Mean	934	1215	1010	1053

	C_0	C_1	C_2	Mean.
L_0	823	660	624	702
L_1	781	1354	816	984
L_2	1197	1630	1590	1472
Mean	954	1215	1010	1053

S.E. for the marginal mean of L or C = 158·8 lb./ac
" " " " P = 183·3 lb./ac.
S.E. for the body of the table P×C or L×P = 317·6 lb./ac.
" " " L×C = 275·1 lb./ac.

Crop :- Paddy (2nd crop). **Ref :-K 51 (61)/51 (60).**
Site :- Agri. Res. Stn. Pattambi. **Type :- 'M'.**

Object :— To find-out how far Paddy crop will respond to P manuring in Laterite soils in the presence of iron and alumina.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) Same experiment was conducted in these plots during the last season. (ii) (a) Laterite loam (b) Refer soil analysis Pattambi. (iii) 5.10.1951. (iv) (a) Puddling 6 times, levelling 3 times. (b) The plots levelled and seedlings transplanted from wet nursery. Av. age of seedlings is about one month ; (c)—(d) 6"×4" (e) 2 to 3. (v) Nil. One weeding one month after planting and another weeding if needed. (ix) 23.76" (5-10.51 to 3.3.1952) (x) 3.3.1952.

2. TREATMENTS :

All combinations of (1), (2) and (3),
(1) 3 levels of G.L :-O (L_0), 5000 (L_1), 7500 (L_2). lb./ac.
(2) 4 levels of P_2O_5 as Super :- O(P_0), 30(P_1), 45(P_2) and 60(P_3) lb. P_2O_5/ac.
(3) 3 levels of lime :- O(C_0), 1500 (C_1), 3000(C_2) lb./ac.
G.L. applied at the time of puddling as basal dressing. Lime applied one month before planting by broadcasting. Super at the time of last puddling by broadcast.

3. DESIGN :

(i) 4×3×3 factorial in R.B.D. (ii) (a) 36 (b) N.A. (iii) 2 (iv) (a) N.A. (b) 19′×20½′ (1/112 ac.) compact block. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Grain yield in lb./plot. (iv) (a) 1951-1st crop-Vinippu. ; 1933-2nd crop Mundakan. (b) Yes (c) N.A. (v) (a), (b) N.A. (vi) & (vii) Nil.

5. RESULTS :

(i) 1105 lb./ac.
(ii) 14.90 lb./ac.
(iii) All main effects and interactions are highly significant.
(iv) Av. as green yield in lb./ac.

	L_0	L_1	L_2	Mean
P_0	374	813	1125	770
P_1	752	1225	1572	1183
P_2	760	1274	1623	1219
P_3	700	1360	1681	1147
Mean	646	1168	1500	1105

	C_0	C_1	C_2	Mean.
P_0	563	703	1045	770
P_1	915	1174	1460	1183
P_2	880	1323	1453	1219
P_3	877	1367	1466	1247
Mean	809	1142	1363	1105

	C_0	C_1	C_2	Mean.
L_0	410	654	876	646
L_1	875	1305	1322	1168
L_2	1142	1465	1893	1500
Mean	869	1142	1363	1105

S.E. for the marginal mean of L or C = 3.04 lb./ac.
S.E. for the marginal mean of P = 3.51 lb/ac.
S.E. for the body of table P×L or P×C = 6.08 lb /ac.
S.E. for the body of table L×C. = 5.26 lb./ac.

Crop :- Paddy (1st crop) Ref :- K. 52 (38)/51 (60,61)

Site :- Agri. Res. Stn. Pattambi. Type :- 'M'

Object :— To find out how far Paddy crop will respond to P manuring in laterite soils in the presence of iron and alumina.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) Same experiment was on these plots during last season (ii) (a) Laterite loam (b) Refer soil analysis Pattambi. (iii) 25.5.195'. 30.6.52 (iv) (a) 7 Ploughings (b) Transplanting in lines (c)—(d)6″×6″ 2 (v) Nil (vi) PTB-9 Improved. 135 days duration. (ii) Rainfed (ii) 2 weedings at intervals of one month from planting (ix) 61.67″ in 85 rainy days (25.5.1952 to 31.10.1952) (x) 31. 10.1952.

2. TREATMENTS :

All combinations of 3 levels of leaf×4 levels of P_2O_5 as super×3 levels of lime.
Leaf : 0 (L_1), 5000 (L_2), 7500 (L_3) lb./ac.

Super 0 (P_0), 30 (P_1), 45 (P_2), 60 (P_3) lb. P_2O_5/ac.
Lime :-0 (C_0), 1500 (C_1), 3000 (C_2) lb./ac.
Leaf applied at the time of puddling.
Lime one month before planting by broadcast.
Super at the time of puddling by broadcast.

3. DESIGN :

(i) 4×4×3 Factorial in R.B.D (ii) (a) 35, (b) N.A. (iii) 4 (iv) (a), (b) 19′ ×20½′ (v) Nil (vi) Yes.

4. GENERAL :

(i) Satisfactory (ii) Nil (iii) Grain and straw weight. (iv) (a) 1951-1st crop to 1953-2nd crop (b) Yes. (c) N.A. (v) (a), (b) Nil. (vi) & (vii) Nil.

5. RESULTS :

(i) 1708 lb/ac.
(ii) 230 lb./ac.
(iii) Leaf Super and Lime are significant at 1% level. Interactions are not significant. Linear component of lime is significant at 1% level.
(vii) Grain weight in lb./ac.

	L_0	L_1	L_2	Mean
P_0	1146	1353	1458	1320
P_1	1682	1759	1953	1798
P_2	1671	1864	1959	1831
P_3	1671	1948	2030	1883
Mean.	1542	1731	1850	1708

	L_0	L_1	L_2	Mean
C_0	1382	1576	1832	1597
C_1	1548	1727	1802	1692
C_2	1691	1891	1917	1835
Mean.	1542	1731	1850	1708

	P_0	P_1	P_2	P_3	Mean.
C_0	1228	1643	1710	1806	1597
C_1	1303	1794	1829	1843	1692
C_2	1428	1957	1955	2000	1835
Mean.	1320	1798	1831	1883	1708

S.E. of body of table P×L or P×C = 66 lb.ac.
S.E. of body of table L×C = 58 lb./ac.
S.E. of marginal mean of L or C = 34 lb./ac.
S-E. of marginal mean of P = 38 lb./ac.

Crop :- Paddy (2nd crop) Ref :-K. 52 (39)/52 (38)
Site :- Agri. Res. Stn. Pattambi. Type :- 'M'

Object:—To find-out how far paddy crop with respond to phosphatic manuring in laterite soils in the presence of iron and alumina.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) Same experiment was in these fields (ii) (a) Laterite loam (b) Refer soil analysis Pattambi. (iii) 27.9.1952 : 6.12.1952 (iv) (a) 6 puddlings 3 levellings (b) Transplating (c) — (d) 6″ ×6″ (e) 2 (v) Nil. (vi) PTB-21. Improved, 125 days duration. (vii) Rainfed (viii) 2 weedings at intervals of one month from planting. (ix) 16.01″ in 18 rainy days. 27.9.1952 to 27.2.1923) (x) 27.2.1923.

2. TREATMENTS :

All combinations of 3 levels of Leaf ×4 levels of Super × 3 levels of lime.
Leaf : O (L_0), 5000 (L_1) 7,500 (L_2) lb/ac.
Super : O (P_0), 30 (P_1), 40 (P_2), 60 (P_3) lb/ac. P_2O_5
Lime : O (C_0), 1500 (C_1),, 3000 (C_2) lb/ac.
Leaf applied at the time of puddling.
Lime one month before planting by broadcast.
Super at the time of last puddling by broadcasting.

3. DESIGN :

(i) 4×3×3 fact in R.B.D. (ii) (a) 36 (b) N.A. (iii) 4 (iv) (a,b) 19'×20½' (v) Nil (vi) Yes.

4. GENERAL :

(i) Not good (ii) Nil (iii) Grain and straw height (iv) (a) 1951-1st crop 1953-2nd crop (both crops in a year) (b) Yes. (c) N.A. (v) (a,b) Nil (vi) & (vii) Nil.

5. RESULTS :

(i) 1348 lb./ac.
(ii) 232 lb./ac.
(iii) N,P and C are higly significant Interactions are not significant. Response to C is linear.
(iv) Grain weight in lb./ac.

	P_0	P_1	P_2	P_3	Mean
L_0	843	1153	1219	1286	1125
L_1	1034	1359	1512	1452	1339
L_2	1244	1633	1684	1750	6578
Mean	1041	1382	1472	1496	1348

	C_0	C_1	C_2	Mean
L_0	910	1149	1317	1125
L_1	1172	1330	1515	1339
L_2	1457	1646	1631	1578
Mean	1180	1375	1487	1348

	P_0	P_1	P_2	P_3	Mean
C_0	820	1228	1300	1372	1180
C_1	1112	1379	1527	1482	1375
C_2	1191	1538	1589	1633	1487
Mean	1041	1382	1472	1496	1348

S.E. of body of table L×P or C×P = 67 lb./ac.
S.E. of body of table L×C = 58 lb./ac.
S.E. of marginal means L or C = 34 lb./ac.
S.E. of marginal means (P) = 39 lb./ac.

Crop :: Paddy, (1st crop) Ref :- K. 53(35 52(38,39).
Site :- Agri. Res. Stn. Partambi. Type :- 'M'

Object-—To find out how far paddy crop will respond to the phosphate manures in laterite soils in the presence of iron and alumina.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) same experiment was in these fields. (ii) (a) Laterite loam (b) Refer soil analysis Pattambi. (iii) 3.6.1953 ; 13.7.1953. (iv) (a) 7 ploughings ; (b) Transplanting in lines (c)—(d) 6"×6" (e)

2 (v) Nil. (vi) PTB. 9 Medium 135 days (vii) Unirrigated. (viii) 2 weedings. (ix) 64.72" in 72 rainy days. (3.6.53 to 10.10.53) (x) 10.10.1953.

2. TREATMENTS :

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

(1) Leaf at $L_0 = 0$: $L_1 = 5000$; $L_2 = 7500$ lb./ac.

(2) P_2O_5 as super at $P_0 = 0$; $P_1 = 30$; $P_2 = 45$ & $P_3 = 60$ lb./ac.

(3) Lime at $C_0 = 0$; $C_1 = 1500$ & $C_2 = 3000$ lb./ac.

Leaf applied at the time of puddling and super at the time of last puddling. Lime one month before planting.

3. DESIGN :

(i) 4×3×3 factorial in R.B.D. (ii) (a) 36 (b) N.A. (iii) 4 (iv) (a,b) 19'×20.5' (v) Nil. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil (iii) Straw and grain weight. (iv) (a) 1951 (1st crop) to 1953 (2nd crop) (b) Yes (c) N.A. (v) (a),(b) Nil (vi) & (vii) Nil.

5. RESULTS :

(i) 2764 lb./ac.

(ii) 279.6 lb./ac.

(iii) Main effects of L, Paud C and interaction L×C are highly significant.

(iv) Grain weight lb./ac.

	C_0	C_1	C_2	Mean.
L_0	2250	2600	2831	2560
L_1	2531	2823	2970	2775
L_2	3033	2907	2935	2958
Mean.	2605	2776	2912	2764

	L_0	L_1	L_2	Mean	C_0	C_1	C_2
P_0	2245	2460	2674	2460	2283	2497	2600
P_1	2628	2769	2991	2796	2583	2842	2964
P_2	2693	2898	3075	2888	2749	2898	3019
P_3	2674	2972	3093	2913	2805	2870	3066
Mean.	2560	2775	2958		2605	2776	2912

S.E. for the marginal means of L&C = 40.4 lb./ac.

" " " P = 46.7 lb./ac.

S.E. for the body of the tables L×P or C×P = 80.7 lb./ac.

" " " L×C = 69.9 lb./ac.

Crop:- Paddy. (2nd crop) **Ref:- K. 53(31)/53 (35)/52(38,39).**

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

Object :— To find out how far paddy crop will respond to the phosphatic manures in laterite soils in the presence of iron and alumina.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) Same expt. was in these plots (ii) Laterite loam. (b) Refer soil analysis Pattambi (iii) 11.9.53 / 10.11.53. (iv) (a) 7 ploughings and levelling. (b) Transplantings in lines. (c)—(d) 6"×6" (e) 2 (v) Nil (vi) PTB—21, Medium. (vii) Unirrigated. (viii) 2 weedings. (ix) 17.06" in 14 rainy days. (12.9.1953 to 1.2.1954) (x) 1.2.2954.

2. TREATMENTS :

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

(1) Leaf at $L_0 = 0$; $L_1 = 5000$; $L_2 = 7500$ lb./ac.

(2) P_2O_5 as super at P = O ; P_1 = 30 ; P_2 = 45 and P_3 = 60 lb. P_2O_5/ac.
(3) Lime at C_0 = O ; C_1 = 1500 and C_2 = 3000 lb./ac.
Leaf at the time of puddling and super at the time of last puddling.
Lime one month before planting.

3. DESIGN :

(i) 4 × 3 × 3 factorial in RBD. (ii) (a) 36 (b) N.A. (iii) 4 (iv) (a),(b) 19" × 20".5" (v) Nil (vi) Yes.

4. GENERAL :

(i) Satisfactory (ii) Nil (iii) Straw and grain weight. (iv) (a) 1951 (1st crop) to 1953 (1st crop) (b) Yes (c) N.A. (v) (a,b) Nil. (vi) & (vii) Nil.

5. RESULTS :

(i) 1132 lb./ac.
(ii) 159.0 lb./ac.
(iii) Main effect of P is significant. Main effects of L and C are highly significant. Interactions not significant.
(iv) Average grain yeild in lb./ac.

	L_0	L_1	L_2	Mean	C_0	C_1	C_2
P_0	925	1056	1105	1029	946	991	1149
P_1	1074	1168	1251	1164	1033	1214	1247
P_2	1074	1212	1233	1173	1087	1248	1184
P_3	1069	1186	1224	1160	1055	1186	1239
Mean.	1036	1156	1203	1132	1030	1160	1205

	L_0	L_1	L_2	Mean
C_0	883	1053	1155	1030
C_1	1076	1165	1239	1150
C_2	1149	1250	1210	1205
Mean	1036	1156	1203	1132

S.E. for marginal means of L or C = 23 lb./ac.
" " " of P = 26.5 lb./ac.
S.E. for the body of the table. L×P or C×P = 45.9 lb.ac.
" " " L×C = 39.8 .b./ac.

Crop:- Paddy (1st crop) Ref:- K. 48(21)
Site:- Agri. Res. Stn. Pattambi. Type:-'M'

Object :— To study the smitable time for application of G.N.C. as a source of N

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) About 5,000 lb./ac. G.L + 100 to 150 lb/ac. A/S. (ii) (a) Laterite loam (b) Refer soil analysis Pattambi. (iii) 11.5.48 5.7.48 (iv) (a) 6 ploughings, 2 puddlings. (b) planting in lines (c)—(d) 4" to 6" between plants & about 10" in rows (e) 3 to 4 (v) Nil (vi) PTB 2-Medium, Improved (vii) Rainfed (viii) One or two weedings if required at interval of onemonth from planting (ix) 77.96" (11.5.1948 to 6.10.1948) (x) 6.10.1948.

2. TREATMENTS :

1. No manure.
3. Cake 20 lb. N/ac. at planting.
3. Cake 20 lb. N/ac. 3 weeks after planting.
4. Cake 40 lb. N/ac. at planting.
5. Cake 40 lb. N/ac. 3 weeks after planting.
6. Cake 20 lb. N/ac. at planting + 20 lb. N/ac. 3 weeks after planting.

3. DESIGN :

(i) R.B.D. (a) 6 (b) N.A. (iii) 6 (iv (a), (b) 18′ × 24′ (x) Nil ; about 1½ to 2 feet interspace between plots. (v)) Yes.

4. GENERAL :

(i) Satisfactory (ii) Nil (iii) Grain weight. (iv) (a) 1948 - 1st crop to 1948 2nd crop (b) Yes. (c) N.A. (b) Nil (vi) Nil. (vii) Nil.

5. RESULTS :

(i) 1908 lb./ac.
(ii) 138 lb./ac.
(iii) The treatment differences are significant.
(iv) Grain weight in lb./ac.

Treatment	Mean
1.	1782
2.	1895
3.	1815
4.	2025
5.	2005
6.	1928

S.E. of treatment mean = 56 lb./ac.

Crop:- Paddy (2nd crop) Ref:- K 48(28)

Site:- Agri. Res. Stn. Pattambi. Type:- 'M'

Object :— To study the smitable time for application of G.N.C. as source of N.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy (c) Same expt. was in these plots (ii) (a) Laterite loam (b) Refer soil analysis Pattambi. (iii) 19.9.48/2.11.48 (iv) (a) 6 ploughings. 2 puddlings. (b) Transp lanted in lines (c)—(d) 4″—6″ between plants and about 10″ between rows. (e) N.A. (v) Nil (vi) PTB 20, Medium Improved (vii) Rainfed (vii) One or two weedings at intervals of one month, if required. (ix) 14.51″ (19.9.48. to 4.2.49) (x) 4.2.49.

2. TREATMENTS :

1. No manure.
2. G.N.C. 20 lb. N/ac. at planting
3. G.N.C. 20 lb. N/ac. at three weeks after planting
4. G.N.C. 40 lb. N/ac. at planting.
5. G.N.C. 40 lb. N/ac. three weeks after planting.
6. G.N.C. 20 lb. N/ac. at planting + 20 lb. N/ac. 3 weeks after planting.

3. DESIGN :

(i) R.B.D. (ii) (a) 6 (b) N.A. (iii) 6 (iv) (a) (b) 18′ × 24′ (v) Nil. About 1½ ft. to 2 ft. interspace between plots. (vi) Yes.

4. GENERAL :

(i) Satisfactory (ii) Nil. (iii) Grain weight (iv) (a) 1943 - 1st crop to 1948. - 2nd crop (b) Yes. (c) N.A. (vi (a) Nil (b) Nil. (vi) Nil. (vii) Nil.

5. RESULTS :

(i) 1720 lb./ac.
(ii) 176 lb./ac.
(iii) Treatment differences are highly significant
(iv) Mean grain yeild in lb./ac.

Treatment	Mean yield.
1.	1504
2.	1689
3.	1656
4.	1983
5.	1705
6.	1782

S.E. of treatment means = 73 lb./ac.

Crop:- Paddy — Ref :- K. 53(40)

Site:- Agri. Res. Stn. Taliparamba. — Type:- 'M'

Object :— To assess the comparative merits of the Compost made out of leaves of Jack, Cashew, mango and to find out if large quantities of these leaves available in this tract can be usefully utilized for manuring of paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy (c) 5000 lb. compost or G.L. + 112 lb. Super + 100 lb/ac. A/S. (ii) (a) Red laterite (b) Refer soil analysis Taliparamba. (iii) 22.5.53 ; 14.7.53. (iv) (a) 3 ploughings levelling digging corners (b) Planting in bulk seedlings of age one anouth sown in a uursery. (c)—(d) 6" to 8" (e) 2 to 3 (v) 112 lb. Supper / ac. ae basal dressing during last ploughing. 100 lb/ac.. A/S as top dressing one month after planting. (vi) PTB 9. Improved. late (vii) Rainfed (viii) one or two weedings at an interval of one month from planting. (ix) About 100" (22.5. 1953 to 17.10.1953) (x) 17.10.1953.

2. TREATEMENTS :

1. Jaek leaf compost at 5 ton/ac.
2. Mango leaf ... ...
3. Cashew leaf ... ...
4. Control.

Applied as basal dressing at the time of ploughing.

3. DESIGN :

(i) R.B.D. (ii) (a) 4 (b) N.A. (iii) 8 (iv) (a), (b) 12' × 30' (v) No (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Slight attack of Helmentho-sporium spraying of 1% B:H.C. tried. (iii) Grain weight (iv) (a) No (b) No (c) Nil (v) (a), (b) Nil. (vi) data N.A. All details collected from annual reports. (vii)Nil

5. RESULTS :

(i) 2337 lb. /ac.
(ii) 212·0 lb. /ac.
(iii) The treatment differ ences are highly significant.
(iv) (Grain weight in lb./ac.)

Treatment	Mean.
1.	2718
2.	2401
3.	2235
4.	1993

S.E. of treatment mean = 75 lb./ac.

Crop :-Paddy — Ref :-K. 53 (23) (Experiment on Cultivator's fields)

Tehsil or Taluk :-Palghat (S. Malabar) — Type :-'M'

Object :—To compare Japanese method with the local method of cultivation.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy (c) Nil. (ii) Sandy loam. (iii) Nil. (iv) Improved Co. 3 (v) (a) 6 to 10 ploughings. (b) Transplanting. (c) N.A. (d) 6 inch × 6 inch in lines. (e) 2 or 3 for farm method. (vi) Planting sets with the receipt of good premonsoon showers. (vii) Rainfed. (viii) Interculture with Japanese Rotary weeder done during the 4th, 6th and 8th week after transplanting for treatment (5). One weeding one month after planting for treatment (1) to (4). (ix) 24.24 inch. (x) January, 54.

2. TREATMENTS :

1. Control.
2. CM 11200 lb./ac. + Super 112 lb./ac. + 80 lb. A/S/ac. applied one month after planting.
3. C.M. 11200 lb./ac.+200 lb. Super/ac.+200 lb. A/S/ac. applied at planting.
4. C.M. 11200 lb./ac.+100 lb. Super/ac.+100 lb. A/S/ac. at planting+100 lb. super/ac.+100 lb. A/S/ac. one month after planting.
5. Seedlings raised under the Japanese method+C.M. 11200 lb./ac.+100 lb. Super/ac.+100 lb. A/S/ac. at planting+100 lb. Super/ac+100 lb. A/S/ac. one month after planting. (Spacing 10 inches×4 inches 4 seedlings/poles).

For treatments (1) to (4) seedlings raised by the local method. Cattle Manure applied at the time of ploughing as basal dressing.

3. DESIGN :

(i) R.B.D. (ii) 5 replications. (iii) (a) (b) 2½ cents. (iv) N:A.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain and straw weights. (iv) (a) to (c) Nil. (v) (a) (b) Nil. (vi) and (viii) Nil.

5. RESULTS :

(i) 2446 lb./ac.
(ii) 184.8 lb./ac.
(iii) Treatment differences are significant at 1 per cent level.
(iv)

Treatment	Mean.
1.	2024
2.	2368
3.	2536
4.	2736
5.	2568

S.E./mean = 82.5 lb./ac.

Crop :- Paddy (2nd crop) — **Ref. :- Simple trials on cultivators' fields (T.C.M.)**

Centre :- Chalkudy (Kerela) — **Year :- 1953 ; Type : 'M'**

Object :— IV (iii) To study the effect of types and levels of P and N.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) Laterite-loam-pH 5.5 (iii) G.M. applied in most trials (iv) N.A. (v) N.A. (v) September-October (vii) Irrigated (viii) N.A. (ix) 80" (x) January-February.

2. TREATMENTS :

0	=	Control
N	=	A/S at 40 lb. N/ac.
NP'_1	=	,, ,, ,, +Nitrophos at 20 lb. P_2O_5/ac.
NP'_2	=	,, ,, ,, + ,, 40 ,,
NP''_1	=	,, ,, ,, +Ammo. Phos 20 ,,
NP''_2	=	,, ,, ,, + ,, ,, 40 ,,

P applied before the last puddling while N at tillering.

DESIGN :

(i) & (ii) Eleven community project centres, representing the entire paddy growing tract of the country, were selected. From each community project centre, one development block was selected. Villages were selected at random from the selected block and a list of cultivators growing paddy for each selected village was prepared. From this list, two cultivators were selected at random and one field each belonging to them was taken for trial. In each selected field an unreplicated trial was laid out (iii) N.A. (iv) Yes

4. GENERAL :

(i) Normal (ii) Nill (iii) Yield data (iv) (a) 1953-56 (b) No (c) N.A. (v) NA (vi) Nil (vii) Nil.

5. RESULTS :

Treatments	Av. yield in lb./ac.
0	1914
N	2228
NP'1	2608
NP'_2	2233
NP''_1	2942
NP''_2	2670
G.M.	2433
S.E./mean	127.5
No. of expts.	7

Crop :- Paddy (2nd crop) — **Ref :- Simple trials on cultivators fields (T.C.M.)**

Centre :- Chalkudy (Kerala) — **Year :- 1953; Type. 'M'**

Object :— IV (i) To study the effect of types and levels of P and N.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) Laterite-loam--pH·5.5. (iii) G·M. applied in most trials (iv) N·A(N.A. (vi) September-October (vii) Irrigated (viii) N.A. (N.A. (ix) 80"(x) January-February.

2. TREATMENTS :

0	=	Control	
N	=	A/S at 40 lb N/ac.	
NP_1	=	,, ,, ,, ,,	+Super at 20 lb P_2O_5/ac.
NP_2	=	,, ,, ,, ,,	+ ,, ,, 40 ,,
NP_1'	=	,, ,, ,, ,,	+ Nitro. phos at 20 lb P_2O_5/ac.
NP'_2	=	,, ,, ,, ,,	+ ,, ,, ,, 40 ,,

P applied before the last puddling while N applied at tillering.

3. DESIGN :

(i) & (ii) Eleven community project centres, representing the entire paddy growing tract of the country, were selected. From each community project centre, one development block was selected. Villages were selected at random from the selected block and a list of cultivators growing paddy for each selected village was prepared. From this list, two cultivators were selected at random and one field each belonging to them was taken for trial. In each selected field an unreplicated trial was laid out (iii) N.A. (vi) Yes

4. GENERAL :

(i) Normal (ii) Nil (iii) Yield data (iv) (a) 1953-56 (b) No (c) N.A. (v) N.A. (vi) Nil (vii) Nil.

5. RESULTS :

Treatments	Av. yield in lb/ac.
0	1749
N	2083
NP_2	2208
NP_1	2129
NP'_1	2215
NP'_2	2185
G.M.	2095
S.E./mean	79.81
No. of expts.	8

Crop :- Paddy (2nd) **Ref : Simple trials on cultivators fields (T.C.M.)**

Centre :- Chalkudy (Kerela) **Year : 1953 ; Type. 'M'**

Object :— IV (ii) To study the effect of types and levels of P and N.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) Laterite-loam-P.H.55. (iii) G.M. applied in most trials (iv) N.A. (v) N.A. (vi) September-October. (vii) Irrigated (viii) N.A. (ix) 90" (x) January-February.

2. TREATMENTS :

0	=	Control	
N	=	A/S at 40 lb. N/ac.	
NP_1	=	,, ,, ,, ,,	+Super at 20 lb P_2O_5/ac.
NP_2	=	,, ,, ,, ,,	+ ,, ,, ,, ,,
NP''_1	=	,, ,, ,, ,,	+Ammo. Phos at 20 lb. P_2O_5/ac.
NP''_2	=	,, ,, ,, ,,	+ ,, ,, ,, 40 ,,

P applied before the last puddling while N applied at tillering.

3. DESIGN :

(i) & (ii) Eleven community project centres, representing the entire paddy growing tract of the country, were selected, From each community project centre, one development block was selected. Villages were selected at random from the selected block and a list of cultivators growing paddy for each selected village was prepared. From this list, two cultivators were selected at random and one field each belonging to them was taken for trial. In each selected field an unreplicated trial was laid out (iii) N.A. (iv) Yes

GENERAL :

(i) Normal (ii) Nil (iii) Yield data (iv) (a) 1953-56 (b) No (c) N.A. (v) N.A. (vi) Nil (vii) Nil.

4. RESULTS :

Treatments	Av. yield in lb./ac.
0	1921
N	2217
NP_1	2566
NP_2	2096
NP''_2	2626
NP''_1	2206
G.M.	2272
S.E./mean	116.8
No. of expts.	8

Crop :- Paddy (2nd crop) **Ref :- Simple trials on cultivator's fields (T.C.M).**

Centre :- Chalkudy (Kerela) **Year : 1953 ; Type : 'M'**

Object :— III : To study effect of A/S with different sources of P

1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) Laterite-loam-p.H. 5.5 (iii) G.M. applied in most trials (iv) N.A. (v) N.A. (vi) Sept.-October., (vii) Irrigated (viii) N.A. (ix) 90" (x) January-February.

TREATMENTS :

O	=	Control	
N	=	A/S at 20 lb N/ac.	
NP	=	A/S at 20 lb N/ac.	+Super at 20 lb. P_2O_5/ac.
NP'	=	,, ,, ,, ,,	+Nitrophos at 20 lb P_2O_5/ac.
NP"	=	,, ,, ,, ,,	+*Ammo. Phos* ,, ,, ,,

P and K applied before the last puddling while N applied at fillering.

3. DESIGN :

(i) & (ii) Eleven community project centres, representing the entire paddy growing tract of the country were selected. From each community project centre, one development block was selected. Villages were selected at random from the selected block and a list of cultivators growing paddy for each selected village was prepared. From this list, two cultivators were selected at random and one field each belonging to them was taken for trial. In each selected field an unreplicated trial was laid out (iii) N.A. (iv) Yes.

4. GENRAL :

(i) Normal (ii) Nil (iii) Yield data (iv) (a) 1953-56 (b) No. (c) N.A. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

Treatments	Av. yield in lb./ac.
O	1680
N	2125
NP	2303
NP'	2344
NP"	2325
G.M.	2156
S.E./mean	113.5
No. of expts.	8

Crop: Paddy (2nd crop) **Ref: Simple trials on cultivator's fields (T.C.M.).**

Centre: Chalkudy (Kerala) **Year: 1953 ; Type : M**

Object : I (b) (ii) To study the effect of different levels and types of N, and P.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) Laterite—loam-pH 5.5. (iii) G.M. applied in most trials (iv) N.A. (v) N.A. (vi) Sept.-Oct. (vii) Irrigated (viii) N.A. (ix) 90" (x) January-February.

2. TREATMENTS :

O = Control
P = 20 lb P_2O_5/ac. as Super
N_1P = A/S at 20 lb N/ac. + 20 lb P_2O_5/ac. as Super
$N_1''P$ = Urea at 20 lb N/ac. + ,, ,, ,, ,,
$N_2''P$ = ,, ,, 40 ,, ,, + ,, ,, ,, ,,
P and K applied before the last puddling while N applied at tillering.

3. DESIGN :

(i) & (ii) Eleven community project centres, representing the entire paddy growing tract of the country, were selected. From each community project centre, one development block was selected. Villages were selected at random from the selected block and a list of cultivators growing paddy for each selected village was prepared. From this list, two cultivators were selected at random and one field each belonging to them was taken for trial. In each selected field an unreplicated trial was laid out (iii) N.A. (iv) Yes.

4. GENERAL :

(i) Normal (ii) Nil (iii) Yield data (iv (a) 1953-56 (b) No. (c) N.A. (v) N.A. (vi) Nil (vii) Nil.

5. RESULTS

Treatments	Av. yield in lb/ac.
O	1237
P	1543
N_1P	1780
$N_1''P$	1618
$N_2''P$	1604
G.M.	1557
S.E/mean	92.98
No. of expts.	8

Crop : Paddy (2nd crop) — Ref : Simple trials on cultivators fields (T.C,M.)

Centre : Chalkudy (Kerala) — Year 1953 ; Type: M

Object : I (b) (ii) To study the effect of different levels and types of N, and P

BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) Laterite—loam—pH 5.5 (iii) G.M. applied in most trials (iv) N.A. (v) N.A. (vi) Sept.-Oct, (vii) Irrigated (viii) N.A. (ix) 60" (x) January-February

2. TREATMENTS :

O = Control
P = 20 lb P_2O_5/ac Super
N_1P = A/S at 20 lb N/ac. + 20 lb P_2O_5/ac. as Super
N_2P = A/S at 40 lb N/ac. + ,, ,, ,, ,,
P and K applied before the last puddling while N applied at tillering.

3. DESIGN :

(i) & (ii) Eleven community project centres, respresenting the entire paddy growing tract of the country, were selected, From each community project centre, one development block was selected. Villages were selected at random from the selected block and a list of cultivators growing paddy for each selected village was prepared, From this list, two cultivators were selected at random and one field each belonging to them was taken for trial. In each selected field an unreplicated trial was laid out (iii) N.A. (iv) Yes.

4. GENERAL :

(i) Normal (ii) Nil (iii) Yield data (iv) (a) 1953-56 (b) No (c) N.A. (v) N.A. (vi) Nil (vii) nil.

5. RESULTS :

Treatments	Av. yield in lb/ac.
O	1650
P	2004
N_1P	2096
N_2P	2550
G.M.	2075
S.E./mean	137.4
No. of expts.	9

Crop : Paddy (2nd crop)

Ref : Simple trials on cultivators' fields (T.C.M.)

Centre : Chalkudy (Kerala)

Year : 1953; Type : M

Object : II To study the effect of manures (N,P,K.)

1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) Laterite—loam—P.H. 5.5. *(iii)* G.M. applied in most trials (iv) N.A. (v) N.A. (vi) Sept.-Oct. (vii) Irrigated (viii) N.A. (ix) 90" (x) January-February

2. TREATMENTS:

O = Control
N = A/S at 20 lb N/ac.
NP = A/S at 20 lb N/ac. + Super at 20 lb P_2O_5/ac.
N"P = Urea ,, ,, + ,, ,, ,, ,,
P and K fertilizers amplied before the last puddling while N fertilizer applied at tillering.

DESIGN :

(i) & (ii) Eleven community project centres, representing the entire paddy growing tract of the Country, were selected. From each community project centre, one development block was selected, Village were selected at random from the selected block and a list of cultivators growing paddy for each selected village was prepared. From this list, two cultivators were selected at random and one field each belonging to them was taken for trial. In each selected field an unreplicated trial was laid out (iii) N.A. (iv) Yes.

4. GENERAL
(i) Normal (ii) Nil (iii) Yield data (iv) (a) 1953-56 (b) No (c) N.A. (v) N.A. (vi) Nil (vii) Nil.

5. RESULTS :

Treatments	Av. yield in lb/ac.
O	1474
N	1651
NP	1841
N"P	1911
G.M.	1719
S.E./mean	73.23
No. of expts.	8

Crop : Paddy (2nd crop)

Ref : Simple trials on cultivators fields (T.C.M.)

Centre : Chalkudy (Kerala)

Year : 1953; Type : M

Object : I (b) (ii) To study the effect of different levels and types of N, and P

1. BASAL CONDITION :

(i) (a) N.A. (c) N.A. (ii) Laterite—loam—pH 5.5. (iii) G.M. applied in most trials (iv) N.A.) (v) N.A, (vi) Sept.-Oct., *(vii)* Irrigated *(viii)* N.A. *(ix)* 90" *(x) January-February.*

2. TREATMENT :

O = Control
P = 20 lb P_2O_5/ac. as Super
N_1P = A/S at 20 lb N/ac. + 20 lb P_2O_5/ac. as Super
N_2P = A/S at 40 lb N/ac. + ,, ,, ,, ,,
N_1"P = Urea at 20 lb N/ac. + ,, ,, ,, ,,
N_2"P ,, ,, 40 ,, ,, ,, ,, ,, ,,
P and K fertilizers applied before the last puddling while N fertilizer applied at tillering.

3. DESIGN -

(i) & (ii) Eleven community project centres, representing the entire paddy growing tract of the country, were selected. From each community project centre, one development block was selected. Villages were selecced at random from the selected block and a list of cultivators growing paddy for each selected village was prepared. From this list, two cultivators were selected at random and one field each belonging to them was taken for trial. In each selected field an unreplicated trial was laid out (iii) N.A. (iv) Yes.

4. GENERAL :

(i) Normal (ii) Nil (iii) Yield data (iv) (a) 1953-56 (b) No (c) N.A. (v) N.A. (vi) Nil (vii) Nil.

5. RESULTS :

Treatments	Av. yield in lb/ac.
O	1753
P	2214
N_1P	2385
N_2P	2435
$N_1'P$	2548
$N_2'P$	2311
G.M.	2274
S.E./mean	107.8
No. of expts.	8

Crop :-Paddy (3rd crop) **Ref :-Simple trials on cultivators fields (T.C.M.)**

Centre :-Chalkudy (Kerala) **Year 1953; Type :-M**

Object :-I (b) (i) To study the effect of different levels and types of N, and P.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) Laterite loam PH 5.5 (iii) G.M. applied in most trials (iv) N.A. (v) N.A. (vi) Dec.—January (vii) Irrigated (viii) N.A. (ix) 90" (x) March—April.

2. TREATMENTS :

O=Control.
P=Super at 30 lb P_2O_5/ac.
N_1P=A/S at 20 lb. N/ac. ac.+20 lb. P_2O_5/ac. as super.
N_2P= ,, 40 ,, ,, + ,, ,, ,, ,,
$N_1'P$=A/N ,, 20 ,, ,, + ,, ,, ,, ,,
$N_2'P$= ,, 40 ,, ,, + ,, ,, ,, ,,
P and K applied before the last puddling while N applied at tillering.

3. DESIGN :

(i) & (ii) Eleven community project centres, representing the entire paddy growing tract of the country, were selected. From each community project centre, one development block was selected. Villages were selected at random from the selected block and a list of cultivators growing paddy for each selected village was prepared. From this list, two cultivators were selected at random and one field each belonging to them was taken for trial. In each selected field an unreplicated trial was laid out (iii) N.A. (iv) Yes.

4. GENERAL :

(i) Normal (ii) Nil (iii) Yield data (iv) (a) 1953-56 (b) No (c) N.A. (v) N.A. (i) Nil (vii) Nil.

5. RESULTS :

Treatments	Av. yield in lb./ac.
O	1284
P	1290
N_1P	1729
N_2P	1980
$N_1'P$	1520
$N_2'P$	1557
G.M.	1560
S. E./mean	104.5
No. of expts.	5

Crop :-Paddy (3rd crop) **Ref :-Simple trials on cultivators fields (T.C M.)**

Centre :-Chalkudy (Kerala) **Year, 1953. Type :-M**

Object :-I (b) (ii) To study the effect of different levels and types of N and P.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) Laterite loam PH 5.5 (iii) G.M. applied in most trials (iv) N.A. (v) N.A. (vi) Dec.-January (vii) Irrigated (viii) N.A. (ix) 90" (x) March-April.

2. TREATMENTS :

O =Control.

P =20 lb. P_2O_5/ac. as super.

N_1P=A/S. at 20 lb N/ac.+20 lb. P_2O_5/ac. as super.

N_2P=A/S at 40 lb. ,, + ,, ,, ,, ,,

$N_1''P$=Urea at 20 lb. ,, + ,, ,, ,, ,,

$N_2''P$= ,, 40 ,, ,, + ,, ,, ,, ,,

P and K applied before the last puddling while N applied at tillering.

3. DESIGN :

(i) & (ii) Eleven comunity project centres, representing the entire paddy growing tract of the country, were selected. From each community project centre, one developmentt block was selected. Villages were selected at random from the selected block and a list of cultivators growing paddy for each selected village was prepared. From this list, two cultivators were selected at random and one field each belonging to them was taken for trial. In each selected field an unreplicated trial was laid out (iii) N.A. (iv) Yes.

4. GENERAL :

(i) Normal (ii) Nil (iii) Yield data (iv) (a) 1953-1956 (b) No (c) N.A. (v) N.A. (vi) Nil (vii) Nil.

5. RESULTS :

Treatments	Av. yield in lb./ac.
O	1082
P	1139
N_1P	1394
N_2P	1630
$N_1''P$	1520
$N_2''P$	1292
G.M.	1343
S.E./mean	111.1
No. of expts.	5

Crop :-Paddy (3rd crop)

Ref :-Simple trials on cultivators fields (T.C.M.)

Centre :-Chalkudy (Kerala)

Year, 1953; Type :-'M'

Object :-I(b) (iii) To study the effect of different levels and types of N and P.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) Laterite loam PH 5.5 (iii) G.M. applied in most trials (iv) N.A. (v) N.A. (vi) Dec.-January (vii) Irrigated (viii) N.A. (ix) 90" (x) March-April.

2. TREATMENT :

O =Control.

P_1 =20 lb. P_2O_5/ac. as Super.

$N_1'P$=A/N at 20 lb. N/ac.+20 lb. P_2O_5/ac. as Super.

$N_2'P$= ,, at 40 lb. ,, + ,, ,, ,, ,,

$N_1''P$=Urea at 20 lb. ,, + ,, ,, ,, ,,

$N_2''P$= ,, at 40 lb. ,, + ,, ,, ,, ,,

P and K applied before the last puddling while N applied at tillering.

3. DESIGN :

(i) & (ii) Eleven community project centres, representing the entire paddy growing tract of the country, were selected. From each community project centre one development block was selected. Villages were selected at random from the selected block and a list of cultivators growing paddy for each selected village was prepared. From this list, two cultivators were selected at random and one field each belonging to them was taken for trial. In each selected field an unreplicated trial was laid out (iii) N.A. (iv) Yes.

4. GENERAL :

(i) Normal (ii) Nil (iii) Yield data (iv) (a) 1953-56 (b) No (c) N.A. (v) N.A. (vi) Nil (vii) Nil.

5. RESULTS :

Treatments	A.v yield in lb./ac.
O	922
P_1	903
N_1'P	1213
N_2'P	1155
N1"P	1053
N_2"P	1249
G.M.	1083
S. E./mean	75.70
No. of expts.	5

Crop :-Paddy (3rd crop)

Ref :-Simple trials on cultivators fields (T.C.M.)

Centre :-Chalkudy (Kerala)

Year 1953; Type :-'M

Object :-II To study the effects of manures (N. P. K.)

1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) Laterite loam P.H. 5.5 (iii) G.M. applied in most trials (iv) N.A. (v) N.A. (vi) Dec.-January. (vii) Irrigated (viii) N.A. (ix) 90" (x) March-April.

2. TREATMENTS :

O =Control.
N =A/S. at 20 lb. N/ac.
NP =A/S. at 20 lb. N/ac.+Super at 20 lb. P_2O_5/ac.
N'P=A/N ,, ,, + ,, ,, ,, ,,
N"P=Urea ,, ,, + ,, ,, ,, ,,
P and K applied before the last puddling while N applied at tillering.

3. DESIGN :

(i) & (ii) Eleven community project centres, representing the entire paddy growing tract of the country, were selected. From each community project centre, one development block was selected. Villages were selected at random from the selected block and a list of cultivators growing paddy for each selected village was prepared. From this list, two cultivators were seleeted at random and one field each belonging to them was taken for trial. In each selected field an unreplicated trial was laid out (iii) N.A. (iv) Yes.

4. GENERAL :

(i) Normal (ii) Nil (iii) Yield data (iv) (a) 1953-55 (b) No (c) N.A. (v) N.A. (vi) Nil (vii) Nil.

5. RESULTS :

Treatments	Av. yield in lb./ac.
O	1170
N	1405
NP	1570
N'P	1350
N"P	1487
G.M.	1396
S. E./mean.	78.99
No. of Expts.	5

Crop :- Paddy (3rd crop)

Ref :- Simple trials on cultivator's fields (T.C.M.

Centre :- Chalkudy (Kerala)

Year 1953; Type: 'M'

Object:—III To study effect of A/S with different sources of P

1. BASAL CONDITIONS

(i) (a) N.A. (b) N.A. (c) N.A. (ii) Laterite loam P.H. 5.5 (iii) G.M. applied in most trials (iv) N.A. (v) N.A. (vi) Dec.-January (vii) Irrigated (viii) N.A. (ix) 90" (x) March-April.

2. TREATMENTS :

O=Control
N=A/S at 20 lb. N/ac.

NP=A/S at 20 lb. N/ac.+Super at 20 lb. P_2O_5/ac.
NP′= ,, ,, ,, ,, +Nitrophos at 20 lb. P_2O_5/ac.
NP″= ,, ,, ,, ,, +Ammo. Phos ,, ,, ,,
P and K applied before the last puddling while N applied at tillering.

3. DESIGN:
(i) & (ii) Eleven community project centres, representing the entire paddy growing tract of the country, were selected. From each community project centre one development block was selected. Villages were selected at random from the selected block and a list of cultivators growing paddy for each selected village was prepared. From this list, two cultivators were selected at random and one field each belonging to them was taken for trial. In each selected field an unreplicated trial was laid out (iii) N.A. (iv) Yes.

4. GENERAL :
(i) Normal (ii) Nil (iii) Yield data (iv) (a) 1953-56 (b) No. (c) N.A. (v) N.A. (vi) Nil (vii) Nil.

5. RESULTS

Treatments	Av. yield in lb./ac.
O	1065
N	1401
NP	1476
NP′	1400
NP″	1602
G.M.	1389
S.E./mean	93.80
No. of expts.	5

Crop :- Paddy (3rd) crop) **Ref :- Simple trials on cultivators fields (T.C.M.)**

Centre :- Chalkudy (Kerala) **Year :- 1953; Type 'M'**

Object :—IV (i) To study the effect of types and levels of P and N.

1. BASAL CONDITIONS :
(i) (a) N.A. (b) N.A. (c) N.A. (ii) Laterite loam P.H. 5.5 (iii) G.M. applied in most trials (iv) N.A. (v) N.A. (vi) Dec.-January (vii) Irrigated (viii) N.A. (ix) 90″ (x) March-April.

2. TREATMENTS :
O=Control
N=A/S at 40 lb. N/ac.
NP_1=,, ,, ,, ,, ,, +Super at 20 lb. P_2O_5/ac.
NP_2=,, ,, ,, ,, ,, + ,, ,, 40 ,, ,,
NP'_1=,, ,, ,, ,, ,, + Nitro. Phos at 20 lb. P_2O_5/ac.
NP'_2=,, ,, ,, ,, ,, + ,, ,, ,, 40 ,,
P and K applied before the last puddling while N applied at tillering.

3. DESIGN :
(i) & (ii) Eleven community project centres, representing the entire paddy growing tract of the country, were selected. From each community project centre, one development block was selected. Villages were selected at random from the selected block and a list of cultivators growing paddy for selected village was prepared. From this list, two cultivators were selected at random and one field each belonging to them was taken for trial. In each selected field an unreplicated trial was laid out (iii) N.A. (iv) Yes.

4. GENERAL :
(i) Normal (ii) Nil (iii) Yield data (iv) (a) 1953-56 (b) No (c) N.A. (v) N.A. (vi) Nil (vii) Nil.

5. RESULTS ;

Treatments	Av. yield in lb./ac.
O	1092
N	1454
NP_1	1316
NP_2	1566
NP'_1	1324
NP'_2	1550
G.M.	1384
S.E./mean	80.63
No. of expts.	5

Crop :- Paddy (3rd crop) Ref:- Simple trials on cultivator's fields T.C.M.)

Centre :- Chalkudy (Kerala) Year :- 1953 Type 'M'

Object :—IV (ii) To study the effect of types and levels of P and N.

1. BASAL CONDITIONS :
(i) N.A. (b) N.A. (c) N.A. (ii) Laterite loam PH 5.5 (iii) G.M. applied in most trials (iv) N.A. (v) N.A. (vi) Dec-January (vii) Irrigated (viii) N.A. (ix) 90" (x) March-April.

2. TREATMENTS :
O=Control
N=A/S at 40 lb. N/ac.
NP_1=,, ,, ,, ,, ,, + Super at 20 lb P_2O_5/ac.
NP_2=,, ,, ,, ,, ,, + ,, ,, 40 ,,
NP''_1=,, ,, ,, ,, ,, + Ammo. Phos at 20 lb P_2O_5/ac.
NP''_2=,, ,, ,, ,, ,, + ,, ,, ,, 40 ,,
P and K applied before the last puddling while N applied at tillering.

3. DESIGN :
(i) & (ii) Eleven community project centres, representing the entire paddy growing tract of the country, were selected. From each community project centre, one development block was selected. Villages were selected at random from the selected block and a list of cultivators growing paddy for each selected village was prepared. From this list, two cultivators were selected at random and one field each belonging to them was taken for trial. In each selected field an unreplicated trial was laid out (iii) N.A. (iv) Yes.

4. GENERAL :
(i) Normal (ii) Nil (iii) Yield data (iv) (a) 1953-56 (b) No. (c) N.A. (v) N.A (vi) Nil (vii) Nil.

5. RESULTS :

Treatments	Av. yield in lb./ac.
O	1130
N	1265
NP_1	1545
NP_2	1320
NP_1''	1720
NP_2''	1799
G.M.	1463
S.E./mean	114.4
No. of Expts.	5

Crop: Paddy (3rd crop) Ref: Simple on trials on cultivators fields (T.C.M.)

Centre : Chalkudy Kerala) Year : 1953; Type 'M'

Object :—IV (iii) To study the effect of types and levels of P and N.

1. BASAL CONDITIONS :
(i) N.A. (b) N.A. (c) N.A. (ii) Laterite loam P.H. 5.5 (iii) G.M. applied in most trials (iv) N.A. (v) N.A. (vi) December-January (vii) Irrigated (viii) N.A. (ix) 90" (x) March-April.

2. TREATMENTS :
O=Control
N=A/S at 40 lb. N/ac.
NP'_1=,, ,, ,, ,, ,, +Nitrophos at 20 lb. P_2O_5/ac.
NP'_2=,, ,, ,, ,, ,, + ,, ,, 40 ,, ,,
NP''_1=,, ,, ,, ,, ,, +Ammo. Phos 20 ,, ,,
NP''_2=,, ,, ,, ,, ,, + ,, ,, 40 ,, ,,
P and K applied before the last puddling while applied at tillering.

3. DESIGN :
(i) & (ii) Eleven community project centres, representing the entire paddy growing tract of the country, were selected. From each community project centre, one development block was selected. Villages were selected at random from the selected block and a list of cultivators growing paddy for each selected village was prepared. From this list, two cultivators were selected at random and one field each belonging to them was taken for trial. n each selected field an unreplicated trial was laid out (iii) N.A. (iv) Yes.

4. GENERAL :

(i) Normal (ii) Nil (iii) Yield data (iv) (a) 1953-55 (b) No (c) N.A. (v) N.A. (vi) Nil (vii) Nil.

5. RESULTS :

Treatments	Av. yield in lb./ac.
O	1410
N	1699
NP'_1	1790
NP'_2	1759
NP_1''	1730
NP''_2	1634
G.M.	1670
S.E./mean	117.7
No. of expts.	5

Crop :- Paddy (1st crop) **Ref :- 51 (33)**

Site :-Agri. Res. Stn. Pattambi. **Type :- MV**

Object :—To evaluate how far morphological differences like differences in the intensity of green colour are associated with qualitative factors affecting yield with two light green cultures in the variety chornali under manured and manured conditions.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) About 2000 to 4000 lb./ac. green leaf+50 to 75 lb./ac.A/S (ii) (a) Laterite loam (b) Refer soil analysis Pattambi (iii) 25.5.51 : 30.7.1951. (iv) (a) Puddling 6 times levelling 3 times (b) Seedlings transplanted from wet nursery (c)—(d) 6"×6" (e) one (v) NIL (vi) As under treatments (vii) Rainfed (viii) One weeding 3 to 4 weeks after planting (ix) 50.25" (25.5.51 to 12.10.1951 (x) 12.10.1951

2. TREATMENTS :

2 Main plot treatments : (1) No manure
(2) G.L. 2000 lb/ac.+400 lb/ac. G.N.C.

4 Sub-plot treatments : (1) Variety 8792 dark green cultures
(2) ,, 8789 ,, ,, ,,
(3) ,, 8769 Light green cultures
(4) ,, 8773 ,, ,, ,,

Leaf applied at time of puddling and G.N.C. one week after planting as top dressing

3. DESIGN :

(i) Split plot (ii) (a) 2 main plots and 4 subplots main plot. (b) N.A. (iii) 4 (iv) (a) (b) 5'×30' (sub) 20'×30' (main) (v) Nil (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil (iii) Grain, Straw weight; productive tillers weight of 10 ear heads. (iv) (a) 1951 (1st crop only) (b) No (c) Nil (v) (a) (b) Nil (vi) & (vii) Nil

5. RESULTS :

(i) 2518 lb/ac.
(ii) (a) 202 ,,
(b) 1·6 ,,
(iii) No manure *vs* manure is significant. Varieties are highly is not signnificant. Interaction [significant.
(iv) (Grain weight in lbs/ac.)

	Cultures				
	8792	8789	8769	8773	Mean
No Manure	2382	2350	2505	2323	2390
Manure	2809	2586	2804	2387	2646
Mean.	2595	2468	2654	2355	2518

S.E. of difference of two marginal means (main plot) =72 lb/ac.
——————do——————(subplot) =83 ,, ,,
S.E. of diff. of two mainplot means for the same sub plot =124 ,, ,,
S.E. of diff. of two sub plot means for the same main plot. =117 ,, ,,

Crop :- Paddy (2nd crop) Ref : K. 53 (22)

Site : Paddy Breeding Station, Kayamkulam. Type :- 'C'

Object :—To find-out the best spacing and optimum number of seedlings per hole.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) B M. 1½ cwts/ac. +Mill Ash 750 lb. /ac. (ii) (a) Sandy loam (b) Refer soil analysis (iii) 27.6.1953, 20.8.1953. (iv) (a) 4 ploughings with country plough and one with iron plough (b) Raising seedlings in a nursery ; planting in lines (c)—(d) & (e) as under treatments(v) 24 cwts (approximately) of Cow dung /ac.+½ cwt of B.M./ac.+3/4 cwt G.N.C./ac. Manures spread and ploughed in before planting. Cowdung at the time of ploughing as basal dressing. B.M. and G.N.C. just before transplanting as basal dressing. (vi) U.R. 19. Late, Improved (vii) Not irrigated. (viii) Two weedings 30 days and 60 days after planting. (ix) About 50" (27.6.53 to 11.1.54) (x) 11.1.1954.

2. TREATMENTS :

Main plot treatments :—
3 spacing : 6", 9" & 12" way.
Sub plot treatments :—
No. of seedlings hole :—1, 2 & 4

3. DESIGN :

(i) Split plot (ii) (a) 3 main plots block and 3 sub-plots main plot (b) 9'×54' (iii) 4 (iv) (a) (b) 9'×6' (sub-plot) 18'×9' (main-plot) (v) Nil (vi) Yes.

4. GENERAL :

(i) Good, No lodging. (ii) Nil (iii) Grain and Straw weight. (iv) (a) No. (b) No (c) N.A. (v) (a,b) Nil (vi) & (vii) Nil

5. RESULTS :

(i) 3752 lb./ac.
(ii) (a) 752.0 lb. /ac.
(b) 528.0 lb. ac.
(iii) None of the treatment effects is significant.
(iv) Average grain yield in lb. /ac.

Spacing	6"	9"	12"	Mean
Seedlings/hole.				
1.	4172	3101	3706	3659
2.	4021	3970	3416	3803
	4122	3857	3403	3794
Mean.	4105	3643	3508	3752

1. S.E. of diff. between two spacing means =307.0 lb./ac.
2. S.E. of diff. between two seeding mean =215.0 " ".
3. ————do————spacing means for the same level of seedlings =433.0 „ „.
4. ——do————seedling means for same level of spacing =373.0 „ „.

Crop : Paddy (2nd Crop) Ref :-K. 53(3)

Site :- Paddy Breeding Station, Monkompu. Type :- 'C'

Object :—To compare transplanting with local methods of sowing.

1. BASAL CONDITIONS

(i) (a) Nil (b) Paddy (c) Nil (ii) (a) Purely clayey in nature (b) Refer soil analysis (iii) 18.11.1953; 28.11.1953. (iv) (a) The field is ploughed twice (dry and wet ploughing) and levelled before planting (b) (c), (d) & (e) As under treatment(v) Nil (vi) MO_2 Variety early improved (vii) Irrigated (viii) 2 weedings (ix) No. (18.11.53 to 21.2.54) (x) 21.2.1954.

2. TREATMENTS :

P_1—Local method of sowing. by broad-casting sprouted seeds at 130 lb./ac.
P_2—Transplanting in lines 6"×6" ; 3 seedlings/hole

3. DESIGN

(i) L. Sq. (ii) (a) 2 (b) N.A. (iii) 6 (iv) (a) 37′×15′ (b) 34′×13′ (v) one foot border around the plot (vi) Yes.

4. GENERAL :

(i) Partial lodging on 15.1.1954. (ii) Nil (iii) Grain Weight (iv) (a) 1953 to 1955 (b) Yes. (c) N.A. (v) (a) (b) Nil (vi) & (vii) Nil

5. RESULTS :

(ii) 1205 lb. /ac.
(ii) 118.0 „ „.
(iii) Treatments differ significantly.
(iv) Av. grain yield in lb./ac.

Treatment	*Mean.*
P_1	1051
P_2	1358

S.E. of treatment mean =48 lb. /ac.

Crop :- Paddy (2nd crop) **Ref : K. 48 (26)**

Site : Agri. Res. Stn. Pattambi. **Type : C.**

Object :—To compare broadcasting with dibbling & transplanting.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) About 5,000 lb. G.L./ac.+100 lb. of A/S/ac. (ii) (a) Laterite Loam (b) Refer soil analysis (iii) 6.9.48/11.10.1948. (iv) (a) 6 to 7 ploughings (b), (c), (d) & (e) As per treatments (v) Nil (vi) PTB 4. Medium. Improved (vii) Rainfed (vii) One or two weedings if required at the intervals of one month from sowing (ix) *15.44″ (6.9.48 to 29.1.1949)* (x) *29.1.1949.*

2. TREATMENTS :

1. Dibbling sprouted seeds at 3 seeds/hole. 6″×6″ either way along plough furrows.
2. Dibbling with powdered cowdung, along phough furrows.
3. Seed broadcast.
4. *Transplanting 10″×6″ spacing ; 3 to 4 seedlings /hole.*

For treatments (2) & (3) seed rate was 80 lb./ac.

3. DESIGN :

(i) R.B.B. (ii) (a) 4 (b) N.A. (iii) 6 (iv) (a) (b) 10′×22′ (v) Nil : About 1½ to 2 feet interspace between plots. (vi) Yes.

4. GENERAL :

(i) Satisfactory (ii) Nil (iii) Grain weight. (iv) (a) *Nil* (b) Nil (c) Nil (v) (a) Nil (b) Nil (vi) Nil (vii) Nil.

5. RESULTS :

(i) 2235 lb./ac.
(ii) 148 lb. /ac.
(iii) The treatments differences are highly significant
(vi) Mean grain yield in lb./ac.

Treatment	Mean yield
1.	2194
2.	2162
3.	2095
4.	2491

S.E. of *treatment mean* = 61 lb./ac.

Crop :- Paddy (1st crop) **Ref:- K.48 (17)**

Site :- Agri. Res. Stn. Pattambi. **Type :- 'C'**

Object :—To assess the effect of intercultivating broadcast crop of paddy by working '*dantalu*' when the ground is wet.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) About 5000 lb./ac. G.L.+100 to 150 lb./ac. A/S. (ii) (a) Laterite loam. (b) Refer soil analysis Pattambi (iii) 2. 5. 1948 (iv) (a) Six dry ploughings (b) Broadcast (c) 70 lbs./ac. (d)—(e)- (v) Nil (vi) PTB 2, Medium, Improved. (vii) Rainfed (viii) One or two weedings if required at intervals of one month from sowing. (ix) 77.73" (2.5.48 to 25.9.1948) (x) 25.9.1948.

2. TREATMENTS :

1 Usual broadcast sowing & covering by country plough.

2 (1)+passing *dantalu* when the ground is wet.

3 (1)+levelling by plank and compacting by passing a light roller.

4 (3)+passing *dantalu* when the ground is wet (26th May, 48).

3. DESIGN :

(i) R.B.D. (ii) (a) 4 (b) N.A. (iii) 4 (iv) (a) (b) 35½'×58½' (v) Nil. About 1½ to 2 feet interspace between plots. (vi) Yes.

4. GENERAL :

(i) Satisfactory (ii) Nil (iii) Grain weight. (iv) (a) 1948-1st crop to 1949 (1st crop) (one crop/year) (b) N.A. (c) N.A. (v)(a) Nil (b) Nil. (vi) Nil. (vii) Nil.

5. RESULTS :

(i) 2207 lb./ac.
(ii) 170 ,, ,,
(iii) The treatments are not significantly different.
(iv) Mean grain yield in lb./ac.

Treatment	Mean
1.	2202
2.	2263
3.	2181
4.	2181

S.E. of treatment means =85 lb./ac.

Crop :- Paddy (1st crop) Ref :- K. 49 (24)
Site :- Agri. Res. Stn. Pattambi. Type :- 'C'

Object :—To find-out if intercultivation of broadcast crop by passing *dantalu* would give better yield (broadcast crop wet lands).

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) 5 tons F.Y.M./ac.+1000 lb. ash/ac.+100 lb. A/S./ac. (ii) (a) Laterite loam (b) Refer soil analysis Pattambi (iii) 10.5.49. (iv) (a) 10 to 12 puddlings (b) Seeds, sown by broadcast (c) 70 lb./ac (d),(e)—(v) 5 tons F.Y.M./ac. at the time of puddling+1000 lb. ash./ac. before sowing and 100 lb. A/S./ac. one month after planting. (vi) PTB 2, Medium 4 to 5 months Improved. (vii) Rainfed. (viii) One weeding three to four weeks after sowing (ix) 88.07" in 89 rainy days (10.5.1949 to 25.9.1949) (x) 25.9.1949.

2. TREATMENTS :

1. Usual broadcast sowing & covering by counting plough.
2. (1)+passing *dantalu* after monsoon sets in.
3. (1)+levelling and compacting by passing a roller.
4. (3)+passing *dantalu* after monsoon sets in (*Dantalu* passed on 15.6.1949.)

3. DESIGN :

(i) R.B.D. (ii) (a) (b) N.A. (iii) 4 (iv) (a,b) 72'×27' (v) Nil (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil (iii) Grain weight (iv) (a) 1948-1st crop & 1949-1st crop (Single crop/year (b) No (c) N.A. (v) (a,b) Nil. (vi) & (vii) Nil.

5. RESULTS :

(i) 1487 lb./ac.
(ii) 159.0 lb./ac.
(iii) The treatments do not differ significantly.

(iv) Grain weight in lb./ac.

Treatment	Mean
1	1456
2	1490
3	1474
4	1528

S.E. of treatment means : ±81 lb./ac.

Crop :- Paddy (Ist crop) **Ref :- K. 49 (23)**
Site :- Agri. Res. Stn. Pattambi. **Type :- 'C'**

Object :—To find-out the best method of sowing paddy (broadcast crop wet lands).

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) 5 tons F.Y.M./ac.+1000 lb. ash./ac.+100 to 150 lb. A/S./ac. (ii) (a) Laterite loam (b) Refer soil analysis Pattambi (iii) 10.5.1949. (iv) (a) 10 to 12 puddlings (b) As under treatments (c) 75 to 100 lb./ac. (d) & (e)—(v) 5 tons F.Y.M./ac. as basal at the time of puddling, 1000 lb. ash./ac. just before sowing+100 to 150 lb. A/S./ac. as top dressing one month after sowing. (vi) PTB 2, Medium 4 to 5 months, Improved. (vii) Rainfed (viii) One weeding three to four weeks after sowing. (ix) 88·07″ in 89 rainy days. (10.5.1949 to 25.9.1949) (x) 25.9.1949.

2. TREATMENTS :

1. Sowing by drill, levelling by plank, working *Karmaram* (A toothed implement used for intercultivation).
2. Broadcasting, levelling by plank and working *Dantalu*.
3. Usual broadcasting.

3. DESIGN :

(i) R.B.D. (ii) (a) 3 (b) N.A. (iii) 4 (iv) (a,b) 32′×32′ (v) Nil (vi) Yes.

4. GENERAL :

(i) Satisfactory (ii) Nil (iii) Grain weight (iv) (a) Not repeated (b) No (c) Nil. (v) (a,b) Nil (vi) & (vii) Nil

5. RESULTS :

(i) 1673 lb./ac.
(ii) 132.0 lb./ac.
(iii) *The treatments differ significantly.*
(iv) (Grain weight in lb./acre.)

Treatment	Mean.
1	1500
2	1723
3	1797

S.E. of treatment means : ±66 lb./ac.

Crop :- Paddy (1st Crop) **Ref :- K. 49 (22)**
Site :- Agri. Res. Stn. Pattambi. **Type :- 'C'**

Object :—To find-out the best method of sowing paddy (single crop lands).

1. BASAL CONDITIONS :

(i) (a) Nil)b) Paddy (c) 5 C.L./ac. F.Y.M.+1000 lb. ash./ac. (ii) (a) Laterite loam (b) Refer soil analysis Pattambi (iii) 11.5.1949. (iv) (a) 10 to 12 ploughings (b) As under treatments (c) 75 to 100 lb./ac. (d) & (e)—(v) 5 C.L. F.Y.M./ac. at time of 1st ploughing and 1000 lb./ac. ash just before sowing. (vi) Kattamodan, Improved, Medium. 125 days duration. (vii) Rainfed. (viii) One weeding three to four weeks after planting. (ix) 77.05″ in 70 rainy days. (11.5.1949 to 2.9.1949) (x) 2.9.1949.

2. TREATMENTS :

1. Sowing by drill, levelling by plank and passing *dantalu*.
2. Sowing by broadcast, levelling by plank and passing *dantalu*
3. Sowing by broadcast (usual method), seed rate 75 to 100 lb./ac.

3. DESIGN :

(i) R.B.D. (ii) (a) 3 (b) N.A. (iii) 6 (iv) (a,b) 40′×33′ (v) Nil ; (vi) Yes.

GENERAL :

(i) low yield. Not satisfactory (ii) Nil (iii) Grain weight (iv) (a), (b) No (c) N.A. (v) (a) (b) Nil. (vi) & (vii) Nil.

5. RESULTS :

(i) 693 lb./ac.
(ii) 181 lb./ac.
(iii) The treatments do not differ significantly.
(iv) Grain weight in lb./ac.

Treatment	Mean
1	594
2	759
3	725

S.E. of treatment means : =74.0 lb./ac.

Crop :- Paddy. (1st crop). Ref :-K. 48 (30).
Site :- Agri. Res. Stn. Pattambi Type :- 'CM'

Object :—To find-out the optimum seedrate for broadcast crop of paddy.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) 2000 lb./ac. G.L.+2 cwt/ac.G.N.C.+56 lb. A/S/ac. (ii) (a) Laterite loam, (b) Refer soil analysis Pattambi. (iii) 2.5.1948. (iv) (a) 8 to 10 ploughings (b) Broadcasting (c) As per treatments (d)—(e)—(v) Nil. (vi) P.T.B. 25 Improved Medium. (vii) Rainfed. (viii) Two weedings at intervals of one month from sowing (ix) N.A. (x) 21.8.1948.

2. TREATMENTS :

2 Main plot treatment :—
(1) No manure.
(2) 2000 lb. of Ash+2 cwt of G.N.C.+50 lb. of A/S per acre.

5 Sub-treatments :—
Seed rates :
(1) 40 lb/ac.
(2) 60 ,,
(3) 80 ,,
(4) 100 ,,
(5) 120 ,,

Ash and G.N.C. at the time of sowing and A/S one month after sowing.

3. DESIGN :

(i) Split plot. (ii) (a) 2 main-plots and 5 sub-plots/main plot (b) N.A. (iii) 4 (iv) (a), (b) Main-plot N.A. Net sub-plot. 33'×23' (v) Nil (vi) Defctive randomisation in main-plots.

4. GENERAL :

(i) Satisfactory. (ii) Nil (iii) Grain weight. (iv) (a) 1948—1st crop to 1949—1st crop (one crop/year) (b) No (c) N.A. (v) (a, b) Nil (vi) & (vii) Nil.

5. RESULTS :

(i) 1554 lb./ac.
(ii) (a) 255 lb./ac.
(b) 267 lb./ac.
(iii) Main plot treatments alone differ significantly.
(iv) Grain weight lb./ac.

	Seed rate					
Manures	1	2	3	4	5	Mean.
1	1320	1212	1342	1442	1374	1338
2	1539	1793	1940	1894	1686	1770
Mean.	1430	1503	1641	1668	1530	1554

S.E. of difference of two marginal means (mainplot). = 80 lb./ac.
do (sub-plot). = 134 ,,
S.E. of diff. of two main-plot means for the same level of sub-plot. = 188 ,,
S.E. of difference of two sub-plot means for the same main-plot. = 189 lb./ac.

Crop :-Paddy (1st crop) Ref :- K. 49 (25)

Site :-Agri. Res. Stn. Pattambi. Type :-'C M'

Object :—To find-out the optimum seed rate for broadcast paddy (single crop lands)

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) 5 ton/ac. F.Y.M.+1000 lb./ac. ash+100 lb./ac. A/S (ii) (a) Laterite loam (b) Refer soil analysis, Pattambi. (iii) 11.5.1949. (iv) (a) 10 to 12 puddlings (b) Seeds sown by broadcast (c) As under treatments (d) (e)—(v) Nil (vi) P.T.B. 2 Medium 4 to 5 months ; Improved. (vii) Rainfed. (viii) One weeding 3 to 4 weeks after planting. (ix) 86·09" in 89 rainy days (11.5.1949 to 28.9.1949). (x) 28.9.1949.

2. TREATMENTS :

Main plot treatments

(1) Unmanured.

(2) Manured with 2000 lb. ash/ac.+448 lb. G.N.C./ac.+50 lb. A/S/ac.
(Ash applied before sowing. G.N.C. one month after sowing. A/S 2 months after sowing as top dressing).

Sub-plot treatments.

1. Seed rate 40 lb./ac.
2. „ 60 „
3. „ 80 „
4. „ 100 „
5. „ 120 „

3. DESIGN :

(i) Split plot (ii) (a) 2 main-plots and 5 sub-plots/main plot. (b) N.A. (iii) 4 (iv) (a, b) Compact block 45'×16' (sub plot) (v) Nil (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil (iii) Grain & Straw weight. (iv) (a) 1948 1st crop & 1949-1st crop (b) No (c) N.A. (v) (a, b) Nil (vi) & (vii) Nil.

5. RESULTS :

(i) 1782 lb./ac.

(ii) (a)=254·0 lb./ac.
(b)=145·0 lb./ac.

(iii) Neither main plot treatments nor sub-plot treatments differ significantly. Interaction is not significant.

(iv) Grain weight in lb./ac.

Manure	Seedrate 1	2	3	4	5	Mean
1	1830	1785	1860	1800	1860	1827
2	1649	1785	1770	1724	1754	1736
Mean.	1739	1785	1815	1762	1807	1782

S.E. of difference of two main plot-means. = 79·0 lb./ac.
S.E. of difference of two sub-plot means. = 73.0 „
S.E. of difference of two sub-plot means for the same mainplot treatment.=103·0 lb./ac.
S.E. of difference of two main-plot means for the same sub-plot treatment.=121·0 „

Crop :- Paddy (1st crop) Ref :-K. 51 (21)

Site :-Agri. Res. Stn. Pattambi Type :-'C M'

Object :—To compare the Japanese method of cultivation and the Farm method of cultivation.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) 5000 lb./ac. G.L.+100 to 150 lb./ac. A/S (ii) (a) Laterite loam (b) Refer, soil analysis Pattambi (iii). 2.6.51 ; 5.7.1951. (iv) Japanese Method. Planting 9" in lines and 1' between lines 3 to 4 seedling/hole.Weeding and raking every 15 days. Super and A/S applied in furrows at the root zone 3" to 4" below soil. Local method. Planting in bulk 6"×6" two seedlings/hole Super applied before final ploughing and A/S broadcast. (v) Nil (vi) PTB 2 Improved. Medium (4 to 5 months) (vii) Rainfed (viii) One weeding 3 to 4 weeks after planting. (ix) 50·25" (2.6.1951 to 20.10.1951) (x) 20.10.1951.

2. TREATMENES :

All combinations of (a) & (b)

(a) Two methods of cultivation viz (1) Japanese and (2) Farm method

(b) 4 levels of manures :—(1) No manure
(2) Leaf 4000 lb./ac.+Super 45 lb./ac. $P_2 O_5$
(3) Leaf 4000 lb./ac.+Super 45 lb./ac. $P_2 O_5$+A/S 20 lb./ac. N at planting+10 lb./ac. N as A/S one month later.
(4) Leaf 4000 lb./ac.+Super 45 lb./ac. $P_2 O_5$+A/S 30 lb./ac. N at planting+15 lb./ac. N as A/S one month later.

3. DESIGN :

(i) 4×2 Factorial in R.B.D. (ii) (a) 8 (b) N.A. (iii) 4 (iv) (a) (b) 13′×20′ (v) Nil (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil (iii) Grain weight (iv) (a) 1951-1st crop to 1952 2nd crop (b) Yes. (c) N.A. (v) (a) (b) Nil (vi) Nil.

5. RESULTS :

(i) 2229 lb./ac.

(ii) 162 lb./ac.

(iii) Only the levels of manure differ highly significantly.

(iv) Grain weight in lb./ac.

b / a	1	2	3	4	Mean
1	1919	2100	2422	2436	2219
2	2023	2142	2345	2443	2238
Mean	1971	2121	2384	2439	2229

S.E. of body of table = 81 lb./ac.
S.E. of marginal mean (levels of manure) = 57 ,,
S.E. of marginal mean (Japanese *vs* local) = 40 ,,

Crop :-Paddy (1st crop) Ref :-K. 50 (17)

Site :-Agri. Res. Stn. Ambalavayal. Type :- CV

Object :—To find-out the feasibility of adopting 'Udu' Cultivation in Wynaad to utilize the water available in portions of the valleys till about March and thus increasing the yield of paddy per acre.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) 5000 lb./ac.of G.L.+150 lb. Super. 75 to 150 lb./ac, of A/S (ii) (a) Brown red clayey soil (b) Refer soil analysis, Ambalavayal (iii) 5.5.1950; 8.6.1950. (iv) (a) 4 ploughings two after harvest and two after 5&6 months. and 4 more plougings to cover G.L. and two after decomposition of leaf and final two ploughings just before planting, the field levelled and prepared for planting (b) Planting in lines (c)—(d) 6″ between plants and 8″—11″ between rows. (e) 3 to 4 (v) N.A. (vi) ADT 3 ; ADT 6 ; PTB 23 ; PTB 15 Velumpala (vii) Rainfed. (viii) One weeding 1½ to 2 months after planting. (ix) 71·08″ (5.5.1950 to 17.3.1951) (x) Short duration varieties harvested on 18.9.1950 ; Velumpala harvested on 2.12 1950. Long duration varieties harvested on 16.2.1951 and 17.3.1951.

2. TREATMENTS :

1. (Short) ADT 3+ADT 6 (Long)—Improved.
2. (Short) ADT 3+PTB 15 (Long)—Improved.
3. (Short) PTB 23+ADT 6 (Long)—Improved.
4. (Short) PTB 23+PTB 15 (Long)—Improved.
5. (Long) Velumpala————Local (Control).

(Details under Results).

3. DESIGN :

(i) R.B.D. (ii) (a) 5 (b) N.A. (iii) 4 (iv) (a), (b) 2 cents (v) Nil (vi) Yes.

4. GENERAL :

(i) ADT 3 grown in combination with ADT 6 and PTB 15 was very badly affected by helminthrosprium and piricularia. (ii) PTB 23 grown in combinations with ADT 6 and PTB 15 was also affected but the incidence was less severe in comparison to that of ADT 3 Both ADT 6 and PTB 3 tillered very well and developed earheads satisfactorily. But the development of grain on both the strains was extremely poor due to the severe incidence of Helminthrosporium. (iii) Grain weight (iv) (a) & (b) No (c) Nil (v) (a) (b) Nil (vi) Nil (vii) Raw data N.A.

5. RESULTS :
   (i) 1181 lb./ac.
   (ii) N.A.
   (iii) The experiment revealed that 'Udu' Cultivation is not suitable for the tract.
   (iv) Grain weight in lb./ac.

Treatment	Mean.
1.	190
2.	197
3.	1275
4.	1103
5.	3038

S.E. per treatment mean N.A.

Note on 'Udu' Cultivation. Seeds of a short duration and long duration varieties will be mixed in the ration 3 : 1 and sown by broadcast in a nursery. The seedlings will be transplanted. When the short duration variety matures, a harvest is done in the whole field. The long duration variety will be harverted when matured. Here the preliminary cultural operations and transplanting are done only once instead of twice when the crops are grown separately.

Crop :- Paddy. (2nd crop) **Ref :- K. 48(2)**
Site :- Paddy Breeding Station, Moncompu. **Type :- 'C V'**

Object:—To ascertain the optimum seed rate for the broadcast crop of paddy

1. BASAL CONDITIONS :
   (i) (a) Nil (b) Paddy (c) Nil (ii) (a) Clayey soil rich in acid (b) N.A. (iii) 17.12.1948. (iv) (a) 2 ploughings (wet & dry) and levelling (b) Broadcasting sprouted seeds (c) As per treatments (d)—(e)—(v) Nil (vi) As per treatments. (vii) Rainfed (viii) One weeding one month after sowing (ix) 107" (17.12.1948 to 18.3.1949) (x) 18.3.1949.

2. TREATMENTS :
   Main plot treatments :—
   V_1=variety MO_1 short, improved.
   V_2=variety MO_2 short, improved.

   Sub plot treatments :—
   S_1 : Seed rate 150 lb./ac.
   S_2 : „ 130 „
   S_3 : „ 110 „
   S_4 : „ 90 „
   S_5 : „ 70 „

3. DESIGN :
   (i) Split plot (ii) (a) 2 main plots & 5 sub plots/main plot (b) Compact (iii) 6 (iv)(a) main plot N.A. sub plot 32'×16' (iv)(b) main plot 70'×30' sub plot 30'×14' (v) border plant left on all sides of each sub-plot. (vi) Yes.

4. GENERAL :
   (i) Stand good—No lodging (ii) Nil (iii) Grain weight (iv) (a) Nil (b) N.A. (c) Nil (v) (a) (b) Nil (vi) Nil (vii) MO_1 and MO_2 are two improved strains evolved from local varieties of "Chettivitippu & Kallade Samba respectively.

5. RESULTS :
   (i) 1819 lb./ac.
   (ii) (a) 308 lb./ac.
   (b) 308 „
   (iii) Seeds rates and "Seedrate×Variety" intraction are highly significant.
   (iv) Mean yield in lbs./ac.

	Seed rate					
Variety	S_1	S_2	S_3	S_4	S_5	Mean
V_1	1775	1856	1770	1713	1830	1789
V_2	2046	1945	2082	2010	1163	1849
Mean	1910	1900	1926	1862	1497	1819

S.E. of difference of two variety marginal means =79 lb./ac.
„ „ „ „ seedrate „ „ =126 „
„ „ „ „ variety means for the same seedrate =178 „
S.E. of difference of two seedrate means for the same variety =348 „

Crop :- Paddy (1st crop) Ref :- K. 48(18)

Site :- Agri. Res. Stn., Pattambi. Type :- 'CV'

Object:—To find out whether the period of sowing has any effect on the yield of paddy.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) About 5000 lb. of G.L./ac.+100 to 150 lb./ac. A/S (ii)(a) Laterite loam (b) Refer soil analysis, Pattambi (iii) as per treatments; 30.6.1948 (iv) (a) 6 ploughings, 2 puddlings (b) Transplated in lines (c)—(d) 4" to 6" between plants & about 10" between rows (e) 3 to 4 (v) N.A. (vi) As per treatments (vii) Rainfed (vii) One or two weedings at intervals of one month from planting if required (ix) 81.21" (3.5.48 to 20.10.1948) (x) 20.10.1948.

2. TREATMENTS :

All possible combinations of (1) & (2)

1. Varieties :—

V_1 PTB 1 Medium, Improved.
V_2 PTB 2 ,, ,,
V_3=PTB 4 ,, ,,

2. Dates of sowing :—

D_1 Early 3rd May 1948
D_2 Medium 14th May 1948
D_3 Late 25th May 1948

3. DESIGN :

(i) 3×3 Factorial in R.B.D. (ii) (a) 9 (b) N.A. (iii) 4 (iv) (a) (b) 5'×30' (a). (v) Nil: About 1½' to 2' interspace between plots (vi) Yes.

4. GENERAL :

(i) Satisfactory (ii) Nil (iii) Grain weight. (iv) (a) 1948-1st crop & 1949 1st crop only during 1st crop season (b) No. (c) N.A. (v) (a) Nil (b) Nil (vi) Nil (vii) Nil.

5. RESULTS :

(i) 2077 lb.ac.
(ii) 389 lb/ac.
(iii) Main effects and interaction are not significant.
(iv) Mean yield in lb./ac.

	Variety			
Dates of Sowing	V_1	V_2	V_3	Mean
D_1	2413	2413	2050	2292
D_2	2088	2033	1888	2003
D_3	2050	2033	1725	1936
Mean	2184	2160	1888	2077

S.E. of body of table =195 lb./ac.
S.E. of marginal means =133 lb./ac.

Crop : Paddy (1st crop) Ref : K. 49 (29)

Site : Agri. Res. Stn., Pattambi. Type : 'C V'

Object:—To test the belief that early sowing secures the best yield in the 1st crop season.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) 5000 lb./ac G.L. + 100 to 150 lb./ac. A/S (ii) (a) Laterite loam (b) Refer soil analysis, Pattambi. (iii) As under treatments (iv) (a) 6 puddlings, 3 levellings (b) Transplanted in bulk (c)—(d)—(e) 3 to 4 (v) 5000 lb. G.L./ac+100 to 150 lb./ac. A/S. (vi) As under treatments (vii) Rainfed. (viii) One weeding three to four weeks after planting. (ix) 92.50" (30.4.1949 to 22.10.1949) (x) 22.10.1949.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 Varieties—

V_1=PTB 1
V_2=PTB 2
V_3=PTB 5

(2) 3 dates of sowing:—
D_1=Early 30.4.1949
D_2=Medium 14.5.1949 and
D_3=Late 28.5.1949.

3. DESIGN :
(i) 3×3 fact in R.B.D. (ii) (a) 9 (b) N.A. (iii) 4 (iv) (a,b) 4′×20′ (v) Nil (vi) Yes.

GENERAL :
(i) Satisfactory (ii) Nil (iii) Grain weight (iv) (a) 1948—1st crop & 1949 1st crop only during 1st crop season.(b) No. (c) Nil. (v)(a,b) Nil. (vi) & (vii) Nil.

5. RESULTS :
(i) 2450 lb./ac.
(ii) 441.0 lb./ac.
(iii) The main effect of Varieties is significant. Main effect of dates of sowing highly significant. Interaction is not significant.
(iv) (Grain weight in lb./ac.)

	V_1	V_2	V_3	Mean
D_1	2246	1293	1770	1770
D_2	3131	2654	2859	2881
D_3	2995	2722	2382	2700
Mean	2791	2223	2337	2450

S.E. for marginal means =125.0 lb./ac.
S.E. for body of table=220.5 „

Crop : Paddy (1st crop) **Ref : K. 53 (34)**
Site : Agri. Res. Stn. Pattambi. **Type : 'C V'**

Object:—To compare the Japanese method of cultivation with the Farm method.

1. BASAL CONDITIONS :
(i) (a) Nil (b) Paddy (c) 4000 lb./ac. G.L.+100 lb./ac. A/S (ii) (a) Laterite loam (b) Refer soil analysis Pattambi. (iii) 3.6.1953 ; 8.7.1953. (iv) (a) (b),(c),(d) & (e) As under treatments (v) As under treatments. (vi) As under treatments(vii) un irrigated. (viii) 2 weedings. (ix) 53.89″ in 53 days PTB-9 56.06″ in 55 days PTB-2 (3.6.1953 to 13.10.1953) (x) PTB-9 8.10.1953; PTB-2. 13.10.1953.

2. TREATMENTS :
All combinations of (a) & (b)
(a) Two varieties V_1= PTB 2, V_2=PTB 9
(b) Two methods of cultivation (1) Japanese (2) Farm methods.

3. DESIGN :
(i) 2×2 Factorial in RBD (ii) (a) 4 (b) N.A. (iii) 8 (iv) (a,b) 30″×25″ (v) Nil (vi) Yes.

4. GENERAL :
(i) Satisfactory. (ii) Nil (iii) weight of Grain & Straw. (iv) (a) 1953 (1st crop) to 1955 (2nd crop) the experiment failed in 1953 (2nd crop) (b) Yes. (c) N.A. (v) (a,b) Nil. (vi) Nil. (vii) Nil.

5. RESULTS :
(i) 2223 lb./ac.
(ii) 208.5 lb./ac.
(iii) Main effects are highly significant. Interaction is not significant.
(iv) Av. grain yield in lb./ac.

	1	2	Mean.
V_1	2843	1818	2330
V_2	2654	1578	2116
Mean	2748	1698	2223

S.E. of body of table = 73.7 lb./ac.
S.E. of marginal means.= 52.1 „ „

Crop :Paddy (1st crop) Ref :K. 51 (23)
Site : Agri. Res. Stn. Pattambi. Type :'CV'

Object :-To compare the advantage of growing two varieties, a long duration second crop variety mixed ith a medium duration first crop variety in the proportion 1:3 with two crops following one another.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) 5000 lb./ac. G.L.+100 to 150 lb. A/S/ac. (ii) (a) Laterite loam (b) Refer soil analysis, Pattambi (iii) 7.5.51; 2.7.51. (iv) (a) Puddling 6 times, levelling 3 times, (b) Seedlings transplanted from wet nursery. Average age of seedlings is about one month. (c)—(d) Planted in bulk. (e) 2 to 3 (v) Nil (vi) As under treatments. All Improved. (vii) Rainfed. (viii) One weeding 3 to 4 weeks after planting. (ix) 50.25" (7.5.1951 to 5.10.1951) (x) PTB 23 on 19.9.51 ; PTB 8 on 5.10.51.

TREATMENTS :

All combinations of (a) & (b)
(a) Combinations of (1), (2)
(1) Two varieties of medium duration : V_1=PTB 23
V_2=PTB 8
(2) Two ,, ,, long ,, V_1'=PTB 15
V_2'=PTB 4
(b) Two methods of growing M_1=followed by other
M_2=mixed together

3. DESIGN :

(i) 4×2 fact, in RBD. (ii) (a) 8 (b) N.A. (iii) 4 (iv) (a) (b) 18'×25' (v) Nil (vi) Yes.

4. GENERL :

(i) Satisfactory. (ii) Nil (iii) Grain and straw weight. (iv) (a) 1951-1st crop to 1951 2nd crop (b) Yes (c) N.A. (v) (a) (b) Nil. (vi) & (vii) Nil.

5. RESULTS :

(i) 1949 lb./ac.
(ii) 200 lb./ac.
(iii) The variety combinations differ highly significantly and the best combination is PTB 8 followed by PTB 15. The methods also differ highly significant. Growing crops one followed by the other is better than growing them together. The interaction is not significant.
(iv) Grain weight in lb./ac.

Methods	Combinations V_1V_1'	V_2V_1'	V_1V_2'	V_2V_2'	Mean.
M_1	2086	2643	2049	2474	2313
M_2	1388	1879	1528	1546	1585
Mean	1737	2261	1788	2010	1949

S. E. of body of table = 100 lb./ac.
S. E. of marginal means (varieties) = 71 ,,
S. E. of marginal means (method) = 50 ,,

Crop :Paddy (2nd crop) Ref :K. 51(24)
Site :Agri. Res. Stn., Pattambi. Type :'CV'

Object :-To compare the advantage of growing two varieties, a long duration second crop variety mixed with a medium duration first crop variety in the proportion 1:3 with two crops following one another.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) Nil (ii) (a) Laterite loam (b) Refer soil analysis, Pattambi. (iii) 27.9.51; 1.11.51. (iv) (a) Puddling 6 times, levelling 3 times (b) Seedlings transplanted from wet nursery. Average age of seedlings is about one month (c)—(d) Planted in bulk. (e) 2 to 3 (v) Nil (vi) As under treatments, all Improved (vii), Rainfed (viii) N.A. (ix) 23.76" (27.9.51 to 28.2.1952) (x) 24.1.52 and 28.2.52

2. TREATMENTS :

All combinations of (a) and (b)

(a) Combinations of (1), (2)

(1) Two varieties of medium duration: V_1=PTB 23
V_2=PTB 8

(2) Two ,, ,, long ,, V_1'=PTB 15
V_2'=PTB 4

(b) Twa methods of growing :— M_1=followed by other
M_2=mixed together

3. DESIGN :

(i) 4×2 fact in RBD (ii) (a) 8 (b) N.A. (iii) 4 (iv) (a), (b) 18′×25′ (v) Nil (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil (iii) Grain and straw weight (iv) (a) 1951 1st crop to 1951-2nd crop (b) Yes (c) N.A. (v) (a) (b) Nil (vi) & (vii) Nil.

5. RESULTS :

(i) 2354 lb./ac.

(ii) 356 lb./ac.

(iii) The two methods are not significantly different. Variety combinations differ significantly. Interaction is highly significant.

(iv) Grain weight lb./ac.

Methods	Variety Combinations V_1V_1'	V_2V_1'	V_1V_2'	V_2V_2'	Mean.
M_1	2837	2837	1461	2055	2298
M_2	2268	2061	2607	2704	2410
Mean	2552	2449	2034	2379	2354

S. E. of body of table =178 lb./ac.
S. E. of marginal means (varieties) =126 ,,
S. E. of marginal means (methods) =89 ,,

Crop :-Paddy (1st crop) **Ref :-K. 52 (35)**
Site :-Agri. Res. Stn., Pattambi. **Type:- ' CMV'**

Object :-To evaluate how far differences in morphological characters like intensity of green colour are associated with quantitative factors affecting yield.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) 4000 lb. G.L./ac.+75 lb. A/S/ac. (ii) (a) Laterite loam (b) Refer soil anylysis Pattambi. (iii) 18.7.1952. (iv) (a) 6 ploughings and levelling (b) Transplanting in lines. (c)—(d) 6″×6″ (e) 2. (v) Nil. (vi) As under treatment ; 1st batch sown on 4.6.52, 2nd batch sown on 18.6.1952. (vi) Rainfed. (viii) 2 weedings at intervals of one month from planting. (ix) 57.89″ in 75 rainy days. (18.7.52 to 22.10.1952) (v) 22.10.1952.

2. TREATMENTS :

Main treatments :—2 leves of manures
M_0=No manure
M_1=C.M. at 30 lb. N/ac. as basal at puddling.

Sub treatments :—Combinations of (1, and (2)

(1) Two ages of seedling : A_1=Normal 30 days
A_2=Aged 45 days

(2) Two varieties : V_1 8769 improved
V_2=8792 ,,

both of medium duration.

3. DESIGN :

(i) Split plot. (ii) (a) 2 mainplots and 4 sub-plots/mainplot. (b) N.A. (iii) 4 (iv) (a,b) 16′×24′ (main-plot) 4′×24′ (sub-plot) (v) Nil. (vi) Yes.

4. GENELAL :

(i) Satisfactory. (ii) Nil (iii) Grain & straw weight, Productive tillers, length of panicles. (iv) (a) 1951 to 1953 (Only during 1st crop). (b) No. (c) N.A. (v) (a,b) Nil (vi) & (vii) Nil.

5. RESULTS :

(i) 1820 lb./ac.

(ii) (a) 69 lb./ac.

(b) 198 lb./ac.

(iii) Manures, Age of seedlings and interaction variety × Age of seedlings are highly significant

(iv) Grain Weight lb./ac.

	M_0	M_1	Mean.
V_1	1985	1592	1788
V_2	1939	1762	1851
A_1	2077	1840	1959
A_2	1846	1514	1680
Mean	1962	1677	1820

	V_1	V_2	Mean
A_1	2056	1861	1959
A_2	1521	1840	1680
	1788	1851	1820

S. E. of diff. of marginal means (manures) = 25 lb./ac.

,, ,, ,, ,, (variety or age) = 70 ,,

S. E. of diff. of two manure means for the same variety or age of seedling. = 74 ,,

S. E. of diff. of two variety or age of seedling means for the same manure. = 99 ,,

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Crop :-Paddy (1st crop) Ref :-K. 53(37)

Site :-Agri. Res. Stn. Pattambi. Type :-'CVM'

Object :-A trial to find-out how far quantitative factors associated with depth of colour of leaf are influenced by difference in cultural and manurial practices.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) 4000 lb./ac. G.L.+75 lb./ac. A/S. (ii) (a) Laterite loam (b) Refer soil anylysis, Pattambi. (iii) 1st batch sowing 28.5.1953 ; 2nd 12-6-53 and planting 15.7.1953. (iv) (a) 7 ploughings (b) Transplanting. (c)—(d) 6"×6" (e) 2 (v) Nil (vi) 8769, 8792, Improved, medium. (vii) Not-irrigated (viii) 2 weedings. (ix) 61.74" in 67 rainy days (28.5.1953 to 21.10.1953) (x) 21.10.1953.

TREATMENTS :

2 Main Plot treatments.

1. Manure (C.M. 30 lb.N/ac.) = M_1
2. No. manure. = M_0

4 Sub Plot treatments :

1. Normal 33 days old (No. 8769 Variety)
2. Normal 33 ,, ,, (No. 8792 ,,)
3. Aged 48 ,, ,, (No. 8769 ,,)
4. Aged 48 ,, ,, (No. 8792 ,,)

Cattle manure applied at puddling.

3. DESIGN :

(i) Split plot. (ii))a) 2 main plots, 4 sub-plots/main plot. (b) N.A. (iii) 4 (iv) (a,b) 4'×24' (sub-plot) 16'×24' (main-plot) (v) Nil (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil (iii) Grain and straw yield. (iv) (a) 1952 and 1953 (1st crop only) (b) No. (c) N.A. (v) (a,b) Nil (vi) & (vii) Nil.

5. RESULTS :

(i) 2010 lb./ac.
(ii) 131.6 lb./ac.
(iii) *Only main treatment differences are highly significant.*
(iv) (Av. grain yield in lb./ac.)

Main / Sub	M_1	M_0	Mean.
1.	2212	1928	2070
2.	2063	2084	2074
3.	2190	1709	1950
4.	2134	1758	1946
	2150	1870	2010

(1) S.E. of difference of two main treatment means= 46.6 lb./ac.
(2) „ „ „ sub treatments means =114.3 „
(3) „ „ „ sub treatment means at the same level of main treatment =161.6 „
(4) „ „ „ *main treatment means at the same level of* sub-treatment =147.5 „

Crop :- Paddy. (1st. crop) **Ref :- K. 49 (44)**
Site : Agri. Res. Stn., Pattambi. **Type :- 'IC'.**

Objeci :— To asses the influence of irrigation on the growth of broadcast crop paddy.

1. BASAL CONDITINS :

(i) (a) Nil (b) Paddy (c) 4000 lb./ac. GL+200 lb./ac. G.N.C.+50 lb./ac. A/S (ii) (a) Laterite loam (b) Refer soil analysis Pattambi (iii) 13.4.1949. ; 9.5.1949. (iv) As under treatments (v) 3000 lb./ac. G.L. at the time of puddling as basal. (vii) PTB 2 ; Medium Improved. 4 to 5 months. (vii) Rainfed. (viii) One weeding three to four weeks after planting (ix) N.A. (x) 12, 20.9.1949.

2. TREATMENTS :

2 Main plot treatments :
I_0=Un irrigated.
I_1=Irrigated.
3 Sub plot treatments :
S_1=Sown on 13.4.49
S_2= „ „ 9.5.49
S_3=Transplanted on 6.7.49
Quantity of Irrigation=N.A. Seedrate=80 lb./ac. Transplanted 6″×6″ ; 2 seedling/hole.

3. DESIGN :

(i) Split plot (ii) (a) 2 main plot ; 3 sub-plots (b) N.A. (iii) 4 (iv) (a) (b) Sub. 50′ ×13′ ; Main 50′×39′. (v) Nil (vi) Randomisation defective.

4. GENERAL :

(i) Satisfactory. (ii) Nil (iii) Grain weight. (iv) (a) Not repeated (b) No (c) Nil. (v) (a,b) Nil. (vi) Nil. (vii) Nil.

5. RESULTS :

(i) 1930 lb. /ac.
(ii) (a) 354 lb./ac.
(b) 212 lb./ac.
(iii) Interaction alone is significant.
(vi) Grain weight in lb./ac.

	S_1	S_2	S_3	Mean.
I_1	2111	2170	1977	2086
I_0	1759	1486	2078	1774
Mean. :	1935	1828	2027	1930

S.E. of diff. of marginal means (main-plot)	=	145 lb./ac.
,, ,, ,, ,, (sub-plot)	=	106 ,, ,, .
S.E. of diff. of main-plot means for the same sub plot treatment.	=	190 ,, ,, .
S.E. of diff. two sub-plot means for the same main -plot treatment.	=	150 ,, ,, .

Crop : Paddy (1st crop) Ref : K. 49 (21)

Site : Agri. Res. Stn. Pattambi Type 'D'.

Object :— To study whether weed growth can be prevented by spraying agroxone.

1. BASAL CONDITIONs :

(i) (a) Nil (b) Paddy (c) 5 C.L./ac. F.Y.M. +1000 lb ash./ac. (ii) (a) Laterite loam (b) Refer soil analysis, Pattambi. (iii) 11.5.1949. (iv) (a) 10 to 12 ploughings (b) seeds sown bp broadcast (c) Seed rate varied from 75 to 100 lb./ac.(d)—(e) —(v) Nil (vi) Kattamodan, Improved, 125 days duration. (vii) Rainfed (viii) Nil (ix) 77.05" in 70 rainy days (11.5.49) to 1.9.1949)-(x) 1.9.1949.

2. TREATMENTS :

1. Agroxone 5%
2. Agroxone 10%.
3. Control.

Agroxone applied as dust by spraying on 4.6.1949.

3. DESIGN :

(i) R.B.D. (ii) (a) 3 (b) N.A. (iii) 8 (iv) (a,b) 8'×54' (v) Nil (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil (iii) Grain weight (iv) (a) A modified study was made during 1950 1st crop. (b) No (c) Nil (v) (a,b) Nil. (vi) & (vii) Nil.

5. RESULTS :

(i) 697 lb./ac.
(ii) 75 lb./ac.
(iii) The treatment differences are highly significant. Agroxine 5 % appears to be the best Agroxine 10% is in excess and hence it effects the crop also.
(lv) (Grain weight in lb./ac.)

Treatment	Mean
1	869
2	571
3	649

S.E. of treatment means : = 26 lb./ac.

Crop : Paddy. (1st crop.) Ref : K 50 (12)

Site : Agri. Res. Stn., Pattambi. Type : 'D'

Object :— To study whether weed growth can be prevented by spraying agroxone.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) 5 C.L./ac. of C.M.+1000 lb/ac. ash+50 lb/ac. A/S. (ii) (a) Laterite loam. (b) Refer soil analysis Pattambi. (iii) 30.5.1950. (iv) (a) 3 or 4 ploughings. (b) broadcast and covered by a shallow ploughing (c) About 80 lb/ac. (d)—(e)—(v) 5 C.L./ac. C.M. at the time of puddling +1000 lb./ac. ash just before sowing+50 lb./ac. A/S as top dressing one month after planting. (vi) Improved Medium (125 days) (vii) Rainfed. (viii) Nil (ix) 96.42" (36.5.50 to 20 9.1950). (x) 20.9.1950.

2. TREATMENTS :

1. Agroxone 10% liquid at 1 gallon/ac. applied once.
2. ... do ... applied twice.
3. Agroxone 5% dust at 40 lb./ac. applied once.
4. ... ... do ... ... applied twice.

5. Hand weeded one month after plantin g.
6. Control (no weeding).

Agroxone applied by spraying first application made one month after planting and 2nd one month after 1st.

3. DESIGN :

(i) R.B.D. (ii) (a) 6 (b) N.A. (iii) 4 (iv) (a) (b) 18′×12′ (v) No ; 2 feet interspace between plots. (vi) Yes.

4. GENERAL :

(i) Poor (ii) Nil (iii) Grain weight (iv) (a) No. (b) No (c) Nil (v) (a) (b) Nil (vi) & (vii) Nil.

5. RESULTS :

(i) 330.2 lb./ac.
(ii) 94.4 lb./ac.
(iii) The treatments are not significantly different.
(iv) Grain weight in lb./ac.

Treatment	Mean.
1	365.5
2	277.3
3	291.4
4	306.4
5	467.1
6	273.4

S.E. of treatment means : = 47.1 lb./ac.

Crop : Paddy (2nd crop) Ref : K. 51 (19)

Site : Agri. Res. Stn., Pattambi. Type 'D'

Object :— To find whether treating the crop with DDT and BHC in different strengths would prevent infestation of Kodu.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) 5000 lb./ac. G.L. and 100 to 150 lb./ac. A/S (ii) (a) Laterite loam (b) Refer soil analysis, Pattambi. (iii) 22.9.1951. (iv) (a) Puddling 6 times, levelling 3 times. (b) seedlings transplanted from wet nursery. Average age of seedling is about one month. (c)—(d) Planted in bulk. (e) 2 to 3 (v) Nil. (vi) PTB 12 Improved Short 120 days. (vii) Rainfed. (viii) One weeding 3 to 4 weeks after planting. (ix) 23.76″ (22.9.1951 to 18.1.1952). (x) 18.1.1952.

2. TREATMENTS :

1. DDT 5% dust.
2. BHC 5% ,,
3. BHC 10% ,,
4. Control.

Dusted on 19.10.1951 and 12.11.1951.

3. DESIGN :

(i) R.B.D. (ii) (a) 4 (b) N.A. (iii) 6 (iv) (a) (b) 7 cents (v) Nil (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Infestation of Kodu. No control measures other than treatments taken. (iii) Grain weight and %infection. (iv) (a) 1951 2nd crop to 1953 1st crop (Both crops in a year). (d) No (c) N.A. (v) (a), (b) Nil. (vi) & (vii) Nil.

5. RESULTS :

(i) 2311 lb./ac.
(ii) 168 lb./ac.
(iii) The treatments differ significantly.
(iv) (Grain yield in lb./ac.)

Treatment	Mean.
1	2357
2	2143
3	2286
4	2457

S.E. of treatment means = 68 lb./ac.

Crop :-Paddy (1st crop) Ref :-K. 52 (36)

Site :-Agri. Res. Stn. Pattambi, Type:- 'D'

Object :-To find-out whether treating crop with DDT and BHC in different strengths would prevent infestation of Kadu.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) 4000 lb./ac. G.L. + 75 lb./ac. A/S. (ii) (a) Laterite loam (b) Refer soil analysis Pattambi. (iii) 26.5 1952; 9.7.1952 (iv) (a) 6 puddlings, 3 levellings (b) Transplanting in lines (c)—(d) 6"×6" (e) 2. (v) 4000 lb. GL/ac. at the time of puddling 75 lb. A/S ac. top dressed one month after planting. (v)PTB 2, Improved, 135 days duration. (vii) Rainfed (viii) 2 weedings at intervals of one month from planting. (ix) 60.32" in 84 rainy days (26.5.52 to 23.10.52) (x) 23.10. 52.

2. TREATMENT :

1 DDT. 5%
2. BHC. 5%
3. BHC. 10%
5. Control.

Dusted on 23.7. 1952 and 8.8.1952.

3. DESIGN :

(i) R.B.D. (ii) (a) 4 (b) N.A. (iii) 6 (iv) (a,b) 6 cents (v) NIL (vi) Yes.

4. GENERAL :

(i) Satisfactory (ii) As under treatments (iii) % infection and Grain weight (iv) (a) 1951-2nd crop to 1953-1st crop (b) No (c) N.A. (v) (a,b) Nil (vi) & (vii) Nil.

5. RESULTS:

(i) 2601 lb./ac.
(ii) 184 lb./ac.
(iii) The treatments are highly significant.
(iv) (Grain weight in lb. lb. /ac)

Treatment	Mean
1	2994
2	2611
3	2403
4	2397

S.E. of treatment mean = 75 lb./ac.

Crop :-Paddy (2nd crop) Ref :-K. 52 (37)

Site :-Agri. Res. Stn., Pattambi. Type:- 'D'

Object :- To find whether treating the crop with DDT and BHC in different strengths would prevent infestation of Kodu.

1. BASAL CONDITIONS :

(i) (a) NIL (b) Paddy (c) 4000 lb GL/ac. + 75 lb. A/S./ac (ii) (a) Laterite loam (b) Refer soil analysis Pattambi. (iii) 20.8.52 : 1.10.52 (iv) (a) 6 puddlings, 3 levellings (b) Transplanting in lines (c)—(d) 6"×6" (e) 2. (v) 4000 lb. GL/ac. at the time of puddling 75 lb. A/S ac. top dressed one month after planting. (vi) PTB 12 Improved 120 days duration (vii) Rainfed. (viii) 2 weedings at intervals of one month from planting. (ix) 20.62" in 26 rainy days (20.8.52 to 19.1.1953) (x) 19-1-1953.

2. TREATMENTS :

1. DDT 5%
2. BHC 5%
3. BHC 10%
4. Control.

Dusting on 24.10.1952 and 25.11.52 when the infection was noticed.

3. DESIGN :

(i) R.B.D. (ii) (a) 4 (b) N.A. (iii) 6 (iv) (a,b) 7 cents (v) Nil (vi) Yes.

4. GENERAL :

(i) Satisfactory (ii) Infestation of Kodu. "No control measures other than those mentioned under"

treatments" taken. (iii) % infection and Grain yield, (iv) (a) 1951 2nd crop to 1953 1st crop to (b) No. (c) N.A. (v) (a,b) Nil (vi) & (vii) Nil.

5. RESULTS :

(i) 2327 lb/ac.
(ii) 211 lb/ac.
(iii) The treatments are significant.
(iv) (Grain yield in lb./ac.)

Treatment	Mean
1.	2517
2.	2250
3.	2162
4.	2379

S.E. of treatment means = 86 lb. /ac.

Crop :- Paddy (1st crop) **Ref :- K. 53 (49)**

Site :-Agri. Res. Stn., Pattambi. **Type :- 'D'**

Object :- To find-out whether dusting of the crop with DDT and B.H.C. in different strengths would prevent the infestation of "Kodu".

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) 4000 lb. G.L./ac. + 75 lb. A/S/ac. (ii) (a) Laterite loam (b) Refer soil analysis Pattambi. (iii) 10.6. 1953; 10.7.1953 (iv) (a) 6 puddlings, 3 levellings (b)-Transplanting (c)—(d) 6" × 6" (e) 2 (v) 4000 lb. G-L./ac. at the time of puddling + 75 lb. A/S/ac. top dressed one month after planting (vi) PTB 2. Improved 135 days duration. (vii) Rainfed (viii) 2 weedings at intervals of one month from planting. (ix) 72.61" in 75 rainy days (10.6.1953 to 21.10.53) (×) 21.10.1953

2. TREATMENTS :

1. DDT dust 5%
2. B.H.C. dust 5%
3. B.H.C. dust 10%
4. Control.

Dusted on 15.8.1953.

3. DESIGN :

(i) R.B.D. (ii) (a) 4 (b) N.A. (iii) 6 (iv) (a, b) 6 cents (v) Nil (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) As under treatments. (iii) Grain weight and % infection. (iv) (a) 1951-2nd crop to 1953-1st crop (b) No (c) N.A. (v) (a,b) Nil (vi) & (vii) Nil.

5. RESULTS :

(i) 2169 lb./ac.
(ii) 168.0 ,, ,,
(iii) Treatments differ significantly.
(iv) Grain weight in lb. /ac.

Treatment	Mean.
1.	2352
2.	2185
3.	2124
4.	2017

S.E. of treatment means = 69.0 lb./ac.

Crop :- Paddy (2nd crop) **Ref :- K. 53 (48)**

Site :- Agri. Res. Stn. Pattambi. **Type :- 'D'**

Object :- To find-out how far spraying with insecticides would prevent the incidence of pests and diseases (stemborer).

1. BASAL CONDITIONS

(i) (a) Nil (b) Paddy (c) 4000 lb. G.L./ac+75 lb. A/S/ac. (ii) (a) Laterite loam (b) Refer soil analysis Pattambi. (iii) 14.9.1953 : 24.10.1953 (iv) (a) 6 puddlings. 3 levellings (b) Transplanting (c)—(d) 6"×6"

(e) 2 (v) 4000 lb. G.L./ac. at the time of puddling+75 lb. A/S/ac top dressed one month after planting. (vi) PTB 21 Improved 125 days duration. (vii) Rainfed. (viii) One weeding one month after planting. Another weeding if required one month after 1st weeding. (ix) 17.06" in 14 rainy days (14.9.1953 to 28.1.1954) (x) 28.1.1954.

2. TREATMENTS :

1. Spraying of B.H.C. 0.1%
2. .....do.....0.05%
3. .....do..... D.D.T. 0.2%
4. .....do.....0.1%
5. Control (light trap)

Spraying was done at the nursery stage on 5.10.1953 and 18.10.1953 and after transplanting on 14.1.1953. 17.12.53

3. DESIGN :
(i) R.B.D. (ii) (a) 5 (b) N.A. (iii) 6 (iv) (a,b) 6 cents (v) Nil (vi) Yes.

4. GENERAL :
(i) Satisfactory. (ii) Under investigation. (iii) Grain weight and % infection. (iv) (a) 1950-2nd crop to 1953-2nd crop (2nd crop only) (b) No (c) N.A. (v) (a,b) Nil (vi) & (vii) Nil.

5. RESULTS :
(i) 1069 lb./ac.
(ii) 67.0 lb./ac.
(iii) The treatments differ highly significantly
(iv) Av. grain yield in lb./ac.

Treatment	Mean.
1.	1436
2.	1281
3.	540
4.	1036
5.	1052

S.E. of treatment means =27.0 lb./ac.

Crop :- Paddy (2nd crop) Ref :-K. 52 (40)

Site :- Agri. Re. Stn., Pattambi. Type :- 'D'

Object :—To investigate whether treatment of seedlings with insecticides would prevent pests and diseases (Sterm borer) on transplanted crop.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) 4000 lb. G.L. /ac. 75 lb. A/S/ac. (ii) (a) Laterite loam (b) Refer soil analysis Pattambi. (iii) 27.9.1952 ; 18.11.1952. (iv) (a) 6 puddlings, 3 levellings (b) Transplanting in lines (c)—(d) 6"×6". (e) 2 (v) 4000 lb. G.L. at the time of puddling 75 lb. A/S/ac top dressed one month after planting. (vi) PTB 21 Improved 120 days. (vii) Rainfed. (viii) 2 weedings at intervals of one month from planting. (ix) 16.04" in 18 rainy days. (27.9.52 to 11.2.1953) (x) 11.2.1953.

2. TREATMENTS :
1. BHC : 0. 1%
2. BHC 0.05 %
3. DDT : 0. 2%
4. DDT 0.1%
5. Control (light trap)

3 sprayings given to the nursery crop on 20.10.52 ; 3.11.52 and 15.11.1952. 2 sprayings given to the transplanted crop on 10.12.1952 and 26.12.1952.

3. DESIGN :
(i) R.B.D. (ii) (a) 5 (b) N.A. (iii) 6 (iv) (a, b) 3045 Sq. ft. (v) Nil (vi) Yes.

4. GENERAL :
(i) Satisfactory (ii) "Stemborer attack" No control measures other than those under "Treatments" taken (iii) % infection, Grain weight (iv) (a) 1950-2nd crop to 1953-2nd crop (b) No (c) N.A. (v) (a,b) Nil (vi) & (vii) Nil

5. RESULTS :
(i) 1222 lb./ac.
(ii) 163 " ".
(iii) The treatments differ highly significantly
(iv) Yield of grain in lb. /ac.

Treatment	Mean.
1.	1430
2.	1260
3.	1302
4.	1154
5.	962

S.E. of treatment means =66 lb. /ac.

Crop :- Paddy (2nd crop) **Ref :- K. 51 (18)**

Site :- Agri. Res. Stn., Pattambi **Type 'D'**

Object :—To investigate whether treatment of seedlings with insecticides would prevent incidence of pests and diseases (stemborer) on transplanted crop.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) 5000/lb. G.L./ac. and 100 to 150 lb. A/S /ac. (ii) (a) Lateritic loam (b) Refer soil analysis Pattambi. (iii) 5.9.51 ; 17.10.51. (iv) (a) Puddling 6 times, levelling 3 times (b) Seedings transplanted from wet nursery Average age of seedlings is about one month. (c)—(d) Planted in bulk (e) 2 to 3 (v) Nil (vi) PTB 21- Improved-Short 120 days. (vii) Rainfed. (viii) One weeding 3 to 4 weeks after planting (ix) 23.76" (5.9.1951 to 26.1.1952) (x) 26.1.1952.

2. TREATMENTS :

(1) BHC = 0.1%
(2) BHC = 0.05%
(3) DDT = 0.2%
(4) DDT = 0.1%
(5) Control

Date of spraying

Nursery crop.	Transplanted crop.
1. 22.9.1951.	1. 15.11.1951.
2. 6.10.1951.	2. 30.11.1951.
3. 10.10.1951.	

3. DESIGN :

(i) R.B.D. (ii) (a) 5 (b) N.A. (iii) 6 (iv) (a), (b) 6.5 cents (v) Nil (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Stemborer attack-no control measures other than treatments taken. (iii) Grain yield (iv) (a) 1950-2nd crop to 1953-2nd crop only (b) same plots for 1950-2nd crop and 1951 1st crop-another set of plots for 1951-2nd crop and 1952 second crop. (c) N.A. (v) (a), (b) Nil (vi) & (vii) Nil

5. RESULTS :

(i) 1893 lb. /ac.
(ii) 162 lb. /ac.
(iii) Treatments are significantly different.
(iv) Grain weight in lb. per ac.

Treatments	Mean
1	2135
2	1938
3	1926
4	1895
5	1572

S.E. of treatment mean. =66 lb. /ac.

Crop :-Paddy (1st crop) **Ref -K. 51(8)**

Site :- Agri. Res. Stn. Pattambi. **Type :- 'D'**

Object :—To investigate whether treatment of seedlings with insecticides would prevent incidence of pests and diseases (Stemborer) on transplanted crop.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) N.A. (ii) (a) Laterite loam (b) Refer soil analysis Pattambi. (iii) 7.5.1951 ; 4.7.1951. (iv) (a) Puddling 6 times, levelling 3 times. (b) Seedlings transplanted from wet nursery. Average age of seedlings is about one month. (c)—(d) Planted in bulk (e) 2 to 3 (v) 5000 lb.G.L./ac. + 100 to 150 lb. A/S /ac. (vi) PTB 26-Medium-125 days. Improved (vii) Rainfed (viii) One weeding 3 or 4 weeks after planting and another weeding if necessary. (ix) 50.25" (7.5.1951 to 4.10.1951) (x) 4.10.1951

2. TREATMENTS :

(1)	Gammaxene	0.05%	(5)	Fish oil soap (1 lb. in 8 gallons of water)
(2)	Gammaxene	0.025%	(6)	Crude oil emulsion
(3)	DDT. (550)	0.25%	(7)	Bordeaux mixture 20%
(4)	DDT. (550)	0.16%	(8)	Control.

All treatments applied at the time of planting by dipping the seedlings.

3. DESIGN.:

(i) R.B.D. (ii) (a) 8 (b) N.A. (iii) 4 (iv) (a), (b) 4'×30' (v) Nil (vi) Yes.

4. GENERAL :

(i) Satisfactory; seedlings treated with crude oil emulsion and grammaxene 0.05% showed poor suvval due to the deterioratory effect of the insecticides. Seedlings treated with Bordeaux mixture showed greatest resistance to stemborer attack compared to DDT and Control. (ii) Nil (iii) Grain yield (iv) (a) 1951 (1st crop) (b) No. (c) Nil (v) (a) (b) Nil (vi) & (vii) Nil

5. RESULTS :

(i) 2415 lb. /ac.
(ii) 163 lb. /ac.
(iii) The treatment differences are highly significant
(iv) Grain yield in lb. /ac.

Treatment.	Mean.
1.	2344
2.	2504
3.	223 6
4.	2330
5.	2579
6.	1998
7.	2599
8.	2727

S.E. of treatment means=82 lb./ac.

Crop :- Paddy (1st crop) **Ref :- K. 51 (29)**
Site :- Agri Res. Stn. Pattambi. **Type :- 'D'**

Object :—To find-out the effect of using the weed killer (*Viz* Dicotox) on the modan paddy as against hand weeding.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) 5 C.L. CM./ac+1000 lb. ash/ac.+50 lb. A/S /ac. (ii) (a) Lateritec loam (b) Refer soil analysis Pattambi. (iii) 3.5.1951. (iv) (a) 4 to 5 ploughings (b) seeds broadcast (c) 75 lb./ac. (d)—(e)—(v) 5 C.L. of C.M./ac. at the times of a 1st ploughing 1000 lb. ash/ac. just before sowing; 50 lb. A/S/ac. one month after sowing. (vi) PTB 29. Improved (vii) Rainfed (viii) As under treatments. (ix) 50.25" (3.5.1951 to 23.8.1951) (x) 23.8.1951.

2. TREATMENTS :

All combinations of (1) & (2) :

(1) 2 levels of Dicotox : D_0=1/50 th, D_1= 1/100 th,
D_2=1/500 th part of water D_3=Hand weeding

(2) 2 times of application : T_1=One month after sowing
T_2=Two months after sowing.

For hand weeding (D_3) the two times are :

T_1=at the time of 1st spraying.
T_2 ,, 1st & 2nd spraying

3. DESIGN :—

(i) 2×4 Fact in RBD. (ii) (a) 8 (b) N.A. (iii) 4 (iv) (a) (b) 4'×25' (v) Nil (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil (iii) Grain and straw weight. (iv) (a) Not repeated. (b) No. (c) Nil (v) (a), (b) Nil (vi) & (vii) Nil

5. RESULTS :

(i) 991 lb./ac.

(ii) 146 lb./ac.

(iii) Levels of Dicotox as compared to Hand weeding are not significantly different. Weeding twice has not appreciably changed the yield as compared to a single weeding.

(iv) (Grain weight in lb./ac.)

	D_0	D_1	D_2	D_3	Mean
T_1	1033	997	983	1104	1029
T_2	907	919	914	1074	953
Mean	970	958	948	1089	991

S.E. of body of table = 73 lb/ac.
S.E. of marginal means (for D) = 51 lb/ac.
————do——— (for T) = 36 lb/ac.

Crop : Tapioca. **Ref : K. 53(24)**
District : Trivandrum, Quilon Kottayam and Trichur. **Type : 'M'**

Object :—To demonstrate the use of complete and balanced NPK fertilizers.

1. BASAL CONDITIONS :

(i) (a) N.A. *(b) In most of the cases Tapioca.* (c) N.A. *(ii) Laterite. (iii) Applying about 3000 lb.* C.M./ac. mixed with 1000 lb. wood ash/ac. if the latter is available at the time of forming mounds and ridges. (iv) Aryan or Nedumangadan, Local. (v) (a) & (b) Preparing the land by digging the field with a spade to a depth of about a foot and half or ploughing twice or thrice to obtain proper tillth. Forming small heaps or mounds or making ridges and furrows. (c)—(d) three to four feet for planting setts with the receipt of good pre-monsoon showers. (e) 1. (vi) March, 1953 (vii) Irrigated. (viii) Intercultivation and weeding three or four times depending upon weed growth and rainfalls. Harvesting by lifting the tubers as the crop matures after nine to fifteen months of planting depending upon the variety and local needs. (ix) N.A. (x) January, 1954.

2. TREATMENTS :

(1) Control (Untreated)

(2) 105lb.N+135lb. P+150 lb.K.

In the control plot, the owners applied their own manures mostly ashes but some of them also used chemical fertilizers. In the N.P.K. plots ½ of the mixture was given before planting.; ¼ at the time of 1st intercultivation and the balance at the time of 2nd intercultivation.

3. DESIGN :

(i) No randomisation was adopted but care was taken to select a field, which could be considered as representing local tract conditions. (ii) Eleven fields. (iii) On an average of about 2400 Sq. ft. It may be mentioned that the number of plants was different according to the spacing which changed from one field to another and even from one plot to another. Usually the control plots were narrowly planted than NPK plots. (iv) N.A.

4. GENERAL :

(i) Normal (ii) Nil. (iii) Weight of Tapioca Tubers. (iv) (a) No (b) & (c) N.A. (v), (a) (b) N.A. (vi) Nil. (vii) Nil.

5. RESULTS :

(i) 24458 lb./ac.

(ii) 2671 lb./ac.

(iii) Treatment differences are highly significant.

(iv) Weight of green tapioca tubers in lb./ac.

Treatment	Mean.
Control	20051
NPK	28864

S.E. of treatment mean=805·5 lb./ac.

Crop : Tapioca. Ref : K. 48(31).

Site : Agri. Res. Stn. Pattambi. Type : 'M'

Object :—To find out the effect of applying borax on the yield of Tapioca.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy. (c) 10 C.L. of C.M./ac.+1000 lb. of Wood ash./ac.+2 cwt of G.N.C./ac. (ii) (a) Laterite loam (b) Refer soil analysis Pattambi. (iii) 2.8.1948. (iv) (a) 6 ploughings (b) formings ridges and planting cuttings of 1 foot length along the ridges (c)—(d) 2½ feet between ridges and 9" between plants (e) Single cutting. (v) Nil (vi) Valenca local variety, one year duration. (vii) Rainfed. (viii) 2 "mamnathy" weeding and earthing up whenever weedgrowth is found. (ix) 101.29" in 113 rainy days. (2.8.48 to 3.8.49) (x) 3.8.1949.

2. TREATMENTS :

(1) O lb. Borax/ac.
(2) 7½ lb. ,, .
(3) 15 lb. ,, .
(4) 22 lb. ,, .
(5) 30 lb. ,, .

Applied in plough furrows and covered up during last plough.

3. DESIGN :

(i) R.B.D. (ii) (a) 5 (b) N.A. (iii) 4 (iv) (a) (b) 6'×15' (v) Nil (vi) Yes.

4. GENERAL :

(i) Satisfactory (ii) Nil (iii) Tuber weight (iv) (a) 1947 to 1953 (b) Yes (c) N.A. (v) (a), (b) Nil. (vi) & (vii) Nil.

5. RESULTS :

(i) 11059 lb./ac.
(ii) 3775 lb./ac.
(iii) The treatments differences are significant
(iv) Tuber weight in lb./ac.

Treatment	Mean.
1	14520
2	16093
3	9196
4	9680
5	5808

S.E. of treatment means =1887 lb./ac.

Crop : Tapioca. Ref : K. 49(31).

Site : Agri. Res. Stn. Pattambi. Type : 'M'

Object :—To find-out whether application of borax will increase the tuber yield of Tapioca.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) Same expriment was in these plots. (ii) (a) Laterite loam (b) Refer soil analysis, Pattambi. (iii) 12.8.1949. (iv) (a) Ploughing 2 or 3 times. Making Ridges 3' apart (b) Planting setts of length 9" to 12" (c)—(d) 1 foot. (e) Single sett per hole. (vi) Valenca, local, late (v) Nil (vii) Rainfed. (viii) Ist weeding one month after planting. 2nd weeding 4 months after planting. (ix) 153.41" (12.8.1949 to 16.8.1950) (x) 16.8.1950.

2. TREATMENTS :

(1) 0 lb./ac borax
(2) 20 ,. ,, ,,
(3) 30 ,, ,, ,,
(4) 40 ,, ., ,,

Applied two to three weeks before planting.

3. DESIGN :

(i) R.B.D. (ii) (a) 4 (b) N.A. (iii) 6 (iv) (a), (b) 10'×12' (v) Nil (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil (iii) Tuber weight. (iv) (a) 1949 to 1952 (b) Yes (c) N.A. (v) (a) (b) Nil (vi) & (vii) Nil.

5. RESULTS :

(i) 13417 lb./ac.
(ii) 3663 lb./ac.
(iii) The treatments are not significantly different.
(iv) (Tuber weight in lb./ac.)

Treatment	Mean.
1	12948
2	13551
3	13856
4	13311

S.E. of treatment means =1496 lb./ac.

Crop : Tapioca **Ref : K. 50(37)/49(31)**

Site : Agri. Res. Stn. Pattambi. **Type : 'M'**

Object :—To investigate the optimum dose of borax for Tapioca to give maximum yield.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Tapioca (c) Same expt. was in these plots. (ii) (a) Laterite loam (b) Refer soil analysis Pattambi. (iii) 21.8.50 (iv) (a) 10 to 12 dry ploughings., forming ridges 2½ feet apart. (b) 9" cuttings with 3 nodes planted on the ridges. (c)—(d) 1 to 1½ apart (e) 1 (v) Nil. (vi) Valenca local variety, 11 months long. (vii) Rainfed. (viii) 3 weedings at intervals of one month beginning from 1st month after planting. Earthing up during 2nd and 4th month. (ix) 81.21" (21.8.50 to 1.8.51) (x) 1.8.1951.

2. TREATMENTS :

The following doses of Borax/ac.
(1) 0 lb./ac. (2) 20 lbs./ac. (3) 30 lb./ac. (4) 40 lb./ac. Applied one month before planting in the form of borax.

3. DESIGN :

(i) R.B.D. *(ii) (a)* 4 *(b)* N.A. *(iii)* 6 *(iv) (a) (b)* 12'×15' *(v)* Nil (vi) Yes.

4. GENERAL :

(i) Poor (ii) Nil (iii) Tuber weight (iv) (a) 1949 to 1952 (b) Yes (c) N.A. (v) (a), (b) Nil (vi) & (vii) Nil.

5. RESULTS :

(i) 6524 lb./ac.
(ii) 3432 lb./ac.
(iii) The treatment differences are not significant.
(iv) Tuber weight in lb./ac.

	Mean
1	9256
2	7069
3	4942
4	4830

S.E. of treatment means =1401 lb./ac.

Crop :-Tapioca **Ref :- K. 51 (17)/50 (37)/ 49 (31)**

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

Object :—To study the effect of borax on the yield of Tapioca.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy *(c)* Same expt. was in these plots *(ii) (a) Laterite loam (b)* Refer soil analysis Pattambi (iii) 2.8.1951 (iv) (a) 3 ploughings ; ridges formed 3 feet apart ; (b) 9" cuttings with 3 nodes, (c)—(d) 1' (e) 1 (v) Nil (vi) Valenca, local, 11 months, long duration. (vii) Unirrigated. (viii) One weeding (ix) 81.21" (2.8.1951 to 24.7.52) (x) 24.7.1952.

2. TREATMENTS :

The following doses of borax applied

(1) 0 lb./ac.
(2) 20 ,, ,,
(3) 30 ,, ,,
(4) 40 ,, ,,

Applied one month before planting in the form of Borax on 31.7.1951.

3. DESIGN :

(i) R.B.D. (ii) (a) 4 (b) N.A. (iii) 6 (iv) (a), (b) 15'×12' (v) Nil (vi) Yes.

4. GENERAL :

(i) Satisfactory (ii) Nil (iii) Tuber weight (iv) (a) 1949 to 1952 (b) Yes (c) N.A. (v) (a) (b) Nil (vi) & (viii) Nil.

5. RESULTS :

(i) 7018 lb./ac.
(ii) 1967 lb./ac.
(iii) The treatments differences are highly significant.
(iv) (Tuber weight in lb./ac.)

Treatments	Mean
1	10728
2	8308
3	5525
4	3509

S.E. of treatment means=803 lb./ac.

Crop :- Tapioca. Ref :- K. 52 (25)

Site :-Agri. Res. Stn. Pattambi. Type :- 'M'

Object :—To study the effect of Borax on the yield of Tapioca.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Tapioca. (c) same expt. was in these fields (ii) (a) Laterite loam (b) Refer soil analysis Pattambi (iii) 31.7.1953 (iv) (a) 3 ploughing ; forming ridges 3 feet apart. (b) planting along ridges (c)—(d) 1 foot (e) 1 (v) Nil (vi) Local variety (vii) Unirrigated. (viii) one weeding (ix) 89.8" in 95 rainy days (31.7.1952 to 23.7.1953) (x) 23.7.1953.

2. TREATMENTS :

1. Control
2. 20 lb./ac. Borax
3. 30 ,, ,, ,,
4. 40 ,, ,, ,,

Borax applied on 31.5.1952.

3. DESIGN :

(i) R.B.D. (ii) (a) 4 (b) N.A. (iii) 6 (iv) (a) 14'×16' (b) 12'×15' (v) 1 row on all round the net plot (vi) Yes.

4. GENERAL :

(i) Poor. (ii) Nil (iii) Weight of tubers. (iv) (a) 1949 to 1952 (b) Yes (c) N.A. (v) (a) (b) Nil (vi) & (vii) Nil.

5. RESULTS :

(i) 6957 lb./ac.
(ii) 2892 lb./ac.
(iii) The treatments do not differ significantly.
(iv) (Tuber weight in lb./acre.)

Treatments.	Mean
1.	7260
2.	7421
3.	7219
4.	5929

S.E. per treatment mean = 1181 lb./ac.

Crop :-Tapioca. Ref :-K. 53 (2)

Site :-Tapioca Res. Stn. Tiruvalla Type :- 'M'

Object :—To find-out responses to different doses of N; P_2O_5 and K singly and in combinations.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Tapioca (c) 2000 lb. of F.Y.M./ac. (ii) (a) Laterite (b) Refer soil analysis (iii) 27.5.1953, (iv) (a) Ploughed two rounds before planting (b) Erect Planting of fresh cuttings of uniform length (7") on small mounds in lines (c)—(d) 3′ × 3′ (e) one cutting per hole. (v) Applied 3240 lb./ac. F.Y.M. equally distributed in the different plots one month before planting. Cowdung procured from different cattle sheds dried and powdered. Weighed quantity applied uniformly in shallow pits over which small mounds for planting the cuttings raised, according to local practice. (vi) 'Ariyan—Medium—Local (vii) Un-irrigated. (viii) Interculturing three times at an interval of two months from planting. Weeding along with interculture. (ix) 80" (27.5.1953 to 11.3.1954) (x) 11.3.1954.

2. TREATMENTS :

Main plots :

All combinations of (1) × (2) where

(1) A/S at N_1=0 lb. N/ac.
N_2=50 lb. N/ac.
N_3=100 lb. N/ac.

(2) Muriate of potash at
K_1=0 lb. K/ac.
K_2=80 lb. K/ac.
K_3=160 lb. K/ac.

Sub-plots :

Super at P_1=0 lb. P_2O_5/ac.
P_2=80 lb. P_2O_5/ac.

3. DESIGN :

(i) Split plot (ii) (a) 9 main plots per block and 2 sub-plots/main plot. (b) N.A. (iii) 6 (iv) (a) main-plot 30′ × 18′ sub-plot 30′ × 9′ (b) main-plot 24′ × 12′ sub-plot. 24′ × 3′. (v) One row round each sub-plot. (vi) Yes.

4. GENERAL :

(i) Growth very good in N_3P_2 plots and poor in control and K_1 plots. (ii) Termite attack in many of the plots. Sprinkling of gammaxane and watering reduced severity of attack and it stopped with heavy rains. (iii) Tuber weight. Height of plants and number of sprouts. (iv) (a) 1953, continuing (b) Yes (c) N.A. (v) (a) Tapioca Res. Stn. Trivandrum ; Tapioca and Sweet Potato Res. Stn. Mannuthy. (b) Nil (vi) Replanting had to be done twice in some of the plots to fill up gaps caused by termite attack. (vii) Nil.

5. RESULTS :

(i) 17922 lb./ac.

(ii) (a) 5427 lb./ac.
(b) 4356 lb./ac.

(iii) Main effect of N alone is highly significant

(iv) Tuber weight in lb. per acre.

	N_1	N_2	N_3	Mean
K_1	14646	17205	20872	17574
K_2	12075	19095	22902	18024
K_3	12818	17167	24515	18167
Mean	13180	17822	22763	17922

	P_1	P_2	Mean
K_1	17864	17284	17574
K_2	19419	16629	18024
K_3	17999	18335	18167
Mean	18427	17416	17922

	N_1	N_2	N_3	Mean
P_1	13881	18747	22654	18427
P_2	12478	16898	22872	17416
Mean	13180	17822	22763	17922

S.E. of body of NK table	=1567 lb./ac.
S.E. of difference of two N or K marginal means	=1279 ,, ,,
S.E. of diff. of two P marginal means	= 838 ,, ,,
S.E. of difference of two N or K means for the same level of P	=1640 ,, ,,
S.E. of difference of two P means for the same level of N or K	=1452 ,, ,,

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Crop :-Tapioca — Ref :-K. 52 (1)

Site :-Tapioca Res. Stn. Tiruvalla — Type :-'M'

Object :—To study the effect of root inducing harmone "Hortomone—A" on yield and drought resistance.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Tapioca (c) Nil (ii) (a) Laterite (b) Refer soil analysis (iii) 25.9.1952. (iv) (a) Ploughed two rounds (b) Erect planting of fresh cuttings of uniform length (7") on small mounds in line. (c)—(d) 3'×3' (e) One (v) Applied 1000 lb. of F.Y.M./ac. equally distributed in the plots one month before planting. Cowdung procured from different cattle sheds dried and powdered. Measured quantity of it applied unformly in shallow pits over which small mounds for planting raised according to local practice. (vi) Ariyan—local—Medium. (vii) Un-irrigated. (viii) Interculturing 3 times at 2 months interval, weeding along with interculture. (ix) 80" (25.9.1952 to 16.9.1953). (x) 16.9.1953

2. TREATMENTS :

All Combinations of (1), (2)

(1) 3 Hartomone dilutions :—1, 2 and 3

(2) 3 durations of application :—8, 14 and 20 days and one Control (seeds not treated)

3. DESIGN :

(i) R.B.D. (ii) (a) 10 (b) N.A. (iii) 5 (iv) (a) 33'×12' (b) 27'×6' (v) one row all round each plot (vi) Yes.

4. GENERAL :

(i) Almost uniform growth in all the plots. (ii) Nil (iii) Tuber weight. Height of plants and number of sprouts. (iv) (a) 1952 to 1953 (b) Yes. (c) N.A. (v) (a) (b) Nil (vi) & (vii) Nil.

5. RESULTS :

(i) 13315 lb./ac.

(ii) 1197 lb./ac.

(iii) The different dilutions alone are signficant.

(iv) Mean yield in lb./ac.

Control=13767 lb./ac.

Durations	Dilutions 1	2	3	Mean
8	12611	13928	12261	12933
14	12960	13982	13014	13319
20	12584	13848	14197	13543
Mean	12718	13919	13157	13265

S.E. for any marginal mean =309 lb./ac.

S.E. for the body of table =525 ,,

S.E. for the diff. centrol and any other mean =742 lb./ac.

Crop :- Tapioca. — Ref :- K. 53 (1)/52(1)

Site : Tapica Res. Stn. Tiruvalla — Type :-'M'

Object To study the effect of the root inducing harmone "Hortomone A" on yield and drought resistance.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Tapioca. (c) 1000 lb. F.Y.M./ac. (ii) (a) Laterite (b) Refer soil analysis (iii) 7.10.1953. (iv) (a) Ploughing two rounds before planting. (b) Erect planting of fresh cuttings of uniform length (7") on

small mounds in line, after dipping basal ends of cuttings in solutions (as per treatments) (c)—(d) 3′×3′ (e) One cutting/hole (v) Applied 1500 lb. F.Y.M./ac. equally distributed in the different plots one month before planting. Cowdung procured from different cattlesheds dried and powdered. Measured quantity of it applied uniformly in shallow pits over which small mounds for planting were raised according to local practices. (vi) Ariyan!, Medium, Local, (vii) Un-irrigated. (viii) Interculturing, three times at two months interval. Weeding along with interculture. (ix) 80″ (7.10.1953 to 12.8.1954) (x) 12.8.1954.

2. TREATMENTS :

All combinations of (1) & (2).

(1) 3 Hartomone dilutions:— 1, 2 and 3

(2) 3 durations of application:— 8,14 and 20 days and one control (no treatment)

3. DESIGN :

(i) R.B.D. (ii) (a) 10 (b) N.A. (iii) 5 (iv) (a) 33′×12′ (b) 27′×6′ (v) One row discarded alround net plot (vi) Yes.

4. GENERAL :

(i) Almost uniform growth in all plots (b) Nil (iii) Tuber weight, height of plants and number of sprouts (iv) (a) 1952-1953 (b) Yes (c) N.A. (v) (a;b) Nil (vi) & (vii) Nil.

5. RESULTS :

(i) 15276 lb./ac.

(ii) 1447 lb./ac.

(iii) Main effects, interaction and Control *vs* others are not significant.

(iv) (Mean yield in lb./ac.)

control=14816 lb./ac.

	Dilutions			
Durations	1	2	3	Mean
8	16402	14762	15597	15586
14	14896	14574	15757	15076
20	14466	16375	15112	15318
Mean	15255	15237	15488	15327

S. E. of the marginal means = 374 lb./ac

S. E. of the body of table = 648 lb./ac.

S.E. of diff. of control *vs* any other mean = 916 lb./ac.

Crop : Tapioca — Ref : 48(14)

Site : Tapioca Res. Stn: Trivandrum — Type : 'M'

Object:—To determine the optimum doses of NPK manures for tapioca.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Tapioca (c) 2 tons of cow dung/ac. (ii) (a) Laterite soil (b) Refer soil analysis Trivandrum. (iii) 21.4.1948. (iv) (a) soil tilled to 18″ depth (b) Cuttings of length 8″ planted erect (c)—(d) 3′ spacing (e) Siugle cutting/hole. (v) Two tons of cow dung/ac. during tilling operations. (vi) Variety No. 32 Local medium. (vii) Partially irrigated. (viii) Intercultivated after 1½ months. Weeding done after 3 months. (ix) About 67″ (21.4.1948 to 27.2.1949) (x) 27.2.1949.

2. TREATMENTS :

All combinations of two levels of N, two levels of P and two levels of K.

Levels of N

No = 0

N_1 = 4 cwt A/S/ac. 2 months after planting by broadcast.

Levels of P

P_0 = 0

P_1 = 2 Cwt/ac. of super as liquid manure at planting

Levels of K

K_0 = 0

K_1 = 2 tons/ac. of ash in two equal doses, at planting and 2 months after planting.

3. DESIGN :

(i) 2×2×2 Factorial partially confounded. Confounding NPK in 1st replication. PK in 2nd replication. NK in 3rd replication and NP in 4th replication. (ii) (a) ; 2 blocks/replication. 4 plots 1 block (b) N.A. (iii) 4 (iv) (a)(b) 9′×12,. (v) Nil (vi) Yes.

4. GENERAL :

(i) Good (ii) Nil (iii) Tuber/weight (iv) (a) 1947 to 1950 (b) Yes (c) N.A. (v) (a) Nil (b) Nil. (vi) & (vii) Nil.

5. RESULTS :

(i) 20525 lb./ac.

(ii) 4626 lb./ac.

(iii) K alone is highly significant

(iv) Av. Tuber weight in lb/ac.

	No	N_1	Mean		No	N_1	Mean
P_0	21699	21437	21568	K_0	16698	14520	15609
P_1	19360	19602	19481	K_1	24361	26519	25440
Mean	20530	20520	20525	Mean	20530	20520	20525

	P_0	P_1	Mean
K_0	18674	12544	15609
K_1	22462	26418	25440
Mean	21568	19481	20525

S.E. of body of table =1638 lb./ac.
S.E. of marginal means =1158 lb./ac.

Crop : Tapioca **Ref : K. 49(17)/48(14)**

Site : Tapioca Res. Stn. Trivandrum. **Type : 'M'**

Object:—To determine the optimum doses of N,P,K, manures for Tapioca.

1. BASAL CONDITIONS:

(i) (a) Nil (b) Tapioca (c) As per treatments (ii) (a) Laterite soil (b) Refer soil analysis Trivandrum. (iii) 3.5.1949 (iv) (a) Tilled the soil to a depth of 18″ by digging shallow pits were taken according to design (b) Cuttings planted; length 8″. Erect planting. (c) —(d) 3″ (e) Single cutting per hole. (v) Two tons of Cowdung/ac. as basal dressing applied during tilling operation by broadcast. (vi) "Kalikalan" - Variety 97-local-Medium (vii) Partially irrigated, hand watering. (viii) Intercultivation after 1½ months and weeding done after 3½ months of planting. (ix) 66 to 67 inches (3.5.1949 to 2.3.1950) (x) 2.3.1950.

2. TREATMENTS :

All combinations of N, P and K each at two levels.

Levels of N

N_0=No A/S N_1=4 cwt/ac. as A/S

Levels of P

P_0=No Super P_1=2 cwt super/ac.

Levels of K

K_0=No ash K_1=2 tons of ash/ac.

A/S applied two months after planting. Super as liquid manure at the time of planting. Ash in two doses at planting and two months after planting.

3. DESIGN :

(i) 3 2 factorial with partial confounding. Confounding NPK in replication I, PK in replication II, NK in replication III and NP in replication IV. (ii) (a) 2 blocks/replication 4 plots/block (b) N.A. (iii) 4 (iv) (a) (b) 12′×9′ (v) Nil (vi) Yes.

4. GENERAL :

(i) Good (ii) Nil (iii) Tuber weight (iv) (a) 1947 to 1950 (b) Yes. (c) N.A. (v) (a,b) Nil (vi) & (vii) Nil.

5. RESULTS :

(i) 24982 lb./ac.
(ii) 2476 lb./ac.
(iii) K alone is highly significant.
(iv) Tuber weight in lb./ac.

	N_0	N_1	Mean
P_0	23345	26091	24716
P_1	24930	25563	25247
K_0	23292	23470	23381
K_1	24982	28185	26583
Mean.	24137	25827	24982

	P_0	P_1	Mean
K_0	23369	23393	23381
K_1	26063	27100	26583
Mean	24716	25247	24982

S.E. of body of table = 879 lb./ac.
S.E. of Marginal Means = 621 lb./ac.

— —

Crop : Tapioca. Ref. : K. 50 (34)/49(17)/48(14)

Site : Tapioca Res. Stn. Trivandrum. Type : 'M'

Object:—To determine the optimum doses of N,P,K manures for Tapioca.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Tapioca (c) As per treatments and basal dressing of previous year. (ii) (a) Laterite soil (b) Refer soil analysis Trivandrum. (iii) 24.4.1950. (iv) (a) Soil tilled to a depth of 18" by digging (b) 8" cuttings planted erect in shallow pits (c)—(d) 3' (e) single cutting/hole. (v) 2 tons of Cowdung/ac. applied during tilling by broadcast. (vi) Variety No. 97, Local Medium. (vii) Partially irrigated. (viii) Interculti-vation after 1½ months and weedings after 4 months of planting. (ix) 66 to 67" (24.4.50 to 17.5.1951) (x) 17.5.1951.

TREATMENTS :

All combinations of N,P,K each at two levels.

Levels of N
N_0=No A/S N_1=4 cwt/ac. A/S

Levels of P
P_1=No super P_1=2 cwt of super/ac.

Levels of K
K_0=No ash P_1=2 tons of ash/ac.

N as A/S by broadcasting two months after planting.
P_2O_5 as Super in the form of liquid manure at the time of planting.
K as ash in two doses at the time of planting and two months after planting.

3. DESIGN :

(i) 2^3 partial confounding. NPK in the 1st Repl. KP in the 2nd Repl. NK in the 3rd Repl. NP in the 4th Repl. (ii) (a) 2 blocks/Repl. 4 plots block (b) N.A. (iii) 4 (iv) (a) (b) 9'×12' (v) Nil (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil (iii) Tuber weight (iv) (a) 1947-1950 (b) Yes. (c) N.A. (v) (a) (b) Nil. (vi) & (vii) Nil.

5. RESULTS :

(i)27924 lb./ac.
(ii)2517 lb./ac.
(iii) N and NK are significant. K is highly significant. Others are not significant.

(iv) Tuber weight in lb./ac.

	No	N_1	Mean.
P_0	26870	28588	27729
P_1	26999	29241	28120
Mean.	26934	28915	27924
K_0	26620	25511	26066
K_1	27249	32315	29782

	P_0	P_1	Mean.
K_0	26168	25966	26066
K_1	29290	30274	29782
Mean.	27729	28120	27924

S.E. af body of table = 891 lb./ac.
S·E. of Marginal means = 629 lb./ac.

Crop :- Tapioca. Ref :-K. 52 (9)

Site : Tapioca Res. Stn. Trivandrum. Type : 'M'.

Objcct :— To find the optimum dose of N,P,K manure for Tapioca to give the best yield.

1. BASAL CONDITIONS

(i) (a) Nil (b) Tapioca (c) Basal dressing of equal proportion of Cowdung and compost at 5 tons./ac. and top dressing of ash. (4% K_2O_0) at 1 ton./ac. (ii) (a) Laterite soil. (b) Refer soil analysis Trivandrum. (iii) 17.5.1252. (iv) (a) The soil is brought to a fine tilling. Shallow pits of 3′ spacing are taken. (b) 8″ length cuttings of uniformly good condition. planted erect in lines. (c)—(d) 3′. (e) 1 cutting hole (v) Night soil compost 3 tons./ac. broadcast uniformly before the 1st tilling. (vi) No : 97 (KaliKalan) Medium (9 to 10 months) local variety. (vii) Partially irrigated. (viii) After intercultivation on 12.5. 1952. Super was worked in to the Sub-plot. One week after A/S and Muriate of Potash were also applied and worked into the soil. Weeded twice after intercultivation. (ix) 67.75 (17.5.52 to 5.3·1953). (x) 5.3.1953.

2. TREATMENTS :

All possible combinations of 3 levels N, 3 levels, of K applied in main plots and 2 levels of P applied in sub-plots.
N is applied in the form of A/S, K in the form of M.O.P. and P in the form of super.
Main plot : All combinations of (1) × (2)
(1) 3 levels of N
N_1 = A/S at 0 lb N/ac.
N_2 = A/S at 50 lb N/ac.
N_3 = A/S at 100 lb N/ac.

(2) 3 levels of K_2O
K_1 = Muriate of Potash at 0 lb K/ac
K_2 = ,, ,, ,, ,, 80 lb K/ac
K_3 = ,, ,, ,, ,, 160 lb K/ac
Sub plot : 2 levels of P_2O_5
P_1 = Super at 0 lb P_2O_5/ac
P_2 = ,, 80 lb P_2O_5/ac

3. DESIGN :

(i) Split plot. (ii) (a) 9 main plots 2 Sub plot/main plot (b) N.A. (iii) 6 (iv) (a) 30′×18′ (main plot) 30′×9′ (subplot) (b) 24′×12′ (main plot) 24′×3′ (sub-plot) (v) One row all round the net sub-plot. (vi) Yes.

4. GENERAL :

(i) Vigorous growth in treated plots. (ii) Nil. (iii) Tuber weight and weight of vegetative parts per sub-plots. (iv) 1952 to 1955 (b) Yes (c) N.A. (v) (a) Tapioca Res. Stn. Tiruvalla, Tapioca and Sweet Potato Res. Stn. Mannuthy. (b) N.A. (vi) & (vii) Nil.

5. RESULTS :

(i) 19228 lb./ac.

(ii) (a) 4404 lb.)ac.

(b) 3243 lb./ac.

(iii) N alone is significant.

(iv) Tuber weight in lb./ac.

K	N_1	N_2	N_3	Mean.
K_1	18150	19209	20772	19377
K_2	18553	19108	20469	19377
K_3	16133	19738	20923	18931
Mean.	17612	19352	20721	19228
P_1	17478	19511	21293	19427
P_2	17747	19192	20150	19029

	P_1	P_2	Mean
K_1	19948	18805	19377
K_2	18990	19763	19377
K_3	19343	18520	18931
Mean.	19427	19029	19228

S.E. of body of NK table = 1270 lb./ac.

S.E. of difference of two N or K. marginal means. = 1041 lb./ac.

S.E. of difference of two P marginal means = 623 lb./ac.

S.E. of difference of two. N or K means for the same level at P. = 1289 lb./ac.

S.E. of difference of two P means for the same level of N or K. = 1081 lb./ac.

Crop :- Tapioca — Res :- K. 53 (10)/52 (9)

Site :- Tapioca Res. Stn. Trivandrum. — Type :- 'M'.

Object :— To determine the optimum dose of N,P,K manures singly and in combinations.

1. ASAL CONDITIONS :

(i) (a) Nil (b) Tapioca (c) As under basal dressing K 52 (9) and as per treatments. (ii) (a) Laterite soil. (b) Refer soil analysis Trivandrum. (iii) 1.5.1953. (iv) (a) The soil well tilled, levelled. (b) Erect planting of cuttings (8" length) in shallow pits. (c)—(d) 3' spacing (e) single cutting/hole. (v) Night soil at the rate of 3 tons/ac. broadcast uniformly before tilling. (vi) No : 97-medium (matures at 9 to 10 months). (vii) Partially irrigated with pipe water. (viii) Intercultivated on 22.6.53 and 24.6.53 before and after applying the After applying manures. the surface soil well raked for mixing the manures with the soil. Two weedings before harvest. (ix) 67.53" (1.5.1953 to 2.2.54). (x) 2.2.1954.

2. TREATMENTS :

Main plots : All combinations of (1)&(2)

(1) 3 levels of N

N_1 = A/S at 0 lb N/ac.

N_2 = A/S at 50 lb N/ac

N_3 = A/S at 100 lb N/ac

K_3 = Muriate of Potash at 0 lb K/ac
K_1 = ,, ,, ,, at 80 lb K/ac
K_2 = ,, ,, ,, at 160 lb K /ac

Sub plot, 2 levels of P_2O_5
P_1 = Super at 0 lb P_2O_5/ac
P_2 = Super at 80 lb P_2O_5/ac

3. DESIGN :

(i) Split plot (ii) (a) 9 main plots/block; 2 sub-plots/main-plot. (b) N.A. (iii) 6 (iv) (a) 27′×18′ main-plot 27′×9′ sub-plot. (b) 21′×12′ main-plot 21′×3′ sub-plot. (v) One] row all round the sub-plot. (vi) Yes.

4. GENERAL :

(i) General growth good, vegetative growth vigorous in treated plots as compared to control. (ii) Nil. (iii) Weight of tubers and vegetative parts. (iv) (a) 1952 to 1955. (b) Yes (c) N.A. (v) (a) Tapioca and Sweet Potato Res. Stn. Mannuthy ; Tapioca Res. Stn., Tiruvalla (b) N.A. (c) N.A. (vi) Nil (vii) Mentioned in full in the "Report on the Combined Scheme of Research on Tapioca and Potato" (July 1st, '53 to June 30,1954).

5. RESULTS :

(i) 18388 lb./ac.
(ii) (a) 5224 lb./ac.
(b) 3870 lb./ac.
(iii) N & P are highly significant.
(iv) Tuber weight in lb./ac.

	N_1	N_2	N_3	Mean.
K_1	14828	19521	20212	18187
K_2	17908	17908	21738	19185
K_3	14885	19319	19175	17793
Mean.	15874	18916	20375	18388

	N_1	N_2	N_3	Mean.
P_1	14780	17256	18561	16865
P_2	16968	20576	22189	19911

	P_1	P_2	Mean.
K_1	16277	20097	18187
K_2	17217	21152	19185
K_3	17102	18484	17793
Mean	16865	19911	18388

S.E. of body of N K table	=	1506 lb./ac.
S.E. of difierence of two N or K marginal means.	=	1230 lb./ac.
S:E. of difference of two P marginal means.	=	746 lb.ac.
S.E. of difference af two N or K means far the same level of P	=	1534 lb./ac.
S.E. of difference of two P means for the same level of N or K.	=	1290 lb./ac.

Crop :- Tapioca. Ref :- K. 52 (27).
Site :- Tapioca Res. Stn. Trivandrum. Type :- 'M'.

Object ;—To determine the intake of potash by the tapioca plant at various stages of growth.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Tapioca. (c) 3 ton of compost and half a ton ash./ac. as basal dressing. (ii) (a) Laterite soil. (b) Refer soil analysis Trivandrum. (iii) 12.6.1952. (iv) (a) Tilled the ground well to a depth of 15″ ; shallow pits were taken. (b) Stem cuttings (8″ long) were planted. (c)—(d) 3′ spacing. (e) Single cutting/hole. (v) Cowdung and compost at the rate of 2 ton/ac. Also Mur. of Pot. to supply 100 lb. K_2O/ac. applied before planting. (vi) Kalikalan. (No 97) Medium. (vii) Partially irrigated. (viii) First intercultivation was done after 1½ months of planting. Weeding and earthing up were done after 3 months of growth. (ix) 67.5″. (x) 22.6.1953.

2. TREATMENTS :

Each block was treated with Mur.of Pot. to supply 100 lb./ac. K_2O prior to planting. At the end of each month potash was applied at 50 lb./ac. K_2O until harvest. It was applied 6 inches away from plant base.

3. DESIGN :

(i) R.B.D. (ii) (a) Each block cantains 64 plants out of which 11 plants out of which 11 plants were selected at random one each at the end of every month beginning from August and ending with June. (iii) 4. (iv) Single plant. (v) Marginal plants in each block were discarded from selecting. (vi) Yes.

4. GENERAL :

(i) Good (ii) Nil. (iii) One plant from each block was selected at random at intervals of one month and the tuber, stem and leaves were analysed seperately to estimate the % of potash: (iv) (a) 1952 Repeated during 1954. (b) No (c) Nil. (v) (a,b) Nil. (vi) & (ii) Nil.

5. RESULTS :

(i) 1.026 (% K_2O expresed as on dry matter).

(ii) 0.131 ,, ,, ,,

(iii) It is observed that at the age of 4 months the tubers absorb largest quantity of potash and hence may be regarded as the best period of applying potassic fertilisers.The treatments (age in months) are highly significantly different.

(iv) Percentage of potash (K_2O) in tuber. (Expressd as percent on dry matter).

Age in months	Mean.
1.	1.250
2.	1.288
3.	1.568
4.	1.033
5.	0.828
6.	0.936
7.	0.866
8.	0.740
9.	0.789
10.	0.990
11.	0.998
S.E. of month means	0.065 per cent of K_2O expressed as on dry matter.

Crop : Tapioca. Ref :- K. 53 (12).

Site :- Tapioca Res. Stn. Trivandrum. Type :- 'M'.

Object :— To find the effect of organic nitrogen on the hydrocynic acid content of tapioca.

BASAL CONDITIONS :

(i) (a) Nil. (b) Tapioca. (c) Compost at 3½ ton/ac. + ash at one ton/ac. (ii) (a) Laterite soil (b) Refer soil analysis Trivandrum. (iii) 10.8.1953. (iv) (a) Soil well tilled. (b) Erect planting of cuttings (8″ length) in shallow pits. (c)—(d) 2½′ between plants. (e) single cutting/hole. (v) Ash at the rate of 10 cwts/ac. after tilling the plot and before planting. Applied to each pit and mixed with the soil. (vi) Kalikalan (No : 97) Medium variety ; matures at 9-10 months. (vi) Partially irrigated. Hand watering twice a week up to two months when there is no rain. Source pipe water intensity : Sufficient to promote good growth till the ensuing monsoon (June to July). (viii) After intercultivation, manures were applied. Weeded once before harvesting. (ix) 67.23″. (x) No harvest.

2. TREATMENTS :

A :— Control.
B ;—A/S to provide 40 lb. N/ac.
C :— ,, ,, 60 ,, ,, .
D :— ,, ,, 80 ,, ,, .
E :— G.N.C ,, 60 ,, ,, .
F :— Cowdung to supply 60 lb. N/ac.
Applied on 29.10.1953 around plant base.

(The 7 months from Nov. to May during which H.C.N. content was estimated have been taken as sub-plots for analysis).

3. DESIGN :

(i) Split plot. L. Sq. (ii) (a) 6 (b) N.A. (iii) 6 (iv) (a), (b) 7½′×7½′ (9 plants plot) Seven plants formed the main plot and single plant formed the subplot (v) Nil. (vi) Yes.

4. GENERAL :

(i) General growth good in all plots except the control plots. (ii) Nil. (iii) One plant to be collected at random from each plot of all the blocks and H.C.N content estimated separately in the leaves and fibers. Samples collected from the third month onwards. (iv) (a) & (b) No (c) Nil. (v) (a,b) Nil. (vi) Nil. (vii) Mentioned fully to the report on the combined scheme of Research on Tapioca and sweet potato (July 1st, 53 to June 30th 1954).

5. RESULTS :

(i) 8.27
(ii) (a) = 1.44
(b) = 1.79
(iii) Main treatments and Sub-treatments differ highly significantly . Interaction is highly significant.
(iv) Hydrocynic acid content of Tapioca (mgm per 100 gms of dry matter).

Treatments : Months.	A	B	C	D	E	F	Mean
November	6.20	6.98	7.10	7.48	6.74	6.56	6.84
Decemcer	8.59	10.49	9.99	11.90	7.56	10.90	9.90
January	5.53	4.99	8.80	8.43	6.43	4.72	6.48
February	6.36	7.28	6.48	7.77	9.17	5.98	7.17
March.	11.09	10.37	8.15	7.75	7.22	11.59	9.36
April.	6.81	9.53	8.34	7.70	7.42	7.54	7.89
May.	8.28	9.99	10.38	11.49	10.19	11.02	10.22
Mean.	7.55	8.52	8.46	8.94	7.82	8.33	8.27

S.E. of the difference between two.
(1) treatment means. = 0.32
(2) month means. = 0.42
(3) month means for the same treatment. = 1.03
(4) treatments means for the same month. = 1.00

Crop :- Tapioca — Ref :- K. 53 (9)
Site :- Tapioca And Sweet Potato Res. Stn. Mannuthy. — Type :- 'C'

Object :—To determine the best spacing and method of cultivation of Tapioca.

1. BASAL CONDITIONS :

(i) (a) Nil (b) tapioca (c) same expt was in these plots (ii) (a) Gravelly and laterite soil. (b) Refer soil analysis Mannuthy (iii) 19·6.1953. (iv) (a)Two rounds of ploughing before planting (b) As under treatments (c)—(d) as per treatments (e) Single cutting/hole (6″ length) (v) 5C.L./ac. of Cowdung applied before ploughing and 50 tin of ash per acre at the time of planting. (vi) Local (No : 97) Medium. (vii) Unirrigated. (viii) First intercultivation and weeding one month after planting. 50 tins of ash applied and intercultivation effected during the 4th month. (ix) N.A.(x) 26.3.1954

2. TREATMENTS :
All combinations of (1) & (2) :
(1) Planting methods :—(a) On Ridges, (b) on Mounds
(2) Spacings :—2′, 4′, 6′ (both ways)

3. DESIGN

(i) 3×2 factorial in R.B.D. (ii) (a) 6 (b) N.A. (iii) 6 (iv) (a) 16′×30′ (2′ spacing) ; 20′×30′ (4′ spacing) 24′×30′ (6′ spacing) (b) 12′×24′ (v) (one row all round the net plot) (vi) Yes.

4. GENERAL :

(i) Good (ii) Nil (iii) Tuber Yield (iv) (a) 1952 to 1957 Expt failed in 1952. (b) Yes. (c) N.A. (v) (a) Trivandrum and Tiruvalla (b) Nil (vi), (vii) Nil.

5. RESULTS :

(i) 10404 lb./ac.

(ii) 1440 lb./ac.

(iii) Spacings are significant.

Methods and their interaction with spacings are not significant.

(iv) Yield in lb./ac.

Method	Spacing 2′	4′	6′	Mean
(1)	10620	9992	11514	10709
(2)	11715	8770	9815	10100
Mean	11168	9380	10665	10404

S.E. of body of the table =587 lb./ac.
S.E. of marginal means (spacings) =415 lb./ac.
S.E. marginal means (methods) =340 lb./ac.

Crop :- Tapioca. Ref :- K. 51 (35)

Site :- Agri. Res. Stn. Pattambi. Type :- 'C'

Object :—To determine the best portion of the Tapioca stem to be used for planting purposes.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Dry Paddy (c) 10 C.L. of C.M./ac.+1000 lb. wood ash/ac. (ii) (a) Laterite loam (b) Refer soil analysis Pattambi (iii) 24.9.1951. (iv) (a) 10 to 12 dry ploughing. Forming ridges 3 feet apart (b) planting cutting of length 9" to 1 foot along the ridges. (c)—(d) 1′ (e) one (v) 10 C.L. of C.M. manure/ac. at the time of ploughing+1000 lb. wood ash/ac. before plouging (vi) Valenca, Local variety of one year duration. (vii) Rainfed (viii) 3 weedings at intervals of one month from planting. Earthing up during 2nd and 4th month. (ix) About 70" (24.9.1951 to 23.9.1952) (x) 23.9.1952.

2. TREATMENTS :

1. Planting cutting obtained from the top portion of the stem.
2. .....do.....middle.....
3. .....do.....basal.....

3. DESIGN :

(i) R.B.D. (ii) (a) 3 (b) N.A. (iii) 4 (iv) (a) (b) 60′×60′ (v) Nil (vi) Yes.

4. GENERAL :

(i) Satisfactory (ii) Nil (iii) Tuber weight (iv) (a) (b) Not repeated (c) Nil (v) (a) (b) Nil (vi) & (vii) Nil.

5. RESULTS :

(i) 8712 lb./ac.

(ii) 282 lb./ac.

(iii) The treatments are not significantly different.

(iv) Tuber weight in lb./ac.

Treatment.	Mean.
1.	8561
2.	10315
3.	7260

S.E. of treatment means =140 lb/ac.

Crop :- Tapioca Ref :- K. 52 (7)

Site :- Tapioca Res. Stn. Tiruvalla. Type :- 'C'

Object .—To find-out the best spacing and best method of cultivation for Tapioca.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Tapioca (c) Nil (ii) (a) Laterite (b) N.A. (iii) 31.5.1952 (iv) (a) 2 ploughings before planting (b) Erect planting of fresh cuttings of uniform length (7") on Ridges and Mounds (c)—(d) As under treatments(e)

Single cutting per hole (v) Applied 2880 lb of F.Y.M./ac. : Dried and powdered Cowdung measured out and applied uniformly in shallow pits over which mounds and ridges are prepared. (vi) Ariyan—Medium local (vii) Un-irrigated (viii) Interculturing three times at 2 months interval. Weeding was done along with interculturing. (ix) 80" (31.5.1952 to 20.2.1953) (x) 20.2.1953.

2. TREATMENTS:
All combinations of (1) & (2)
(1) Two methods of planting (a) on Ridges. (b) On mounds.
(2) Three spacings viz 2', 4', 6' (both ways)

3. DESIGN :
(i) 2×3 Fact in R.B.D. (ii) (a) 6 (b) N.A. (iii) 6 (iv) (a) & (b) 24'×12' (v) Nil (vi) Yes.

4. GENERAL :
(i) Growth poor in 2' plots. (ii) Nil (iii) Tuber weight ; height of plants and number of sprouts. (iv) (a) 1952 to 1955 (b) yes (c) N.A. (v) (a) Tapioca Res. Stn. Trivandrum; Tapioca and Sweet Potato Res. Stn. Mannuthy. (b) nil. (vi) & (vii) Nil.

5. RESULTS :
(i) 16784 lb./ac.
(ii) 1664 lb./ac.
(iii) Spacing differences are highly significant.
Method and its interaction with spacing are not significant.
(iv) Yield in lb./ac.

Methods	Spacings 2'	4'	6'	Mean
(a)	19636	19252	12684	17191
(b)	19089	17226	12809	16374
Mean	19363	18239	12747	16784

S.E. of body of the table = 680 lb./ac.
S.E. of marginal means (methods) = 392 lb./ac.
S.E. of marginal means (spacings) = 480 lb./ac.

Crop :- Tapioca. Ref :- K. 53 (13)/52 (7)
Site :- Tapioca Res. Stn. Tiruvalla. Type :- 'C'

Object :—To study the effect of planting on mounds and on ridges at different spacings between plants (2', 4' and 6')

1. BASAL CONDITIONS :
(i) (a) Nil (b) Tapioca (c) 2880 lb. F.Y.M./ac. (ii) (a) Laterite soil (b) N.A. (iii) 21.4.1953. (iv) (a) Ploughed two rounds before planting of fresh cutting (b) Erect planting of uniform length (7") (c)—(d) As under treatment (e) N.A. (v) Applied 2880 lb. F.Y.M./ac. Dried and powdered cowdung in measured quantity applied uniformly in shallow pits over which mounds and ridges are made. (vi) Ariyan-Medium, local (vii) Unirrigated. (vii) Interculturing three times at two months interval. Weeding was done along with interculturing. (ix)80" (21.4. 53 to 10.3.1954) (x) 10.3.1954.

2. TREATMENTS :
All Combinations of (1) and (2)
(1) Two methods of planting (a) On Ridges (b) On mounds.
(2) Three spacings, 2', 4', 6' (both ways)

3. DESIGN :
(i) 2×3 Fact in R.B.D (ii) (a) 6 (b) N.A. (iii) 6 (iv) (a) (b) 24'×12' (v) Nil (vi) Yes.

4. GENERAL :
(i) Growth poor in 2' plots. (ii) Nil (iii) Tuber weight. Height of plants and number of sprouts. (iv) (a) 1952 to 1955 (b) Yes (c) N.A. (v) (a) Tapioca Res. Stn. Trivandrum, Tapioca and Sweet Patato Res. Stn. Mannuthy. (b) Nil. (vi) & (vii) Nil.

5. RESULTS :
(i) 25868 lb./ac.
(ii) 3053 lb./ac.

(iii) Only differences in yield due to spacings are highly significant.

(iv) Av. yield of tubers in lb./ac.

Methods	Spacing 2′	4′	6′	Mean.
(a)	26972	27696	20794	25154
(b)	28690	28092	22964	26582
Mean.	27831	27894	21880	25868

S.E. of body of the table = 1247 lb./ac.
S.E. of marginal means (methods) = 719 lb./ac.
S.E. of marginal means (spacings) = 882 lb./ac.

Crop :—Tapioca — Ref :— K.52 (8)

Site :—Tapioca Res. Stn. Trivandrum. — Type :—'C'

Object :—To ascertain the best method of planting and the optimum spacing between plants.

1. BASAL CONDITIONS :

(i) Nil (b) Tapioca (c) Cowdung at the rate of 5 tons/ac. and Ash at 1 ton/ac. (Available K_2O *in ash* was about 4%) (ii) (a) Laterite soil (b) Refer soil analysis Trivandrum (iii) 16.4. 1952 (iv) (a) The soil is brought to a fine tillth by digging. Mounds and ridges taken at particular spacings (as per treatments) (b) *planting of 8″ cuttings from good stem of uniform nature.* (c)—(d) *as per treatments* (e) 1 (v) Cowdung and compost manure (in equal proportion) were broadcast as basal dressing at the rate of 5 tons/ac. before tilling (Top dressing of ash at the rate of one ton/ac. was also given) (vi) 97 medium (9 to 10 months) (Kalikalam) local variety. (vii) Partially irrigated (viii) Intercultivation on 20.5.52 after giving a top dressing of ash. Weeding twice before harvest. (ix) About 67″ (61.4.1952 to 27.2.53) (x) 27.2.1953.

2. TREATMENTS :

All combinations of (1) and (2)

(1) *Two methods of planting : (a) On Ridges (b) On mounds.*

(2) Three spacings : 2′, 4′, 6′ (both ways)

3. DESIGN

(i) 2×3 fact. R.B.D. (ii) (a) 6 (b) N.A. (iii) 6 (iv) (a) 16′×27′ (2′ spacing) 20′×27′ (4′ spacing) 24′×21′ (6′ spacing) (b) 12′×21′ (v) One row all round the net sub-plot (vi) Yes.

4. GENERAL :

(i) Uniformly good growth. (ii) Nil (iii) Weight of tuber (iv) (a) 1952 to 1955 (During 1955 a slight *modification in spacing was made*) (b) Yes. (c) N.A. (v) (a) Tapioca Res. Stn Tiruvalla ; Tapioca and Sweet Potato Res. Stn. Mannuthy. (b) NA (vi) & (vii) Nil

5. RESULTS :

(i) 39007 lb./ac.
(ii) 5930 lb./ac.
(iii) Main effect of spacings alone is significant ; others are not significant.
(iv) *Tuber yield in lb./ac.*

Method of planting	Spacing 2′	4′	6′	Mean
(a)	46624	39820	28891	38445
(b)	42068	42788	33851	39569
Mean	44346	41304	31370	39007

S.E. of treatment means = 2422 lb./ac.
S.E. of marginal means (methods) = 1398 lb./ac.
S.E. of marginal means (spacings) = 1713 lb./ac.

Crop —Tapioca Ref :—K.53 (11)/52 (8)

Site :—Tapioca. Res. Stn., Trivandrum. Type :—'C'

Object :—To ascertain the best method of planting and the optimum spacing between plants.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Tapioca (c) Same experiment was in these plots (ii) (a) Laterite (b) Refer soil analysis, Trivandrum. (iii) 19.5.1953 (iv) (a) Soil well tilled (b) planting cuttings of 8" length on mounds and ridges at spacings given under "Treatments" *viz* 2', 4' and 6'. Erect planting (c)—(d) As under treatment (e) Single cutting per hole. (v) Night soil compost at 3 ton/ac by broadcasting uniformly before tilling. (vi) 97 (Medium) ; matures at 9 to 10 months (vii) Partially irrigated with pipe water. (viii) Intercultivated on 22.6.1953 after applying ash. General weeding of the plots twice befor harvesting. (ix) 67.53" (19.5.1953 to 17.3.1954)(x) 17.3.1954.

2. TREATMENTS :

All combinations of (1) & (2)
(1) Method of planting : (a) On ridges (b) On mounds
(2) Spacing 2', 4', 6' (both ways)

3. DESIGN :

(i) 2×3 Fact in R.B.D. (ii) (a) 6 (b) N.A. (iii) 6 (vi) (a) 27' ×16' (2' spacing), 27'×20' (4' spacing) 27'×24' (6' spacing) (b) 21'×12' (v) one row all round plot (vi) Yes.

4. GENERAL :

(i) Growth good. (ii) Nil (iii) Weight of tubers (iv) (a) 1952 to 1954 (b) Yes. (c) N.A. (v) (a) Topioca and Sweet Potato Res. Stn. Mannuthy, Tapioca Res. Stn. Tiruvalla. (b) N A (vi) & (vii) Nil

5. RESULTS :

(i) 22634 lb./ac.
(ii) 3872 lb./ac.
(iii) Neither main effects nor their interaction is significant.
(iv) Tuber yield in lb./ac.

Method	Spacing 2'	4'	6'	Mean.
(a)	23931	21222	19995	21716
(b)	24710	24898	21049	23552
Mean	24320	23060	20522	22634

S.E. of body of the table = 1581 lb/ac.
S.E. of marginal means (methods) = 913 lb./ac.
S.E. of marginal means (spacings) = 1118 lb./ac.

Crop :- Tapioca Ref :- K. 48(10)

Site :- Tapioca Res. Stn., Trivandrum Type :- 'C'

Object :—To find out the optimum length of seed canes for planting.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Tapioca (c) Same expt. was in these plots (ii) (a) Laterite (b) Refer soil analysis Trivandrum (iii) 10.4.1948. (iv) (a) Soil tilled to 15" depth by digging. (b) Cuttings of lengths as under 'Treatment' planted erect. (c)—(d) 3½' (e) Single cutting per hole. (v) 3 ton of Cowdung and ½ ton of ash/ac. applied by broadcast during tilling ½ ton of ash./ac. as top dressing applied during intercultivation after 2 months. (vi) 38 local (Medium.) (vii) Partially irrigated (viii) Intercultivated 2 months after and weeded 4 months after planting. (ix) About 67" (10.4.1948 to 25.2.1949) (x) 25.2.1949.

2. TREATMENTS :

Planting Cuttings of length
1. 4"
2. 5"
3. 6"
4. 8"
5. 10"

3. DESIGN :

(i) 5×5 L. Sq. (ii) (a) 5 (b) N.A. (iii) 5 (iv) (a) (b) 10½'×10½' (v) Nil (vi) No.

4. GENERAL :

(i) Good. (ii) Nil (iii) tuber weight. (iv) (a) 1947-1950 (b) Yes. (c) N.A. (v) (a), (b) Nil (vi) & (vii) Nil.

5. RESULTS :

(i) 13860 lb./ac.
(ii) 1940 „ „
(iii) The treatment differences are highly significant.
(iv) Tuber weight in lb./ac.

	Mean
1.	10273
2.	15330
3.	12722
4.	13986
5.	16989

S.E. of treatment means: =869 lb./ac.

Crop :- Tapioca **Ref :- K. 49(15)/48 (10)**

Site :- Tapioca Res. Stn., Trivandrum. **Type :- 'C'**

Object :—To find-out the optimum length of seed canes for planting.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Tapioca (c) Same expt. was in these plots. (ii) (a) Laterite soil (b) Refer soil analysis Trivandrum. (iii) 30.4.1949. (iv) (a) Tilled the soil to a depth of 15". Shallow pits were taken by digging (b) cuttings planted erect. (c) —(d) 3½' (e) Single cutting per hole. (v) 3 ton of Cowdung and 1 ton of ash/ac. as basal dressing during tilling applied by broadcast. Amo. phos 2 cwt/ac. applied as top dressing during intercultivation 1½ months after planting. (vi) "Kalikalan" 97 local, Medium. (vii) Partially irrigated. Hand watering twice a week till the one set of monsoon (viii) Intercultivated 1½ months after and weeded 3½ months after planting. (ix) 66 to 67" (30.4.1949 to 25.1.1950) (x) 25.1.1950.

2. TREATMENTS :

Planting cuttings of length
1. 4"
2. 5" „ „
3. 6" „ „
4. 8" „ „
5. 10" „ „

3. DESIGN :

(i) 5×5 L. Sq. (ii) (a) 5 (b) N.A. (iii) 5 (iv) (a.b) 10½'×10½' (v) Nil (vi) No.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Tuber weight. (iv) (a) 1947 to 1950 (b) Yes. (c) N.A. (v) (a),(b) Nil (vi) & (vii) Nil.

5. RESULTS :

(i) 22379 lb./ac.
(ii) 3034 lb./ac.
(iii) The treatment differences are not significant.
(iv) Tuber weight in lb./ac.

Treatment	Mean.
1.	19992
2.	20111
3.	22837
4.	25998
5.	22955

S.E. of treatment means =1359 lb./ac.

Crop :- Tapioca. **Ref :- K. 50(25)/49(15)/48(10)**

Site :- Tapioca Res. Stn., Trivandrum. **Type :- 'C'**

Object :—To find-out the optimum length of seed canes for planting.

1. BASAL CONDITIONS :

(i) Nil (b) Tapioca (c) Same expt. was in these plots. (ii) (a) Laterite soil (d) Refer soil analysis Trivandrum (iii) 20.4.1950 (iv) (a) soil tilled to a depth of 15" by digging (b) Cuttings planted erect in shallow pits (c)—(d) 3½ (e) Single cutting/hole. (v) 3 ton of Cowdung and 1 ton of ash/ac. applied broadcast during tilling. 2 cwt of Amophos/ac. applied during intercultivation 1½ months after planting as top dressing. (vi) H 105, Medium Improved (vii) Partially irrigated (viii) Intercultivation 1½ months after and weeding 3½ months after planting. (ix) 66 to 67" (20.4.1950 to 8.2.1951) (x) 8.2.1951

2. TREATMENTS :

Planting cuttings of length

1. 4"
2. 5"
3. 6"
4. 8"
5. 10"

3. DESIGN :

(i) 5×5 L. Sq. (ii) (a) 5 (b) N.A. (iii) 5 (iv) (a) (b) 10½'×10½' (v) Nil (vi) No.

4. GENERAL :

(i) Good. (ii) Nil (iii) Tuber weight. (iv) (a) 1947-1950 (b) Yes. (c) N.A. (v) (a), (b) Nil (vi) & (vii) Nil.

5. RESULTS :

(i) 22603 lb./ac.
(ii) 3275 lb./ac.
(iii) The treatments differences are significant
(iv) Tuber weight in lb./ac.

	Mean
1.	18551
2.	21612
3.	22797
4.	26867
5.	23587

S.E. of treatment means = 1466 lb./ac.

Crop :-Tapioca — Ref :- K. 48(16)

Site :- Tapioca Res., Stn., Trivandrum. — Type 'C'

Object :—To determine the optimum number of buds to be retained in a plant.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Tapioca (c) Same expt. was in these plots (ii) (a) Laterite soil (b) Refer soil analysis Trivandrum. (iii) 3.4.1948. (iv) (a) Soil tilled to a depth of 15" by digging. (b) Shallow pits were taken and cuttings of, 8" length planted erect. (c)—(d) 3' (e) Single cutting/hole. (v) 2½ ton of Cowdung and ½ ton of ash/ac. as basal dressing and ½ ton of ash/ac. applied during intercultivation as top dressing. (vi) Variety No : 26 Local, Medium. (vii) Partially irrigated. (viii) Intercultivation two months after planting and weeding 3½ months after planting. Unwanted buds were removed at early stages of development. (ix) About 67" (3.4.1948 to 5.2.1949) (x) 5.2.1949.

2. TREATMENTS :

1. Allowed only one bud to develope.
2. Allowed only two buds to develope.
3. Allowed only three buds to develope.
4. Control—Non removal of budse.

3. DESIGN :

(i) 4×4 L. Sq. (ii) (a) 4 (b) N.A. (iii) 4 (iv) (a), (b) 12'×12' (v) Nil (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil (iii) Tuber weight. (iv) (a) 1947-1950 (b) Yes. (c) N.A. (v) (a) Nil (b) Nil. (vi) & (vii) Nil.

5. RESULTS :

(i) 32094 lb./ac.
(ii) 2193 lb./ac.
(ii) The treatment differences are highly significant
(vi) Tuber weight in lb./ac.

Treatment	Mean
1.	26469
2.	31914
3.	35961
4.	34031

S.E.of treatment means = 1095 lb./ac.

Crop :- Tapioca. Ref :- K. 49(28)/48 (16)

Site :- Tapioca Res. Stn. Trivandrum. Type :- 'C'

Object :—To determine the optimum number of buds to be retained in a plant.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Tapioca (c) Same expt. was in these plots (ii) (a) Laterite (b) Refer soil analysis Trivandrum (iii) 29.4.1949. (iv) (a) Soil tilled to a depth of 15" by digging. Shallow pits were taken as per design (b) 8" cuttings planted erect. (c)—(d) 3' (e) single cutting/hole. (v) 3 ton of Cowdung and ½ ton of ash/ac. applied as basal dressing during tilling. Amo-phos 2 cwt/ac. applied during inter cultivation on month after plants as top dressing. (vi) H 105 Medium Improved (vii) Partially irrigated, hand watering (viii) Intercultivation one month after planting and weeding 3 months after planting were done. Unwanted buds were removed at early stages of development. (ix) 66 to 67" (29.4.1949 to 2.2.1950) (x) 2.2.1950.

2. TREATMENTS :

1. Allowed one bud to develope.
2. Allowed two buds to develope.
3. Allowed three buds to develope.
4. Control—Non-removal of buds

3. DESIGN :

(i) 4×4 Latin Square (ii) (a) 4 (b) N.A. (iii) 4 (iv) (a), (b) 12'×12' (v) Nil (vi) No.

4. GENERAL :

(i) Good. (ii) Nil (iii) Tuber weight (iv) 1947 to 1950 (b) Yes (c) N.A. (v) (a,b) Nil (vi) & (vii) Nil.

5. RESULTS :

(i) 30428 lb./ac.
(ii) 1882 lb./ac.
(iii) The treatment differences are highly significant.
(iv) Tuber weight in lb./ac.

Treatment	Mean.
1.	26393
2.	29872
3.	31838
4.	33614

S.E. of treatment means = 941 lb./ac.

Crop :-Tapioca. Ref : K. 50 (33)/49 (28)/48 (16)

Site : Tapioca Res. Stn. Trivandrum. Type 'C'

Object :—To determine the optimum number of bunds to be retained in a plant.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Tapioca (c) As per basal dressing of K 49 (28) (ii) (a) Laterite. soil. (b) Refer soil analysis Trivandrum. (iii) 21.4.1950. (iv) (a) Soil tilled to a depth of 18" by digging and shallow pits were taken (b) 8" cuttings were planted erect (c)—(d) 3' (e) single cutting per hole. (v) 3 ton of cowdung and 1/2 ton of of ash/ac. applied during tilling 2 cwt of Amophos/ac. applied during intercultivation 1 month. after planting (vi) H 105. Medium. Improved (vii) Partially irrigated (viii) Intercultivation 1 month after planting and weeding 3 months after planting (ix) 65 to 67" (21.4.50 to 15.2.51) (x) 15.2.51.

2. TREATMENTS :

1. Allowed one bud to develope.
2. ,, two buds to develope.
3. ,, three buds to develope.
4. (Control) Non removal of buds

3. DESIGN :

(i) 4×4 L. Sq. (ii) (a) 4 (b) N.A. (iii) 4 (iv) (a), (b) 12′×12′ (v) Nil (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil (iii) Tuber weight (iv) (a) 1947-1950 (b) Yes. (c) N.A. (v) (a) Nil. (b) Nil. (vi) & (vii) Nil.

5. RESULTS :

(i) 29249 lb./ac.
(ii) 2329 lb./ac.
(iii) The treatment differences are dightly significant
(iv) Tuber weight in lb./ae.

Treatment.	Mean
1.	22914
2.	28964
3.	32972
4.	32141

S.E. of treatment means = 1165 lb./ac.

Crop :- Tapioca — Ref :- K. 48 (11)
Site :- Tapioca Res. Stn. Trivandrum. — Type :- 'C'

Object :—To find out the best portion of Tapioca stem for planting.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Tapioca (c) 2½ ton of compost and 1 ton of ash./ac. (ii) (a) Laterite Soil (b) Refer soil analysis Trivandrum (iii) 9.4.1948. (iv) (a) Soil tilled to a depth of 15″ by digging (b) Cuttings of 8″ length planted erect in shallow pits. (c)-(d) 3′ (e) Single cutting/hole. (v) 3 ton of Cowdung and ½ ton of ash./ac. as basal dressing applied during tilling and ½ ton ash/ac. applied as top dressing during intercultivation after 2 months of planting. (vi) H 105; Medium, Improved, (vii) Partially irrigated (viii) Intercultivated two months after planting. Earthing up and weeding 4 months after planting. (ix) About 67″ (9.4.48 to 3.2.1949) (x) 3.2.1949.

2. TREATMENTS :

1. Planting top portion of the stem.
2. Planting middle portion of the stem.
3. Planting basal portion of the stem.

3. DEISGN :

(i) 3×3 L. Sq. (ii) (a) 3 (b) N.A. (iii) 3 (iv) (a), (b) 9′×9′ (v) Nil (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil (iii) Tuber weight (iv) (a) 1948-1950. (b) Yes. (c) N.A. (v) (a) Nil (b) Nil. (vi) & (vii) Nil.

5. RESULTS :

(i) 30773 lb./ac.
(ii) 1086 ,, ,,
(iii) The treatment differences are not significant.
(iv) Tuber weight in lb./ac.

Treatment.	Mean.
1.	29938
2.	30293
3.	32089

S.E. of treatment means = 629 lb./ac.

Crop :- Tapioca. Res :- K. 49 (18)/48 (11)

Site :- Tapioca Res. Stn. Trivandrum. Type :- 'C'

Object :—To find-out the best portion of the tapioca stem for planting purposes.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Tapioca (c) Same expt. was in these plots (ii) Laterite soil (b) Refer soil analysis Trivandrum (iii) 3.5.1949. (iv) (a) Soil tilled to a depth of 15" by digging (b) Cuttings of 8" length planted erect in pits (c)—(d) 3½' (e) Single cutting/hole. (v) 3 cwt of Cowdung and ½ ton of ash/ac. basal dressing applied during tilling. 2 cwt of Amophos/ac. applied one month after planting during intercultivation as top dressing. (vi) "Maryetan" Variety No : 77 local medium. (vii) Partially irrigated. Hand watering (viii) Intercultivation was done one month after planting and weeding and earthing up 3½ months after planting (ix) 66 to 67 inches (3.5.1949 to 3.3.1950) (x) 3.3.1950.

2. TREATMENTS :

1. Planting top portion of stem.
2. Planting middle portion of stem.
3. Planting basal portion of stem.

3. DESIGN :

(i) 3×3 L. Sq. (ii) (a) 3 (b) N.A. (iii) 3 (iv) (a,b) 10½'×10½' (v) Nil (vi) No.

4. GENERAL :

(i) Good. (ii) Nil (iii) Tuber weight (iv) (a) 1948 to 1950 (b) Yes (c) N.A. (v) (a,b) Nil (vi) & (vii) Nil

5. RESULTS :

(i) 23398 lb./ac.
(ii) 1079 lb./ac.
(iii) The treatment differences are not significant.
(iv) (Tuber weight in lb./ac.)

Treatment.	Mean
1.	22521
2.	24101
3.	23576

S.E. of treatment means =620 lb./ac.

Crop :- Tapioca. Ref :- K. 50 (27)/49 (18)/48 (11)

Site :- Tapioca Res. Stn. Trivandrum. Type :- 'B'

Object :—To determine the best portion of stem for planting.

1. TREATMENTS :

(i) (a) Nil (b) Tapioca (c) Same expt was in these plots (ii) (a) Laterite soil (b) Refer soil analysis Trivan dum (iii) 23.5.50. (iv) (a) Soil tilled to a depth of 15" by digging (b) cutting of 8" planted in pits. (c)—(d) 3½' (e) Single cutting/hole. (v) 3 ton of cowdung and ½ ton of ash/ac. during tilling and 2 cwt of Amophos/ac. during intercultivation one month after planting as top dressing. (vi) Variety No. 77 local (vii) Partially, Irrigated. (viii) Intercultivation one month after planting and earthing up & weeding 3½ months after planting. (ix) 66 to 67" (23.5.50. to 26.3.51.) (x) 26.3.1951.

1. BASAL CONDITIONS :

1. Planting top portion of the stem.
2. Planting middle portion of the stem.
3. Planting basal portion of the stem.

3. DESIGN :

(i) L. Sq. (ii) (a) 3 (b) N.A. (iii) 3 (iv) (a) (b) 10½'×10½' (v) Nil (vi) No.

4. GENERAL :

(i) Good. (ii) Nil (iii) Tuber weight (iv) 1948-1950 (b) Yes (c) N.A. (v) (a) Nil (b) Nil (vi) & (vii) Nil.

5. RESULTS :

(i) 23969 lb./ac.
(ii) 822 lb./ac.
(iii) The treatment differences are highly significant.

(iv) Tuber weight in lb./ac.

Treatment	Mean
1.	21995
2.	23311
3.	26602

S.E. of treatment means =474 lb./ac.

Crop :- Tapioca Ref :- K 48(12)

Site :- Tapioca Res. Stn. Trivandrum. Type 'C'

Object :—To investigate the effect of topping tapioca plants at different periods of growth.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Tapioca (c) Same expt. was in these field. (ii) Laterite soil (b) Refer soil analysis Trivandrum. (iii) 10.4.1948. (iv) (a) Tilled the soil to a depth of about 15" by digging. (b) Cuttings of length 8" planted erect in shallow pits. (c)—(d) 3' (e) Single cutting/hole (v) 3 tons of Cowdung and ½ ton of ash/ac. as basal dressing applied during tilling and ½ ton of ash/ac. applied as top dressing during intercultivation 2 months after planting. (vi) Variety No : 26. Local Medium. (vii) Partially irrigated. (viii) Intercultivation 2 months after planting, weeding and earthing up done 4 months after planting. (ix) About 67" (10.4.48 to 3.3.1949) (x) 3.3.1949.

2. TREATMENTS :

1. Topping at 2nd month.
2. ,, at 3rd ,,
3. ,, at 4th ,,
4. ,, at 5th ,,
5. ,, at 6th ,,
6. ,, at 7th ,,
7. ,, at 8th ,,
8. No topping-Control.

3. DESIGN :

(i) R.B.D. (ii) (a) 8 (b) N.A. (iii) 5 (iv) (a) (b) 9'×6' (v) Nil (vi) Yes.

4. GENERAL :

(i) Good (ii) Nil (iii) Tuber weight. (iv) (a) 1947-1950 (b) Yes. (c) N.A. (v) (a) Nil (b) Nil (vi) & (vii) Nil.

5. RESULTS :

(i) 30371 lb./ac.
(ii) 5929 lb./ac.
(iii) The treatment differences are not significant.
(iv) Tuber weight in lb./ac.

Treatment	Mean
1.	32751
2.	27023
3.	28475
4.	32186
5.	28395
6.	29847
7.	31621
8.	32670

S.E. of treatment means =2654 lb./ac.

Corp :-Tapioca Ref :- K. 49(16)/48(12)

Site :- Tapioca Res. Stn. Trivandrum. Type'C' :-

Object :—To find-out the effect of topping tapicca plants at different periods of growth.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Tapioca (c) Same expt. was in these plots (ii) (a) Laterite (b) Refer soil analysis Trivandrum. (iii) 30.4.1949. (iv) (a) Soil tilled to a depth of 15" by digging; (b) Cuttings of 8" length planted erect in pits (c)—(d) 3'×3½' (e) Single cutting/hole (v) 3 ton of

Cowdung and ½ ton of ash./ac. applied as basal dressing during tilling. 2 cwt of compost/ac. applied one month after planting during intercultivation as top dressing. (vi) H. 105. Medium Improved. (vii) Partially irrigated. Hand watering. (viii) Intercultivated one month after planting, weeding and earthing up done 3½ months after planting. (ix) 65 to 67" (30.4.1949 to 3.2.1950) (x) 3.2.1950.

2. TREATMENTS :

1. Topping ,, at 2nd Month
2. ,, at 3rd ,,
3. ,, at 4th ,,
4. ,, at 5th ,,
5. ,, at 6th ,,
6. ,, at 7th ,,
7. ,, at 8th ,,
8. No topping. (Control)

3. DESIGN :

(i) R.B.D. (ii) (a) 8 (b) N.A. (iii) 5 (iv) (a.b) 6'×10½' (v) Nil (vi) Yes.

4. GENERAL :

(i) Good (ii) Nil (iii) Tuber weight (iv) (a) 1947 to 1950 (b) Yes (c) N.A. (v) (a.b) Nil (vi) &. (vii) Nil.

5. RESULTS :

(i) 25747 lb./ac.
(ii) 3554 lb./ac.
(iii) The treatment differences are highly significant.
(iv) Tuber weight in lb./ac.

Treatment	Mean.
1.	24961
2.	20881
3.	24407
4.	20121
5.	26897
6.	28487
7.	30630
8.	29593

S.E. of treatment means : =1590 lb./ac.

Crop :- Tapioca **Ref :- K. 50(26)/49(16)/48(12)**

Site :- Tapioca Res. Stn. Trivandrum. **Type :- 'C'**

Object :—To find-out the effect of topping at different periods of growth.

1. *BASAL CONDITIONS :*

(i) (a) Nil (b) Tapioca (c) Same expt. was in these plots (ii) (a) Laterite soil (b) Refer soil analysis Trivandrum (iii) 21.4.1950 (iv) (a) soil tilled to a depth of 15" by digging (b) 8" cuttings planted erect in shallow pits (c)—(d) 3'×3½' (e) single cutting/hole. (v) 3 ton of Cowdung and ½ ton of ash/ac. applied during tilling. Amophos 2 cwt./ac. applied during intercultivation one month after planting (vi) H 105. Medium. Improved (vii) Partially irrigated (viii) Intercultivated one month after planting and weeding done 3½ months after planting. (ix) 65 to 67" (21.4.50 to 12.2.51) (x) 12.2.1951.

2. TREATMENTS :

1. Topping at 2nd month
2. ,, 3rd ,,
3. ,, 4th ,,
4. ,, 5th ,,
5. ,, 6th ,,
6. ,, 7th ,,
7. ,, 8th ,,
8. No topping (Control)

3. DESIGN :
(i) R.B.D. (ii) (a) 8 (b) N.A. (iii) 5 (iv) (a), (b) 6'×10½' (v) Nil (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil (iii) Tuber weight. (iv) (a) 1947-1950 (b) Yes. (c) N.A. (v) (a) Nil (b) Nil (vi) & (vii) Nil.

RESULTS

(i) 29187 lb./ac.
(ii) 3208 lb./ac.
(iii) The treatments differ highly significantly.
(iv) Tuber weight in lb./ac.

Treatment.	Mean.
1.	26551
2.	25514
3.	26067
4.	28487
5.	28003
6.	33396
7.	32359
8.	33119

S.E. of treatment means =1438 lb./ac.

Crop :- Tapioca. Ref :- K. 48(9)
Site :- Tapioca Res. Stn. Trivandrum Type :- 'C'

Object :—To find the optimum number of plants per pit.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Tapioca (c) Same experiment was in these plots. (ii) (a) Laterite soil. (b) Refer soil analysis Trivandrum. (iii) 8.4.1948. (iv) (a) Soil tilled to a depth of 15" by digging (b) cuttings of 8" length planted in shallow pits, erect planting (c)—(d) 3' (e) As per treatments. (v) 3 ton of cowdung and ½ ton of ash/ac. applied during tilling, ½ ton of ash/ac. applied during intercultivation 2 months after planting as top dressing. (vi) Variety No. 26 Local, Medium (vii) Partially irrigated. (viii) Intercultivation after applying ash. 2 months after planting and weeding during the 4th month of planting (ix) 66" to 67" (8.4.48. to 3.2.1949) (x) 3.2.1949.

2. TREATMENTS :

1. Single cutting per pit. 25 plants per plot).
2. Two ,, 50 ,,
3. Three ,, 75 ,,

3. DESIGN :

(i) L. Sq. (ii) (a) 3 (b) N.A. (iii) 3 (iv) (a) (b) 15'×15' (v) Nil (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil (iii) Tuber weight (iv) (a) 1947 to 1950 (b) Yes. (c) N.A. (v) (a) Nil. (b) Nil (vi) & (vii) Nil.

5. RESULTS :

(i) 22630lb./ac.
(ii) 2937 ,, ,,
(iii) The treatments are not significantly different.
(vi) Tuber weight in lb./ac.

Treatment	Mean
1.	22909
2.	22845
3.	22134

S.E. of treatment means : =1696 lb./ac.

Crop :-Tapioca Ref :-49 (14) 48(9)
Site :-Tapioca Res. Stn. Trivandrum. Type : 'C'

Object:— To find-out the optimum number of plants per pit.

1. BASAL CONDITIONS :

(i) (a) Nil (B) Tapioca (c) same expt. was in these plots (ii) (a) Laterite soil (b) Refer soil analysis, Trivandrum. (iii) 3.5.1949 (iv) (a) Soil tilled to a depth of 15" by digging (b) Cuttings of length 8" planted erect in shallow pits (c)—(d)3½ (e) under "treatments" (v) 3 ton of Cowdung and 1 ton of ash/ac. as basal dressing applied by broadcast during tilling Amo phos at the rate of 2 cwt/ac. applied one month after

planting during intercultivation as top dressing. (vi) "Kalikalan" Variety No: 97. local medium (vii) Partially irrigated, Hand watering (viii) Intercultivation one month after planting and weeding 3 months after planting. (ix) 66 to 67" (3.5.1949 to 1.3.1950) (x) 1.3.1950.

2. TREATMENTS :

1. *Single cutting per pit.*
2. Two cuttings per pit.
3. Three cuttings per pit.

3. DESIGN :

(i) 3×3 L.sq. (ii) (a) 3 (b) N.A. (iii) 3 (iv) (a),(b) 17½'×17½' (v) Nil (vi) yes.

4. GENERAL :

(i) Good. (ii) Nil (iii) Tuber weight. (iv) (a) 1947 to 1950 (b) Yes (c) N.A. (v) (a), (b) Nil (vi) & (vii) Nil.

5. RESULTS :

(i) 22081 lb./ac.
(ii) 370 lb./ac.
(iii) The treatment differences are not significant.
(iv) Tuber weight in lb./ac

Treatment	Mean
1.	21614
2.	21828
3.	22799

S.E. of treatment mean =213 lb./ac.

Crop :-Tapioca **Ref : K.50 (24) 49 (14) 48 (9)**

Site :-Tapioca Res. Stn. Trivandrum. Type : 'C'

Object:—To find the optimum number of plants per pit.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Tapioca (c) 3 ton/of cowdung 1 tons/ash Amophs 2cwt/ac. (ii) (a) Laterie (b) Refer soil analysis, Trivandrum (iii) 20.4.50. (iv) (a) Soil tilled to a depth of 15" by digging (b) Cuttings of uniform length of 8" planted erect in shallow pits (c)—(d) 3½' (e) As per treatments. (v) 3 ton of Cowdung and 1 ton of ash/ac. applied during tilling. Amophos at the rate of 2 cwt/ac. applied 1 month after planting during intercultivation as top dressing. (vi) Kali Kalan Variety No: 97. (vii) Partially irrigated (viii) Intercultivation after applying amonphos and weeding after 3 months of planting (ix) 66-67" (20.4.50 to 17.3.51) (x) 17.3.1951.

2. TREATMENTS :

1. 1 cutting per pit.
2. 2 ,, ,, ,,
3. 3 ,, ,, ,,

3. *DESIGN :*

(i) L.Sq. (ii) (a) 3 (b) N.A. (iii) 3 (iv) (a) (b) 17½' ×17½' (v) No. (vi) No.

4. GENERAL :

(i) Good. (ii) Nil (iii) Tuber weight (iv) (a) 1947 to 1950 (b) Yes. (c) N.A. (v) (a) Nil (b) Nil (vi) & (Vii) Nil.

5. RESULTS :

(i) 22372 lb./ac.
(ii) 1485 lb./ac.
(iii) The treatments do not differ significantly.
(iv) (Tuber weight in lb./ac.)

Treatment.	Mean
1.	21377
2.	22301
3.	23439

S.E. of treatment means =858 lb./ac.

Crop :- Tapioca — Ref - K. 48 (8)

Site :- Tapioca Res. Stn. Trivandrum. — Type :- 'C'

Object:—To study the best metohd of planting tapioca.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Tapioca (c) Cowdung 2 ton/ac. : Night soil Compost 1½ton/ac. and ash 1 ton/ac. (ii)(a) Laterite. (b) Refer soil analysis Trivandrum. (iii) 8.4.1948. (iv) (a) Soil tilled to a depth of 15" by digging (b) As per treatments. (c)—(d) 3½' (e) One cutting per hole. (v) Cowdung 3 ton/ac. and ash ½ ton/ac. before planting by broadcast. Ash/½ ton/ac. as top dressing 2 months after planting. (vi) No. 78 medium local. (vii) Partially irrigated. (viii) Intercultivated after 2 months of planting; another weeding 4 months after planting. (ix) About 67" (8.4.48 to 25.2.49) (x) 25.2.49.

2. TREATMENTS :

Three methods of planting.

1. Completely burying in the soil.
2. Planting in shallow pits.
3. Planting on mounds.

Erect planting of uniform cuttings of 8" length.

3. DESIGN :

(i) L.sq. (ii) (a) 3 (b) N.A. (iii) 3 (iv) (a) (b) 17½'×17½' (v) Nil (vi) yes.

4. GENERAL :

(i) Good. (ii) Nil (iii) Tuber weight (iv) (a) 1946-1950. (b) No. (c) N.A. (v) (a) Nil (b) Nil. (vi) & (vii) Nil.

5. RESULTS :

(i) 32026 lb./ac.
(ii) 3180 lb./ac.
(iii) The treatments are not significantly different.
(iv) Tuber weight in lb./ac.

Treatment.	Mean
1.	29909
2.	32564
3.	33606

S.E. of treatment means = 1836 lb./ac-

Crop :- Tapioca — Ref : K. 49 (13)

Site :-Tapioca Res. Stn. Trivandrum. — Type : 'C'

Object:-To study the best method of planting Tapioca.

BASAL CONDITIONS:

(i) (a) Nil (b) Tapioca (c) Cowdung 3 tons/ac. + ash ½ ton/ac. (ii) (a) Laterite soil (b) Refer soil analysis Trivandrum. (iii) 29.4.1949 (iv) (a) Soil tilled to a depth of 15" by digging (b) As per treatments (c)— (d) 3½' (e) One cutting hole. (v) 3 ton of cowdung and one ton of ash/ac. as basal dressing before planting by broadcast. Amonium phos at the rate of 2 cwt/ac. was applied as top dressing 2 months after planting. (vi) Hybrid No : 105 Medium Improved. (vii) Partially irrigated, Hand watering (viii) Intercultivation two months after planting. Another weeding 4 months afrer planting (ix) About 67" (29.4.1949 to 2.3.1950.) (x) 2.3.1950.

2. TREATMENT :

Uniform cuttings of 8" planted as below.
Three methods of planting.

1. Buried completely under the soil.
2. Planting erect in shallow pits.
3. Planting erect on raised mounds.

3. DESIGN :

(i) L.Sq. (ii) (a) 3 (b) N.A. (iii) 3 (iv) (a,b) 17½'×17½' (v) Nil (vi)Y es.

4. GENERAL :

(i) Good (ii) Nil (iii) Tuber weight (iv) (a) 1946 to 1950 (b) No (c) N.A. (v) (a,b) Nil (vi) & (vii) Nil.

5. RESULTS ;

(i) 24854 lb,/ac.
(ii) 1676 lb./ac.
(iii) The treatment differences are not significant.
(iv) Tuber weight in lb./ac..

Treatment	Mean
1.	24625
2.	25927
3.	24008

S.E. of treatment means. =968 lb./ac.

Crop: Tapioca. Ref : K. 50 (23)

Site : Tapioca Res. Stn. Trivandrum. Type : 'C'

Object ;- To study the best method of planting Tapioca.

1. BASAL CONDITIONS:

(i) (a) Nil (b) Tapioca (c) 3 ton of Cowdung and 1 ton of ash/ac. and Amm. Phos. at the rate of 2 cwt/ acre. (ii) (a) Laterite soil (b) Refer to soil analysis, Trivandrum— (iii) 21.4.50 (iv) (a) Soil tilled to a depth of 15" by digging (b) As per treatments (c)-(d) 3½' (e) One cutting/hole (v) 3 ton of Cowdung and 1 ton of ash/ac. as basal dressing before planting by broadcast. Amm- Phos at the rate of 2 cwt/ac. was applied as top dressing 2 months after planting. (vi) Hy' brid 105. Medium. Improved (vii) Partially irrigated. (viii) Interculturing two months after planting. Another weeding 4 months after planting. (ix) 67" 21.4.50 to 16.3.51. (x) 16.3.51

2. TREATMENTS :

Three methods of planting.
1. Completely buried under the soil
2. Planting erect in pits.
3. Planting erect in mounds.

Direct planting of uniform cuttings of 8" length.

3. DESIGN :

(i) L. Sq. (ii) (a) 3 (b) N.A. (iii) 3 (iv) (a) (b) 17½' × 17½' (v) Nil (vi) yes.

GENERAL :

(i) Good. (ii) Nil (iii) tuber weight. (iv) (a) 1946-1950 (b) No. (c) N.A. (v) (a) (b)Nil (vi) & (vii) Nil.

5. RESULTS :

(i) 26307 lb/ac.
(ii) 1570 lb/ac.
(iii) The treatments are not significantly different.
(iv) Tuber yield in lb./ac.

Treatment	Mean
1.	23794
2.	29624
3.	25501

S.E. of treatment means = 906 lb./ac.

Crop: Tapioca. Ref: K. 48 (13)

Site: Tapioca Res. Stn. Trivandrum . Type : 'VC'

Object: To investigate the effect of removal and non-removal of flower buds on yield of 4 varieties of tapioca.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Tapioca (c) Same expt. was in these fields (ii) (a) Laterite soil. (b) Refer soil analysis Trivandrum. (iii) 20.4.1948. (iv) (a) soil tilled to a depth of 15" by digging. (b) shallow pits were taken and cuttings of length 8" planted erect (c) -(d) 3' (e) Single cutting/hole. (v) 3 ton of cowdung and ½ ton of ash/ac. as basal dressing during tilling by broadcasting ½ ton of ash/ac, during intercultivation 2 months after planting as top dressing. (vi) Variety No : 38, 54, 63 and 97 Local Medium. As per treatments

(vii) Partially irrigated (viii) Intercultivated 2 months after planting. Weeding and earthing up done after 4 months of planting. (ix) About 67" (20.4.'48 to 5.3.1949 (x) 5.3;1949.-

2. TREATMENTS :

4. Main plot treatments :

(1) Variety No. 38
(2) ,, ,, 54
(3) ,, ,, 63
(4) ,, ,, 97

2 Sub plot treatments :

(1) Removal of flower buds.
(2) Non removal.

3. DESIGN :

(i) Split plot. Main plots. L. Sq. (ii) (a) 4 main plots and two sub plots in each main plot (b) NA (iii) 4 (iv) (a)(b) Main plot 10'×12' Subplot 12'×6', (v) Nil (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil (iii) Tuber Weight. (iv) (a) 1947-1948 (b) Yes. (c) N.A. (v) (a) Nil (b) Nil. (vi) & (vii) Nil.

5. RESULTS :

(i) 25958 lb/ae.
(ii) (a) 8349 ,, ,,
(b) 7950 lb/ac.
(iii) Main, Sub and interaction "main×sub" are not significant.
(iv) Tuber weight in lb/ac.

Veriety	38	54	63	97	Mean.
Treatment					
Removal	28738	29191	15428	26015	24843
Non-removal	32821	27830	24502	32141	27074
Mean	30780	28510	19965	24578	25958

S.E. of difference between two treatment means. = 2807 lbs/ac.
S.E. of difference between two variety means = 4174 ,, ,,.
S.E. of difference of two treatment means far the same variety. = 5620 ,, ,,.
S.E. of difference of two variety means for the same treatment. = 5766 ,, ,,.

Crop :- Sugarcane. Ref :- K. 53 (41).
(Experiment on cultivators' fields)
Tehsil or Taluk :- Tiruvalla (Alleppy) Type :- 'M'

Object:—To find-out the response to NPK manuring on the yield of Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Sugarcane (c) Parry's alluvaial mixture. (50 N+40 P+100 K (lb./ac.) in two doses one month and 2 months after planting applied by placement. (ii) (a) Alluvial. (b) Refer soil analysis. Sugarcane Farm, Tirvualla. (iii) Nil; (iv) Co.349, Improved Medium. (v) (a) Digging Removing stubbles (b) Planting cane setts in furrows (c) About 13000 setts/ac. (d) end to end planting 3' spacing between furrows. (e) 2 or 3 nodes/cutting. (vi) Jan. 1953. (vii) Irrigated. (viii) Earthing up about 3 months after planting- (ix) 108.41" (x) Jan; 1954.

2. TREATMENTS :

1. N 100 lb./ac.
2. N 100 lb./ac. + P 100 lb/ac.
3. N 100 lb./ac. + K 100 lb/ac.
4. N 100 lb./ac. + P 100 lb/ac. + K 100 lb./ac.

All applied as Parry's alluvial mixture 50% N applied one month after planting in the form of mixture containing 'A/S' G.N.C. in the rotio 2:1. Rest was applied as 2nd dose 2months after planting.

3. DESIGN :

(i) No particular method was adopted for selection. (ii) 36 cultivator's fields selected (iii) Varied from cultivator to cultivator (iv) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Cane weight in ton/ac. (iv) (a) Nil. (b) (c) Nil (v) (a), (b) Nil. (vi) Nil (vii) Raw data N.A.

5. *RESULTS :*

(i) 35.70 ton/ac.
(ii) N.A.
(iii) The treatment differences are significant.
(iv) Cane weight in on/ac.

Treatment	Mean
1.	33.48
2.	34.94
3.	37.29
4.	37.08

Crop :-Sugarcane. Ref :- K. 53(42).
(Experimenton cultivators filds)

Tehsil or Taluk :- Tiruvalla (Alleppy) Type :- 'M'

Object:—To find-out the response to NPK manuring on the yield of Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Nil, (b) Sugarcane. (c) Parry's alluvial mixture. 50 (N+40 P+100K) (lb/ac.) in two doses one and two months after planting applied by placement. (ii) (a) Loam. (b) Refer soil analysis Sugarcane farm Tiruvalla. (iii) Nil. (iv) Co. 349. Improved. Medium. (v) (a) Diggieg Removing stubbles (b) planting canesetts along furrows. (c) About 13000 sets/ac. (d) end to end planting with 3' spacing between furrows; (e) 2 or 3 nodes/cutting. (vi) Jan. 1953. (vii) Irrigated. (viii) Earthing up done about 3 months after planting. (ix) 108.41" (x) Jan. 1954.

2. TREATMENTS :

1. 50 N lb./ac.
2. do + 100 P lb./ac.
3. do + 100 K lb./ac.
4. 50 N+100 P+100 K lq./ac.

All applied as Parry's alluvial mixture 50% 'N' applied one month after planting in the form of a mixture containing 'A/S' and G.N.C. in the ratio 2:1 Rest was applied as second dose 2 months after planting;

3. DESIGN :

(i) No particular method of slection was adopted. (ii) 32 cultivator's fields selected. (iii) Varied from cultivator to cultivator; (iv) N.A.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Cane weight in ton/ac. (iv) (a) to (c) Nil. (v) (a) (b) Nil. (vii) Rew data N.A;

5. RESULTS :

(i) 30.90 ton/ac.
(ii) N.A.
(iii) The treatments are not significantly different.
(iv) (Cane weight in tons/ac.)

Treatment	Mean.
1.	29.85
2.	30.48
3.	32.21
4.	31.06

Crop :- Chillies. Ref : K. 48(5).

Site :- Agri. Res. Stn. Taliparamba. Type 'M'

Object : To find the effect of C.M., G.N.C. applied alone and in combinations & the combination of C.M. with 'A/S'.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Chillies. (c) As per treatments & basal dressing of previous year. (ii) (a) Red laterite (b) Refer, soil analysis, Taliparamba (iii) 2nd week of May 1948/15.6.42. (iv) (a) 3 plgughings ; forming ridges & furrows. (b) Transplanting seedlings raised from nursery on ridges. (c)—(d) Spacing between rows. 2½" &between plants 1½ ft. (e) 1 (v) Nil. (iv) South Malabar; Improved. (vii) Rainfed.(viii) 2 weedings & 2 earthings 1st : 3 or 4 weeks after planting ; 2nd : 8 weeks after planting. (ix) About 100" (2nd week of May 1948 to January 1949). (x) Sep. 1948 to Jan. 1949.

2. TREATMENT :

1. No manure.
2. 5 ton./ac of C.M.
3. 1400 lb./ac. of G.N.C.
4. (2) +500 lb/ac of G.N.C.
5. (2) +1000 lb./ of G.N.C.
6. (2) +200 lb./ac. A/S
7. (2) +400 lb./ac. of 'A/S'.

Cattle manure applied at the time of ploughing. G.N.C. applied as basal dressing before planting. 'A/S' top dressed in two doses two months and three months after planting.

3. DESIGN :

(i) R.B.D. (ii) (a) 7 (b) N.A. (iii) 6 (iv) (a), (b) 5½ cent. (dimensions N.A.) (v) Nil. (Nil) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nii. (iii) Chillies weight. (iv) (a) 1945-1950. (b) Yes. (c) N.A. (v) (a) (b) Nil. (vi) Nil. (vii) Data N.A. All details obtained from annual reports.

6. RESULTS :

(i) 1504 lb./ac.
(ii) 416.1 ,, ,,
(iii) The treatments are significantly different.
(iv) Mean yield in lb./ac.

Treatment	Mean yield.
1	766
2	1353
3	1453
4	1661
5	1498
6	1569
7	2226

S.E. of treatment mean =170.0 lb./ac.

Crop :- Chillies. Ref :- K. 49(11)/48(5)

Site :- Agri. Res. Stn.Taliparamba. Type :- 'M'

Objeet :—To find the effect of C.M., G.N.C. and their combinations and the combination of C.M. with A/S.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Chillies. (c) As under treatments and basal dressing of K 48(5). (ii) (a) Red laterite. (b) Refer soil analysis, Taliparamba. (iii) 27.6.1949. (iv) (a) Ploughing three times ; forming ridges and furrows. (b) Planting seedlings raised from nursery on the ridges. (c)— (d) 2½ feet between rows and 1½' between plants. (e) 1 (v) Nil. (vi) South Malabar ; Improved. no classification according to duration. (vil) Rainfed. (viii) Two weedings and two earthings ; 1st : 3 or 4 weeks after planting and 2nd : 8 weeks after planting. (ix) About 140" (27.6.1949 to 15.12. 1949). (x) 15th, 25th Oct., 14th. 27th Nov. and 15th Dec generally planted one months after sowing).

2. TREATMENTS :

1. No Manure.
2. 5 tons/ac of C.M.
3. 1400 lb./ac. of G.N.C.

4. (2) +500 lb./ac. G.N.C.
5. (2) +1000 lb./ac. G.N.C.
6. (2) +200 lb./ac. A/S.
7. (2) +400 lb./ac. A/S.

C.M. applied at the time of ploughing.
G.N.C. as basal dressing before planting ; A/S as basal dressing before planting when plants are weak A/S. is top dressed.

3. DESIGN :

(i) R.B.D. (ii) (a) 7 (b) N.A. (iii) 10 (iv) (a) 0.178 cent (b) 0.172 cent (v) One row all round the net plot. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Nil (iii) weight of chillies. (iv) (a) 1945 to 1950 . The experiment appears to have failed during 1946. (b) Yes (c) N.A. (v) (a,b) Nil (vi) Nil (vii) No original data could be traced out from the station. All details are collected from the annual reports. Hence no standard errors could be calculated.

5. RESULTS :

(i) 292 lb./ac.
(ii) N.A.
(lii) The treatment diflerences are not significant.
(iv) Weight of chillies in lb./ac.

Treatment	Mean
1.	161
2.	261
3.	370
4.	272
5.	286
6.	354
7	343

S.E. of treatment mean. N.A.

Crop : Chillies. Ref : K.50 (9)/49 (11)/48 (5)

Site : Agri. Res. Stn. Taliparamba Type :-'M'

Object : To test the effect of C.M., G.N.C. and their combinations and combination of C.M. with A/S.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Chillies (c) Same expt. was in these plots (ii) (a) Red laterite (b) Refer soil analysis Taliparamba (iii) Sowing by the end of April ; planting by the end of May or beginning of June one month after sowing. (iv) (a) Ploughing 2 times; forming ridges and furrows (b) Planting seedlings raised *from nursery on the ridges* (c)—(d) 2½′ *between rows and* 1½′ *between plants* (e)—(v) *Nil* (vi) South Malabar; Improved (vii) Rainfed (viii) Two weedings and two earthings ; 1st : three or four weeks after planting; 2nd : 8 weeks after planting (ix) About 129″ (x) 21st Sep. 9th, 15th, 23rd and 30th Oct. 10th, 18th Nov. 1950.

2. TREATMENTS :

1. No manure
2. 5 tons/ac. of C.M.
3. 1400 lb./ac. of G.N.C.
4. (2) +500 lb./ac. of G.N.C.
5. (2) +1000 lb./ac. of G.N.C.
6. (2) +200 lb./ac of A/S
7. (2) +400 lb./ac. of A/S

C.M. applied at the times of ploughing; G.N.C. as basal dressing just before planting; A/S as basal dressing just before planting but when the plants are weak A/S was top dressed.

3. DESIGN :

(1) R.B.D. (ii) (a) 7 (b) N.A. (iii) 6 (iv) (a) 0.178 cents (b) 0.173 cents (v) One row all round the net plot discarded (vi) Yes.

4. GENERAL :

(i) Satisfactory (ii) Nil (iii) Yield of Chillies (iv) (a) 1945-50 (b) Yes (c) N.A. (v) (a),(b) Nil (vi) Nil (vii) Raw data N.A.

RESULTS :

(i) 716 lb./ac.
(ii) 215 lb./ac.
(iii) The treatment differences are significant.
(iv) Yield in lb./ac.

Treatment	Mean
1.	319
2.	712
3.	392
4.	1093
5.	846
6.	748
7.	904

S.E. of treatment means. = 88 lb./ac

Crop : Chillies. Ref : K. 48 (6)

Site : Agri. Res. Stn. Taliparamba. Type : 'C'

Object. To compare the performances of seedlings planted after nipping off the top shoot to about 3" with those without removing top shoots.

1. BASAL CONDITONS :

(i) (a) Nil (b) Chillies (c) N.A. (ii) (a) Red laterite (b) Refer soil analysis—Talipramba (iii) 2nd week of May 1948/15.6.1948 (iv) (a) 3 ploughings; forming ridges & furrows (b) Transplanting seedlings raised from nursary on ridges (c)— (d) 1½' between plants; 2½' between rows (e) 1. (v) 5 tons per ac. of F.Y.M. at the time of ploughing (vi) South Malabar ; Improved. (vii) Rainfed (viii) Two weedings & two earthings 1st : 3 to 4 weeks after planting & 2nd : 8 weeks after planting (ix) About 100" (2nd week of May 48 to Jan.19·49). (x) September 1948 to January 1949.

2. TREATMENTS :

1. Topped i.e. planting seedlings after nipping off the top shoot to about 3".
2. Untopped.

3. DESIGN :

(i) Three 2×2 L. Sq. (ii) (a) 2 (b) N.A. (iii) 6 (iv) (a) (b) 5/13 cents. (Dimensions N.A.) (v) No (vi) Yes

4. GENERAL :

(i) Satisfactory (ii) Nil (iii) Chillies weight (iv) (a) 1945-1950 (b) Yes (c) N.A. (v) (a) Nil (b) Nil (vi) Nil (vii) Raw data N.A.

5. RESULTS :

(i) 2016 lb/ac.
(ii) 392.4 lb./ac.
(iii) The treatments are not significantly different.
(iv) Mean yield of chillies in lb./ac.

Treatments	Mean
1.	1974
2.	2057

S.E. of treatment means = 160.2 lb/ac.

Crop :-Chillies. Ref :-K. 49 (9)/48 (6)

Site :-Agri. Res. Stn. Taliparamba Type :-'C'

Object :—To compare the performance of seedlings planted after nipping of the top shoot to about 3" with those without removing top shoot.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Chillies (c) As in basal dressing K 48 (6) (ii) (a) Red laterite (b) Refer soil analysis Taliparamba (iii) 25.6.1949 (iv) (a) Ploughing three times; forming ridges and furrows (b) Planting seedlings raised from nursery. (c)—(d) 2½' between rows and 1½' between plants (e) 1 (v) 5 tons/ac. of F.Y.M. at the time of planting+250 lb./ac. G.N.C.+500 lb./ac. of ash+50 lb./ac. of Super in two doses at

the time of earthing up. (vi) South Malabar ; Improved, No classification according to duration. (vii) Rainfed. (viii) Two weedings and two earthings 1st : 3 or 4 weeks after planting. 2nd : 8 weeks after planting. (ix) About 140" (25.6.1949 to 15.12.1949) (x) Harvested on 15th, 25th Oct, 14th, 27th Nov. and 15th Dec. (Sown generally in a nursery and planted one month afterwards.)

2. TREATMENTS :

1. Topped i.e. planting seedlings after nipping off the top shoot to about 3"
2. Untopped,

3. DESIGN :

(i) Three 2×2 L. Sq. (ii) (a) 2 (b) N.A. (iii) 6 (iv) (a) 0·178 cent (b) 0.172 eent (v) one row a round the net plot (vi) Yes.

4 GENERAL :

(i) Satisfactory. (ii) Nil (iii) weight of chillies (iv) (a) 1945 to 1950 (b) Yes. (c) N.A. (v) (a), (b) Nil (vi) Nil (vii) Raw data N.A.

5. RESULTS :

(i) 672 lb./ac.
(ii) 22 „
(iii) The treatments are significantly different.
(iv) Chillies weight in lb./ac.

Treatment	Mean.
1.	606
2.	737

S.E. of treatment means =9 lb./ac.

Crop :-Chillies — Ref :-K. 50 (10)/49 (9)/48 (6)
Site :-Agri. Res. Stn. Taliparamba — Type :- 'C'

Object :—To compare the performance of seedlings planted after nipping off the top shoot to about 3" with those without removing the top shoot.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Chillies (c) As per basal dressing in K 49 (9) (ii) (a) Red laterite. (b) Refer soil analysis, Taliparamba (iii) 12.6.50 (iv) (a) Ploughing 3 times; forming ridges and furrows (b) Planting seedlings raised from nursery on the ridge (c)—(d) 2½' between rows and 1½' between plants (e) 1 (v) 5 tons/ac. Compost applied at the time of ploughing+250 lb./ac. of G.N.C+500 lb./ac. Ash+50 lb./ac. Super applied in 2 doses at the time of earthings as top dressing. (vi) South Malabar; Improved (vii) Rainfed (viii) Two weedings and two earthing. 1st : weeding and earthing 3 or 4 weeks after planting and 2nd : 8 weeks after planting, (ix) About 129" (12.6.50 to 18.11.1950) (x) 21st Sep. 9th. 16th 23rd and 30th Oct. and 10th and 18th Nov. 1950.

2. TREATMENTS :

1. Topped i.e. planting seedlings after nipping off the top shoot to about 3"
2. No topping

3. DESIGN :

(i) Three 2×2 L. Sq. (ii) (a) 2 (b) N.A. (iii) 6 (iv) (a) 0.178 cent (b) 0.172 cent. (v) One row all round the net plot. (vi) Yes.

4. GENERAL :

(i) Satisfactory (ii) Nil (iii) chillies weight (iv) (a) 1945—1950 (b) Yes (c) N.A. (v) (a) (b) Nil (vi) Nil (vii) Raw data N.A.

5. RESULTS :

(i) 2274 lb./ac.
(ii) N.A.
(iii) The treatments are not significantly different.
(iv) Mean yield in lb./ac.

Treatment	Mean
1.	2296
2.	2251

S.E. per treatment mean : N.A

Crop :-Chillies Ref :-K. 48(7)

Site :-Agri. Res. Stn. Taliparamba Type :-'C'

Object :—To test the possibility of increasing the yield by planting more than one seedling per/hole.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Chillies (c) N.A. (ii) (a) Red laterite (b) Refer soil analysis Taliparamba (iii) 15.5.43 ; 15.6.48. (iv) (a) 3 ploughings; forming ridges & furrows (b) planting seedlings raised from nursery on the ridges (c)—(d) 2½' between rows & 1½' between plants (e) As per treatments (v) 5 tons/ac. F.Y.M. at the time of planting+250 lb./ac. G.N.C.+500 lb./ac. of Ash+50 lb./ac. Super in two equal doses at the time of earthing up top dressed (vi) South Malabar; Improved (vii) Rainfed (viii) Two weedings & two earthings ; 1st : three or four weeks after planting and 2nd : 8 weeks after planting. Weeding & earthing up done to-gether (ix) About 100" (May 48 to November 48). (x) During the months of September, October & November 1948.

2. TREATMENTS :

1. 1 Seedling/hole
2. 2 ,, ,,
3. 3 ,, ,,

3. DESIGN :

(i) R.B.D. (ii) (a) 3 (b) N.A. (iii) (8) (iv) (a) N.A. (b) 5½ cents. (dimensions N.A.) (v) N.A. (vi) Yes.

4. GENERAL :

(i) Satisfactory (ii) Nil (iii) Chillies weight (iv) (a) 1946—1950 (b) Yes (c) N.A. (v) (a) (b) Nil (vi) Nil (vii) Raw data N.A.

5. RESULTS :

(i) 2005 lb./ac.
(ii) 453.2 ,,
(iii) The treatments are not significantly different.
(iv) Mean yield of chillies in lb/ac.

Treatment	Mean
1	1985
2.	1926
3.	2104

S.E. of treatment means = 160.2 lb/ac.

Crop:-Chillies Ref :-K 49 (10) 48 (7)

Site :-Agri. Res. Stn. Taliparamba Type :-'C'

Object :—To test the possibility of increasing the yield by planting more than one seedling per hole.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Chillies (c) As per basal dressing in K 48 (7) (ii) (a) Red Laterite, (b) Refer soil analysis, Taliparamba (iii) 25.6.1949. (iv) (a) Ploughing three times; forming ridges and furrows (b) Planting seedlings raised from nursery on ridges (c)—(d) between rows 2½' and 1½' between plants (e) As under treatments. (v) 5 tons/ac. of F.Y.M. at the time of planting+250 lb./ac. G.N.C.+500 lb./ac. of Ash +50 lb/ac. of Super in two doses at the time of earthing up. (vi) South Malabar; Improved, No. classification according to duration. (vii) Rainfed (viii) Two weedings and two earthings ; 1st : three or four weeks after planting and 2nd : 8 weeks after planting. (ix) About 140" (25.6.1949 to 15.12.1949) (x) Harvested on 15th, 25th Oct. 14th, 27th Nov. and 15th Dec. (Planted about one month after sowing in a nursery.

2. TREATMENTS :

1. 1 seedling/hole.
2. 2 ,, ,,
3. 3 ,, ,,

3. DESIGN :

(i) R.B.D: (ii) (a) 3 (b) N.A. (iii) 6 (iv) (a) 0.178 cent (b) 0.172 cant (v) One row all round the net plot. (vi) Yes

4. GENERAL :

(i) Satisfactory (ii) Nil (iii) Chillies weight (iv) (a) 1946 to 1950. The experiment appears to have failed during 1947. (b) Yes. (c) N.A. (v) (a), (b) Nil (vi) Nil (vii) Raw data N.A.

5. RESULTS :

(i) 798 lb./ac.
(ii) N.A.
(iii) The treatment differences are not significant.
(iv) Chillies weight in lb./ac.

Treatment	Mean
1.	665
2.	847
3.	883

S.E.—N.A.

Crop :- Chillies .Ref :- K. 50 (8)/49 (10)/48 (7)

Site :- Agri. Res. Stn. Taliparamba Type :- 'C'

Object—To test the possibility of increasing the yield by planting more than one seedling per hole.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Chillies (c) As per basal dressing in K 49 (10) (ii) (a) Red laterite (b) Refer soil analysis Taliparamba (iii) Planted on 12.6.1950. (iv) (a) Ploughing 3 times, forming ridges and furrows (b) Planting seedlings raised from nursery on the ridges (c)— (d) 2½' 'between rows and 1½' between plants (e) As under treatments (v) 5 tons/ac. F.Y.M. at the time of planting+250 lb/ac. of G.N.C+500 lb./ac. Ash.+50 lb./ac. Super in two equal doses at the time of earthing up ; top dressed. (vi) South Malabar ; Improved (vii) Rainfed (viii) Two weedings and two earthings. 1st : 3 or 4 weeks after planting and 2nd : 8 weeks after planting (ix) About 129" (12.6.1950 to 18.11.1950) (x) 18.11.1950.

2. TREATMENTS :

1. 1 seedling/hole.
2. 2 ,, ,,
3. 3 ,, ,,

3. DESIGN :

(i) R:B,D. (ii) (a) 3 (b) N.A. (iii) 8 (iv) (a) 0.178 cents (b) 0.172 cents (v) One row all round the net plot discarded. (vi) Yes.

4. GENERAL :

(i) Satisfactory (ii) Nil (iii) Chillies weight (iv) (a) 1946-50 (b) Yes (c) N.A. (v) (a) (b) Nil (vi) Nil (vii) The experiment appears to have failed during 1947. Raw data N.A.

5. RESULTS :

(i) 1983. lb./ac.
(ii) N.A.
(iii) The treatments are not sigfinificantly different.
(iv) Chillies weight in lb/ac

Treatment	Mean
1.	1785
2.	2117
3.	2046

S.E. of treatment mean : N.A.

Crop :- Chillies. Ref :- K. 52 (17)

Site :- Agri. Res. Stn. Taliparamba. Type :- 'D'

Object:—To find-out the best chemical to control the fruit-rot of chillies.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Chillies (c) 5 tons/ac. of Compost (ii) (a) Red laterite (b) Refer Soil analysis Taliparamba (iii) 24.4.52 ; 27.6.1952 (iv) (a) Ploughing 3 times ; formed ridges and furrows (b) Planting seedlings raised from nursery on the ridges (c)—(d) 2½' 'between rows and 1½' between plants (e) 1 (v) 5 tons/ac. compost applied at the time of ploughing. (vi) South Malabar ; Improved (no ciassification according to duration.) (vii) Rainfed (viii) Two weedings and two earthings ; 1st : 3 or 4 weeks after planting ; 2nd : 8 weeks after planting. (ix) About 104" (24.4.52 to 27.6.1952) (x) Harvests begin from Sept. and end in Dec. at intervals of about 10 days.

2. TREATMENTS :

1. Gybamate
2. Blitox
3. Coppesan
4. Copper sandoz
5. Dithane Z 78
6. Dithane D 14+Zinc sulphate
7. Bordeaux mixture
8. Perenox
9. Control.

All chemicals sprayed.

First spraying on 29.7.1952 and second on 1.10.1952.

3. DESIGN :

(i) R.B.D. (ii) (a) 9 (b) N.A. (iii) 4 (iv) (a,b) 20′×20′ (v) Nil (vi) Yes.

4. GENERAL :

(i) Satisfactory (ii) No (iii) % infection(=total no. of affected plants× 100÷total no. of plants.) (iv) (a) No (b) No (c) Nil (v) (a),(b) Nil (vi) Nil (vii) Raw data N.A.

5. RESULTS :

(i) 9.0% infection.
(ii) 3.8% „ „
(iii) The treatments differ significantly.
(iv) % of infection

Treatment	Mean % infection.
1.	10.3
2.	13.7
3.	6.0
4.	4.9
5.	9.5
6.	15.1
7.	4.8
8.	5.6
9.	11.2

S.E. of treaiment means = 1.9% infection.

Crop :- Sweet Potato. **Ref :- K. 52 (5)**

Site :- Tapioca and Sweet potato Res. Stn, Mannuthy. **Type :- 'M'**

Object:—To determine the optimum requirements of N, P and K for sweet potato.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Previously the area was used as a grazing field. (c) N.A. (ii) (a) Loamy (b) Refer soil analysis Mannuthy (iii) 16.7.1952 (iv) (a) 4 rounds of ploughings and removing of weeds before laying out the experiment (b) Vines are cut with 3 nodes and planted at a depth of 3″ on ridges (c)— (d) 3′×3′ (e) One cutting per groove. (v) Nil (vi) Local ; Medium. (vii) Un-irrigated. (viii) Weeding once, Interculturing once at the time of application of N and K one month after planting. (ix) N.A. (16.7.1952 to 11.11. 1952) (x) 11.11-1952.

2. TREATMENTS :

1 Main-plot treatments :—

All combinations of (1) & (2)

(1) Three levels of N : N_0=0, N_1=50 lb/ac. N_2=100 lb/ac.

(2) Three levels of K_2O : K_0=0, K_1=80 lb/ac. K_2=160 lb/ac.

2 Sub-plot treatments :—

Two levels of P_2O_5 : P_0=O, P_1=80 lb/ac.

K as Muriate of potash one month after planting.

P as Super before planting.

3. DESIGN :

(i) Split plot (ii) (a) 9 main-plots/block ; 2 sub-plots/main plot. (b) N.A. (iii) 6 (iv) (a) Main plot 24′×60′ Sub plot 60′×12′ (b) Sub-plot 54′×6′ (v) One row alround the net plot discarded (vi) Yes.

4. GENERAL :

(i) Good (ii) Nil (iii) Tuber yield (iv) (a) 1952 to 1957. Experiment failed in 1953. (b) yes (c) N.A (v) (a),(b) Nil (vi) Nil (vii) These was some attack on the crop from wild boars and strayanimals due to want of proper fencing. As it is reported that there was some attack to the crop by wild animals and hence the results arelikely to be vitiated and the significant interactions need not be attached anv importance. The significant interaction N may also be due to this fact.

5. RESULTS :

(i) 3237 lb./ac.
(ii) (a) 563 lb./ac.
b) 434 ,,
(iii) N,K, NK and NP are highly significant.
(iv) Mean tuber weight in lb./ac.

	N_0	N_1	N_2	Mean
K_0	1707	2783	3455	2648
K_1	3139	3334	2988	3157
K_2	3274	4403	4040	3906
P_0	2348	3554	3558	3153
P_1	3065	3460	3437	3321
Mean	2707	3507	3497	3237

	P_0	P_1	Mean
K_0	2550	2747	2648
K_1	3191	3123	3157
K_2	3719	4092	3906
Mean	3153	3321	3237

S.E. of body of (NK) table =162 lb./ac.
S.E. of difference of two N or K marginal means =133 ,, ,,
S.E. of difference of two P marginal means =84 ,, ,,
S.E. of difference of two N or K means for the same level of P =168 ,, ,,
S.E. of difference of two P means for the same level of N or K =145 ,, ,,

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Crop :- Sweet potato. Ref :- K. 48 (54)
Site :- Agri. Res. Stn. Pattambi. Type :- 'M'

Object—To find-out the effect of application of Borax on the yield of sweet potato.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Modan Paddy (c) 10.C.L./ac. of F.Y.M.+1000 lb./ac. Wood Ash +2 cwt/ac. of G.N.C. (ii) (a) Laterite loam (b) Refer Soil analysis Pattambi (iii) July 1948. (iv) (a) 6 ploughings ; forming ridges. (b) Planting in ridges (c)— (d) 2½' between rows and 9" between plants (e) single cuttings per hole of length 9". (v) Nil. (vi) Local (vii) Rainfed. (viii) Two weedings and earthing up. (ix) About 90". (July 1948 to 20.7.1949) (x) 19, 20.7.1949.

2. TREATMENTS :

1. 0 lb./ac. of Borax
2. 20 ,, ,,
3. 30 ,, ,,
4. 40 ,, ,,

Applied before planting

3. DESIGN :

(i) R.B.D. (ii) (a) 4 (b) N.A. (iii) 6 (iv) (a,b) 10½'×21' (v) 4' interspace between plots. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil (iii) Weight of tubers. (iv) (a) 1947-1949 (b) No (c) N.A. (v) (a,b) Nil. (vi) & (vii) Nil.

5. RESULTS :

(i) 1.995 ton/ac.
(ii) 0.415 ton/ac.
(iii) The treatments do not differ significantly.
(iv) Tuber weight in tons/ac.

Treatment	Mean
1.	1.970
2.	2,087
3.	1,793
4.	2,131

S.E. of treatment means =0.168 ton/ac.

Crop :—Sweet Potato Ref :—K.52 (6)

Site :—Tapioca and Sweet Potato Res. Stn. Mannuthy. Type :—'C'

Object :—To determine the best spacing for Sweet Potato and to find-out the best method of planting.

1. BASAL CONDITIONS ;

(i) (a) Nil (b) Previously the area was used as a grazing field. (c) N.A. (ii) (a) Loamy (b) Refer soil analsis Mannuthy (iii)23-7.1952 (iv) (a) 4 rounds of ploughing before laying out the experiment. Removed the weeds andprepared the field for planting (b) Vines are cut with 3 nodes and planted at a depth of 3"(c) —(d) As per treatments (e) one cutting per groove. (v) 5 C.L./ac. of Cowdung+100 tins/ac. of Ash. Cowdung applied before plonghing, and ash at the time of planting. (vi) Local Medium (vii) Un-irrigated (viii) Weeding once. (ix) N.A. (x) 26. 11.1952.

2. TREATMENTS :

All combinations (1) & (2) :
1. Two methods of planting (i) on ridges and (ii) on flat beds
2. 4 spacidgs 1', 2', 3' & 4'

3. DESIGN :

(i) 2×4 fact. in R.B.D. (ii) (a) 8 (b) N.A. (iii) 6 (iv) (a) N.A. (b) 12'×24' (v) Nil (vi) Yes.

4. GENERAL :

(i) Good (ii) Nil (iii) Tuber yield (iv) (a) 1952—1957 ; failed in 1953 (b) Yes (c) N.A- (v) (a), (b) Nil (vi) There was some attack on the crop from stray animals due to want of fencing- (vii) Nil.

5. RESULTS :
(i) 2080 lb./ac.
(ii) 143 lb./ac.
(iii) Spacings, methods of planting and interaction are higiy significant.
(iv) Average Tuber yield in lb./ac.

Method of Planting.	Spacing 1'	2'	3'	4'	Mean
On redges	2448	1377	1007	856	1422
On flat beds	4310	2579	2492	1573	2739
Mean	3379	1978	1749	1214	2080

S.E. of the body of table =59 lb./ac.
S.E. of marginal means (spacing)=41 ,, ,,
S.E. of marginal means (method)=29 ,, ,,

Crop :-Coconut. Ref : K. 48 (47)

Site :-Agri. Res. Stn. Nileshwar III. Type :-'M'

Object :—To find-out the best manure for the Coconut in the sandy soil in addition to regular cultivation and the better method of applying the manure.

1. BASAL CONDITIONS :

(i) The trees were under uniform manurial and cultural operations. (ii) (a) Sandy. (b) Refer soil analysis Nileshwar III (iii) Seedlings. (iv) Ordinary tall westcoast. (v) Date N.A. Triangular method of planting ; 25' spacing. (vi) One year old. (vii) Nil. (viii) 2 ploughings in Sept. & Dec. cultivator worked in Dec. (ix) A green manure crop of Crotolaria was raised and applied to the trees. (x) Rainfed- (xi) 151.06" in 132 rainy days. (xii) Monthly harvests.

2. TREATMENTS :

All combinations of

3 Manures × 2 Methods of application.

Manures : (1) 4½ lb. A/S/tree.
(2) 15 lb. F.M.
(3) 13½ lb. G.N.C/tree.

Methods : (1) Broadcast in circular basins around trees.
(2) In trenches 3' deep dug in between row of trees.

General dose common to all trees.

200 lb. G.L.+30 lb. ash+2 lb. B.M./tree/year. Manure applied in Aug. & Sept.

3. DESIGN :

(i) 2×3 Fact. in R.B.D. (ii) (a) 6 (b) N.A. (iii) 3 (iv) 2 (v) Nil (vi) Yes.

4. GENERAL :

(i) Satisfactory (ii) Beetles regularly searched and killed (iii) (1) No. of functioning leaves. (2) No. of days between the production of two successive leaves. (3) No. of female flowers. (4) Yield of nuts. (iv) (a) 1942-50 (modified during 1948) (b) N.A. (v) (a), (b) Nil. (vi) & (vii) Nil.

4. RESULTS

(i) (1) 12·64 (2) 42·58 (3) 2·33 (4) 0·92

(ii) N.A.

(iii) For characters (1) & (2), treatments are not significantly different. For character (3) data not statistically analysed as all trees had not produced female flowers. For character (4) data not statistically analysed as all the trees had not come to bearing.

(iv) (1) Mean no. of functioning leaves in the crown/tree/year.

	G.N.C.	A/S	F.M.	Mean.
Broadcast	14.33	11.66	12·16	12.72
Trenches.	8.83	15.50	13.33	12.56
Mean.	11.58	13.58	12.75	12.64

S.E.s N.A.

(2) Mean no. of days between the production of successive leaves/tree/year.

	G.N.C.	A/S	F.M.	Mean.
Broadcast	39.15	47·33	46.66	44.38
Trenches.	40.00	40.33	42.00	40.78
Mean	39.58	43.83	44.33	42.58

S.E.s.....N.A.

(3) Mean no. of female flowers produced/tree/year.

	G.N.C.	A/S	F.M.	Mean.
Broadcast	2.66	3.00	1.66	2.44
Trenches	3.50	0.50	2.66	2.22
Mean.	3.08	1.75	2.16	.33

(4) Mean no. of nuts/tree/year.

	G.N.C.	A/S	F.M.	Mean
Broadcast	1.16	1.00	0.58	0.91
Trenches.	1.33	0.25	1.25	0 94
Mean.	1.24	0.62	0.92	0.92

Crop :-Coconut. Ref :- K. 49 (66)/48 (47)

Site :-Agri. Res. Stn. Nileshvar. III. Type :- 'M'

Object :—To find-out the best manure for coconut in sandy soil in addition to the regular cultivation and the better method of applying the manure.

1. BASAL CONDITIONS :

(i) The trees were under uniform manurial and cultural operations. (ii) (a) Pure sandy soil. (b) Refer soil analysis, Nileshwar III. (iii) By seed nuts. (iv) Ordinary tall west coast. (v) Date N.A. ; Triangular method of planting ; 25′ spacing. (vi) one year. (vii) Nil (viii) 2 ploughings in Sept. & Dec. and cultivator worked in Dec. (ix) G.M. of Crotolaria straita was raised and applied to the trees. The G.M. crop did not come up well. (x) Rainfed. (xi) 147.83″ in 109 rainy-days. (xii) Monthly harvest.

2. TREATMENTS :

All combinations of :

3 Manures × 2 Methods of application.

Manures (1) 4½ lb. A/S/tree
(2) 13½ lb. G.N.C./tree
(3) 15 lb. F.M.

Methods (1) In circular basins of 8 feet radius and 1 foot depth.
(2) In trenches dug between trees.

3. DESIGN :

(i) R.B.D. (ii) (a) 6 (b) N.A. (iii) 3 (iv) 2 (v) Nil (vi) Yes.

4. GENERAL :

(i) Satisfactory (ii) Rhinocerous Beetle regularly searched and killed. (iii) (1) No. of leaves in the crown (2) Rate of production of leaves (3) No. of female flowers (4) No. of nuts/tree. (iv) (a) 1942-50 (modified during 1948) (b) N.A. (v) (a), (b) Nil. (vi) & (vii) Nil.

5. RESULTS :

(i) (1) 12.28 (2) 37.39 (3) 20.1 (4) 5.2
(ii) N.A.
(iii) For characters (1) & (2) treatments are not significantly different. For character (3) data not statistically analysed, as some of the trees did not produce female flowers. For character (4) data not statistically analysed, as some of trees did not start yielding.
(iv) (1) Mean no. of functioning leaves on the crown/tree/year.

	basins	trenches	Mean.
G.N.C.	12.31	12.34	12.33
A/S.	12.23	12.28	12.26
F.M.	12.28	12.23	12.26
Mean.	12.27	12.28	12.28

(2) Mean no. of days between the production of successive leaves/tree/year.

	basins	trenches	Mean.
G.N.C.	37.53	37.57	37.55
A/S	37.27	37.00	37.14
F.M.	37.37	37.57	37.47
Mean.	37.39	37.38	37.39

(3) mean no. of female flowers/tree/year.

	basins	trenches	Mean.
G.N C.	21.8	19.5	20.7
A/S	28.8	17.1	22.9
F.M.	19.0	14.1	16.6
Mean.	23.2	16.9	20.1

(4) mean no. of nuts/tree/year.

	basins	trenches	Mean.
G.N.C.	8.3	4.6	6.5
A/S	7.3	6.3	6.8
F.M.	2.0	2.7	2.4
Mean.	5.9	4.5	5.2

Crop :- Coconut. Ref :- K. 50 (54)/49(66)/48(47)

Site :- Agri. Res. Stn. Nileshwar. III. Type : 'M'

Object :- To find-out the best manure for coconut in the sandy soil in addition to cultivation and best method of applying manures.

1. BASAL CONDITIONS :

(i) The trees were under uniform manurial and cultural operations. (ii) (a) Sandy (b) Refer soil analysis *Nileshwar III. (iii) By seedlings (iv) ordinary tall west coast. (v) Date N.A. ; Triangular method; 25' spacing.* (vi) one year old. (viii) Nil. (viii) Two ploughings in Sept. and May, 1950. Intercultivation in Sept. (ix) G.M. crop of Crotolaria straita was raised and applied to the trees. (x) Rainfed. (xi) 169.72" in 123 rainy days. (xii) Monthly harvests.

2. TREATMENTS :

All combinations of :

3 manures x 2 methods of application.

Manures :-

(1) 4½ lb. of A/S/ac.

(2) 15 lb. G.N.C./ac.

(3) 13½ lb. F.M./tree

Methods (1) Applying in circular basins 8" radius and 1 foot depth.

(2) In trenches dug in between rows of trees.

Common dose :— 30 lb. Ash and 2 lb. B.M./tree/year, Ash in June and others in Aug.

3. DESIGN :

(i) 2×3 Fact, in R.B.D. (ii) (a) 6. (b) N.A. (iii) 3 (iv) 2 (v) No (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Beetles regularly searched and killed. (iii) (1) No. of functioning leaves. (2) Interval between production of two successive leaves. (3) No. of female flowers. (4) Yield of nuts. (iv) (a) 1942 to 1950 (modified during 1948) (b) N.A. (v) (a,b) Nil. (vi) & (vii) Nil.

5. RESULTS :

(i) (1) 13.18 (2) 40.71 (3) 8.72 (4) 1.00 (ii) N.A.

(iii) For characters (1) & (2), the treatments are not significantly different. For character (3) data not statistically analysed as all the trees had not reached flowering stage. For character (4) data not statistically analysed as all the trees had not come to bearing.

(iv) (1) Mean no. of functioning leaves./tree/year.

	A/S	G.N.C.	F.M.	Mean.
basins	13.25	13.64	12.66	13.18
trenches	12.83	13.28	13.42	13.18
Mean.	13.04	13.46	13.04	13.18

(2) Interval between the production of two consecutive leaves (days)/tree/year.

	A/S	G.N.C.	F.M.	Mean.
basins	41.62	40.28	41.82	41.24
trenches	40.46	39.84	40.24	40.18
Mean.	41.04	40.06	41.03	40.71

(3) Mean no. of female flowers/tree/year

	A/S	G.N.C.	F.M.	Mean.
basins	8.46	9.00	8.80	8.75
trenches	8.38	8.58	9.10	8.69
Mean.	8.42	8.79	8.95	8.72

(4) Mean. no. of nuts/tree/year.

	A/S	G.N.C.	F.M.	Mean.
basins	1.00	0.90	1.10	1.00
trenches	0.88	1.12	0.98	0.99
Mean	0.94	1.01	1.04	1.00

Crop :- Coconut. Ref.-K. **48 (44)/49 (55)/50 (49)/51 (45).**
Site :-Agri. Res. Stn. Pilicode. Type :- 'M'

Object :—To determine the optium depth at which coconut husks and leaves have to be buried as manures to the crop.

1. BASAL CONDITIONS :
(i) Uniform manurial and cultural operations given to this block, 3 ploughings and two intercultivations. Ash 20 lb.+A/S 3 lb. +100 lb. G.M./tree/year. in Aug.—Sept. (ii) (a) Gravely laterite, (b) Refer soil analysis, Pilicode. (ii) By seedling. (iv) Ordinary tall west coast. (v) 24.10.1922, surface planted by triangular method ; 30′ spacing ; trees were lowered by 3′ in June 1926. (vi) One year. (vii) Nil. (viii) & (ix)

Year	*G.M. raised.*	*Cultural. operations.*	*Manurial operations*
1942.	Kolinji	2 ploughings and 2 intercultivations.	9 lb. G.N.C./tree in basins round the tree in Aug—Sept. and 20 lb. Ash/tree broadcast in Oct.
1943.	Kolinji.	2 ploughing and 2 intercultivations.	9 lb. G.N.C./tree+ 20 lb. Ash/tree in Aug. Sept.
1944	Sann-hemp.	1 ploughing and 4 hoeings.	3 lb. A/S+20 lb. Ash /tree in Aug.—Sept.
1945	Kolinji.	3 ploughings and 2 intercultivations.	5 lb. G.N.C.+2 lb. A/S + 20 lb. Ash tree in Aug.—Sept.
1946.	Crotolaria straita.	2 Ploughings and 2 intercultivations.	5 lb. G.N.C.+2 lb. A/S + 2 of lb:B.M. 20 lb. /tree in Aug. Sep. Ash
1947.	Do.	Do.	5 lb. G.N.C+2 lb. A/S + 21 lb. Mur. Pot./tree in Aug.—Sept.
1948.	Do.	2 ploughings.	5 lb. G.N.C+2lb. A/S+ 2 lb. B.M./tree in Aug. Sept.

(x) Rainfed. (xi) 1948 139.71"), 1949 (144.34") 50 (148.69")& 19 51(107.74") (xii) Monthly harvests

2. TREATMENTS :

Burying husks and coconut leaves in linear trenches.

1. 7′ wide and 1′. 3″ deep.
2. 6′ wide and 3′ deep.

Rate : 500 husks+50 leaves/ tree/year.

3. DESIGN :

(i) Paired plot. (ii) 2 (iii) 7 (iv) 4 (v) Nil. (vi) No.

4. GENERAL :

(i) Satisfactory. (ii) Rhinocerous beetle regularly searched and killed. (iii) (1) No. of leaves on the crown. (2) No of leaves produced during the year. (3) No. of female flowers. (4) No. of nuts. (iv) (a) 1942—1951 (b) N.A. (vi) & (vii) Nil.

5. RESULTS :

Average no. of nuts/tree.

Treatment	Year 1948	1949	1950	1951
1.	47.00	16.85	32.30	4.10
2.	37.30	21.43	24.85	5.86
S.E. of diff. of two means	7.58	4.35	4.00	1.89
Significance :	N.S.	N.S.	N.S.	N.S.

N.S. :-Not significant.

Crop :-Coconut. Ref :-K. 53 (54)

Site :-Agri. Res. Stn. Pilicode. Type :-'M'

Object :—To find out the best potassic fertilizer that can effectively replace ash which is not available in sufficient quantities.

1. BASAL CONDITIONS :

(i) The experiment was conducted to compare G.N.C. with A/S in this block during 1942—1948. The treatments were (1) 3 lb. A/S+2 lb. ash per tree per year. (2) 9 lb. G.N.C.+20 lb. ash/tree/year applied by broadcast and ploughed in during Aug.—Sept. Three ploughings with iron plough given annually. (ii) (a) Gravelly laterite. (b) Refer soil analysis Pilicode (iii) One year old seedling planted on 23.5.1948 before the onset of S.W. monsoons. (iv) West coast tall variety. (v) In pits 3′×3′×3′ by the triangular method—30′ spacing. (vi) one year. (vii) Nil.

(viii)

Year	Cultural operations	Manurial operations
1951	Two ploughings (Sept., Oct. & Dec.) Three intercultivations (Jan. March & May)	7½ lb. G.N.C.+3 lb. A/S+2 lb. Super+100 lb. G.M./tree in Aug.—Sept.
1952	Two ploughings (April, & Aug.) and one hoeing (summer).	A/S 2 lb.+G.N.C. 5 lb. +B.M. 2 lb./tree in Aug—Sept.
1953	4 ploughings (Aug., Oct. and Nov. 53 & April 54).	3 lb. A/S+100 lb. G.M. / tree in Aug—Sept.

(ix) Crotolaria straita was raised. (x) Rainfed. (xi) 139·23″. (xii) Monthly harvests.

2. TREATMENTS :

1. Potassium Sulphate.
2. Muriate of Potash.
3. Ash.

Applied in Aug.—Sept.

On equivalent K_2O basis to supply 1 lb. of K_2O/tree/year.

3. DESIGN :

(i) R.B.D. (ii) 3 (iii) 5 (iv) 9 (v) Nil. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil (iii) Girth, height, No. of leaves, length, of petiole length of leaf, No. of spathes, No. of female flowers. No. of female flowers shed. No. of green nuts. No. of barren nuts, etc. (iv) (a) 1951 to 1953: (b) N.A. (v) (a) (b) N.A. (vi) Nil, (vii) Treatments are not significantly different for the years 1951 & 1952. Results not given for 1951 & 1952.

5. RESULTS : (1953)

Average no. of nuts/tree (adjusted).

1.	25·00
2.	29·01
3.	25·98

S.E. difference of any two means=3·22 nuts/tree.

The treatments do not differ significantly.

Crop :-Coconut. Ref :-K. 50 (42), 51 (38), 52 (44) & 53 (53)

Site :-Agri. Res. Stn. Pilicode. Type :-'M'

Object :—To find-out the best method of applying manures to coconut trees in laterite gravelly soil.

1. BASAL CONDITIONS :

(i) The effect of burial of coconut husks and leaves was tried in this block in 1937. Husks and leaves were buried in linear trenches 6′ wide & 1′ deep. No artificials applied till 1944. Three ploughings given every year. (ii) (a) Gravelly laterite, (b) Refer soil analysis, Pilicode. (iii) By seed nuts. (iv) West Coast tall variety. (v) One year old seedling planted on 23.5.1918 before the onset of south west monsoon in pits 3′×3′×3′, Triangular method of planting, 30′ spacing. (vi) One year. (vii) Nil (viii) 2 ploughings in Sept.—Oct & Nov.—Dec. 1950. During 1951, 2 ploughings in Sept-Oct, Nov-Dec. cultivator worked in Jan. and May.

During 1952, 2 ploughings in Apr—May & Aug—Sept. and hoeing in summer.

During 1953, 4 ploughings in Aug, Oct, Nov. and April—May 1954.

(ix) G.M. crop of Crotolaria straita raised. (x) Rainfed. (xi) 148·69″, 107·74″, 120·85″ & 165·63″ in year 1950 1951, 1952 & 1953 respectively. (xii) Monthly harvests.

2. TREATMENTS :

Applying 4½ lb. A/S+2 lb. B.M.+100 lb. G.L./tree/year in Aug—Sept.

(1) In circular basin around each tree to a radius of 8′ and depth 1′ towards the periphery.

(2) Broadcast over the entire area and ploughed in.

(3) In linear trenches 2′ wide and 1′ deep.

3. DESIGN :

(i) R.B D. (ii) (a) 3 (b) N.A. (iii) 5 (iv) 9 (v) Nil. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) During 1950, beetles regularly watched and killed; mild attack of Neppantis; severe attack of shoot-rot- 1% Bordeaux mixture sprayed twice, April-May & June—July. During 1951 there was serious Neppantis attack and was contolled by 0·2% wettable D.D.T. and release of parasities. During 1952 and 53 there was no serious incidence of pests. Regular search was made for Rinocerous Beetle (iii) Girth height, No. of leaves, length of petiole, length of leaves, No. of spathes, No. of female flowers, No. of female flowers set, No. of green nuts & No. of barren nuts etc. (iv) (a) 1948—1953. Data analysed for 1950 to 1953 period. (b) Nil (v) (a), (b) Nil. (vi) & (vii) Nil.

5. RESULTS :

Av. no. of nuts/tree (adjusted).

Treatment	Year 1950	1951	1952	1953
1.	37·72	18·20	46·80	33·00
2.	33·64	15·92	53·60	27·00
3.	35·00	20·00	49·00	25·00
Mean	35·45	18·04	49·80	28·33
S.E. of difference	2·82	3·24	2·13	2·20
Signi-ficance	N.S.	N.S.	Signi-ficant	Signi-ficant.

Crop :-Coconut. Ref :-K. 52 (63)

Site :- Central Coconut Res. Stn. Kasaragod Type :-'C'

Object :—To study the germination capacity of nuts of different maturity.

1. BASAL CONDITIONS :

(i) Virgin land (ii) (a) Red loam (b) Refer soil analysis, Kasaragod. (iii) By seednuts. (iv) Ordinary tall West coast, (v) 2.6.52 in nursery. Sown by square method 1'×1'. (vi) As per treatments. (vii) Nil. (viii) Nil. (ix) Nil (x) Rainfed (xi) 3086·3 mms in 118 rainy days. (xii) Nursery study.

2. TREATMENTS :

Seednuts aged : 1. 11 months
2. 12 ,,
3. 13 ,,
4. 14 ,,

3. DESIGN :

(i) R.B.D. (ii) (a) 4 (b) N.A. (iii) 6 (iv) 5 (v) Nil (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil (iii) No. of days taken for germination ; girth at collar & seedlings (mm.) Height of seedlings (cm). No. of functioning leaves. (iv) (a) 1952—not repeated. (b) Nil (v) (a), (b) Nil (vi)& (viii) Nil.

5. RESULTS :

Character : No. of days taken for germination.

(i) 120·27

(ii) 11·07

(iii) The treatments do not differ significantly.

(iv)

Treatment	Mean
1.	121·91
2.	120·90
3.	122·18
4.	116·30

S.E. of treatment means = 4·52

Character : Girth at collar (m.m.)

(i) 102·8

(ii) 7·82.

(iii) The treatments do not differ significantly

(iv)

Treatment	Mean
1.	101·0
2.	100·2
3.	104·3
4.	105·8

S.E. treatment means = 3·19

Character : Height of seedlings (c.m.)

(i) 111·0

(ii) 11·16

(iii) The treatments do not differ significantly

(iv)

Treatment	Mean
1.	106·2
2.	109·8
3.	109·0
4.	100·9

S.E. of treatment means=4·56

Character : No. of functioning leaves on the crown.

(i) 5·0

(ii) 0·400

(iii) The treatment do not differ significantly

(iv)

Treatment	Mean
1.	5·0
2.	4·9
3.	4·9
4.	5·3

S.E. treatment means = 0·163

Crop :-Coconut — Ref :-K. 48 (4)
Site :-Agri. Res. Stn. Nileshwar-III. — Type :-'C'

Object :—To find-out the proper depth at which coconut seedlings are to be planted in pure littoral sand.

1. BASAL CONDITIONS :

(i) Virgin land. (ii) (a) Purely sandy generally met with in the west coast area and is found to a depth of 20' or more. (b) Refer soil analysis Nileshwar—III. (iii) By seednuts. (iv) Ordinary tall west coast variety. (v) 6.7.1939, Triangular method 25' spacing. (vi) About one year. (vii) Nil (viii) G.N.C. 5 lb./tree+'A/S' 2 lb./tree+Ash 20 lb./tree+G.M. 200 lb./tree Manures generally applied in Aug.—Sept. after heavy rains by broadcast. (b) A basal dressing of 20 lb. of ash/ac. to give a start to the G.M. crop sown in May—June in the poor sandy soils. G.M. crop ploughed in situ during Sept. Burial of Coconut husks and leaves occassionally done to improve the organic content of the soil. (c) Ploughed in Jan. and Oct. and cultivator worked in Feb. The seedling pits cleaned of weeds and excess of soil removed from pits. (ix) Nil. (x) Rainfed (xi) 137·97". (xii) The trees have not come to bearing.

2. TREATMENTS :

1. Planting seedlings in 3' deep pits.
2. Planting seedlings in 6' deep pits.

Planted on 6.7.1939.

3. DESIGN :

(i) Three 2×2 L. Sq. (ii) (a) 2 (b) N.A. (iii) 6 (iv) 12 (v) Nil. (vi) No.

4. GENERAL :

(i) Satisfactory (ii) Trees regularly searched for pests and diseases. Beetles occasionally caught and killed (iii) Rate of production of leaves; Number of leaves on the crown. (iv) (a) 1939, being continued (b) N.A. (v) (a), (b) Nil (vi) & (vii) Nil.

5. RESULTS :

(i) 5·90 leaves/tree.
(ii) 0·178 leaves/tree.
(iii) The treatments are significantly different.
(iv) Number of leaves produced/tree during the year.

Treatment	Mean.
1.	6·14
2.	5·65

S.E. of treatment means =0·072 leaves/tree.

Crop :- Coconut. — Ref :- K. 49 (5)/48 (4)
Site :- Agri. Res. Stn. Nileshwar-III. — Type :- 'C'

Object:—To find-out the proper depth at which coconut seedlings are to be planted in pure littoral sand.

1. BASAL CONDITIONS :

(i) Virgin land. (ii) (a) Purely sandy, generally met with in the West Coast area and is found to a depth of 20 feet or more. (b) Refer soil analysis, Nileshwar-III. (iii) By seednuts. (iv) Ordinary tall west coast variety. (v) 6.7.1939, Triangular method, 25 feet spacing. (vi) About one year. (vii) Nil (viii) 2 C. ft. Red Laterite soil+G.N.C. 7½ lb.+A/S 3 lb.+Super 2 lb.+Ash 30 lb. per tree. Manures generally applied in Aug-Sept. after heavy rains by broadcast. (b) basal dressing of 20 lb. of ash/tree to give a start to the G.M. crop in the poor sandy soils. The G.M. crop ploughed in situ during Sept. Burial of coconut husks and leaves occasionally done to improve the organic content of the soil. (ix) Nil (x) Rainfed (xi) 169.39" (xii) The trees have not come to bearing.

2. TREATMENTS :

1. Planting seedlings in 3' deep pits.
2. " " 6'

Planted on 6.7.1939.

3. DESIGN :

(i) Three 2×2 L.Sq. (ii) (a) 2 (b) N.A. (iii) 6 (iv) 12 (v) Nil. (vi) No.

4. GENERAL :

(i) Satisfactory. (ii) The crown of palms sprayed with zinc Bordeaux mixture during the year. (iii) Rate of production of leaves; No. of functioning leaves on the crown. (iv) (a) 1939 being continued. (b) N A. (v) (a), (b) Nil. (vi) & (vii) Nil.

5. RESULTS :

(i) 6.08 leaves/tree
(ii) 0.051 leaves/tree
(iii) The treatments are significantly different.
(iv) No. of leaves produced/tree during the year.

Treatment	Mean
1.	6.19
2.	5.97

S.E. of treatment means =0.021 leaf/tree.

Crop :- Coconut. Ref :- K. 50 (4)/49 (5)/48 (4)

Site :-Agri. Res. Stn. Nileshwar-III Type :- 'C'.

Object:—To find-out the proper depth at which coconut seedlings are to be planted in pure littoral sand.

1. BASAL CONDITIONS :

(i) Virgin land. (ii) (a) Purely sandy generally met with in the West Coast area and is found up to a depth of 20 feet or more. (b) Refer soil analysis, Nileshwar-III. (iii) By seednuts. (iv) Ordinary tall west coast variety. (v) 6.7.1939. Triangular method, 25' spacing. (vi) About one year. (vii) Nil. (viii) 2 C. ft. red soil ; G.N.C. 7½ lb. A/S 3 lb., Super 2 lb., Ash 30 lb. per tree. Manures generally applied in Aug. & Sept. after the heavy rains by broadcast. The basal dressing of 20 lb. of ash/tree to give a start to G.M. crop on the poor sandy soils. The G.M. crop ploughed in situ during Sept. Burial of coconut husks and leaves occasionally done to improve the organic content of the soil. 2 C. ft. Red soil/tree applied to improve the soil condition. Ploughed in Jan. and Oct. and cultivator worked in Feb. The seeding pits weeded, cleaned and excess soil removed. (ix) Nil (x) Rainfed. (xi) 172.55" (xii) The trees have not come to bearin.

2. TREATMENTS ;

1. Planting seedlings in 3' deep pits.
2. „ „ „ 6' „ „

Planted on 6.7.1939.

3. DESIGN :

(i) Three 2×2 L. Sq. (ii) (a) 2 (b) N.A. (iii) 6 (iv) 12 (v) Nil. (vi) No.

4. GENERAL :

(i) Satisfactory. (ii) Palms searched for beetles and Nephantis serinopa. Spraying with Zinc Bordeaux mixture during Sept. (iii) Rate of production of leaves ; Number of functioning leaves on the crown. (iv) (a) 1939 being continued. (b) N.A. (v) (a), (b) Nil. (vi) & (vii) Nil.

5. RESULTS :

(i) 5.82 leaves/tree
(ii) 0.112 leaves/tree.
(iii) The treatment differences are highly significant.
(iv) Number of leaves produced/tree during the year.

Treatment	Mean
1.	6.20
2.	5.44

S.E. of treatment means =0.046 leaves/tree

Crop :- Coconut. Ref :- K. 51 (20)/50 (4)/49 (5)/48 (4)

Site :- Agri. Res. Stn. Nileshwar-III. Type :- 'C'.

Object:—To find-out the proper depth at which coconut seedlings are to be planted in pure littoral sand.

1. BASAL CONDITIONS :

(i) Virgin land. (ii) (a) Purely sandy generally met with in the west coast area and is found to a depth of 20 feet or more. (b) Refer soil analysis, Nileshwar-III. (iii) By seednuts. (iv) Ordinary tall west coast variety. (v) 6.7.1939, Triangular method ; 25' spacing (vi) About one year. (vii) Nil. (viii) (a) Crotolaria straita was sown in May at 15 lb./ac., pulled out and applied in Oct. The palms received 7½ lb G.N.C., A/S, 2 lb. Super and 30 lb. ash/tree. (b) basal dressing of 24 lb. ash/tree to give a start to the G.M

crop on the poor sandy soils. The G.M. crop ploughed in situ during Sept. Burial of coconut husks and leaves occasionally done to improve the organic content of the soil. (c) The area received two ploughings in May and Dec. (ix) Nil. (x) Rainfed. (xi) 118.21" (xii) The trees have not yet started bearing.

2. TREATMENTS :

1. Planting seedlings in 3' deep pits.
2. ,, ,, ,, 6' ,, ,,

Planted on 6.7.1939.

3. DESIGN :

(i) Three 2×2 L.Sq. (ii) (a) 2 (b) N.A. (iii) 6 (iv) 12 (v) Nil (vi) No.

4. GENERAL :

(i) Satisfactory. (ii) A regular search maintained for beetles and nephantis throughout the year. Zinc Bordeaux mixture sprayed in Oct. (iii) Rate of production of leaves. Number of functioning leaves on the crown. (iv) (a) 1939, being continued. (b) N.A. (v) (a) & (b) Nil. (vi) & (vii) Nil.

5. RESULTS :

(i) 6.64 leaves/tree
(ii) 0.479 leaves/tree
(iii) The treatments are not significantly different.
(iv) Number of leaves produced/tree during the year.

Treatment	Mean
1.	6.79
2.	6.43

S.E. of treatment means =0.195 leaves/tree.

Crop :- Coconut. Ref :- K. 52 (16)/51 (20)/50 (4) /49 (5)/48 (4)

Site :- Agri. Res. Stn. Nileshwar-III. Type :- 'C'.

Object:—To find-out the proper depth at which coconut seedlings are to be planted in pure littoral sand.

1. BASAL CONDITIONS :

(i) Virgin land. (ii) (a) Purely sandy generally met with in the west coast area and is found to a depth of 20 feet or more. (b) Refer soil analysis, Nileshwar-III. (iii) By seednuts. (iv) Ordinary tall west coast variety. (v) 6.7.1939. Triangular method, 25' spacing. (vi) About one year. (vii) Nil (viii) (a) Ash 4500 lb./ac: broadcast and Crotolaria Straita seed broadcast in May at 15 lb./ac. All the palms received 5 lb. G.N.C. 2 lb. A/S & 2 lb. B.M./tree. (b) The basal dressing of ash to give a start to the G.M. crop on the poor sandy soils. G.M. crop ploughed in situ during Sept. Burial of coconut husks and leaves occasionally done to improve the organic content of the soil. One ploughing in Oct.-Nov. Unploughed areas dug well. The seedling pits cleaned in Aug. Junior hoe worked in Dec. (ix) Nil. (x) Rainfed. (xi) 127.71" (xii) The trees have not come to bearing.

2. TREATMENTS :

1. Planting seedlings in 3' deep pits.
2. ,, ,, 6' ,, ,,

Planted on 6.7.1939.

3. DESIGN :

(i) Three 2×2 L.Sq. (ii) (a) 2 (b) N.A. (iii) 6 (iv) 12 (v) Nil. (vi) No.

4. GENERAL :

(i) Satisfactory. (ii) Palms regularly searched for pests and diseases. Zinc Bordeaux mixture sprayed in April. (iii) Rate of production of leaves. No. of functioning leaves on the crown. (iv) (a) 1939, being continued. (b) N.A. (v) (a), (b) Nil. (vi) & (vii) Nil.

5. RESULTS :

(i) 6.77 leaves./tree.
(ii) 0.384 leaves/tree
(iii) The treatments are significantly different.
(iv) Number of leaves produced/tree during the year.

Treatment	Mean
1.	7.57
2.	5.97

S.E. of treatment mean =0.124 leaves/tree.

Crop :- Coconut. Ref :- K. 53 (25)/52 (16)/51 (20)/50 (4)/49 (5)/48 (4)

Site :- Agri. Res. Stn. Nileshwar-III. Type :- 'C'

Object:—To find-out the optimum depth at which coconut seedlings have to be planted in sandy soils.

1. BASAL CONDITIONS :

(i) Virgin land. (ii) (a) Purely sandy, generally met with in the West coast region and is found to a depth of 20 feet or more. (b) Refer soil analysis, Nileshwar-III. (iii) By seednuts (iv) Ordinary tall west coast variety. (v) 6.7.1939 Triangular method, 25 eet. (vi) About one year. (vii) Nil. (viii) 3 lb. A/S, 20 lb. ash and 200 lb. G.L. and decaying coconut leaves/tree. Ash applied by broadcast with the receipt of premonsoon shower in two doses in July and Aug. 'A/S' applied in Sept. after the application of ash. G.M. crop sown and covered by working a country plough or a cultivator in May, June and ploughed in situ during Sept. (b) basal dressing of 20 lb. of ash./tree to give a start to the G.M. crop in the poor sandy soils. G.M. crop ploughed in situ during Sept. Burial of coconut husks and leaves occasionally done to improve the organic content of the soil. (c) Two ploughings in Jan. and Sept. Unploughed areas dug in Sept. Seedling pits cleaned and filled up with rotten coconut leaves and green leaves in Aug. (ix) Nil. (x) Rainfed (xi) *128.76"* (xii) The trees have not come to bearing.

2. TREATMENTS :

1. Planting seedlings 3' deep in pits.
2. " " 6' " " "

3. DESIGN :

(i) Three 2×2 L. Sq. (ii) (a) 2 (b) N.A. (iii) 6 (iv) 12 (v) Nil. (vi) No.

4. GENERAL :

(i) Satisfactory. (ii) The palms regularly searched for pests and diseases (iii) Number of functioning leaves on the crown. Rate of production of leaves (iv) (a) 1939, being continued, (b) N.A. (v) (a), (b) Nil. (vi) & (vii) Nil.

5. RESULTS :

(i) 5.50 leaves/tree.
(ii) 0.284 leaves/tree.
(iii) The treatment differences are significant.
(iv) Number of leaves produced/tree during the year

Treatment	Mean
1.	6.02
2.	4.97

S.E. of treatment means =0.116 leaves/tree.

Crop :-Coconut. Ref :-K. 49 (68)

Site :—Agri. Res. Stn. Nileshwar—III. Type :—'C'.

Object :—To find-out the proper depth to which the soil has to be ploughed and cultivated in coconut gardens in sandy soil.

1. BASAL CONDITIONS:

(i) The trees received uniform manurial and cultural operations (ii) (a) Sandy soil (b) Refer soil analysis, Nileshwar—III. (iii) By seed nuts. (iv) Ordinary tall, west coast variety. (v) Date N.A. Triangular method of planting; 25' spacing. (vi) one year. (vii) Nil. (viii) *Manures* : 30. lb. ash+7½ lb. G.N.C.+ 3 lb. 'A/S'+2 lb. B.M.+50 to 100 lb. G.L./tree in Aug. & Sept. (ix) G.M. crop of Crotolaria Striata raised and applied to the trees. (x) Rainfed. (xi) 147·83" in 109 rainy days (xii) Monthly.

2. TREATMENETS :

1. Ploughing in July, Sept. and Nov .with Cooper plough to a depth of 4".
2. Digging 5" deep and forming mounds or piling in June and levelling in Sept.
3. Ploughing with Cooper plough in July, Sept. and Nov. to a depth of 6"

3. DESIGN :

(i) R.B.D. (ii) (a) 3 (b) N.A. (iii) 6 (iv) 2 (v) Nil (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Rhinocerous beetled regalurly searched and killed. (iii) No. of functioning leaves. Rate of production of leaves., No. of female flowers, No. of nuts. (iv) (a) 1948 to 1953. (b) N.A. (v) (a), (b) Nil. (vi) & (vii) During 1948, no results were presented as it was too early to draw any conclusion

5. RESULTS :

(i) As in table below

(ii) & (iii) Data not statistically analysed as it was too early to get any conclusion.

(iv)

Character	Treatment 1.	2.	3.	Mean
Mean No. of functioning leaves/tree.	21·1	21·8	21·8	21·6
Interval between production of two successive leaves	32·9	31·4	31·6	32·0
No. of female flowers/tree	37·3	35·9	38·8	37·7
No. of nuts/tree	6·2	6·5	6·5	6·4

Crop :- Coconut. Ref :- K. 50 (57)/49 (68)

Site :- Agri. Res. Stn. Nileshwar III Type :- 'C'.

Object :—To find-out the depth to which the soil has to be ploughed or cultivated in the coconut gardens in sandy soil.

1. BASAL CONDITIONS :

(i) The trees received uniform manurial & cultural operations (ii) (a) Sandy, (b) Refer soil analysis, Nileshwar—III. (iii) By seedling. (iv) Ordinary tall, west coast variety. (v) Date N.A. Triangular method ; 25′ spacing. (vi) One year old. (vii) Nil. (viii) 30 lb. Ash in June ; 7½ lb. G.N.C.+3 lb. A/S+2 lb. B.M. per tree in Sept. (ix) G.M. crop of Crotolaria straita raised and applied to the trees. (x) Rainfed. (xi) 169.72″ in 123 rainy days. (xii) Monthly harvests.

2. TREATMENTS :

(1) Ploughing 4″ deep with 'Cooper 26' plough thrice a year roughly at 2 months interval in July, Sept. and Nov.

(2) Ploughing 6″ deep with 'Cooper 34' plough as in (1).

(3) Digging 5″ deep and forming mounds in Sept. and levelling them in Nov.

3. DESIGN :

(i) R.B.D. (ii) (a) 3 (b) N.A. (iii) 6 (iv) 2 (v) Nil. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Beetles regularly searched and killed. (iii) No. of functioning leaves on the crown, Interval of production of two successive leaves, Production of female flowers, No. of nuts. (iv) (a) 1948—1953 (b) N.A. (v) (a), (b) Nil. (vi) & (vii) Nil.

5. RESULTS :

(i) As in table below

(ii) N.A.

(iii) Treatments not significantly different for any character.

(iv)

Character	Treatment 1	2	3	Mean.
No. of functioning leaves/tree	28.4	29.4	28.8	28.9
Rate of leaf production/tree	38.9	37.4	38.4	38.2
No. of female flowers/tree.	21.8	20.4	21.6	21.3
No. of nuts/tree.	7.8	8.2	7.2	7.7

Crop :-Coconut. Ref :-K 51 (49)/50 (57)/49 (68)

Site :-Agri. Res. Stn. Nileshwar. III Type :-'C'

Object :—To find-out the depth to which the soil has to be ploughed or cultivated in the coconut gardens in sandy soil.

1. BASAL CONDITIONS :

(i) The trees received uniform manurial & cultural operations (ii) (a) Sandy (b) Refer soil analysis—Nileshwar-III. (iii) By seedling. (iv) Ordinary tall West Coast variety. (v) Date N.A. Triangular Methods, 25′ spacing. (vi) One year old. (vii) Nil. (viii) 30 lb. Ash+7½ lb. G.N.C.+3 lb. 'A/S'+2 lb. Super/tree. Ash & Super broadcast, others applied in trenches during Aug.—Sept (ix) Nil. (x) Rainfed. (xi) 111.63″ in 114 rainy days. (xii) Monthly harvest.

2 TREATMENTS :

(1) Ploughing 4″ deep with 'Cooper 26' plough' thrice a year roughly at 2 months interval in July, Sept & Nov.

(2) Ploughing 6" deep with 'Cooper 34' plough' as in (1)
(3) Digging 5" deep and forming mounds in Sept. and levelling them in Nov.

3. DESIGN :

(i) R.B.D. (ii) (a) 3 (b) N.A. (iii) 6 (iv) 2 (v) Nil. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Beetles regularly searched and killed. (iii) No. of functioning leaves, rate of production of leaves, No. of female flowers & No. of nuts. (iv) (a) 1948-1953. (b) N.A. (v) (a) (b) Nil. (vi) & (vii) Nil.

5, RESULTS :

(i) & (ii) As in table below
(iii) Treatments are not significantly different for any character.
(iv)

Character	Treatment (1)	(2)	(3)	Mean	S.E. of expt	S.E. of treatment mean
No. of functioning leaves/tree	21.2	21.8	21.7	21.6	1.09	0.45
Rate of production of leaves/tree	38.5	38.3	38.4	38.4	1.24	0.51
No. of female flowers/tree	20.8	21.1	21.2	21.0	3.45	1.41
No. of nuts/tree	1.6	1.7	1.5	1.6	0.84	0.34

Crop :-Coconut. Ref :-K.52 (53)/50 (57)/49 (68)

Site :- Agri. Res. Stn. Nileshwar. III Type :- 'C'

Object :—To find-out the depth to which the soil has to be ploughed or cultivated in the coconut gardens in sandy soil.

1. BASAL CONDITIONS :

(i) The trees received uniform manurial and cultural operations (ii) (a) Sandy. (b) Refer soil analysis, Nileshwar-III. By seedlings. (iv) Ordinary tall west coast variety, (v) Date N.A. Triangular method, 25' spacing. (vi) One year old (vii) Nil (viii) 20 lb. Ash/tree in equal doses during May & Nov. 2 lb. A/S.+5 lb. G.N.C.+2 lb. B.M. in Sept. with 100 lb. G.M./tree. (ix) G.M. crop of Crotolaria raised and applied to the trees. (x) Rainfed. (xi) 114.68"—107 days. (xii) Monthly harvest.

2. TREATMENTS :

(1) Ploughing 4" deep with 'Cooper 26' plough thrice a year roughly at 2 months interval in July. Sept. & Nov.
(2) Ploughing 6" deep with "Cooper 34" plough as in (1).
(3) Digging 5" deep and forming mounds in Sept. and levelling them up in Nov.

3. DESIGN :

(i) R.B.D. (ii) (a) 3 (b) N.A. (iii) 6 (iv) 2 (v) Nil (vi) Yes.

4. GENERAL ;

(i) Satisfactory. (ii) Beetles regularly searched and killed. (iii) No. of functioning leaves, No. of female flowers and No. of nuts. (iv) (a) 1948-1953 (b) N.A. (v) (a), (b) Nil. (vi) & (vii) Nil.

5. RESULTS :

(i), (ii) As in table below
(iii) For none of the characters the treatment effects are significantly different.
(iv)

Character	Treatment 1	2	3	Mean	S.E. of expt	S.E. of treat mean
No. of functioning leaves/tree	15.2	15.8	15.5	15.5	4.14	1.69
No. of female flowers/tree	11.5	13.4	5.8	10.2	5.58	2.28
No. of nuts/tree	4.3	5.6	2.9	4.2	2.25	0.92

Crop :-Coconut. Ref :-K. 53 (60)/52 (53)/51 (49) 50 (57)/49 (68)

Site :-Agri. Res. Stn. Nileshwar-III. Type :-'C'

Object :—To find-out the depth to which soil has to be ploughed or cultivated in the coconut gardens in sandy soil.

1. BASAL CONDITIONS :

(i) The trees received uniform manurial and cultural operations (ii) (a) Sandy (b) Refer soil analysis, Nileshwar-III. (iii) By seedlings. (iv) Ordinary tall, west coast variety. (v) Date N.A. Triangular method 25' spacing, (vi) One year old. (vii) Nil (viii) 20 lb. Ash/tree in equal doses in May & Oct. 3 lb. A/S in Sept. with 100 lb. G.L./tree. (ix) G.M. crop of Crotolaria straita raised and applied to the trees. (x) Rainfed. (xi) 165.63"—121 days (xii) Monthly harvests.

2. TREATMENTS :

(1) Ploughing 4" deep with "Cooper 26" plough thrice a year roughly at 2 months interval in July, Sept. & Nov.
(2) Ploughing 6" deep with "Cooper 34" plough as in (1).
(3) Digging 5" deep and forming mounds in Sept. and levelling them up in Nov.

3. DESIGN :

(i) R.B.D. (ii) (a) 3 (b) N.A. (iii) 6 (iv) 2 (v) Nil. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Beetles regularly searched and killed (iii) No. of functioning leaves, No. of female flowers and No. of nuts. (iv) (a) 1948-1953. (b)N.A. (v) (a), (b) Nil. (vi) & (vii) Nil.

5. RESULTS :

(i) &, (ii) As in table below
(iii) The treatments are not significantly different for any character.
(iv)

Character	Treatment 1	2	3	Mean	S.E. of expt	S.E. of treat mean
No. of functioning leaves/tree	18.0	17.8	19·4	18.4	2.41	0.98
No. of female flowers produced/ tree	17.5	23.5	27.0	22.7	16.28	6.65
No. of nuts/tree	6.1	7.4	8.8	7.4	6.09	2.49

Crop :- Coconut. Ref-: K. 48(36), 49(47), 50(41), 51(37), 52(42) & 53(50)

Site:- Agri. Res. Stn. Pilicode. Type :- 'C'.

Object :— To find-out (1) the effect of ploughing with monsoon plough and digging the soil with mammatty on the yield & (2) minimum number of ploughings to get the best yield.

1. BASAL CONDITIONS :

(i) The trees were manured regularly at 3 lb. A/S + 2 lb. B.M. +100 lb. Green stuff compost/tree/year. The fields were ploughed twice and harrowed once or twice a year. (ii) (a) Laterite gravely soil. (b) Refer soil analysis, Pilicode. (iii) By seedlings. (iv) Ordinary tall west coast variety. (v) One year old seedlings planted on 9.6.1919 in pits, 3'×3'×3' by triangular method, 30 feet spacing (vi) One year old seedlings at the time of planting. (vii) Nil. (vii) G.M crop applied in Aug—Sept. by ploughing 5 lb. G.N.C. 2 lb. A/S & 2 lb. B.M./tree. applied in Dec. 1948. GNC 7½ lb. +A/S 3 lb. + B.M. 2 lb.+Mur. pot. 75 lb. + Ash 20 lb. + G.M. 50 to 100 lb/tree. GNC & A/S in trenches and others broadcast in Aug. & Sep. 1949. G.M. crop of Crotolaria straita grown did not come up well.
3 lb. A/S + 7½ lb. G.N.C + 2 lb. Super + 100 lb. G.M. tree applied in trenches + 30 lb. Ash/tree broadcast in Aug. Sept. 1950. During 1951 G.N.C. 7½ lb. + A/S 3 lb. + Super 2 lb + G.M. 100 lb./tre in trenches + 30 lb. Ash tree broadcast. Ash and super in Nov. Dec. and other in Aug. Sept. During 1 52 A/S 2 lb. + G.N.C. 5 lb. + B.M. 2 lb. broad cast in Aug. Sept. 20 lb. Ash/tree in two doses broad cast in April, May & Nov—Dec.
During 1953 3 lb. A/S/tree along with the G.M. crop in Aug. 20 lb. Ash/tree in Sept. Oct. (ix) G.M. crop of Crotolaria straita raised. (x) Rainfed. (xi) 139.71", 144.14" 148.69", 107.74". 120.85" & 139.23" in the year 1948, 49, 50, 51, 52 and 53 respectively. (xii) Monthly harvests.

2. TREATMENTS :—

1. Ploughing with monsoon plough once in Aug.—Sept.
2. Ploughing with monsoon plough twice in June & Sept.
3. Ploughing thrice with monsoon plough in June, Sept. & Nov.
4. Digging with mammatty 9" deep once in Aug.—Sept.

3. DESIGN

(i) R.B.D. (ii) (a) 4 (b) N.A. (iii) 5 (iv) Varied from 7 to 15 (v) Nil (vi) Yes.

4. GENERAL :—

(i) Satisfactory. (ii) During 1948 beetles regularly searched and killed. Mild attack of nephantis. 1% Bordeaux mixture applied against shoot rot in April, May & June-July. Rhinoceros beetles regularly searched and killed in 1949. During 1950 a mild attack of nephantis was noticed. A severe attack of shoot rot was controlled by 2 sprayings with 1% Bordeaux mixture. Beetles regularly searched & killed.
During 1951 a serious nephantis attack was controlled by 0.2 % wettable D.D.T. and also by release of parasites. Rhinocerous Beetles regularly searched and killed.
During 1952 there was no incidence of pests or disease. Beetles watched and destroyed.
During 1953 all trees were regularly searched for beetles. (iii) Girth height, No. of leaves. Length of petiole, Length of leaf, No. of spathes No. of female flowers, No. of female flowers set, No. of green nuts, & No of barren nuts. (iv) (a) 1942—being continued. (b) Nil (v) (a) (b) Nil. (vi) &(vii) Nil.

5. RESULTS :

No. of nuts/tree. (adjusted)

Treatment	Year 1948	1949	1950	1951	1952	1953
1.	53.25	18:73	36.13	14.93	36.34	23.64
2.	53.39	17.48	35.76	13.93	34.59	20.29
3.	58.93	22.54	46.96	14.24	41.99	24.89
4.	47.23	22.00	32.55	15.69	38.66	20.64
Mean	53.19	20.19	37.85	14.70	37.89	22.36

Av. S.E. of diff. of two means.

S.E.	3.57	2.80	2.60	2.30	4.62	5.31
Significance	N.S.	N.S.	Significant.	N.S.	N.S.	N.S.

Crop :- Coconut. Ref :- K. 50 (43) , 51(40), 52(46) & 53(55).
Site :- Agri.Res. Stn. Pilicode. Type :- 'C'.

Object :— To find-out the correct depth to which the soil has to be tilled in a Coconut garden.

1. BASAL CONDITIONS :

(i) 3 ploughings. 3 lb A/S + 2 lb. B.M. + 100 lb. G.L. or compost/tree per year. Cultivator worked once, or twice in a year. (ii) (a) Gravelly laterite soil. (b) Refer soil analysis-Pilicode. (iii) By seedlings. (iv) West coast exotic varieties and self progenies of Kasargod parents.. (v) 1926-27 Triangular method of planting with 30 feet spacing. (vi) One year. (vii) Nil.

(viii)

1950

2 plonghings in Sept.—Oct. and Nov.—Dec. 3 lb: A/S + 7½ lb. G.N.C. + 2 lb. Super per tree/year applied in trenches along with 100 lb. G.M./tree. In Aug. Sept. 30 lb. Ash/tree broadcast.

1951

Two ploughings in Sept.—Oct. & Nov.—Dec. Cultivator worked in Jan.—Feb., March.—April & April—May.
Manures :— 7½ lb. G.N.C. + 3 lb. A/S. + 30 lb. Ash + 2 lb. Super/tree/ year + 100 lb. G.L. or G.N.C. + A/S + G.L. in trenches in Aug.—Sept. and Ash and super broadcast in Nov.—Dec.

1952

2 ploughings in April—May & Aug.—Sept. hoeing in summer. 2 lb. A/S +2 lb. B.M. + 5 lb. G.N.C. in Aug.—Sept. and 20 lb. ash/tree in two doses in April—May & Nov.—Dec.

1953

4 ploughings in Aug.—Sept.. Oct.—Nov. and April.—May 1954.

(ix) A green manure crop of crotolaria straita raised. (x) Rainfed. (xi) 50 (148.69)", 51(107.74"), 52 (120.85") ; 53(139.23". (xii) Monthly harvests.

2. TREATMENTS :

(1) Digging 5" deep with mammatty, forming mounds in Aug.—Sep. and mounds levelled during Dec.—Jan.

(2) Ploughing thrice 4" deep with monsoon plough.

(3) Ploughing thrice 6" deep with 'Cooper No : 34 plough.' The three ploughings were given at intervals of two months from July.

3. DESIGN :

(i) R.B.D. (ii) 3 (iii) 5 (iv) 6 (v) Nil. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) In 1951 serious nephantis-0. 2% wettable D.D.T. sprayed & parasite released. (iii) Girth, Height, No of leaves, Length of petiole length of leaf No. of spathes, No of female flowers, No of female flowers set, No of green nuts & No. of barren nuts etc. (iv) (a) 1948—1953. (b) N.A. (v) (a), (b) Nil. (vi) & (vii) Nil.

5. RESULTS :

(i) to (iv) see table below.

Average No. of nuts per tree (adjusted).

Treatment	Year 1950	1951	1952	1953
1.	32.90	16.75	34.45	15.80
2.	41.10	11.70	50.82	16.78
3.	38.10	12.40	35.74	17.56
S.E. of diff. of any two means	3.70.	3.37	6.73	3.34
Significance :—	N.S.	N.S.	N.S.	N S.

Crop :- Cashewnut. Ref :- K. 48(53).

Site :- Agri. Res. Stn. Nileshwar-III. Type :- 'M'.

Object :— To find-out the best manure for cashewnut in addition to regular cultivation.

1. BASAL CONDITIONS :

(i) Virgin land- (ii) (a) Pure sandy. (b) Refer soil analysis-Nileshwar-III. (iii) By seedlings. (iv) Local. (v) 1942. Square method, 20' spacing. (vi) About one year (vii) Nil. (viii) Digging pits and cleaning weeds. (ix) Nil. (x) Reinfed. (xi) 151.05" in 132 rainy days. (xii) N.A.

2. TREATMENTS :

	lb. G.N.C.	+	lb. B.M.	+	lb.	Ash	+	Cultivations/tree/year.
1.	5 ,,	+	1 ,,	+	10 ,,	,,		,, ,,
2.	5 ,,	+	0 ,,	+	0 ,,	,,		,, ,,
3.	0 ,,	+	1 ,,	+	0 ,,	,,		,, ,,
4.	0 ,,	+	0 ,,	+	10 ,,	,,		,, ,,
5.	0 ,,	+	0 ,,	+	0+	,,		,, ,,

6. No Manure + No cultivation.

Cultivation consisted of digging pits and weeding. manures applied in Aug.—Sept.

3. DESIGN :

(i) R.B.D. (ii) (a) 6 (b) N.A. (iii) 4 (iv) 8 (Net) (v) Yes, one row all round each plot. (vi) Yes.

4. GENERAL :

(i) Satisfactory (ii) Cashew beetle was regularly searched and killed. (iii) Yield of nuts, (iv) (a) 1942—1951 (b) Nil. (v) (a) (b) Nil. (vi) & (vii) Nil.

5. RESULTS :

(i) See table below.

(ii) N.A.

(iii) The yield data were not statistically analysed as all the trees have not come to bearing.

(iv) Treatment	No. of flowers	Yield of nuts in lb/tree lb. ozs.
1.	40	14- 8
2.	39	3- 10
3.	39	0- 4
4.	36	0- ½
5.	33	Nil.
6.	39	2- 0

Crop :- Cashewnut. Ref :- K. 49(45)/48(53)

Site :- Agri. Res. Stn. Nileshwar-III. Type :- 'M'.

Object :—To find-out the best manure for Cashewnut in addition to regular cultivation.

1. BASAL CONDITIONS :

(i) Virgin land. (ii) (a) Sandy (b) Refer soil analysis-Nileshwar-III. (iii) By seeednuts. (iv) Local (v) 1942 square method of planting, 20' spacing. (vi) One year. (vii)Nil. (viii) Clearing pits and digging. (ix) Nil. (x) Rainfed. (xi) 147.88" in 109 rainy days. (xii) monthly.

2. TREATMENTS :

1. 5 lb. G.N.C. + 1 lb. B.M. + 10 lb. Ash + Cultivation/tree/year.
2. 5 ,, ,, + 0 ,, ,, + 0 ,, ,, ,, ,,
3. 1 ,, ,, + 1 ,, ,, + 0 ,, ,, ,, ,,
4. 13 ,, ,, + 0 ,, ,, + 10 ,, ,, ,, ,,
5. 0 ,, ,, + 0 ,, ,, + 0 ,, ,, ,, ,,
6. No manure + No cultivation.

Manures applied in Aug. & Sept. Cultivation consisted of one or two diggings and cleaning pits.

3. DESIGN :

(i) R.B.D. (ii) (a) 6 (b) N.A. (iii) 4 (iv) 8 (net) (v) Yes, one row all round the plot (vi) Yes.

4. GENERAL :

(i) Satisfactory (ii) Rhinocerous beetle was regularly searched and killed, (iii) Yield of nuts. (iv) (a) 1942—1951 (b)Nil. (v) (a) (b) Nil. (vi) & (vii) Nil.

5. RESULTS :

(i) (1) 38.33 (2) 3.67

(ii) N.A.

(iii) Yield data not statistically analysed as all trees had not come to bearing.

(iv) Treatment	No. of trees flowered.	Yields of nuts in lb/tree
1	40	14½
2	40	5½
3	39	1½
4	37	1½
5	35	Nil
6	39	Nil

Crop :- Cashewnut. Ref :- K. 50 (60)/49 (45)/48 (53)

Site :- Agri. Res. Stn. Nileshwar-III. Type :- 'M'

Object—To find-out the optimum manurial requirements of cashewnut.

1. BASAL CONDITIONS :

(i) Virgin land. (ii) (a) Sandy (b) Refer soil analysis, Nileshwar-III. (iii) By seedling. (iv) Local variety. (v) 1942. Square method of planting ; 20' spacing. (vi) About one year. (vii) Nil. (viii) Digging the pits to clean weeds. (ix) Nil. (x) Rainfed (xi) 169·72"-123 rainy days. (xii) N.A.

2. TREATMENTS :

Treatment								
1.	5 lb G.N.C.	+	1 lb B.M.	+	10 Ash	+	Cultivations/tree/year.	
2.	5 ,, ,,	+	0 ,, ,,	+	0 ,,	+	,,	,,
3.	0 ,, ,,	+	1 ,, ,,	+	0 ,,	+	,,	,,
4.	0 ,, ,,	+	0 ,, ,,	+	10 ,,	+	,,	,,
5.	0 ,, ,,	+	0 ,, ,,	+	0 ,,	+	,,	,,

6. No manure + No cultivation

Manures applied in Aug.-Sept. Cultivation consisted of one or two diggings and cleaning pits.

3. DESIGN :

(i) R.B.D. (ii) (a) 6 (b) N:A. (iii) 4 (iv) 8 (net) (v) Yes, one row all round the plot. (vi) Yes.

4. GENERAL :

(i) Some of the trees died during the year (ii) Cashew beetle regularly watched & killed. (iii) Weight of nuts. (iv) (a) 1942 to 1951 (b) N.A. (v) (a) (b) N.A. (vi) & (vii) Nil.

5. RESULTS :

(i) (1) 38.15 (2) 2.67

(ii) N.A.

(iii) Data not analysed as some of the trees died due to beetle attack.

(iv)

Treatment	No. of trees flowered.	yields of nuts in lb/trees
1.	40	8¼
2.	40	3½
3.	39	2
4.	36	1¼
5.	35	Nil
6.	39	¾

Crop :- Banana. Ref :- K. 52 (55).

Site :- Agri. Res. Stn. Pattambi. Type :- 'M'

Object:—To find out the effect of N.P.K. manures each at two levels alone and in combinations.

1. BASAL CONDITIONS :

(i) Banana. manuring : 10 lb. G.L.+25 lb. Wood Ash/tree (ii) (a) Laterite loam (b) Refer soil analysis Pattambi. (iii) by suckers. (iv) Nendran, local, one year duration. (v) 30.4.52, 8′ apart in pits of size 1½′×1½′. Planting rhizomes ; single per pit. (vi) Not applicable. (vii) Nil. (viii) Earthing up 2,3,4 months after planting. (ix) Nil. (x) Rainfed. (xi) 70.04″ in 101 rainy days. (xii) 10 to 24.4.1953

2. TREATMENTS :

1. Control.
2. G.L. ½ lb. N/plant as basal.
3. G.L. ½ lb. N/plant-basal+'A/S' ½ lb. N/plant at the time af earthing up.
4. G.L. ½″ lb. N/plant as basal+G.N.C. ½ "lb. N/plant" as basal.
5. G.N.C. ½ lb. N/plant as basal+'A/S' ½ lb. N/plant at the time of earthing up.
6. G.L. ½ lb. N+Super ½ lb. P_2O_5/plant as basal.
7. G.L. ½ lb. N+Pot:Sul ½ lb. K_2O/plantas bas al.
8. G.L. ½ lb N+Super ½ lb. P_2O_5/plant+Pot. Sul ½ lb. K_2O as all basal.

3. DESIGN ;

(i) R.B.D: (ii) (a) 8 (b) N.A. (iii) 4 (iv) 6 (v) Nil. (vi) Yes.

4. GENERAL :

(i) Severe drought affected the crop. (ii) Nil, (iii) Weight of bananas. (iv) (a) Not repeated. (b) Nil. (v) (a) (b) Nil. (vi) & (vii) Nil.

5. RESULTS :

(i) 4970 lb./ac.

(ii) 402 ,, ,,

(iii) The treatments are significantly different.

(iv) Mean yield in lb./ac.

Treatment	Mean yield.
1.	4736
2.	4764
3.	4935
4.	4793
5.	4906
6.	4821
7.	5360
8.	5445

S.E. of treatment mean. =201 lb./ac.

Crop :- Banana. Ref :- K. 52 (56)

Site :- Agri. Res. Stn. Pattambi. Type :- 'M'

Object:—To verify and scientifically examine the rationale of the local practice of crushing the nendran suckers before planting.

1. BASAL CONDITIONS :

(i) Banana manuring : 10 lb. G.L.+25 lb. wood ash/tree. (ii) (a) Laterite loam (b) Refer soil analysis, Pattambi. (iii) By suckers. (iv) Nendran, local, one year duration. (v) 26.4.52, 8′ apart in pits of 1½′×2′ planting rhizomes, single per pit. (vi) Not applicable. (vii) Nil. (viii) Earthing up 2, 3, & 4 months after planting. (ix) Nil. (x) Rainfed. (xi) 70.04″ in 101 rainy days: (xii) 10 to 22.4.1953.

2. TREATMENTS :

1. Suckers to be cut back to 6″ from the rhizome and planted at once.
2. Suckers to be cut back as in (1), dried in the sun for 2 days and then planted.
3. Corn to be collected after the bunch is harvested from the parent plant and planted out.
4. Corn to be collected from the 1st daughter sucker of the same clump soon after the harvest of the bunch of the parent plant.
5. (2)+crushing the shoot portion before planting.
6. (2)+creshing the shoot portion when the shooting starts after planting.
7. (2)+crushing the shoot once before planting and once after planting.
8. Sword suckers without any treatment (Control).

3. DESIGN :

(i) R.B.D. (ii) (a) 8 (b) N.A. (iii) 4 (iv) 6 (v) Nil; (vi) Yes.

4. GENERAL :

(i) Severe drought affected the crop. (ii) Nil. (iii) Weight of banana. (iv) (a) Not repeated. (b) Nil. (v) (a) (b) Nii. (vi) Mll.

5. RESULTS :

(i) 3924 lb./ac.
(ii) 629 ,,
(iii) The treatments are not significantly different.
(iv) Banana weight in lb./ac.

Treatment	Mean
1.	3885
2.	3942
3.	3857
4.	4226
5.	3942
6.	3857
7.	3885
8.	3800

S.E. of treatment mean. =315. lb/ac.

Crop :- Banana. Ref :- K. 52 (57).
Site :- Agri. Res. Stn. Pattambi. Type :- 'M'

Object:—To find-out the best combination of G.N.C. & 'A/S' in the presence and absence of lime.

1. BASAL CONDITIONS :
(i) Banana. manuring—10 lb. G.L.+45 lb. wood ash/tree. (ii) (a) Laterite loam (b) Refer soil analysis Pattambi. (iii) By suckers. (iy) Nendran local. One year duration. (v) 24.4.52. 8' apart in pits of size 1½'×2' planting rhizomes single/pit. (vi) Not applicable. (vii) 10 lb. G.L./plant (viii) Earthing up 2,3 and 4 months after planting. (ix) Nil. (x) Rainfed. (xi) 69.70" in 100 rainy days. (xii) 7 to 15.4.1953.

2: TREATMENTS :
All possible combinations of (1) & (2).
(1) 2 levels of lime : 0, ½ lb/plant
(2) 10 manures :—
1. No manure.
2. G.N.C. 2 lb./plant.
3. ,, 3 ,, ,,
4. ,, 4 ,, ,,
5. A/S ½ ,, ,,
6. ,, ¾ ,, ,,
7. ,, 1 ,, ,,
8. G.N.C: 1 lb./plant.+A/S ½ lb./plant.
9. ,, 1½ lb./plant.+A/S ½ lb./plant.
10. ,, 2 ,, ,, + ,, ½ ,, ,,
G.N.C. & A/S applied in two doses 2 months & 4 months after planting. Lime applied immediately after planting.

3. DESIGN :
(i) 2×10 Fact. in R.B.D. (ii) (a) 20 (b) N.A. (iii) 2 (iv) 6 (v) Nil. (vi) Yes.

4. GENERAL :
(i) Severe drought affected the crop.((ii) Nil. (iii) Yield of Banana. (iv) (a) Not repeated. (b) Nil. (v) (a) (b). Nil. (vi) Nil (vii) Raw data N.A.

5. RESULTS :
(i) 5966 lb./ac.
(ii) 566 lb./ac.
(iii) Main effects and interaction not significant.
(iv) Weight of Banana in lb./ac.

Other Manure	Lime 1.	2.	Mean
1.	4878	6239	5558
2.	5615	5842	5728
3.	6409	5729	6069
4.	7147	6466	6806
5.	5105	6239	5672
6.	6012	5842	5927
7.	6069	5785	5927
8.	6353	5558	5956
9.	5785	5722	5757
10.	6750	5785	6268
Mean.	6012	5921	5966

S.E. of the body of table. = 393 lb./ac.
S.E. of marginal means (Lime) = 124 ,,
S.E. of marginal means (other manures) = 278 ,,

Crop :- Ginger. Ref :- K. 49(6)
Site :- Agri. Res. Stn. Taliparamba. Type :- 'M'

Object :— To test the effect on yield of Ginger of different doses of C.M. and G.N.C. and their combinations.

1. BASAL CONDITIONS :
(i) (a) Paddy, Ginger, Chillies. (b) Modan Paddy (c) Basal dressing of 5 C.L./ac. of F.Y.M. (ii) (a) Red laterite (b) Refer soil analysis, Taliparamba (iii) 7.6.1949. (iv) (a) Digging. levelling (b) Planting in raised beds (c) 1½ tola hole (d) 4" to 6" spacing (e) Single rhizome/hole. (v) Nil: (vi) Ernad, Imported. No

classification according to duration. (vii) Rainfed (viii) Two mulchings and two earthings. 1st two months after planting and 2nd, three months after planting. (ix) About 150" (7.6.1949 to 18.2.1950) (x) 18.2.1950.

2. TREATMENTS:—

1. 5 ton/ac. of C.M.
2. 10 ton/ac. of C.M.
3. (1)+ 500 lb./ac. of G.N.C.
4. (1)+ 1000 lb./ac. of ,,
5. 1400 lb./ac ,, ,,
6. 2800 lb./ac. ,, ,,

C.M. applied in small pits after forming beds at the time of planting. G.N.C. top dressed in two doses 60 and 90 days after planting.

3. DESIGN :

(i) R.B.D. (ii) (a) 6 (b) N.A. (iii) 10 (iv) (a) 0.101 cent (b) 0.069 cent (v) One row all round the plot. (vi) Yes.

4. GENERAL: —

(i) Satisfactory (ii) Nil. (iii) Weight of Ginger. (iv) (a) 1945 to 1950 The experiment failed during 1948. (b) No. (c) N.A. (v) (a),(b) Nil. (vi) Nil. (vii) Original data N.A.

5. RESULTS :

(i) 1600 lb./ac.
(ii) 883 lb./ac.
(iii) Treatment differences are highly significant.
(iv) Weight of Ginger in lb./ac.

Treatment	Mean.
1.	1942
2.	1207
3.	1897
4.	2523
5.	1171
6.	862

S.E. of treatment means —279 lb./ac.

Crop -: Ginger. **Ref: K.50(5)**

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

Object:—To test the effect of different doses of C.M. and G.N.C. and their combinations on the yield of Ginger.

1. BASAL CONDITIONS :

(i) (a) Modan Paddy, Ginger, Chillies. (b) Modan Paddy (c) Basal dressing of 5 C.L. F.Y.M./ac. (ii) (a) Red laterite. (b) Refer soil analysis, Taliparamba. (iii) 26.5. 1950 (iv) (a) Digging, levelling (b) planting in raised beds (c) ½ tola/hole (d) 4" to 6" (e) Single rhizome/hole. (v) Nil. (vi) Ernad. imported. (vii) Rainfed (viii) Two mulchings and two earthings 1st : two months after planting and 2nd three months after planting (ix) About 140" (26.5.1950 to 24.2.1951) (x) 24.2.1951.

2. TREATMENTS :

1. 5 ton/ac. of C M.
2. 10 ,, ,, ,, ,,
3. 5 ,, ,, ,, + 500 lb./ac. of G.N.C.
4. 5 ,, ,, ,, + 1000 ,, ,, ,, ,,
5. 1400 lb./ac. of G.N.C.
6. 2800 lb./ac. G.N.C.

C.M. applied in small pits after forming beds
G·N.C. top dressed in two doses two months and three months after planting.

3. DESIGN :—

(i) R.B.D. (ii) (a) 6 (b) N.A. (iii) 10 (iv).(a) 0.101 cent (b) 0.069 cent (v) One row all round the plot (vi) Yes.

4. GENERAL :

(i) Satisfactory (ii) Nil. (iii) Weight of ginger. (iv) (a) 1945—1950. (b) No. (c) N.A. (v) (a), (b) Nil. (vi) Nil. (vii) Raw data N.A. Experiment seems to have failed during 1948.

5. RBSUSTS :

(i) 2760 lb./ac.
(ii) 1101 lb./ac.
(iii) The treatment differences are significant
(iv) Weight of ginger in lb/ac.

Treatment.	Mean.
1.	3303
2.	3721
3.	3022
4.	2822
5.	1978
6.	1768

S.E: of treatment means =348 lb./ac.

Crop :- Ginger — Ref :- K. 49(7)

Site :- Agri. Res. Stn. Taliparamba. — Type:- 'C'

Object :—To test the effect on yield of Ginger by reducing the seed-rate to 1 tola and ½ tola per hole from the local seed-rate of 1½ tola/hole.

1. BASAL CONDITIONS :

(i) (a) Modan Paddy, Ginger, Chillies (b) Modan Paddy (c) Basal dressing of 5 C.L./ac. of F.Y.M. (ii) (a) Red laterite (b) Refer soil analysis, Taliparamba (iii) 7.6.1949. (iv) (a) Digging, levelling. (b) Planting in raised beds (c) As per treatment (d) 4" to 6" (e) single rhizome hole. (v) 5 ton./ac. F.Y.M. compost applied in small pits after forming beds at the time of planting (vi) Ernad, Imported. No classification according to duration. (vii) Rainfed. (viii) Two mulchings and two earthings 1st : two months after planting and 2nd : three months after planting. (ix) About 150" (7.6.1949 to 1.2.1950) (x) 1.2.1950.

2. TREATMENTS :

1. Seed material weighing 1½ tolas./hole
2. ,, ,, ,, 1 ,,
3. ,, ,, ,, ½ ,,

4. DESIGN :

(i) R.B.D. (ii) (a) 3 (b)/N.A. (iii) 10 (iv) (a) 0.101 cent (b) 0.069 cent (v) one row all round the plot. (vi) Yes.

4. GENERAL :

(i) Satisfactory (ii) Nil. (iii) Weight of ginger. (iv) (a) 1945 to 1950. The experiment seems to have failed during 1948. (b) No (c) N.A. (v) (a), (b) Nil. (vi) Nil. (vii) Original data N.A.

5, RESULTS :

(i) 1597 lb./ac.
(ii) 212 lb./ac.
(iii) The treatment differences are significant.
(iv) Weight of Ginger in lb./ac.

Treatment	Mean.
1.	2795
2.	1171
3.	826

S.B. of treatment means =67 lb./ac.

Crop :- Ginger. — Ref:-K. 50(6)

Site :- Agri. Res. Stn. Taliparamba. — Type :-'C'

Object :—To test the effect on yield by reducing the seed-rate to 1 tola and ½ tola/hole from the local seed-rate of 1½ tola/hole.

1. BASAL CONDITIONS :

(i) (a) Modan Paddy, Ginger, Chillies. (b) Modan Paddy (c) Basal dressing of 5 C.L./ac. of F.Y.M. (ii) (a) Red laterite (b) Refer soil analysis taliparamba (iii) 26.5.1950 (iv) (a) Digging ; levelling (b)

planting in raised beds (c) As per treatments (d) 4″ to 6″ (e) Single/rhizome hole (v) 5 ton of F.Y.M. or compost applied in small pits after forming beds (vi) Ernad, Imported, No classificatlon according to duration.(vii) Rainfed (viii) Two mulching, and two earthings 1st one month after planting and 2nd three months after planting.(ix) About 140″ (26.5.1950 to 24.2.1951) (x) (24.2.1951.

2. TREATMENTS :

1. Seed material weighing 1½ tola/hole
2. „ „ „ 1 „
3. „ „ „ ½ „

3. DESIGN :

(i) R.B.D. (ii) (a) 3 (b) N.A. (iii) 6 (iv) (a) 0.101 cent. (b) 0.069 cent. (v) One row all round each plot (vi) Yes.

4. GENERAL :

(i) Satisfactory (ii) Nil (iii) Ginger weight. (iv) (a) 1945—1950 (b) No. (c) N.A. (v) (a) (b) Nil. (vi) Nil. (vii) Raw data N.A. Experiment seems to have have failed during 1948.

5. RESULTS :

(i) 1229 lb./ac.
(ii) 1085 lb./ac.
(iii) The treatment differences are not significant.
(iv) Weight of Ginger in lb/ac.

Treatment	Mean.
1.	1883
2.	942
3.	862

S.E. of treatment means =443

Crop :- Ginger — Ref :- K. 49 (8)

Site :- Agri. Res. Stn. Taliparamba. — Type :- 'D'

Object :—To test the incidence of 'soft rot' diseases on ginger by treating the seed material with different fungicides before planting.

1. BASAL CONDITIONS :

(i) (a) Modan Paddy, Ginger, Chillies. (b) Modan Paddy. (c) About 5 C.L. of F.Y.M./ac. *(ii) (a) Red* laterite (b) Refer Soil analysis (iii) 8.6,1949 (iv) (a) Digging levelling (b) planting, in raised beds (c) 1½ tola/hole (d) 4″ to 6″ (e) Single rhizome/hole. (v) 5 ton/ac. F.Y.M. or Compost applied in small pits after forming beds at the time of planting. (vi) Ernad, Imported, No classification according to duration. (vii) Rainfed. (viii) Two mulchings and two earthings. 1st : two months after planting and 2nd : three months after planting. (ix) About 150 inches. (8.6.1949 to 1.2.1950) (x) 1.2.1950.

2. TREATMENTS :

1. Steeping ginger seed for 1½ hours in % mercuric chloride solution.
2. Steeping ginger seed for 1½ hours in 1% mercuric chloride solution + planting in soil to which super at ½ oz. hole.added/
3. Steeping ginger seed for 1½ hours in 1% mercuric chloride solntion+planting in soil to which A/P at ½ oz. hole is added.
4. Planting in soil to which Super at ½ oz./hole is added.
5. Planting in soil to which A/P at ½ oz./hole is added.
6. Control.

3. DESIGN :

(i) R.B.D. (ii) (a) 6 (b) N.A. (iii) 5 (iv) (a) 0.101 cent (b) 0.069 cent (v) One row all round the plot. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil (iii) % Incidence/plot. (iv) (a) 1949 to 1950 (b) No. (c) N.A. (v) (a), (b) Nil (vi) Nil (vii) Original data N.A.

5. RESULTS :

(i) 100.0 % incidence of pests.
(ii) 66.2 „ „ „
(iii) The treatment differences are significant.
(iv) (% general mean of incidence/plot)

Treatment	Mean.
1.	26.5
2.	55.8
3.	42.6
4.	106.6
5.	236.7
6.	131.9

S.E. of treatment means =29.6

Crop :- Ginger — Ref :- K. 50 (7)

Site :- Agri. Res. Stn. Taliparamba. — Type :- 'D'

Object :—To test the incidence of 'soft rot' disease of ginger by treating the seed material with different fungicides and manure before planting.

1. BASAL CONDITIONS :

(i) (a) Modan Paddy, Ginger, Chillies. (b) Modan paddy (c) Basal dressing of 5 C.L./ac. F.Y.M. (ii) (a) Red laterite (b) Refer soil analysis Taliparamba (iii) 7.6.1950 (iv) (a) Digging, levelling (b) Planting in raised beds (c) 1½ tola./hole (d) 4 to 6 inches (e) Single rhizome/hole. (v) 5 tons/ac. at C.M. the time of planting applied in small pits after forming beds. (vi) Ernad, Imported (vii) Rainfed (viii) Two mulchings and two earthings up's 1st : two months after planting and 2nd three months after planting. (ix) About 140″ (7.6.1950 to 26.2.1951) (x) 26.2.1951.

2. TREATMENTS :

(1) Steeping ginger seed for one and a half hours in 0.01% marcuric cloride solution.
(2) Steeping ginger seed for 1½ hours in 0.01% M/C solution and planting in soil to which super at ½ oz/hole is added.
(3) Steeping ginger seedfor 1½ hours In 0.01% M/C solution and planting in soil to which A/P at ½ oz/hole is added.
(4) Planting in soil to which super at ½ oz/hole is added.
(5) Planting in soil to which A/P at ½ oz/hole is added.
(6) Control.

3. DESIGN :

(i) R.B.D. (ii) (a) 6 (b) N.A. (iii) 5 (iv) (a) 0.101 cents (b) 0.069 cents (v) One row all round the plot (vi) Yes.

4. GENERAL :

(i) Satisfactory (ii) Nil (iii) % of infection (iv) (a) 1949 to 1950 (b) No (c) N.A. (v) (a), (b) Nil (vi) Nil (vii) basic data not available.

5. RESULTS :

(i) 100% infected plants
(ii) N.A.
(iii) The treatment differences are not significant.
(iv) % general mean of incidence/plot.

Treatment	Mean
1.	166.9
2.	42.3
3.	105.5
4.	97.2
5.	81.5
6.	106.6

Crop :- 'Lemon Grass'. — Ref :- K. 53 (8).

Site :- Lemon Grass Res. Stn. Odakkali. — Type :- 'M'

Object :—To study the effect of different combinations of N, P & K on yield and quality of oil on Lemon Grass.

1. BASAL CONDITIONS :

(i) Fallow land. (ii) (a) typical laterite—Lime is one of the principal requirements. (b) Refer soil analysis (iii) By seeds (iv) Red stemmed grass-local variety. (v) 28.4.53. 9.8.53. Sowing by broadcast in a nursery

seed rate 15 lb./ac. The plants were transplanted along raised bed seperated by furrows. Spacing 12", plant to plant and 15" between rows. Single plant/hole. (vi) 103 days. (vii) Nil (viii) 3 weedings (ix) Nil. (x) Unirrigated. (xi) 100 to 120". (xii) 8.12.1953. Generally 4 to 5 harvests/year. Only one harvest on 8.12.53 has been reported for analysis.

2. TREATMENTS :

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

(1) A/S at (i) N_0=0 lb. plot (ii) N_1=1 lb./plot of N

(2) Super at (i) P_0=0 lb./plot (ii) P_1=1.2 lb/plot of P_2O_5

(3) Muriate of Potash at (i) K_0=0 lb./plot (ii) K_1=0.4 lb./plot of K_2O.

3. DESIGN :

(i) R.B.D. (ii) (a) 8 (b) N A. (iii) 4 (iv) 75-120 (v) 2 feet furrow between plots and a footpath between blocks. (vi) Yes.

4. GENERAAL :

(i) Growth very good in NPK plots. (ii) Nil (iii) fresh of weight Grass ; yield of oil and citral content. (iv) (a) 1953, continuing. (b) Nil. (v) (a), (b) Nil (vi) Nil. (vii) The experiment commenced with 120 plants per plot ; but many plants died afterwards. The analysis is based on 120 plants per plot of size 20'×6'

5. RESULTS :

(1) Mean weight of fresh grass in lb/plot of 120 plants

(i) 13.6 lb./plot

(ii) 4.12 lb.lplot

(iii) P alone is highly significant.

(iv) (weight of fresh grass in lb./plot of 120 plants)

	N_0	N_1	Mean.
P_0	10.0	8.6	9.3
P_1	15.8	19.9	17.8
K_0	13.6	14.2	13.9
K_1	12.1	14.4	13.2
Mean.	12.9	14.3	13.6
	P_0	P_1	Mean.
K_0	11.1	16.6	13.9
K_1	7.4	19.0	13.2
Mean.	9.3	17.8	13.6

S.E. of the table means = 1.46 lb./plot

S.E. of marginal means = 1.03. lb./plot

(2) Mean yield of oil in c.c./plot of 120 plants

(i) 16.44

(ii) 4.44

(iii) K alone is significant.

(iv) (Yield of oil in cc/plot of 120 plants)

(Av)	N_0	N_1	Mean
P_0	11.57	11.08	11.32
P_1	17.88	25.26	21.57
K_0	15.31	16.35	15.83
K_1	14.14	19.99	17.06
Mean.	14.72	18.17	16.44
	P_0	P_1	Mean.
K_0	12.30	19.36	15.83
K_1	10.35	23.78	17.06
Mean.	11.32	21.57	16.44

S.E. of body of table = 1.57
S.E. of Marginal Means. = 1.11
(3) (Citeral %)
(i) 84 3.
(ii) 0.04
(iii) N, NP, K, NK and PK are highly significant while P is significant
(iv)

	N_0	N_1	Mean
P_0	84.0	85.0	84.5
P_1	82.5	85.8	84.2
K_0	82.0	85.0	83.5
K_1	84.4	85.7	85.0
Mean.	83.2	85.4	84.3

	P_0	P_1	Mean
K_0	83.0	84.1	83.5
K_1	86.0	84.2	85.0
Mean.	84.5	84.2	84.3

S.E. of body of the table = 0.14
S.E. of marginal means = 0.10

Crop :- Crotolaria Straita. Ref :- K. 51 (28)
Site .- Agri. Res. Stn. Pattambi. Type :- 'M'

Object :—To find-out whether application of lime will increase the yield of G. M. from Crotolaria Straita.

2. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) About 5000 lb./ac G.L. +100 to 150 lb./ac. of A/S. (ii) (a) Laterite loam (b) Refer soil analysis Pattambi (iii) 9.2.1951 (iv) (a) 4 to 5 ploughings (b) seeds sown by broadcast (c) 25 lb./ac. (d)—(e)—(v) Nil (vi) Local, 4 to 5 months (vii) Rainfed (viii) Nil (ix) About 16 inches (9.2.51 to 21.6.1951) (x) 21.6.1951.

2. TREATMENTS :

Lime at
1. 0 lb/acre.
2. 1000 ,, ,,
3. 2000 ,, ,,
4. 3000 ,, ,,

Applied one month before sowing.

3. DESIGN :

(i) R.B.D. (ii) (a) 4 (b) N.A. (iii) 6 (iv) (a), (b) 12'×9' (v) Nil (vi) Yes.

4. GENERAL :

(i) Satisfactory (ii) Nil (iii) Weight of grass (iv) (a) Not repeated (b) No (c) Nil (v) (a) (b) Nil (vi) & (vii) Nil.

5. RESULTS :

(i) 20351 lb./ac.
(ii) 4380 ,, ,,
(iii) The treatments are not significantly different.
(iv) Weight of G. L. in lb./ac.

Treatment.	Mean.
1.	18150
2.	21913
3.	22655
4.	18686

S.E. of treatment means =1787 lb./ac.

Crop :- Crotolaria Straita — Ref :- K. 51 (27)

Site :- Agri Res. Stn. Pattambi. — Type :- 'C'

Object :—To find-out the optium seed rate which will give the maximum G.M. from Crotolaria straita.

1. BASAL CONDITIONS :

(i) (a) Nil. (Grown in paddy lands) (b) Paddy (c) About 5000 lb./ac. of G.L. + 100 lb./ac. A/S. (ii) (a) Lateritie loam (b) Refer soil analysis Pattambi (iii) 25.1.1951. (iv) (a) 4 to 5 ploughings (b) seeds broadcast. (c) As per treatment (d)—(e)—(v) Nil. (vi) Local ; 4 to 5 months duration. (vii) Rainfed. (viii) Nil. (ix) About 16" (25.1.1951 to 19.6.1951) (x) 19.6.1951.

2. TREATEMENTS :

Seed rate at

1. 5. lb /ac.
2. 15 „ „
3. 25 „ „
4. 35 „ „
5. 45 „ „

3. DESIGN :

(i) R.B.D. (ii) (a) 5 (b) N.A. (iii) 5 (iv) (a), (b) 12'×11' (v) Nil. (vi) Yes.

4. GENERAL :

(i) Satisfactory (ii) Nil. (iii) Weight of G:L. (iv) (a) Not repeated. (b) No (c) Nil. (v) (a) (b) Nil. (vi) & (vii) Nil.

5. RESULTS :

(i) 15246 lb./ac.
(ii) 3399 lb./ac.
(iii) The treatments are significantly different.
(iv) Weight of G.L. in lb./ac.

Treatment.	Mean.
1,	11121
2.	16830
3.	14091
4.	16599
5.	17589

S.E. of treatment means = 1528 lb./ac.

Crop :- Vettivert. — Ref :- K. 51(53).

Site :- Agri. Res. Stn. Pattambi. — Type :- 'M'

Object :— To find-out the influence of C.M., Wood ash and B.M. on the production of roots and oil content.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Dry paddy. (c) 10 C.L./ac. of C.M. +1000 lb. wood ash/ac. (ii) (a) Laterite loam (b) Refer Soil analysis Pattambi (iii) 4.8.1951. (iv) (a) 2 to 3 ploughing (b) planting in strips on ridges of depth 1' 3' semi idom between ridges ; and 1' to 2' between strips. (c)— (d) 1' to 2' (e) 1 (v) Nil. (vi) No classification local. (vii) Rainfed. (viii) One weeding one month after planting. (ix) 76.36"—111 days for 1st harvest 100.95" —144 days for 2nd harvest (4.8.1951 to 4.2.53). 104.45" in 150 days for 3rd harvest. (x) Harvest in three batches 4.8.52 ; 4.11.1952 ; and 4.2.1953.

2. TREATMENTS :

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

(1) C.M. @ (i) N_0=O ton./ac. N_1=10 ton./ac.
(2) Wood Ash @ K_0=O lb/ac. K_1=1000 lb./ac.
(3) B.M. @ P_0=O cwt./ac. P_1=2 cwt./ac.

All applied before planting.

3. DESIGN :

(i) R.B.D. (ii) (a) 8 (b) N.A. (iii) 6 (iv) (a,b) 16'×24' (v) Nil. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) (a) Yield in lb. (iv) (a) not repeated. (b) No (c) Nill (v) (a), (b) Nil (vi) Nil. (vii) Data. N.A.

5. RESULTS :

(Harvrsted on 4.8.52)

(i) 2060 lb./ac.

(ii) 256 ,,

(iii) The treatments are not significantly different.

(iv)

Mean field in lb/ac. of the crop harvested on 4.8.52

Mean Yield in lb./ac.

	N_0	N_1	Mean.
P_0	2070	1972	2021
P_1	1886	2070	1978
K_0	2028	2042	2035
K_1	1928	2000	1964
Mean.	1978	2021	2000

	P_0	P_1	Mean.
K_0	1986	2084	2035
K_1	2056	1872	1964
Mean.	2021	1978	2000

S.E. of body of table = 74 lb./ac.

S.E. of marginal means. = 52 lb./ac.

Harvested on 4.11.1952

(i) 5130 lb./ac.

(ii) 1102 ,,

(iii) The treatment differences are significant. Main effects of C.M. & Wood ash are significant.

(iv) Mean yield in lb./ac.

	N_0	N_1	Mean.
P_0	4694	5290	4992
P_1	4835	5700	5268
K_0	4324	5275	4800
K_1	5204	5714	5459
Mean.	4764	5495	5130

	P_0	P_1	Mean.
K_0	4764	4835	4800
K_1	5218	5700	5459
Mean.	4991	5263	5130

S.E. of body of table = 319 lb./ac.

S.E. of the marginal means. = 225 lb./ac.

Harvested on 4.2.1953.

(i) 3258 lb./ac.

(ii) 830 ,,

(iii) The treatment are not significantly different.

(iv) Mean yield in lb./ac.

	N_0	N_1	Mean.
P_0	3134	3516	3325
P_1	2992	3392	3192
K_0	2836	3616	3226
K_1	3290	3293	3292
Mean.	3063	3454	3258

	P_0	P_1	Mean.
K_0	3332	3120	3226
K_1	3318	3265	3292
Mean.	3225	3192	3258

S.E. of body of table. = 240 lb./ac.
S.E. of marginal means. = 169 lb./ac.

Crop :-Sesbania (2nd crop season of paddy). Ref :-K. 52 (54).
Site :-Agri. Res. Stn, Pattambi. Type : 'C'

Object :—To determine the optimum spacing for sesbania.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) G.L.4000 lb/ac. 75 lb./ac. A/S (ii) (a) Laterite loam (b) Refer Soil analysis Pattambi (iii) 20.9.1952/13.11.1952. (iv) (a) Nil (b) Field bunds (c)—(d) As per treatments (e) Single cutting/hole. (v) Nil (vi) Sesbania speciose. (vii) Rainfed. (viii) Nil. (ix) 16.10"in 20 rainy days (20.9.52 to 9.3.1953.) (x) 9.3.1953.

2. TREATMENTS :

Following spacings.

1. 2"
2. 3"
3. 4"
4. 6"

3. DESIGN :

(i) R.B.D. (ii) (a) 4 (b) N.A. (iii) 4 (iv) (a), (b) N.A. (v) Nil (vi) Yes.

1. GENERAL :

(i) Satisfactory. (ii) Nil (iii) Weight of green leaf. (iv) (a) Not repeated. (b) No (c) Nil (v (a), (b) Nil (vi) Nil (vii) Raw data N.A.

5. RESULTS :

(i) 505 lb./ac.
(ii) 92 lb./ac.
(iii) Treatments are not significantly different.
(iv) Weight of G.L. in lb./ac.

Treatment	Mean.
1.	500
2.	463
3.	632
4.	426

S.E. of treatment means =46 lb./ac.

Crop :-Yam. Ref :-K. 51 (2)

Site :-Agri. Res. Stn. Pattambi. Type :-'C'

Object :—To determine the optimum seedrate (Size of seed bits) for planting of Yam.

1. BASAL CONDITIONS :

(i) Virgin land. (ii) (a) Laterite loam. (b) Refer soil analysis Pattambi. (iii) Through rhizomes (iv) No classification, Elephant yam local. (v) 15.5.51 (planted) Single rhizome/hole, planted in 4' square pits (vi) Not applicable. (vii) Wood ash applied before planting quantity N.A. (viii) 1 digging and earthing up 6 months after planting. (ix) Nil. (x) Purely rainfed. (xi) About 150 inches during the crop season i. e. 1951—53. (xii) 23.4.1953.

2. TREATMENTS :

Seed bits of sizes. 1. ½ lb./pit
2. 1 lb./pit
3. 1½ lb./pit
4. 2 lb./pit

3. DESIGN .

(i) R.B D. (ii) (a) 4 (b) N.A. (iii) 6 (iv) N.A. (v) Nil, (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil (iii) Weight of tuber (iv) (a) Not repeat-ed. (b) Nil. (v) (a) (b) Nil (vi) & (vii) Nil.

5. RESULTS :

(i) 3.65 ton/ac.
(ii) 0.73 ton/ac.
(iii) The treatment differences are highly significant.
(iv) Tuber weight ton/ac.

Treatment	Mean.
1.	2.27
2.	3.01
3.	4.17
4.	5.14

S.E. of treatment means : =0.30 ton/ac.

Crop :-Gingelly. Ref :-K. 51 (22)

Site :-Agri. Res. Stn. Pattambi. Type :-'CV'

Object :—To find-out the best time of sowing for three different varieties of Gingelly.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Paddy (c) 5 C.L. of C.M./ac. 1000 lb. ash/ac.+50 lb. A/S/ac. (ii) (a) Laterite loam (b) Refer soil analysis Pattamabi (iii) As per treatments (iv) (a) 3 or 4 ploughings (b) seeds broadcast and covered by shallow ploughing. (c) 5 lb./ac. (d), (e)—(v) C.M. at 5 C:L./ac. applied at the time of ploughing. (vi) As per treatmets (vii) Rainfed. (viii) Weeded whenever required. (ix) About 25" (3.8.52 to about 100 days) (x) Harvested about 10 daysafter sowing.

2. TREATMENTS :

All combinations of (1) & (2) :
(1) 3 varieties viz. (1) Local, (2) TMV_1 and (3) TMV_2
(2) Three dates of sowing viz. (1) 3.8.51 (2) 10.9.51 and (3) 19.9.1951.
Note :—
TMV_1 and TMV_2 are improved and short.

3. DESIGN :

(i) 4×3 Factorial in R.B.D. (ii) (a) 9 (b) N.A. (iii) 2 (iv) (a) (b) 8'×40' (v) Nil (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil (iii) Weight of gingelly (iv) (a) 1949 to 1951 (b) Yes (c) N.A. (v) (a) (b) Nil (vi) & (vii) Nil.

5. RESULTS :

(i) 4175 lb./ac.
(ii) 1189 „ „

(iii) Main effects of varieties and dates of sowing are highly significant. Their interaction is no significant.

(iv) Wieght of Gingelly in lb./ac.

Variety	1	2	3	Mean.
Date of sowing.				
1.	3638	1179	2471	2429
2.	7435	5440	4964	5946
3.	5179	4125	3151	4152
Mean.	5417	3581	3528	4175

S.E. of body at table. = 841 lb./ac.
S.E. of marginal mean = 486 lb./ac,