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EXPERIMENTS

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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 hopé 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 SCHEME OF 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 & GUJARAT (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 Statistican, 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.	Rajastan (Jaipur)	Shri. H.C. Kothari, Satistician, Department of Agriculture, Rajastan.
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 corner is given the name of the crop on which the experiment is conducted. Within brackets along side the crop is mentioned the season wherever the information is available.

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

Abbreviations adopted for States are as follows :-

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 crop. (State amount and kind). (ii) (a) Soil type. (b) Soil analysis. (iii) Date of sowing/planting. (iv) Cultural practices. (a) Preparatory cultivation. (b) Method of sowing/planting. (c) Seed-rate. (d) Spacing. (e) No. of seedlings per hole. (v) Basal manuring with time and method of application. (vi) Variety. (vii) Irrigated or Unirrigated. (viii) Post-sowing/planting cultural operations. (ix) Rainfall during crop season (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 repetition in successive years, (a) from what year to what year, (b) whether treatments were assigned to the same plots in the same manner every year, (c) reference to combined analysis, if any. (v) In case of repetition in other places names of places along with reference. (vi) Abnormal occurrences, like heavy rains, frost, storm etc., if any. (vii) Any other important information.

GLOSSARY OF VERNACULAR NAMES OF CROPS

Sl. No.	Name of Crop	Botanical name	Assamese	Bengali	Oriya	Telugu	Tamil	Malayalam	Kannada	Marathi	Gujarati	Hindi	Punjabi & Kashmiri
1.	Paddy	*Oryza sativa* L.	Dhan	Dhan	Dhano	Vadlu, Biyyamu	Nel	Nellu	Bhatta	Bhat	Dangar	Dhan ; Chawal	Shali
2.	Wheat	*Triticum Sativum* Lamk ; *Triticum aestivum* L.	Gaum ; Ghehu	Gam	Gaham	Godhumalu	Kothumai	Gotha-mbu	Godhi	Gahu	Ghahu	Gehon	Kanak
3.	*Jowar*	*Andropogon sorghum* Brot ; *Sorghum vulgare* Pers.	——	Jowar	Juara	Jonna	Cholam	Cholam	Jola	Jowari ; Jondhla	Jowari ; Juar	Jowar ; Jaur	Jowar
4.	*Bajra*	*Pennisetum typhoides* stapf Ex Hubbard	——	Bajra	Bajra	Sajja	Kambu	Kambu	Sajje	Bajri	Bajri	Bajra	Bajra
5.	Maize	*Zea mays* L.	Gom-dhan	Bhutta	Macca	Mokka-jonna	Makka cholam	Cholam	Musukina jola	Makka	Makkai	Makka	Makki ; Makayee
6.	Gram	*Cicer arietinum* L.	Butmah	Chola	Boot	Sanagalu	Kadalai ; Sundal Kadalai	Kadala	Kadale	Harbara	Chana	Chana	Chhole ; Chana
7.	*Chinamug* (Green gram)	*Phoseolus aureus* Roxb.	Magumah	Sonamug	Mung	Pachape-salu	Pachaipayaru Pasipayaru	Cerupayaru ; Payaru	Hesaru	Mug ; Chinamug	Mag	Moong	Moong Mug
8.	*Udid* (Black gram)	*Phoseolus mungo* var. *radiatus* Linn	Matimah	Mashkalai	Biri	Minumulu	Uzhundu	Uzhundu	Uddu	Udid	Udid ; Udad	Urd	Mash ; Urd
9.	*Tur* (Pigeon pea)	*Cajanus Cajan* Milsp ; *Cajanus indicus* Sprengl.	Arhar	Arhar	Harad	Kandulu	Thuvarai	Thuvran payaru	Thogari	Tur	Tuver	Arhar	Harhar ; Arhar
10.	*Wal* (Indian bean)	*Dolichos lablab* L.	Desi Urahi	Deshi Shim	Jhata simba	Anapa	Mochchai	Ramacha	Avare	Wal	Wal	Sem	Lobia desi
11.	*Lang* (Chikling vetch)	*Lathyrus Sativus* L.	Khesari	Khesari	Khesari	Kesari Pappu	Kaesari paruppu	——	Chikka-thogari	Lakh	Lang	Chattri Mathri	——
12.	Sugarcane	*Saccharum officinarum* L.	Kohiar	Akh	——	Cheruku	Karumbu	Karimbu	Kabbu	Oos	Sherdi	Ganna ; Kamad ; Naishakar	Kamad ; Ganna ; Eakh
13.	Cotton	*Gossypium* spp.	Kapah	Karpas; Tula	Kapa	Pratti	Paruthi	Paruthi	Hatti	Kapus	Kapas	Kapas	Kapah
14.	Groundnut	*Arachis hypogaea* L.	China Badam	Cheena badam	China badam	Nelash-anga ; Veru Shanaga	Nilkadalai	Nilakk-adla	Kadale kayi	Bhui-mug	Magafali	Mung-phali	Mungfali
15.	*Chikoo* (Sapota ; Sapodilla plum)	*Achras Sapota* L.	Sopata	Sabota	Sopeta	Sapota	Sapota ; Seemai ellupai	Sapota	Sapota	Chiku	Chiko	Cheeku	Chiku

CONTENTS

GUJARAT STATE

1. GENERAL.

The present Gujarat State came into existence on 1st May 1960 as result of bifurcation of the erst-while Bombay State into two states of Maharashtra & Gujarat. The State comprises of the 17 districts of Banaskantha, Mehsana, Sabarkantha, Ahmedabad, Kaira, Panch Mahals, Baroda, Broach, Surat, Dangs, Amreli, Surendranagar, Rajkot, Jamnagar, Junagadh, Bhavnagar & Kutch. The State is bound by Rajasthan and West Pakistan on north, on east by Madhya Pradesh, on south by Maharashtra state and on west by Arabian Sea. The State has an area of 72,403 square miles (or 46.4 million acres). The area according to village papers (reporting area) is 44.9 million acres. The utilization of land area is as follows : (figures for 1956-57 for reporting area)

		Acres (000)
(1)	Land not available for cultivation.	12,956
(2)	Forests.	2,109
(3)	Permanent pastures.	2,281
(4)	Area under miscellaneous tree crops not included in net area sown.	1,177
(5)	Culturable waste.	1,202
(6)	Fallow lands other than current fallows.	634
(7)	Current fallows.	1,113
(8)	Net area sown.	22,930
(9)	Total cropped area.	23,980
(10)	Area sown more than once.	1,050

2. PHYSICAL FEATURES, RAINFALL AND CLIMATE

Physiographically the state lies in Gujarat-Kathiawar sub-region in the Western Ghats and the coastal region. In this sub-region are included the northern divisions of the Bombay State to the north of the Damanganga river and comprises of the whole of Gujarat, Saurashtra and Kutch. The north-eastern high land regions consist of those portions of the Satpuras, the Vindhyas and the Gujarat-Malwa Hill ranges which focus the drainage of the eastern part of this sub-region on to the Gulf of Cambay by a fan of major rivers the most famous of which are the Narbada and the Tapti. 90% of the rainfall of this area occurs during the south-west monsoon season, viz, June to September. The southern Gujarat plain and the Tapti valley receive a moderate rainfall of 30" to 40" but towards the Satpura and the north-east high lands there is an increase due to relief. Further north in Gujarat there is a steady decline from 40" to 25" and along the Saurashtra coast it is only 20". Kutch is practically a semi-desert with less than 20" of rainfall.

The cold weather season commences in December and lasts till February or March. During this season the dry continental air from the north prevails over the sub-region and skies are generally clear except when in association with western disturbances, brief spells of cloudy weather prevail. January, February and March are marked by heavy dew and thick fog in the early mornings. The average early morning temperature is between 50° and 60° F and January is generally the coldest month when on occasions temperatures near the freezing point have been recorded. Deesa has once recorded a temperature of 28° F in January and Baroda, Rajkot and Dohad are other places in the area where the lowest temperature recorded has been 32° F or less.

March to May is a season of continuous increase of temperature and the days become oppressively hot. The maximum day temperature ranges between 95° and 105° F except in the Saurashtra coast where it ranges between 85° and 90° F. On indivdual days a temperature as high as 122° F has been recorded at Deesa during the month of May and Ahmedabad, Bhuj and Rajkot have seen 118° F during the same month. Thundershowers may occur 1-2 days during the whole season but the amount of rain received is very little. Winds are west to north-west only in March and April and south-west to west only in May and are stronger in the afternoons.

The south-west monsoon advances into this area by about the third week of June and withdraws by about the third week of September. July is the rainiest month. Monsoon is active in July and August during which months depressions travel west to north-west wards from the north of the Bay of Bengal and give very heavy rain. Table 1 gives the seasonwise distribution of rainfall in different regions of Gujarat State.

TABLE 1

Seasonwise Normal Rainfall in inches for regions of Gujarat State

Regions.	Monsoon (June to Sept.)	Post monsoon (Oct to Dec.)	Winter (Jan. to Feb.)	Pre-monsoon (March to May)	Total for the year.
1. Bombay—Gujarat division	31.02	1.86	—	0.33	33.21
2. Saurashtra division	19.87	0.85	—	0.46	21.18
3. Kutch division	12.44	0.47	0.12	0.43	13.46
State (simple average)	21.11	1.06	0.04	0.40	22.61

1" =25.4 mm.

The districts in Bombay—Gujarat division are—Surat, Broach, Baroda, Panch Mahals, Banaskantha Sabarkantha, Mehsana, Ahmedabad, Kaira and Amreli ; in Saurashtra division are—Halar, Central Saurashtra, Zalawad, Gohilwad and Sorath and in Kutch division—Kutch.

3. SOILS

Bombay—Gujarat Division. A strip of alluvium soil about 10 to 15 miles wide is found along the coast of Surat and Broach districts, but most of the Broach and Surat districts is covered by deep black soil from trap, as in the western portion of Ahmedabad district. The soils in Broach are alluvial and deep. The prevailing soil in Surat is deep black cotton soil, though there are also typical light *gorat* soils. The northern part of Ahmedabad, the eastern portion of Mehsana, and most of Kaira, Baroda and Amreli districts are covered by sandy soil from elder alluvium, locally known as *gorat* or *gorudu*. The alluvial *gorudu* soil of the Indo-Gangetic type found in Ahmedabad is very deep, grey to light brown in colour. In Baroda, Mehsana and Amreli, the soil is mainly alluvial. The main types distinguished are the deep black cotton heavy soils, the light coloured sandy *gorat* soil, and the *besar* or mixed soils. In the valleys of Panch Mahals district the soil is dark coloured loam which is fairly deep and fertile.

Saurashtra Division. Black cotton and red soil predominates in Saurashtra. A strip of coastal alluvium 5 to 10 miles wide is found along the east and south coast. *Besar* or mixed soils of black and *gorat* are distributed widely in Saurashtra. These soils exhibit great variety in their chemical and mechanical composition. Coarse sandy soils of light colour is found in parts of Zalawad along the Rann of Kutch.

Kutch Division. The surface soils are generally brown or brownish black, and are of alluvial character with clayey or silty clay texture. The high salt content of the soil is responsible for the barren-ness of the tract.

4. IRRIGATION

The state has nearly 1.36 million acres irrigated. The area irrigated by differen: sources is given below :—

TABLE 2

Area irrigated by different sources (figures for 1956—57)

	Source	Area (000 acres)	% of total irrigated area
(1)	Goverment Canals.	130	9.61
(2)	Private Canals.	1	0.07
(3)	Tanks	69	5.10
(4)	Wells	1128	83.37
(5)	Other sources.	25	1.85
	Total.	1353	100.00

5. AGRICULTURAL PRODUCTION AND NORMAL CROPPING PATTERN.

Jowar, Wheat, *Bajra*, Paddy and pulses are the principal crops of the State. *Gorat* (i. e. red and black type of soil) is usually suitable for *Jowar*, *Bajra*, Cotton and pulses, etc., *Kyari* i.e. black and muddy type soil is retentive of moisture and grows rice in *Kharif* after which *Rabi* crops are taken. The area, production and yield per acre are given in table below :—

TABLE 3

Area, production and yield per acre of principal crops (fingure for 1958—59)

	Crops	Area (000 acres)	Production (000 tons)	Yield lb./ac.
(1)	Jowar.	3,483	398	256
(2)	*Bajra.*	4,095	677	370
(3)	Rice.	1,158	437	845
(4)	Wheat.	1,003	314	701
(5)	Pulses.	1,151	157	306
(6)	Groundnut.	3,260	1,125	773
(7)	Other oilseeds.	682	74	243
(8)	Cotton. @	4,565	1,297	111

@ Production in '000 bales of 39 .each.

6. AGRICULTURAL EXPERIMENTATION AND RESEARCH FARMS.

Research on field crops is directed towards genetic improvement leading to evolution of high yielding, disease resistant strains of superior quality. At the same time agronomic aspects are studied and standard agricultural practices are evolved leading to higher yields.

There were 17 research farms which reported experiments on agronomic problems. Medium black, deep black, sandy loam, loamy, clayey loam are the types of the soils found in these stations. The research stations at Amreli and Surat are the principal stations. The Dohad farm is the oldest.

Maximum number of experiments was reported from the Surat farm. The next in order was the Amreli farm. At both of these stations the major crops on which the experiments are carried out are *Jowar*, *Bajra*, Wheat & Cotton. Experimentation on *Jowar*, Wheat & Cotton is carried out at almost all the farms. Farms at Bulsar, Dabhoi, Nawagaon, Vyara & Waghai conduct experiments on Paddy.

7. EXPERIMENTS

There were in all 198 experiments reported for the period 1948-53 from the Gujarat region. The distribution of these experiments according to crops and types of treatments tried is given in table below :—

TABLE 4.

Distribution of experiments according to crop and types of treatments tried.

Crop	M	C	CV	CM	I	IM	D	Total
Paddy	18	13	—	3	—	—	—	34
Wheat	7	18	2	—	4	—	1	32
Jowar	31	5	—	3	—	—	3	42
Bajra	8	2	—	—	—	—	—	10
Maize	1	—	—	—	—	—	—	1
Pulses	22	1	—	—	—	—	—	23
Sugarcane	5	—	—	—	—	1	—	6
Cotton	9	—	—	7	—	—	—	16
Groundnut	6	5	2	—	—	—	—	13
Mixed Cropping	—	—	—	—	—	—	—	13
Rotational	—	—	—	—	—	—	—	2
Chikoo	6	—	—	—	—	—	—	6
Total	113	44	4	13	4	1	4	198

It can be seen from the above table that maximum number of experiments (22%) carried out were on *Jowar* crop which is major crop of the state and occupies nearly 5.5 million acres. Next in order is paddy crop, nearly 18% of the experiments being carried out on this crop which occupies about 1 million acres. *Bajra* which has nearly 4 million acres under it has only 10 experiments out of 198.

Nearly 58% of the experiments conducted are purely manurial and 23% are purely cultural. Considering individual crops it is seen that majority belongs to the manurial type of experiments.

Manurial experiments commonly found were to study the effect of application of P_2O_5 to leguminous crops on the succeeding cereal crops like *Jowar*, Wheat and *Bajra*. Leguminous crops were Groundnut, *Udid* and Gram. The rate of application of P_2O_5 as super varied from 50 lb./ac. to 150 lb./ac. Among the experiments usually found were to study the effects of N and P alone and in combination. The levels of N and P besides control varied from 15 lb./ac. to 64 lb./ac. to different cereal crops. The sources of N usually were A/S., G.N.C. and their mixture. The source of P_2O_5 was invariably super. Sometimes Farm Yard Manure also formed one of the factors along with N and P. The rate of application of F.Y.M. varied from 5 to 10 C.L./ac. to cereal crops.

The design usually adopted was in randomised blocks. The number of plots per block varied from 4 to 16. Split-plot design was next variety of design adopted for cultural type of experiments as well as for manurial-cum-cultural experiments. Number of main-plots per replication varied from 2 to 6 and number of sub-plots per main-plot varied from 3 to 9. Number of replications varied from 2 to 6.

The gross plot size in a randomised block design varied from 1/100th of an acre to 1/33rd of an acre.

STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS (Gujarat State)

Sl. No.	Name of the experimental station, location, year of establishment, tract it represents and major crops.	Soil type and soil analysis.	Normal rainfall in inches	Irrigation facilities	No. of experiments	General description of topography of experimental area.
1	2	3	4	5	6	7
1.	**Amreli.** Agri. Res. Stn., Amreli. Four furlongs from Amreli Rly. Stn. Year of establishment 1926. It represents Saurashtra type medium black. Major crops :- **Jowar, Cotton, Bajra,** Groundnut and Irrigated Wheat.	(1) **Soil type :** Medium black (2) **Depth :** 5'. (3) **Colour :** Medium black (4) **Structure :** Fine. (5) **Soil analysis :** Refer page 14.	June 5.23 July 4.16 Aug. 1.00 Sept. 4.92 Oct. — Nov. — Dec. — Jan. — Feb. — Mar. — April. — May — Total 15.31 Figure for the year 1959-1960.	Irrigation by 2 wells out of 4. *Kaccha* water channel is used for irrigation. One well was installed with oil engine from 1951 and the other from 1948. Natural drainage.	**Jowar** — 4 **Bajra** — 6 Cotton — 6 Wheat — 2 Paddy — 2 Groundnut — 5 **Udid** — 2 Mixed crop — 2 Total — 29	Area levelled.

STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS

GUJARAT STATE (Contd.)

1.	2	3	4	5	6	7
2.	Arnej. Agri. Res. Stn. Distt. Ahmedabad. 2 furlongs from Arnej Rly. Stn. Year of establishment : 1944. It represents *Bhal* tract of Gujarat with medium black soils. Major crops : Wheat and Gram.	(1) **Soil type** : Medium black to deep black. (2) **Depth** : 2½′ to 3′. (3) **Colour** : Dark black to black. (4) **Structure** : Clayey. (5) **Soil analysis** : (i) **Chemical analysis** : Depth / Total salts / $CaCO_3$ / pH / Exchangeable basis Ca / Mg / Na 0-9″ / 0.29 / 10.0 / 8.55 / 25.00 / 2.50 / 3.0 9″-18″ / 0.36 / 10.4 / 8.75 / 22.00 / 8.50 / 2.50 (ii) **Mechanical analysis** : Depth / Silt / Clay 0-9″ / 28.25 / 38.00 9″-18″ / 16.00 / 40.00	June 3.93 July 6.55 Aug. 7.81 Sept. 5.22 Oct. 0.68 Nov. 0.06 Dec. 0.02 Jan. 0.12 Feb. — Mar. 0.11 April 0.31 May 0.29 Total 25.10 Average of 10 years 1946—57.	Nil	Wheat —12 Gram —2 Mixed cropping—2 Total —16	There is variation of soils from plot to plot. The soils are lighter on the western side of the farm than on eastern side.

STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS

GUJARAT STATE (Contd.)

1	2	3	4	5	6	7
3.	**Baroda** : Agri. School and Res. Stn. 1¼ miles from Baroda Railway Station. Year of est. 1936. It represents *Gorudu* soil tract. Major crops : *Bajra*, Cotton, *Jowar*, Wheat and vegetables.	1. **Broad soil type** : Deep black and medium black. 2. **Depth** : More than 6'. 3. **Colour** ; Light brown to light black. 4. **Structure** : Friable and loose. 5. **Soil analysis** : Not available.	June 5.37 July 12.89 Aug. 18.76 Sept. 9.44 Oct. 2.65 Nov. 0.17 Dec. — Jan. — Feb. — March — April 0.03 May 0.67 Total 49.98	Irrigation by well. There are 3 wells installed with electric motor pumps for irrigation facilities available from 1936. The soil is well drained.	*Bajra*—2.	The area of the farm land is 106 acres of which 84 acres are generally kept under cultivation, and rest under roads, buildings etc.
4.	**Bhuwa** : Agri. Res. Stn. Distt. Broach 11 miles from Broach Rly. Stn. Year of est. 1948. Major crops : *Jowar, Tur,* Oilseed, Cotton and Wheat. It represents Broach district. (Now shifted to Tanchha).	**Soil type** : Black cotton soil and *basar* soil. **Soil analysis** : N.A.	June 4.24 July 10.51 Aug. 15.21 Sept. 6.27 Oct. to May Nil Total 32.00	Irrigation by engine. Facilities available since inception. Proper drainage system.	*Jowar* — 8 Wheat — 4 *Chinamug* — 5 Lang — 1 Mixed cropping — 2 Total —18	Most of the area levelled.
5.	**Bulsar** : Agri. Res. Stn. Distt. Surat. 1 mile from Bulsar Rly. Station. Year of est. 1945. Major crops : Paddy and Cotton.	**Soil type** : Medium black. Soil analysis : N.A.	Annual rainfall=30".	Information not available.	Paddy —12 Gram — 3 Wal — 3 Total 18	Information not available.

STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS
GUJARAT STATE (Contd.)

1	2	3	4	5	6	7
6.	**Dabhoi**. Agri. Res. Stn. Distt. Baroda. 1½ miles from Dabhoi Rly. Stn. Year of establishment ; 1938-1939. It represents middle Gujarat Zone. Major crops : Cotton, Paddy, Wheat *Jowar* and *Tur* etc.	1. Soil type : Clayey loam, black. 2. Depth : 3' with *murum* soil. 3. Colour : Black 4. Structure : good. 5. Soil analysis : (i) Chemical analysis : (% for various constituents). Moisture 3.50 Nitrogen 0.05 Available P_2O_5 (mg) 19.20 Available K_2O (mg) 28.09 Ca Co_3 00.15 Soluble salts 0.11 pH value 7.6 (ii) Mechanical Analysis—not done.	June 8.56 July 4.62 Aug. 7.03 Sept. 12.39 Oct. 4.50 Nov. 0.10 Dec. to May Nil. Total 37.20	Irrigation facilities available from 1938-1939 from Canal. There is no special drainage system but when needed it is to be excavated during the monsoon for removing the water from the low lying area.	Paddy —5 *Jowar* —1 Cotton —2 Mixed cropping —2 Total —10	This farm is little bit on low lying side and being black in nature it takes a long duration for Vapasa condition.
7.	**Deesa** : Agri. Res. Stn. Dist. Banaskantha. Year of establishment ; 1953. It represents Banaskantha district. Major crops : *Bajra*, *Makki* and *Guwar* etc.	1. Soil type : Sandy loam. 2. Depth : indefinite. 3. Colour : Yellowish. 4. Structure : Pure coarse sandy loam loose and driable. 5. Soil analysis : (i) Chemical analysis. pH 8.34 ; Total salts % 0.034 ; $CaCO_3$ 0.74 ; Calcium 2 ; Mg 3 ; Na and K_2O. 1.1 (ii) Mechanical analysis : Silt 4.80 ; clay 12.50	June 0.02 July 5.73 Aug. 1.66 Sept. 4.39 Oct. 2.65 Nov. to March Nil. April 0.07 May Nil. Total 14.43 figures for the year 1958-1959.	No irrigation facilities and no drainage system.	Groundnut —1 *Bajra* —1 Total —2	Plain.

STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS

GUJARAT STATE (Contd.)

1	2	3	4	5	6	7
8.	**Dohad.** Agri. Res. Stn. Distt. Panch Mahals. 3 miles from Dohad Rly. Stn. Year of establishment 1938—1939. It represents rocky and stony tract. Major crops : Maize, Wheat, Gram and Paddy.	1. **Soil type :** Light brown and medium black. 2. **Depth :** 3'. 3. **Colour :** Light brown and medium black. 4. **Structure :** Partly stony. 5. **Soil analysis :—** (Refer page 14)	June 4.65 July 8.33 Aug. 9.26 Sept. 11.00 Oct. 3.35 Nov. 0.67 Dec. 0.02 Jan. 0.01 Feb. — March 0.07 April 0.02 May 0.37 Total 37.75 (Average of 5 years)	In *Rabi* season there is irrigation. Facilities available since inception. Water drain surrounding the plots have been dug but there is no mechanical arrangement on this side.	Wheat 5 Groundnut 3 Maize 1 Mixed cropping 1 Total 10	Information not available.
9.	**Gandevi.** Fruit Res. Stn. Distt. Surat, situed at a distance of about 1½ miles from Gandevi town. Year of establishment 1937-1938. It represents the entire fruit crop area of *gorudu* type. Major crops: Mango and *chikoo* fruit crops.	1. **Soil type :** Old alluvium. 2. **Depth :** 20'. 3. **Colour : Gorudu.** 4. **Structure :** Hard. **Soil analysis :** **Chemical analysis :** (percent) N 0.57 — Total P_2O_5 0.095 — Total K_2O 0.304 — Organic matter 0.057 **Mechanical analysis** (percent) Course sand 2.52 — fine sand 53.83 — Silt 14.22 — Clay 21.90 — $CaCO_3$ Nil — S.T.S.S. 0.04	June 10.0 July 28.0 Aug. 18.0 Sep. 9.0 Oct. 1.5 Nov. 0.5 Dec. to April — May 0.5 Total 67.5 Average over 9 years 1950-51 to 1958-59.	Yes No proper drainage system.	*Chikoo* 6	N.A.

STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS
GUJARAT STATE (Contd.)

1	2	3	4	5	6	7
10.	**Harij.** Agri. Res. Stn. Distt. Mehsana 1½ miles from Harij Rly. Stn. Year of establishment 1941—42. It represents sandy loam soil having salt content to considerable amount. Major crops : *Kharif* : *Bajra, Jowar* and *Udid. Rabi* : Wheat and Gram	1. **Soil type** : Sandy loam. 2 **Depth** : 10-15 ft. 3. **Colour** : Brownish white. 4. **Structure.** Loamy. 5. **Soil analysis** : Not available.	June 1.04 July 3.94 Aug. 2.24 Sept. 5.42 Oct. 0.98 Nov. 0.15 Dec. to May Nil. Total 13.77 Figures for the year 1958-1959.	No irrigation facilities. The experimental area is divided by 5 big drains and sub-drains to leach out the salts.	*Jowar* 2	The experimental area of the farm is normally levelled and having slopes to some extent on Southern side.
11.	**Junagadh** : Agri Res. Stn. Distt : Sorath. Year of establishment : 1950—51. It represents medium black soils of Southern part of Rajkot Division. Major crops : *Jowar, Bajra,* Cotton, Vegetables and Wheat.	1. **Soil type** : Medium black. 2. **Depth** : 0" to 3'. 3. **Structure** : Crum. 4. **Soil analysis** : (i) **Chemical analysis** : (%). T.S.S. $CaCO_3$ pH Org. Car N_2 Avl. P_2O_5 0.19 1.40 7.9 1.5 0.11 1.50 Avl. K_2O Exchangeable Ca Exchangeable Mg. 4.1 (ingum) 38.9 (mili Eq.) 6.5 mili equivalent. (ii) **Mechanical analysis** : (%) Coarse sand Finesand Silt Clay 2.99 44.13 24.3 42.43	June 6.7 July 19.2 Aug. 4.7 Sept. 8.5 Oct. 3.5 Nov. to May Nil. Total 42.6 Average of the figures 1956—60	Since 1956—57 facilities are available for 60 acres. The soils are well drained. Drains for diverting surplus rain water have been opened on the farm area.	Groundnut —4 Mixed cropping —2 Rotational —1 Total —7	The plots are more or less levelled.

STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS
GUJARAT STATE (Contd.)

1	2	3	4	5	6	7
12.	**Nawagam :** Agri. Res. Stn. Distt. Kaira. 11 miles from Baredji Rly. Stn. Year of establishment 1945. Major crops : Paddy.	Soil type: Clayey loam. Soil Analysis : N.A.	Annual rainfall 25".	Canal Irrigation.	Paddy—7	Information not available.
13.	**Surat :** Agri. Res. Stn. Distt. Surat. Year of establishment : 1896. Major crops : Cotton, *Jowar*, *Tur* and *Til*. It represents black cotton soil tract.	1. **Soil type :** Black cotton soil. 2. **Depth :** 4′ to 6′. 3. **Colour :** Black with sticky yellow sub-soil. 4. **Structure :** Clay silt (62%). 5. **Soil analysis :** (i) **Chemical analysis :** (%) N P_2O_5 K_2O CaO 0.023 to 0.043 0.051 0.0263 to 0.610 0.19 to 1.52 (ii) **Mechanical analysis :** Soil surface Clay and silt Fine sand Stone, sand & gravel 9" 62% 35% 3%	June 5.96 July 13.53 Aug. 9.32 Sept. 13.30 Oct. 1.09 Nov. 0.03 Dec. 0 16 Jan. 0.01 Feb. 0.01 Mar. 0.08 April 0.00 May 0.23 Total. 43.72	Irrigation from Kakrapora canal from 1958—59. The soil is properly drained.	**Jowar—24** **Tur — 6** Cotton— 8 Mixed cropping 1 Total—39	Information not available.

STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS
GUJARAT STATE (Contd.)

1	2	3	4	5	6	7
14.	Vijapur : Agri. Res. Stn. Distt. Mehsana. Near Vijapur Railway Station. Year of establishment : 1944. Major crops : Wheat, *Bajra*, Pulses and Cotton.	1. **Soil type** : Sandy soil. 2. **Depth** : 6". 3. **Colour** : Brown. 4. **Structure** : Sandy. 5. **Soil analysis** : Not available.	June 5.00 July 15.00 Aug. 12.00 Sept. 8.00 Oct. 2.00 Nov. 0.50 Dec. to April Nil May 0.50 Total 43.00	Irrigation by tube-well since 1944. Drainage is not required for this area, because the soil is very percolative.	Wheat — 9 *Bajra* — 1 Total —10	The farm is generally on the high level of the round about area. The soil is levelled.
15.	Viramgam : Agri. Res. Stn. Distt. Ahmedabad, 1½ miles from Viramgam Rly Stn. year of establishment : 1922. It represents North Gujarat tract. Major crops : Cotton, *Bajra*, *Jowar*, Wheat etc.	1. **Soil type** : Clay, medium, black and varying much in depth. 2. **Depth** : Average 40". 3. **Colour** : Greyish black (kali-basar). 4. **Structure** : Cloddy, clods breaking to fine crumbs. 5. **Soil analysis** : Refer next page.	June 2.44 July 7.33 Aug. 6.39 Sept. 5.16 Oct. 0.78 Nov. 0.09 Dec. 0.03 Jan. 0.10 Feb. — March 0.06 April — May 0.03 Total 22.41	Irrigation by a bore well filled with pump is done in emergency as the water is suitable for irrigation. No proper drainage.	*Jowar* —3	The area is quite flat.

STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS
GUJARAT STATE (Contd.)

1	2	3	4	5	6	7

CHEMICAL AND MECHANICAL ANALYSIS AGRI. RES. STN. VIRAMGAM

Soil depth	pH	Total soluble salts	Calcium carbonate	Exchangeable bases in milli-equivalents			Fertility constituents			C/N ratio	Mechanical composition		Remarks
				Ca	Mg	Na+K	Organic carbon	Total Nitrogen	Available P_2O_5 mg		Silt	Clay	
				—Percent on fine matter—							—Percent on fine matter—		
0″—13″	8.53	0.15	11.2	22.0	3.0	1.5	0.408	0.056	10.92	7.3	8.75	25.75	
13″—23″	8.61	0.19	15.6	28.5	4.5	1.0	—	—	—	—	9.25	32.00	
23″—32″	8.66	0.19	15.2	29.5	5.0	1.0	—	—	—	—	10.00	32.50	
32″—42″	8.61	0.15	28.8	20.5	5.0	1.0	—	—	—	—	10.00	22.50	
42″—50″	8.63	0.11	32.8	18.5	4.0	0.5	—	—	—	—	8.25	14.00	

16. **Vyara**: Agri. Res. Stn. Distt. Surat. Agri. Res. Stn. Vyara. Year of establishment. 1935. It represents black cotton soil of the Surat distt. Major crops : Sugarcane, Paddy and Wheat etc.

1. **Soil type** : Black cotton.
2. **Depth** : 0—12″ and 0—18″.
3. **Colour** : Black.
4. **Structure** : Clayey.
5. **Soil analysis** :
   (i) **Chemical analysis** : N.A.
   Lime : 2.0 to 5.0 %
   P_2O_5 : 0.005 to 0.01%
   K_2O : 0.02 to 0.06%
   (ii) **Mechanical analysis** :
   Not available

June	4.26
July	34.54
Aug.	26.73
Sept.	22.17
Oct.	0.35
Nov.	0.40
Dec. to March	Nil
April	0.8
May	0.22
Total	88.75

Figures for the year 1958 (Jan.-Dec.).

Irrigation facilities available from the beginning of the farm. No drainage system.

Sugarcane — 6
Paddy — 5
Total — 11

The site of the farm is in general rectangular. A slight slope from west to east There is no variation in soil except that some western part of the farm is stoney.

17. **Waghai** : Agri. Res. Stn. Year of establishment : 1948.

1. **Soil type** : Black and light brownish soil. Other details not available.

Information N.A.

No irrigation.

Paddy—3

N.A.

Agricultural Research Station, Amreli (Soil Analysis Report)

Description	A	B	C	D
	Percent on original samples			
Stones	6.22	6.86	6.75	5.44
	Percent on air dry fine sample			
Moisture	8.44	10.04	9.42	8.54
Loss on ignition (excluding moisture)	6.28	7.24	8.74	5.74
Calcium Carbonate ($CaCO_3$)	5.80	5.00	5.60	4.80
Nitrogen	0.08	0.09	0.08	0.07
	Percent on dry fine sample			
Mechanical analysis (i) (coarse sand)	10.94	17.76	13.24	10.92
Fine sand (by diff.)	15.46	27.12	29.56	23.20
Silt	24.80	32.72	36.20	31.06
Clay	40.80	22.40	21.00	34.40
	Mam/100 gms. of dry fine matter.			
Available phosphoric acid (P_2O_5)	12.00	24.60	23.80	18.00
Available potash (K_2O)	11.00	20.00	22.00	8.00
pH value	8.30	8.50	8.50	8.60

Water analysis report

Description	Well Water 'A'	Well Water. 'B'
	Parts per 100,000 parts of waters.	
Sol. salts.	67.60	78.20
Sodium carbonate (Na_2CO_3)	3.45	3.45
Calcium carbonate ($CaCO_3$)	26.63	32.57
Magnesium carbonate ($Mg\ CO_3$)	6.58	7.33
Magnesium Sulphate ($Mg\ SO_4$)	12.50	12.05
Magnesium chloride ($Mg\ Cl_2$)	—	2.08
Sodium chloride	17.23	16.12
pH value	8.75	8 80

Agricultural Research Station, Dohad (Results of soil analysis)

Chemical Analysis

Percentage of different constituents analysed for :

Depth in inches	0—4"	4—11"	11—21"	21—40"
Moisture	0.71	1.86	2.36	2.58
Loss on ignition (excluding moisture)	7.69	7.55	7.99	8.65
$CaCO_3$	trace	trace	trace	trace
Total K_2O	0.41	0.41	0.34	0.44
Total P_2O_5	0.127	0.130	0.117	0.058
Total N	0.070	0.062	0.034	0.034
Available K_2O	0.024	0.016	0.014	0.021
Available P_2O_5	0.058	0.044	0.023	0.009
	(Mili equivalent percent)			
Exchangeable Ca	14.00	17.00	18.50	21.50
Exchangeable Mg	2.00	3.00	4.00	2.00
Exchangeable Na	2.30	1.50	1.30	1.30
Exchangeable K	0.79	0.68	0.56	1.54
Total exchangeable bases sum of the above	19.09	22.18	24.36	26.34
pH value	7.80	7.60	7.80	7.80

Mechanical analysis

Percent on air dry fine matter

Depth in inches	0—4"	4—11"	11—21"	21—40"
Moisture	1.71	1.86	2.36	2.58
Carbonates ($CaCO_3$)	—	—	—	—
Organic matter	5.93	5.67	5.54	6.07
Clay	30.75	25.75	23.00	33.25
Silt	17.00	21.50	18.50	21.50
Fine sand (estimated by difference)	41.26	43.22	38.30	33.57
Coarse sand	3.30	2.00	2.30	3.03

Crop :- Paddy (*Kharif*) Ref. :- Gj. 50(79)

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

Object :—To study the N and P_2O_5 requirements of Paddy (with a basal dose of F.Y.M.).

1. BASAL CONDITIONS :

(I) (a) N.A. (b) Groundnut-*Bajra*. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Amreli. (iii) 19.7.1950. (iv) (a) N.A. (b) Drilling. (c) 34 lb./ac. (d) between rows-18" ; between plants—irregular. (e) N.A. (v) 5 C.L./ac. of F.Y.M. was spread on 16.5.1950. (vi) Local (early) (vii) Irrigated. (viii) Weedings on 4, 24 and 25.8.1950 ; interculturing on 25.8.1950. (ix) 21.90". (x) 11, 12.11.1950.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N : N_0=0, N_1=32, N_2=64 and N_3=96 lb./ac.

(2) 4 levels P_2O_5 : P_0=0, P_1=32, P_2=64 and P_3=96 lb./ac.

N as G.N.C. and P_2O_5 as Super. Manures were spread on 20.7.1950.

3. DESIGN :

(i) 4×4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 33'×18' ; (b) 25'×12'. (v) 4'×3'. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1950–1956. (b) No. (c) N.A. (v) (a) (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 2512 lb./ac.

(ii) 359.2 lb./ac.

(iii) None of the effects is significant.

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

	N_0	N_1	N_2	N_3	Mean
P_0	2880	2668	2195	2737	2620
P_1	2466	2870	2752	2500	2647
P_2	2294	2515	2511	2185	2376
P_3	2323	2658	2175	2456	2403
Mean	2491	2678	2408	2470	2512

S.E. of marginal mean of N or P =89.8 lb./ac.

S.E. of body of table =179.6 lb./ac.

Crop :- Paddy. Ref. :- Gj. 53(29)

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

Object :—To study the N and P_2O_5 requirements of Paddy (with a basal dose of F.Y.M.).

1, BASAL CONDITIONS :

(i) (a) No. (b) Cotton. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Medium black. (b) Refer soil analysis, Amreli. (iii) 25.6.1953. (iv) (a) 1 ploughing and 3 harrowings. (b) Drilling. (c) 40 lb./ac. (d) 18". (e) N.A. (v) 5 C.L./ac. of F.Y.M. in the month of May. (vi) Local (medium). (vii) Irrigated. (viii) Weeding thrice and interculturing thrice. (ix) 34.25". (x) 20.10.1953.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N : N_0=0, N_1=32, N_2=64 and N_3=96 lb./ac,

(2) 4 levels of P_2O_5 : P_0=0, P_1=32, P_2=64 and P_3=96 lb./ac.

N as A/S applied in single dose by broadcasting and P_2O_5 as Super applied in single dose in furrows by drilling.

3. DESIGN :

(i) 4×4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 33'×18'. (b) 25'×12'. (v) 4'×3'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1950—1956. (b) No. (c) N.A. (v) Dabhoi, and Amreli. (b) N.A. (vi) Nil. (vii) The experiments were vitiated in 1951 and 1952.

5. RESULTS :

(i) 2181 lb./ac.
(ii) 368.8 lb./ac.
(iii) Main effect of N alone is significant.
(iv) Av. yield of grain in lb./ac.

	N_0	N_1	N_2	N_3	Mean
P_0	1901	2153	2442	2090	2146
P_1	1844	2174	2625	2296	2235
P_2	2053	2165	2165	2335	2179
P_3	1983	1967	2448	2255	2164
Mean	1946	2115	2420	2244	2181

S E. of marginal mean of N or P = 92.2 lb./ac.
S.E of body of table = 184.4 lb./ac.

Crop :- Paddy. (*Kharif*). Ref :- Gj. **51(170)**.

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

Object :—To study the effect of leguminous crop Gram grown with and without P_2O_5 on the succeeding cereal crop Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy—Gram. (b) Gram. (c) As per treatments. (ii) (a) Medium black. (b) N.A. (iii) N.A. (iv) (a) to (c) N.A. (d) 9"×9" (e) 8 seedlings per bunch. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) 50.63" (x) N.A.

2. TREATMENTS :

1. Control (no P_2O_5)
2. 50 lb./ac. of P_2O_5 as Super.
3. 100 lb /ac. of P_2O_5 as Super.
4. 150 lb./ac. of P_2O_5 as Super.
5. Fallow in *Rabi*.

These treatments are applied to the previous leguminous crop Gram.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 24'×18'. (b) 15'×9'. (v) 4½' ring round the net plot. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1949 (*Rabi*) to 1952 (*Rabi*) (b) No. (c) N.A. (v) (a) Nil. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1508 lb./ac.
(ii) 229.9 lb./ac.
(iii Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1553
2.	1436
3.	1480
4.	1525
5.	1545
S.E./mean	= 102.8 lb./ac.

Crop :- Paddy. Ref :- Gj. 52(193).

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

Object :—To study the effect of a leguminous crop Gram grown with and without P_2O_5 on the succeeding cereal crop Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy—Gram. (b) Gram. (c) As per treatments. (ii) (a) Medium black. (b) N.A. (iii) N.A. (iv) (a), (b), (c) N.A. (d) 9″×9″. (e) 8 seedlings/bunch. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) 59.87″. (x) N.A.

2. TREATMENTS :

1. Control (no P_2O_5)
2. 50 lb./ac. of P_2O_5 as Super.
3. 100 lb./ac. of P_2O_5 as Super.
4. 150 lb./ac. of P_2O_5 as Super.
5. Without legume (sown in *Kharif* and fallow in *Rabi*).

These treatments are applied to the previous leguminous crop Gram.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 24′×18′. (b) 15′×9′. (v) 4½′ ring round the net plot. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1949 (*Rabi*) to 1952 (*Rabi*). (b) No. (c) N.A. (v) (a) Nil. (b) N.A (vi) and (vii) Nil.

5. RESULTS :

(i) 1259 lb./ac.
(ii) 216.5 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1362
2.	1153
3.	1284
4.	1227
5.	1270
S.E./mean	=96.8 lb./ac.

Crop :- Paddy (*Kharif*). Ref :- Gj. 49(99).

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

Object :—To study the effect of a leguminous crop *Wal* grown with and without P_2O_5 on the succeeding crop Paddy.

1. BASAL CONDITIONS :

(i) (a Paddy—*Wal*. (b) *Wal* in *rabi*. (c) As per treatments. (ii) (a) Medium black. (b) N.A. (iii) N.A. (iv) (a) to (c) N.A. (d) 9″×9″. (e) 8 seedlings/bunch. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) 98.05″. (x) N.A.

2. TREATMENTS :

1. Control (no P_2O_5).
2. 50 lb /ac. of P_2O_5 as Super.
3. 100 lb./ac. of P_2O_5 as Super.
4. 150 lb./ac. of P_2O_5 as Super.
5. Fallow (sown in *Kharif* and fallow in *Rabi*).

P_2O_5 applied to previous crop *Wal*.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 24′×18′. (b) 15′×9′. (v) 4½′ ring round the net plot. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Nil. (iii) N.A. (iv) (a) 1949 (*Rabi*) to 1952 (*Rabi*). (b) No. (c) N.A. (v) (a) Nil. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 2492 lb./ac.
(ii) 182.6 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	2472
2.	2525
3.	2468
4.	2686
5.	2307

S.E./mean = 81.7 lb./ac.

Crop :- Paddy (*Kharif*). Ref :- Gj. **50(125)**.
Site :- Agri. Res. Stn., Bulsar. Type :- 'M'.

Object :—To study the effect of leguminous crop *Wal* grown with and without P_2O_5 on the succeeding cereal crop Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy-Gram. (b) *Wal* in *Rabi*. (c) As per treatments. (ii) (a) Medium black. (b) N.A. (iii) N.A. (iv) (a) to (c) N.A. (d) 9"×9". (e) 8 seedlings/bunch. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) 62.47". (x) N.A.

2. TREATMENTS :

1. Control (no P_2O_5).
2. 50 lb./ac. of P_2O_5 as Super.
3. 100 lb./ac. of P_2O_5 as Super.
4. 150 lb./ac. of P_2O_5 as Super.
5. Without legume (sown in *Kharif* and fallow in *Rabi*).

These treatments are applied to the previous leguminous crop *Wal* and the residual effect on paddy is studied this year.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 24'×18'. (b) 15'×9'. (v) 4½' ring round the net plot. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1949 (*Rabi*) to 1952 (*Rabi*). (b) No. (c) N.A. (v) (a) Nil. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 3391 lb./ac.
(ii) 226.5 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	3452
2.	3384
3.	3416
4.	3513
5.	3190

S.E./mean = 101.37 lb./ac.

Crop :-Paddy (*Kharif*). Ref :-Gj. 51(169).

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

Object :—To study the effect of leguminous crop *Wal* grown with and without P_2O_5 on the succeeding cereal crop Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy—*Wal*. (b) *Wal* in *Rabi*. (c) As per treatments. (ii) (a) Medium black. (b) N.A. (iii) N.A. (iv) (a), (b) and (c) N.A. (d) 9″×9″. (e) 8 seedlings/bunch. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) 50.63″. (x) N.A.

2. TREATMENTS :

1. Control (no P_2O_5).
2. 50 lb./ac. of P_2O_5 as Super.
3. 100 lb./ac. of P_2O_5 as Super.
4. 150 lb./ac. of P_2O_5 as Super.
5. Without legume (sown in *Kharif* and fallow in *Rabi*). P_2O_5 applied to previous crop *Wal*.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 24′×18′. (b) 15′×9′. (v) 4½′ ring round the net plot. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1949 to 1952 (*Rabi*). (b) No. (c) N.A. (v) (a) Nil.(vi) and (vii) Nil.

5. RESULTS :

(i) 1950 lb./ac.
(ii) 614.0 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1916
2.	1972
3.	1763
4.	2049
5.	2049
S.E./mean	=274.5 lb./ac.

Crop :-Paddy (*Kharif*). Ref :-Gj. 52(197).

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

Object :—To study the effect of leguminous crop *Wal* grown with and without P_2O_5 on the succeeding cereal crop Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy—*Wal*. (b) *Wal* in *Rabi*. (c) As per treatments. (ii) (a) Medium black. (b) N.A. (iii) N.A. (iv) (a) to (c) N.A. (d) 9″×9″. (e) 8 seedlings/bunch. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) 59.87″. (x) N.A.

2. TREATMENTS :

1. Control (no P_2O_5).
2. 50 lb./ac. of P_2O_5 as Super.
3. 100 lb./ac. of P_2O_5 as Super.
4. 150 lb./ac. of P_2O_5 as Super.
4. Without legume (sown in *Kharif* and fallow in *Rabi*. Treatments given to the previous leguminous crop *Wal*.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 24′×18′. (b) 15′×9′. (v) 4½′ ring round the net plot. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1949 to 1952 (*Rabi*). (b) No. (c) N.A. (v) (a) Nil. (b) N.A. (vi) and (vii) N.A.

5. RESULTS :

(i) 1494 lb./ac.
(ii) 241.6 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1560
2.	1528
4.	1343
3.	1512
5.	1529
S.E./mean	= 108.0 lb./ac.

Crop :- Paddy (*Kharif*). **Ref :- Gj. 51(146).**

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

Object :—To find out the N and P_2O_5 requirements of Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy—Gram. (b) Gram. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Dabhoi. (iii) 30.6.1951. (iv) (a) N.A. (b) Drilled. (c) N.A. (d) Between rows 15". (e) N.A. (v) Nil. (vi) K.226. (vii) Irrigated. (viii) N.A. (ix) 20.81". (x) N.A.

2. TREATMENTS :

All combinations of (1) and (2)
(1) 4 levels of N : N_0=0, N_1=32, N_2=64 and N_3=96 lb./ac.
(2) 4 levels of P_2O_5 : P_0=0, P_1=32, P_2=64 and P_3=96 lb./ac.
N as A/S and P_2O_5 as Super.

3. DESIGN :

(i) 4×4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 31'×25'. (b) 26'×20'. (v) 2½' ring round the net plot. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1951—N.A. (b) Yes. (c) N.A. (v) (a) Bulsar, (b) N.A. (vi) and (vii) Nil.

5. RESULTS

(i) 3831 lb./ac.
(ii) 317.5 lb./ac.
(iii) Only main effect of N is significant.
(iv) Av. yield of grain in lb./ac.

	N_0	N_1	N_2	N_3	Mean
P_0	3738	4094	3769	3790	3848
P_1	3329	4073	4293	3895	3897
P_2	3581	4116	3853	3854	3851
P_3	3392	3822	3863	3832	3727
Mean	3510	4026	3945	3843	3831

S.E. of any marginal mean = 79.4 lb./ac.
S.E. of body of table = 158.7 lb./ac.

Crop :- Paddy (*Kharif*). Ref :- Gj. 52(169).

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

Object :—To find out the N and P_2O_5 requirements of Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy—Gram. (b) Gram. (c) Nil. (ii) (a) Black soil. (b) Refer soil analysis, Dabhoi. (iii) 16.7.1952. (iv) (a) N.A. (b) Drilled (c) 25 lb./ac. (d) 15" apart. (e) N.A. (v) K.226. (vii) Irrigated. (viii) 3 weedings and interculturings. (ix) 28.53". (x) 3.12.1952.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N: N_0=0, N_1=32, N_2=64 and N_3=96 lb./ac.

(2) 4 levels of P_2O_5 : P_0=0, P_1=32, P_2=64 and P_3=96 lb./ac.

N as A/S and P_2O_5 as Super. Manures applied on 16.9.1952.

3. DESIGN :

(i) 4×4 Fact. in. R B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 30'×25'. (b) 20'×15'. (v) 5' ring round the net plot. (vi) Yes.

4. GENERAL :

(i) Normal (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1951—N.A. (b) Yes. (c) N.A. (v) (a) Bulsar, and Amreli. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 4197 lb./ac.

(ii) 464.6 lb./ac.

(iii) None of the effects is significant.

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

	N_0	N_1	N_2	N_3	Mean
P_0	4429	4256	4102	4275	4265
P_1	4038	4547	4256	3920	4190
P_2	4683	4193	4238	3703	4204
P_3	4075	3875	4202	4365	4129
Mean	4306	4218	4199	4066	4197

S.E. of any marginal mean =116.2 lb./ac.

S.E. of body of table =232.3 lb./ac.

Crop :-Paddy (*Kharif*). Ref :-Gj. 53(145).

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

Object :—To find the N and P_2O_5 requirements of Paddy.

1. BASAL CONDITIONS :

(i) (a) No. (b) Paddy. (c) As per treatments. (ii) (a) Medium black. (b) Refer soil analysis, Dabhoi. (iii) 20.6.1953 4 to 8.8.1953. (iv) (a) 3 ploughings and 2 harrowings. (b) Transplanting. (c) —. (d) 15". (e) N.A. (v) 5 C.L /ac of F.Y.M. (vi) K. 226. (vii) Irrigated. (viii) Weeding between 4 and 6.9.1953. (ix) 45.25". (x) 18.11.1953.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N : N_0=0, N_1=32, N_2=64 and N_3=96 lb./ac.

(2) 4 levels of P_2O_5 : P_0=0, P_1=32, P_2=64 and P_3=96 lb./ac.

N as A/S and P_2O_5 as Super.

3. DESIGN :

(i) 4×4 Fact. in R.B.D. (ii) (a) 16. (b) 240'×50'. (iii) 4. (iv) (a) 30'×25'. (b) 20'×14'. (v) 5' all round the net plot. (vi) Yes.

4. GENERAL :

(i) Above normal. (ii) The plots receiving high doses of N were attacked by stem-borer. The extent of damage is about 10%. (iii) Weight of grain and straw. (iv) (a) 1951—1955. (b) Yes. (c) N.A. (v) (a) Bulsar and Amreli. (b) N.A. (vi) The crop was transplanted as drilling was impossible due to continuous rains. (vii) Nil.

5. RESULTS :

(i) 2881 lb./ac.

(ii) 593.9 lb./ac.

(iii) None of the effects is significant.

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

	N_0	N_1	N_2	N_3	Mean
P_0	2895	3082	2541	2886	2851
P_1	2948	3231	3022	2559	2940
P_2	2759	3352	3212	2568	2973
P_3	2378	2735	3004	2913	2758
Mean	2745	3100	2945	2732	2881

S.E. of any marginal mean = 148.4 lb./ac.

S.E. of body of table = 296.8 lb./ac.

Crop :- Paddy (*Kharif*). **Ref :-Gj. 48(67).**

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

Object :—To study the effect of A/S and Ammo. Phos. on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Black soil. (b) Refer soil analysis, Vyara. (iii) 18.6.1948./3, 6.8.1948. (iv) (a) and (b) N.A. (c) 60 lb./*bigha*. (d) and (e) N.A. (v) N.A. (vi) K. 226 (late). (vii) Irrigated. (viii) 2 weedings. (ix) N.A. (x) 24.11.1948.

2. TREATMENTS :

All combinations of (1) and (2)+a control (no manure)

(1) 2 sources of N : S_1=A/S and S_2=Ammo. Phos.

(2) 2 levels of N : N_1=30 and N_2=60 lb./ac.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 112'×12'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) N.A. (iii) Grain yield. (iv) (a) No. (b) and (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1423 lb./ac.

(ii) 193.8 lb./ac.

(iii) Only 'Control *vs* others' is highly significant.

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

Control =752 lb./ac.

	N_1	N_2	Mean
S_1	1506	1648	1577
S_2	1437	1774	1606
Mean	1471	1711	

S.E. of any marginal mean = 79.1 lb./ac.

S.E. of body of table =111.9 lb./ac.

Crop :-Paddy (*Kharif*). Ref :-Gj. 50(28).

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

Object :—To find out the effect of application of N and P_2O_5 through Sann on Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy—paddy. (b) Paddy (*Kharif*). (c) Nil. (ii) (a) Black soil. (b) Refer soil analysis, Vyara. (iii) 14.6.1950/20 and 21.7.1950. (iv) (a) to (c) N.A. (d) 6″×6″. (e) 4. (v) 5 C.L./ac. of F.Y.M. (vi) Zinia-31 (early). (vii) Irrigated. (viii) 2 weedings. (ix) 74.20″. (x) 4.11.1950.

2. TREATMENTS :

Main-plot treatments :

4 levels of N as A/S : N_0=0. N_1=40, N_2=60 and N_3=80 lb./ac.

Sub-plot treatments :

All combinations of (1) and (2)+a control (Only green manuring without P_2O_5)

1. 3 levels of P_2O_5 as Super : P_1=20, P_2=30 and P_3=40 lb./ac.
2. 2 methods of application of P_2O_5 (directly and indirectly) : $M_1=P_2O_5$ applied to Sann and Sann used as green manuring to paddy (indirectly). $M_2=P_2O_5$ applied to paddy (directly).

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/block ; 7 sub-plots/main-plot. (b) N.A. (iii) 5. (iv) (a) Main-plot : 33′×112′ ; Sub-plot : 33′×16′. (b) 27′×10′. (v) 3′ ring round the net plot. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) N.A. (iii) Grain and fodder yield. (iv) (a) 1950—1952. (b) Yes. (c) N.A. (v) (a) Nil. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 2674 lb./ac.

(ii) (a) 531.2 lb./ac.

(b) 303.3 lb./ac.

(iii) Only N effect is significant. Others are not significant.

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

	N_0	N_1	N_2	N_3	Mean
Control	2029	2735	2877	2686	2582
P_1M_1	2354	2719	2887	2881	2710
P_2M_1	1875	2683	2896	2916	2592
P_3M_1	2272	3163	2861	2857	2788
P_1M_2	2193	2942	2745	2999	2720
P_2M_2	2141	2766	2848	2929	2671
P_3M_2	2267	2916	2653	2788	2656
Mean	2162	2846	2824	2865	2674

S.E. of difference of two

1. main-plot treatment means = 126.9 lb./ac.
2. sub-plot treatment means = 95.9 lb./ac.
3. sub-plot treatment means at the same level of main-plot treatment = 191.8 lb./ac.
4. main-plot treatment means at the same level of sub-plot treatment = 218.3 lb./ac.

Crop :-Paddy (*Kharif*). **Ref :-Gj. 51(29)/50(28).**

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

Object :—To find the effect of application of N and P_2O_5 through Sann on Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy—paddy. (b) Paddy (*Kharif*). (c) As per treatments. (ii) (a) Black soil. (b) Refer soil analysis, Vyara. (iii) 17.6.1951/19 to 21.7.1951. (iv) (a) to (c) N.A. (d) 6'×6'. (e) 4. (v) 5 C.L /ac. of F.Y.M. (vi) Zinia-31 (early). (vii) Irrigated. (viii) 2 weedings. (ix) 32.70". (x) 1.11.1951 and 6.11.1951.

2. TREATMENTS :

Main-plot treatments :

4 levels of N as A/S : N_0=0, N_1=40, N_2=60 and N_3=80 lb /ac.

Sub-plot treatments :

All combinations of (1) and (2)+a control (Only G.M. without P_2O_5).

1. 3 levels of P_2O_5 as Super : P_1=20, P_2=30 and P_3=40 lb./ac.
2. 2 methods of application of P_2O_5 :—M_1=P_2O_5 applied to Sann and Sann used as green manuring to paddy (indirectly) ; M_2=P_2O_5 applied to paddy (directly).

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/block ; 7 sub-plots/main-plot. (b) N.A. (iii) 5. (iv) (a) Main-plot : 33'×112'. ; Sub-plot : 33'×16'. (b) 27'×10'. (v) 3' alround. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) N.A. (iii) Grain and straw yield. (iv) (a) 1950—1952. (b) Yes. (c) N.A. (v) (a) Nil. (b) N.A. (vi) Nil. (vii) Sann raised for green manuring practically failed due to absence of moisture.

5. RESULTS :

(i) 1417 lb./ac.

(ii) (a) 501.1 lb./ac.
(b) 269.9 lb./ac.

(iii) Main effect of N and 'control *vs.* other sub-plot treatments' effect are significant. Others are not significant,

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

	N_0	N_1	N_2	N_3	Mean
Control	1230	1184	1434	1383	1308
P_1M_1	1098	1516	1605	1539	1439
P_2M_1	1154	1189	1485	1444	1318
P_3M_1	1271	1237	1559	1626	1423
P_1M_2	1098	1369	1880	1934	1570
P_2M_2	1238	1469	1542	1618	1467
P_3M_2	1298	1229	1458	1600	1396
Mean	1198	1313	1566	1592	1417

S.E. of difference of two

1. main-plot treatment means = 119.7 lb./ac.
2. sub-plot treatment means = 85.3 lb./ac.
3. sub-plot treatment means at the same level of main-plot treatment = 170.7 lb./ac.
4. main-plot treatment means at the same level of sub-plot treatment = 198.8 lb./ac.

Crop :-Paddy (*Kharif*). **Ref :-Gj. 52(57)/51(29)/50(28).**

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

Object :—To find the effect of application of N and P_2O_5 through Sann on Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy—paddy. (b) Paddy. (c) As per treatments. (ii) (a) Black soil. (b) Refer soil analysis, Vyara. (iii) 12.6.1952/19.7.1952. (iv) (a) to (c) N.A. (d) 6″×6″ (e) 4. (v) 5 C.L. a/c of F.Y.M. (vi) Zinia-31 (early) (vii) Irrigated. (viii) 2 Weedings. (ix) 40.91″. (x) 4, 5, 7.11.1952.

2. TREATMENTS :

Main-plot treatments :

4 levels of N as A/S : N_0=0, N_1=40, N_2=60 and N_3=80 lb./ac.

Sub-plot treatments :

All combinations of (1) and (2)+a control (only G.M. without P_2O_5)

(1) 3 levels of P_2O_5 as Super : P_1=20, P_2=30 and P_3=40 lb./ac.

(2) 2 methods of application of P_2O_5 : $M_1=P_2O_5$ applied to sann and sann used as green manuring to paddy (indirectly) and $M_2=P_2O_5$ applied to Paddy (directly).

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/block ; 7 sub-plots/main-plot. (b) N.A. (iii) 5. (iv) (a) Sub-plot : 33′×16′ ; Main-plot size : 33′×112′. (b) 27′×10′. (v) 3′ ring round the net plot. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1950—1952. (b) Yes. (c) N.A. (v) (a) Nil. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1855 lb./ac.

(ii) (a) 305.56 lb./ac.

(b) 203.8 lb./ac.

(iii) Main effect of N and M and interaction P×M are significant. Others are not significant.

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

	N_0	N_1	N_2	N_3	Mean
Control	1347	1726	1928	2053	1763
P_1M_1	1331	1779	2130	2057	1824
P_2M_1	1314	1815	1896	2234	1814
P_3M_1	1210	1952	2097	1960	1805
P_1M_2	1230	2009	2081	2073	1848
P_2M_2	1436	1888	2025	2372	1930
P_3M_2	1565	1928	2323	2198	2003
Mean	1348	1871	2068	2135	1855

S.E. of difference of two

1. main-plot treatment means = 73.0 lb./ac.
2. sub-plot treatment means = 64.4 lb./ac.
3. sub-plot treatment means at the same level of main-plot treatment = 128.8 lb./ac.
4. main-plot treatment means at the same level of sub-plot treatment = 139.8 lb./ac.

Crop :-Paddy (*Kharif*). Ref :-Gj. **51(184)**.

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

Object :--To find out the effect of manure mixture on Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy—Cotton—*Rabi Jowar*. (b) *Jowar*. (c) Nil. (ii) (a) Black soil. (b) N.A. (iii) 21.6.1951. (iv) (a) 2 ploughings and 2 harrowings. (b) to (e) N.A. (v) Nil. (vi) Early. (vii) Unirrigated. (viii) 3 weedings and 1 interculturing. (ix) 26". (x) 11.10.1951.

2. TREATMENTS :

1. No manuring.
2. 280 lb./ac. of manure mixture.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 12. (iv) (a) 38'×12'. (b) 34'×8'. (v) 2' ring round the net plot. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) No. (b) and (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1173 lb./ac.
(ii) 116.5 lb./ac.
(iii) Treatments differ highly significantly.
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1070
2.	1275
S.E./mean	=33.63 lb./ac.

Crop :- Paddy (*Kharif*). Ref :- Gj. 52(223).

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

Object :—To study the N and P_2O_5 requirements of Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy-*Nagli*. (b) *Nagli*. (c) Nil. (ii) (a) Light and brownish soil. (b) N.A. (iii) 2.7.1952. (iv) (a) 2 ploughings and 2 harrowings. (b) to (e) N.A. (v) 5 C.L./ac. of F.Y.M. (vi) N.A. (vii) Unirrigated. (viii) 3 hand weedings and 1 interculturing. (ix) 31.17". (x) 14 to 17.10.1952.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N : N_0=0, N_1=32, N_2=64 and N_3=96 lb./ac.

(2) 4 levels of P_2O_5 : P_0=0, P_1=32, P_2=64 and P_3=96 lb./ac.

N as G N.C. and P_2O_5 as Super.

3. DESIGN :

(i) 4×4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 30'×10'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Not satisfactory. In July, crop growth was stunted ; grain development was not satisfactory for want of rains and hence yield was poor. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) to (c) N.A. (v) (a) Nil. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1009 lb./ac.

(ii) 241.3 lb./ac.

(iii) Main effects of N, P and interaction NP are significant.

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

	N_0	N_1	N_2	N_3	Mean
P_0	716	784	1054	1274	957
P_1	677	839	1113	1220	962
P_2	669	864	1058	1190	945
P_3	1150	852	1383	1303	1172
Mean	803	835	1152	1247	1009

S.E. of marginal means = 60.3 lb./ac.

S.E. of body of table = 120.7 lb./ac.

Crop :- Paddy (*Kharif*). Ref :- Gj. 52(253).

Centre :- Bulsar. Type :- 'M'.

Object :—To study the response to N and P_2O_5 applied singly and in combination on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy (*Kado*). (c) No. (ii) Black to deep black. (iii) 5 C.L./ac. of F.Y.M. (iv) *Kado*. (v) (a) to (c) N.A. (d) Spacing between rows—6" ; spacing between plants—3". (e) N A. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) 59.87". (x) 20.10.1952.

2. TREATMENTS :

1. Control.
2. 64 lb./ac. of N as mixture of G.N.C. and A/S.
3. 64 lb./ac. of N as mixture of G.N.C. and A/S+32 lb./ac. of P_2O_5 as Super.

P_2O_5 applied after ploughing. N applied in two doses, one at transplanting and the other at tillering.

3. DESIGN :

(i) and (ii) Villages were selected at random from a *taluka* and a list was prepared. From this list few villages were chosen, retaining the serial order. The site in a village was located by a randomly selected survey number. No. of experimental sites—2. (iii) (a) 42'×51'-8". (b) 33'×33'. (iv) N.A.

4. GENERAL :

(i) Not good due to lack of rains. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) No. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) Nil. (vii) Only one trial was conducted. Other trials were vitiated.

5. RESULTS :

(i) 310.0 lb./ac.
(ii) 148.8 lb /ac.
(iii) Treatment differences are not significant.
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	320.0
2.	200.0
3.	410.0
S.E./mean	=148.8 lb./ac.

Crop :- Paddy (*Kharif*). Ref. :- Gj. 52 (249).

Centre :- Bansada. Type :- 'M'.

Object :—To study the response to N and P_2O_5 applied singly and in combination on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Kado* Paddy. (c) No. (ii) Medium black. (iii) No. (iv) *Kado* paddy (mid-late). (v) (a) Nil. (b) Transplanting. (c) N.A. (d) 1½' spacing between rows. (e) N.A. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) 57.82". (x) 22.10.1952 to 14.11.1952.

2. TREATMENTS :

1. Control.
2. 64 lb./ac. of N as a mixture of A/S and G.N.C.
3. 64 lb./ac of N as a mixture of A/S and G.N.C. +32 lb./ac. of P_2O_5 as Super.

Super was applied after ploughing ; N was applied in two doses, one at transplanting and one after tillering.

3. DESIGN :

(i) and (ii) Villages were selected at random from a taluka and a list was prepared. From this list few villages were chosen retaining the serial order. The site in a village was located by a randomly selected survey number. (iii) (a) 5'×91½' at one site and 111'×141' at another site. (b) 33'×33'. (iv) N.A.

4. GENERAL :

(i) Stunted growth, withering due to want of rains. Yields of plots having double dose of N and P were heighest. (ii) Nil. (iii) Straw yield. (iv) (a) 1952, conducted only for one year. (b) N.A. (c) N.A. (v) N.A. (vi) Less rainfall. (vii) Nil.

5. RESULTS :

(i) 1584 lb./ac.
(ii) 417.2 lb /ac.
(iii) Treatments differ significantly.
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	2010
2.	2070
3.	1200
S.E./mean	=208.60 lb./ac.

Crop :- Paddy. (*Kharif*). Ref :- Gj. 52(252).

Centre :- Bardoli. Type :- 'M'.

Object :—To study the response to N and P_2O_5 applied singly and in combination on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy in *kharif*. (c) 5 to 10 C.L./ac. of F.Y.M. (ii) Medium black. (iii) 5 to 10 C.L./ac of F.Y.M. (iv) Paddy (*Kado*). (v) (a), (b) and (c) N.A. (d) 6"×6" spacing between rows. (e) N.A. (vi) N.A. (vii) Two irrigations were given in one trial ; It was given at the time of flowering. (viii) N.A. (ix) 35·01". (x) 1.10.1952 to 22.10.1952.

2. TREATMENTS :

1. Control.
2. 64 lb./ac. of N as a mixture of G.N.C and A/S.
3. 64 lb./ac. of N as a mixture of G.N.C and A/S.+32 lb./ac. of P_2O_5 as Super.

P_2O_5 was applied after ploughing. N was applied in 2 doses, one at transplanting and one at tillering.

3. DESIGN :

(i) and (ii) Villages were selected at random from a *taluka* and a list was prepared. From this a list of few villages were chosen retaining the serial order. The site in a village was located by a randomly selected survey number. No. of experimental sites—4. (iii) (a) 50′×44′. (b) 33′×23′ (iv) N.A.

4. GENERAL :

(i) Good in irrigated plots. Poor in other Plots. (ii) N.A. (iii) Grain and straw yield. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) Experiment failed at one site.

5. RESULTS :

(i) 2150 lb./ac.
(ii) 147.6 lb./ac.
(iii) Treatments differ significantly.
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1773
2.	2382
3.	2293
S.E./mean	=82.0 lb./ac.

Crop :- Paddy (*Kharif*). **Ref :- Gj. 52(255).**

Centre :- Dharampur. **Type :-'M'.**

Object :—To study the response to N and P_2O_5 applied singly and in combination on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Wal* in village Bamti and Paddy in village Bandia. (c) No manures to *wal* ; 5 C.L./ac. of F.Y.M. to Paddy. (ii) Medium black. (iii) 5 C.L./ac. of F.Y.M. (iv) *Kado* Paddy at 3 sites, *Kolum* (late) at one site. (v) (a) N.A. (b) Transplanting(c) N.A. (d) 6″. (e) N.A. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) 65.04″. (x) 10.10.1952 to 1.11.1952.

2. TREATMENTS :

1. Control.
2. 64 lb./ac. of N as a mixture of G.N.C. and A/S.
3. 64 lb./ac. of N as a mixture of G.N.C. and A/S+32 lb./ac. of P_2O_5 as Super.

P_2O_5 was applied after ploughing and N in two doses, one at transplanting and other after tillering.

3. DESIGN :

(i) and (ii) Villages were selected at random from a *taluka* and a list was prepared. From this list ; a few villages were chosen retaining the serial order. The site in a village was located by a randomly selected servey number. No. of experimental sites-4. (iii) (a) 55′×42′. (b) 33′×33′. (iv) N.A.

4. GENERAL :

(i) Good. (ii) Lodging was observed in some plots. (iii) Grain and straw yield. (iv) (a) No (b) N.A. (c) N.A. (v) N.A. (vi) After August, no rains. (vii) Nil.

5. RESULTS :

(i) 2458 lb./ac.
(ii) 213.6 lb /ac.
(iii) Treatments differ highly significantly.
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1940
2.	2565
3.	2870
S.E./mean	= 115.6 lb./ac.

Crop :- Paddy (*Kharif*). **Ref :- Gj. 52(250).**

Centre :- Navasan. Type :- 'M'.

Object :—To study the response to N and P_2O_5 applied singly and in combination on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow in *Rabi* ; Paddy in *Kharif* in Kuched and *Wal* in Abrana. (c) 5 to 15 C.L./ac. of F.Y.M. (ii) Black medium. (iii) 7 to 12 C.L./ac. of F.Y.M. (iv) *Kado* Paddy (early). (v) (a), (b) and (c) N.A. (d) 6" between rows. (e) N.A. (vi) N.A. (vii) 5 irrigations in Abrana and 1 irrigation in Kuched. (viii) N.A. (ix) 31.80". (x) 10.10.1952. to 20.10.1952.

2. TREATMENTS :

1. Control.
2. 64 lb./ac. of N as a mixture of G.N.C. and A/S.
3. 64 lb./ac. of N as a mixture of G.N.C. and A/S+32 lb./ac. of P_2O_5 as Super.

Super was applied after ploughing. N was applied in two doses, one at transplanting and one at tillering.

3. DESIGN :

(i) and (ii) Villages were selected at random from a *taluka* and a list was prepared. From this list, a few villages were chosen retaining the serial order. The site in a village was located by a randomly selected survey number. No. of experimental sites was-4, out of which one was vitiated. (iii) (a) 55'×40' in one village, 50'×44' in the other village. (b) 33'×33'. (iv) N.A.

4. GENERAL :

(i) Fair to good. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1952—for one year only. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) 2nd dose of manure not given at one site due to late rains.

5. RESULTS :

(i) 1830 lb./ac.
(ii) 306.4 lb./ac.
(iii) Treatment differences are highly significant.
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1953
2.	2130
3.	1407

S.E./mean = 176.8 lb /ac.

Crop :-Paddy (*Kharif*). **Ref :-Gj. 52(256)**

Centre :-Pareli. Type :-'M'.

Object :—To study the response to N and P_2O_5 applied singly and in combination on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Wal* (*Rabi*) in Kumbhani village ; Wheat (*Rabi*) in Pati village. (c) No (ii) Loamy and *Gordu*. (iii) 5 C.L./ac. of F.Y.M. (iv) *Kado* variety. (v) (a), (b) and (c) N.A. (d) 6"×6" spacing between bunches. (e) N.A. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) 56.40". (x) 17.10.52 to 4.11.1952.

2. TREATMENTS :

1. Control.
2. 64 lb /ac. of N as a mixture of G.N.C. and A/S.
3. 64 lb./ac. of N as a mixture of G.N.C. and A/S.+32 lb /ac of P_2O_5 as Super.

P_2O_5 was applied after ploughing. N applied in two doses, one at transplanting and one at tillering.

3. DESIGN :

(i), (ii) Villages were selected at random from a *taluka* and a list was prepared. From this list, a few villages were chosen retaining the serial order. The site in a village was located by a randomly selected survey number. No. of experimental sites-4. (iii) (a) 49.5'×44'. (b) 33'×33'. (iv) N.A.

4. GENERAL ;

(i) Good. (ii) N.A. (iii) Grain and straw yield. (iv) (a) No. (b) No. (c) N.A. (v) N.A. (vi) Nil. (vii) 2nd dose of manure was not applied due to lack of rains. The yields of one trial out of 4 were as follows : Treat (1)=5 00, Treat. (2)-6.25 and treat. (3)-6.75 lb./plot and plot size 33'×35'.

5. RESULTS :

(i) 1037 lb./ac.
(ii) 33.20 lb./ac.
(iii) Treatments differ highly significantly.
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	950
2.	1052
3.	1110
S.E./mean	=17.60 lb./ac.

Crop :-Paddy (*Kharif*). **Ref :-Gj. 52(254).**

Centre :-Songad. **Type :-'M'.**

Object :—To study the response to N and P_2O_5 applied singly and in combination on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy. (c) No. (ii) Loamy in one village ; Black in the other village (dropped). (iii) 5 C.L./ac. of F.Y.M. in village Bedwan. No manure in the a village (dropped). (iv) Mid-late. *Kado* in village Bedwan ; Mid-late. *Mayaswal* in 2nd village (dropped). (v) (a), (b) and (c) N.A. (d) 9"×9" spacing. (e) N.A. (vi) N.A. (vii) Irrigated at flowering stage. (viii) N.A. (ix) 39.27". (x) 27.10.1952.

2. TREATMENTS :

1. Control.
2. 64 lb./ac. of N as a mixture of G.N.C. and A/S.
3. 64 lb./ac. of N as a mixture of G.N.C. and A/S+32 lb./ac. of P_2O_5 as Super.

Manures applied in single dose at the time of planting.

3. DESIGN :

(i), (ii) Villages were selected at random from a *taluka* and a list was prepared. From this list, a few villages were chosen retaining the serial order. The site in a village was located by a randomly selected survey number. No. of experimental sites-2 (one vitiated). (iii) (a) 55'×40'. (b) 33'×33'. (iv) N.A.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain and straw yield. (iv) (a) No. (b) No. (c) N.A. (v) N.A. (vi) Nil. (vii) Only one village selected and out of 2 trials in the village, one trial was vitiated.

5. RESULTS :

(i) 2229.
(ii) N.A.
(iii) N.A.
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1537
2.	2500
3.	650
S.E./mean	=N.A.

Crop :- Paddy (*Kharif*). **Ref :- Gj. 52(251).**

Centre :- Valod. **Type :- 'M'.**

Object :—To study the response to N and P_2O_5 applied singly and in combination on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy. (c) 5 to 10 C.L./ac. of F.Y.M. (ii) Medium black. (iii) 5 to 10 C.L./ac. of F.Y.M. (iv) Paddy (late). (v) (a) to (c) N.A. (d) 6" spacing between rows. (e) N.A. (vi) N.A. (vii) Unirrigated (viii) N.A. (ix) 37.57". (x) 17.10.1952.

2. TREATMENTS :

1. Control.
2. 64 lb./ac. of N as a mixture of G.N.C. and A/S.
3. 64 lb /ac. of N as a mixture of G.N.C. and A/S+32 lb./ac. of P_2O_5 as Super.

Super applied after ploughing. N was applied in two doses, one at transplanting and one at tillering.

3. DESIGN :

(i) and (ii) Villages were selected at random from a *taluka* and a list was prepared. From this list, few villages were chosen retaining the serial order. The site in a village was located by a randomly selected survey number. No. of experimental sites 4, out of which one was vitiated. (iii) (a) Plot size varies from site to site. (b) 33′×33′. (iv) N.A.

4. GENERAL :

(i) Good. (ii) N.A. (iii) Grain and straw yield. (iv) (a) 1952, for one year only. (b) N.A. (c) N.A. (d) N.A. (vi) Rainfall not sufficient. (vii) One trial failed.

5. RESULTS :

(i) 654 lb./ac.

(ii) 147.2 lb./ac.

(iii) Treatments do not differ significantly.

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

Treatment	Av. yield
1.	546
2.	627
3.	788
S.E./mean	= 84.8 lb./ac.

Crop :- Paddy (*Kharif*). Ref :- Gj. 52(257).

Centre :- Vyara. Type :- 'M'.

Object :—To study the response to N and P_2O_5 applied singly and in combination on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy. (c) 5 C.L./ac. of F.Y.M. (ii) Black soil. (iii) 5 C.L./ac. of F.Y.M. (iv) *Kadvo* (early) in village Vyara ; Manjerval (mid-late) in Mypore village. (v) (a) N.A. (b) N.A. (c)—. (d) 9″×9″ (e) 4 to 5. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) 25.11.1952 to 4.12.1952.

2. TREATMENTS :

1. Control.
2. 64 lb./ac. of N as mixture of G.N.C. and A/S.
3. 64 lb./ac. of N as mixture of G.N.C. and A/S+32 lb./ac. of P_2O_5 as Super.

P_2O_5 was applied after ploughing. N was applied in two doses, one at transplanting and other at tillering.

3. DESIGN :

(i) and (ii) Villages were selected at random from a Taluka and a list was prepared. From this list, a few villages were chosen retaining the serial order. The site in a village was located by a randomly selected survey number. No of experimental sites-4. (iii) (a) 40′×54½′. (b) 33′×33′. (iv) N.A.

4. GENERAL :

(i) Not good (ii) Nil. (iii) Grain and straw yield. (iv) (a) No. (b) No. (c) N.A. (v) N.A. (vi) Crop suffered for want of sufficient rains. (vii) Nil.

5. RESULTS :

(i) 740 lb /ac.

(ii) 196 8 lb./ac.

(iii) Treatments differ highly significantly.

(iv) Av. yield of grain i lb./ac.

Treatment	Av. yield
1.	560
2.	815
3.	845
S.E /mean	= 81.6 lb./ac.

Crop :- Paddy *(Kharif)*. Ref :- Gj. 48(62).

Site :- Agri. Res. Stn., Bulsar. Type :- 'C'.

Object :—To find out the optimum no. of seedlings per bunch and spacing to give maximum yield.

1. BASAL CONDITIONS :

(i) (a) Paddy—*Wal.* (b) *Wal* in *Rabi.* (c) 15 C.L./ac. of F.Y.M. (ii) (a) Medium black. (b) N.A. (iii) 7.6.1948/27,28.7.1948. (iv) (a) N.A. (b) Transplanting. (c) —. (d) and (e) As per treatments. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) 32.38". (x) 14,20,21.10.1948.

2, TREATMENTS :

Main-plot treatments:

3 spacings : C_1=6"×6", C_2=9"×9" and C_3=12"×12".

Sub-plot treatments :

No. of seedlings/bunch : S_1=4, S_2=6, S_3=8, S_4=10 and S_5=12.

3. DESIGN:

(i) Split-plot. (ii) (a) 3 main-plots/block and 5 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) For C_1= 11'×21', C_2=12'×21', C_3=13'×21' (sub-plot sizes). (b) 9'×15'. (v) For treatments : C_1=1'×3'; C_2=1.5'×3' and C_3=2'×3'. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1947—1951. (b) No. (c) N.A. (v) (a) Nil. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1187 lb./ac.

(ii) (a) 435.8 lb./ac.

(b) 789.7 lb./ac.

(iii) Only main treatments (spacing) differ significantly.

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

	C_1	C_2	C_3	Mean
S_1	1257	1237	1082	1192
S_2	1227	1104	1248	1193
S_3	1311	1222	1274	1269
S_4	1340	1283	873	1165
S_5	1104	1136	1112	1117
Mean	1248	1196	1118	1187

S.E. of difference of two

1. main-plot treatment means =112.6 lb./ac.
2. sub-plot treatment means =263.2 lb./ac.
3. sub-plot treatment means at the same level of main-plot treatment =455.9 lb./ac.
4. main-plot treatment means at the same level of sub-plot treatment =423.3 lb./ac.

Crop :-Paddy *(Kharif)*. Ref :- Gj. 49(98).

Site :- Agri. Res. Stn., Bulsar. Type :-'C'.

Object :—To find out the optimum number of seedlings per bunch and spacing to give maximum yield.

BASAL CONDITIONS :

(i) (a) Paddy—*Wal.* (b) *Wal.* (c) N.A. (ii) (a) Medium black. (b) N.A. (iii) N.A. (iv) (a) to (c) N.A. (d) and (e) As per treatments. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) 98.05". (x) N.A.

2. TREATMENTS :

Main-plot treatments :

3 spacings : $C_1=6''\times6''$, $C_2=9''\times9''$ and $C_3=12''\times12''$.

Sub-plot treatments :

No. of seedlings/bunch : $S_1=4$, $S_2=6$, $S_3=8$, $S_4=10$ and $S_5=12$.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block and 5 sub-plots/main-plot. (b) N.A. (iii) 5. (iv) (a) Sub-plot $C_1=11'\times21'$, $C_2=12'\times21'$, $C_3=13\times21'$, main-plot : $C_1=11'\times105'$, $C_2=12'\times105'$ and $C_3=13'\times105'$. (b) $9'\times15'$ (sub-plot). (v) For $C_1=1'\times3'$, for $C_2=1.5'\times3'$, and for $C_3=2'\times3'$. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1947--1951. (b) No (c) N.A. (v) (a) Nil. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 2554 lb./ac.

(ii) (a) 570.1 lb./ac.

(b) 289.1 lb./ac.

(iii) Only sub-plot treatments differ significantly. Others are not significant.

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

	C_1	C_2	C_3	Mean
S_1	2472	2359	2234	2355
S_2	2710	2468	2468	2548
S_3	2593	2606	2501	2566
S_4	2618	2561	2561	2580
S_5	2755	2831	2585	2723
Mean	2629	2565	2469	2554

S.E. of difference of two

1. main-plot treatment means = 161.2 lb./ac.
2. sub-plot treatment means = 105.6 lb./ac
3. sub-plot treatment means at the same level of main-plot treatment = 182.4 lb./ac.
4. main-plot treatment means at the same level of sub-plot treatment = 229.8 lb./ac.

Crop :-Paddy (*Kharif*). Ref :-Gj. **50(124).**

Site :-Agri. Res. Stn., Bulsar. Type :-'C'.

Object :—To find out the optimum number of seedlings per bunch and spacing to give maximum yield.

1. BASAL CONDITIONS :

(i) (a) Paddy—*Wal.* (b) *Wal.* (c) Nil. (ii) (a) Medium black. (b) N.A. (iii) N.A. (iv) (a) to (c) N.A. (d) and (e) As per treatments. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) 62.47". (x) N.A.

2. TREATMENTS :

Main-plot treatments :

3 spacings : $C_1=6''\times6''$, $C_2=9''\times9''$ and $C_3=12''\times12''$.

Sub-plot treatments :

No. of seedlings/bunch : $S_1=4$, $S_2=6$, $S_3=8$, $S_4=10$ and $S_5=12$.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block and 5 sub-plots/main-plot. (b) N.A. (iii) 5. (iv) (a) Sub-plot : $C_1=11'\times21'$, $C_2=12'\times21'$, $C_3=13'\times21'$. Gross main-plot : $C_1=11'\times105'$, $C_2=12'\times105'$ and $C_3=13'\times105'$. (b) Sub-plot : $9'\times15''$ (v) $1'\times3'$ for treatment C_1, $1\frac{1}{2}'\times3'$ for treatment C_2 and $2'\times3'$ for treatment C_3. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1947—1951. (b) No. (c) N.A. (v) (a) Navagaon, (b) N.A (vi) and (vii) Nil.

5. RESULTS :

(i) 2890 lb./ac.
(ii) (a) 483.5 lb./ac.
(b) 192.3 lb./ac.
(iii) None of the effects is significant.
(iv) Av. yield of grain in lb./ac.

	C_1	C_2	C_3	Mean
S_1	3038	2712	2511	2754
S_2	3066	2785	2849	2900
S_3	3176	2918	2606	2900
S_4	2982	3021	2861	2955
S_5	3099	2978	2754	2944
Mean	3072	2883	2716	2890

S.E. of difference of two

1. main-plot treatment means =136.7 lb./ac.
2. sub-plot treatment means = 70.3 lb./ac.
3. sub-plot treatment means at the same level of main-plot treatment =121.6 lb./ac.
4. main-plot treatment means at the same level of sub-plot treatment =174.8 lb./ac.

Crop :-Paddy (*Kharif*). **Ref :-Gj. 51(168).**

Site :-Agri. Res. Stn., Bulsar. **Type :-'C'.**

Object :—To find out the optimum number of seedlings per bunch and spacing to give maximum yield.

1. BASAL CONDITIONS :

(i) (a) Paddy—*Wal.* (b) *Wal.* (c) 15 C.L./ac. of F.Y.M. (ii) (a) Medium black. (b) N.A. (iii) N.A. (iv) (a) to (c) N.A. (d) and (e) As per treatments. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) 50.63", (x) N.A.

2. TREATMENTS :

Main-plot treatments :

3 spacings : C_1=6"×6", C_2=9"×9" and C_3=12"×12".

Sub-plot treatments :

No. of seedlings/bunch : S_1=4, S_2=6, S_3=8, S_4=10 and S_5=12.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block and 5 sub-plots/main-plot. (b) N.A. (iii) 4 (one replication vitiated). (iv) (a) Sub-plot : C_1=11'×21', C_2=12'×21' and C_3=13'×21' and Gross main-plot : C_1=11'×105', C_2=12'×105' and C_3=13'×105'. (b) Sub-plot : 9'×15'. (v) 1'×3' for treatment C_1, 1.5'×3' for treatment C_2 and 2'×3' for treatment C_3. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1947—1951. (b) No. (c) N.A. (v) (a) Navagaon, (b) N.A (vi) and (vii) Nil.

5. RESULTS :

(i) 1618 lb./ac.
(ii) (a) 186.9 lb./ac.
(b) 260.4 lb./ac.
(iii) Main-plot treatments alone differ highly significantly.

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

	C_1	C_2	C_3	Mean
S_1	1669	1976	1296	1647
S_2	1639	1770	1543	1651
S_3	1855	1563	1472	1630
S_4	1845	1492	1316	1551
S_5	1770	1623	1442	1612
Mean	1756	1685	1414	1618

S.E. of difference of two

1. main-plot treatment means = 59.1 lb./ac,
2. sub-plot treatment means =106.2 lb./ac.
3. sub-plot treatment means at the same level of main-plot treatment = 183.8 lb /ac.
4. main-plot treatment means at the same level of sub-plot treatment =174.9 lb./ac.

Crop :- Paddy. (*Kharif*). Ref :- Gj. 52(200).

Site :- Agri. Res. Stn., Bulsar. Type :- 'C'.

Object :—To find out a suitable substitute for rabbing.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Medium black. (b) N.A. (iii) N.A. (iv) (a) N.A. (b) Transplanting. (c) N.A. (d) 6″×6″. (e) N.A. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) 59.87". (x) N.A.

2. TREATMENTS :

1. Usual cultivator's method of rabbing.
2. Mixing one basketful charcoal powder with surface soil without rabbing.
3. Applying manure mixture to the seed bed at 15 lb./gunta.
4. No rabbing as check.

3, DESIGN:

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 5. (iv) (a) 30′×7′. (b) 28′×6′. (v) 1′×½′. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain and fodder yield. (iv) (a) No, (b) No. (c) N.A. (v) (a) Nil. (b) Nil. (vi) and (vii) N.A.

5. RESULTS :

(i) 1452 lb./ac.
(iii) 259.3 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1537
2.	1913
3.	1420
4.	938
S.E./mean	=115.9 lb./ac.

Crop :- Paddy. (*Kharif.*). Ref :- GJ. 51(194).

Site :- Agri. Res. Stn., Dabhoi. Type :- 'C'.

Object :—To find-out the optimum spacing for Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Dabhoi. (iii) 30.6.1951 (iv) (a) N.A. (b) Drilling. (c) 25 lb./ac. (d) As per treatments. (e) N.A. (v) Nil. (vi) Paddy K-226. (vii) Irrigated. (viii) Nil. (ix) 20.81". (x) N.A.

2. TREATMENTS :

1. Narrow i.e. 12" spacing between two rows.
2. Normal i.e. 15" spacing between two rows.
3. Wider i.e. 18" spacing between two rows.

3. DESIGN.

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 4. (iv) (a) 80'×15'. (b) 74'×15'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) N.A. (iii) Grain and fodder yield. (iv) (a) 1951-1952. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) Nil.

5. RESULTS :

(i) 3139 lb./ac.
(ii) 238.6 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	3335
2.	3247
3.	2835
S.E./mean	=119.3 lb./ac.

———

Crop :- Paddy. (*Kharif*). Ref :- Gj. 52 (170).

Sie:- Agri. Res. Stn, Dabhoi. Type :- 'C'.

Object :—To find the optimum spacing for Paddy.

1. BASAL CONDITIONS :

(i) (a) No. (b) Paddy. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Dabhoi. (iii) 30.6.52 (iv) (a) N. A. (b) Drilled. (c) 25 lb./ac. (d) As per treatments. (e) N.A. (v) 5 C.L./ac. of F.Y.M. (vi) K—226, (viii) Irrigated. (viii) N.A. (ix) 58.53". (x) 19.11.1952.

2. TREATMENTS :

3 row spacings : S_1=12", S_2=15" and S_3=18".

3. DESIGN :

(i) R.B.D. (ii) (a) 3 (b) N.A. (iii) 6. (iv) (a) 80'×15' ; (b) 70'×15'. (v) 5' on each end. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1951—1952. (b) No. (c) N.A. (v) (a) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 3264 lb./ae.
(ii) 516.9 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
S_1	3443
S_2	3186
S_3	3163
S.E./mean	=210.3

Crop :- Paddy (*Kharif*). Ref :- Gj. 50(44).

Site :- Agri. Res. Stn., Navagam. Type :- 'C'.

Object :—To find out the optimum spacing and number of seedlings per bunch for Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy-Wheat. (b) Wheat. (c) N.A. (ii) (a) Medium black soil. (b) N.A. (iii) 12, 13.8.1950. (iv) (a) N.A. (b) Broadcasting. (c) N.A. (d) and (e) As per treatments. (v) 10 C.L./ac. of F.Y.M. (vi) *Sukhwel* No. 10 (early) (vii) Irrigated. (viii) Two weedings on 6 and 13.9.1950. (ix) 34.39". (x) 1.11.1950.

2. TREATMENTS :

Main-plot treatments :

3 spacings : $C_1 = 6" \times 6"$, $C_2 = 9" \times 9"$ and $C_3 = 12" \times 12"$.

Sub-plot treatments :

No. of seedlings/bunch : $S_1 = 1$, $S_2 = 2$ and $S_3 = 3$.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 24'×21' ; main plot : 72'×63'. (b) 18'×15' ; main plot=54'×45'. (c) 3' all round the net plot. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1950-1952. (b) No. (c) N.A. (v) (a) Bulsar. (b) N.A. (vii) and (vii) Nil.

5. RESULTS :

(i) 3193 lb./ac.

(ii) (a) 201.2 lb./ac.

(b) 148.1 lb./ac.

(iii) Only sub-plot treatments differ significantly.

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

	C_1	C_2	C_3	Mean
S_1	3105	3307	3400	3271
S_2	3130	3118	3291	3180
S_3	3037	3101	3247	3128
Mean	3091	3175	3313	3193

S.E. of difference of two

1. main-plot treatment means = 82.1 lb./ac.
2. sub-plot treatment means = 60.5 lb./ac.
3. sub-plot treatment means at the same level of main-plot treatment = 154.7 lb./ac.
4. main-plot treatment means at the same level of sub-plot treatment = 118.3 lb./ac.

Crop :- Paddy (*Kharif*). Ref :- Gj. 51(48).

Site :- Agri. Res. Stn., Navagam. Type :- 'C'.

Object :—To find out the optimum spacing and number of seedlings per bunch for Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy-Wheat. (b) Wheat. (c) N.A. (ii) (a) Medium black soil. (b) N.A. (iii) 13.7.1951 14.8.1951. (iv) (a) N.A. (b) Transplanting. (c) —. (d) and (e) As per treatments. (v) 10 C.L./ac. of F.Y.M. (vi) *Sukhwel* No. 10 (early). (vii) Irrigated. (viii) Weeding on 15.9.1950. (ix) 14.60". (x) 15.11.1951.

2. TREATMENTS :

Main-plot treatments :

3 spacings : C_1=6″×6″, C_2=9″×9″ and C_3=12″×12″.

Sub-plot treatments :

No of seedlings/bunch : S_1=1, S_2=2 and S_3=3.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 24′×21′ and main-plot : 72′×63′. (b) 18′×15′ ; main-plot 54′×45′. (v) 3 feet all round the net plot. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1950 to 1952. (b) No. (c) N.A. (v) (a) Bulsar. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 2950 lb./ac.

(ii) (a) 273.0 lb /ac.
(b) 154.8 lb./ac.

(iii) Only interaction S×C is significant.

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

	C_1	C_2	C_3	Mean
S_1	3013	2829	2902	2915
S_2	3097	3011	2825	2978
S_3	2809	2962	3103	2958
Mean	2973	2934	2943	2950

S.E. of difference of two

1. main-plot treatment means = 111.4 lb./ac.
2. sub-plot treatment means = 63.4 lb./ac.
3. sub-plot treatment means at the same level of main-plot treatment = 108.6 lb./ac.
4. main-plot treatment means at the same level of sub-plot treatment = 265.4 lb./ac.

Crop :-Paddy (*Kharif*). Ref :-Gj. 52(75).

Site :-Agri. Res. Stn., Navagam. Type :-'C'.

Object :—To find out the optimum spacing and number of seedlings per bunch for Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy-Wheat. (b) Wheat. (c) N.A. (ii) (a) Medium black soil. (b) N.A. (iii) 26.6.1952./ 26.7.1952. (iv) (a) N.A. (b) Transplanting. (c) Nil. (d) and (e) As per treatments. (v) 10 C.L./ac. of F.Y.M. (vi) *Sukhwel* No. 10 (early). (vii) Irrigated. (viii) Weeding on 24.8.1952. (ix) 23.91″. (x) 24.10.1952.

2. TREATMENTS :

Main-plot treatments :

3 spacings : C_1=6″×6″, C_2=9″×9″ and C_3=12″×12″.

Sub-plot treatments :

No. of seedlings/bunch : S_1=1, S_2=2 and S_3=3.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/blocks ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 24′×21′ and main-plot : 72′×63′. (b) 18′×15′, main-plot : 54′×45′. (v) 3 feet all round the net plot. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1950 to 1952. (b) No. (c) N.A. (v) (a) Bulsar. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 3185 lb./ac.

(ii) (a) 99.4 lb./ac.

(b) 109.5 lb./ac.

(iii) Main effects of S and C and interaction S×C are highly significant.

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

	C_1	C_2	C_3	Mean
S_1	3315	3033	2908	3085
S_2	3456	3291	2952	3233
S_3	3525	3198	2988	3237
Mean	3432	3174	2949	3185

S.E. of difference of two

1. main-plot treatment means = 40.6 lb./ac.
2. sub-plot treatment means = 44·7 lb./ac.
3. sub-plot treatment means at the same level of main-plot treatment = 77.4 lb./ac.
4. main-plot treatment means at the same level of sub-plot treatment = 75.1 lb./ac

---

Crop :- Paddy (*Kharif*). Ref :- Gj. **50(45).**

Site :- Agri. Res. Stn., Navagam. Type :- 'C'.

Object :—To find out the optimum spacing and number of seedlings per bunch for Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy-Wheat. (b) Wheat. (c) N.A. (ii) (a) Medium black. (b) N.A. (ii) 13, 14.8.1950. (iv) (a) N.A. (b) *Varude* method of broadcasting. (c) N.A. (d) and (e) As per treatments. (v) 10 C.L./ac. of F.Y.M. (vi) Jirasal No. 274 (late). (vii) Irrigated. (viii) Two weedings on 7 and 15.9.1950. (ix) 34.39". (x) 17, 18.11.1950.

2. TREATMENTS :

Main-plot treatments :

3 spacings : C_1=6"×6", C_2=9"×9" and C_3=12"×12".

Sub-plot treatments :

No. of seedlings/bunch : S_1=1, S_2=2 and S_3=3.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 24'×21' : and main-plot : 72'×63'. (b) 18'×15', main-plot : 54'×45'. (v) 3' all round the net-plot. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1950—1952. (b) No. (c) N.A. (v) (a) Bulsar. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 3971 lb./ac.

(ii) (a) 268.3 lb./ac.

(b) 114.0 lb./ac.

(iii) None of the effects is significant.

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

	C_1	C_2	C_3	Mean
S_1	4122	3948	3799	3956
S_2	4174	3964	3799	3979
S_3	4000	4118	3819	3979
Mean	4099	4010	3806	3971

S.E. of difference of two

1. main-plot treatment means = 109.5 lb./ac.
2. sub-plot treatment means = 46.5 lb./ac.
3. sub-plot treatment means at the same level of main-plot treatment = 80.6 lb./ac.
4. main-plot treatment means at the same level of sub-plot treatment = 127.5 lb./ac.

Crop :- Paddy (*Kharif*). Ref :- Gj. 51(47).

Site :- Agri. Res. Stn., Navagam. Type :- 'C'.

Object :—To find out the optimum spacing and number of seedlings per bunch for Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy-Wheat. (b) Wheat. (c) N.A. (ii) (a) Medium black soil. (b) N.A. (iii) 13.7.1951/ 12..8.1951. (iv) (a) N.A. (b) Transplanting. (c)—. (d) and (e) As per treatments. (v) 10 C.L./ac. of F.Y.M. (vi) Jirasal No. 274 (late). (vii) Irrigated. (viii) Weeding on 20.9.1951. (ix) 14.60". (x) 2.11.1951.

2. TREATMENTS :

Main-plot treatments :

3 spacings : C_1=6"×6", C_2=9"×9" and C_3=12"×12".

Sub-plot treatments :

No. of seedlings/bunch : S_1=1, S_2=2 and S_3=3.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 24'×21'; main-plot : 72'×63'. (b) 18'×15' ; main-plot : 54'×45'. (v) 3' all round the net plot. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1950—1952. (b) No. (c) N.A. (v) (a) Bulsar. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 3625 lb./ac.

(ii) (a) 281.6 lb./ac.

(b) 134.7 lb./ac.

(iii) Only the interaction S×C is highly significant.

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

	C_1	C_2	C_3	Mean
S_1	3819	3638	3347	3601
S_2	3601	3690	3597	3629
S_3	3585	3783	3569	3646
Mean	3668	3704	3504	3625

S.E. of difference of two

1. main-plot treatment means = 114.9 lb./ac.
2. sub-plot treatment means = 55.0 lb./ac.
3. sub-plot treatment means at the same level of main-plot treatment = 95.2 lb./ac.
4. main-plot treatment means at the same level of sub-plot treatment = 138.9 lb./ac.

Crop :-Paddy (*Kharif*). Ref :-Gj. 52(74).

Site :-Agri. Res. Stn., Navagam. Type :- 'C'.

Object :—To find out the optimum spacing and number of seedlings per bunch for Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy—Wheat. (b) Wheat. (c) N.A. (ii) Medium black soil. (b) N.A. (iii) 26.6.1952/27.28.2.1952. (iv) (a) N.A. (b) Transplanting. (c) —. (d) and (e) As per treatments. (v) 10 C.L./ac. of F.Y.M. (vi) Jirasal No. 274 (late). (vii) Irrigated. (viii) Weedings on 2 and 9 to 23.9.1952. (ix) 23.91". (x) 13, 14.11.1952.

2. TREATMENTS :

Main-plot treatments :

3 spacings : $C_1 = 6" \times 6"$, $C_2 = 9" \times 9"$ and $C_3 = 12" \times 12"$.

Sub-plot treatments :

No. of seedlings/bunch : $S_1 = 1$, $S_2 = 2$ and $S_3 = 3$.

3. DESIGN :

(i) Split-plot. ii) (a) 3 main-plots/block and 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 24'×21'; main-plot size = 72'×63'. (b) 18'×15', main-plot size = 54'×45'. (v) 3' all round the net plot. (vi) Yes.

3. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1950—1952. (b) No. (c) N.A. (v) (a) Bulsar. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 3185 lb./ac.

(ii) (a) 201.2 lb /ac.

(b) 97 7 lb./ac.

(iii) Main effect of S is highly significant. Main effect of C is significant. Interaction S×C is not significant.

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

	C_1	C_2	C_3	Mean
S_1	3315	3033	2903	3085
S_2	3456	3291	2952	3233
S_3	3525	3198	2988	3237
Mean	3432	3174	2949	3185

S.E. of difference of two

1. main plot treatment means = 82.2 lb /ac.
2. sub-plot treatment means = 39.9 lb /ac.
3. sub-plot treatment means at the same level of main-plot treatment = 69.1 lb./ac.
4. main-plot treatment means at the same level of sub-plot treatment = 69.7 lb /ac.

Crop :- Paddy (*Kharif*). Ref :-Gj. 52(199).

Site :-Agri. Res. Stn., Bulsar. Type :-'CM'.

Object :—To find the optimum combinations of N, P_2O_5 and spacing for getting maximum yield.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy in *Kharif*. (c) 10 C.L./ac. of F.Y.M. (ii) (a) Medium black. (b) N.A. (iii) N.A. (iv) (a) N.A. (b Transplanting. (c) —. (d) As per treatments. (e) 8. (v) Nil. (vi) N.A. (vii) N.A. (viii) N.A. (ix) 59.87". (x) N.A.

2. TREATMENTS :

All combinations of (1), (2), (3) and (4)

(1) 3 levels of N : $N_0 = 0$, $N_1 = 32$ and $N_2 = 64$ lb./ac.

(2) 2 levels of P_2O_5 : $P_0 = 0$ and $P_1 = 32$ lb./ac.

(3) 2 levels of F.Y.M. : $F_0 = 0$ and $F_1 = 5$ C.L./ac.

(4) 2 spacings : $S_1 = 4" \times 4"$ and $S_2 = 6" \times 6"$.

N as A/S and P_2O_5 as Super.

3. DESIGN :

(i) 3×2^3 Fact. in R.B.D. (ii) (a) 24. (b) N.A. (iii) 1. (iv) (a) 30'×10'. (b) 26'×6'. (v) 2' all round the net plot. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) and (b) No. (c) N.A. (v) (a) Nil. (b) N.A. (vi) Nil. (vii) For want of sufficient seedlings, only one replication could be taken instead of three.

5. RESULTS :

(i) 1890 lb./ac.
(ii) N.A.
(iii) N.A.
(iv) Av. yield of grain in lb./ac.

	N_0	N_1	N_2	Mean	S_1	S_2	F_0	F_1
P_0	1210	1848	1943	1667	1522	1812	1651	1683
P_1	1375	2212	2750	2112	2023	2202	1988	2237
F_0	1347	1747	2363	1820	1677	1963		
F_1	1238	2312	2330	1960	1869	2052		
S_1	1499	1815	2004	1773				
S_2	1087	2245	2689	2007				
Mean	1293	2030	2347	1890				

S.E.s—N.A.

Crop :- Paddy (*Kharif*). Ref :- Gj. 53(102).

Site :- Agri. Res. Stn., Navagam. Type :- 'CM'.

Object :—To study the relative merits of Japanese method and departmentally recommended method of Paddy cultivation.

1. BASAL CONDITIONS .

(i) (a) Paddy—Wheat. (b) Wheat. (c) Nil. (ii) (a) Medium black soil. (b) N.A. (iii) 23.6.1953/ 27.7.1953. (iv) (a) Preparing the land by puddling. (b) Transplanting. (c) —. (d) and (e) As per treatments. (v) 1 C.L./ac. of F.Y.M. for seed-bed treatment and 5 C.L./ac. of F.Y.M. in the field. (vi) Jirasal. No. 274 (late). (vii) Irrigated. (viii) One hand weeding. (ix) 40.93". (x) 15.11.1953.

2. TREATMENTS :

64 treatment combinations of the following 6 factors each at two levels.

(i) Departmental method :	(ii) Japanese method:
Seed bed :—	
A=Flat.	Raised.
B=1 C.L. F.Y.M.+8 lb./ac. of A/S per *guntha*.	1 C.L./*guntha* of F.Y.M.+16 lb./*guntha* of A/S+16 lb./*guntha* of P_2O_5+layer of Ash.
Field :—	
C=10"×10".	9"×9".
D=8 seedlings/bunch.	4 seedlings/bunch.
E=5 C.L. F.Y.M.+G.M.+64 lb./ac. of N as A/S+32 lb./ac. of P_2O_5 as Super.	5 C.L./ac. of F.Y.M.+G.M.+100 lb./ac. of N as A/S +80 lb./ac. of P_2O_5 as Super.
F=One hand weeding.	One hand weeding.

3. DESIGN :

(i) 2^5 Fact. in R.B.D. (see general. (vii) (ii) (a) 32 (see general. (vii) (b) N.A. (iii) 4. (iv) (a) 10'-6" × 33' (for 9" × 9" spacing) ; and 10'-10" × 33'-4" (for 10" × 10" spacing). (b) 7'-6" × 30'. (v) 1½' alround for 9" × 9" spacing and 1⅔' alround for 10" × 10" spacing. (vi) Yes.

4. GENERAL :

(i) Heavy lodging in 2nd week of October 1953. (ii) Attack of Jassids in the 3rd week of September dusting by 5% B.H.C. powder. (iii) Grain and straw yield. (iv) (a) 1953—1955. (b) No. (c) N.A. (v) (a) Vyara. (b) N.A. (vi) Total rainfall was above normal. The distribution was also very bad as there were heavy rains in the last fortnight of August. There was complete absence of rainsin the month of September. This combined with dry weather caused the crop to suffer from a heavy attack of Jassids. (vii) Originally it was laid out as a 2^6 confounded in 2 replications. (with 8 blocks/replication and 8 plots/block) but as F was same in both the methods, this has been treated as 2^5 simple Fact. in R.B.D. with 4 replications (32 plots/replication). The analysis was carried out and higher order interactions were pooled with error.

Results on page (45)

Crop :-Paddy (*Kharif*). Ref :-Gj. 53(70).

Site :-Agri. Res. Stn., Vyara. Type :-'CM'.

Object :—To compare the Japanese method of Paddy cultivation with departmental method of Paddy cultivation.

1. BASAL CONDITIONS :

(i) (a) No. (b) Wheat. (c) 5 C.L./ac. of F.Y.M. and G.M and 50 lb./ac. of N as A/S and 300 lb./ac. of G.N.C. (ii) (a) Black soil. (b) Refer soil analysis, Vyara. (iii) 21.6.1953/17.7-1953. (iv) (a) Ploughing. (b) Transplanting (c) —. (d) and (e) As per treatments. (v) 5 C.L./ac. of F.Y.M. in summer. G.M. as Sann (vi) Paddy—Z. 31 (early fine *Kalam*). (vii) Irrigated (viii) Puddling at planting time and weeding as per treatments. (ix) 72". (x) 20.10.1953.

2. TREATMENTS :

All the 2^6 combinations of the following 6 factors each at 2 levels.

Departmental method :

A_0 = Flat seed-bed.

B_0 = Manuring of seed-bed : 1 C.L./*guntha* of F.Y.M. and 8 lb./*guntha* of A/S.

C_0 = Manuring of field : 5 C.L./ac. of F.Y.M. +G.M.+64 lb./ac. of N as A/S+32 lb./ac. of P_2O_5 as Super.

D_0 = Spacing between bunches : 10" × 10".

E_0 = 8 seedlings/bunch.

F_0 = One hand weeding+no interculturing.

Japanese method :

A_1 = Raised seed-bed.

B_1 = Manuring of seed-bed : 1 C.L./*guntha* of F.Y.M. and 16 lb./*guntha* of N as A/S.

C_1 = Manuring of field : 5 C.L./ac. of F.Y.M. +G.M.+100 lb./ac. of N as A/S+80 lb./ac. of P_2O_5 as Super.

D_1 = Spacing between bunches : 9" × 9".

E_1 = 4 seedlings/bunch.

F_1 = One hand weeding+3 interculturings.

3. DESIGN :

(i) 2^6 confounded Fact. (ii) (a) 8 plots/block and 8 blocks/replication (b) N.A. (iii) 2. (iv) (a) 7.5 × 21.8' and 7.5' × 20.8' for 9" and 10" spacings respectively. (b) 10.5' × 24' and 10.8' × 24.2' for 9" and 10" spacings respectively. (v) 4 rows round the net plot. (vi) Yes.

4. GENERAL :

(i) Satisfactory in the beginning, lodging afterward. (ii) Attack of Jassid hoppers-controlled by 50% D.D.T. spraying. (iii) Grain and fodder yield. (iv) (a) and (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

Results on Page (45)

Ref :—Gj. 53(102)

5. RESULTS :

(i) 3140 lb./ac. (ii) 336.5 lb./ac. (iii) Main effect of C is highly significant, main effect of D is significant, interaction AD is significant. Others are not significant.

(iv) Mean & differential response in lb./ac. (for grain yield).

Differential response.

Factor	Mean response	A		B		C		D		E	
		—	+	—	+	—	+	—	+	—	+
A	—17.09	—	—	— 65.22	+ 31.04	+652 01	—686.19	+ 72.96	—107.14	— 68.06	+ 33.88
B	+53.45	+ 5.32	+101.58	—	—	— 10.16	+117.06	+101.94	+ 4.96	+110.83	— 3.93
C	—669.10	—634.95	—703.25	—732.72	—605.48	—	—	—653.34	—684.86	—741.49	—596.71
D	—90.05	— 3.33	—176.77	— 41.56	—138.54	— 74.29	—105.81	—	—	—135.10	— 45.00
E	+50.97	+ 97.95	+ 3.99	+108.35	— 6.41	— 21.42	+123.36	+ 95.41	+ 6.53	—	—

S.E. of mean response = 59.49 lb./ac. S.E. of differential response = 84.12 lb./ac.

Ref. :—Gj. 53(70)

5. RESULTS :

(i) 3130 lb./ac. (ii) 284.52 lb./ac. (iii) Main effect of C and interaction AD and BC are significant while others are not significant.

(iv) Mean and differential response in lb./ac. (grain).

Differential response

Factor	Mean response	A		B		C		D		E		F	
		—	+	—	+	—	+	—	+	—	+	—	+
A	+183.64	—	—	+188.96	+178.30	+247.79	+119.49	+ 78.28	+289.01	+181.96	+185.33	+245.37	+121.91
B	— 48.08	— 42.76	— 53.39	—	—	+ 70.67	—166.83	— 45.96	— 50 19	—102 12	+ 5.95	— 81.04	— 15.12
C	+103.72	+167.87	+ 39.57	+222.48	— 15.03	—	—	+183.17	+ 24.28	+ 79.49	+127.96	+116.64	+ 90.81
D	— 46.26	—151.63	+ 59.10	— 44.15	— 48.38	+ 33.18	—125.71	—	—	+ 86.74	— 5.78	— 39.91	— 52.61
E	— 10.84	12.53	— 9 16	— 64.89	— 43.20	— 35.08	13.39	— 51.32	+ 29.63	—	—	— 88.65	+ 66.96
F	+ 87.13	+148.86	+ 25.40	+ 54.17	+120.09	+100.05	+ 74.22	+ 93.48	+ 80.78	+ 9.33	164.94	—	—

S.E. of mean response =50.30 lb./ac. S.E. of differential response =71.12 lb./ac.

Crop :-Paddy (*Kharif*). Ref :-Gj. 53(309).

Site :-Agri. Res. Stn., Waghai. Type :-'CM'.

Object :--To find out the proper spacing, manurial dose and method of sowing.

1. BASAL CONDITIONS :

(i) (a) Paddy--*Nagli*. (b) *Nagli*. (c) Nil. (ii) (a) Light and brownish soil. (b) N.A. (iii) 25.6.1953. (iv) (a) 2 ploughings and 2 harrowings. (b) to (e) As per treatments. (v) 5 C.L./ac. of F.Y.M. (vi) E.K.—70 (early). (vii) Unirrigated. (viii) Interculturings as per treatments. (ix) 64". (x) 13, 14.10.1953.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 manures : M_1 = 64 lb./ac. of N + 32 lb./ac. of P_2O_5 and M_2 = 100 lb./ac. of N + 80 lb./ac. of P_2O_5.

(2) 8 cultural practices :

C_1 = Drilling at 60 lb./ac. with 3 interculturings and 15" spacing.
C_2 = Drilling at 60 lb./ac. with 3 interculturings and 12" spacing.
C_3 = Drilling at 60 lb./ac. with 5 interculturings and 15" spacing.
C_4 = Drilling at 60 lb./ac. with 5 interculturings and 12" spacing.
C_5 = Dibbling at 6 seeds/dibble with 9" × 9" spacing and 3 interculturings one way.
C_6 = Dibbling at 6 seeds/dibble with 9" × 9" spacing and 3 interculturings both ways.
C_7 = Dibbling at 6 seeds/dibble with 9" × 9" spacing and 5 interculturings one way.
C_8 = Dibbling at 6 seeds/dibble with 9" × 9" spacing and 5 interculturings both ways.

3. DESIGN :

(i) 2×8 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 16.5' × 7.5'. (b) 15' × 4.5'. (v) $\frac{1}{2}$' × $1\frac{1}{8}$'. (vi) Yes.

4. GENERAL :

(i) Satisfactory in early stages. However due to dry weather in September, the grain formation suffered much. (ii) Crop damaged slightly by rats and birds. (iii) Grain yield. (iv) (a) and (b) N.A. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 609 lb./ac.
(ii) 153.4 lb./ac.
(iii) All effects are highly significant.
(iv) Av. yield of grain in lb./ac.

	M_1	M_2	Mean
C_1	730	370	550
C_2	780	530	655
C_3	590	535	563
C_4	685	285	485
C_5	730	580	655
C_6	910	715	813
C_7	470	675	573
C_8	620	540	580
Mean	689	529	609

S.E. of marginal mean of M = 27.1 lb./ac.
S.E. of marginal mean of C = 54.2 lb./ac.
S.E. of body of table = 76.7 lb./ac.

Crop :-Wheat (*Rabi*). Ref :-Gj. 53(33).

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

Object :—To study the suitability of calcium cynamide as a source of N in place of A/S and its effect on Wheat crop.

1. BASAL CONDITIONS;

(i) (a) *Bajra*-Groundnut (*Kharif*) and Wheat (*Rabi*)—Cotton. (b) Groundnut. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Medium black. (b) Refer soil analysis, Amreli. (iii) 12.11.1953. (iv) (a) 2 harrowings. (b) Drilling. (c) 60 lb./ac. (d) 9". (e) —. (v) 5 C.L./ac. of F.Y.M. in the month of October. (vi) Kenpt ad. R.R. (medium). (vii) Irrigated. (viii) Weeding once. (ix) Nil. (x) 25.3.1954.

2. TREATMENTS :

1. 40 lb./ac. of N as A/S.
2. 40 lb./ac. of N as A/S and G.N.C. in 1 : 1 ratio.
3. 40 lb./ac. of N as calcium cynamide.
4. 40 lb./ac. of N as calcium cynamide and G.N.C. in 1 : 1 ratio.

Manures applied at the time of sowing.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 35'×13.5'. (b) 30'×9.8'. (v) Yes. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1953-continued. (b) N.A. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1629 lb./ac.
(ii) 744.6 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av yie d of grain in lb./ac.

Treatment	Av. yield
1.	1700
2.	1550
3.	1555
4.	1710
S.E./mean	= 303.8 lb./ac.

Crop :-Wheat (*Rabi*). Ref :-Gj. 53(224).

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

Object :—To see the effect of application of F.Y.M. at diferent intervals on the yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Gram. (c) Nil. (ii) (a) Mediam black to deep black. (b) Refer soil analysis, Arnej. (iii) 15.10.1952. (iv) (a) 4 harrowings. (b) to (e) N.A. (v) Nil. (vi) A-206. (medium). (vii) Unirrigated. (viii) 1 weeding. (ix) *Rabi* season hence negligible. (x) N.A.

2. TREATMENTS :

1. Control (no manure)
2. 5 C.L./ac. of F.Y.M. every year.
3. 5 C.L./ac. of F.Y.M. every alternate year commencing from 1952.
4. 5 C.L./ac. of F.Y.M. every alternate year commencing from 1953.
5. 5 C.L./ac. of F.Y.M. every third year commencing from 1952.
6. 5 C.L./ac of F.Y.M. every third year commencing from 1953.
7. 5 C.L./ac. of F.Y.M. every third year commencing from 1954.

F.Y.M. broadcasted in September.

This year, the treatments 4, 6 and 7 are not applied hence [they reduced to control ; and 2, 3 and 5 are identical hence there are only two distinctive treatments). M_1=Control—4 plots/replication (treatments 1, 4, 6 and 7) and M_2=5 C.L /ac. of F.Y.M.—3 plots/replication (treatments 2, 3 and 5).

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 6. (iv) (a) 36'×16'. (b) 30'×10'. (v) 3' all round the net plot. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1952 to 1957. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was analysed as R.B.D. with 2 distinctive treatments 0 and 5 C.L./ac. of F.Y.M. with 6 replications, as this was the first year of the experiment.

5. RESULTS :

(i) 504 lb./ac.
(ii) 81.75 lb /ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield	
M_1	513	
M_2	493	
S.E./mean (M_1)	=16.69	lb./ac.
S.E./mean (M_2)	=19.26	lb./ac.

Crop :- Wheat (*Rabi*). Ref :- Gj. 53(159).

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

Object :—To see the effect of application of F.Y.M. at different intervals on the yield of Wheat.

1, BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) As per treatments. (ii) (a) Medium black. (b) Refer soil analysis, Arnej. (iii) 24.10.1953. (iv) (a) 5 harrowings prior to sowing. (b) Sowing by drilling with 3 coultered seed drill. (c) 40 lb./ac. (d) Between rows 12". (e) N.A. (v) As per treatments. (vi) A—206 (medium). (vii) Unirrigated. (viii) Weeding. (ix) *Rabi* season, hence negligible. (x) 21.2.1254.

2. TREATMENTS :

1. Control (no manure).
2. 5 C.L./ac. of F.Y.M. every year.
3. 5 C.L./ac. of F.Y.M. every alternate year commencing from 1952.
4. 5 C.L./ac. of F.Y.M. every alternate year commencing from 1953.
5. 5 C.L./ac. of F.Y.M. every third year commencing from 1952.
6. 5 C.L./ac. of F.Y.M. every third year commencing from 1953.
7. 5 C.L./ac. of F.Y.M. every third year commencing from 1954.

For this year, treatments reduce to 4 distinct treatments as given below :

M_1=Control : 2 plots/replication [treatment (1) and (7)].
M_2=5 C.L./ac. of F.Y.M (with manuring in previous year) (treatment 2)—one plot/replication.
M_3=Residual effect of 5 C.L./ac. of F.Y.M. applied in 1952 and 2 plots/replication [treatments (3) and (5)].
M_4=5 C.L./ac. of F.Y.M. (witthout manuring in the previous year)—2 plots/replication [treatments (4) and (6)].

3. DESIGN :
(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 6. (iv) (a) 36'×16'. (b) 30'×10'. (v) 3' all round the net plot. (vi) Yes.

4. GENERAL :

(i) Good germination and stand of crop was fair. (ii) Nil. (iii) No. (iv) (a) 1952—1957. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) The cloudy weather at milk stage affected the grain size and maturity (vii) Nil.

5. RESULTS :

(i) 1022 lb./ac.
(ii) 66.79 lb./ac.
(iii) Treatments do not differ significantly.

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

Treatment	Av. yield
M_1	1008
M_2	1073
M_3	1024
M_4	1006

S.E./mean (for M_2) = 27.27 lb./ac.
S.E./mean (for others) = 19.28 lb./ac.

Crop :- Wheat (*Rabi*). Ref :- Gj. 53(304).

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

Object :—To study the suitability of calcium cynamide as a source of N and its effect on yield.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Light brown. (b) Refer soil analysis, Dohad. (iii) N.A. (iv) (a) N.A. (b) Drilling. (c) to (e) N.A. (v) Nil. (vi) Pusa-4. (vii) Irrigated. (viii) N.A. (ix) *Rabi* season, hence negligible. (x) N.A.

2. TREATMENTS :

1. Control (no manure).
2. 40 lb./ac. of N as A/S.
3. 40 lb./ac. of N as A/S+G.N.C. in 1 : 1 ratio.
4. 40 lb./ac. of N as calcium cynamide.
5. 40 lb./ac. of N as calcium cynamide+G.N.C. in 1 : 1 ratio.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 2. (iv) (a) N.A. (b) 20'×53'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Nil. (iii) Grain yield. (iv) (a) N.A. (b) and (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1258 lb./ac.
(ii) 132.3 lb./ac.
(iii) Treatments differ highly significantly.
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	863
2.	1520
3.	1413
4.	1147
5.	1346
S.E./mean	= 93.6 lb./ac.

Crop :- Wheat. (*Rabi*). Ref :- Gj. 53(305).

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

Object :—To study the effect of Sann green manuring on Wheat (Feeler trial).

1. BASAL CONDITIONS :

(i) (a) Nil. (b) N.A. (c) N.A. (ii) (a) Light brown. (b) Refer soil analysis, Dohad. (iii) N.A. (iv) (a) N.A. (b) Drilling. (c) to (e) N.A. (v) Nil. (vi) Pusa—4. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) N.A.

2. TREATMENTS

1. Control (no G.M.)
2. Sann crop grown and burried along with tender tops and leaves.
3. Sann crop grown, cut and left as such.
4. The leaves and tender tops from treatment (3) buried.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 2. (iv) (a) 33'×33'. (b) 23'×23'. (v) 5' alround the net plot. (vi) Yes.

4. GENERAL:

(i) N.A. (ii) Nil. (iii) Grain yield. (iv) (a) 1953—N.A. (b) No (c) N.A. (v) (a) N.A. (b) N.A. (vi) Nil. (vii) Nil.

5. RESULTS :

(i) 1884 lb./ac.
(ii) 357.4 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1854
2.	1884
3.	1647
4.	2151
S.E./mean	±252.7 lb./ac.

Crop :- Wheat. (*Rabi*). Ref :- Gj. 48(110).

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

Object :—To ascertain the manurial requirements of Wheat crop.

1. BASAL CONDITIONS :

(i) (a) *Bajra*-Wheat. (b) *Bajra*. (c) 5 C.L./*bigha*. of F.Y.M. (ii) (a) Light sandy soil. (b) N.A. (iii) 11.11.1948. (iv) (a) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii N.A. (ix) *Rabi* season, hence negligible. (x) 12.3.1949.

2. TREATMENTS :

1. No manure (Control).
2. 20 lb./*bigha* of N as A/S.
3. 20 lb./*bigha* of N as Ammo. Phos.
4. 20 lb./*bigha* of N as Castor cake.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) and (b) 22'×18'. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of white ants and rust was observed. (iii) Grain yield. (iv) (a) 1945—N.A. (b) No. (c) Nil. (v) (a), (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 744 lb./ac.
(ii) 170.6 lb./ac.
(iii) Treatments differ significantly.
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	587
2.	706
3.	962
4.	720
S.E./mean	±69.7 lb./ac.

Crop :- Wheat (*Rabi*). Ref :- Gj. 49(140).

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

Object :—To ascertain the manurial requirements of Wheat.

1. BASAL CONDITIONS :

(i) (a) *Bajra*-Wheat. (b) *Bajra*. (c) N.A. (ii) (a) Light sandy soil. (b) N.A. (iii) 21.11.1949. (iv) (a) to (e) N.A. (v) Nil. (vi) C-13 (medium). (vii) Irrigated. (viii) N.A. (ix) *Rabi* season, hence negligible. (x) N.A.

2. TREATMENTS :

1. Control (no manure).
2. 20 lb /*bigha* of N as A/S.
3. 20 lb./*bigha* of N as Ammo. Phos.
4. 20 lb./*bigha* of N as Castor cake.

Manures top dressed on 10.12.1949.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) and (b) 50'×20'. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Slight attack of white ants. (iii) Grain yield. (iv) (a) 1945—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 663 lb./ac.
(ii) 69.26 lb./ac.
(iii) Treatments differ highly significantly.
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	327
2.	799
3.	871
4.	653

S.E./mean = 28.28 lb./ac.

Crop :- Wheat. Ref :- Complex experiments (T.C.M.), 1953.

Site :- Paliad (Gujarat). Type :- 'M'.

Object :—II. To study the best time of application of N.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Sandy loam to clayey loam in texture, medium black in colour. (b) N.A. (iii) 7.11.1953. (iv) (a) N.A. (b) Drilled. (c) 80 lb./ac. (d) 9". (e) N.A. (v) N.A. (vi) Kenphad. (vii) Irrigated. (viii) One weeding. (ix) 20.06". (x) March 1954.

2. TREATMENTS :

All combinations of (1) and (2) +a control (no manure).
(1) 2 sources of N (at 20 lb./ac.) : S_1=A/S and S_2=Urea.
(2) 2 times of application of N : T_1=At sowing and T_2=At first irrigation.
A basal dose of 20 lb./ac. of P_2O_5 was given at the time of sowing.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 37'×10.5'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Slight damage to crop caused by tiny white bugs on leaves and rat trouble. (iiii) Grain yield. (iv) (a) 1953—1956. (b) No. (c) N.A. (v) (a) Kotah, Banaras, Pura, Niphad and Satna. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 2131 lb./ac.
(ii) 99.39 lb./ac.
(iii) Main-effects, interaction and control *vs* others are not significant.

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

Control = 2106 lb./ac.

	S_1	S_2	Mean
T_1	2231	2111	2171
T_2	2066	2139	2103
Mean	2148	2125	2137

S.E. of any marginal mean = 35.15 lb./ac.
S.E. of body of table = 49.70 lb./ac.

Crop :-Wheat. **Ref :-Complex experiments (T.C.M.), 1953.**

Site :-Paliad (Gujarat). **Type :-'M'.**

Object :—IV, To study the effect of types, levels and method of application of P_2O_5.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy to clay loam in texture, medium black in colour (b) N.A. (iii) 8.11.1953. (iv) (a) N.A. (b) Drilled. (c) 80 lb./ac. (d) 9". (e) N.A. (v) N.A. (vi) I.P. 165. (vii) Irrigated. (viii) One weeding. (ix) 26.06". (x) N.A.

2. TREATMENTS:

All combinations of (1), (2) and (3)+2 control plots/block (no manure)

(1) 3 sources of P_2O_5 : S_1=Super, S_2=Nitro. Phos. and S_3=Ammo. Phos.

(2) 2 levels of P_2O_5 : P_1=15 and P_2=30 lb./ac.

(3) 2 methods of applications P_2O_5 : M_1=Broadcast before final cultivation and M_2=2½" below seed.

N equalised to 30 lb./ac. of N by applying A/S at the time of sowing.

3. DESIGN :

(i) R.B.D. (ii) (a) 14. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 37'×10.5'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Slight damage to crop was caused by tiny white bugs and rat pest. (iii) Grain yield. (iv) (a) 1953—56. (b) No. (c) N.A. (v) (a) Kotah, Banaras and Pura. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 2204 lb./ac.
(ii) 300.1 lb./ac.
(iii) None of the effects is significant.
(iv) Av. yield of grain in lb./ac.

Control = 2067 lb./ac.

	S_1	S_2	S_3	Mean	P_1	P_2
M_1	2217	2406	2151	2258	2211	2306
M_2	2246	2190	2153	2196	2201	2192
Mean	2231	2298	2152	2227	2206	2249
P_1	2148	2287	2181			
P_2	2315	2309	2123			

S.E. of marginal mean of S = 86.6 lb./ac.
S.E. of marginal mean of M or P = 70.7 lb./ac.
S.E. of body of table S×M or S×P = 122.5 lb./ac.
S.E. of body of table M×P = 100.0 lb./ac.
S.E. of control mean = 122.5 lb./ac.

Crop :-Wheat. Ref :-Complex experiments (T.C.M.), 1953.

Centre :-Paliad (Gujarat). Type :-'M'.

Object :—VI, To study the residual value of phosphatic manures.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy to clay loam in texture, medium black in colour. (b) N.A. (iii) 22.11.1953. (iv) (a) N.A. (b) Drilled. (c) 80 lb./ac. (d) 9". (e) N.A. (v) N.A. (vi) Kenphad. (vii) Irrigated. (viii) One weeding. (ix) 26.06". (x) N.A.

2. TREATMENTS :

5 treatments replicated as follows :

1. O =Untreated. 1 plot/block.
2. C =Control. 6 plots/block.
3. $P_{\frac{1}{2}}$=½ unit dressing 1 plot /block.
4. P_1 =Unit dressing. 2 plots/block.
5. P_2 =Double dressing. 2 plots/block.

Unit ressing—20 lb./ac. of P_2O_5 as Triple Super.
A basal dressing of 20 lb./ac. of N as A/S given to all treatments except treatment (1). Manures applied at the time of sowing.

3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 37'×10.5'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Slight damage to crop caused by rats and stem borer. (iii) Grain yield. (iv) (a) 1953—56. (b) No. (c) N.A. (v) (a) and (b) No. (vi) and (vii) Nil.

5. RESULTS :

(i) 1929 lb./ac.
(ii) 165.6 lb./ac.
(iii) Treatment differences are not significant.
(iv) Av. yield of grain in lb./ac.

Treatment	O	C	$P_{\frac{1}{2}}$	P_1	P_2
Av. yield	1878	1987	1683	1972	1864
S.E./mean	117.1	47.8	117.1	82.8	82.8

Crop : Lucerene.

(i) 271.3 md /ac.
(ii) 18.40 md./ac.
(iii) Treatment differences are highly significant.
(iv) Av. yield of grain in md./ac.

Treatment	O	C	$P_{\frac{1}{2}}$	P_1	P_2
Av. yield	232.55	245.03	299.48	297.21	329.54
S.E./mean	13.01	5.31	13.01	9.20	9.20

Crop :-Wheat. Ref :-Complex experiments (T.C.M.), 1953.

Centre :-Paliad. (Gujarat). Type :-'M'.

Object :—(i) (a), To study the effect of types and levels of N and P_2O_5 on non-acidic soils.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Sandy to clay loam in texture, medium black in colour. (b) N.A. (iii) 12.11.1953. (iv) (a) N.A. (b) Drilled. (c) 80 lb./ac. (d) 9". (e) N.A. (v) N.A. (vi) NP-710. (vii) Irrigated. (viii) One weeding. (ix) 26.06". (x) March, 1954.

2. TREATMENTS :

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

(1) 3 levels of N : N_0=0, N_1=20 and N_2=40 lb./ac.
(2) 2 sources of N : S_1=A/S and S_2=Urea.
(3) 3 levels of P_2O_5 (as Triple Super). : P_0=0, P_1=20 and P_2=40 lb./ac.

Triple Super applied 10 days before sowing and N applied at the time of sowing.

3. DESIGN :

(i) R.B.D. (ii) (a) 15. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 37'×10.5'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Crop was slightly damaged by tiny white bugs on leaves and rat pests. (iii) Grain yield. (iv) (a) 1953 to 1956. (b) No. (c) N.A. (v) (a) Banaras, Pura. (b) N.A. (vi) Nil. (vii) Nil.

5. RESULTS :

(i) 2368 lb./ac.
(ii) 195.7 lb./ac.
(iii) Main effects and interactions are not significant.
(iv) Av. yield of grain in lb./ac.

	N_0	N_1	N_2	Mean	S_1	S_2	Mean
P_0	2263	2314	2324	2308	2394	2244	2319
P_1	2273	2396	2364	2359	2426	2334	2380
P_2	2482	2406	2448	2438	2446	2408	2427
Mean	2339	2372	2379	2368	2422	2329	
S_1	—	2431	2412	2422			
S_2	—	2312	2445	2329			
Mean	—	2372	2379				

For table 'N×P' :

S.E. of marginal mean of column No	=65.2 lb./ac.
S.E. of marginal mean of column (N_1, N_2)	=46.1 lb./ac.
S.E. of marginal mean of row	=50.6 lb./ac.

For table 'P×S' :

S.E. of marginal mean of column	=46.1 lb./ac.
S.E. of marginal mean of row	=56.5 lb./ac.
S.E. of body of table	=79.9 lb./ac.

For table 'S×N'.

S.E. of marginal mean (row or column)	=46.1 lb./ac.
S.E. of body of table	=65.2 lb./ac.

Crop :-Wheat. Ref :-Simple trials on cultivator's fields (T.C.M.), 1953.

Centre :-Rajkot (Gujarat). Type :-'M'.

Object :—I (a) (i) To study the effect of different levels and sources of N.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) Medium black—clay loam—pH. 8.3. (iii) Nil. (iv) Improved variety. (v) N.A. (vi) October-November. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) March. 1954.

2. TREATMENTS :

O = Control.
N_1 = A/S at 20 lb./ac. of N.
N_2 = A/S at 40 lb./ac. of N.

3. DESIGN :

(i) and (ii) Eleven comunity project centres, representing the entire wheat growing tract of the country, were selected. Form each community project centre, one development block was selected. Villages were selected at random from the selected block and a list of cultivators growing wheat 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 unreplicared trial was laid out. (iii) N.A. (iv) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1953—1956. (b) No. (c) N.A. (v) N.A. (vi) Nil. (vii) Nil.

5. RESULTS:

Treatment	Av. yield in lb./ac.
O	1388
N_1	1486
N_2	1584
G.M.	=1446
S.E. for control	=24.10
S.E. for others	=41.72
No. of experiments	13

Crop :- Wheat **Ref :- Simple trials on cultivators, fields (T.C.M.), 1953.**

Centre :- Rajkot (Gujarat) **Type :- 'M'.**

Object :— I (a) (iii) To study the effect of different levels and sources of N.

1. BASAL CONDITIONS:

(i) (a) N.A. (b) N.A. (c) N.A. (ii) Medium black-clay loam—pH.8.3. (iii) Nil. (iv) Improved variety. (v) N.A. (vi) October—November. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) March 1954.

2. TREATMENTS:

O =Control.
N_1'' =Urea at 20 lb./ac. of N.
N_2'' =Urea at 40 lb./ac. of N.

3. DESIGN:

(i) and (ii) Eleven community project centres, representing the entire wheat 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 wheat 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) Grain Yield. (iv) (a) 1953—1956. (b) No. (c) N.A. (v) N.A. (vi) Nil. (vii) Nil.

5. RESULTS:

Treatment	Av. yield in lb./ac.
O	1405
N_1''	1600
N_2''	1605
G.M.	=1484
S.E. for control	=31.18 lb./ac.
S.F. for others	=55.54 lb./ac.
No. of experiments	17

Crop :- Wheat. **Ref :- Simple trials on cultivator's fields (T.C.M.), 1953.**

Centre :- Rajkot (Gujarat). **Type :- 'M'.**

Object :—I (b) (l) To study different levels and types of N and P_2O_5.

1. BASAL CONDITIONS:

(i) (a) N.A. (b) N.A. (c) N.A. (ii) Medium black-clay loam—pH 8.3. (iii) Nil. (iv) Improved variety. (v) N.A. (vi) October—November. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) March.

2. TREATMENTS:

O =Control.
P =Super at 20 lb./ac. of P_2O_5.
N_1P =A/S at 20 lb./ac. of N + 20 lb./ac. of P_2O_5 as Super.
N_2P =A/S at 40 lb./ac. of N + 20 lb./ac. of P_2O_5 as Super.

3. DESIGN:

(i) and (ii) Eleven community project centres, representing the entire wheat 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 wheat 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) Grain yield. (iv) (a) 1953—56. (b) No. (c) N.A. (v) N.A. (vi) Nil. (vii) Nil.

5. RESULTS:

Treatment	Av. yield in lb./ac.
0	1192
P	1325
N_1P	1423
N_2P	1477
G.M.	1321
S.E. for control	32.50 lb./ac.
S.E. for others	45.99 lb./ac.
No. of experiments	16

Crop :- Wheat. Ref :- Simple trials on cultivator's fields (T.C.M.), 1953.

Centre :- Rajkot (Gujarat). Type :- 'M'.

Object :—I (b) (iii) To study different levels and types of N and P_2O_5.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Medium black—clay loam—pH.8.3 (iii) Nil. (iv) Improved variety. (v) N.A. (vi) October-November. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) March.

2. TREATMENTS :

0 =Control.
P =20 lb./ac. of P_2O_5 as Super.
$N_1'P$ =Urea at 20 lb./ac. of N +20 lb./ac. of P_2O_5 as Super.
$N_2'P$ =Urea at 40 lb./ac. of N+20 lb./ac. of P_2O_5 as Super.

3. DESIGN :

(i) and (ii) Eleven community project centres, representing the entire wheat 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 wheat 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) Grain yield. (iv) (a) 1953—1956. (b) No. (c) N.A. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

Treatment	Av. yield in lb./ac.
0	1543
P	1651
$N_1'P$	1649
$N_2'P$	1697
G.M.	1617
S.E. for control	23.53 lb./ac.
S.E. for others	=33.32 lb./ac.
No. of experiments	=14

Crop :- Wheat. Ref :- Simple trials on cultivator's fields (T.C.M.), 1953.

Centre :- Rajkot (Gujarat). Type :- 'M'.

Object :— I (b) (ii), To study different levels and types of N and P_2O_5

1. BASAL CONDITIONS :

(i) (a) N.A. (b) and (c) N.A. (ii) Medium black—clay loam—pH 8.3. (iii) Nil. (iv) Improved variety. (v) N.A. (vi) October-November. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) March.

2. TREATMENTS :

O =Control.
P =20 lb./ac. of P_2O_5 as Super.
N_1P =A/S at 20 lb./ac. of N+20 lb./ac. of P_2O_5 as Super.
N_2P =A/S at 40 lb./ac. of N+20 lb./ac. of P_2O_5 as Super.
$N_1'P$ =Urea at 20 lb./ac. of N + 20 lb./ac. of P_2O_5 as Super.

3. DESIGN :

(i) and (ii) Eleven community project centres, representing the entire wheat 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 wheat for each selected village was prepared. From this list, two cultivator's 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) Grain yield. (iv) (a) 1953—1956. (b) No. (c) N.A. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

Treatment	Av. yield in lb./ac.
O	1562
P	1638
N_1P	1595
N_2P	1720
$N_1'P$	1674
G.M.	1638
S.E./mean	= 49.37 lb./ac.
No. of experiments	12

———

Crop :- Wheat. Ref :- Simple trials on cultivator's fields (T.C.M.), 1953.

Centre :- Rajkot (Gujarat). Type :- 'M'.

Object :—(iv) (ii), To study the effects of types and levels of P_2O_5 and N.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) Medium black-clay loam-pH 8.3. (iii) Nil. (iv) Improved variety. (v) N.A. (vi) October-November. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) March.

2. TREATMENTS :

O =Control.
N =A/S at 40 lb./ac. of N.
NP_1 =A/S at 40 lb./ac. of N+Super at 20 lb./ac. of P_2O_5.
NP_2 =A/S at 40 lb./ac. of N+Super at 40 lb./ac. of P_2O_5.
NP_1' =(A/S+Ammo. Phos.) at 40 lb./ac. of N+20 lb./ac. of P_2O_5.
NP_2' =(A/S+Ammo. Phos.) at 40 lb./ac. of N+40 lb./ac. of P_2O_5.

3. DESIGN :

(i) and (ii) Eleven community project centres, representing the entire wheat growing tract of the country, were selected. Form each community project centre, one development block was selected. Villages were selected at random from the selected block and a list of cultivators growing wheat for each selected village was prepared. Form this, list two cultivator's 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) Grain yield. (iv) (a) 1953–1956. (b) No. (c) N.A. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

Treatment	Av. yield in lb./ac.
O	1336
N	1479
NP_1	1409
NP_2	1498
NP_1'	1495
NP_2'	1525
G.M.	1457
S.E./mean	= 28.72 lb./ac.
No. of experiments	7

Crop :- Wheat. **Ref :- Simple trials on cultivator's fields(T.C.M.), 1953.**

Centre :- Rajkot (Gujarat). **Type :- 'M'.**

Object :—(iv) (i), To study the effects of types and levels of P_2O_5 and N.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) Medium black-clay loam-pH 8.3. (iii) Nil. (iv) Improved variety. (vi) October-November. (vii) Irrigated. (viii) N.A. (x) N.A. (x) March.

2. TREATMENTS :

O =Control.
N =A/S at 40 lb./ac. of N.
NP_1 =A/S at 40 lb./ac. of N+Super at 20 lb./ac. of P_2O_5.
NP_2 =A/S at 40 lb./ac. of N+Super at 40 lb./ac. of P_2O_5.
NP_1' =(A/S+Nitro. Phos) at 40 lb./ac. of N+20 lb./ac. of P_2O_5.
NP_2' =(A/S+Nitro. Phos.) at 40 lb /ac. of N+40 lb./ac. of P_2O_5.

3. DESIGN :

(i) and (ii) Eleven community project centres, representing the entire wheat 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 wheat for each selected village was prepared. From this, list two cultivator's 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) Grain yield. (iv) a) 1953—1956. (b) No. (c) N.A. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

Treatment	Av. yield in lb./ac.
O	1479
N	1597
NP_1	1622
NP_2	1802
NP_1'	1637
NP_2'	1712
G.M.	1641
S.E./mean	= 65.58 lb./ac.
No. of experiments	13

Crop :-Wheat. Ref :-Simple trials on cultivator's fields (T.C.M.) 1953.

Centre :-Rajkot (Gujarat). Type :-'M'.

Object :—IV (v), To study the different sources and levels of P_2O_5 and N.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) Medium black—clay loam—pH 8.3. (iii) Nil. (iv) Improved variety. (v) N.A. (vi) October-November. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) March.

2. TREATMENTS :

O = Control.
N = A/S at 40 lb./ac. of N
NP'_1 = (A/S+Nitro. phos.) at 40 lb./ac. of N+20 lb./ac. of P_2O_5 as Super.
NP'_2 = (A/S+Nitro. phos.) at 40 lb./ac. of N+40 lb./ac. of P_2O_5 as Super.
NP''_1 = (AS+Ammo. phos.) at 40 lb./ac. of N+20 lb./ac. of P_2O_5 as Super.
NP''_2 = (A/S+Ammo. phos.) at 40 lb./ac. of N+40 lb./ac. of P_2O_5 as Super.

3. DESIGN :

(i) and (ii) Eleven community project centres, representing the entire wheat 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 wheat for each selected village was prepared. From this, list two cultivator's 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) Grain yeild. (iv) (a) 1953—1956. (b) No. (c) N.A. (v) N.A. (vi) Nil. (vii) Nil.

5. RESULTS :

Treatment	Av. yield in lb./ac.
O	1362
N	1382
NP'_1	1446
NP'_2	1469
NP''_1	1562
NP''_2	1558
G.M.	1453
S.E./mean	=55.54 lb./ac.
No. of experiments	13

Crop :-Wheat. Ref :-Complex experiments (T.C.M.) 1953.

Centre :-Paliad (Gujarat). Type :-'MV'.

Object :—VIII, To study the effect of N and P_2O_5 along with varieties.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Sandy to clay loam medium black in colour. (b) N.A. (iii) 14.11.1953. (iv) (a) N.A. (b) Drilled. (c) 80 lb./ac. (d) 9". (e) N.A. (v) N.A. (vi) As per treatments (vii) Irrigated. (viii) One weeding. (ix) 26.06". (x) N.A.

2. TREATMENTS :

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

(1) 3 levels of N : $N_0=0$, $N_1=20$ and $N_2=40$ lb./ac.
(2) 3 levels of P_2O_5 : $P_0=0$, $P_1=20$ and $P_2=40$ lb./ac.
(3) 3 varieties : V_1=Local, V_2=Kenphad and V_3=N.P. 715.

N as A/S and P_2O_5 as Triple Super.

A/S braodcast at the time of sowing and P_2O_5 at the time of ploughing in between two sowing dates.

3. DESIGN :

(i) 3^3 Fact. in R.B.D. (confounded). (ii) (a) 9 plots/block ; 3 blocks/replication (b) N.A. (iii) 1. (iv) (a) N.A. (b) 37'×10.5'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Slight attack of tiny white bugs and rat pests. (iii) Grain yield. (iv) (a) 1953—1956. (b) No. (c) N.A. (v) (a) Kotah, Banaras, Pura and Niphad. (b) No. (vi) Nil. (vii) Nil.

5. RESULTS :

(i) 2183 lb /ac.
(ii) 134.6 lb./ac.
(iii) Only interaction PV is significant.
(iv) Av. yield of grain in lb./ac.

	N_0	N_1	N_2	Mean	V_1	V_2	V_3
P_0	2154	2322	2217	2231	2211	1994	2489
P_1	2090	2170	2181	2147	2254	1994	2193
P_2	2126	2132	2251	2170	2155	2279	2074
Mean	2123	2208	2217	2183	2207	2089	2252
V_1	2080	2272	2268				
V_2	2159	2040	2069				
V_3	2130	2312	2314				

S.E. of any marginal means =44.9 lb /ac.
S E. of body of table =77.8 lb./ac.

Crop :-Wheat. Ref :-Complex experiments (T.C.M.),1953.
Centre :-Paliad (Gujarat). Type :-'MV'.

Object :—VII, To study the effect of irrigation along with manures.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy to clay loam in texture, medium black in colour. (b) N.A. (iii) 12.11.1953. (iv) (a) N. A. (b) Drilled. (c) 80 lb./ac. (d) 9". (e) N.A. (v) N.A. (vi) NP—715. (vii) Irrigated. (viii) One weeding. (ix) 23.06". (x) N.A.

2. TREATMENTS :

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

(1) 3 levels of N : $N_0=0$, $N_1=20$ and $N_2=40$ lb./ac.
(2) 3 levels of P_2O_5 : $P_0=0$, $P_1=20$ and $P_2=40$ lb./ac.
(3) 3 levels of Irrigation : $I_1=8$ days interval, $I_2=12$ days interval and $I_3=16$ days interval.

N as A/S and P_2O_5 as triple Super. A/S broadcast at tha time of sowing and P_2O_5 applied at the time of ploughing in between two sowing dates.

3. DESIGN :

(i) 3^3 Fact. in R.B.D. (confounded). (ii) (a) 9 plots/block and 3 blocks/replication. (b) N.A. (iii) 1. (iv) (a) N.A. (b) 37'×10.5'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal (ii) Attack of tiny white bugs on leaves. Attack of stemborer and rat pests ; no specific damage to crop. (iii) Grain yield. (iv) (a) 1953—56. (b) No. (c) N.A. (v) (a) Kotah, Banaras, Pura, (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 2335 lb./ac.
(ii) 227.9 lb./ac.
(iii) None of the effects is significant.

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

	N_0	N_1	N_2	Mean	I_1	I_2	I_3
P_0	2185	2380	2236	2267	2163	2372	2264
P_1	2205	2328	2491	2342	2350	2347	2329
P_2	2424	2449	2318	2397	2538	2448	2207
Mean	2271	2386	2348	2335	2350	2389	2266
I_1	2221	2440	2390				
I_2	2335	2401	2431				
I_3	2258	2316	2225				

S.E. of any marginal means = 75.9 lb./ac.
S.E. of body of table =131.6 lb./ac.

Crop :-Wheat (*Rabi*). **Ref :-Gj. 53(32).**

Site :-Agri. Res. Stn., Amreli. **Type :-'C'.**

Object :—To study the economic seed rate for irrigated Wheat in this tract.

1. BASAL CONDITIONS:

(i) (a) *Bajra*—Groundnut (*Kharif*) and Wheat (*Rabi*)—Cotton. (b) Groundnut. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Medium black. (b) Refer soil analysis, Amreli. (iii) 5.11.1953. (iv) (a) 2 horrowings. (b) Drilled. c) As per treatments. (d) 9". (e) —. (v) 5 C.L./ac. of F.Y.M. in the month of October. (vi) Kenphad R.R. (medium). (vii) Irrigaied. (viii) Weeding once. (ix) Nil. (x) 11.3.1954.

2. TREATMENTS :

5 seed rates : R_1=40, R_2=60, R_3=80, R_4=100 and R_5=120 lb./ac.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 26'×13.5'. (b) 21'×9.8'. (v) Yes. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Slight attack of rust. (iii) Grain yield. (iv) (a) 1951—continued. (b) Yes (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 890 lb./ac.
(ii) 146.8 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield.
R_1	862
R_2	942
R_3	870
R_4	854
R_5	921
S.E./mean	=65.7 lb./ac.

Crop :- Wheat (*Rabi*). Ref :- Gj. 48(37).

Site :- Agri. Res. Stn., Arnej. Type :- 'C'.

Object :—To find out the suitable and economic seed rate and spacing for Wheat.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Wheat. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Arnej. (iii) N.A. (iv) (a) and (b) N.A. (c) and (d) As per treatments. (e) N.A. (v) Nil. (vi) *Gulab* (medium). (vii) Un-irrigated. (viii) Nil. (ix) *Rabi* season hence negligible. (x) N.A.

2. TREATMENTS :

Main-plot treatments :

3 spacings between rows : S_1=12", S_2=15" and S_3=18".

Sub-plot treatments :

4 seed rates : R_1=30, R_2=40, R_3=50 and R_4=60 lb./ac.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block and 4 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 40'×20' for 12" and 15" spacing and 40'×21' for 18" spacing. (b) 35'×15'. (v) 2'×2½' for 12" and 15" spacing and 2'×3' for 18" spacing. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1947—1949 (further modified in 1950-1951.) (b) No. (c) N.A. (v) (a) Bhuwa. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 233 lb./ac.

(ii) (a) 54.35 lb./ac.

(b) 70.59 lb./ac.

(iii) None of the effects is significant.

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

	S_1	S_2	S_3	Mean
R_1	220	206	189	205
R_2	238	289	246	258
R_3	225	226	266	239
R_4	254	225	219	233
Mean	234	236	230	233

S.E. of difference of two

1. spacing marginal means = 15.68 lb./ac.
2. seed rate marginal means = 23.53 lb./ac.
3. seed rate means at the same level of spacing = 40.76 lb./ac.
4. spacing means at the same level of seed rate = 38.60 lb./ac.

Crop :- Wheat (*Rabi*) Ref :- Gj. 49(64).

Site :- Agri. Res. Stn., Arnej. Type :- 'C'.

Object :—To find out suitable and economic seed rate and spacing for Wheat.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Wheat. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Medium black. (b) Refer soil analysis, Arnej. (iii) 27.10.1949. (iv) (a) and (b) N.A. (c) and (d) As per treatments. (e) N.A. (v) Nil. (vi) *Gulab* (medium). (vii) Unirrigated. (viii) Nil. (ix) *Rabi* season, hence negligible. (x) N.A.

2. TREATMENTS :

Main-plot-treatments :

3 spacings between rows : S_1=12", S_2=15" and S_3=18".

Sub-plot treatments :

4 seed rates : R_1=30, R_2=40, R_3=50 and R_4=60 lb /ac.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block and 4 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 40′×19′ for 12″, 40′×20′ for 15″ and 40′×21′ for 18″ spacing respectively. (b) 36′×5′. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1947—1949. (Further modified in 1952-1953). (b) No. (c) N.A. (v) (a) Bhuwa and Jalagaon. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 644 lb./ac.
(ii) (a) 41.04 lb./ac.
(b) 89.93 lb./ac.
(iii) None of the effects is significant.
(iv) Av. yield of grain in lb./ac.

	S_1	S_2	S_3	Mean
R_1	591	614	605	603
R_2	698	645	671	671
R_3	666	619	636	640
R_4	681	646	652	660
Mean	659	631	641	644

S.E. of difference of two

1. S marginal means =11.82 lb./ac.
2. R marginal means =29.98 lb./ac.
3. R means at the same level of S =51.92 lb./ac.
4. S means at the same level of R =46.72 lb./ac.

Crop :-Wheat (*Rabi*). Ref :-Gj. 52(93).

Site :-Agri. Res. Stn., Arnej. Type :-'C'.

Object :—To find out suitable spacing and economic seed rate for Wheat.

1. BASAL CONDITIONS :

(i) (a) No. (b) Wheat. (c) Nil. (ii) (a) Medium black to deep black. (b) Refer soil analysis, Arnej. (iii) 24.10.1952. (iv) (a) N.A. (b) Drilling. (c) and (d) As per treatments. (e) N.A. (v) Nil. (vi) A—206. (vii) Unirrigated. (viii) Weeding. (ix) *Rabi* season hence negligible. (x) 21.2.1953.

2. TREATMENTS :

Main-plot treatments :

3 seed rates : R_1=30, R_2=40 and R_3=50 lb./ac.

Sub-plot treatments :

2 spacings : S_1=9″ and S_2=12″.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block ; 2 sub-plots/main-plot. (b) 84′×63′. (iii) 6. (iv) (a) main-plot : 84′×21′ and sub-plot : 42′×21′. (b) 36′×15′. (v) 3′ all round net plot. (vi) Yes.

4. GENERAL :

(i) The emergence of the seedlings was good and uniform in all treatments. All the plants in different plots attained maturity at the same time. (ii) Nil. (iii) Weight of grain. (iv) (a) 1952—1955. (b) No. (c) N.A. (v) (a) Bhuna and Jalagaon. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 710 lb./ac.
(ii) (a) 62.9 lb./ac.
(b) 88.7 lb./ac.
(iii) None of the effects is significant.

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

	R_1	R_2	R_3	Mean
S_1	681	700	739	706
S_2	687	704	751	714
Mean	684	702	745	710

S.E. of difference of two

1. R marginal means =25.10 lb./ac.
2. S marginal means =27.38 lb./ac.
3. S means at the same level of R =30.82 lb./ac.
4. R means at the same level of S =44.38 lb./ac.

Crop :-Wheat (*Rabi*). Ref :-Gj. 53(51).

Site :-Agri. Res. Stn., Arnej. Type :-'C'.

Object :—To find out the suitable spacing and economic seed rate for Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) Nil. (ii) (a) Medium black to deep black. (b) Refer soil analysis, (iii) 27.10.1953. (iv) (a) 4 harrowings. (b) Drilling. (c) and (d) As per treatments. (e) N.A. (v) N.A. (vi) A.—206 (medium). (vii) Unirrigated. (viii) Nil. (ix) *Rabi* season hence negligible. (x) 22.2.1954.

2. TREATMENTS :

Main-plot treatments :

3 seed rates : R_1=30, R_2=40 and R_3=50 lb./ac.

Sub-plot treatments :

2 spacings between rows : S_1=9" and S_2=12".

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block and 2 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 42'×21' (main-plot : 84'×63'.) (b) 36'×15'. (v) 3' around the net plot. (vi) Yes.

4. GENERAL :

(i) Germination was satisfactory and crop stand was good. (ii) Nil. (iii) Grain yield. (iv) (a) 1952—1955. (b) No. (c) N.A. (v) (a) Bhuwa and Jalagaon. (b) N.A. (vi) The cloudy wheather at the time of milky stage affected the grain size and maturity. (vii) Nil.

5. RESULTS :

(i) 838 lb./ac.
(ii) (a) 53.24 lb./ac.
(b) 55.66 lb./ac.
(iii) None of the effects is significant.
(iv) Av. yield of grain in lb./ac.

	R_1	R_2	R_3	Mean
S_1	850	832	823	835
S_2	868	875	784	842
Mean	859	853	803	838

S.E. of difference of two

1. R marginal means =21.69 lb./ac.
2. S marginal means =18.61 lb./ac.
3. S means at the same level of R =32.03 lb./ac.
4. R means at the same level of S =31.33 lb./ac.

Crop :- Wheat (*Rabi*). Ref :- Gj. 50(61).

Site :- Agri. Res. Stn., Arnej. Type :- 'C'.

Object :—To find the best preparatory tillage for Wheat crop.

1. BASAL CONDITIONS :

(i) (a) No. (b) *Jowar*. (c) Nil. (ii) (a) Medium black to deep black. (b) Refer soil analysis, Arnej. (iii) 26.10.1950. (iv) (a) As per treatments. (b) Drilling. (c) 40 lb./ac. (d) 12". (e) N.A. (v) Nil. (vi) A—206. (vii) Unirrigated. (viii) Nil. (ix) *Rabi* season, hence negligible. (x) 5.3.1951.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 levels of ploughing : L_0=No ploughing and L_1=One ploughing.

(2) 4 levels of harrowing : H_1=2, H_2=3, H_3=4 and H_4=5 harrowings.

Date of ploughing —4.10.1950 and dates of harrowings: -4,8,12,16 and 19.10.1950.

3. DESIGN :

(i) 4×2 Fact. in R.B.D. (ii) (a) 8. (b) 113'×112'. (iii) 4. (iv) (a) 113'×14'. (b) 109'×10'. (b) 2' all round net plot. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1950—1955. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 676 lb./ac.

(ii) 61.2 lb./ac.

(iii) Main effect of ploughing alone is highly significant.

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

	H_1	H_2	H_3	H_4	Mean
L_0	703	736	710	701	713
L_1	641	623	650	643	639
Mean	672	630	680	672	676

S.E. of marginal mean of H =21.60 lb./ac.

S.E. of marginal mean of L =15.30 lb./ac.

S.E. of body of table, =30.60 lb./ac.

Crop :- Wheat (*Rabi*). Ref :- Gj. 52(92).

Site :- Agri. Res. Stn., Arnej. Type :- 'C'.

Object :—To find the best preparatory tillage for Wheat crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Gram. (c) Nil. (ii) (a) Medium black to deep black. (b) Refer soil analysis, Arnej. (iii) 16.10.1952. (iv) (a) As per treatments. (b) Drilled. (c) 40 lb./ac. (d) 12" between rows. (e) N.A. (v) Nil. (vi) A—206. (vii) Unirrigated. (viii) Weeding. (ix) *Rabi* season, hence negligible. (x) 16.2.1953.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 levels of ploughing : L_0=No ploughing and L_1=One ploughing.

(2) 4 levels of harrowing : H_1=2, H_2=3, H_3=4 and H_4=5 harrowings.

3. DESIGN :

(i) 4×2 Fact. in R.B.D. (ii) (a) 8. (b) 113'×112'. (iii) 4. (iv) (a) 113'×14'. (b) 109'×10'. (v) 2' all round. (vi) Yes.

4. GENERAL :

(i) The germination was good in plots receiving 4 and 5 harrowings ; and was not good in plots receiving 2 and 3 harrowings There was however no difference between treatments in the later phase of plant development. (ii) Nil. (iii) Grain yield (iv) (a) 1950—1955. (b) No. (c) N.A. (v) (a) No. (b) Nil. (vi) Nil. (vii) The experiment was vitiated in 1951.

5. RESULTS :

(i) 400 lb./ac.

(ii) 59.04 lb./ac.

(iii) The main effect of harrowings and ploughings are highly significant and interaction is significant.

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

	H_1	H_2	H_3	H_4	Mean
L_0	238	297	466	484	371
L_1	349	382	505	475	428
Mean	293	340	486	480	400

S.E. of marginal mean of H = 20.90 lb./ac.

S.E. of marginal mean of L = 14.80 lb./ac.

S.E. of body of table = 29.50 lb./ac.

Crop :-Wheat (*Rabi*). Ref :-Gj. 53(49).

Site :-Agri. Res. Stn., Arnej. Type :-'C'.

Object : -To find the best preparatory tillage for Wheat crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Gram. (c) Nil. (ii) (a) Medium black to deep black. (b) Refer soil analysis, Arnej. (iii) 24.10.1953. (iv) (a) As per treatments. (b) N.A. (c) 40 lb./ac. (d) 12" between rows. (e) N.A. (v) Nil. (vi) A—206 (medium). (vii) Unirrigated. (viii) Weeding. (ix) *Rabi* season, hence negligible. (x) 22.2.1954.

2. TREATMENTS :

All combinations (1) and (2)

(1) 2 levels of ploughing : L_0=No ploughing and L_1=One ploughing.

(2) 4 levels of harrowing : H_1=2, H_2=3, H_3=4 and H_4=5 harrowings.

Date of ploughing—28.9.1950.

3. DESIGN :

(i) 4×2 Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 113'×14'. (b) 109'×10'. (v) 2' all round net plot. (vi) Yes.

4. GENERAL :

(i) Germination satisfactory and the stand of the crop fair. (ii) Nil. (iii) Grain yield. (iv) (a) 1950—1955. (b) No. (c) N.A. (x) (a) N.A. (b) N.A. (vi) The cloudy wheather at the time of milky stage affected the grain size and maturity. (vii) Nil.

5. RESULTS :

(i) 903 lb./ac.

(ii) 97.60 lb./ac.

(iii) None of the effects is significant.

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

	H_1	H_2	H_3	H_4	Mean
L_0	893	867	926	905	898
L_1	855	946	865	968	908
ean	874	906	895	936	903

S.E. of marginal means of H =34.50 lb./ac.
S.E. of marginal means of L =24.40 lb./ac.
S.E. of body of table =48.90 lb./ac.

Crop :-Wheat (*Rabi*). Ref :-Gj. 49(54).

Site :-Agri. Res. Stn., Bhuwa. Type :-'C'.

Object :—To find out suitable spacing and sowing dates for Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Black soils. (b) N.A. (iii) Normal sowing date 10.10.1949 ; other sowing dates-according to treatments. (iv) (a) Ploughing. (b) Drilling. (c) N.A. (d) Between rows—according to treatments ; between plants irregular. (e) N.A. (v) Nil. (vi) Niphad-4. (vii) Unirrigated. (viii) One interculturing and one weeding. (ix) 0.46". (x) N.A.

2. TREATMENTS:

Main-plot treatments :

5 sowing dates : D_1=Two weeks before the normal sowing date (26.9.1949).
D_2=One week before the normal sowing date (3.10.1949).
D_3=Normal sowing date (10.10.1949)
D_4=One week after the normal sowing date (17.10.1949).
D_5=Two weeks after the normal sowing date (24.10.1949).

Sub-plot treatments :

2 spacings between rows : S_1=24" and S_2=27".

3. DESIGN :

(i) Split-plot. (ii) (a) 5 main-plots/block ; 2 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 33'×18'. (v) Two rows on either side and 3' of rows on either end. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Heavy attack of stem borer. (iii) Grain yield. (iv) (a) 1949—1950. (b) No. (c) N.A. (v) (a) Nil. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 572 lb./ac.
(ii) (a) 166.4 lb./ac.
(b) 72.9 lb./ac.
(iii) Main effect of D and interaction D×S are significant. Effect of S is not significant.
(iv) Av. yield of grain in lb./ac.

	D_1	D_2	D_3	D_4	D_5	Mean
S_1	543	543	453	627	753	584
S_2	562	533	516	481	714	561
Mean	553	538	484	554	733	572

S.E. of difference of two

1. D marginal means =67.9 lb./ac.
2. S marginal means =18.8 lb./ac.
3. S means at the same level of D =42.1 lb /ac.
4. D means at the same level of S =74.1 lb./ac.

Crop Wheat (*Rabi*). Ref :- Gj. 50(67).

Site :- Agri. Res. Stn., Bhuwa. Type :- 'C'.

Object :—To find out suitable spacing and sowing dates for Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Lang* and Gram. (c) Nil. (ii) (a) Black soil. (b) N.A. (iii) As per treatments. (iv) (a) N.A. (b) Drilling. (c) N.A. (d) Between rows-according to treatments ; between plants-irregular. (e) N.A. (v) Nil. (vi) *Gulab*. (vii) Unirrigated. (viii) 6 weedings. (ix) *Rabi* season, hence negligible. (x) 4 to 8.3.1951.

2. TREATMENTS :

Main-plot treatments :

5 sowing dates :

D_1=Two weeks before normal sowing date (10.10.1950).
D_2=One week before normal sowing date (17.10.1950).
D_3=Normal sowing date (24.10.1950).
D_4=One week after the normal sowing date (31.10.1950).
D_5=Two weeks after the normal sowing date (7.11.1950).

Sub-plot treatments :

2 spacings between rows : S_1=24" and S_2=27".

3. DESIGN :

(i) Split-plot. (ii) (a) 5 main-plots/block ; 2 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 39'×26', 39'×27' for spacings 24" and 27" respectively. (b) 33'×18'. (v) Two rows on either side and 3' of rows on either end. (vi) Yes.

4. GENERAL :

(i) The crop remained stunted for want of rains. The grains also remained spotted for want of sufficient moisture at the end. (ii) The mild attack, with very negligible damage, of ground hoppers and rats were experienced. Dusting gammaxene on 27.11.1950. (iii) Grain and chaff yield. (iv) (a) 1949-1950. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 410 lb./ac.
(ii) (a) 57.26 lb./ac.
(b) 43.38 lb./ac.
(iii) Main effect of D alone is highly significant.
(iv) Av. yield of grain in lb./ac.

	D_1	D_2	D_3	D_4	D_5	Mean
S_1	310	449	483	443	410	419
S_2	274	440	468	407	410	400
Mean	292	445	476	425	410	410

S.E. of difference of two

1. D marginal means = 23.37 lb./ac.
2. S marginal means = 11.18 lb./ac.
3. S means at the same level of D = 25.04 lb./ac.
4. D means at the same level of S = 29.33 lb./ac.

Crop :- Wheat (*Rabi*). Ref :- Gj. 52(352).

Site :- Agri. Res. Stn., Bhuwa. Type :- 'C'.

Object :—To find out suitable spacing and seed rate for Wheat crop.

1. BASAL CONDITIONS :

(i) (a) No. (b) N.A. (c) N.A. (ii) (a) Black cotton soil. (b) N.A. (iii) 15, 16.10.1952. (iv) (a) 6 harrowings. (b) Drilling. (c) and (d) As per treatments. (e) N.A. (v) N.A. (vi) K-25. (vii) Unirrigated. (viii) Nil. (ix) *Rabi* season, hence negligible. (x) 12.2.1953.

2. TREATMENTS :

Main-plot treatments :

3 spacings between rows : S_1=18", S_2=24" and S_3=27".

Sub-plot treatments :

3 seed rates : R_1=30, R_2=40 and R_3=50 lb./ac.

3. DESIGN

(i) Split-plot. (ii) (a) 3 main-plots/block ; 3 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 36'×21'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Due to lack of moisture in soil and also due to grass hoppers, the growth was checked. (ii) Grass hoppers caused a little damage. Gammaxene was applied. (iii) Grain and fodder yield. (iv) (a) 1952—1955. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 53 lb./ac.

(ii) (a) 20 63 lb./ac.

(b) 18.09 lb./ac.

(iii) None of the effects is significant.

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

	S_1	S_2	S_3	Mean
R_1	55	55	36	49
R_2	62	59	43	55
R_3	51	55	64	57
Mean	56	56	48	53

S.E. of difference of two

1. S marginal means = 6.87 lb./ac.
2. R marginal means = 6.02 lb./ac.
3. R means at the same level of S =10.44 lb./ac.
4. S means at the same level of R =10.95 lb./ac.

Crop :- Wheat. (*Rabi*). Ref :- Gj. 53(192).

Site :- Agri. Res. Stn., Bhuwa. Type :- 'C'.

Object :—To find out suitable spacing and seed rate for Wheat crop.

1. BASAL CONDITIONS :

(i) (a) No. (b) Wheat. (c) Nil. (ii) (a) Black cotton soil. (b) N.A. (iii) 28.10.1953. (iv) (a) 6 harrowings. (b) Drilling. (c) and (d) As per treatments. (e) N.A. (v) 15 C.L./ac. of F.Y.M. on 30.5.1953 by broadcasting. (vi) Kenphad (medium). (vii) Nil. (viii) Nil. (ix) 0.10". (x) 4.3.1954.

2. TREATMENTS :

Main-plot treatments :

3 spacings between rows : S_1=18", S_2=24" and S_3=27".

Sub-plot treatments :

3 seedrates : R_1=30, R_2=40 and R_3=50 lb./ac.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block; 3 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 39'×27', 40'×27' and 40.5'×27' for 18", 24" and 27" spacings respectively. (b) 36'×21'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Crop growth was unsatisfactory due to insufficient moisture. (ii) Mild attack of grass hoppers. No control measures were taken. (iii) Grain yield. (iv) (a) 1952—1955. (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) Nil. (vii) yield very low. This may be treated as vitiated.

5. RESULTS:

(i) 94.35 lb./ac.
(ii) (a) 32.89 lb./ac.
(b) 21.43 lb./ac.
(iii) Only sub-plot treatments differ highly significantly.
(iv) Av. yield of grain in lb./ac.

	S_1	S_2	S_3	Mean
R_1	67.2	68.3	78.5	71.3
R_2	73.8	99.6	101.9	91.8
R_3	127.7	109.7	121.6	119.7
Mean	89.6	92.5	100.7	94.3

S.E. of difference of two

1. S marginal means = 10.96 lb./ac.
2. R marginal means = 7.14 lb./ac.
3. R means at the same level of S = 12.37 lb./ac.
4. S means at the same level of R = 14.91 lb./ac.

Crop :- Wheat. (*Rabi*). Ref :- Gj. 48(30).

Site :- Agri. Res. Stn., Dohad. Type :- 'C'.

Object :—To find out suitable spacing and sowing dates for Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) 10 C.L./ac. of F.Y.M. (ii) (a) Dark brown. (b) Refer soil analysis, Dohad. (iii) As per treatments. (iv) (a) 4 ploughings. (b) and (c) N.A. (d) As per treatments. (e) N.A. (v) N.A. (vi) Niphad-4 (medium). (vii) Irrigated. (viii) 2 weedings. (ix) Nil. (x) 3.3.1949.

2. TREATMENTS:

Main-plot treatments

5 sowing dates : D_1=21.10.1948, D_2=28.10.1948, D_3=4.11.1948, D_4=11.11.1948 and D_5=18.11.1948.

Sub-plot treatments :

2 spacings between rows: S_1=15" and S_2=18".

3. DESIGN:

(i) Split-plot. (ii) (a) 5 main-plots/block; 2 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 39'×20' for 15" spacing and 39'×21' for 18" spacing. (b) 33'×15'. (v) Two rows on either side and 3' of rows on either end. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Root-rot trouble in some plots. (iii) Grain yield. (iv) (a) 1948—1950. (b) No. (c) N.A. (v) (a) Nil. (b) N.A. (vi) and (vii) Nil.

5. RESULTS:

(i) 1079 lb./ac.
(ii) (a) 163.1 lb./ac.
(b) 272.3 lb./ac.
(iii) None of the effects is significant.
(iv) Av. yield of grain in lb./ac.

	D_1	D_2	D_3	D_4	D_5	Mean
S_1	1073	1118	1104	969	956	1064
S_2	1017	1130	1096	1078	1147	1094
Mean	1045	1124	1100	1024	1102	1079

S.E. of difference of two

1. D marginal means = 66.6 lb./ac.
2. S marginal means = 70.3 lb./ac.
3. S means at the same level of D = 157.4 lb./ac.
4. D means at the same level of S = 129.6 lb./ac.

Crop :- Wheat (*Rabi*). Ref :-Gj. 49(51).

Site :- Agri. Res. Stn., Dohad. Type :- 'C'.

Object : To find out suitable spacings and sowing dates for Wheat.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Maize. (c) 10 C.L./ac. of F.Y.M. (ii) (a) Black soil. (b) Refer soil analysis, Dohad. (iii) As per treatments (iv) (a) 4 ploughings. (b) N.A. (c) N.A. (d) As per treatments. (e) N.A. (v) N.A. (vi) Niphad—4. (vii) Irrigated. (viii) One weeding. (ix) Nil. (x) 10.3.1950.

2. TREATMENTS :

Main-plot treatments :

5 sowing dates : D_1=21.10.1949, D_2=28.10.1949, D_3=4.11.1949, D_4=11.11.1949 and D_5=18.11.1949.

Sub-plot treatments :

2 spacings between rows : S_1=15" and S_2=18".

3. DESIGN :

(i) Split-plot. (ii) (a) 5 main-plots/block ; 2 sub-plots/main-plot. (b) N.A. (iii) 6 (iv) (a) 39'×20' for 15" spacing ; 39'×21' for 18" spacing. (b) 33'×15'. (v) Two rows on either side and 3 ' of rows on either end. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1948—1950. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1066 lb./ac.

(ii) (a) 156.9 lb./ac.

(b) 121.8 lb./ac.

(iii) Only D effect is significant.

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

	D_1	D_2	D_3	D_4	D_5	Mean
S_1	1069	1012	1010	1172	983	1049
S_2	1145	999	1073	1201	998	1083
Mean	1108	1006	1042	1186	990	1066

S.E. of difference of two

1. D marginal means =64.1 lb./ac.
2. S marginal means =31.5 lb./ac.
3. S means at the same level of D =70.4 lb./ac.
4. D means at the same level of S =81.1 lb./ac.

Crop :- Wheat (*Rabi*). Ref :- Gj. 50(65).

Site :- Agri. Res. Stn., Dohad. Type :- 'C'.

Object :—To find out suitable spacings and sowing dates for Wheat.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Green manuring crop. (c) N.A. (ii) (a) Dark brown. (b) Refer soil analysis, Dohad. (iii) As per treatments. (iv) (a) N.A. (b) Drilled. (c) 60 lb./ac. (d) As per treatments. (e) N.A. (v) N.A. (vi) Niphad—4. (vii) Irrigated. (viii) Only hand weeding for a number of days to remove weeds. (ix) *Rabi* season, hence negligible. (x) 9.4.1951.

2. TREATMENTS :

Main-plot treatments :

5 sowing dates : D_1=21.10.1950, D_2=28.10.1950, D_3=4.11.1950, D_4=11.11.1950 and D_5=18.11.1950.

Sub-plot treatments :

2 spacings (rows×plants) : S_1=15"×4" and S_2=18"×4".

3. DESIGN :

(i) Split-plot. (ii) (a) 5 main-plots/block ; 2 sub-plots/main-plot. (b) N.A. (iii) 6 (iv) (a) 39′×20′ for 15″ spacing ; 39′×21′ for 18″ spacing. (b) 33′×15′. (v) Two rows on either side and 3′ of rows on either end. (vi) Yes.

4. GENERAL :

(i) Germination and the general growth of the crop was satisfactory. Hot season started earlier due to which the maturity of the crop was hastened. (ii) Slight attack of stem borer, but damage was negligible. (iii) Grain yield. (iv) (a) 1948—1950. (b) No. (c) N.A. (v) (a) Nil. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 875 lb./ac.
(ii) (a) 222.2 lb./ac.
(b) 116.6 lb./ac.
(iii) None of the effects is significant.
(iv) Av. yield of grain in lb./ac.

	D_1	D_2	D_3	D_4	D_5	Mean
S_1	764	861	967	990	952	907
S_2	676	930	920	945	747	844
Mean	720	895	943	968	849	875

S.E. of difference of two

1. D marginal means = 90.7 lb./ac.
2. S marginal means = 30.1 lb./ac.
3. S means at the same level of D = 67.3 lb./ac.
4. D means at the same level of S = 102.5 lb./ac.

Crop:- Wheat (*Rabi*). Ref :-Gj. **49(139).**

Site :-Agri. Res. Stn., Vijapur. Type :-'C'.

Object :—To ascertain the optimum seed rate for Wheat.

1. BASAL CONDITIONS :

(i) (a) *Bajra*—Wheat. (b) and (c) N.A. (ii) (a) Light sandy soil. (b) N.A. (iii) 27.11.1949. (iv) (a) to (e) N.A. (v) 80 lb./*bigha* of manure mixture top dressed on 18.12.1949. (vi) J.P.—52 (medium). (vii) Irrigated. (viii) N.A. (ix) *Rabi* season, hence negligible. (x) N.A.

2. TREATMENTS :

3 seed rates : R_1=38, R_2=59 and R_3=80 lb./*bigha*.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) and (b) 51′×26′. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Not good. (iii) Mild attack of white ants. (iii) Grain yield (iv) (a) 1949—N.A. (b) and (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 475 lb./ac.
(ii) 108.5 lb./ac.
(iii) Treatments differ highly significantly.
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
R_1	318
R_2	449
R_3	657
S.E./mean	= 44.3 lb./ac.

Crop :- Wheat (*Rabi*). Ref :- Gj. 51(228).

Site :- Agri. Res. Stn., Vijapur. Type :- 'C'.

Object :—To ascertain the optimum seed rate for Wheat.

1. BASAL CONDITIONS:

(i) (a) *Bajra*—Wheat. (b) and (c) N.A. (ii) (a) Light sandy soil. (b) N.A. (iii) 16.11.1951. (iv) (a) to (e) N.A. (v) N.A. (vi) J.P.—52 (medium). (vii) Irrigated. (viii) N.A. (ix) *Rabi* season, hence negligible. (x) 15.3.1952.

2. TREATMENTS :

6 seed rates : R_1=40, R_2=60, R_3=80, R_4=100, R_5=120 and R_6=136 lb./ac.

3. DESIGN :

(i) R.B.D. (ii) 6. (b) N.A. (iii) 4. (iv) (a) and (b) 40'×12'. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1949—N.A. (b) and (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 670 lb./ac.
(ii) 63.6 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
R_1	590
R_2	726
R_3	658
R_4	681
R_5	681
R_6	681
S.E./mean	=31.8 lb./ac.

Crop :-Wheat (*Rabi*). Ref :-Gj. 52(360).

Site :-Agri. Res. Stn., Vijapur. Type :- 'C',

Object :—To ascertain the optimum seed rate for Wheat.

1. BASAL CONDITIONS :

(i) (a) *Bajra*-Wheat. (b) N.A. (c) N.A. (ii) (a) Light sandy soil. (b) N.A. (iii) 7.11.1952. (iv) (a) to (e) N.A. (v) N.A. (vi) Niphad-4 (medium). (vii) Irrigated. (viii) N.A. (ix) *Rabi* season, hence negligible. (x) 10.3.1953.

2. TREATMENTS :

6 seed rates : R_1=40, R_2=60, R_3=80, R_4=100, R_5=120 and R_6=136 lb./ac.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) and (b) 40'×12'. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1949—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 751 lb./ac.
(ii) 108.2 lb./ac.
(iii) Treatments differ highly significantly.

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

Treatment	Av. yield
1.	585
2.	594
3.	770
4.	805
5.	947
6.	804
S.E./mean	=54.1 lb./ac.

Crop :-Wheat (*Rabi*). Ref :-Gj. 50(60).

Site :-Agri. Res. Stn., Arnej. Type :-'CV'.

Object :—To find out optimum spacing and economic seed rate for two varieties of Wheat.

1. BASAL CONDITIONS :

(i) (a) No (b) Wheat. (c) Nil. (ii) (a) Medium black to deep black. (b) Refer soil analysis, Arnej. (iii) 25.10.1950. (iv) (a) 5 harrowings. (b) Drilled with 2 coultered seed-drill. (c) and (d) As per treatments. (e) N.A. (v) N.A. (vi) As per treatments (vii) Unirrigated. (viii) Weeding (ix) *Rabi* season, hence negligible. (x) 4 and 5.3.1951.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2)

(1) 2 varieties : V_1=A-206 and6 V_2=A-624

(2) 3 spacings : S_1=12″, S_2=15″ and S_3=18″.

Sub-plot treatments :

4 seed rates : R_1=30, R_2=40, R_3=50 and R_4=60 lb./ac.

3. DESIGN :

(i) Split-plot. (ii) (a) 6 main-plots/block ; 4 sub-plots/main-plot. (b) 160′×120′. (iii) 4. (iv) (a) 40′×19′, 40′×20′ and 40′×21′ for 12″, 15″ and 18″ spacings respectively. (b) 36′×15′. (v) Two rows on either side and 2′ on both ends of rows of the net plot. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1950—1951. (b) No. (c) N.A. (v) (a) No. (b) No. (vi) and (vii) Nil.

5. RESULTS :

(i) 686 lb./ac.

(ii) (a) 91.36 lb./ac.

(b) 75.02 lb./ac.

(iii) Only V effect is highly significant. Others are not significant.

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

	S_1	S_2	S_3	Mean	R_1	R_2	R_3	R_4
V_1	655	648	656	653	647	678	658	628
V_2	731	734	694	720	713	739	717	708
Mean	693	691	675	686	680	709	687	668
R_1	685	677	680					
R_2	704	732	691					
R_3	690	690	683					
R_4	693	665	647					

S.E. of difference of two

1. V marginal means =18.68 lb./ac.
2. S marginal means =22.88 lb./ac.
3. R marginal means =21.65 lb./ac.
4. R means at the same level of V =30.63 lb./ac.
5. V means at the same level of R =32.42 lb./ac.
6. R means at the same level of S =37.51 lb./ac.
7. S means at the same level of R =39.70 lb./ac.
8. means in the body of V×S tabe =32.37 lb./ac.

Crop :- Wheat (*Rabi*). Ref :- Gj. 51(63).

Site :- Agri. Res. Stn., Arnej. Type :- 'CV'.

Object :—To find out optimum spacing and economic seed rate for two varieties of Wheat.

1. BASAL CONDITIONS:

(i) (a) No. (b) Wheat. (c) Nil. (ii) (a) Medium black to deep black. (b) Refer soil analysis, Arnej. (iii) 20.10.1951. (iv) (a) Harrowing 5 times. (b) Drilled with 2 coultered drill. (c) and (d) As per treatments. (e) N.A. (v) N.A. (vi) As per treatments. (vii) Unirrigated. (viii) Weeding. (ix) *Rabi* season, hence negligible. (x) 16.2.1952.

2. TREATMENTS:

Main-plot treatments :

All combinations of (1) and (2)

(1) 2 varieties : V_1=A-206 and V_2=A-624.

(2) 3 spacings : S_1=12", S_2=15" and S_3=18".

Sub-plot treatments :

4 seed rates : R_1=30, R_2=40, R_3=50 and R_4=60 lb./ac.

3. DESIGN :

(i) Split-plot. (ii) (a) 6 main-plots/block ; 4 sub-plots/main-plot. (b) 160'×120'. (iii) 4. (iv) a) 40'×19', 40'×20' and 40'×21' for 12", 15" and 18" spacings respectively. (b) 36'×15'. (v) Two rows on either side and 2' on both ends of row. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1950-1951. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 287 lb./ac.

(ii) (a) 53.30 lb./ac.

(b) 41.91 lb./ac.

(iii) None of the effects is significant.

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

	S_1	S_2	S_3	Mean	R_1	R_2	R_3	R_4
V_1	283	268	255	269	251	271	286	267
V_2	331	282	303	305	289	317	305	310
Mean	307	275	279	287	270	294	295	289
R_1	275	267	268					
R_2	303	299	281					
R_3	329	265	292					
R_4	321	270	275					

S.E. of difference of two

1. V marginal means = 11.28 lb./ac.
2. S marginal means = 13.82 lb./ac.
3. R marginal means = 12.09 lb./ac.
4. R means at the same level of V = 17.12 lb./ac.
5. V means at the same level of R = 18.64 lb./ac.
6. R means at the same level of S = 20.95 lb./ac.
7. S means at the same level of R = 22.82 lb./ac.
8. means in the body of V×S table = 19.54 lb./ac.

Crop :-Wheat (*Rabi*). **Ref :-Gj. 48(111).**

Site :-Agri. Res. Stn., Vijapur. **Type :-'I'.**

Object :—To ascertain the optimum level and interval of irrigation for Wheat.

1. BASAL CONDITIONS :

(i) (a) *Bajra*—Wheat. (b) *Bajra.* (c) 5 C.L./*bigha* of F.Y.M. (ii) (a) Light sandy soil. (b) N.A. (iii) 9.11.1948. (iv) (a) to (e) N.A. v) 160 lb./*bigha* of Castor cakes at the time of sowing. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) *Rabi* season, hence negligible. (x) 16.3.1949.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of irrigation : I_1=30,000, I_2=35,000 and I_3=40,000 gallons/*bigha.*

(2) 3 intervals of irrigation : T_1=Once in 8 days, T_2=Once in 10 days and T_3=Once in 12 days.

3. DESIGN :

(i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 5. (iv) (a) and (b) 31'×14'. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) N.A. (iii) Grain yield. (iv) (a) 1945—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 604 lb./ac.

(ii) 145.0 lb./ac.

(iii) None of the effects is significant.

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

	T_1	T_2	T_3	Mean
I_1	582	617	542	580
I_2	708	672	622	667
I_3	642	547	507	565
Mean	644	612	557	604

S.E. of any marginal mean = 37.45 lb /ac.

S.E. of body of table = 64.33 lb /ac.

Crop :-Wheat (*Rabi*). **Ref :-Gj. 49(138).**

Site :-Agri. Res. Stn., Vijapur. **Type :-'I'.**

Object :—To ascertain the optimum level and interval of irrigation for Wheat.

1. BASAL CONDITIONS :

(i) (a) *Bajra*—Wheat. (b) *Bajra.* (c) N.A. (ii) (a) Light sandy soil. (b) N.A. (iii) 20.11.1949. (iv) (a) to (e) N.A. (v) 80 lb./*bigha* of manure mixture, top dressed on 8.12.1949. (vi) C—13 (medium). (vii) Irrigated. (viii) N.A. (ix) *Rabi* season, hence negligible. (x) N.A.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of irrigation : I_1=51,000, I_2=59,500 and I_3=68,000 gallons/*bigha.*

(2) 3 intervals of irrigation : T_1=Once in 8 days, T_2=Once in 10 days and T_3=Once in 12days.

3. DESIGN :

(i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 5. (iv) (a) and (b) 33'×15'. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Good. (ii) White-ant attack observed. (iii) Grain yield. (iv) (a) 1945—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 723 lb./ac.
(ii) 149.2 lb./ac.
(iii) None of the effects is significant.
(iv) Av. yield of grain in lb./ac.

	T_1	T_2	T_3	Mean
I_1	739	766	783	763
I_2	801	774	642	739
I_3	713	695	598	669
Mean	751	745	674	729

S.E. of any marginal mean = 38.5 lb./ac.
S.E. of body of table = 66.7 lb./ac.

Crop :- Wheat (*Rabi*). Ref :-Gj. 51(227).

Site :-Agri. Res. Stn., Vijapur. Type :-'I.'

Object :—To ascertain the optimum level and interval of irrigation for Wheat.

1. BASAL CONDITIONS :

(i) (a) *Bajra*—Wheat. (b) *Bajra.* (c) N.A. (ii) (a) Light sandy soil. (b) N.A. iii) 9.11.1951. (iv) (a) to (e) N.A. (v) N.A. (vi) J.P.—52 (medium). (vii) Irrigated. (viii) N.A. (ix) *Rabi* season, hence negligible. (x) 21.3.1952.

2. TREATMENTS :

All combinations of (1) and (2)
(1) 3 levels of irrigation : I_1 = 51,000, I_2 = 57,800 and I_3 = 68,000 gallons/ac.
(2) 3 intervals of irrigation : T_1 = once in 8 days, T_2 = once in 10 days and T_3 = once in 12 days.

3. DESIGN :

(i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 9′×40′. (b) 7′×38′. (v) 1′ alround. (vi) Yes.

4. GENERAL :

(i) Very good. (ii) Nil. (iii) Grain yield. (iv) (a) 1945—N.A. (b) and (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 2115 lb./ac.
(ii) 240.7 lb./ac.
(iii) Only main effect of interval of irrigation is highly significant. Others are not significant.
(iv) Av. yield of grain in lb./ac.

	T_1	T_2	T_3	Mean
I_1	2497	2292	1719	2169
I_2	2210	2333	1760	2101
I_3	2210	2128	1883	2074
Mean	2306	2251	1787	2115

S.E. of any marginal mean = 69.5 lb./ac.
S.E. of body of table = 120.4 lb./ac.

Crop :- Wheat (*Rabi*). Ref :- Gj. 52(361).

Site :- Agri. Res. Stn., Vijapur. Type :- 'I'.

Object :—To ascertain the optimum level and interval of irrigation for Wheat.

1. BASAL CONDITIONS :

(i) (a) *Bajra*—Wheat. (b) *Bajra*. (c) N.A. (ii) (a) Light sandy soil. (b) N.A. (iii) 9.12.1952. (iv) (a) to (e) N.A. (v) N.A. (vi) J.P.—52 (medium). (vii) Irrigated. (viii) N.A. (ix) *Rabi* season, hence negligible. (x) 15.3.1953.

2. TREATMENTS

All combinations of (1) and (2)

(1) 3 levels of irrigation : I_1=51,000, I_2=57,800 and I_3=64,000 gallons/ac.

(2) 3 intervals of irrigation : T_1=once in 8 days, T_2=once in 10 days and T_3=once in 12 days

3. DESIGN:

(i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 30'×12'. (b) 24'×10'. (v) 3'×1'. (vi) Yes.

4. GENERAL:

(i) Very good. (ii) Nil. (iii) Grain yield. (iv) (a) 1945—N.A. (b) and (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS

(i) 1514 lb./ac.

(ii) 225.3 lb./ac.

(iii) Only main effect of interval of irrigation is significant.

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

	T_1	T_2	T_3	Mean
I_1	1706	1404	1488	1533
I_2	1606	1576	1511	1564
I_3	1661	1461	1216	1446
Mean	1658	1480	1405	1514

S.E. of marginal means = 65.0 lb./ac.

S.E. of body of table = 112.6 lb./ac.

Crop :- Wheat (*Rabi*). Ref :- Gj. 53(48).

Site :- Agri. Res. Stn., Arnej. Type :- 'D'.

Object :—To study the effect of hormone on the yield of Wheat.

1. BASAL CONDITIONS:

(i) (a) No. (b) Wheat. (c) Nil. (ii) (a) Medium black to deep black. (b) Refer soil analysis, Arnej. (iii) 26.10.1953. (iv) (a) 4 harrowings. (b) to (e) N.A. (v) Nil. (vi) A-206 (medium). (vii) Unirrigated. (viii) Weeding. (ix) *Rabi* season hence negligible. (x) 22.2.1954.

2. TREATMENTS :

All combinations of (1) and (2)+a control (untreated dry seed)

(1) 3 concentrations of 2-4-D in p.p.m. : C_1=0.01, C_2=0.10 and C_3=1.00 p.p.m.

(2) 2 intervals for which the seeds were soaked in the above solution : T_1=30 minutes and T_2=20 hours.

3. DESIGN:

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 36'×18'. (b) 30'×12'. (v) 3' all round net plot. (vi) Yes.

4. GENERAL :

(i) Germination was satisfactory and the stand was good. (ii) Nil. (iii) Nil. (iv) (a) 1953—1955. (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) The cloudy weather at the time of milky stage, affected the grain size and maturity. Emergence of seeds treated for 20 hours was earlier by a day. (vii) Nil.

5. RESULTS :

(i) 712 lb./ac

(ii) 51.67 lb./ac.

(iii) None of the effects is significant.

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

Control=685 lb./ac.

	C_1	C_2	C_3	Mean
T_1	687	729	706	707
T_2	708	698	769	725
Mean	697	713	737	716

S.E. of marginal mean of C =18.27 lb./ac.
S.E. of marginal mean of T =14.92 lb./ac.
S.E. of body of table =25.88 lb./ac.

Crop :- Jowar (*Kharif*). Ref :- Gj. 50(78).

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

Object :—To study the N and P_2O_5 requirements of *Jowar* (without basal manuring of F.Y.M).

1. BASAL CONDITIONS :

(i) (a) Cotton-*Jowar*-Groundnut (b) Cotton. (c) 7 C.L./ac. of F.Y.M. and 280 lb./ac. G.N.C. (ii) (a) Medium black. (b) Refer soil analysis, Amreli. (iii) 11.7.1950. (iv) (a) N.A. (b) Drilling. (c) 14 lb./ac. (d) Between rows—18"; between plants.—irregular. (e) —. (v) Nil. (vi) *Jowar* (early). (vii) Unirrigated. (viii) Weeding—8.8.1950 ; Interculturing—28.7.1950. (ix) 21.90". (x) 24 and 25.10.1950.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N : N_0=0, N_1=15, N_2=30 and N_3=45 lb./ac.

(2) 4 levels of P_2O_5 : P_0=0, P_1=15, P_2=30 and P_3=45 lb./ac.

N as G.N.C. and P_2O_5 as super. Manures applied at sowing by spacing.

3. DESIGN :

(i) 4×4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 42'×24'. (b) 30'×12'. (v) 6' alround. (vi) Yes.

4. GENERAL :

(i) Withering was seen during the draught period. Grain setting was poor in some plots. (ii) Plants were severely attacked by stem borer and swarmy caterpiller. These troubles were in patches only. (iii) Grain and fodder yield. (iv) (a) 1950—1952. (b) No. (c) N.A. (v) (a) Surat. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 833 lb./ac.

(ii) 142.6 lb./ac.

(iii) Only main effect of N is significant.

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

	N_0	N_1	N_2	N_3	Mean
P_0	643	907	915	809	818
P_1	828	821	945	836	858
P_2	790	802	669	866	782
P_3	730	877	855	1036	874
Mean	748	852	846	887	833

S.E. of any marginal mean = 35.7 lb./ac.
S.E. of body of table = 71.3 lb./ac.

Crop :- Jowar (*Kharif*). Ref :- Gj. 52(237).

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

Object :—To study the N and P_2O_5 requirements of *Jowar* (without basal manuring of F.Y.M.).

1. BASAL CONDITIONS :

(i) (a) Cotton-*Jowar*-Groundnut. (b) N.A. (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Amreli. (iii) 27.6.1952. (iv) (a) to (e) N.A. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) One inter-culturing, one thining and one weeding. (ix) 12.72". (x) 24 to 27.10.1952.

2. TREATMENTS :

All combinations of (1) and (2)
(1) 4 levels of N : N_0=0, N_1=15, N_2=30 and N_3=45 lb./ac.
(2) 4 levels of P_2O_5 : P_0=0, P_1=15, P_2=30 and P_3=45 lb./ac.
N as G.N.C. and P_2O_5 as Super.

3. DESIGN :

(i) 4×4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 19.5'×35'. (b) 13.5'×29'. (v) 3' alround. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1950–1952. (b) No. (c) Nil. (v) (a) Surat. (b) N.A. (vi) Yields are very poor due to insufficient rains. (vii) The expt. was vitiated in 1951.

5. RESULTS :

(i) 209 lb./ac.
(ii) 134.3 lb./ac.
(iii) None of the effects is significant.
(iv) Av. yield of grain in lb./ac.

	N_0	N_1	N_2	N_3	Mean
P_0	146	220	217	195	194
P_1	172	221	352	172	229
P_2	191	174	288	224	219
P_3	186	203	120	277	196
Mean	173	204	244	217	209

S.E. of any marginal mean = 33.6 lb./ac.
S.E. of body of table = 67.2 lb./ac.

Crop :- Jowar (*Kharif*). Ref :- Gj. 50(77).

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

Object :—To study the N and P_2O_5 requirements of *Jowar* (with basal manuring of F.Y.M.).

1. BASAL CONDITIONS.

(i) (a) Cotton-*Jowar*-Groundnut. (b) Cotton. (c) 7 C.L./ac. of F.Y.M. and 280 lb./ac. of G.N.C. (ii) (a) Medium black. (b) Refer soil analysis, Amreli. (iii) 17.7.1950. (iv) (a) N.A. (b) Drilling. (c) 14 lb./ac. (d) Between rows 18". (e) N.A. (v) 5 C.L./ac. of F.Y.M. was spread on 18.5.1950. (vi) Local (early). (vii) Unirrigated. (viii) Weeding on 8.8.1950; interculturing on 1.8.1950 to 7.8.1950. (ix) 21.90". (x) 27.10.1950.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N : N_0=0, N_1=15, N_2=30 and N_3=45 lb./ac.

(2) 4 levels of P_2O_5 : P_0=0, P_1=15, P_2=30 and P_3=45 lb./ac.

N as G.N.C. and P_2O_5 as Super. Manures applied at the time of sowing by spreading.

3. DESIGN :

(i) 4×4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 42'×24'. (b) 30'×12'. (v) 6 all round the net plot. (vi) Yes.

4. GENERAL :

(i) Withering of crop was seen during the draught period. Grain setting was poor in some plots. (ii) Plants were severely attacked by stem borers and swarmy caterpiller. These troubles were in patches only. (iii) Grain and fodder yield (iv) (a) 1950—1952. (b) No. (c) N.A. (v) (a) Surat. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 493 lb./ac.

(ii) 207.2 lb./ac.

(iii) None of the effects is significant.

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

	N_0	N_1	N_2	N_3	Mean
P_0	503	442	492	466	476
P_1	745	435	405	378	491
P_2	416	548	541	579	521
P_3	446	412	548	533	485
Mean	527	459	496	489	493

S.E. of any marginal mean = 51.8 lb./ac.

S.E. of body of table =103.6 lb./ac.

Crop :-Jowar (*Kharif*). Ref :-Gj. 52(238).

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

Object :—To study the N and P_2O_5 requirements of *Jowar* (with basal manuring of F.Y.M.).

1. BASAL CONDITIONS

(i) (a) Cotton-*Jowar*-Groundnut. (b) Cotton. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Medium black. (b) Refer soil analysis, Amreli. (iii) 27.6.1952. (iv) (a) N.A. (b) Drilling. (c) 10 lb./ac. (d) 18" between rows. (e) —. (v) 5 C.L./ac. of F.Y.M. (vi) N.A. (vii) Irrigated. (viii) One interculturing, one weeding and two thinings. (ix) 12.72". (x) N.A

2. REATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N : $N_0=0$, $N_1=15$, $N_2=30$ and $N_3=45$.

(2) 4 levels of P_2O_5 : $P_0=0$, $P_1=15$, $P_2=30$ and $P_3=45$ lb./ac.

N as G.N.C. and P_2O_5 as Super.

3. DESIGN :

(i) 4×4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) a) 19.5'×35'. (b) 13.5'×29'. (v) 3' alround. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1950 to 1952. (b) No. (c) Nil. (v) (a) Surat. (b) N.A. (vi) The rains in the 3rd week of August, 1952 were insufficient. Irrigations were given but they were given late and as such yields were very poor. (vii) The experiment was vitiated in 1951.

5. RESULTS :

(i) 386 lb./ac.

(ii) 229.4 lb./ac.

(iii) None of the effects is significant.

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

	N_0	N_1	N_2	N_3	Mean
P_0	387	356	442	446	408
P_1	314	385	410	361	367
P_2	599	420	309	475	451
P_3	468	189	271	345	318
Mean	442	338	358	407	386

S.E. of any marginal mean = 57.4 lb./ac.
S.E. of body of table = 114.7 lb./ac.

Crop :-Jowar (*Rabi*). Ref :-Gj. 53(258).

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

Object :—To study the usefulness of burying tender leaves of Sann on succeeding *Jowar*.

1. BASAL CONDITIONS :

(i) (a) No. (b) Sann. (c) Nil. (ii) (a) Medium black soil. (b) N.A. (iii) 29.9.1953. (iv (a) 6 Harrowings (b) Drilling. (c) 6 lb./ac. (d) Between rows 24". (e) N.A. (v) Nil. (vi) *Jowar* No. 8. (vii) Unirrigated. (viii) Thinning on 16.10.1953 ; Interculturing on 20.10.1953. (ix) Negligible because of *Rabi* season. (x) 28.1.1954.

2. TREATMENTS :

1. Sann grown for green manuring and buried in *situ*.
2. Sann grown for green manuring and was cut for burying in treatment(3).
3. Buried stripped leaves and tender tops from treatment(2).
4. No green manuring.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 2. (iv) (a) 90.75'×12' (b) 84.75'×12'. (v) 3' along length. (vi) Yes.

4. GENERAL :

(i) Crop growth was vigorous. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1953—1955. (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) Nil. (vii) Nil.

5. RESULTS :

(i) 1334 lb./ac.

(ii) 146.7 lb./ac.

(iii) Treatments do not differ significantly.

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

Treatment	Av. yield
1.	1322
2.	1167
3.	1503
4.	1344
S.E /mean	=103.7 lb./ac.

Crop :-Jowar (*Rabi*). Ref :-Gj. 53(257).

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

Object :—To study the usefulness of *chinamug* as a green manure on succeeding *Rabi Jowar* (Feeler trial).

1. BASAL CONDITIONS:

(i) (a) No. (b) *Jowar*. (c) Nil. (ii) (a) Medium black cotton soil. (b) N.A. (iii) 22.9.1953. (iv) (a) 6 harrowings. (b) Drilling. (c) 6 lb./ac. (d) Between rows—24" and between plants—irregular. (e) N.A (v) Nil. (vi) *Jowar* No. 8 (medium). (vii) Unirrigated. (viii) Thinning on 10.10.1953 and interculturing on 20.10.1953. (ix) *Rabi* season, hence negligible. (x) 28.1.1954.

2. TREATMENTS :

1. *Chinamug* grown in *Kharif* and buried in *situ*.
2. *Chinamug* grown in *Kharif*, cut and buried in plot receiving treatment (3).
3. No *chinamug* grown in *Kharif* but G.M. from treatment (2) buried.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 2. (iv) (a) 90.75'×12'. (b) 84.75'×12'. (v) 3' along length. (vi) Yes.

4. GENERAL :

(i) Crop growth was vigorous. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1953—1955. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1346 lb./ac.
(ii) 41.76 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1376
2.	1360
3.	1301
S.E./mean	=29.53 lb./ac.

Crop :-Jowar (*Rabi*). Ref :-Gj. 49(53).

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

Object :—To study the effect of leguminous crop (*Chinamug*) grown with and without Super on the succeeding cereal crop *Jowar*.

1. BASAL CONDITIONS :

(i) (a) *Chinamug—Jowar*. (b) *Chinamug*. (c) As per treatments. (ii) (a) Medium black. (b) N.A. (iii) 6.9.1949. (iv) (a) N.A. (b) Drilling. (c) 6 lb./ac. (d) Between rows—24' and between plants—irregular. (e) N.A. (v) Nil. (vi) *Jowar* No. 8. (vii) Unirrigated. (viii) Gap filling on 2.10.1949; thinning on 18.10.1949 and interculturing on 18 and 29.10.1949. (ix) Negligible. (x) 21 to 27.2.1950.

2. TREATMENTS :

1. Control (No P_2O_5).
2. 50 lb./ac. of P_2O_5 as Super applied to previous crop *Chinamug*.
3. 100 lb./ac. of P_2O_5 as Super applied to previous crop *Chinamug*.
4. 150 lb./ac. of P_2O_5 as Super applied to previous crop *Chinamug*.
5. Fallow in *Kharif* but Sann in *Rabi* with manuring 10 C.L./ac. of F.Y.M.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 51'×34'. (b) 47'×30'. (v) 2'all round the net plot. (vi) Yes.

4. GENERAL:

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) *Kharif* 1948—49 to *Rabi* 1954—55. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 756 lb./ac.
(ii) 113.8 lb./ac.
(iii) Treatments do not differ significantly
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	754
2.	803
3.	828
4.	779
5.	618
S.E./mean	±50.9 lb./ac.

Crop :- Jowar (*Rabi*). Ref :- Gj. 53(64).

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

Object :—To study the effect of leguminous crop (*Chinamug*) grown with and without P_2O_5 on the succeeding cereal crop *Jowar*.

1. BASAL CONDITIONS :

(i) (a) *Chinamug—Jowar—Chinamug*. (b) *Chinamug* in *Kharif*. (c) As per treatments. (ii) (a) Medium black cotton soil. (b) N.A. (iii) 27.9.1953. (iv) (a) 3 harrowings. (b) Drilling. (c) 6 lb./ac. (d) 24". (e) N.A. (v) Nil. (vi) No.8 (medium). (vii) Unirrigated. (viii) One thinning only. (ix) *Rabi* season, hence negligible. (x) 12.2.1954.

2. TREATMENTS:

1. Control (no P_2O_5).
2. 50 lb./ac. of P_2O_5 as Super to *Chinamug* in *Kharif*.
3. 100 lb./ac. of P_2O_5 as Super to *Chinamug* in *Kharif*.
4. 150 lb./ac. of P_2O_5 as Super to *Chinamug* in *Kharif*.
5. Fallow in *Kharif* and sown in *Rabi* with 10 C.L./ac. of F.Y.M.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 48'×30'. (b) 36'×18' (v) 6' all round the net plot. (vi) Yes.

4. GENERAL :

(i) Not satisfactory. (ii) No. (iii) Grain and fodder yield. (iv) (a) 1948—1954. (b) No. (c) N.A. (v) (a) Nil. (b) No. (vi) and (vii) Nil.

5. RESULTS :

(i) 343 lb./ac.
(ii) 89.37 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	279
2.	282
3.	395
4.	355
5.	405
S.E./mean	± 39.99 lb./ac.

Crop :- Jowar (*Rabi*). Ref :- Gj. 53(63).

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

Object :—To study the effect of *Lang* (legume) grown with and without P_2O_5 on the succeeding *Jowar*.

1. BASAL CONDITIONS :

(i) (a) *Lang—Jowar*. (b) *Lang*. (c) As per treatments. (ii) (a) Black cotton soil. (b) N.A. (iii) 22.9.1953. (iv) (a) 6 harrowings. (b) Drilling. (c) 8 lb./ac, (d) 24". (e) N.A. (v) Nil. (vi) *Jowar* No. 8 (medium). (vii) Unirrigated. (viii) Thinning on 16.10.1953 and interculturing on 20.10.1953. (ix) 10 cents. (x) 14.2.1954.

2. TREATMENTS:

1. Control (no P_2O_5).
2. 50 lb./ac. of P_2O_5 as Super applied to *Lang*.
3. 100 lb./ac. of P_2O_5 as Super applied to *Lang*.
4. 150 lb./ac. of P_2O_5 as Super applied to *Lang*.
5. Fallow in *Kharif* and sown in *Rabi*.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 48'×24'. (b) 44'×20'. (v) 2' all round the net plot. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Mild attack of grass hoppers. (iii) Grain yield. (iv) (a) 1952–1954. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 814 lb./ac.
(ii) 322.7 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	810
2.	721
3.	981
4.	809
5.	749
S E./mean	= 144.5 lb./ac.

Crop :- Jowar, (*Kharif*). Ref :- Gj. 53(363).

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

Object :—To determine the optimum dose of Gypsum for *Jowar*.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) No. (c) 4 C.L./ac. of F.Y.M. (ii) (a) Saline soil. (b) N.A. (iii) 3.7.1953. (iv) (a) 2 harrowings and 2 ploughings. (b) to (e) N.A. (v) Nil. (vi) Saundhia fodder variety. (vii) Unirrigated. (viii) Nil. (ix) 25.70". (x) 13.10.1953.

2. TREATMENTS :

1. Control (no gypsum).
2. 0.5 ton/ac. of gypsum applied on 15.5.1953.
3. 1.0 ton/ac. of gypsum applied on 15.5.1953.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 4. (iv) (a) and (b) 16.5'×16.5'. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Not good. (ii) Nil. (iii) Fodder and grain yield. (iv) (a) 1951—Contd (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

Fodder

(i) 402 lb./ac.
(ii) 141.3 lb./ac.
(iii) Treatment difference are not significant.
(iv) Av. yield of fodder in lb./ac.

Treatment	Av. yield
1.	378
2.	428
3.	400
S.E./mean	±70.6 lb./ac

Grain

(i) 49.73 lb./ac.
(ii 9.82 lb./ac.
(iii Treatment difference are not significant
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	47.20
2.	57.20
3.	44.80
S.E./mean	± 4.91 lb./ac.

Crop :- Jowar (*Kharif*). Ref :- Gj. 53(364).

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

Object :—To study the effect of Sulphur on yield and in improving the soil.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Banti (millets) and Motu. (c) 4 C.L./ac. of F.Y.M. (ii) (a) Saline soil. (b) N.A. (iii) 3.7.1953. (iv) (a) 2 harrowings and 2 ploughings. (b) N.A. (c) 40 lb./ac. (d) 15". (e) N.A. (v) Nil. (vi) Saundhia-fodder variety. (vii) Unirrigated. (viii) Nil. (ix) 25.70". (x) 13.10.1953

2. TREATMENTS:

1. Control (no Sulphur)
2. ¼ ton/ac. of Sulphur applied on 15.5.1953.
3. ½ ton/ac. of Sulphur applied on 15.5.1953.

3. DESIGN :

(i) R.B.D. (ii)-(a) 3. (b) N.A. (iii) 4. (iv) (a) 33'×16.5'. (b) 27'×10.5'. (v) 3' alround. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Fodder yield. (iv) (a) 1951—Contd (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1440 lb./ac.
(ii) 305.5 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of fodder in lb./ac.

Treatment	Av. yield
1.	1570
2.	1246
3.	1503
S.E./mean	± 152.7 lb./ac.

Crop :- Jowar (*Kharif*). Ref :- Gj. 49(9).

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

Object :—To study the effect of *Tur* grown with and without P_2O_5 on the succeeding cereal crop *Jowar*.

1. BASAL CONDITIONS :

(i) (a) *Tur—Jowar*. (b) *Tur*. (c) As per treatments. (ii) (a) Black cotton soil. (b) Refer soil annlysis, Surat. (iii) 24.7.1949. (iv) (a) N.A. (b) Drilled. (c) 8 to 10 lb./ac. (d) 3'×1'. (e) N.A. (v) Nil. (vi) B.P.-53. (vii) Unirrigated. (viii) 2 interculturings on 14.8.1949 and 25.8.1949; thinning on 24.8.1949. (ix) 43.42". (x) 3.2.1950.

2. TREATMENTS :

1. Control (no P_2O_5).
2. 50 lb./ac. of P_2O_5 as Super to *Tur* in *Rabi.*
3. 100 lb./ac. of P_2O_5 as Super to *Tur* in *Rabi.*
4. 150 lb./ac. of P_2O_5 as Super to *Tur* in *Rabi.*
5. Cotton *Suyog* in *Rabi.*

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N,A. (iii) 5. (iv) (a) 42′×30′. (b) 30′×18′. (v) 6′ all round the net plot. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1948—1954. (b) Yes. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1412 lb./ac.
(ii) 162.6 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1391
2.	1452
3.	1323
4.	1412
5.	1484
S.E./mean	= 72.6 lb./ac.

Crop :- Jowar (*Kharif*). Ref: - Gj. 50(16).

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

Object :—To study the effect of *Tur* grown with and without P_2O_5 on the succeeding crop *Jowar.*

1. BASAL CONDITIONS :

(i) (a) *Tur-Jowar.* (b) *Tur.* (c) As per treatments. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surat. (iii) 3.8.1950. (iv) (a) N.A. (b) Drilled. (c) 8—10 lb./ac. (d) 3′×1′. (e) N.A. (v) Nil. (vi) B.P.—53. (vii) Unirrigated. (vlii) 4 intercuturings and one thinning. (ix) 29.40″. (x) 27.1.1951.

2. TREATMENTS :

1. Control (no P_2O_5).
2. 50 lb./ac. of P_2O_5 as Super to *Tur* in *Rabi.*
3. 100 lb /ac. of P_2O_5 as Super to *Tur* in *Rabi.*
4. 150 lb./ac. of P_2O_5 as Super to *Tur* in *Rabi.*
5. Cotton *Suyog* in *Rabi.*

3. DESIGN :

(i) L. Sq. (ii) (a) 5. (b) N.A. (iii) 5. iv) (a) 42′×30′. (b) 30′×18′. (v) 6′ all round the net plot. (vi) Yes.

4. GENERAL :

(i) Growth poor in the begining. Improved later. (ii) Attack of borer and also of striga observed. (iii) Grain and straw yield. (iv) (a) 1948—1954. (b) Yes. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1122 lb./ac.
(ii) 273.5 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1182
2.	1178
3.	958
4.	1353
5.	942
S.E./mean	= 122.4 lb./ac.

Crop :- Jowar (*Kharif*). Ref :-Gj. **52(38).**

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

Object :—To study the effect of *Tur* grown with and without P_2O_5 on the succeeding crop *Jowar*.

1. BASAL CONDITIONS :

(i) (a) *Tur–Jowor*. (b) *Tur*. (c) As per treatments. (ii) (a) Black cotton soils. (b) Refer soil analysis, Surat. (iii) 23.7.1952. (iv) (a) N.A. (b) Drilled. (c) 8 to 10 lb./ac. (d) 3'×1'. (e) —. (v) Nil. (vi) B.P.—53. (vii) Unirrigated. (viii) Thinning on 22.8.1952 ; weeding on 2.9.1952 ; interculturing on 27.8.1952 ; 30.9.1952 ; 10.10.1952. (ix) 20.18". (x) 20.1.1953.

2. TREATMENTS :

1. Control (no P_2O_5).
2. 50 lb./ac. of P_2O_5 as Super to *Tur* in *Rabi*.
3. 100 lb./ac. of P_2O_5 as Super to *Tur* in *Rabi*.
4. 150 lb./ac. of P_2O_5 as Super to *Tur* in *Rabi*.
5. Cotton *Suyog* in *Rabi*.

3. DESIGN :

(i) L. Sq. (ii) (a) 5. (b) N.A, (iii) 5. (iv) (a) 42'×30'. (b) 30'×18'. (v) 6' all round the net plot. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1948—1954. (b) Yes. (c) N.A. (v) (a) N.A. (b) N.A. (vi) Nil. (vii) Experiment failed in the year 1951.

5. RESULTS :

(i) 852 lb./ac.
(ii) 173.4 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	866
2.	823
3.	845
4.	931
5.	797
S.E./mean	=77.6 lb./ac.

Crop :- Jowar (*Kharif*). Ref :- Gj. **53(43),**

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

Object :—To study the effect of *Tur* grown with and without P_2O_5 on the succeeding crop *Jowar*.

1. BASAL CONDITIONS :

(i) (a) *Jowar-Tur*. (b) Cotton and *Tur*. (c) As per treatments. (ii) (a Black cotton soil. (b) Refer soil analysis, Surat. (iii) 21.7.1953. (iv) (a) 2 harrowings. (b) Drilling. (c) 10 lb./ac. (d) 3'×1'. (e) N.A. (v) Nil (vi) B.P.—53 (late). (vii) Unirrigated. (viii) Once thinning, twice weeding and thrice interculturings. (ix) 58". (x) 3.2.1954.

2. TREATMENTS :

1. Control (no P_2O_5).
2. 50 lb./ac. of P_2O_5 as Super to *Tur* in *Rabi*.
3. 100 lb./ac. of P_2O_5 as Super to *Tur* in *Rabi*.
4. 150 lb./ac. of P_2O_5 as Super to *Tur* in *Rabi*.
5. Cotton *Suyog* in *Rabi*.

3. DESIGN :

(i) L. Sq. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 42'×30'. (b) 30'×18'. (v) 6' all round the net plot. (vi) Yes.

4. GENERAL :

(i) *Jowar* in rotation with *Tur* was taller than *Jowar* after cotton. *Jowar* after cotton was late by about 15 days. (ii) Attack of Stemborer to *Jowar* to the extent of about 50%. (iii) Periodical height and weight of *kadbi* were taken. (iv) (a) 1948—1954. (b) Yes. (c) N.A. (v) (a) N.A. (b) N.A. (vi) Season was abnormal. (vii) Nil.

5. RESULTS :

(i) 1347 lb./ac.
(ii) 112.1 lb./ac.
(iii) Treatments differ significantly.
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1539
2.	1303
3.	1375
4.	1541
5.	976
S.E./mean	=50.0 lb./ac.

Crop :- Jowar (*Kharif*). **Ref :- Gj. 48(86).**

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

Object :—To study the N and P_2O_5 requirements of *Jowar* without a basal dose of F.Y.M.

1. BASAL CONDITIONS :

(i) (a), (b) and (c) N.A. (ii) (a) Deep black. (b) Refer soil analysis, Surat. (iii) N.A. (iv) (a) to (e) N.A. (v) Nil. (vi) B.P.—53. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) N.A.

2. TREATMENTS :

All combinations of (1) and (2)
(1) 4 levels of N as A/S : N_0=0, N_1=20, N_2=40 and N_3=60 lb./ac.
(2) 4 levels of P_2O_5 as Super : P_0=0, P_1=20, P_2=40 and P_3=60 lb./ac.

3. DESIGN :

(i) 4×4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 27'×42'. (b) 15'×30'. (v) 6' all round. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain and fodder yield. (iv) (a) 1948—1951. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1710 lb./ac.
(ii) 266.4 lb./ac.
(iii) Only main effect of N is significant.
(iv) Av. yield of grain in lb./ac.

	N_0	N_1	N_2	N_3	Mean
P_0	1670	1718	1525	1682	1649
P_1	1452	1658	1730	1888	1682
P_2	1694	1930	1748	1888	1815
P_3	1779	1519	1730	1742	1693
Mean	1649	1706	1683	1800	1710

S.E. of any marginal mean = 66.6 lb./ac.
S.E. of body of table =133.2 lb./ac.

Crop :- Jowar (*Kharif*). Ref :- Gj. 49(115).

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

Object :—To study the N and P_2O_5 requirements of *Jowar* without a basal dose of F.Y.M.

1. BASAL CONDITIONS :

(i) (a), (b) and (c) N.A. (ii) (a) Deep black. (b) Refer soil analysis, Surat. (iii) 7.8.1949/2.9.1949. (iv) (a) to (e) N.A. (v) Nil. (vi) B.P.—53. (vii) Unirrigated. (viii) 4 interculturings on 25, 27.8.1949 ; 3,9 and 17.10.1949. Thinning on 2.9.1949. Weeding on 27.8.1949. (ix) 12.50". (x) 5.2.1950.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N as A/S : $N_0=0$, $N_1=20$, $N_2=40$ and $N_3=60$ lb./ac.

(2) 4 levels of P_2O_5 as Super : $P_0=0$, $P_1=20$, $P_2=40$ and $P_3=60$ lb./ac.

3. DESIGN :

(i) 4×4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 27'×42'. (b) 15'×30'. (v) 6' all-round. (vi) Yes.

4. GENERAL :

(i) Plots receiving higher dose of N showed vigorous growth. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1948—1951. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1332 lb./ac.

(ii) 213.6 lb./ac.

(iii) Only main effect of N is significant.

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

	N_0	N_1	N_2	N_3	Mean
P_0	1182	1276	1352	1606	1354
P_1	883	1303	1528	1745	1365
P_2	1004	1334	1382	1615	1334
P_3	1031	1113	1392	1561	1274
Mean	1025	1257	1414	1632	1332

S.E. of any marginal mean = 53.4 lb./ac.

S.E. of body of table = 106.8 lb./ac.

— ——

Crop :-Jowar (*Kharif*). Ref :-Gj. 50(137).

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

Object :—To study the N and P_2O_5 requirements of *Jowar* without a basal dose of F.Y.M.

1. BASAL CONDITIONS

(i) (a) N.A. (b) Cotton. (c) Nil. (ii) (a) Deep black. (b) Refer soil analysis, Surat. (iii) 7.8.1950. (iv) (a) N.A. (b) Drilling. (c) 8 to 10 lb./ac. (d) 3'×1', (e) N.A. (v) Nil. (vi) B.P.—53. (vii) Unirrigated. (viii) 3 interculturings on 24.8.1950, 25.9.1950 and 10.10.1950 ; weeding on 29.8.1950 and thinning on 31.8.1950. (ix) 29.40". (x) 23.1.1951.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N as A/S : $N_0=0$, $N_1=20$, $N_2=40$ and $N_3=60$ lb./ac.

(2) 4 levels of P_2O_5 as Super : $P_0=0$, $P_1=20$, $P_2=40$ and $P_3=60$ lb./ac.

3. DESIGN :

(i) 4×4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 27'×42'. (b) 15'×40'. (v) 6' all round. (vi) Yes.

4. GENERAL :

(i) Vigorous growth in plots receiving higher doses of N. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1948—1951. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1190 lb./ac.
(ii) 210.5 lb./ac.
(iii) Only the main effect of N is highly significant.
(iv) Av. yield of grain in lb./ac.

	N_0	N_1	N_2	N_3	Mean
P_0	923	1155	1137	1234	1112
P_1	916	1089	1161	1564	1182
P_2	983	1192	1255	1422	1213
P_3	974	1041	1428	1573	1254
Mean	949	1119	1245	1448	1190

S.E. of marginal means = 52.6 lb./ac.
S.E. of body of table =105.3 lb./ac.

Crop :-Jowar (*Kharif*). **Ref :-Gj. 51(18).**

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

Object : -To study the N and P_2O_5 requirements of *Jowar* without a basal dose of F.Y.M.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) Cotton. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analyris, Sub-t. (iii) 14.8.1951. (iv) (a) N.A. (b) Drilling. (c) 8 to 10 lb./ac. (d) 3′×1′. (e) —. (v) Nil. (vi) B.P.—53. (vii) Unirigated. (viii) Thinning on 7.9.1951 ; interculturing on 8.9 1951, 21.8.1951 and 11.10.1951. and weeding on 31.8.1951. (ix) 23.22″. (x) 2 and 3.2.1952.

2. TREATMENTS :

All combinations of (1) and (2)
(1) 4 levels of N : N_0=0, N_1=20, N_2=40 and N_3=60 lb./ac.
(2) 4 levels of P_2O_5 : P_0=0, P_1=20, P_2=40 and P_3=60 lb./ac.
N as G.N.C. and P_2O_5 as Super. Manures applied on 18.8.1951.

3. DESIGN :

(i) 4×4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 3. (iv) (a) 27′×42′. (b) 15′×30′. (x) 6′ ring all round the net plot. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of stem borer in the earlier stage and attack of shoot borer at earing time observed. (iii) Grain and fodder yield. (iv) (a) 1948—1951. (b) No. (c) N.A. (v) (a) Amreli and Surat. (b) N.A. (vi) Nil. (vii) Originally 4 replications were laid out. But replication No. 1 was dropped as majority of the plot yields were low due to attack of stem borer.

5. RESULTS :

(i) 1556 lb./ac.
(ii) 284.5 lb./ac.
(iii) None of the effects is significant.

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

	N_0	N_1	N_2	N_3	Mean
P_0	1223	1618	1543	1555	1485
P_1	1412	1533	1901	1510	1589
P_2	1422	1569	1678	1506	1544
P_3	1365	1628	1973	1452	1605
Mean	1356	1587	1774	1506	1556

S.E. of any marginal mean = 82.1 lb./ac.
S.E. of body of table = 164.2 lb./ac.

Crop :- Jowar (*Kharif*). **Ref :- Gj. 48(6).**

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

Object :—To study the N and P_2O_5 requirements of *Jowar* with a basal dose of F.Y.M.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*. (b) Cotton. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surat. (iii) N.A. (iv) (a) N.A. (b) Drilled. (c) 10 lb./ac. (d) 3'×1'. (e) N.A. (v) 5 C.L./ac. of F.Y.M. (vi) B.P.—53. (vii) Unirrigated. (viii) 1 thinning, 3 interculturings and 1 weeding. (ix) 16.70". (x) N.A.

2. TREATMENTS :

All combinations of (1) and (2)
(1) 4 levels of N as A/S : N_0=0, N_1=20, N_2=40 and N_3=60 lb./ac.
(2) 4 levels of P_2O_5 as Super : P_0=0, P_1=20, P_2=40 and P_3=60 lb./ac.

3. DESIGN :

(i) 4×4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 27'×42'. (b) 15'×30'. (v) 6' ring all round the net plot. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1913—1957. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) Nil. (vii) Two sites are maintained for the experiment and the experiment is brought to same site every alternate year.

5. RESULTS :

(i) 1858 lb./ac.
(ii) 270.0 lb./ac.
(iii) None of the effects is significant.
(iv) Av. yield of grain in lb./ac.

	N_0	N_1	N_2	N_3	Mean
P_0	1748	1809	1597	2136	1823
P_1	1791	1803	1785	1791	1793
P_2	1821	2051	1930	1863	1916
P_3	1634	1845	2009	2118	1902
Mean	1749	1877	1830	1977	1858

S.E. of any marginal mean = 67.5 lb./ac.
S.E. of body of table = 135.0 lb./ac.

Crop :- Jowar (*Kharif*). Ref :- Gj. 49(8).

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

Object :—To find out the N and P_2O_5 requirements of *Jowar* with a basal dose of F.Y.M.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*. (b) Cotton. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surat. (iii) 7.8.1949. (iv) (a) N.A. (b) Drilled. (c) 10 lb./ac. (d) 3'×1'. (e) —. (v) 5 C.L./ac. of F.Y.M. (vi) B.P.–53. (vii) Unirrigated. (viii) Thinning on 2.9.1949 and interculturings on 26 and 27.8.1949, 3.9.1949 and 17.10.1949 and weeding on 27.8.1949. (ix) 45.42". (x) 7.2.1950.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N : N_0=0, N_1=20, N_2=40 and N_3=60 lb./ac.

(2) 4 levels of P_2O_5 : P_0=0, P_1=20, P_2=40 and P_3=60 lb./ac.

N as G.N.C. and P_2O_5 as Super. Manuring done on 30.7.1949 by broadcast.

3. DESIGN :

(i) 4×4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 42'×27'. (b) 30'×15'. (v) 6' ring all round the net plot. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1948—1952. (b) No. (c) N.A. (v) (a) Amreli and Surat. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1493 lb./ac.

(ii) 150.6 lb./ac.

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

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

	N_0	N_1	N_2	N_3	Mean
P_0	1219	1316	1691	1860	1522
P_1	1188	1297	1703	1830	1505
P_2	1007	1213	1524	1872	1404
P_3	1186	1373	1682	1927	1542
Mean	1150	1300	1650	1872	1493

S.E. of any marginal mean =37.6 lb./ac.

S.E. of body of table =75.3 lb./ac.

Crop :- Jowar (*Kharif*). Ref :- Gj. 50(17).

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

Object :- To study the N and P_2O_5 requirements of *Jowar* with a basal dose of F.Y.M.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) Cotton. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surat. (iii) 7.8.1950. (iv) (a) N.A. (b) Drilling. (c) 8 to 10 lb./ac. (d) 3'×1'. (e) —. (v) 5 C.L./ac. of F.Y.M. (vi) B.P.–53. (vii) Unirrigated. (viii) Thinning once, weeding once and interculturing thrice. (ix) 29.40". (x) 23.1.1951.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N : N_0=0, N_1=20, N_2=40 and N_3=60 lb./ac.

(2) 4 levels of P_2O_5 : P_0=0, P_1=20, P_2=40 and P_3=60 lb./ac.

N as A/S and P_2O_5 as Super. Manures applied on 6.8.1950.

3. DESIGN :

(i) 4×4 Fact. in R.B.D. (ii) 16. (b) N.A. (iii) 4. (iv) (a) 27′×42′. (b) 15′×30′. (v) 6′ ring all round the net plot. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1948–1952. (b) No. (c) N.A. (v) (a) Amreli. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1384 lb./ac.
(ii) 200.2 lb./ac.
(iii) Main effect of N alone is highly significant.
(iv) Av. yield of grain in lb./ac.

	N_0	N_1	N_2	N_3	Mean
P_0	1195	1261	1173	1818	1362
P_1	1110	1192	1403	1591	1324
P_2	922	1440	1597	1430	1347
P_3	934	1403	1682	1984	1501
Mean	1040	1324	1464	1706	1384

S.E. of any marginal mean = 50.5 lb./ac.
S.E. of body of table = 101.0 lb./ac.

Crop :- Jowar (*Kharif*). Ref :- Gj. 51(17).
Site :- Agri. Res. Stn., Surat. Type :- 'M'.

Object :- To study the N and P_2O_5 requirements of *Jowar* with a basal dose of F.Y.M..

1. BASAL CONDITIONS :

(i) (a) *Jowar*-Cotton. (b) Cotton. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surat. (iii) 23.7.1951. (iv) (a) N.A. (b) Drilling. (c) 10 lb./ac. (d) 3′×1′. (e) —. (v) 5 C.L./ac. of F.Y.M. (vi) B.P.—53. (vii) Unirrigated. (viii) Thinning once, weeding twice and interculturing thrice. (ix) 23.22". (x) 2, 3.2.1952.

2. TREATMENTS :

All combinations of (1) and (2)
(1) 4 levels of N : N_0=0, N_1=20, N_2=40 and N_3=60 lb./ac.
(2) 4 levels of P_2O_5 : P_0=0, P_1=20, P_2=40 and P_3=60 lb./ac.
N as G.N.C. and P_2O_5 as Super.

3. DESIGN :

(i) 4×4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 27′×42′. (b) 15′×30′. (v) 6′ ring round the net plot. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Severe attack of Stem-borer in the earlier stages and attack of shoot borer at the earing time observed. (iii) Grain and straw yield. (iv) (a) 1948–1952. (b) No. (c) N.A. (v) (a) Amreli. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1729 lb./ac.
(ii) 273.2 lb./ac.
(iii) None of the effects is significant.

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

	N_0	N_1	N_2	N_3	Mean
P_0	1575	1652	2166	1824	1804
P_1	1593	1815	1621	1754	1696
P_2	1752	1815	1912	1962	1860
P_3	1559	1488	1630	1552	1557
Mean	1620	1693	1832	1773	1729

S.E. of any marginal mean = 68.3 lb./ac.
S.E. of body of table =136.6 lb./ac.

Crop :- Jowar (*Kharif*). **Ref :- Gj. 52(358).**

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

Object :—To study the N and P_2O_5 requirements of *Jowar* with a basal dose of F.Y.M.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) N.A. (c) N.A. (ii) (a) Deep black cotton soil. (b) Refer soil analysis, Surat. (iii) 23.7.1952. (iv) (a) N.A. (b) Drilling. (c) 10 lb./ac. (d) 3'×1'. (e)—. (v) 5 C.L./ac. of F.Y.M. (vi) B.P.—53. (vii) Unirrigated. (viii) One interculturing and one weeding. (ix) 20.18". (x) N.A.

2. TREATMENTS :

All combinations of (1) and (2)
(1) 4 levels of N : N_0=0, N_1=20, N_2=40 and N_3=60 lb./ac.
(2) 4 levels of P_2O_5: P_0=0, P_1=20, P_2=40 and P_3=60 lb./ac.
N as G.N C. and P_2O_5 as Super.

3. DESIGN :

(i) 4×4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 42'×27'. (b) 30'×15'. (v) 6' ring alround. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1948—1952. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 779 lb./ac.
(ii) 174.0 lb /ac.
(iii) Main effect of N alone is significant.
(iv) Av. yield of grain in lb./ac.

	N_0	N_1	N_2	N_3	Mean
P_0	813	656	784	786	760
P_1	888	811	624	653	744
P_2	891	840	699	736	792
P_3	944	825	694	811	819
Mean	884	783	700	747	779

S.E. of any marginal mean =43.5 lb./ac.
S.E. of body of table =87.0 lb./ac.

Crop :- Jowar (*Kharif*). Ref :- Gj. 52(359).

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

Object :—To study the N, P_2O_5 and F.Y.M. requirements of *Jowar*.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Deep black cotton soil. (b) Refer soil analysis, Surat. (iii) 3.8.1952. (iv) (a) N.A. (b) Drilling. (c) 8—10 lb./ac. (d) 3'×1'. (e) —. (v) Nil. (vi) B.P.—53. (vii) Unirrigated. (viii) One interculturing, one weeding and one thinning. (ix) 20.18". (x) N.A.

2. TREATMENTS :

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

(1) 3 levels of N : N_1=40, N_2=60 and N_3=80 lb./ac.

(2) 2 levels of P_2O_5 : P_1=20 and P_2=40 lb./ac.

(3) 2 levels of F.Y.M. : F_1=5 and F_2=10 C.L./ac.

N as A/S and G.N.C. in 1 : 1 ratio and P_2O_5 as Super. Manures applied on 2.7.1952.

3. DESIGN :

(i) 3×2×2 Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 42'×18'. (b) 30'×12'. (c) 3'×3'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) N.A. (iii) Grain and fodder yield. (iv) (a) 1952—N.A. (b) N.A. (c) Nil. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

5. RESULTS

(i) 1290 lb./ac.

(ii) 722.1 lb./ac.

(iii) Only the interaction N×F is significant.

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

	N_1	N_2	N_3	Mean	F_1	F_2
P_1	903	1406	1081	1130	1071	1189
P_2	1209	1629	1512	1450	1517	1383
Mean	1056	1518	1297	1290	1294	1286
F_1	1341	1633	907			
F_2	771	1402	1686			

S.E. of marginal mean of N	=180.5 lb./ac.
S.E. of marginal mean of P or F	=147.4 lb./ac.
S.E. of body of N×P or N×F table	=255.1 lb./ac.
S.E. of body of table	=208.5 lb./ac.

Crop :- Jowar (*Kharif*). Ref :- Gj. 53(45).

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

Object :—To study the N, P_2O_5 and F.Y.M. requirements of *Jowar*.

1. BASAL CONDITIONS :

(i) (a) *Jowar* - Cotton. (b) Cotton. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surat. (iii) N.A. (iv) (a) 2 to 3 harrowings. (b) Drilling. (c) 10 lb./ac. (d) 3'×1'. (e) —. (v) Nil. (vi) B.P.—53 (late). (vii) Unirrigated. (viii) 2 weedings, 2 thinnings and 3 interculturings. (ix) 58". (x) N.A.

2. TREATMENTS :

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

(1) 3 levels of N : N_1=40, N_2=60 and N_3=80 lb./ac.

(2) 2 levels of P_2O_5 : P_1=20 and P_2=40 lb./ac.

(3) 2 levels of F.Y.M. : F_1=5 and F_2=10 C.L./ac.

N as A/S and P_2O_5 as Super.

3. DESIGN :

(i) 3×2×2 Fact in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 42′×18′. (b) 30′×12′. (v 6′×3′. (vi) Yes.

4. GENERAL :

(i) In the early stages of *Jowar* growth, some of the plots were gappy due to Stem-borer attack and in most of the plots 3 to 4 shoots sprouted per hill and remaining were stunted and unraised due to lack of moisture in later part of the season. (ii) There was attack of Stem-borer of intensity 85%. (iii) Height of *Jowar* plant, no. of plants per plot and weight of *Kalbi*/plot was taken. (iv) (a) 1948—1954 (modified in 1952-53). (b) Two different plots for experiment were kept. The same treatments were being followed to the same sub-plot in every alternate year. (c) N.A. (v) (a) and (b) N.A. (vi) 46″ of rainfall in July and August in place of 42″ average for every year. (vii) Nil.

5. RESULTS :

(i) 579 lb./ac.

(ii) 207.3 lb./ac.

(iii) Only the interaction N×F is significant.

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

	N_1	N_2	N_3	Mean	F_1	F_2
P_1	646	546	610	601	575	626
P_2	530	580	563	558	539	576
Mean	588	563	586	579	557	601
F_1	557	459	655			
F_2	619	667	517			

S.E. of marginal mean of N =52.0 lb./ac.
S.E. of marginal mean of P or F =42.4 lb./ac.
S.E. of body of N×P or N×F table =73.4 lb./ac.
S.E. of body of P×F table P×F =59.8 lb./ac.

Crop :- Jowar (*Kharif*). Ref :- Gj. 52(235).

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

Object :—To study the suitability of using Di-calcium phosphate in place of Super.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*. (b) Cotton. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Deep black. (b) Refer soil analysis, Surat. (iii) 3.8.1952. (iv) (a) N.A. (b) Drilling. (c) 8 to 10 lb./ac. (d) 3′×1′. (e) N.A. (v) C.L./ac. of F.Y.M.+60 lb./ac. of N as A/S. (vi) B.P.—53. (vii) Unirrigated. (viii) 4 interculturings, weedings and 1 thinning. (ix) 19.98″. (x) 23.1.1953.

2. TREATMENTS :

1. Di-calcium phosphate at 20 lb./ac. of P_2O_5.
2. Super at 20 lb./ac. of P_2O_5.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 12. (iv) (a) 21′×42′. (b) 9′×30′. (v) 6′ ring round the net plot. (vi) Yes.

4. GENERAL :

(i) Vigorous growth in the beginning. Later affected adversely due to lack of sufficient moisture. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1952—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 569 lb./ac.
(ii) 297.6 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	611
2.	527
S.E./mean	= 85.9 lb./ac.

Crop :- Jowar (*Kharif*). Ref :- Gj. 53 (286).

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

Object :—To study the suitability of using Di-calcium phosphate in place of Super.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) Cotton. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surat. (iii) 13.8.1953. (iv) (a) 2 harrowings. (b) Drilling. (c) 10 lb./ac. (d) 3'×1'. (e) N.A. (v) 5 C.L./ac. of F.Y.M.+60 lb./ac. of N as A/S. (vi) B.P.–53 (late). (vii) Unirrigated. (viii) 2 weedings, 2 thinnings and 4 interculturings. (ix) 58". (x) 12.2.1954.

2. TREATMENTS :

1. Dicalcium phosphate at 20 lb./ac. of P_2O_5.
2. Super at 20 lb./ac. of P_2O_5.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 12. (iv) (a) 42'×21'. (b) 30'×9'. (v) 6' round the net plot. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Stem-borer attack—85 to 90%. (iii) Grain yield. (iv) (a) 1952-53. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) No rains in the later part of the season. (vii) Nil.

5. RESULTS :

(i) 855 lb./ac.
(ii) 218.2 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	807
2.	903
S.E./mean	= 62.9 lb./ac.

Crop :- Jowar (*Kharif*). Ref :- Gj. 52(234).

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

Object :—To study the effect of calcium cynamide on growth and yield of *Jowar*.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*. (b) Cotton. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Deep black. (b) Refer soil analysis, Surat. (iii) 9.8.1952. (iv) (a) N.A. (b) Drilling (c) 8 to 10 lb./ac. (d) 3'×1'. (e) N.A. (v) N.A. (vi) B.P.–53. (vii) Unirrigated. (viii) 3 interculturings, 2 weedings and 1 thinning. (ix) 19.98". (x) 21.1.1953.

2. TREATMENTS :

1. 60 lb./ac. of N as A/S.
2. 60 lb./ac. of N as G.N.C. and A/S in 1 : 1 ratio.
3. 60 lb./ac. of N as Calcium cynamide.
4. 60 lb./ac. of N as G.N.C. and Calcium cynamide in 1 : 1 ratio.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 2. (iv) (a) 74′×30′. (b) 62′×18′. (v) 6′ alround. (vi) Yes.

4. GENERAL :

(i) Poor. (ii) Severe attack of Stem-borer. (iii) Grain and fodder yield. (iv) (a) 1952—N.A. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 156 lb./ac.
(ii) N.A.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	210
2.	99
3.	98
4.	217
S.E./mean	= N.A.

Crop :- Jowar. (*Kharif*). Ref :- Gj. 53(308).

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

Object :—To study the effect of calcium cynamide on growth and yield of *Jowar*.

1. BASAL CONDITIONS :

(i) (a) *Jowar*-Cotton. (b) Cotton. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surat. (i i) 21.7.1953. (iv) (a) 2 harrowings. (b) Drilling. (c) 10 lb./ac. (d) 3′×1′. (e)—. (v) 5 C.L./ac. of F.Y.M. (vi) B.P.—53 (late). (vii) Unirrigated. (viii) 2 weedings, 4 interculturings and 1 thinning. (ix) 58″. (x) 8.2.1954.

TREATMENTS :

1. 60 lb./ac. of N as A/S.
2. 60 lb./ac. of N as A/S and G.N.C. in 1 : 1. ratio.
3. 60 lb./ac. of N as Calcium cynamide.
4. 60 lb./ac. of N as Calcium cynamide and G.N.C. in 1 : 1 ratio.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 3. (iv) (a) 74′×30′. (b) 62′×18′. (v) 6′ all round the plot. (vi) Yes.

4. GENERAL :

(i) Growth was stunted and 2 to 3 shoots sprouted per hill due to attack of Stem-borer. (ii) Severe attack of Stem-borer-85 to 90%. No control measures taken. (iii) Grain and *Kadbi* yield. (iv) (a) 1952—1954. (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 668 lb./ac.
(ii) 111.7 lb./ac.
(iii) Treatments differ significantly.
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	734
2.	854
3.	790
4.	293
S.E./mean	= 79.0 lb./ac.

Crop :- Jowar (*Kharif* and fodder crop). Ref :- Gj. 53(170).

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

Object :—To study the effect of Calcium cynamide on the yield of *Jowar*.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*. (b) Cotton. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Alluvial, medium black. (b) Refer soil analysis, Viramgaum. (iii) 10.7.1950. (iv) (a) 3 harrowings and no ploughings. (b) Drilling. (c) 30 lb./ac. (d) Between rows—18" and between plants—irregular. (e) N.A. (v) 5 C.L./ac. of F.Y.M in May 1953, broadcast. (vi) C-10-2 (fodder mid-late). (vii) Unirrigated. (viii) 1 weeding on 15.7.1953 2 interculturings on 23.7.1953 and 8.8.1953. (ix) 37.85". (x) N.A.

2. TREATMENTS :

1. Control (no manure).
2. 60 lb./ac. of N as A/S.
3. 60 lb./ac. of N as A/S and G.N.C. in 1 : 1 ratio.
4. 60 lb./ac. of N as Calcium cyanamide.
5. 60 lb /ac. of N as Calcium cynamide and G.N.C. in 1 : 1 ratio.

N applied one month after sowing.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 2. (iv) (a) N.A. (b) 72'×12'. (v) 2 rows round the net plot. (vi) Yes.

4. GENERAL :

(i) Due to unusual rains, flooding occurred in the plots affecting the crop considerably. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1953—1954. (b) No. (c) N.A. (v) (a) No (b) N.A. (vi) Nil. (vii) *Jowar* crop was a fodder crop and the yield data for fodder was also analysed.

5. RESULTS :

Grain		Fodder	
(i)	541 lb./ac.	(i)	6453 lb./ac.
(ii)	54.75 lb./ac.	(ii)	920.7 lb./ac.
(iii)	Treatments do not differ significantly.	(iii)	Treatments do not differ significantly.
(iv)	Av. yield of grain in lb./ac.	(iv)	Av. yield of fodder in lb./ac.

Treatment	Av. yield	Treatment	Av. yield
1.	481	1.	6050
2.	553	2.	7336
3.	512	3.	6201
4.	554	4.	6957
5.	604	5.	5722
S.E./mean	= 38.71 lb./ac.	S.E./mean	= 658.2 lb./ac.

Crop :-Jowar (*Kharif*). Ref :-Gj.52(248).

Centre :-Chorasi. Type :-'M'.

Object —To study the response of *Jowar* to N applied singly and in combination with P_2O_5.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Cotton at Variz. ; Cotton and *Jowar* at Lajpur. (c) 15 to 20 C.L./ac. of F.Y.M. at Variz No manure at Lajpur. (ii) Black in Variz and loamy in Lajpur. (iii) 5 C.L./ac. of F.Y.M. (iv) N.A. (v) (a), (b) and (c) N.A. (d) Between rows—38". (e) N.A. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) 30.1.1953.

2. TREATMENTS :

1. Control (no manure).
2. 60 lb./ac. of N.
3. 60 lb./ac. of N+20 lb./ac. of P_2O_5.

N applied as a mixture of A/S and G.N.C. ; P_2O_5 applied as Super.

3. DESIGN :

(i) and (ii) Villages were selected at random from a *taluka* and a list was prepared. From this list, few villages were chosen retaining the serial order. The site in a village was located by a randomly selected survey number. In each village, two fields were selected. (iii) (a) 72′×30′. (b) 60′×18′. (iv) Yes.

4. GENERAL :

(i) Normal. (ii) No. (iii) Grain and straw yield. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1392 lb./ac.
(ii) 411.0 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield.
1.	1336
2.	1275
3.	1565
S.E./mean	=205.5 lb./ac.

Crop :-Jowar (*Kharif*). Ref :-Gj. 52(247).

Centre :-Mandis. Type :-'M'.

Object :—To study the response of *Jowar* to N applied singly and in combination with P_2O_5.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Cotton. (c) No manuring except in one village at one site where 5 C L./ac. of F.Y.M. was given. (ii) Alluvial with medium level for one trial in each village, Murum with zinc-stone at remaining site. (iii) 5 to 7 C.L./ac. of F.Y.M. (iv) Local variety. (Late) (v) (a), (b) and (c) N.A. d) Between-rows—2′; between plants ½′, to ¾′. (e) N.A. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) 34.62″. (x) 24.12.1952 to 21.1.1953.

2. TREATMENTS :

1. Control (no manure).
2. 60 lb /ac. of N.
3. 60 lb./ac. of N+20 lb./ac. of P_2O_5.

N as A/S+G.N.C. in 1 : 1 ratio and P_2O_5 as Super.

3. DESIGN :

(i) and (ii) Villages were selected at random from a *taluka* and a list was prepared. From this list, few villages were chosen retaining the serial order. The site in a village was located by a randomly selected survey number. In each village, two fields were selected (iii) (a) 72′×30′. (b) 60′×18′. (iv) Yes

4. GENERAL :

(i) Due to lack of rain, growth was not normal in some plots. (ii) Nil. (iii) Grain and straw yield. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1311 lb./ac.
(ii) 311.4 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1100
2.	1249
3.	1585
S.E./mean	=155.70 lb./ac.

Crop :-Jowar (*Kharif*). Ref :-Gj. 52(246).

Centre :-Mangrol. Type :-'M'.

Object :—To study the response of *Jowar* to N applied singly and in combination with P_2O_5.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Cotton. (c) F.Y.M. and compost manure 1800 lb./ac. (ii) Medium black. (iii) 250 lb./ac. of F.Y.M. (5 C.L./ac.). (iv) Local (medium-late). (v) (a) to (c) N.A. (d) Between rows—24". (e) N.A. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) 26.69." (x) 24.1.1953.

2. TREATMENTS :

1. Control.
2. 50 lb./ac. of N.
3. 60 lb./ac. of N+20 lb./ac. of P_2O_5.

N as A/S+G.N.C. in 1 : 1 ratio and P_2O_5 as Super.

3. DESIGN :

(i) and (ii) Villages were selected at random from a *taluka* and a list was prepared. From this list, few villages were chosen retaining the serial order. The site in a village was located by a randomly selected survey number. In each village, two fields were selected. (iii) (a) 72'×30'. (b) 60'×18'. (iv) Yes.

4. GENERAL :

(i) Stunted growth. (ii) No. (iii) Grain and straw yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 412.5 lb./ac.
(ii) 93.97 lb /ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	508.0
2.	419.2
3.	310.3
S.E./mean	=48.98 lb./ac.

Crop :-Jowar (*Kharif*). Ref :-Gj. 52(245).

Centre :-Navsari. Type :-'M'.

Object :—To study the response of *Jowar* to Napplied singly and in combination with P_2O_5.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Cotton. (c) Nil. (ii) Loamy soil. (iii) 5 C.L./ac. of F.Y.M. (iv) Local. (v) (a) to (c) N.A. (d) Between rows—72" and between plants—18". (e) N.A. (vi) N.A. (vii) Unirrigated (viii) N.A. (ix) 31.80". (x) 7 to 17.1.1953.

2. TREATMENTS :

1. Control (no manure).
2. 60 lb./ac. of N.
3. 60 lb./ac. of N+20 lb./ac. of P_2O_5

N as A/S+G.N.C. in 1 : 1 ratio and P_2O_5 as Super.

3. DESIGN :

(i) and (ii) Villages were selected at random from a *taluka* and a list was prepared. From this list, few villages were chosen retaining the serial order. The site in a village was located by a randomly selected survey number. In each village, two fields were selected. (iii) (a) 72'×30' (b) 60'×18'. (iv) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain and straw yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1623 lb./ac.
(ii) 75.42 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1864
2.	1583
3.	1422
S.E./mean	=53.34 lb./ac.

Crop :- Jowar (*Kharif*). Ref :- Gj. 52(244).

Centre :- Olpad. Type :- 'M'.

Object :—To study the response of *Jowar* to N applied singly and in combination with P_2O_5.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Cotton. (c) 12 to 20 C.L./ac. of F.Y.M. at Sonasak and no F.Y.M. at Umpara. (ii) Medium black. iii) N.A. (iv) Mid-late variety at Umpara ; B.P.—53 at Sonasak. (v) (a), (b) and (c) N.A. (d) Between rows 4' ; between plants 1½'. (e) N.A. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) 14.62". (x) 15.1.1953.

2. TREATMENTS :

1. Control (no manure)
2. 60 lb./ac. of N.
3. 60 lb./ac of N+20 lb./ac. of P_2O_5.

N as A/S+G.N.C. in 1 : 1 ratio and P_2O_5 as Super.

3. DESIGN :

(i) and (ii) Villages were selected at random from a *taluka* and a list was prepared. From this list few villages were chosen retaining the serial order. The site in a village was located by a randomly selected survey number. In each village two fields were selected. (iii) (a) 72'×30'. (b) 60'×18'. (iv) Yes.

4. GENERAL :

(i) Stunted growth. (ii) Nil. (iii) Grain and straw yield. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 153.6 lb./ac.
(ii) 60.50 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	145.6
2.	117.7
3.	197.6
S.E./mean	=15.12 lb./ac.

Crop :- Jowar (*Kharif*). Ref :- Gj. 52(241).

Centre :- Palsana. Type :- 'M'.

Object :—To study the response of *Jowar* to N applied singly and in combination with P_2O_5.

BASAL CONDITIONS :

(i) (a) N.A. (b) Cotton. (c) Nil. except at one site in Tundi where 5 C.L. of F.Y.M./*bigha* was applied. (ii) Medium black. (iii) 5 C.L./ac. of F.Y.M. (iv) Local (mid-late). (v) (a), (b) and (c) N.A. d) Between rows 3' to 8' ; between plants—12". (e) N.A. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) 14.1.1953 to 22.1.1953.

2. TREATMENTS :

1. Control (no manure).
2. 60 lb./ac. of N.
3. 60 lb./ac. of N+20 lb./ac. of P_2O_5.

N as A/S+G.N.C. in 1 : 1 ratio and P_2O_5 as Super.

3. DESIGN :

(i) and (ii) Villages were selected at random from a *taluka* and a list was prepared. From this list few villages were chosen retaining the serial order. The site in a village was located by a randomly selected survey number In each village, two fields were selected. iii) (a) 72' × 30'. (b) 60' × 18'. (iv) Yes.

4. GENERAL :

(i) Stunted growth. (ii) Nil. (iii) Grain and straw yield. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A (vi) and (vii) Nil.

5. RESULTS :

(i) 669.60 lb./ac.
(ii) 83.48 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	564.0
2.	689.2
3.	755.5
S.E./mean	±41.74 lb./ac.

Crop :- Jowar (*Kharif*). Ref :- Gj. 52(242).

Centre :- Songadh. Type :- 'M'.

Object : - To study the response of *Jowar* to N applied singly and in combination with P_2O_5.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Jowar*. (c) Nil. (ii) Loamy. (iii) No basal manure except at one site with 3 C.L./ac. of F.Y.M. (iv) Local (late). (v) (a) to (c) N.A. (d) Between rows—21" and between plants—9". (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) 39.27". (x) 18 to 19.12.1952.

2. TREATMENTS :

1. Control (no manure).
2. 60 lb./ac. of N.
3. 60 lb./ac. of N+20 lb./ac. of P_2O_5.

N as A/S+G.N.C. in 1 : 1 ratio, P_2O_5 as Super.

3. DESIGN :

(i) and (ii) Villages were selected at random from a *taluka* and a list was prepared. From this list few villages were chosen retaining the serial order. The site in a village was located by a randomly selected survey number. In each village two fields were selected. (iii) (a) 72' × 30'. (b) 60' × 18'. (vi) Yes.

4. GENERAL :

(i) Stunted growth. (ii) Attack of black rust. (iii) Grain and fodder yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) In village Bedra, only one trial was conducted.

5. RESULTS :

(i) 60.83 lb./ac.
(ii) 39.12 lb./ac.
(iii) Treatments do not differ significantly.

Treatment	Av. yield
1.	78.22
2.	103.35
3.	94.08
S.E./mean	± 22.59 lb./ac.

Crop :- Jowar (*Kharif*). Ref :- Gj. 52(243).

Centre :- Valod. Type :-'M'.

Object :—To study the response of *Jowar* to N applied singly and in combination with P_2O_5.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Cotton. (c) No manure. (ii) Medium black. (iii) 5 to 8 C.L./ac. of F.Y.M. (iv) Local (late). (v) (a) to (c) N.A. (d) Between rows—3' and between plants—1.5'. (e) N.A. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) 37.57". (x) 14 to 18.1.1953.

2. TREATMENTS :

1. Control (no manure).
2. 60 lb./ac. of N.
3. 60 lb./ac. of N+20 lb./ac. of P_2O_5.

N as A/S+G.N.C. in 1 : 1 ratio and P_2O_5 at Super.

3. DESIGN :

(i) and (ii) Villages were selected at random from a *taluka* and a list was prepared From this list few villages were chosen retaining the serial order. The site in a village was located by a randomly selected survey number. In each village, two fields were selected. (ii) (a) 72'×30'. (b) 60'×18'. (iv) N A.

4. GENERAL :

(i) Stunted growth. (ii) No. (iii) Grain and straw yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 221.8 lb./ac.

(ii) 21.78 lb./ac.

(iii) Treatments do not differ significantly.

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

Treatment	Av. yield
1.	262.1
2.	211.7
3.	191.6
S.E./mean	= 15.40 lb./ac.

Crop :-Jowar (*Kharif*). Ref :-Gj. 52(240).

Centre :-Vyara. Type :-'M'.

Object :—To study the response of *Jowar* to N applied singly in combination with P_2O_5.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Cotton. (c) No manure. (ii) Medium black soil. (iii) 5 C.L./ac. of F.Y.M. (iv) Local (v) (a) to (c) N.A. (d) Between rows—2'—6" and plants—1'. (e) N.A. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) 18, 19.12.1952.

2. TREATMENTS :

1. Control (no manure).
2. 60 lb./ac. of N.
3. 60 lb./ac. of N+20 lb./ac. of P_2O_5.

N applied as a mixture of G.N.C. and A/S and P_2O_5 as Super.

3. DESIGN :

(i) and (ii) Villages were selected at random from a *taluka* and a list was prepared. From this list few villages were chosen retaining the serial order. The site in a village was located by a randomly selected survey number. In each village two fields were selected. (iii) (a) 72'×30'. (b) 60'×18'. (vi) Yes.

4. GENERAL :

(i) Stunted growth. (ii) Nil. (iii) Grain and straw yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 186.5 lb./ac.
(ii) 17.34 lb./ac.
(iii) Treatments differ significantly.
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	143.6
2.	196.6
3.	219.2
S.E./mean	=8.67 lb./ac.

Crop :-Jowar (*Rabi*). Ref :-Gj. 52(106).

Site :-Agri. Res. Stn., Bhuwa. Type :-'C'.

Object :—To find out the optimum spacing and seedrate for *Jowar*.

1. BASAL CONDITIONS :

(i) (a) Fallow—Wheat—*Jowar*. (b) Fallow. (c) Nil. (ii) (a) Black soil. (b) N.A. (iii) 9, 10.9.1952. (iv) (a) N.A. (b) Drilling. (c) and (d) As per treatments. (e) N.A. (v) Nil. (vi) No 8 (medium). (vii) Unirrigated. (viii) Gap filling on 24, 25.9.1952 ; interculturing on 7, 21.10.1952 and 2.11 1952 and weeding on 23.10.1952. (ix) 0.27". (x) 9 to 11.2.1953.

2. TREATMENTS :

Main-plot treatments :

3 spacings between rows : S_1=2', S_2=3' and S_3=2' and 3' alternate spacing.

Sub-plot treatments :

3 seed rates : R_1=6, R_2=8 and R_3=10 lb./ac.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block and 3 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 27'×38' for 2', 27'×42' for 3' and 27'×40' for 2' and 3' alternate spacings respectively (v) Two rows on either side and 5' at each end. (vi) Yes.

4. GENERAL :

(i) The general growth was quite normal. However grains did not develop fully for want of sufficient moisture in the soil. (ii) Only a mild attack of grass hopper was observed in the beginning. (iii) Grain and *chaff* yield. (iv) (a) 1952—1954. (b) No. (c) N.A. (v) (a) and (b) N.A. vi) and (vii) Nil.

5. RESULTS :

(i) 803 lb./ac.
(ii) (a) 198.6 lb./ac.
(b) 159.8 lb./ac.
(iii) Only R effect is highly significant.
(iv) Av. yield of grain in lb./ac.

	S_1	S_2	S_3	Mean
R_1	959	823	945	909
R_2	825	875	814	838
R_3	663	662	657	661
Mean	816	787	805	803

S.E. of difference of two

1. S marginal means = 66.2 lb./ac.
2. R marginal means = 53.3 lb./ac.
3. R means at the same level of S = 92 3 lb./ac.
4. S means at the same level of R = 100.4 lb./ac.

Crop :-Jowar (*Rabi*). Ref :-Gj. 53(62).

Site :-Agri. Res. Stn., Bhuwa. Type :-'C'.

Object —To find out optimum spacing and seed-rate for *Jowar*.

1. BASAL CONDITIONS

(i) (a) No. (b) Wheat. (c) Nil. (ii) (a) Black cotton soil. (b) N.A. (iii) 29.9.1953. (iv) (a) 6 harrowings. (b) Drilling. (c) and (d) As per treatments. (e) N.A. (v) 10 C.L./ac. of F.Y.M. applied on 3.6.1953. by broadcasting. (vi) *Rabi Jowar* No. 8 (medium). (vii) Unirrigated. (viii) Nil. (ix) N.A. (x) 8.2.1954.

2. TREATMENTS

Main-plot treatments :

3 spacings between rows : S_1=2', S_2=3' and S_3=2' and 3' alternate spacing.

Sub-plot treatments :

3 seed rates : R_1=6, R_2=8 and R_3=10 lb./ac.

3. DESIGN

(i) Split-plot. (ii) (a) 3 main-plots/block ; 3 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) For 2' spacing, 27'×38' ; for 3' spacing 27'×42' ; for 2' and 3' spacing 27'×40'. (b) 17'×30'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Mild attack of grass hopper. (iii) Grain yield. (iv) (a) 1952—1954. (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 820 lb./ac.

(ii) (a) 3008 lb./ac.

(b) 151.6 lb./ac.

(iii) Only R effect is highly significant.

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

	S_1	S_2	S_3	Mean
R_1	807	1081	943	944
R_2	731	701	749	727
R_3	767	832	766	788
Mean	768	871	820	820

S.E. of difference of two

1. S marginal means =100.6 lb./ac.
2. R marginal means = 50.7 lb./ac.
3. R means at the same level of S = 87.2 lb./ac.
4. S means at the same level af R =123.2 lb./ac.

Crop :-Jowar (*Rabi*). Ref :-Gj. 53(233).

Site :-Agri. Res. Stn., Bhuwa. Type :-'C'.

Object —To study the effect of growing *Lang* between *Jowar* strips (in *Laria* system) and to study its res dual effect on succeeding cotton crop.

1. BASAL CONDITIONS :

(i) (a) Cotton *Lang* and *Rabi Jowar*, (b) *Rabi Jowar*. (c) Nil. (ii) (a) Black cotton soil. (b) N.A. (iii) *Jowar*-24.9.1953 and *Lang* 10.10.1953. (iv) (a) 6 harrowings. (b) Drilling. (c) *Jowar*-8 lb./ac. ; *Lang*-40 lb./ac. (d) *Jowar*-3, *Lang*-3 ; *Larias*-12 . (e) N.A. (v) Nil. (vi) *Lang*-Indore T-2.12 (medium) ; *Rabi Jowar* No. 8. (medium). (vii) Unirrigated. (viii) Thinning on 15.10.1953. in *Jowar* plots. (ix) 0.10". (x) *Jowar*—7.2.1954 ; Lang—7.2.1954.

2. TREATMENTS :

1. No *Lang* between *Jowar* strips (*Laria* system).
2. *Lang* grown between *Jowar* strips (*Laria* system).

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 3. (iv) (a) 50'×46.5'. (b) 46'×18'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) *Jowar* crop quite vigorous due to *Laria* system. *Lang* stunted due to shade effect of *Jowar*. (ii) Nil. (iii) Grain yield. (iv) (a) 1953—1954. (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) Nil. (vii) Lang crop failed.

5. RESULTS :

(i) 1983 lb./ac.

(ii) 169.1 lb./ac.

(iii) Treatments differ highly significantly.

(iv) Av. yield of *Jowar* grain in lb./ac.

Treatment	Av. yield
1.	1773
2.	2193
S.E./mean	=84.53 lb./ac.

Crop :- Jowar (*Kharif*). Ref :- Gj. 50(82).

Site :- Agri. Res. Stn., Viramgaum. Type :- 'C'.

Object :—To find out optimum spacing and seed rate for *Jowar*.

1. BASAL CONDITIONS :

(i) (a) Cotton-*Jowar*-Cotton. (b) Cotton. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Alluvial, medium black. (b) Refer soil analysis, Viramgaum. (iii) 21.7.1950. (iv) (a) No ploughings but 3 to 4 harrowings. (b) Drilling. (c) As per treatments. (d) As per treatments. (e) NA. (v) Nil. (vi) C-10-2 (fodder crop, mid-late). (vii) Unirrigated. (viii) One weeding on 13.8.1950; 2 interculturings on 15.8.1950 and 29.8.1950. (ix) 24.37". (x) 12.10.1950.

2. TREATMENTS :

Main-plot treatments :

3 spacings between rows : S_1=12", S_2=15" and S_3=18".

Sub-plot treatments :

4 seed rates : R_1=5, R_2=10, R_3=15 and R_4=20 lb./ac.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block ; 4 sub-plots/main-plot. (b) 114'×64.5'. (iii) 6. (iv) (a) Sub-plot size : 36'×21' for 12" and 18" spacing and 36'×22.5' for 15" spacing, main-plot size : 144'×21' for 12" and 18" spacing and 144'×22.5' for 15" spacing. (b) Sub-plot : 30'×15'. (v) 3' all round the net plot for 12" and 18" spacing and for the plot with 15" spacing, 3 rows on either side and 3' row at both the ends of net plot. (vi) Yes.

4. GENERAL :

(i) Germination and the general growth of the crop is fairly good. (ii) Nil. (iii) Weight of grain and fodder. (iv) (a) 1950—1951. (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) Nil. (vii) *Jowar* crop was a fodder crop and the yield data for fodder was also analysed.

5. RESULTS :

(i) 679 lb./ac.

(ii) (a) 122.5 lb./ac.

(b) 139.6 lb./ac.

(iii) Only R effect is significant.

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

	R_1	R_2	R_3	R_4	Mean
S_1	644	785	716	617	691
S_2	731	729	676	597	683
S_3	813	650	647	543	663
Mean	729	721	680	586	679

S.E. of difference of two

1. S marginal means =35.4 lb./ac.
2. R marginal means =46.5 lb./ac.
3. R means at the same level of S =80.6 lb./ac.
4. S means at the same level of R =78.0 lb./ac.

Crop :- Jowar (*Kharif*). **Ref :- Gj. 51(90).**

Site :- Agri. Res. Stn., Viramgaum. **Type :- 'C'.**

Object :—To find out the optimum spacing and seed-rate for *Jowar*.

1. BASAL CONDITIONS :

(i) (a) Cotton-*Jowar*-Cotton. (b) Cotton. (c) Nil. (ii) (a) Alluvial, medium black. (b) Refer soil analysis, Viramgaum. (iii) 4.8.1951. (iv) (a) No ploughing, 3 to 4 harrowings. (b) Drilling. (c) As per treatments. (d) As per treatments. (e) N.A. (v) Nil. (vi) C-10-2 (fodder crop, mid-late). (vii) Unirrigated. (viii) One weeding and interculturing on 1.9.1951. (ix) 9.71". (x) 15.10.1951.

2. TREATMENTS :

Main-plot treatments:
3 spacings between rows ; S_1=12", S_2=15" and S_3=18".
Sub-plot treatments:
4 seed rates : R_1=5, R_2=10, R_3=15 and R_4=20 lb./ac.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block ; 4 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 36'×21' for 12" and 18" spacing ; 36'×22.5' for 15" spacing. (b) 30'×15'. (v) 3' round the net plot for 12" and 18" spacing. 3 rows on either side and 3' of rows at both ends for 15" spacing. (vi) Yes.

4. GENERAL :

(i) The monsoon started about a month later. The general growth of the crop was below normal on account of scarcity of rains. There was no grain formation and hence the crop was a total failure. (ii) Nil. (iii) Weight of fodder. (iv) (a) 1950-1951. (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) Nil. (vii) *Jowar* crop was a fodder crop. As there was no grain formation, the yield data for fodder was analysed and presented in results.

5. RESULTS :

(i) 2253 lb./ac.
(ii) (a) 500.3 lb./ac.
(b) 417.5 lb /ac.
(iii) Only R effect is highly significant.
(iv) Av. yield of fodder in lb./ac.

	R_1	R_2	R_3	R_4	Mean
S_1	2033	2291	2307	2452	2271
S_2	1807	2388	2243	2097	2134
S_3	1710	2452	2904	2355	2355
Mean	1850	2377	2484	2301	2253

S.E. of difference of two

1. S marginal means =144.8 lb./ac.
2. R marginal means =139.2 lb./ac.
3. R means at the same level of S =241.1 lb./ac.
4. S means at the same level of R =252.4 lb./ac.

Crop :- Jowar (*Kharif*). Ref :- Gj. 49(136).

Site :- Agri. Res. Stn., Surat. Type :- 'CM'.

Object :—To study the residual effect of cotton intercropped with *Chinamug* on the yield of succeeding *Jowar* crop.

1. BASAL CONDITIONS :

(i) (a) Cotton and *Chinamug-Jowar*. (b) Cotton and *Chinamug*. (c) As per treatments. (ii) (a) Deep black cotton soil. (b) Refer soil analysis, Surat. (iii) 24.7.1949. (iv) (a) 3 harrowings. (b) Drilling. (c) 10 lb./ac. (d) 3'×1'. (e) —. (v) Nil. (vi) B.P. 53 (late). (vii) Unirrigated. (viii) 1 weeding ; 3 thinning and 2 interculturings. (ix) 45.42". (x) 4.2.1950.

2. TREATMENTS :

1. Cotton alone to be followed by *kharif Jowar*.
2. Cotton with inter cropping of *chinamug* to be followed by *kharif Jowar*.
3. Cotton with inter cropping of *chinamug* with 50 lb./ac. of P_2O_5 to be followed by *kharif Jowar*.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 8. (iv) (a) 36'×62'. (b) 24'×50'. (v) 6' ring alround. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Slight attack of Stem-borer. (iii) Grain and fodder yield. (iv) (a) 1948—1951 residual effect from 1949—1950). (b) Yes (Two different plots for the experiment were kept. Hence the treatments were being administered to the same plots in every alternate year). (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1275 lb./ac.
(ii) 84.37 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1293
2.	1225
3.	1308
S.E./mean	=29.83 lb./ac.

Crop :- Jowar (*Kharif*). Ref :- Gj. 50(162).

Site :- Agri. Res. Stn., Surat. Type :- 'CM'.

Object :—To study the residual effect of cotton intercropped with *chinamug* on the yield of succeeding *Jowar* crop.

1. BASAL CONDITIONS :

(i) (a) Cotton and *chinamug-Jowar* (b) Cotton and *chinamug*. (c) As per treatments. (ii) (a) Deep black cotton soil (b) Refer soil analysis, Surat. (iii) 4.8.1950. (iv) (a) Nil. (b) Drilling. (c) 10 lb./ac. (d) 3'×1'. (e) —. (v) Nil. (vi) B.P. 53 (late). (vii) Unirrigated. (viii) 3 interculturings and 1 thinning. (ix) 29.49". (x) 24.1.1951.

2. TREATMENTS :

1. Cotton only to be followed by *kharif Jowar*.
2. Cotton with inter cropping of *chinamug* to be followed by *kharif Jowar*.
3. Cotton with inter cropping of *chinamug* with 50 lb./ac of P_2O_5 to be followed by *kharif Jowar*. 5 C.L./ac. of F.Y.M. applied to cotton.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 8. (iv) (a) 36'×62'. (b) 24'×50'. (v) 6' ring alround. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Attack of Stem-borer. (iii) Grain and fodder yield. (iv) (a) 1948—1951 (Residual effect from 1949—1950. (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 938 lb./ac.
(ii) 59.97 lb./ac.
(iii) Treatments do not differ significantly.

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

Treatment	Av. yield
1.	945
2.	921
3.	949
S.E./mean	=21.21 lb./ac.

Crop :- Jowar (*Khartf*). Ref :- Gj. 51(226).

Site :-Agri. Res. Stn., Surat. Type :-'CM'.

Object :—To study the residual effect of Cotton intercropped with *Chinamug* on the yield of succeeding *Jowar* crop.

1. BASAL CONDITIONS :

(i) (a) Cotton and *Chinamug—Jowar*. (b) Cotton and *Chinamug*. (c) As per treatments. (ii) (a) Deep black cotton soil. (b) Refer soil analysis, Surat. (iii) 22.7.1951. (iv) (a) 3 harrowings. (b) Drilling. (c) 10 lb./ac. (d) 3′×1′. (e) —. (v) Nil. (vi) B.P.—53 (late). (vii) Unirrigated. (viii) 1 weeding, 1 thinning and 3 interculturings. (ix) 23.22″. (x) 16.2.1952.

2. TREATMENTS :

1. Cotton only to be followed by *kharif Jowar*.
2. Cotton with intercropping of *chinamug* to be followed by *kharif Jowar*.
3. Cotton with intercropping of *chinamug* with 50 lb./ac. of P_2O_5 to *chinamug* to be followed by *kharif Jowar*.

5 C.L./ac. of F.Y.M. applied to Cotton.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 8. (iv) (a) 36′×62′. (b) 24′×50′. (v) 6′ ring alround. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Heavy attack of stem borer. (iii) Grain and fodder yield. (iv) (a) 1948—1951 (residual effect from 1949-50). (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 937 lb./ac.
(ii) 115.4 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	994
2.	885
3.	932
S.E./mean	= 40.8 lb./ac.

Crop :- Jowar (*Rabi*). Ref :- Gj. 53(259).

Site :- Agri. Res. Stn., Dabhoi. Type :- 'D'.

Object :—To see the effect of seeds treated with 2-4-D solutions with different conditions on growth and yield of *Jowar*.

1. BASAL CONDITIONS:

(i) (a) Cotton—*Jowar*. (b) Cotton. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Dabhoi. (iii) 16.10.1953. (iv) (a) 3 ploughings and 3 harrowings. (b) Drilling. (c) 5 lb./ac. (d) Between rows—18″ and between plants irregular. (e) N.A. (v) Nil. (vi) Bhatpuri. (vii) Irrigated. (viii) Interculturing on 4.12.1953, weeding and thinning on 4.12.1953. (ix) Nil. (x) 9.3.1954.

2. TREATMENTS :

1. Seed soaked in water for 30 minutes.
2. Seed soaked in solution of 2-4-D of concentration 0.01 P.P.M. for 30 minutes.
3. Seed soaked in solution of 2-4-D of concentration 0.10 P.P.M. for 30 minutes.
4. Seed soaked in solution of 2-4-D of concentration 0.00 P.P.M. for 30 minutes.
5. Seed soaked in water for 5 hours.
6. Seed soaked in solution of 2-4-D of concentration 0.01 P.P.M. for 5 hours.
7. Seed soaked in solution of 2-4-D of concentration 0.10 P.P.M. for 5 hours.
8. Control.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 42'×18'. (b) 36'×12'. (v) 3' ring round the net plot. (vi) Yes.

4. GENERAL :

(i) In replications II and III, the growth was poor. In the II and III replications the crop was heavily attacked by grass hopper during germination time hence the growth was poor. (ii) Grain and fodder yield. (iv) (a) 1952—1954. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 572 lb./ac.
(ii) 169.6 lb /ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	586
2.	624
3.	523
4.	479
5.	567
6.	611
7.	454
8.	731
S.E./mean	= 84.8 lb./ac.

Crop :-Jowar (*Kharif*). Ref :- Gj. 52(37).
Site :-Agri Res. Stn., Surat. Type :-'D'

Object :—To see the effect of the seeds treated with hormones on the growth and yield of *Jowar*.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*. (b) Cotton (*Sayog*). (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surat. (iii) 9.8.1952. (iv) (a) N.A. (b) Drilling. (c) 8 to 10 lb./ac. (d) Distance between rows 3'. (e)—. (v) Nil. (vi) B.P.—53. (vii) Unirrigated. (viii) One thinning, two weedings and four interculturings. (ix) 19.98". (x) 20.1.1953.

2. TREATMENTS :

1. Seeds soaked in water for 30 minutes.
2. Seeds soaked in water for 5 hours.
3. Seeds soaked in solution of 2-4-D in 0.1 concentration for 30 minutes.
4. Seeds soaked in solution of 2-4-D in 0.1 concentration for 5 hours.
5. Seeds soaked in solution of 2-4-D in 1.0 concentration for 30 minutes.
6. Seeds soaked in solution of 2-4-D in 1.0 concentration for 5 hours.
7. Seeds soaked in solution of 2-4-D in 10.0 concentration for 30 minutes.
8. Seeds soaked in solution of 2-4-D in 10.0 concentration for 5 hours.
9. Seeds soaked in solution of I.A.A in 1.0 concentration for 30 minutes.
10. Seeds soaked in solution of I.A.A in 1.0 concentration for 5 hours.
11. Seeds soaked in solution of I.A.A in 10.0 concentration for 30 minutes.
12. Seeds soaked in solution of I.A.A in 10.0 concentration for 5 hours.
13. Seeds soaked in solution of I.A.A in 100.0 concentration for 30 minutes.
14. Seeds soaked in solution of I.A.A in 100.0 concentration for 5 hours.
15. Control.

3. DESIGN :

(i) R.B.D. (ii) (a) 15. (b) N.A. (iii) 4. (iv) (a) 42′×18′. (b) 36′×12′. (v) 3′ ring all round the net plot. (vi) Yes.

4. GENERAL :

(i) Good germination and good growth. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1952—1954. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 896 lb./ac.
(ii) 108.1 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield	Treatment	Av. yield
1.	826	9.	949
2.	750	10.	942
3.	892	11.	838
4.	854	12.	911
5.	958	13.	952
6.	967	14.	870
7.	907	15.	949
8.	873		

S.E./mean = 54.1 lb./ac.

Crop :-Jowar (*Kharif*). Ref :-Gj. 53(42).

Site :-Agri. Res. Stn., Surat. Type :-'D'.

Object :—To study the effect of seeds treated with hormones on the growth and yield of *Jowar*.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) Cotton. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surat. (iii) 13.3.1953 and resown on 25.8.1953. (iv) (a) 2—3 harrowings. (b) Drilled, by hand plough. (c) 10 lb./ac. (d) 3′ distance and thinned out keeping 1′ distance between plants. (e) —. (v) Nil. (vii) *Budh perio*—53 (improved, late). (vii) Unirrigated. (viii) 2 weedings ; 2 thinnings and 5 inter-culturings. (ix) 58″. (x) 13.2.1954.

2. TREATMENTS :

1. Seeds soaked in water for 30 minutes.
2. Seeds soaked in water for 5 hours.
3. Seeds soaked in solution of 2-4-D in 0.1 concentration for 30 minutes.
4. Seeds soaked in solution of 2-4-D in 0.1 concentration for 5 hours.
5. Seeds soaked in solution of 2-4-D in 1.0 concentration for 30 minutes.
6. Seeds soaked in solution of 2-4-D in 1.0 concentration for 5 hours.
7. Seeds soaked in solution of 2-4-D in 10.0 concentration for 30 minutes.
8. Seeds soaked in solution of 2-4-D in 10.0 concentration for 5 hours.
9. Seeds soaked in solution of I.A.A. in 1.0 concentration for 30 minutes.
10. Seeds soaked in solution of I.A.A. in 1.0 concentration for 5 hours.
11. Seeds soaked in solution of I.A.A. in 10.0 concentration for 30 minutes.
12. Seeds soaked in solution of I.A.A. in 10.0 concentration for 5 hours.
13. Seeds soaked in solution of I.A.A. in 100.0 concentration for 30 minutes.
14. Seeds soaked in solution of I.A.A. in 100.0 concentration for 5 hours.
15. Control.

3. DESIGN :

(i) R.B.D. (ii) (a) 15. (b) N.A. (iii) 4. (iv) (a) 42′×18′. (b) 36′×12′. (v) 3′ ring round the net plot. (vi) Yes.

4. GENERAL :

(i) Germination was satisfactory. *Jowar* growth was checked due to heavy attack of stem-borer. Many shoots were sprouted but the earing was not satisfactory, which may be due to lack of moisture in later part of the season. (ii) There was about 80% attack of stemborer to *Jowar*. No control measures taken. (iii) Periodical height, and weight of *Kadbi* were taken. (iv) (a) 1952—1954. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) Out of 58″ of rain against an average of 42″ and 46″ occurred in July and August. respectively. (vi) Nil.

5. RESULTS :

(i) 805 lb./ac.
(ii) 139.2 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield	Treatment	Av. yield
1.	781	9.	731
2.	718	10.	821
3.	766	11.	873
4.	895	12.	807
5.	848	13.	794
6.	863	14.	712
7.	778	15.	835
8.	837		

S.E./mean =69.6 lb./ac.

Crop :- Bajra (*Kharif*). Ref :- Gj. **51(196)**.

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

Object:—To study the N and P_2O_5 requirements of *Bajra* (with a basal dose of F.Y.M).

1. BASAL CONDITIONS :

(i) (a) *Bajra*-Groundnut-Wheat-Cotton. (b) Lucerne and Vegetables. (c) 24 C.L./ac. of F.Y.M. (ii) (a) Medium black. (b) Refer soil analysis, Amreli. (iii) 31.7.1951. (iv) (a) N.A. (b) Drilling. (c) 5 lb./ac. (d) 18" between rows. (e) N.A. (v) 5 C.L./ac. of F.Y.M. on 27.6.1951. (vi) *Bajra*—IV. (vii) Unirrigated. (viii) 2 interculturings 1 weeding and 2 thinnings. (ix) 9.90". (x) 23 and 24.10.1951.

2. TREATMENTS :

All combinations of (1) and (2).
(1) 4 levels of N : N_0=0, N_1=15, N_2=30 and N_3=45 lb./ac.
(2) 4 levels of P_2O_5 : P_0=0, P_1=15, P_2=30 and P_3=45 lb./ac.
N as G.N.C. and P_2O_5 as Super.

3. DESIGN :

(i) 4×4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 21'×22'. (b) 18'×16'. (v) 1.5'×3'. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) Grain yield. (iv) (a) 1951—1954. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 627 lb./ac.
(ii) 172.4 lb./ac.
(iii) None of the effects is significant.
(iv) Av. yield of grain in lb./ac.

	N_0	N_1	N_2	N_3	Mean
P_0	681	770	580	601	658
P_1	747	602	619	502	618
P_2	707	742	591	593	658
P_3	562	542	689	500	573
Mean	674	664	620	549	627

S.E. of any marginal mean =43.1 lb./ac.
S.E. of body of table =86.2 lb./ac.

Crop :- Bajra (*Kharif*). Ref :- Gj. 52(113).

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

Object :—To study the N and P_2O_5 requirements of *Bajra* (with a basal dose of F.Y.M.).

1. BASAL CONDITIONS :

(i) (a) *Bajra*-Groundnut (*Kharif*) and Wheat (*Rabi*)-Cotton. (b) Cotton. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Amreli. (iii) 29.6.1952. (iv) (a) N.A. (b) Drilling. (c) 5 lb./ac. (d) Between rows—18" ; between plants—irregular. (e) —. (v) 5 C.L./ac. of F.Y.M. spread one month before sowing. (vi) *Bajra*-E.M S. (local) (early ; mass selection). (vii) Unirrigated. (viii) One thinning on 23.7.1952 ; 1 weeding and 2 interculturings and gap filling. (ix) 11.71". (x) 24 to 27.10.1952.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N : N_0=0, N_1=15, N_2=30 and N_3=45 lb./ac.

(2) 4 levels of P_2O_5 : P_0=0, P_1=15, P_2=30 and P_3=45 lb./ac.

N as G.N.C. and P_2O_5 as Super. Manures spread on 29.6.1952.

3. DESIGN :

(i) 4×4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 39'×21'. (b) 30'×12'. (v) 4½' ring round the net plot. (vi) Yes.

4. GENERAL :

(i) The germination was quite satisfactory and the growth was even. At the harvesting time, practically half of the plants had fallen down on account of wind. Yield was quite satisfactory. (ii) Continuous cloudy weather lead to an intense growth of insects, exact nature of insects and pests not specified. (iii) Grain yield. (iv) (a) 1951—1954. (b) No. (c) N.A. (v) (a) Baroda. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 344 lb./ac.

(ii) 103.6 lb./ac.

(iii) Only main effect of P is highly significant.

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

	N_0	N_1	N_2	N_3	Mean
P_0	219	304	234	239	249
P_1	290	352	271	305	305
P_2	496	370	384	411	415
P_3	389	405	471	369	409
Mean	348	358	340	331	344

S.E. of any marginal mean =25.9 lb./ac.

S.E. of body of table =51.8 lb./ac.

Crop :-Bajra (*Kharif*). Ref :- Gj. 53(30)

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

Object :—To study the N and P_2O_5 requirements of *Bajra* (with a basal dose of F.Y.M.).

1. BASAL CONDITIONS :

(i) (a) *Bajra*-Groundnut (*Kharif*) and Wheat (*Rabi*)—cotton. (b) Cotton. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Medium black. (b) Refer soil analysis, Amreli. (iii) 26.6.1953. (iv) (a) 3 harrowings. (b) Drilling. (c) 5 lb./ac. (d) 18". (e) —. (v) 5 C.L./ac. of F.Y.M. in the month of May. (vi) Mass selected *Bajra*. (vii) Unirrigated. (viii) Weeding and interculturing thrice. (ix) 34.25". (x) 25.10.1953.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N : N_0=0, N_1=15, N_2=30 and N_3=45 lb./ac.

(2) 4 levels of P_2O_5 : P_0=0, P_1=15, P_2=30 and P_3=45 lb./ac.

N as A/S broadcast in single dose. P_2O_5 as Super drilled in furrows.

3. DESIGN :

(i) 4×4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 39′×21′. (b) 33′×15′. (v) 3′ all round the net plot. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1951–1954. (b) No. (c) N.A. (v) (a) Baroda. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1516 lb /ac.

(ii) 184.8 lb./ac.

(iii) None of the effects is significant.

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

	N_0	N_1	N_2	N_3	Mean
P_0	1495	1506	1652	1328	1495
P_1	1526	1389	1470	1426	1453
P_2	1489	1623	1535	1495	1535
P_3	1478	1581	1603	1667	1582
Mean	1497	1525	1565	1479	1516

S.E. of any marginal mean = 46.2 lb./ac.
S.E. of body of table = 92.4 lb./ac.

Crop :-Bajra (*Kharif*). Ref :-Gj. 48(65).

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

Object :—To study the effect of Super applied to crops (Groundnut, *Ud.d* and *Bajra*) on the succeeding crop Cotton.

1. BASAL CONDITIONS :

(i) (a) No. (b) N.A. (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Amreli. (iii) 14 to 21.8.1948. (iv) (a) 1 ploughing and 3 harrowings. (b) Drilling. (c) 5 C L./ac. (d Between rows–36″ ; between plants irregular. (e) N.A. (v) Nil. (vi) *Bajra* (local). (vii) Unirrigated. (viii) 1 to 2 weedings and 2 to 3 interculturings. (ix) 12.73″. (x) N.A.

2. TREATMENTS

1. *Bajra* without Super.
2. *Bajra* with Super applied at 30 lb./ac. of P_2O_5.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 4. (iv) (a) 44′×30′. (b) 40′×24′. (v) 2′×3′. (vi) Yes.

4. GENERAL :

(i) The crop germinated well. For want of rains, withering was noticed. (ii) Nil. (iii) Grain yield. (iv) (a) 1946—1949. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) Raw data N.A. Groundnut and *Udid* crops are given separately.

5. RESULTS :

(i) 1205 lb./ac.

(ii) N.A.

(iii) N.A.

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

Treatment	Av. yield
1.	1168
2.	1242
S.E./mean	=N.A.

Crop :-Bajra (*Kharif*). Ref :-Gj. 49(82).

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

Object :—To study the effect of Super applied to the crops (Groundnut, *Udid* and *Bajra*) on the succeeding crop Cotton.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Medium black. (b) Refer soil analysis, Amreli. (iii) 19.7.1949. (iv) (a) 1 ploughing and 3 harrowings. (b) Drilling. (c) 5 lb./ac. (d) Between rows—36" between plants-irregular. (e) N.A. (v) Nil. (vi) *Bajra* (Local). (vii) Unirrigated. (viii) 4 weedings and 3 interculturings. (ix) 13.75". (x) 26.11.1949. ; 27.12.1949.

2. TREATMENTS :

1. *Bajra* without Super.
2. *Bajra* with Super applied at 30 lb /ac. of P_2O_5.

3. DESIGN ;

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 4. (iv) (a) 44'×30'. (b) 40'×24'. (v) 2'×3'. (vi) Yes.

4. GENERAL :

(i) Due to insufficient rains in the month of August, the tillering in *Bajra* was affected. (ii) Nil. (iii) Grain yield. (iv) (a) 1946—1949. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) Groundnut and *Udid* crops are given separately.

5. RESULTS :

(i) 1135 lb /ac.
(ii) 45.38 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1112
2.	1157
S.E./mean	=22.69 lb./ac.

Crop :-Bajra (*Kharif*). Ref :-Gj. 50(69).

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

Object :—To find out the N and P_2O_5 requirements of *Bajra* (with a basal dose of F.Y.M.).

1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Baroda. (iii) 4.8.1950. (iv) (a) 1 harrowing. (b) N.A. (c) 8 lb./ac. (d) Between rows-18". (e) —. (v) 10 C.L./ac. of F.Y.M. (vi) B-207. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) N.A.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N : N_0=0, N_1=20, N_2=40 and N_3=60 lb./ac.
(2) 4 levels of P_2O_5 : P_0=0, P_1=20, P_2=40 and P_3=60 lb./ac.

Other details N.A.

3. DESIGN :

(i) 4×4 Fact. in R.B.D. (ii) (a) 16. (b) 160′×120′. (iii) 4. (iv) (a) 40′×30′. (b) 30′×15′. (v) 5 rows on either side and 5′ of row at each end of net plot. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1950—1952. (b) No. (c) N.A. (v) (a) No. (b) No. (vi) and (vii) Nil.

5. RESULTS :

(i) 1028 lb./ac.
(ii) 135.5 lb./ac.
(iii) Only main effect of N is highly significant.
(iv) Av. yield of grain in lb./ac.

	N_0	N_1	N_2	N_3	Mean
P_0	780	912	1092	1270	1013
P_1	796	983	1132	1247	1039
P_2	832	900	1176	1126	1008
P_3	847	968	1124	1269	1052
Mean	814	941	1131	1228	1028

S.E. of any marginal mean = 38.9 lb./ac.
S.E. of body of table = 67.8 lb./ac.

Crop :- Bajra (*Kharif*). Ref :- Gj. 52(107).
Site :- Agri. Res. Stn., Baroda. Type :- 'M'.

Object :—To find out the N and P_2O_5 requirements of *Bajra* (with a basal dose of F.Y.M.).

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Kodra*. (c) 160 lb./ac. of G.N.C. (ii) (a) Sandy loam. (b) Refer soil analysis, Baroda. (iii) 28.6.1952. (iv) (a) N.A. (b) Drilling. (c) 8 lb./ac. (d) Between rows—18″. (e)—. (v) F.Y.M. at 5 C.L./ac. (vi) B-207. (vii) Unirrigated. (viii) Hoeing on 19.7.1952. (ix) N.A. (x) 23.9.1952.

2. TREATMENTS :

All combinations of (1) and (2)
(1) 4 levels of N : N_0=0, N_1=20, N_2=40 and N_3=60 lb./ac.
(2) 4 levels of P_2O_5 : P_0=0, P_1=20, P_2=40 and P_3=60 lb./ac.
Other details N.A.

3. DESIGN :

(i) 4×4 Fact. in R.B.D. (ii) (a) 16. (b) 168′×108′. (iii) 4. (iv) (a) 42′×27′. (b) 30′×15′. (v) 6′ all round net plot. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1950 to 1952. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment failed in 1951.

5. RESULTS :

(i) 1298 lb./ac.
(ii) 271.8 lb./ac.
(iii) Only main effect of N is highly significant.

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

	N_0	N_1	N_2	N_3	Mean
P_0	1119	1289	1222	1573	1301
P_1	1174	1077	1301	1482	1259
P_2	871	1271	1467	1736	1336
P_3	1074	1398	1216	1497	1296
Mean	1060	1259	1302	1572	1298

S.E. of any marginal mean = 67.9 lb /ac.
S.E. of body of table =135.9 lb./ac.

Crop :- Bajra (*Kharif*). Ref :- Gj. 53(369).
Site :- Agri. Res. Stn., Vijapur. Type :- 'M'.

Object :—To study the effect of P_2O_5 on the yield of *Bajra*.

1. BASAL CONDITIONS :

(i) (a) *Bajra*-Wheat-Cotton. (b) N.A. (c) N.A. (ii) (a) Light sandy soil. (b) N.A. (iii) N.A. (iv) (a) to (e) N.A. (v) N.A. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) 33.46". (x) N.A.

2. TREATMENTS :

1. *Bajra* unmanured.
2. *Bajra* manured with 50 lb./ac. of P_2O_5 as Super at sowing.

3. DESIGN :

(i) Paired-plot. (ii) (a) 2. (b) 42'×36'. (iii) 2. (iv) (a) 42'×18'. (b) 30'×15'. (v) 6'×1.5'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1953—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 735 lb./ac.
(ii) 242.0 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac,

Treatment	Av. yield
1.	690
2.	779
S.E /mean	=171.1 lb./ac.

Crop :-Bajra (*Kharif*). Ref :-Gj. 53(31).
Site :-Agri. Res. Stn., Amreli. Type :-'C'.

Object :—To find out the economic and suitable combination of seed rate and spacing for maximum yield.

1. BASAL CONDITIONS :

(i) (a *Bajra*—Groundnut (*Kharif*) and Wheat (*Rabi*)—Cotton. (b) Cotton. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Medium black. (b) Refer soil analysis, Amreli. (iii) 25.6.1953. (iv) (a) 3 harrowings. (b) Sowing by hand in furrows opened by axe. (c) and (d) As per treatments. (e) N.A. (v) 5 C L./ac. of F Y.M. in the month of May (vi) Mass selected *Bajra*. (vii) Unirrigated. (viii) 3 weedings and 3 interculturings. (ix) 34.25". (x) 23.10.1953.

2. TREATMENTS :

Main-plot treatments :

4 spacings : S_1=18", S_2=24", S_3=30" and S_4=36".

Sub-plot treatments :

4 seed rates : R_1=5, R_2=10, R_3=15 and R_4=20 lb./ac.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/block and 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 36'×19', 34'×19', 35'×19' and 36'×19' for 18", 24", 30" and 36" spacings respectively. (b) 30'×15'. (c) and (d) as per treatments (e) N.A. (v) 2 rows on either side of each plot for 18" spacing and one row on either side for 24", 30" and 36" spacings respectively (vi) Yes.

4. GENERAL :

(i) Fair. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1952--1954. (b) and (c) N.A. (v) (a) and (b) N.A. (vi) The growth of the plants and earheads was rather stunted in plots with single seed rate and spacings. (vii) Nil.

5. RESULTS :

(i) 1209 lb./ac.

(ii) (a) 382.3 lb./ac.

(b) 173.9 lb./ac.

(iii) None of the effects is significant.

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

	S_1	S_2	S_3	S_4	Mean
R_1	1156	1192	1100	1187	1159
R_2	1167	1201	1269	1132	1192
R_3	1077	1398	1195	1331	1250
R_4	1090	1264	1318	1259	1235
Mean	1123	1264	1220	1230	1209

S E. of difference of two

1. S marginal means = 135.2 lb./ac.
2. R marginal means = 61.5 lb./ac.
3. R means at the same level of S = 123.0 lb./ac.
4. S means at the same level of R = 172.1 lb./ac.

Crop :-Bajra (*Kharif*). Ref :-Gj. 53(158).

Site :-Agri. Res. Stn., Deesa. Type :-'C'.

Object :—To find out the suitable spacing and seed rate for getting maximum yield.

1. BASAL CONDITIONS :

(i) (a) and (b) N.A. (c) Nil. (ii) (a) N.A. (b) Refer soil analysis, Deesa. (iii) 25.6.1953. (iv) (a) Ordinary tillage. (b) Drilling. (c) and (d) As per treatments. (e) N.A. (v) Nil. (vi) *Bajra*—207. (vii) Unirrigated. (viii) Interculturing on 20.7.1953. (ix) N.A. (x) 22, 23.9.1953.

2. TREATMENTS :

Main-plot treatments :

4 spacings between rows : S_1=9", S_2=12", S_3=15" and S_4=18".

Sub-plot treatments :

3 seed rates : R_1=5, R_2=10 and R_3=15 lb./ac.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/block and 3 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 36'×21' for 9", 12" and 18" spacings and 36'×22.5' for 15" spacing. (b) 30'×15'. (v) 3' at either ends and 4, 3, 2, 1 rows on either sides for 9", 12", 18" and 15" spacings respectively. (vi) Yes.

4. GENERAL :

(i) The germination was good and the growth was accelerated by timely rainfall followed by good tillering After one month the crop was affected to a great extent by heavy and continuous rainfall. Hence less yield. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1953—N.A. (b) No. (c) N.A. (v) (a) Amreli. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1864 lb./ac.
(ii) (a) 346.6 lb./ac.
(b) 348.7 lb./ac.
(iii) Only R effect is highly significant.
(iv) Av. yield of grain in lb./ac.

	S_1	S_2	S_3	S_4	Mean
R_1	1407	1633	1483	1653	1544
R_2	1883	2008	1984	1891	1941
R_3	1968	2319	2036	2101	2106
Mean	1753	1987	1834	1882	1864

S.E. of difference of two

1. S marginal means =115.5 lb./ac.
2. R marginal means =100.7 lb./ac.
3. R means at the same level of S =201.3 lb./ac.
4. S means at the same level of R =200.9 lb./ac.

Crop :-Maize. (*Kharif*). **Ref. :- Gj 51(77)**

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

Object :—To study the effect of the leguminous crop (Gram) grown with and without super on the succeeding cereal crop (*Maize*).

1. BASAL CONDITIONS :

(i) (a) Gram *Maize*. (b) Gram. (c) As per treatments. (ii) (a) Dark brown. (b) Refer soil analysis, Dohad. (iii) 16.6.1951. (iv) (a) N.A. (b) Drilling (c) 20 lb./ac. (d) 24"×12". (e) N.A. (v) 10 C.L./ac. of F.Y.M. (vi) N.A. (vii) Unirrigated. (viii) 4 interculturings and one weeding. (ix) 17.49". (x) 24, 25.9.1951.

2. TREATMENTS :

1. Control (no P_2O_5).
2. 50 lb./ac. of P_2O_5 as Super to Gram Crop.
3. 100 lb./ac. of P_2O_5 as Super to Gram Crop.
4. 150 lb./ac. of P_2O_5 as Super to Gram Crop.
5. Fallow in *Rabi* and sown in *Kharif*. Manured with 10 C.L./ac. F.Y.M. in *Kharif* season.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) 50'×21'; (b) 30'×15'. (v) 10'×3'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain & fodder yield. (iv) (a) 1950—1951. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 966 lb./ac.
(ii) 208.6 lb /ac.
(iii) Treatments do not differ significantly.

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

Treatment	Av. yield
1.	947
2.	1275
3.	902
4.	832
5.	876
S.E./mean	= 85.2 lb./ac.

Crop :-Gram (*Rabi*). Ref :- Gj. 53(50).

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

Object :--To study the N, P and K requirements of Gram.

1. BASAL CONDITIONS :

(i (a) Gram-*Jowar*. (b) *Jowar*. (c) Nil. (ii) (a) Medium black to deep black. (b) Refer soil analysis, Arnej. (iii) 18.10.1953. (iv) (a) 5 harrowings prior to sowing. (b) N.A. (c) 20 lb./ac. (d) 12" row spacing (e) N.A. (v) 5 C.L./ac. of F.Y.M. on 14.10.1953. (vi) *Chafa* (medium). (vii) Unirrigated. (viii) Weeding. (ix) Nil. (x) 18.2.1954.

2. TREATMENTS :

O = Control.
N = 20 lb./ac. of N as A/S. and G.N.C. in 1 : 1 ratio.
P = 20 lb./ac. of P_2O_5 as Super.
K = 40 lb./ac. of K_2O as Pot. Sul.
The treatments were applied on 17.10.1953.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 90'×6' (b) 81.5'×4'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Germination was satisfactory and crop stand was good. (ii) Nil. (iii) Grain yield. (iv) (a) 1953-Contd. (b) No. (c) N.A. (v) (a) & (b) N.A. (vi) & (vii) Nil.

5. RESULTS :

(i) 409 lb./ac.
(ii) 58.79 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
O	379
N	458
P	401
K	357
S.E./mean	= 24.05 lb./ac.

Crop :- Gram (*Rabi*). Ref :- Gj. 49(101).

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

Object :- To study the effect of a leguminous crop Gram grown with and without P_2O_5 on the succeeding cereal crop Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy Gram. (b) Paddy. (c) 10 C.L./ac. of F.Y.M. (ii) (a) Medium black. (b) N.A. (iii) N.A. (iv) (a) N.A. (b) Broadcasting. (c) 60 lb./ac. (d) N.A. (e) N.A. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) Nil. (x) N.A.

2. TREATMENTS :

1. Control (no P_2O_5).
2. 50 lb./ac. of P_2O_5 as Super.
3. 100 lb./ac. of P_2O_5 as Super.
4. 150 lb /ac. of P_2O_5 as Super.
5. Fallow (sown in *kharif* and fallow in *rabi*).

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N A. (iii) 5. (iv) (a) 24′×18′. (b) 15′×9′. (v) 4½′ ring round the net plot. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1949 (*kharif*)—1952 (*rabi*). (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) No reason given in records for low yields. (vi) Nil.

5. RESULTS :

(i) 232 lb./ac.
(ii) 42.8 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of gram in lb./ac.

Treatment	Av. yield
1.	245
2.	248
3.	221
4.	213
5.	Fallow
S.E./mean	±19.12 lb./ac.

Crop :- Gram (*Rabi*). Ref :- Gj. 50(127).

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

Object :—To study the effect of leguminous crop Gram grown with and without P_2O_5 on the succeeding cereal crop Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy-Gram. (b) Paddy. (c) 10 C.L./ac. of compost manure. (ii) (a) Medium black. (b) N.A. (iii) N.A. (iv) (a) N.A. (b) Broadcasting. (c) 60 lb./ac. (d) N.A. (e) N.A. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) *Rabi* season hence negligible. (x) N.A.

2. TREATMENTS :

1. Control (no P_2O_5).
2. 50 lb /ac. of P_2O_5 as Super.
3. 100 lb./ac. of p_2O_5 as Super.
4. 150 lb./ac. of P_2O_5 as Super.
5. Fallow (sown in *kharif* and fallow in *rabi*).

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 24′×18′. (b) 15′×9′. (v) 4½′ ring round the net plot. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) *Kharif* 1949—1950 to *rabi* 1952—1953. (b) No. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 711 lb./ac.
(ii) 154.3 lb./ac.
(iii) Treatments do not differ significantly.

(iv) Av. yield of gram in lb./ac.

Treatment	Av. yield
1.	761
2.	748
3.	615
4.	720
5.	Fallow
S.E./mean	=68.97 lb /ac.

Crop :-Gram (*Rabi*). Ref : Gj. 51(172).

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

Object :—To study the effect of leguminous crop Gram grown with and without P_2O_5 on the succeeding cereal crop Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy-Gram. (b) Paddy. (c) 10 C.L./ac of compost manure. (ii) (a) Medium black. (b) N.A. (iii) N.A. (iv) (a) N.A. (b) Broadcasting. (c) 60 lb./ac. (d) and (e) N.A. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) *Rabi* season hence negligible. (x) N.A.

2. TREATMENTS :

1. Control (no P_2O_5).
2. 50 lb /ac. of P_2O_5 as Super.
3. 100 lb./ac. of P_2O_5 as Super.
4. 150 lb./ac. of P_2O_5 as Super.
5. Sown in *kharif* and fallow in *rabi*.

3. DESIGN ;

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 24'×18'. (b) 15'×9'. (v) 4½' ring round the net plot. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1949 (*kharif*)—1952 (*rabi*). (b) No (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 514 lb./ac.
(ii) 160.9 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of gram in lb./ac.

Treatment	Av. yield
1.	528
2.	528
3.	484
4.	516
5.	Fallow
S.E./mean	=71.9 lb./ac.

Crop :-Gram (*Rabi*). Ref :-Gj. 50(66).

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

Object :—To study the effect of leguminous crop Gram grown with and without P_2O_5 on the succeeding cereal crop Maize.

1. BASAL CONDITIONS :

(i) (a) Gram-Maize. (b) Maize. (c) 10 C.L./ac. of F.Y.M. (ii) (a) Black. (b) Refer soil analysis, Dohad. (iii) 24.10.1950. (iv) (a) N.A. (b) Sowing with a plough to which a draw tube is attached. (c) 60 lb./ac. (d) 15"×12". (e) N.A. (v) 10 C.L./ac. of F.Y.M. (vi) Yellow gram. (vii) Unirrigated. (viii) Nil. (ix) Nil. (x) 14.3.1951.

2. TREATMENTS :

1. Control (no P_2O_5).
2. 50 lb./ac. of P_2O_5 as Super.
3. 100 lb./ac. of P_2O_5 as Super.
4. 150 lb./ac. of P_2O_5 as Super.
5. Fallow in *rabi*, manured with 10 C.L./ac. of F.Y.M. in *kharif*.

Manures were applied in rows and then mixed up with the soil by hand digging.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) 50′×21′. (b) 30′×15′. (v) N.A. (vi) Yes.

4. GENERAL :

(i) The germination was good but later crop suffered due to lack of moisture. (ii) There was a slight attack of frost, damage to the extent of 15 to 20%. (iii) Grain yield. (iv) (a) 1950—1951. (b) Yes. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 187 lb./ac.
(ii) 86.7 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	209
2.	184
3.	184
4.	172
5.	Fallow
S.E./mean	=35.4 lb./ac.

Crop :- Gram (*Rabi*). Ref :- Gj. 53(52).

Site :- Agri. Res. Stn., Arnej. Type :- 'C'.

Object :- To find out the suitable spacing and economic seed rate for Gram.

1. BASAL CONDITIONS :

(i) (a) Gram—Wheat. (b) Wheat. (c) Nil. (ii) (a) Medium black to deep black. (b) Refer soil analysis. Arnej. (iii) 23.10.1953. (iv) (a) 4 to 5 harrowings prior to sowing. (b) Drilling. (c) and (d) As per treatments. (e) N.A. (v) Nil. (vi) *Chafa* (medium). (vii) Un irrigated. (viii) Nil. (ix) *Rabi* season hence negligible. (x) 18.2.1954.

2. TREATMENTS :

Main-plot treatments :

3 spacings : S_1=12″, S_2=15″ and S_2=18″.

Sub-plot treatments :

3 seed rates : R_1=20, R_2=30 and R_3=40 lb./ac.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block and 3 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 33½′×18′ for 12″ and 15″ spacing and 33′×18′ for 18″ spacing. (b) 30′×16′. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Germination was satisfactory and stand of crop was good. (ii) Nil. (iii) Grain yield. (iv) (a) 1953—continued. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 510.2 lb./ac.
(ii) (a) 57.17 lb./ac.
(b) 59.90 lb./ac.
(iii) None of the effects is significant.

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

	S_1	S_2	S_3	Mean
R_1	467.8	514.6	506.2	496.2
R_2	547.1	514.6	507.0	522.9
R_3	474.5	528.9	531.5	511.6
Mean	496.5	519.4	514.9	510.2

S.E. of difference of two

1. S marginal means = 18.99 lb./ac.
2. R marginal means = 19.00 lb./ac.
3. R means at the same level of S = 34.98 lb./ac.
4. S means at the same level of R = 34.06 lb./ac.

Crop :- Chinamug (*Kharif*). Ref :- Gj. 58(31).

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

Object :—To study the effect of leguminous crop *Chinamug* grown with and without P_2O_5 on the succeeding cereal crop *Jowar*.

1 BASAL CONDITIONS :

(i) (a) Nil. (b) *Lang* in *rabi*. (c) Nil. (ii) (a) Black cotton. (b) N.A. (iii) 4.8.1948. (iv) (a) N.A. (b) Drilling. (c) 18 lb./ac. (d) Between rows 24" and between plants irregular. (e) N.A. (v) Nil. (vi) *Chinamug* (early). (xii) Unirrigated. (viii) 1 weeding only. (ix) 5.50". (x) 20.10.1948.

2. TREATMENTS :

1. No P_2O_5 (control).
2. 50 lb./ac. of P_2O_5 as Super.
3. 100 lb./ac. of P_2O_5 as Super.
4. 150 lb./ac. of P_2O_5 as Super.
5. Fallow in *kharif*, manured with 10 C.L./ac. of F.Y.M. in *rabi*.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 51' × 34'. (b) 47' × 30'. (v) 2' around the net plot. (vi) Yes.

4. GENERAL :

(i) The crop failed. (ii) Nil. (iii) Grain and fodder yield and no. of plants. (iv) (a) 1948—1954. (b) No. (c) N.A. (v) (a) and (b) No. (vi) The experiment failed. Accordingly the succeeding cereal crop *Rabi Jowar* could not be sown. (vii) Nil.

5. RESULTS :

(i) 20 lb./ac.
(ii) 12.77 lb./ac.
(iii) The treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	21
2.	22
3.	18
4.	20
5.	—
S.E./mean	= 5.71 lb./ac.

Crop :- Chinamug (*Kharif*). Ref :- Gj. 49(52).

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

Object :—To study the effect of leguminous crop (*Chinamug*) grown with and without P_2O_5 on the succeeding cereal crop *Jowar*.

1. BASAL CONDITIONS :

(i) (a) No. (b) Cotton. (c) F.Y.M. details N.A. (ii) (a) Black cotton soil. (b) N.A. (iii) 19.7.1949 and 21.7.1949. (iv) (a) N.A. (b) Drilling. (c) 18 lb./ac. (d) Between rows – 24" and between plants – irregular. (e) N.A. (v) Nil (vi) *Chinamug* (early). (vii) Unirrigated. (viii) 2 gap fillings 27, 28.7.1949, 3 thinnings, 7 weedings and 1 interculturing. (ix) 13.87". (x) 12 and 19.9.1949.

2. TREATMENTS :

1. No P_2O_5 (control).
2. 50 lb./ac. of P_2O_5 as Super.
3. 150 lb./ac. of P_2O_5 as Super.
4. 150 lb./ac. of P_2O_5 as Super.
5. Fallow in *Kharif* and manured with 10 C.L /ac. of F.Y.M. in *Rabi*.

Manuring on 19.7.1949, 23 and 24.7.1949 was done by hand.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 51'×34'. (b) 47'×30'. (v) 2' all round the net plot. (vi) Yes.

4. GENERAL :

(i) The general growth of the crop was normal. (ii) Attack of hairy caterpillar, negligible damage. (iii) Grain yield. (iv) (a) 1948—1954. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 263 lb./ac.
(ii) 97.51 lb./ac.
(iii) The treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	233
2.	245
3.	271
4.	305
5.	—
S.E./mean	= 43.59 lb./ac.

Crop :- Chinamug (*Kharif*). Ref :- Gj. 51(222).

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

Object :—To study the effect of leguminous crop (*Chinamug*) with and without P_2O_5 on the succeeding cereal crop *Jowar*.

1. BASAL CONDITIONS :

(i) (a) No. (b) *Jowar*. (c) Nil. (ii) (a) Black cotton soil. (b) N.A. (iii) 26.6.1951. (iv) (a) N.A. (b) Drilling. (c) 18 lb./ac. (d) 24" between rows. (e)—. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) 1 weeding and 1 interculturing. (ix) 6.92". (x) 18.9.1951 and 27.9.1951.

2. TREATMENTS :

1. No P_2O_5 (control).
2. 50 lb./ac. of P_2O_5 as Super.
3. 100 lb./ac. of P_2O_5 as Super.
4. 150 lb./ac. of P_2O_5 as Super.
5. Fallow in *Kharif* and manured with 10 C.L./ac. of F.Y.M. in *Rabi*.

Super applied on 24.6.1251.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 5. (iv) (a) 48'×30'. (b) 36'×18'. (v) 6' alround the net plot. (vi) Yes.

4. GENERAL :

(i) Growth stunted for want of sufficient moisture. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1948 – 1954. (b) No. (c) Nil. (v) (a) No. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 24 lb./ac.
(ii) 14.79 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	26
2.	26
3.	23
4.	23
5.	—
S.E./mean	= 6.61 lb./ac.

Crop :- Chinamug (*Kharif*). Ref :- Gj. 52(108).

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

Object :—To study the effect of leguminous crop *Chinamug* grown with and without P_2O_5 on the succeeding cereal crop *Jowar*.

1. BASAL CONDITIONS :

(i) (a) No. (b) Fallow. (c) Nil. (ii) Black cotton soil. (b) N.A. (iii) 18.6.1952. (iv) (a) N.A. (b) Drilling. c) 18 lb./ac. (d) Between rows 24" ; between plants irregular. (e) N.A. (v) Nil. (vi) *Chinamug* (early). (vii) Unirrigated. (viii) 2 gap fillings, 2 interculturings and 1 weeding. (ix) N.A. (x) 28.8.1952 and 1.9.1952.

2. TREATMENTS :

1. No P_2O_5 (control).
2. 50 lb./ac. of P_2O_5 as Super.
3. 100 lb./ac. of P_2O_5 as Super.
4. 150 lb./ac. of P_2O_5 as Super.
5. Fallow in *kharif* and manure with 10 C.L./ac. of F.Y.M. in *rabi*

Manures applied on 18.6.1952.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 48'×30'. (b) 36'×18'. (v) 6' around the net plot. (vi) Yes.

4. GENERAL :

(i) Due to constant rain the growth was held up and decreased the yield to a considerable extent. (ii) Rabbits and monkeys together damaged the crop. (iii) Grain and fodder yield. (iv) (a) 1948 – 1954. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 297 lb./ac.
(ii) 79.70 lb./ac.
(iii) The treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	233
2.	328
3.	361
4.	266
5.	—
S.E./mean	=35.63 lb./ac.

Crop :- Chinamug (*Kharif*). Ref :- Gj. 53(65).

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

Object :—To study the effect of leguminous crop *Chinamug* grown with and without P_2O_5 on the succeeding cereal crop *Jowar*.

1. BASAL CONDITIONS :

(i) (a) No. (b) *Jowar*. (c) Nil. (ii) (a) Black cotton soil. (b) N.A. (iii) 16.5.1953. (iv) (a) 3 harrowings. (b) Drilling. (c) 18 lb./ac. (d) 24". (e) N.A. (v) Nil. (vi) *Chinamug* (early). (vii) Unirrigated. (viii) Gap filling, interculturing and 3 weedings. (ix) 36.23". (x) 23, 24.9.1953.

2. TREATMENTS :

1. No P_2O_5 (control).
2. 50 lb./ac. of P_2O_5 as Super.
3. 100 lb./ac. of P_2O_5 as Super.
4. 150 lb./ac. of P_2O_5 as Super.
5. Fallow in *kharif* and manured with 10 C.L./ac. of F.Y.M. in *rabi*.

Super applied on 12.6.1953.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 48'×30'. (b) 36'×18'. (v) 6' alround the net plot. (vi) Yes.

4. GENERAL :

(i) Uneven growth. Rains at the time of flowering affected the yield. (ii) No. (iii) Grain yield. (iv) (a) 1948—1954. (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 68.97 lb./ac.
(ii) 24.20 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	65.58
2.	65.72
3.	68.94
4.	75.67
5.	—
S.E./mean	±10.9 lb./ac.

Crop :-Udid (*Kharif*). Ref :-Gj. 49(81).

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

Object :—To study the effect of P_2O_5 applied to *Udid* on the succeeding cotton crop grown with and without N.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Medium black. (b) Refer soil analysis, Amreli. (iii) 19.7.1949. (iv) (a) to (e) N.A. (v) Nil. (vi) *Udid* (local). (vii) Unirrigated. (viii) 4 weedings and 2 interculturings. (ix) 13.75". (x) 27.12.1949.

2. TREATMENTS :

1. *Udid* grown without P_2O_5.
2. *Udid* grown with P_2O_5 at 30 lb./ac. as Super.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 4. (iv) (a) 44'×30'. (b) 40'×24'. (v) 2'×3'. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1946—1949. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) No reasons given for low yield. (vii) Nil.

5. RESULTS :

(i) 318 lb./ac.
(ii) 50.73 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	318
2.	318
S.E./means	=25.36 lb./ac.

Crop :-Tur (*Rabi*). Ref :-Gj. 48(5).

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

Object :—To study the effect of the leguminous crop *Tur* grown with and without P_2O_5 on the succeeding cereal crop *Jowar*.

1. BASAL CONDITIONS :

(i) (a) *Tur-Jowar*. (b) *Jowar*. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surat. (iii) 30.9.1948. (iv) (a) N.A. (b) Drilling. (c) 15 to 20 lb./ac. (d) 3' between rows ; 1½' between plants. (e) N.A. (v) Nil. (vi) Local. (vii) Unirrigated. (viii) 2 thinnings and 2 interculturings. (ix) 4.88". (x) 23.3.1949.

2. TREATMENTS .

1. No P_2O_5 (control).
2. 50 lb./ac. of P_2O_5 as Super.
3. 100 lb./ac. of P_2O_5 as Super.
4. 150 lb./ac. of P_2O_5 as Super.
5. Fallow.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 42'×30'. (b) 30'×18'. (v) 6' ring around the net plot. (vi) Yes.

4. GENERAL :

(i) Below normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1948—1954. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 223 lb./ac.
(ii) 94.27 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	226
2.	210
3.	222
4.	234
5.	—
S.E./mean	=42.03 lb./ac.

Crop :- Tur (*Rabi*). Ref :- Gj. 49(10)/48(5).

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

Object :—To study the effect of the leguminous crop *Tur* grown with and without P_2O_5 on the succeeding cereal crop *Jowar*.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar*. (c) Nil. (ii) (a) Black cotton soils. (b) Refer soil analysis, Surat. (iii) *Tur* 14.10.1949 ; Cotton 22.7.1949. (iv) (a) N.A. (b) Drilling. (c) 10 lb./ac. to 15 lb./ac. (d) 8'×1½'. (e) N.A. (v) Nil. (vi) Local. (vii) Unirrigated. (viii) Weeding, thinning, interculturing and 2 gap filling. (ix) Nil. (x) 6.4.1950.

2. TREATMENTS :

1. No P_2O_5 (control).
2. 50 lb./ac. of P_2O_5.
3. 100 lb./ac. of P_2O_5.
4. 150 lb /ac. of P_2O_5.
5. Cotton *Suyog*.

P_2O_5 as Super applied on 21.9.1949.

3. DESIGN :

(i) L. Sq. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 42′×30′. (b) 30′×18′. (v) 6′ alround the net plot. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Slight attack of Jassids on *tur*, no damage. (iii) Grain yield. (iv) (a) 1948—1954. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The expt. is analysed with treatment, no. 5 missing. The yield of cotton is given separately.

5. RESULTS :

(i) 393 lb./ac.
(ii) 100.8 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	433
2.	382
3.	398
4.	359
S.E /mean	= 45.14 lb./ac.
Av. yield of *kapas*	=379 lb./ac.

Crop :- Tur (*Rabi*). Ref :- Gj. 50(15)/49(10)/48(5).

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

Object :—To study the effect of the leguminous crop *Tur* grown with and without P_2O_5 on the succeeding cereal crop *Jowar*.

1. BASAL CONDITIONS :

(i) *Tur-Jowar*. (b) *Jowar*. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surat. (iii) *Tur* 25.8.1950. (iv) (a) N.A. (b) Drilling. (c) 15 to 20 lb./ac—1 plant at final stand. (d) 3′×1½′. (e)—. (v) Nil. (vi) Local. (vii) Unirrigated. (viii) One thinning, 2 interculturings and weeding. (ix) Nil. (x) 18.3.1951.

2. TREATMENTS .

1. No P_2O_5 (control).
2. 50 lb./ac. of P_2O_5.
3. 100 lb./ac. of P_2O_5.
4. 150 lb./ac. of P_2O_5.
5. Cotton *Suyog*.

P_2O_5 as Super applied on 23.8.1950.

3. DESIGN :

(i) L. Sq. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 42′×30′. (b) 30′×18′. (v) 6′ alround the net plot. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Borer attack. (iii) Grain yield, (iv) (a) 1948—1954. (b) Yes. (c) N.A. (v) (a) No (b) N.A. (vi) N.A. (vii) The experiment analysed with treatment no. 5 missing. The yield of cotton is given separately.

5. RESULTS :

(i) 484 lb./ac.
(ii) 37.11 lb./ac.
(iii) Treatments do not differ significantly.

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

Treatment	Av. yield
1.	484
2.	458
3.	498
4.	496

S.E./mean = 16.61 lb./ac.

Av. yield of *kapas* = 599 lb./ac.

Crop :- Tur (*Rabi*). Ref :- Gj. 51(21)/50(15)/49(10)/48(5).

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

Object :—To study the effect of the leguminous crop *Tur* raised with and without P_2O_5 on the succeeding cereal crop *Jowar*.

1. BASAL CONDITIONS :

(i) (a) *Tur—Jowar*. (b) *Jowar*. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surat. (iii) 4.9.1951. (iv) (a) N.A. (b) Drilling. (c) 10 to 15 lb./ac. (d) 9" to 1' between plants and 1½' between rows. (e) —. (v) Nil. (vi) Local. (vii) Unirrigated. (viii) Thinning, 3 interculturings and weeding. (ix) Nil. (x) 7.3.1952.

2. TREATMENTS :

1. No P_2O_5 (control).
2. 50 lb./ac. of P_2O_5 as Super.
3. 100 lb./ac. of P_2O_5 as Super.
4. 150 lb./ac of P_2O_5 as Super.
5. Cotton.

3. DESIGN :

(i) L. Sq. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 42'×30'. (b) 30'×18'. (v) 6' alround the net plot. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Slight attack of pod borer. (iii) Grain yield. (iv) (a) 1948—1954. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) Experiment analysed with one mising plot. Mean yield of cotton is given separately.

5. RESULTS :

(i) 826 lb./ac.

(ii) 61.71 lb./ac.

(iii) Treatments do not differ significantly.

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

Treatment	Av. yield
1.	819
2.	807
3.	799
4.	879
5.	—

S.E./mean = 27.62 lb./ac.

Av. yield of *kapas* = 76.15 lb./ac.

Crop :- Tur (*Rabi*). Ref :- Gj. 52(35)/51(21)/50(15)/49(10)/48(10).

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

Object :—To study the effect of the leguminous crop *Tur* grown with and without P_2O_5 on the succeeding cereal crop *Jowar*.

1. BASAL CONDITIONS :

(i) (a) *Jowar—Tur*. (b) *Jowar*. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surat. (iii) 25.9.1952. (iv) (a) N.A. (b) Drilling. (c) 15 to 20 lb./ac. (d) 3' between rows and 1½' between plants. (e) N.A. (v) Nil. (vi) Local. (vii) Unirrigated. (vii) Thinning and 3 interculturings. (ix) Nil. (x) 9.3.1952.

2. TREATMENTS :

1. No P_2O_5 (control).
2. 50 lb./ac. of P_2O_5.
3. 100 lb./ac. of P_2O_5.
4. 150 lb./ac. of P_2O_5.
5. Cotton *Suyog*.

P_2O_5 as Super applied on 7.9.1952.

3. DESIGN :

(i) L. Sq. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 42′ × × 30′. (b) 30′ × 15′. (v) 6′ alround the net plot. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1948—1954. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was analysed with one treatment missing. The mean yield of treatment 5 is given separately.

5. RESULTS :

(i) 430 lb./ac.
(ii) 34.69 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	426
2.	430
3.	438
4.	426
5.	—

S.E./mean = 15.52 lb./ac.
Av. yield of *kapas* = 235 lb./ac.

Crop :-Tur (*Rabi*). **Ref :-Gj. 53(44)/52(35)/51(21)/50(15)/49(10/48(5).**
Site :-Agri. Res. Stn., Surat. **Type :-'M'.**

Object :—To study the effect of leguminous crop *Tur* grown with and without P_2O_5 on the succeeding cereal crop *Jowar*.

1. BASAL CONDITIONS :

(i) (a) *Jowar—Tur*. (b) *Jowar*. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surat. (iii) 26 8 1953. (iv) (a) 3 harrowings. (b) Drilling. (c) to (e) N.A. (v) Nil. (vi) Local. (vii) Unirrigated. (viii) 1 thinning, 2 weedings and 3 interculturings. (ix) Nil. (x) 5.4.1954.

2. TREATMENTS :

1. No P_2O_5 (control).
2. 50 lb./ac. of P_2O_5 as Super.
3. 100 lb./ac. of P_2O_5 as Super.
4. 150 lb./ac. of P_2O_5 as Super.
5. Cotton *Suyog*.

3. DESIGN :

(i) L. Sq. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 42′ × 30′. (b) 30′ × 18′. (v) 6′ alround the net plot. (vi) Yes.

4. GENERAL :

(i) Below normal. (ii) Attack of top borer and yield was affected to about 50%. (iii) Height, stand and grain yield. (iv) (a) 1948—1954. (b) Yes. (c) N.A. (v) (a) and (b) N.A. (vi) Nil. (vii) The expt. was analysed with one treatment missing.

5. RESULTS :

(i) 397 lb./ac.
(ii) 47.58 lb./ac.
(iii) Treatments differ significantly.

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

Treatment	Av. yield
1.	426
2.	426
3.	407
4.	331
5.	—
S.E./mean	=20.97 lb./ac.

Crop :-Wal (*Rabi*). Ref :-Gj. 49(100).

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

Object :—To study the effect of the leguminous crop *Wal* grown with and without P_2O_5 on the succeeding cereal crop Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy—*Wal*. (b) Paddy. (c) 10 C.L./ac. of F.Y.M. (ii) (a) Medium black. (b) N.A. (iii) N.A. (iv) (a) N.A. (b) Broadcasting. (c) 80 lb./ac. (d) and (e) N.A. (v) Nil. (vi) N.A. (vii) N.A. (viii) N.A. (ix) Nil. (x) N.A.

2. TREATMENTS :

1. No P_2O_5 (control).
2. 50 lb./ac. of P_2O_5 as Super.
4. 100 lb./ac. of P_2O_5 as Super.
3. 150 lb./ac. of P_2O_5 as Super.
5. Fallow in *rabi* and sown in *kharif*.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 24'×18'. (b) 15'×9'. (v) 4½' around the net plot. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1949—1952. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 802 lb./ac.
(ii) 126.5 lb./ac.
(iii) The treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	713
2.	807
3.	855
4.	833
5.	—
S.E./mean	=56.54 lb./ac.

Crop :- Wal (*Rabi*). Ref :- Gj. 50(126).

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

Object :—To study the effect of the leguminous crop *Wal* grown with and without P_2O_5 on the succeeding cereal crop Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy-*Wal*. (b) Paddy in *kharif* and *wal* in *rabi*. (c) C.L./ac. of compost to paddy. (ii) (a) Medium black. (b) N.A. (iii) N.A. (iv) (a) N.A. (b) Broadcasting. (c) 80 lb./ac. (d) N.A. (e) N.A. (v) Nil. (vi) N.A. (vii) N.A. (viii) N.A. (ix) Nil. (x) N.A.

2. TREATMENTS :

1. No P_2O_5 (Control).
2. 50 lb./ac. of P_2O_5 as Super.
3. 100 lb./ac. of P_2O_5 as Super.
4. 150 lb./ac. of P_2O_5 as Super.
5. Fallow in *rabi* and sown in *kharif*.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 24′×18′. (b) 15′×9′. (v) 4½′ alround the net plot. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1949—1952. (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 760 lb./ac.
(ii) 97.0 lb /ac.
(iii) The treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	750
2.	776
3.	730
4.	784
5.	—
S.E./mean	=43.36 lb./ac.

Crop :- Wal (*Rabi*). Ref :- Gj. 51(171).

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

Object :—To study the effect of leguminous crop *Wal* grown with and without P_2O_5 on the succeeding cereal crop Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy-*Wal*—Gram. (b) Paddy in *Kharif*, *Wal* and Gram in *rabi*. (c) 10 C.L./ac. of compost given to paddy. (ii) (a) Medium black. (b) N.A. (iii) N.A. (iv) (a) N.A. (b) Broadcasting. (c) 80 lb./ac. (d) N.A. (e) N.A. (v) Nil. (vi) N.A. (vii) N.A. (viii) N.A. (ix) Nil. (x) N A.

2. TREATMENTS :

1. No P_2O_5 (Control).
2. 50 lb./ac. of P_2O_5 as Super.
3. 100 lb./ac. of P_2O_5 as Super.
4. 150 lb./ac. of P_2O_5 as Super.
5. Fallow in *rabi* and sown in *kharif*.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 24′×18′. (b) 15′×9′. (v) 4½′ alround the net plot. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1949—1952. (b) No. (c) N.A. (v) (a) N.A. (b) N A. (vi) and (vii) Nil.

5. RESULTS :

(i) 432 lb./ac.
(ii) 182.9 lb./ac.
(iii) The treatments do not differ significantly.

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

Treatment	Av. yield
1.	472
2.	379
3.	460
4.	419
5.	—
S.E./mean	=81.7 lb./ac.

Crop :-Lang (*Rabi*). Ref : Gj. 52(353)

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

Object :—To study the effect of leguminous crop *Lang* raised with and without P_2O_5 on the succeeding cereal crop *Jowar*.

1. BASAL CONDITIONS :

(i) (a) *Lang-Jowar*. (b) *Jowar*. (c) Nil. (ii) (a) Black cotton soil. (b) N.A. (iii) 29.9.1952. (iv) (a) N.A. (b) Drilling. (c) 40 lb./ac. (d) 24" spacing. (e) —. (v) Nil. (vi) T-2-12. (vii) Unirrigated. (viii) N.A. (ix) Nil. (x) 31.1.1953.

2. TREATMENTS :

1. No P_2O_5 (control).
2. 50 lb./ac. of P_2O_5 as Super.
3. 100 lb./ac. of P_2O_5 as Super.
4. 150 lb./ac. of P_2O_5 as Super.
5. Fallow.

P_2O_5 applied on 26.8.1952.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 43'×24'. (b) 44'×20'. (v) 2' around the net plot. (vi) Yes.

4. GENERAL :

(i) Crop growth stunted due to severe heat and want of moisture. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) N.A. (b) N.A. (c) Nil. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 16 lb./ac.
(ii) 7.33 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	19
2.	10
3.	14
4.	23
5.	—
S.E./mean	=3.28 lb./ac.

Crop :-Sugarcane. Ref : Gj. 50(24).

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

Object :—To study the effect of A/S and G.N.C. along with F.Y.M. on Sugarcane yield.

1. BASAL CONDITIONS :

(i) (a) Paddy-Sugarcane. (b) Paddy. (c) Nil. (ii) (a) Black soil. (b) Refer soil analysis, Vyara. (iii) 16, 17.2.1950. (iv) (a), (b) and (c) N.A. (d) 3½'. (e) 36000 three budded setts/ac. (v) Nil. (vi) Co-527. (vii) Unirrigated. (viii) Weeding and earthing up thrice. (ix) 74.20". (x) End of Feb. 1951.

2. TREATMENTS :

Main-plot treatments :

2 levels of F.Y.M. : F_1=10 and F_2=20 C.L./ac.

Sub-plot treatments:

3 ratios of N (applied at 120 lb./ac.). R_1=A/S : G.N.C. in 1 : 1. R_2=A/S : G.N.C. in 1 : 2. R_3=G.N.C. alone.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/block ; 3 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 55.3′×31.5′. (b) 44.8′×24.5′. (v) one row at either side and 5.3′ at either end. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of borer. Control measures taken N.A. (iii) Germination counts, height, girth, no. of internodes and cane yield. (iv) (a) 1950—1954. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 28.81 ton/ac.

(ii) (a) 2.89 ton/ac.
(b) 3.31 ton/ac.

(iii) Only the interaction F×R is highly significant.

(iv) Av. yield of sugarcane in ton/ac.

	F_1	F_2	Mean
R_1	27.50	29.57	28.53
R_2	29.76	28.45	29.10
R_3	29.40	28.32	28.81
Mean	28.89	28.75	28.81

S.E. of difference of two

1. F marginal means =0.96 ton/ac.
2. R marginal means =1.35 ton/ac.
3. R means at the same level of F =1.91 ton/ac.
4. F means at the same level of R =1.83 ton/ac.

Crop :-Sugarcane. Ref :-Gj. 51(27).

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

Object :—To study the effect of A/S and G.N.C. along with F.Y.M. on Sugarcane yield.

1. BASAL CONDITIONS :

(i) (a) Paddy—Sugarcane. (b) Paddy. (c) N.A. (ii) (a) Black soil. (b) Refer soil analysis, Vyara. (iii) 26.1.1951 and 27.1.1951. (iv) (a) and (b) N.A. (c) 36,000 three budded setts/ac. (d) Between rows—3.5′. (e) N.A. (v) Nil. (vi) CO—527. (vii) Irrigated. (viii) Weeding twice and earthing up thrice. (ix) 32.7″. (x) February 1952.

2. TREATMENTS :

Main-plot treatments :

2 levels of F.Y.M. : F_1=10 and F_2=20 C.L./ac.

Sub-plot treatments :

3 ratios of N (applied at 120 lb./ac.) : R_1=A/S : G.N.C. in 1 : 1, R_2=A/S : G.N.C. in 1 : 2 and R_3= G.N.C. alone.

DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/block ; 3 sub-plot/main-plot. (b) N.A. (iii) 6. (iv) (a) 31.5′×55.3′. (b) 24.5′×44.5′. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Stem borer attack 1% and shoot borer attack 2%. (iii) Germination count, girth weight of sugarcane, No. of inter nodes. (iv) (a) 1950—1954. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 34.88 ton/ac.
(ii) (a) 5.50 ton/ac.
(b) 2.55 ton/ac.
(iii) None of the effects is significant.
(iv) Av. yield of sugarcane in lb./ac.

	F_1	F_2	Mean
R_1	33.51	37.46	35.48
R_2	33.58	35.88	34.73
R_3	33.18	35.71	34.44
Mean	33.42	36.35	34.88

S.E. of difference of two
1. F marginal means = 1.80 ton/ac.
2. R marginal means = 1.04 ton/ac.
3. R means at the same level of F = 1.47 ton/ac.
4. F means at the same level of R = 2.16 ton/ac.

Crop :-Sugarcane. Ref :-Gj. 52(54).

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

Object :—To study the effect of A/S and G.N.C. along with F.Y.M. on Sugarcane yield.

1. BASAL CONDITIONS :

(i) (a) Paddy—Sugarcane. (b) Paddy. (c) N.A. (ii) (a) Black soil. (b) Refer soil analysis, Vyara. (iii) January 19.2 and 4.2.1952. (iv) (a) and (b) N.A. (c) 12,000 three buded setts/ac. (d) 3½' between rows and 9 rows in a plot. (e) N.A. (v) Nil. (vi) CO—527. (vii) Irrigated. (viii) Weedings thrice and earthing up thrice. (ix) 40.94". (x) 17 and 26.1.1953.

2. TREATMENTS:

Main-plot treatments :

2 levels of F.Y.M. : F_1 = 10 and F_2 = 20 C.L./ac.

Sub-plot treatments :

3 ratios of N (applied at 120 lb./ac.) : R_1 = A/S : G.N.C. in 1 : 1, R_2 = A/S : G.N.C. in 1 : 2 and R_3 = G.N.C. alone.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/block and 3 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 55.3' × 31.5'. (b) 44.5' × 24.5'. (v) 1 row on either side and 5.4' on either end. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of stem borer ; D.D.T. and Pyrilla. (iii) Germination count, height, girth, internode and sugarcane yield. (iv) (a) 1950—1954. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 24.65 ton/ac.
(ii) (a) 1.50 ton/ac.
(b) 2.06 ton/ac.
(iii) None of the effects is significant.

(iv) Av. yield of sugarcane in ton/ac.

	F_1	F_2	Mean
R_1	23.60	25.40	24.50
R_2	23.70	25.20	24.45
R_3	25.00	25.00	25.00
Mean	24.10	25.20	24.65

S.E. of difference of two

1. F marginal means =0.50 ton/ac.
2. R marginal means =0.84 ton/ac.
3. R means at the same level of F =1.19 ton/ac.
4. F means at the same level of R =1.09 ton/ac.

Crop :- Sugarcane. Ref :- Gj. 53(100).

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

Object :—To study the effect of A/S and G.N.C. along with F.Y.M. on Sugarcane yield.

1. BASAL CONDITIONS :

(i) (a) Sugarcane—Paddy—Sugarcane. (b) Paddy. (c) 5 C.L./ac. of F.Y.M.+100 lb./ac. of A/S+300 lb./ac. of G.N.C.. (ii) (a) Black soil. (b) Refer soil analysis, Vyara. (iii) 31.1.1953. (iv) (a) to (e) N.A. (v) Nil. (vi) CO.419. vii) Irrigated. (viii) Weeding five times. (ix) 72". (x) 12.1.1954.

2. TREATMENTS :

Main-plot treatments :

2 levels of F.Y.M. : F_1=10 and F_2=20 C.L./ac.

Sub-plot treatments :

3 ratios of N (applied at 120 lb./ac.) : R_1=A/S : G.N.C. in 1 : 1, R_2=A/S : G.N.C. in 1 : 2 and R_3=G.N.C. alone.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/block and 3 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 31.5'×55.3'. (b) 24.5'×44.5'. (v) Two rows on either side along the length. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Mild attack of pyrilla—5% D.D.T. ; mealy bugs—1% fish oil rasin soap. (iii) Germination counts, tillering counts, no. of internodes and sugarcane yield. (iv) (a) 1950—1954. (b) No. (c) N.A. (v) (a) Nil. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 32.75 ton/ac.
(ii) (a) 5.94 ton/ac.
(b) 5.44 ton/ac.
(iii) Only main effect of R is significant.
(iv) Av. yield of cane in ton/ac.

	F_1	F_2	Mean
R_1	34.34	34.18	34.26
R_2	26.63	32.33	29.48
R_3	33.83	35.21	34.52
Mean	31.60	33.90	32.75

S.E. of difference of two

1. F marginal means =1.98 ton/ac.
2. R marginal means =2.22 ton/ac.
3. R means at the same level of F =3.14 ton/ac.
4. F means at the same level of R =3.24 ton/ac.

Crop :-Sugarcane. Ref :- Gj. 53(101).

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

Object :—To study the N and P_2O_5 requirements of Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Sugarcane—Paddy—Sugarcane. (b) Paddy. (c) 5 C.L./ac. of F.Y.M.+100 lb./ac. of A/S+300 lb./ac. of G.N.C. (ii) (a) Black soil. (b) Refer soil analysis, Vyara. (iii) 31.1.1953. (iv) (a) to (e) N.A. (v) 10 C.L./ac. of F.Y.M. (vi) CO.419 (medium). (vii) Unirrigated. (viii) Weeding five times, top dressing thrice and interculturing twice. (ix) 72". (x) 23.1.1954.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 levels of P_2O_5 as Super : P_0=0 and P_1=100 lb./ac.

(2) 3 levels of N as A/S : N_1=120, N_2=170 and N_3=220 lb./ac.

3. DESIGN :

(i) 3×2 Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 24.5'×55.5'. (b) 17.5'×46.5'. (v) 3½'×4½'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Mild attack of pyrilla—5% B.H.C. dusted. (iii) Germination count, tillering count, no. of internodes and sugarcane yield. (iv) (a) 1953—1955. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 28.35 ton/ac.

(ii) 2.48 ton/ac.

(iii) Main effect of N is significant while main effect of P_2O_5 and interactions are not significant.

(iv) Av. yield of cane in ton/ac.

	P_0	P_1	Mean
N_1	26.48	27.08	26.78
N_2	27.67	26.78	27.22
N_3	32.32	29.82	31.07
Mean	28.82	27.89	28.35

S.E. of marginal mean of N =0.87 ton/ac.

S.E. of marginal mean of P_2O_5 =0.72 ton/ac.

S.E. of body of table =1.24 ton/ac.

Crop :-Sugarcane. Ref :-Gj. 52(53).

Site :-Agri. Res. Stn., Vyara. Type :-'IM'.

Object :-To study the intensity of irrigation required for Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Paddy—Sugarcane. (b) Paddy. (c) N.A. (ii) (a) Medium black soil. (b) Refer soil analysis, Vyara. (iii) 3.2.1952. (iv) (a) & (b) N.A. (c) 36,000 three-budded setts/ac. (d) 3½' between rows. (e) N.A. (v) 10 C.L./ac. of F.Y.M.+120 lb./ac. of N as A./S & G.N.C. in the ratio 1 : 2. (vi) CO.419. (vii) Irrigated. (viii) 4 weedings and 2 earthing up. (ix) 40.92". (x) 1.1.1953 & 31.1.1953.

2. TREATMENTS :

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

(1) 2 levels of P_2O_5 as Super : P_0=0 and P_1=100 lb./ac.

(2) 2 levels of Irrigation : I_1=30"A and I_2=50"A.

(3) 2 intervals of Irrigation : T_1=once in 15 days and T_2=once in 30 days.

3. DESIGN :

(i) 2^3 Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 3. (iv) (a) 44.5'×24.5'. b) 38.8'×17.5'. (v) 1 row on either side and 2.9' at either end. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Attack of Stem-borer. (iii) Germination ccunt, no. of tillers, height, girth and cane yield. (iv) (a) No. (b) No. (c) N.A. (v) (a) & (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 31.46 ton./ac.

(ii) 1.94 ton./ac.

(iii) None of the effects is significant.

(iv) Av. yield of cane in ton./ac.

	T_1	T_2	Mean	P_0	P_1
I_1	32.66	30.92	31.79	31.04	32.54
I_2	31.23	31.06	31.14	31.62	30.67
Mean	31.94	30.99	31.46	31.33	31.60
P_0	31.52	31.14			
P_1	32.37	30.84			

S.E. of any marginal mean =0.56 ton/ac.

S.E. of body of table =0.79 ton/ac.

Crop :-Cotton. Ref :- Gj. 48(75).

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

Object :-To study the effect of Super applied to the leguminous crops (Groundnut, *Udid*, *Bajra*) on the succeeding cereal crop Cotton grown with & without N.

1. BASAL CONDITIONS :

(i) (a) Cotton–legumes. (b) *Bajra*, Groundnut & *Udid* in *Rabi*. (c) As per treatments. (ii) (a) Medium black. (b) Refer soil analysis, Amreli. (iii) 14 to 21.8.1948. (iv) (a) 3 harrowings and 1 ploughing. (b) Drilling. (c) 15 lb./ac. (d) 3' between rows. (e) N.A. (v) Nil. (vi) *Pratap*. (vii) Unirrigated. (viii) 3 weedings & 3 interculturings. (ix) 12.73". (x) N.A.

2. TREATMENTS :

Main-plot treatments : All combinations of (1) and (2)

(1) 3 previous crops : C_1=Groundnut, C_2=*Udid* and C_3=*Bajra*.

(2) 2 levels of P_2O_5 as Super (applied to above crops) : P_0=0 and P_1=30 lb./ac.

Sub-plot treatments :

2 levels of N (applied to cotton) : N_0=0 and N_1=30 lb./ac.

A/S drilled in furrows at the time of sowing of cotton.

3. DESIGN :

(i) Split-plot. (ii) (a) 6 main-plots/block ; 2 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 45′×15′. (b) 40′×9′. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) *Kapas* yield. (iv) (a) 1947–1949. (b) No. (c) Nil. (v) (a) & (b) Nil. (vi) Nil. (vii) Plot wise yield data N.A. ; hence not analysed.

5. RESULTS :

(i) 763 lb /ac.
(ii) N.A.
(iii) N.A.
(iv) Av. yield of *kapas* in lb./ac.

	C_1	C_2	C_3	Mean	N_0	N_1
P_0	713	806	779	766	759	773
P_1	754	724	800	759	794	725
Mean	734	765	790	763	776	749
N_0	737	783	810			
N_1	730	747	770			

S.E.'s—N.A.

Crop :- Cotton (*Kharif*). Ref :- Gj. 49(80).

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

Object :—To study the effect of Super applied to the leguminous crops (Groundnut, *Udid* and *Bajra*) on the succeeding crop Cotton grown with and without N.

1. BASAL CONDITIONS :

(i) (a) Cotton-legumes. (b) Legumes. (c) As per treatments. (ii) (a) Medium black. (b) Refer soil analysis, Amreli. (iii) 19.7.1949. (iv) (a) One ploughing and 3 harrowings. (b) Drilling. (c) 15 lb./ac. (d) Between rows 36″ and between plants—irregular. (e) N.A. (v) Nil. (vi) *Pratap*. (vii) Unirrigated. (viii) 3 weedings and 3 interculturings. (ix) 13.75″. (x) N.A.

2. TREATMENTS :

Main-plot treatments : All combinations of (1) and (2)

(1) 3 previous crops : C_1=Groundnut, C_2=*Udid* and C_3=*Bajra*.

(2) 2 levels of P_2O_5 as Super (applied to above crops) : P_0=0 and P_1=30 lb /ac.

Sub-plot treatments :

2 levels of N (applied to cotton) : N_0=0 and N_1=30 lb./ac.

A/S drilled in furrows at the time of sowing cotton.

3. DESIGN :

(i) Split-plot. (ii) (a) 6 main-plots/block ; 2 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 45′×15′. (b) 40′×9′. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Due to scanty rainfall the growth was not good. The crop dried earlier than the normal ones. (ii) N.A. iii) Yield of *kapas*. (iv) (a) 1946—1949. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 645 lb./ac.
(ii) (a) 79.89 lb /ac.
(b) 58.02 lb /ac.
(iii) Main effects of C, N and interactions C×P and C×N are significant. Others are not significant.

(iv) Av. yield of *kapas* in lb./ac.

	C_1	C_2	C_3	Mean	N_0	N_1
P_0	514	650	706	623	607	639
P_1	562	725	721	669	636	702
Mean	538	688	714	646		
N_0	505	662	700	622		
N_1	571	714	727	671		

S.E. of difference of two

1. C marginal means =28.24 lb./ac.
2. P marginal means =23.07 lb./ac.
3. N marginal means =16.74 lb./ac.
4. N means at the same level of P =23 60 lb./ac.
5. P means at the same level of N =28.50 lb /ac.
6. N means at the same level of C =29.00 lb./ac.
7. C means at the same level of N =34.90 lb./ac.

Crop :- Cotton (*Kharif*). Ref :- Gj. **52(114)**.

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

Object :—To study the optimum requirements of N for Cotton.

1. BASAL CONDITIONS :

(i) (a) Cotton-*Jowar* or *Bajra*-Groundnut. (b) Groundnut. (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Amreli. (iii) 26.6.1952. (iv) (a) 1 ploughing and 3 harrowings. (b) Seeds were sown with local wooden drill and covered with *rapta*. (c) 15 lb./ac. (d) Between rows 12" and between plants—irregular. (e)—. (v) 5 C.L./ac. of F.Y.M. was spread one month before sowing. (vi) *Pratap* (early). (vii) Unirrigated. (viii) 3 interculturings, 1 weeding and 1 thinning. (ix) 11.71". (x) N.A.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of A/S : N_0=0, N_1=2 and N_2=4 cwts/ac. of A/S.

(2) 3 levels of Cellulose : C_0=0, C_1=2 and C_2=5 ton/ac.

A/S was spread and was covered with cellulose material.

3. DESIGN :

(i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N A. (iii) 6. (iv) (a) 27'×52'. (b) 15'×40'. (v) 6' all round the net plot. (vi) Yes.

4. GENERAL :

(i) The germination was poor. There were scanty rains after the middle of August which very much affected the yield. (ii) Picking of larvae was done between 16.8.1952 to 25.8.1952. (iii) Seed yield and stubble yield (iv) (a) 1952—1954. (b) No. (c) N.A. (v) (a) Surat. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 60 lb./ac.
(ii) 21.20 lb./ac.
(iii) None of the effects is significant.
(iv) Av. yield of *kapas* in lb./ac.

	N_0	N_1	N_2	Mean
C_0	54	63	51	56
C_1	69	59	48	59
C_2	64	72	62	66
Mean	62	65	54	60

S.E. of any marginal mean =5.00 lb./ac.
S.E. of body of table =8.65 lb./ac.

Crop :- Cotton (*Kharif*). Ref :- Gj. **53(164)**.

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

Object :—To study the optimum requirements of N for Cotton.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar* or *Bajra*—Groundnut. (b) Groundnut. (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Amreli. (iii) 23.6.1953. (iv) (a) One ploughing and three harrowings. (b) Sown with wooden drill and covered with *rapta*. (c) 15 lb./ac. (d) Between rows 18"; between plants—irregular. (e) N.A. (v) 5 C.L./ac. of F.Y.M. spread one month before sowing. (vi) *Paras* early. (vii) Unirrigated. (viii) 7 interculturings, 1 weeding and 1 thinning. (ix) 34.25". (x) 17.11.1953, 4.12.1953, 26.12.1953 and 4.1.1954.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of A/S : N_0=0, N_1=2 and N_2=4 cwts./ac. of A/S.

(2) 3 levels of Cellulose : C_0=0, C_1=2 and C_2=5 tons/ac.

A/S was spread and was covered with cellulose material.

3. DESIGN :

(i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) 27'×52'. (b) 15'×40'. (v) 6' all round the net plot. (vi) Yes.

4. GENERAL :

(i) The germination was poor. Due to heavy rains in the month of August and September, the crop was heavily damaged. (ii) Nil. (iii) *Kapas* yield. (iv) (a) 1952—1954. (b) No. (c) N.A. (v) (a) Surat. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 102 lb./ac.

(ii) 4[illegible].1 lb./ac.

(iii) Only the main effect of N is significant.

(iv) Av. yield of *kapas* in lb./ac.

	N_0	N_1	N_2	Mean
C_0	71	92	123	95
C_1	89	106	115	103
C_2	89	110	122	107
Mean	83	103	120	102

S.E. of any marginal mean = 9.5 lb./ac.

S.E. of body of table = 16.4 lb./ac.

Crop :- Cotton (*Kharif*). Ref :- Gj. **48(87)**.

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

Object :—To compare the effects of A/S and G.N.C. on Cotton.

1. BASAL CONDITIONS :

(i) (a) Cotton-Wheat and *Jowar*. (b) Wheat and *Jowar*. (c) Nil. (ii) (a) Black soil. (b) Refer soil analysis, Dabhoi. (iii) 14.6.1948. (iv) (a) 1 ploughing and 1 harrowing. (b) to (e) N.A. (v) Nil. (vi) *Deshi*. (vii) Unirrigated. (viii) 1 weeding. (ix) 14.71". (x) N.A.

2. TREATMENTS :

All combinations of (1) and (2)+a control (no manure)

(1) 3 levels of N : N_1=20, N_2=30 and N_3=40 lb./ac

(2) 2 sources of N : S_1=A/S and S_2=G.N.C.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 2. (iv) (a) 175'×225'. (b) N.A. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Seed cotton yield. (iv) (a) 1947—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) Plot wise yield data N.A., hence analysis could not be carried out.

5. RESULTS :

(i) 634 lb./ac.
(ii) and (iii) N.A.
(iv) Av. yield of *kapas* in lb./ac.

Control =692 lb./ac.

	N_1	N_2	N_3	Mean
S_1	626	537	704	622
S_2	669	681	526	625
Mean	648	609	615	623

S.E.'s—N.A.

Crop :- Cotton (*Kharif*). Ref :- Gj. 48(88).

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

Object :—To study the residual effect of previous crops (manured and unmanured) on the yield of Cotton.

1. BASAL CONDITIONS :

(i) (a) No. (b) Leguminous crops with and without manures. (c) 30 lb./ac. of P_2O_5. (ii) (a) Black. (b) Refer soil analysis, Dabhoi. (iii) 14.6.1948. (iv) (a) to (e) N.A. (v) 30 lb./ac. of N as A/S. (vi) *Deshi* cotton. (vii) Unirrigated. (viii) N.A. (ix) 14.71". (x) 10, 26.1.1949. and 11.2.1949.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 6 previous crops : C_1=*Jowar* (Control), C_2=*Tur*, C_3=Groundnut, C_4=*Udid*, C_5=*Gur* and C_6=Gram.

(2) 2 levels of P_2O_5 (applied to previous crops) : P_0=No manuring and P_1=30 lb./ac. of P_2O_5 as Super.

3. DESIGN :

(i) 6×2 Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 60'×40'. (b) 55'×20'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Seed cotton yield. (iv) (a) 1947—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) Plot wise yield data is N.A., hence analysis could not be carried out.

5. RESULTS :

(i) 425 lb./ac.
(ii) N.A.
(iii) N.A.
(iv) Av. yield of *kapas* in lb./ac.

	C_1	C_2	C_3	C_4	C_5	C_6	Mean
P_0	308	295	771	310	317	358	393
P_1	388	315	985	342	394	317	457
Mean	348	305	878	326	356	338	425

S.E.'s—N.A

Crop :- Cotton (*Kharif*). Ref :-Gj. 52(36).

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

Object :—To study the optimum requirements of N for Cotton.

1. BASAL CONDITIONS :

(i) (a) Cotton-*Jowar*. (b) *Jowar*. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surat. (iii) 25.6.1952. (iv) (a) N.A. (b) Dibbled. (c) 2½ to 3 lb./ac. (d) 6′×2″. (e) 1-2 seeds/dibble. (v) Nil. (vi) *Suvog*. (vii) Unirrigated. (viii) 7 interculturings, 1 thinning and 3 weedings. (ix) 19.98″. (x) 5, 21.3.1953.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of A/S : N_0=0, N_1=2 and N_2=4 cwt./ac. of A/S.

(2) 3 levels of cellulose matter : C_0=0, C_1=2 and C_2=5 ton/ac.

Manuring on 6.6.1950.

3. DESIGN :

(i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 5. (iv) (a) 42′×30′. (b) 30′×18′. (v) 6′ all round the net plot. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Slight attack of boll-worm ; 10% damage found. (iii) Seed cotton yield. (iv) (a) 1952—1955. (b) No. (c) N.A. (v) (a) Amreli, and Surat. (b) N.A. (vi) Nil. (vii) Originally it was laid out with 6 replications but replication No. 4 was omitted because of very low yield, hence only 5 replications.

5. RESULTS :

(i) 245 lb./ac.

(ii) 56.63 lb./ac.

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

(iv) Av. yield of *kapas* in lb./ac.

	N_0	N_1	N_2	Mean
C_0	353	189	191	244
C_1	345	253	143	247
C_2	343	259	132	244
Mean	347	233	135	245

S.E. of any marginal mean = 15.00 lb./ac.

S.E. of body of table = 25.28 lb./ac.

Crop :- Cotton (*Kharif*). Ref :- Gj. 53(46).

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

Object :- To study the optimum requirements of N for Cotton.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*. (b) *Jowar*. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surat. (iii) 24.6.1953. (iv) 2-3 harrowings. (b) Dibbling. (c) N.A. (d) 6′×2″. (e) 1 seed/dibble. (v) Nil. (vi) *Vijay* 2087 (Improved—early). (vii) Unirrigated. (viii) 1 thinning, 1 weeding and 6 interculturings. (ix) 58″. (x) 7 to 9.3.1954.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of A/S : N_0=0, N_1=2 and N_2=4 cwt/ac. of A/S.

(2) 3 levels of cellulose matter : C_0=0, C_1=2 and C_2=5 ton/ac.

3. DESIGN :

(i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) 42′×30′. (b) 30′×18′. (v) 6′ round the net plot. (vi) Yes.

4. GENERAL :

(i) Good. Stand was good without lodging. (ii) Nil. (iii) *Kapas* yield. (iv) (a) 1952—1955. (b) No. (c) N.A. (v) (a) Amreli. (b) N.A. (vi) 46″ out of 58″ rainfall occured in July and August against the average of 42″. (vii) N.A.

5. RESULTS :

(i) 640 lb./ac.
(ii) 49.19 lb./ac.
(iii) All effects are significant.
(iv) Av. yield of *kapas* in lb./ac.

	N_0	N_1	N_2	Mean
C_0	557	687	845	696
C_1	519	636	731	629
C_2	532	603	651	595
Mean	536	642	742	640

S.E. of any marginal mean =11.60 lb./ac.
S.E. of body of table =20.14 lb./ac.

Crop :- Cotton (*Kharif*). **Ref. :-Gj. 51(30).**

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

Object :— To find the optimum dose of N to Cotton crop.

BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) *Jowar*. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surat. (iii) 28.6.1951. (iv) (a) 2 harrowings. (b) Dibbling. (c) N.A. (d) 5″×3″. (e) 1 seed/dibble. (v) Nil. (vi) 170-CO.2 *Desi Raj*. (vii) Unirrigated. (viii) 1 interculturing, 1 weeding and 1 thinning. (ix) 20.18″. (x) 5, 28.1.1952 and 10.2.1952.

2. TREATMENTS :

1. Control (no manure).
2. 20 C.L./ac. of F.Y.M.
3. 10 C.L./ac. of F.Y.M.+5 lb./ac. of N as A/S (coating to seed)+20 lb./ac. of N as manure mixture top-dressed.
4. 10 C.L./ac. of F.Y.M.+5 lb./ac. of N as A/S (coating to surface)+20 lb./ac. of N as manure mixture top dressed.
5. 50 lb./ac. of N as manure mixture.
6. 10 C.L./ac. of F.Y.M.+20 lb./ac. of N as manure mixture top dressed.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 72′×15′. (b) 69′×5′. (v) 1½′×5′. (vi) Yes.

4. GENERAL :

(i) Below normal. (ii) Nil. (iii) Cotton seed yield. (iv) (a) 1951—1955 (modified in 1952). (b) No. (c) N.A. (v) (a) Nil. (b) N.A. (vi) Unfavourable season with low rains. (vii) Nil.

5. RESULTS :

(i) 368.4 lb./ac.
(ii) 76.71 lb./ac.
(iii) Treatments do not differ significantly.

(iv) Av. yield of *kapas* in lb./ac.

Treatment	Av. yield
1.	348.8
2.	359.0
3.	375.6
4.	341.9
5.	416.9
6.	368.3

S.E./mean = 38.35 lb./ac.

Crop :-Cotton (*Kharif*). Ref :-Gj. 52(236).

Site :-Agri. Res. Stn., Amreli. Type :-'CM'.

Object :—To study the optimum dose of N and P_2O_5 along with spacings on the yield of Cotton.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Groundnut (*Kharif*)—Wheat (*Rabi*). (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Amreli. (iii) N.A. (iv) (a) N.A. (b) Drilling. (c) N.A. (d) As per treatments. (e) 2 seeds/ dibble. (v) 5 C.L./ac. of F.Y.M. (vi) Nil. (vii) Unirrigated. (viii) N.A. (ix) 12.72". (x) N.A.

2. TREATMENTS :

Main-plot treatments : All combinations of (1) and (2)

(1) 3 levels of N as A/S : N_0=0, N_1=30 and N_2=60 lb./ac.

(2) 3 levels of P_2O_5 as Super : P_0=0, P_1=30 and P_2=60 lb./ac.

Sub-plot treatments :

3 spacings : S_1=12"×9", S_2=18"×9" and S_3=24"×9".

3. DESIGN :

(i) Split-plot. (ii) (a) 9 main-plots/block ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 63'×16' for 12" and 24" spacing and 63'×15' for 18" spacing. (b) 60'×12'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Nil. (iii) *Kapas* yield. (iv) (a) 1952—1954. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 275 lb./ac.

(ii) (a) 73.81 lb./ac.

(b) 52.18 lb./ac.

(iii) None of the effects is significant.

(iv) Av. yield of *kapas* in lb./ac.

	N_0	N_1	N_2	Mean	S_1	S_2	S_3
P_0	271	290	294	285	279	307	268
P_1	261	298	275	278	279	278	278
P_2	248	269	271	263	267	272	258
Mean	260	286	280	275	271	286	268
S_1	239	296	279				
S_2	279	285	293				
S_3	261	276	267				

S.E. of difference of two

1. N or P marginal means =17.39 lb./ac.
2. S marginal means =12.30 lb./ac.
3. S means at the same level of N or P =21.30 lb./ac.
4. N or P means at the same level of S =24.60 lb./ac.

Crop :-Cotton (*Kharif*). Ref :-Gj. 53(77).

Site :-Agri. Res. Stn., Amreli. Type :-'CM'.

Object :—To study the optimum dose of N and P_2O_5 along with spacings on the yield of Cotton.

1. BASAL CONDITIONS :

(i) (a) No. (b) Groundnut and Wheat. (c) Nil. (ii) (a) Medium black cotton. (b) Refer soil analysis, Amreli. (iii) 26 to 29.6.1953. (iv) (a) Harrowing twice, ploughing once and levelling once. (b) Dibbling. (c) 15 to 20 lb./ac. (d) As per treatments. (e) 3 to 5 seeds/hole. (v) 5 C.L./ac. of F.Y.M. before preparatory tillage. (vi) *Pratap* (medium). (vii) Unirrigated. (viii) 3—4 interculturings and weedings. (ix) 34.25". (x) 20.10.1953 ; 9.11.1953 ; 15.12.1953 ; 7, 25.1.1954.

2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2)

(1) 3 levels of N as A/S : $N_0=0$, $N_1=30$ and $N_2=60$ lb./ac.

(2) 3 levels of P_2O_5 as Super : $P_0=0$, $P_1=30$ and $P_2=60$ lb./ac.

Sub-plot treatments :

3 spacings : $S_1=12"\times9"$, $S_2=18"\times9"$ and $S_3=24"\times9"$.

3. DESIGN :

(i) Split-plot. (ii) (a) 9 main-plots/block and 3 sub-plots/main-plot. (iii) 4. (iv) (a) 63'×16' for 12" and 24" spacing ; 63'×15' for 18" spacing. (b) 60'×12'. (v) One row on either side and 1.5' at each end to be left for 18" and 24" treatments and two rows on either side and 1.5' at each end for 12" spacing to be left as non-experimental areas. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) *Kapas* yield. (iv) (a) 1952—1954. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 211 lb./ac.

(ii) (a) 104.9 lb./ac.

(b) 58.8 lb./ac.

(iii) None of the effects is significant.

(iv) Av. yield of *kapas* in lb./ac.

	N_0	N_1	N_2	Mean	S_1	S_2	S_3
P_0	173	225	198	198	211	208	177
P_1	212	207	231	214	222	224	195
P_2	193	201	273	222	212	229	225
Mean	192	211	231	211	215	220	199
S_1	195	221	228				
S_2	189	221	251				
S_3	192	191	213				

S.E. of difference of two

1. N or P marginal means =24.7 lb./ac.
2. S marginal means =13.9 lb./ac.
3. S means at the same level of N or P =24.0 lb./ac.
4. N or P means at the same level of S =31.5 lb./ac.

Crop :- Cotton (*Kharif*). Ref :- Gj. 48(109).

Site :- Agri. Res. Stn., Surat. Type :- 'CM'.

Object :—To study the residual effect of Cotton grown with *chinamug* on succeeding crop *Jowar*.

1. BASAL CONDITIONS :

(i) (a) Cotton, *Chinamug-Jowar*. (b) N.A. (c) N.A. (ii) (a) Deep black cotton soil. (b) Refer soil analysis, Surat. (iii) 22.7.1948. (iv) (a) to (e) N.A. (v) 5 C.L./ac. of F.Y.M. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) 12.4.1949.

2. TREATMENTS :

1. Cotton to be followed by *Jowar* next year.
2. Cotton with intercropping of *Chinamug* to be followed by *Jowar*.
3. Cotton with intercropping of *Chinamug* (super at 50 lb./ac. of P_2O_5 applied to *Chinamug*) to be followed by *Jowar*.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 8. (iv) (a) 36'×62'. (b) 24'×50'. (v) 6' alround. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Seed cotton yield. (iv) (a) 1948—1951. (b) N.A. (c) Nil. (v) (a) N.A. (b) N.A. (vi) Nil. (vii) The intercrop *chinamug* did not thrive for want of rain and hence the yield of *chinamug* not recorded.

5. RESULTS :

(i) 234 lb./ac.
(ii) 23.28 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of *kapas* in lb./ac.

Treatment	Av. yield
1.	234
2.	226
3.	243
S.E./mean	±8.23 lb./ac.

Crop :- Cotton (*Kharif*). Ref :- Gj. 49(137).

Site :- Agri. Res. Stn., Surat. Type :- 'CM'.

Object :—To study the residual effect of Cotton grown with *Chinamug* on succeeding crop *Jowar*.

1. BASAL CONDITIONS :

(i) (a) Cotton, *Chinamug-Jowar*. (b) *Jowar*. (c) Nil. (ii) (a) Deep black cotton soil. (b) Refer soil analysis, Surat. (iii) 9.7.1949. (iv) a) N.A. (b) Dibbling. (c) N.A. (d) N.A. (e) N.A. (v) 5 C.L./ac. of F.Y.M. (vi) N.A. (vii) Unirrigated. (viii) 2 interculturings, 1 thinning and 1 weeding. (ix) 45.42". (x) by 9.4.1950.

2. TREATMENTS :

1. Cotton to be followed by *Jowar* next year.
2. Cotton with intercropping of *Chinamug* to be followed by *Jowar*.
3. Cotton with intercropping of *Chinamug* (super at 50 lb./ac. of P_2O_5 applied to *Chinamug*) to be followed *Jowar*.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 8. (iv) (a) 36'×62'. (b) 24'×50'. (v) 6' alround. (vi) Yes.

4. GENERAL :

(i) Due to heavy rains, crop growth was stunted. (ii) Heavy attack of leaf eating cater pillers and pod borers in *Chinamug* due to which crop failed. (iii) Seed cotton yield. (iv) (a) 1948—1951. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) The inter crop *Chinamug* completely failed.

5. RESULTS :

(i) 615 lb./ac.
(ii) 79.13 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of *kapas* in lb./ac.

Treatment	Av. yield
1.	662
2.	581
3.	603
S.E./mean	=27.98 lb./ac.

Crop :- Cotton. (*Kharif*). **Ref :- Gj. 50(161).**

Site :- Agri. Res. Stn., Surat. **Type :- 'CM'.**

Object :—To study the residual effect of Cotton grown with *Chinamug* on succeeding crop *Jowar*.

1. BASAL CONDITIONS :

(i) (a) Cotton, *Chinamug-Jowar*. (b) *Jowar*. (c) Nil. (ii) (a) Deep black cotton soil. (b) Refer soil analysis, Surat. (iii) 6.7.1950. (iv) (a) 3 harrowings. (b) Dibbled. (c) N.A. (d) 6′×2′. (e) N.A. (v) 5 C.L./ac. of F.Y.M. spread on 29.5.1950. (vi) *Suyog* (vii) Unirrigated. (viii) 2 weedings, 2 thinnings & 3 interculturings (ix) 29.40″ (x) 10.3.1951 & 26.3.1951.

2. TREATMENTS :

1. Cotton to be followed by *Jowar* next year.
2. Cotton with intercropping of *Chinamug* to be followed by *Jowar*.
3. Cotton with intercropping of *Chinamug* (super applied to *Chinamug* at 50 lb./ac. of P_2O_5) to be followed by *Jowar*.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 8. (iv) (a) 36′×62′. (b) 24′×50′. (v) 6′. alround (vi) Yes.

4 GENERAL :

(i) Normal growth for cotton. (ii) *Chinamug* was heavily attacked by insects and also at the time of pod formation, attack of rats spoiled most of the pods. (iii) Seed cotton yield. (iv) (a) 1948—1951. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) *Chinamug* crop failed.

RESULTS :

(i) 530 lb./ac.
(ii) 38.50 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of *kapas* in lb./ac.

Treatment	Av. yield
1	544
2.	530
3.	516
S.E./mean	= 13.77 lb./ac.

Crop :- Cotton. (*Kharif*.). **Ref :- Gj. 52(58).**

Site :- Agri. Res. Stn., Surat. **Type :- 'CM'.**

Object :—To find the optimum dose of manures to Cotton crop with suitable spacing.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) *Jowar*. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surat. (iii) 26.6.1952. (iv) (a) 2 harrowings. (b) Dibbling. (c) N.A. (d) As per treatments. (e) N.A. (v) Nil. (vi) 170 CO-2 *Deis Raj*. (vii) Unirrigated. (viii) 3 weedings, 4 interculuturings and 2 thinings. (ix) 20.18″. (x) 21.2.1953, and 15.3.1953

2. TREATMENTS :

Main-plot treatments :

6 doses of manure : M_0=Control (no manure), M_1=20 C.L./ac. of F.Y.M, M_2=10 C.L./ac. of F.Y.M +20 lb./ac. of N as manure mixture + 5 lb./ac. of N asA/S coating of seed, M_3=10 C.L./ac. of F.Y.M. +5 lb./ac. of N as A/S coating to surface +20 lb./ac. of N as manure mixture top dressing, M_4=50 lb./ac. of N as manure mixture and M_5=10 C.L./ac. of F.Y.M. + 25 lb./ac. of N as manure mixture top dressing.

Sub-plot treatments :

2 spacings : S_1=5′×2′ and S_2=5′×3′.

3. DESIGN :

(i) Split-plot. (ii) (a) 6 main-plots/block ; 2 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) Main plot : 84′×15′. Sub-plot : 42′×15′. (b) 36′×5′. (v) One row on either side, 3′ at either end. (vi) Yes, in main-plots ; in sub-plots treatments not randomised.

4. GENERAL :

(i) Below normal. (ii) Nil. (iii) Seed cotton yield. (iv) (a) 1951 to 1955 (modified in 1952.) (b) No. (c) N.A. (v) (a) Nil. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 450.2 lb./ac.

(ii) (a) 145.8 lb./ac.
(b) 83.41 lb./ac.

(iii) None of the effects is significant.

(iv) Av. yield of *kapas* in lb./ac.

	M_0	M_1	M_2	M_3	M_4	M_5	Mean
S_1	485.5	443.2	502.2	461.3	565.7	444.7	483.7
S_2	325.2	668.5	340.3	397.8	409.9	358.5	416.7
Mean	405.4	555.8	421.2	429.6	487.8	401.6	450.2

S.E. of difference of two

1. M marginal means = 72.88 lb./ac.
2. S marginal means = 24.06 lb./ac.
3. S means at the same level of M = 58.98 lb./ac.
4. M means at the same level of S = 83.98 lb./ac.

Crop :- Cotton (*Kharif*) Ref :- Gj 53(140).

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

Object : —To find out the optimum dose of manure to Cotton crop with suitable spacing.

1. BASAL CONDITIONS :

(i) (a) Cotton-*Jowar*. (b) *Jowar*. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surat. (iii) 23.6.1953 (iv) (a) 2 harrowings. (b) Dibbling. (c) N.A. (d) As per treatments. (e) 1 plant/dibble. (v) Nil. (vi) 170-CO-2. (*Desi Raj*) (vii) Unirrigated. (viii) 2 thinnings, 3 weedings and 4 intercul.urings. (ix) 58″. (x) 1st picking on 20.2.1954, 2nd on 17.3.1954.

2. TREATMENTS :

Main plot treatments :

6 doses of manure :—M_0=Contral (no manure), M_1=20 C.L./ac. of F.Y.M., M_2=10 C.L./ac. of F.Y.M. +20 lb./ac. of N as manure mixture+5 lb./ac of N as A/S coating of seed., M_3=10 C.L./ac. of F.Y.M. +5 lb./ac. of N as A/S coating to surface+20 lb./ac. of N as manure mixture top dressing, M_4=50 lb./ac. of N as manure mixture and M_5=10 C.L./ac. of F.Y.M.+25 lb./ac. of N as manure mixture top dressing.

Sub-plot treatments:

2 spacings : S_1=5′×2′ and S_2=5′×3′.

3. DESIGN :

(i) Split-plot. (ii) (a) 6 main-plots/block ; 2 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) Sub-plot: 42′×15′ ; main-plot : 84′×15′. (b) 36′×5′. (v) One row on either side, 3′ at either end. (vi) Yes.

4. GENERAL :

(i) Good. ii) Crop attacked by thrips. No control measures taken. (iii) Seed cotton yield (iv) (a) 1951 to 1955. (b) No. (c) N.A. (v) (a) Nil. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 745.7 lb./ac.

(ii) (a) 138.9 lb./ac.
(b) 116.6 lb./ac.

(iii) Main effect of M, S are significant. Interaction M×S is not significant.

(iv) Av. yield of *kapas* in lb./ac.

	M_0	M_1	M_2	M_3	M_4	M_5	Mean
S_1	583.8	801.6	836.4	889.4	870.0	795.0	796.0
S_2	314.6	633.7	798.6	875.7	774.4	773.0	695.5
Mean	449.2	717.6	817.5	882.5	823.7	704.0	745.7

S E. of difference of two

1. M marginal means =69.44 lb./ac.
2. S marginal means =33.67 lb./ac.
3. S means at the same level of M =82.48 lb./ac.
4. M means at the same level of S =85.30 lb./ac.

Crop :- Groundnut. Ref :- Gj. 49(85).

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

Object :—To study the effect of organic manures on the yield of Groundnut.

1. BASAL CONDITIONS :

(i) (a) No. (b) Cotton. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Medium black. (b) Refer soil analysis, Amreli. (iii) 19.7.1949. (iv) (a) One ploughing and 3 harrowings. (b) Drilled. (c) 60 lb./ac. (d) Between rows 18″ ; between plants-irregular. (e) N.A. (v) Nil. (vi) A.H.32. (vii) Unirrigated. (viii) 2 weedings and 2 interculturings. (ix) 13.75″. (x) 31.10.1949.

2. TREATMENTS :

1. Control (no manuring).
2. 7 C.L./ac. of Compost.
3. 7 C.L./ac. of Poudrette Compost.
4. 7 C.L./ac. of F.Y.M.

Manures applied at sowing.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 2. (iv) (a) 44′×30′. (b) 40′×24′. (v) 2′×3′. (vi) Yes.

4. GENERAL :

(i) Inspite of insufficient rains in the month of August the crop did not suffer much, the general growth was normal. (ii) Nil. (iii) Pod yield. (iv) (a) No. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) Nil.

5. RESULTS :

(i) 1274 lb./ac.
(ii) 291.8 lb /ac.
(iii) Treatments do not differ significantly.
(v) Av. yield of pod in lb./ac.

Treatment	Av. yield
1.	1078
2.	1395
3.	1373
4.	1248
S.E./mean	=206.3 lb./ac.

Crop :- Groundnut (*Kharif*). Ref :- Gj. 48(64).

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

Object :—To study the effect of Super applied to the crops Groundnut, *Udid* and *Bajra* on the succeeding crop Cotton.

1. BASAL CONDITIONS :

(i) (a) No. (b) N.A. (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Amreli. (iii) 14.8.1948 to 21.8.1948. (iv) (a) One ploughing and three harrowings. (b) Drilled. (c) 60 lb./ac. (d) Between rows 18", between plants—irregular. (e)—. (v) Nil. (vi) A.H.32. (vii) Unirrigated. (viii) 2 to 3 weedings and 3 to 4 interculturings. (ix) 12.73". (x) N.A.

2. TREATMENTS :

1. Groundnut without Super.
2. Groundnut with Super at 30 lb./ac. of P_2O_5.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 4. (iv) (a) 44' × 30'. (b) 40' × 24'. (v) 2' × 3'. (vi) Yes.

4. GENERAL :

(i) The crop germinated well. For want of rains withering was noticed. On the whole the season was normal. (ii) Nil. (iii) Pod yield. (iv) (a) 1948–1949. (b) No (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) Plot wise yield data N.A.

5. RESULTS :

(i) 1415 lb./ac.
(ii) N.A.
(iii) N.A.
(iv) Av. yield of pod in lb./ac.

Treatment	Av. yield
1.	1401
2.	1429
S.E./mean	=N.A.

Crop :- Groundnut (*Kharif*). Ref :- Gj. 49(84).

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

Object :—To study the effect of Super applied to crops (Groundnut, *Udid* and *Bajra*) on the succeeding crop Cotton with and without N.

1. BASAL CONDITIONS :

(i) (a) No. (b) Cotton. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Medium black. (b) Refer soil analysis, Amreli. (iii) 19.7.1949. (iv) (a) One ploughing and 3 harrowings. (b) Drilled. (c) 60 lb./ac. (d) Between rows 18" and between plants—irregular. (e)—. (v) Nil. (vi) A.H.32. (vii) Unirrigated. (viii) 4 weedings and 2 interculturings. (ix) 13.73". (x) 26.11.1949 and 27.12.1949.

2. TREATMENTS :

1. Groundnut without Super.
2. Groundnut with Super at 30 lb./ac. of P_2O_5.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 4. (iv) (a) 44'×30'. (b) 40'×24'. (v) 2'×3'. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Pod yield. (iv) (a) 1946—1949. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1149 lb./ac.
(ii) 15.72 lb./ac.
(iii) Treatments do not differ significantly.
(iv) Av. yield of pod in lb./ac.

Treatment	Av. yield
1.	1146
2.	1151
S.E./mean	= 7.86 lb./ac.

Crop :- Groundnut (*Kharif*). Ref :- Gj. 53(306).

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

Object :—To find out the effect of Boron and Manganese on Groundnut yield.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Light brown. (b) Refer soil analysis, Dohad. (iii) 23.7.1953. (iv) (a) N.A. (b) Drilling. (c) to (e) N.A. (v) Nil. (vi) Spanish No. 5. (vii) Unirrigated. (viii) N.A. (ix) 18.64". (x) 2.11.1953 to 9.11.1953.

2. TREATMENTS :

All combinations of (1) and (2)
(1) 2 levels of Boron : B_0=0 and B_1=4 lb./ac.
(2) 2 levels of Manganese : M_0=0 and M_1=6 lb./ac.

3. DESIGN :

(i) 2×2 Fact. in R.B.D. (ii) (a) 4 (b) N.A. (iii) 2. (iv) (a) 42'×39'. (b) 30'×31'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Due to continuous rains after sowing, plots were not in good condition for any operation and hence the crop growth was hindered. (ii) Crop suffered from root-rot disease and hence damaged to the extent of 25%. (iii) Yield of pods and tops. (iv) (a) 1953—N.A. (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 750 lb./ac.
(ii) 256.0 lb./ac.
(iii) None of the effects is significant.
(iv) Av. yield of pod in lb./ac.

	B_0	B_1	Mean
M_0	889	664	777
M_1	719	728	724
Mean	804	696	750

S.E. of any marginal mean = 128.0 lb./ac.
S.E. of body of table = 181.0 lb./ac.

Crop :- Groundnut (*Kharif*). Ref :- Gj. 52(175).

Site :- Groundnut Res. Stn., Junagadh. Type :- 'M'.

Object : –To find the best combination of F.Y.M., P_2O_5 and K_2O for getting maximum yield.

1. BASAL CONDITIONS :

(i) (a) No. (b) and (c) N.A. (ii) (a) Medium black (b) Refer soil analysis, Junagadh. (iii) N.A. (iv) (a) 2 to 3 harrowings. (b) Dibbling. (c) N.A. (d) Between rows 3' and between plants 4". (e) 1. (v) Nil. (vi) Punjab 1. (spreading type). (vii) Unirrigated. (viii) 2 to 3 interculturings and 3 to 4 weedings. (ix) 24.11". (x) N.A.

2. TREATMENTS :

Main-plot treatments :

2 levels of F.Y.M. : F_0=0 and F_1=10 C.L./ac.

Sub-plot treatments :

All combinations of (1) and (2)

(1) 3 levels of P_2O_5 as Super : P_0=0, P_1=24 and P_2=48 lb./ac.

(2) 3 levels of K_2O as Pot. Sul. : K_0=0, K_1=27 and K_2=54 lb./ac.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/block and 9 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 75'×1'. (b) 65'×6'. (v) 4½'×2'. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) N.A (iii) Pod yield. (iv) (a) 1952—contd. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) N

5. RESULTS :

(i) 1063 lb./ac.

(ii) (a) 153.2 lb./ac.

(b) 116.9 lb./ac.

(iii) Only main effect of F is significant.

(iv) Av. yield of pod in lb./ac.

	P_0	P_1	P_2	Mean	F_0	F_1
K_0	991	1030	1043	1021	982	1059
K_1	1092	1123	1055	1090	1009	1170
K_2	1009	1067	1162	1079	989	1169
Mean	1031	1073	1086	1063	993	1133
F_0	935	1018	1027			
F_1	1126	1128	1145			

S.E. of difference of two

1. F marginal means =32.28 lb./ac.
2. P or K marginal means =30.16 lb./ac.
3. P or K means at the same level of F =42.45 lb./ac.
4. F means at the same level of P or K =47.62 lb./ac.

Crop :-Groundnut (*Kharif*). Ref :-Gj. 53(256).

Site :-Groundnut Res. Stn., Junagadh. Type :-'M'.

Object :—To find the best combination of F.Y.M, P_2O_5 and K_2O for getting maximum yield.

1. BASAL CONDITIONS :

(i) (a) No. (b) and (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Junagadh. (iii) N.A (iv) (a) 2 to 3 harrowings. (b) Dibbling. (c) N.A. (d) Between rows—3' and between plants—4". (e) One. (v) Nil. (vi) Punjab. I. (spreading type). (vii) Unirrigated. (viii) 2 to 3 interculturings and 3 to 4 weedings. (ix) 50.54". (x) N.A.

2. TREATMENTS :

Main-plot treatments :

2 levels of F.Y.M. : $F_0=0$ and $F_1=10$ C.L./ac.

Sub-plot treatments :

All combinations of (1) and (2)

(1) 3 levels of P_2O_5 as Super : $P_0=0$, $P_1=24$ and $P_2=48$ lb./ac.

(2) 3 levels of K_2O as Pot. Sul. : $K_0=0$, $K_1=27$ and $K_2=54$ lb./ac.

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/block and 9 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 75'×10'. (b) 66'×6'. (v) 4½'×2'. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Pod yield. (iv) (a) 1952—contd. (modified in 1955—56). (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1083 lb./ac.

(ii) (a) 409.9 lb./ac.

(b) 192.1 lb./ac.

(iii) Main effect of F is highly significant ; main effect of P and interactions P×K and P×F are significant. Others are not significant.

(iv) Av. yield of pod in lb./ac.

	P_0	P_1	P_2	Mean	F_0	F_1
K_0	909	1203	1148	1087	799	1374
K_1	1068	1075	1109	1084	797	1370
K_2	960	1079	1203	1081	790	1372
Mean	979	1119	1153	1083	795	1372
F_0	603	840	942			
F_1	1354	1398	1364			

S.E. of difference of two

1. F marginal means =78.87 lb./ac.
2. P or K marginal means =45.26 lb /ac.
3. P or K means at the same level of F =64.02 lb./ac.
4. F means at the same level of P or K =94.60 lb./ac.

Crop :-Groundnut (*Kharif*). Ref :-Gj. 53(157).

Site :-Agri. Res. Stn., Deesa. Type :-'C'.

Object :—To determine the eccnomic seed rate and spacing of plants to get maximum yield.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Bajra*. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Deesa. (iii) 27.6.1953. (iv) (a) N.A. (b) Dibbling. (c) and (d) As per treatments. (e) N.A. (v) N.A. (vi) Spanish pearut. (vii) Unirrigated. (viii) 1 interculturing. (ix) N.A. (x) 9 to 12.11.1953.

2. TREATMENTS :

Main-plot treatments :

3 spacing between rows : S_1=12″, S_2=15″ and S_3=18″.

Sub-plot treatments :

3 seed rates : R_1=60, R_2=80 and R_3=100 lb./ac.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block and 3 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 36′×21′ for 12″ and 18″ spacing and 36′×22.5′ for 15″ spacing. (b) 30′×15′. (v) 3 ring round the net plot for 12″ and 18″ spacing. 3′×3′–9″ border for 15″ spacing. (vi) Yes.

4. GENERAL :

(i) Germination was good. Growth and pod formation was affected by continuous rains. (ii) Crop was affected by termites. No control measures taken. (iii) Pod yield. (iv) (a) 1950—1953. (b) No. (c) N.A. (v) (a) Dohad. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 611 lb./ac.

(ii) (a) 117.1 lb./ac.

(b) 70.4 lb./ac.

(iii) R effect is highly significant. S effect and interaction S×R are significant.

(iv) Av. yield of pod in lb./ac.

	S_1	S_2	S_3	Mean
R_1	460	500	468	476
R_2	556	641	556	584
R_3	734	875	710	773
Mean	583	672	578	611

S.E. of difference of two

1. S marginal means = 38.0 lb./ac.
2. R marginal means = 23.5 lb./ac.
3. R means at the same level of S = 41.0 lb./ac.
4. S means at the same level of R = 41.2 lb./ac.

Crop :- Groundnut (*Kharif*). Ref :-Gj. 52(105).

Site :-Agri. Res. Stn., Dohad. Type :-'C'.

Object :—To find out the optimum spacing and seed rate for getting maximum yield.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Maize*. (c) Nil. (ii) (a) Medium brown. (b) Refer soil analysis, Dohad. (iii) 28, 29.6.1952. (iv) (a) N.A. (b) By plough. (c) and (d) As per treatments. (e) N.A. (v) 5 C.L./ac. of F.Y.M. on 11.6.1952. (vi) Spanish.5 (erect type). (vii) Unirrigated. (viii) Hand weeding during the second week of August. Interculturing by a country plough on 23.8.1952. (ix) 31.07″. (x) 27.10.1952 to 2.11.1952,

2. TREATMENTS :

Main-plot treatments :

3 spacings between rows : S_1=12″, S_2=15″ and S_3=18″.

Sub-plot treatments :

3 seed rates : R_1=80, R_2=100 and R_3=120 lb./ac.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block and 3 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 36′×15′ (b) 30′×9′ for 12″, 18″ and 27′×10′ for 15″ spacings respectively. (v) N.A. (vi) Yes.

4. GENERAL :

(i) The germination was gappy and the stand of the crop was uneven. The crop suffered due to continuous and heavy rains from the second week of July to 2nd week of August. (ii) *Katra* was found on groundnut but did not come out with any significant damage. (iii) Pod yield. (iv) (a) 1952—1954. (b) No. (c) N.A. (v) (a) Deesa. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1104 lb./ac.
(ii) (a) 381.3 lb./ac.
(b) 362.7 lb./ac.
(iii) None of the effects is significant.
(iv) Av. yield of pod in lb./ac.

	S_1	S_2	S_3	Mean
R_1	1091	954	1014	1020
R_2	1139	1042	1249	1143
R_3	1218	1141	1085	1148
Mean	1149	1046	1116	1104

S.E. of difference of two
1. S marginal means =127.1 lb./ac.
2. R marginal means =120.9 lb./ac.
3. R means at the same level of S =209.3 lb./ac.
4. S means at the same level of R =212.9 lb./ac.

Crop :- Groundnut (*Khraif*). **Ref :-Gj. 53(156).**

Site :- Agri. Res. Stn., Dohad. **Type :-'C'.**

Object :—To find out the optimum spacing and seed rate for getting maximum yield.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Medium brown. (b) Refer soil analysis, Dohad. (ii) 25, 26.7.1953. (iv) (a) N.A. (b) By plough. (c) and (d) As per treatments. (e) N.A. (v) 5 C.L./ac. of F.Y.M. during the second week of June 1953. (vi) Spanish-5 (erect type). (vii) Unirrigated. (viii) Interculturing by plough on 30.8.1953 and hand weeding on 31.8.1953. (ix) 19.05". (x) 22 to 27.10.1953.

2. TREATMENTS :

Main-plot treatments :

3 spacings between rows : S_1=12", S_2=15" and S_3=18".

Sub-plot treatments :

3 seed rates : R_1=80, R_2=100 and R_3=120 lb./ac.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block and 3 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 36'×21', 36'×22.5' and 35'×24' for 12", 15" and 18" spacings respectively. (b) 30'×15'. (v) 3 rows on either side and 3' at either end of the net plot. (vi) Yes.

4. GENERAL :

(i) The germination of the crop was satisfactory. The total rainfall for this year was only half the annual average rainfall. However the distribution of the rainfall was not so bad, hence the crop did not suffer much. (ii) *Tikka* disease was noticed in later stage ; no control measures were taken. (iii) Pod yield. (iv) (a) 1952—1954. (b) No. (c) N.A. (v) (a) Deesa. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 982 lb./ac.
(ii) (a) 199.8 lb./ac.
(b) 180.0 lb./ac.
(iii) None of the effects is significant.

(iv) Av. yield of pod in lb./ac.

	S_1	S_2	S_3	Mean
R_1	945	870	932	916
R_2	986	981	926	964
R_3	1084	1084	1028	1065
Mean	1005	978	962	982

S.E. of difference of two

1. S marginal means = 66.6 lb./ac.
2. R marginal means = 60.2 lb./ac.
3. R means at the same level of S = 104.2 lb./ac.
4. S means at the same level of R = 108.1 lb./ac.

Crop :- Groundnut (*Kharif*). Ref :- Gj. 52(174).

Site :- Agri. Res. Stn., Junagadh. Type :- 'C'.

Object :—To determine the optimum spacing between rows and between plants for Groundnut.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Junagadh (iii) N.A. (iv) (a) 2 to 3 harrowings. (b) Dibbling. (c) N.A. (d) As per treatments. (e) One. (v) 5 C.L./ac. of F.Y.M. applied in furrows 15 days before sowing. (vi) Punjab—I (spreading type). (vii) Unirrigated. (viii) 2-3 interculturings and 3 to 4 weedings. (ix) 24.11". (x) N.A.

2. TREATMENTS :

All combinations of (1 and (2).

(1) 2 spacings between rows : $S_1 = 2'$ and $S_2 = 3'$.

(2) 3 spacings between plants : $S_1' = 2''$, $S_2' = 4''$ and $S_3' = 6''$.

3. DESIGN :

(i) 3×2 Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) 50'×12'. (b) 44'×6'. (c) 3' ring round the net plot. (vi) Yes.

4. GENERAL :

(i) The germination and growth was normal. (ii) *Tikka* and aphids ; damage was negligible ; no control measures taken. (iii) Pod yield. (iv) (a) 1951—1957 (modified in 1957-58). (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) Nil. (vii) The experiment was vitiated in 1951-52 owing to low rainfall.

5. RESULTS :

(i) 978 lb./ac.

(ii) 108.2 lb./ac.

(iii) Only main effect of 'row spacings' is highly significant.

(iv) Av. yield of pod in lb./ac.

	S_1	S_2	Mean
S'_1	802	1147	975
S'_2	823	1151	987
S'_3	838	1110	974
Mean	821	1136	978

S.E. of marginal mean of row spacing = 25.50 lb./ac.

S.E. of marginal mean of plant spacing = 31.23 lb./ac.

S.E. of body of table = 44.17 lb./ac.

Crop :- Groundnut (*Kharif*). Ref :- Gj. 53(255).

Site :- Groundnut Res. Stn., Junagadh. Type :- 'C'.

Object :—To determine the optimum spacing between rows and between plants for Groundnut.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Junagadh. (iii) N.A. (iv) (a) 2 to 3 harrowings. (b) Dibbling. (c) N.A. (d) As per treatments. (e) One. (v) 5 C.L./ac. of F.Y.M. applied in furrows 15 days before sowing. (vi) Punjab—I spreading type. (vii) Unirrigated. (viii) 2-3 interculturings and 3 to 4 weedings. (ix) 50.54". (x) N.A.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 row spacings : S_1=2' and S_2=3'.

(2) 3 plant spacings : S'_1=2", S'_2=4" and S'_3=6".

3. DESIGN :

(i) 3×2 Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) 50'×12'. (b) 44'×6'. (v) 3' ring round the net plot. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Yield of pods and tops. (iv) (a) 1951—1957 (modified in 1957—1958). (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1495 lb./ac.

(ii) 155.7 lb./ac.

(iii) 'Row spacing' effect and 'plant spacing' effect are highly significant. Interaction is not significant.

(iv) Av. yield of pod in lb./ac.

	S_1	S_2	Mean
S'_1	1341	1939	1640
S'_2	1210	1774	1492
S'_3	1097	1605	1351
Mean	1216	1773	1495

S.E. of marginal mean of row spacing =36.70 lb./ac.

S.E. of marginal mean of plant spacing =44.95 lb./ac.

S.E. of body of table =63.57 lb./ac.

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Crop :-Groundnut. Ref :-Gj. 48(63).

Site :-Agri. Res. Stn., Amreli. Type :-'CV'.

Object :—To find out the optimum spacing for two different varieties of Groundnut.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Amreli. (iii) 14.8.1948 to 21.8.1948. (iv) (a) 1 ploughing and three harrowings. (b) Dibbling. (c) N.A. (d) As per treatments. (e) N.A. (v) 5 C.L./ac. of F.Y.M. spread one month before sowing. (vi) As per treatments. (vii) Unirrigated. (viii) 2 to 3 weedings. 3 to 4 interculturings. (ix) 12.73". (x) N.A.

2. TREATMENTS :

1. A-H-32 with spacing 18"×6"
2. A-H-334 with spacing 18"×6".
3. A-H-334 with spacing 18"×9".

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 8. (iv) (a) N.A. (b) N.A. (v) N.A. (vi) Yes.

4. GENERAL :

(i) The germination was good. The general growth was normal. The season was also normal. (ii) Nil. (iii) Pod and fodder yield. (iv) (a) 1947--1949. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) Plotwise yield data was N.A., hence could not be analysed.

5. RESULTS :

(i) 1186 lb./ac.

(ii) N.A.

(iii) N.A.

(iv) Av. yield of pod in lb./ac.

Treatment	Av. yield
1.	1270
2.	1059
3.	1228
S.E./mean	=N.A.

Crop :-Groundnut (*Kharif*). Ref :-Gj. 49(83).

Site :-Agri. Res. Stn., Amreli. Type :-'CV'

Object :—To find out the optimum spacing for the two varieties of Groundnut.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy in *Kharif* and wheat in *Rabi*. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Medium black. (b) Refer soil analysis, Amreli. (iii) 17.7.1949. (iv) (a) 1 ploughing, and 3 harrowings. (b) Dibbling. (c) N.A. (d) As per treatments. (e) N.A. (v) 5 C.L./ac. of F.Y.M. spread one month before sowing. (vi) As per treatments. (vii) Unirrigated. (viii) 2 weedings and 3 interculturings. (ix) 13.75". (x) A-H-32 on 29.10.1949 and A-H-334 on 6.11.1949.

2. TREATMENTS :

1. A-H-32 with spacings 18"×6".
2. A.H-334 with spacings 18"×6".
3. A.H-334 with spacings 18"×9".

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 8. (iv) (a) 190'×4.5'. (c) 180'×4.5'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) The variety A.H. 334 suffered due to the absence of late rains. (ii) *Tikka* disease ; no considerable damage. (iii) Pod yield. (iv) (a) 1947—1949. (b) No. (c) N.A. (v) (a) No (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1414 lb./ac.

(ii) 121.3 lb./ac.

(iii) Treatments differ highly significantly.

(iv) Av. yield of pod in lb./ac.

Treatment	Av. yield
1.	1701
2.	1311
3.	1230
S.E./mean	=42.9 lb./ac.

Crop :- Chickoo. Ref :- Gj. 48(85).

Site :- Fruit Res. Stn., Gandevi. Type :- 'CM'.

Object :—To study the different root stocks used for propogating *Chickoo* in combination with manures.

1. BASAL CONDITIONS :

(i) N.A. (ii) Refer soil analysis, Gandevi. (iii) By grafting. (iv) (a) *Kali patti*. (v) Replication—I. on 26.10.1942 ; replication II on 14.12.1942 and spacing between plants—15'×15'. (vi) One to two years old. (vii) F.Y.M. and B.M. were given. Quantity N.A. (viii) Ploughing. (ix) Nil. (x) Irrigated. (xi) N.A. (xii) N.A.

2. TREATMENTS :

Main-plot treatments :

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

(1) 2 levels of N as A/S : N_0=0 and N_1=3 lb./tree in January, 1948+1.5 lb./tree in December, 1948.

(2) 2 levels of P_2O_5 as Super P_0=0 and P_1=3 lb./tree in January, 1948+1.5 lb./tree in December, 1948.

(3) 2 levels of K_2O as Pot. Sul. : K_0=0 and K_1=1.5 lb./tree in January, 1948 +0.8 lb./tree in December, 1948.

Sub-plot treatments :

3 root stocks : R_1=*Chickoo* on *Gootie*, R_2=*Chickoo* on *Chickoo* and R_3=*Chickoo* on *Rayan*.

3. DESIGN :

(i) Split-plot. (ii) (a) 8 main-plots/block ; 3 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) 4 trees/sub-plot. (v) 1 ring round the main-plot. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Ni (iii) Height, girth, weight and no. of *Chickoo*. (iv) (a) 1942—contd. (b) N.A. (v) N.A. (vi) Nil.

5. RESULTS :

(i) 60 lb./tree

(ii) (a) 19.73 lb./tree.

(b) 20.45 lb./tree.

(iii) Main effect of R and interaction 'PK' are highly significant. Other effects are not significant.

(iv) Av. yield of *Chickoo* in lb./tree.

	R_1	R_2	R_3	Mean	K_0	K_1	P_0	P_1
N_0	74	30	61	55	59	51	50	61
N_1	84	36	71	64	64	64	62	66
P_0	73	37	58	56	68	44		
P_1	84	30	74	63	55	71		
K_0	82	38	63	62				
K_1	75	28	69	57				
Mean	79	33	66	60				

S.E. of difference of two

1. N or P or K marginal means = 5.69 lb./tree.
2. R marginal means = 7.24 lb./tree.
3. R means at the same level of N or P or K =10.22 lb./tree.
4. N or P or K means at the same level of R =10.10 lb./tree.

Crop :- Chickoo. Ref :- Gj. 49(114).

Site :- Fruit Res. Stn., Gandevi. Type :- 'CM'.

Object :—To study the different root stocks used for propagating *Chickoo* in combination with manures.

1. BASAL CONDITIONS :

(i) N.A. (ii) Refer soil analysis, Gandevi. (iii) By grafting. (iv) *Kali patti* (v) Replication—I. on 26.10.1942. replication II on 14.12.1942 and spacing between plants 15'×15'. (vi) One to two years old. (vii) F.Y.M. and B.M. were given. Quantity N.A. (viii) Ploughing. (ix) Nil. (x) Irrigated. (xi) N.A. (xii) N.A.

2. TREATMENTS :

Main-plot treatments :

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

(1) 2 levels of N as A/S : N_0=0 and N_1=3½ lb./tree in January, 1949+1.75 lb./tree in December, 1949.

(2) 2 levels of P_2O_5 as Super : P_0=0 and P_1=3½ lb./tree in Jan., 1949+1.75 lb./tree in December, 1949.

(3) 2 levels of K_2O as Pot. Sul. : K_0=0 and K_1=1.4 lb./tree in Jan., 1949+0.7 lb./tree in December, 1949.

Sub-plot treatments :

3 root stocks : R_1=*Chickoo* on *Gootie*, R_2=*Chickoo* on *Chickoo* and R_3=*Chickoo* on *Rayan*.

3. DESIGN :

(i) Split-plot. (ii) 8 main-plots/block ; 3 sub-plots/main-plot. (b) N.A (iii) 2. (iv) 4 trees/sub-plot. (v) 1 ring round the main-plot. (vi) Yes.

4. GENERAL :

(i) Norm l. (ii) Nil. (iii) Height, Girth, wt. of *Chickoo*, and no. of *chickoos*. (iv) (a) 1942–contd. (b) N.A. (v) N.A. (vi) Nil.

5. RESULTS :

(i) 66 lb./tree.

(ii) (a) 29.45 lb./tree.

(b) 29.37 lb./tree.

(iii) Main effect of R and interaction 'PK' are highly significant. Other effects are not significant.

(iv) Av. yield of *Chickoo* in lb./tree.

	R_1	R_2	R_3	Mean	K_0	K_1	P_0	P_1
P_0	91	29	66	62	68	5	62	62
P_1	98	28	83	69	70	66	76	63
P_0	107	34	67	69	56	83		
P_1	83	23	81	62	82	47		
K_0	93	29	84	69				
K_1	95	28	65	63				
Mean	95	28	75	66				

S.E. of difference of two

1. N or P or K marginal means = 8.50 lb./tree.
2. R marginal means = 10.24 lb./tree.
3. R means at the same level of N or P or K = 14.73 lb./tree.
4. N or P or K means at the same level of R = 14.63 lb./tree.

Crop :-Chickoo. Ref :-Gj. 50(136).

Site :-Fruit Res. Stn., Gandevi. Type :-'CM'.

Object :- To study the different root stocks used for propagating *Chickoo* in combination with manures.

1. BASAL CONDITIONS :

(i) N.A (ii) Refer soil analysis, Gandevi. (iii) By grafting. (iv) *Koli patti*. (v) Replication–I on 26.10.1942 and replication II on 14.12.1942 ; spacing between plants 15' × 15'. (vi) One to two years old. (vii) F.Y.M. and B.M. were given. Quantity N.A. (viii) Ploughing. (ix) Nil. (x) Irrigated. (xi) N.A. (xii) N.A.

2. TREATMENTS :

Main-plot treatments :

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

(1) 2 levels of N as A/S : $N_0=0$ and $N_1=3.5$ lb./tree in Jan., 1949+1.75 lb./tree in Dec., 1949.

(2) 2 levels of P_2O_5 as Super : $P_0=0$ and $P_1=3.5$ lb./tree in Jan., 1949+1.75 lb./tree in Dec., 1949.

(2) 2 levels of K_2O as Pot. Sul. : $K_0=0$ and $K_1=1.4$ lb./tree in Jan., 1949+0.70 lb./tree in Dec., 1949.

Sub-plot treatments :

3 root stocks : R_1=*Chickoo* on *Gootie*, R_2=*Chickoo* on *Chickoo* and R_3=*Chickoo* on *Payan*,

Note : Manures are not applied this year. Residual effect of manures applied in last year was studied.

3. DESIGN :

(i) Split-plot. (ii) (a) 8 main-plots/block ; 3 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) 4 trees/sub-plot. (v) 1 ring round the main-plot. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Height, girth, weight and no. of *chickoo*. (iv) (a) 1942—contd. (b) N.A. (v) N.A. (vi) Nil.

5. RESULTS :

(i) 102 lb./tree.

(ii) (a) 51.26 lb./tree.

(b) 36.23 lb./tree.

(iii) Main effect of R is highly significant and that of N is significant. Other effects are not significant.

(iv) Av. yield of *chickoo* in lb./tree.

	R_1	R_2	R_3	Mean	K_0	K_1	P_0	P_1
N_0	122	62	60	81	87	75	85	77
N_1	163	73	134	123	116	131	123	124
P_0	151	71	90	104	115	93		
P_1	133	64	104	100	88	113		
K_0	128	82	94	101				
K_1	156	53	99	103				
Mean	142	68	97	102				

S.E. of difference of two

1. N or P or K marginal means = 16.53 lb./tree.
2. R marginal means = 12.81 lb./tree.
3. R means at the same level of N or P or K = 18.12 lb./tree.
4. N or P or K means at the same level of R = 20.92 lb./tree.

Crop :-Chickoo. Ref :-Gj. 51(193).

Site :-Fruit Res. Stn., Gandevi. Type :-'CM'.

Object :—To study the different root stocks used for propogating *Chickoo* in combinaton with manures.

1. BASAL CONDITIONS :

(i) N.A. (ii) Refer soil analysis, Gandevi. (iii) By grafting. (iv) *Kali patti*. (v) Replication I on 26.10.1942 and replication II on 14.12.1942. Spacing between plants 15'×15'. (vi) One to two years old. (vii) F.Y.M. and B.M. were given. Quantity N.A. (viii) Ploughing. (ix) Nil. (x) Irrigated. (xi) 42.53". (xii) N.A.

2. TREATMENTS :

Main-plot treatments:

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

(1) 2 levels of N as A/S : N_0=0 and N_1=5.5 lb./tree in Feb., 1951 and 2.25 lb./tree in Dec., 1951.

(2) 2 levels of P_2O_5 as Super : P_0=0 and P_1=5.5 lb./tree in Feb., 1951 and 2.25 lb./tree in Dec., 1951.

(3) 2 levels of K_2O as Pot. Sul. : N_0=0 and N_1=2.8 lb./tree in Feb., 1951 and 0.9 lb./tree in Dec., 1951.

Sub-plot treatments :

3 root stocks : R_1=*Chickoo* on *Gootie*, R_2=*Chickoo* on *Chickoo* and R_3=*Chickoo* on *Rayan*.

3. DESIGN :

(i) Split-plot. (ii) (a) 8 main-plots/block ; 3 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) 4 trees/sub-plot. (v) 1 ring round the main-plot. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Height, girth, wt. of *chickoo* and no. of *chickoo*. (iv) (a) 1942—contd. (b) N.A. (vi) and (vii) Nil.

5 RESULTS :

(i) 133.0 lb./tree.

(ii) (a) 39.37 lb./tree.

(b) 55.43 lb./tree.

(iii) Main effects of N and R and interaction P × K are highly significant. Other effects are not significant.

(iv) Av. yield of *chickoo* in lb./tree.

	R_1	R_2	R_3	Mean	K_0	K_1	P_0	P_1
N_0	153.6	72.3	81.0	102.5	105.9	99.1	98.0	107.0
N_1	221.8	96.8	176.3	164.9	157.4	172.4	172.9	157.0
Mean	188.2	84.5	128.6	133.0	131.6	135.7	135.4	132.0
P_0	202.6	91.5	112.2	135.4	125.4	145.5		
P_1	173.7	77.5	145.0	132.0	138.0	126.0		
K_0	189.9	73.7	131.9	131.6				
K_1	186.5	95.3	125.3	135.7				

S.E. of difference of two

1. N or P or K marginal means = 11.36 lb./tree.
2. R marginal means, = 19.60 lb./tree.
3. R means at the same level of N or P or K = 27.72 lb./tree.
4. N or P or K means at the same level of R = 25.34 lb./tree.

Crop :-Chickoo. Ref :- Gj. 52(233).

Site :- Fruit Res. Stn., Gandevi. Type :-CM'.

Object :—To study the different root stocks used for propogating *Chickoo* in combination with manures.

1. BASAL CONDITIONS :

(i) N.A. (ii) Refer soil analysis, Gandevi. (iii) By grafting. (iv) *Kali* patti. (v) Replication I. on 28.10.1942, II. on 14.12.1942 spacing between plants 15′ × 15′. (vi) 1 to 2 years old. (vii) F.Y.M. and B.M. were given. Quantity N.A. (viii) Ploughing. (ix) Nil. (x) Irrigated. (xi) 33.56″. (xii) 1.4.1952 to 26.6.1953.

2. TREATMENTS :

Main plot treatments :

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

(1) 2 levels of N as A/S : N_0=0 and N_1=5.0 lb./tree in Jan., 1952 and 2.5 lb./tree in Oct., 1952.

(2) 2 levels of P_2O_5 as Super : P_0=0 and P_1=5.0 lb./tree in Jan., 1952 and 2.5 lb./tree in Oct., 1952.

(3) 2 levels of K_2O as Pot. Sul. : K_0=0 and K_1=2.0 lb./tree in Jan., 1952 and 1.0 lb./tree in Oct., 1952.

Sub-plot treatments :

3 root stocks : K_1=*Chickoo* on *Gootie*, R_2=*Chickoo* on *Chickoo* and R_3=*Chickoo* on *Rayan*.

3. DESIGN :

(i) Split-plot. (ii) (a) 8 main-plots/block, 3 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) 4 trees/sub-plot. (v) 1 ring round the main-plot. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Height, girth, wt. of *chickoo*, and no. of *chickoo*. (iv) (a) 1942—contd. (b) N.A. (v) N.A. (vi) Nil.

5. RESULTS :

(i) 92.0 lb./tree.

(ii) (a) 26.58 lb./tree.

(b) 22.44 lb./tree.

(iii) Main effects of N and R are highly significant. Interaction N × K and N × R are significant. Other effects are not significant.

(iv) Av. yield of *chickoo* in lb./tree.

	R_1	R_2	R_3	Mean	K_0	K_1	P_0	P_1
N_0	48.8	28.2	132.7	69.9	84.5	55.3	64.9	74.9
N_1	124.4	61.9	155.7	114.0	103.0	125.0	110.9	117.1
Mean	86.6	45.1	144.2	92.0	93.7	90.2	87.9	96.0
P_0	82.2	41.8	139.7	87.9	87.5	88.3		
P_1	91.0	48.4	148.7	96.0	100.0	92.0		
K_0	78.4	56.1	146.7	93.7				
K_1	94.8	34.1	141.7	90.2				

S.E. of difference of two

1. N or P or K marginal means = 7.67 lb./tree.
2. R marginal means = 7.93 lb./tree.
3. R means at the same level of N or P or K = 11.92 lb./tree.
4. N or P or K means at the same level of R = 11.22 lb./tree.

Crop :-Chickoo. Ref :-Gj. 53(315).

Site :-Fruit Res. Stn., Gandevi. Type :-'CM'.

Object :—To study the different root stocks used for propogating *Chickoo* in combination with manure.

1. BASAL CONDITIONS :

(i) N.A. (ii) Refer soil analysis, Gandevi. (iii) By grafting. (iv) *Kalli patti.* (v) Replication I. on 26.10.1942 and II. on 14.12.1942. spacing between plants 15'×15'. (vi) 1 to 2 years old. (vii) F.Y.M. and B.M. were given. Quantity N.A. (viii) Ploughing. (ix) Nil. (x) Irrigated. (xi) 36.30". (xii) 3.4.1953 to 29.3.1954.

2. TREATMENTS :

Main-plot treatments :

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

(1) 2 levels of N as A/S : N_0=0 and N_1=5.5 lb./tree in April, 1953 and 2.8 lb./tree in Oct., 1953.

(2) 2 levels of P_2O_5 as Super : P_0=0 and P_1=5.5 lb./tree in April, 1953 and 2.8 lb./tree in Oct., 1953.

(3) 2 levels of K_2O as Pot. Sul. : K_0=0 and K_1=2.2 lb./tree in April, 1953 and 1.1 lb./tree in Oct., 1953.

Sub-plot treatments :

3 root stocks : R_1=*Chickoo* on *Gootie*, R_2=*Chickoo* on *Chickoo* and R_3=*Chickoo* on *Rayan*.

3. DESIGN :

(i) Split-plot. (ii) (a) 8 main-plots/block, 3 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) 4 trees/sub-plot. (v) 1 ring round the main-plot. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Height, girth, and weight of *chickoo*. (iv) (a) 1942-contd. (b) N.A. (v) Nil. (vi) Nil.

5. RESULTS :

(i) 69.0 lb./tree.

(ii) (a) 17.35 lb./tree.

(b) 15.57 lb./tree.

(iii) Main effect of R and interaction N×P are highly significant. Main effect of N and interactions N×K and N×R are significant. Other effects are not significant.

(iv) Av. yield of *chickoo* in lb /tree.

	R_1	R_2	R_3	Mean	K_0	K_1	P_0	P_1
N_0	53.7	40.0	94.5	62.7	58.5	66.9	48.0	77.4
N_1	87.9	47.0	93.9	76.3	87.7	64.8	87.1	65.4
Mean	70.8	43.5	94.2	69.0	73.1	65.9	67.6	71.4
P_0	67.3	38.4	97.1	67.6	67.4	67.8		
P_1	74.3	48.6	91.3	71.4	78.8	64.0		
K_0	78.7	41.6	99.0	73.1				
K_1	62.9	45.4	89.4	65.9				

S.E. of difference of two

1. N or P or K marginal means = 5.00 lb./tree.
2. R marginal means = 5.49 lb./tree.
3. R means at the same level of N or P or K = 7.78 lb./tree.
4. N or P or K means at the same level of R = 8.08 lb./tree.

Crop :- Bajra and Groundnut (*Kharif*). Ref :-Gj. 52(299).

Site :-Agri. Res. Stn., Amreli. Type :- 'X'.

Object :—To study the suitability of growing cereal crops along with legumes.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Bajra*. (c) 2 C.L./ac. of F.Y.M. (ii) (a) Medium black. (b) Refer soil analysis, Amreli. (iii) 5.7.1952. (iv) (a) N.A. (b) Drilled. (c) N.A. (d) Between rows—18". (e) N.A. (v) 4 C.L./ac. of F.Y.M. (vi) N.A. (vii) Unirrigated. (viii) 2 weedings, 2 interculturings and 1 thinning. (ix) 12.71". (x) 10.10.1952.

2. TREATMENTS :

A. Groundnut alone.

B. *Bajra* alone.

* (i) One row of *Bajra* and 2 rows of Groundnut.
(ii) One row of *Bajra* and 4 rows of Groundnut.
(iii) One row of *Bajra* and 6 rows of Groundnut.
(iv) One row of *Bajra* and 8 rows of Groundnut.
(v) One row of *Bajra* and 10 rows of Groundnut.

* Yields of treatments C are not available separately for different proportions of Groundnut and *Bajra*. Treatment C is taken as a single treatment.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 2. (iv) 93'×52.5'. (v) 87'×52.5'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain and pod yield. (iv) (a) 1952—contd. (b) No. (c) Nil. (v) (a) Nil. (b) N.A. (vi) Nil. (vii) Prices of Groundnut and *Bajra* for Amreli are taken from "Season and crop report" of 1952-1953, Bombay State (Table VI). Groundnut Rs. 15.50 per B.M. *Bajra* Rs. 12.00 per B.M.

5. RESULTS :

(i) 212.63 Rs./ac.
(ii) 5.61 Rs./ac.
(iii) Treatment differences are highly significant.
(iv) Av. value of produce in Rs./ac.

Treatment	A	B	C
Av. value	238.76	186.15	212.99

S.E./mean = 3.96 Rs./ac.

Crop :- Bajra and Groundnut (*Kharif*). Ref :- Gj. 53(327).

Site :- Agri. Res. Stn., Amreli. Type :- 'X'.

Object :—To study the suitability of growing cereal crops along with legumes.

1. BASAL CONDITIONS:

(i) (a) N.A. (b) *Bajra*. (c) 2 C.L /ac. of F Y M. (ii) (a) Medium black. (b) Refer soil analysis, Amreli. (iii) 26.6 1953. (iv) (a) N.A. (b) Drilled. (c) Groundnut 50 lb./ac. ; *Bajra* 10 lb./ac. (d) Between rows 18". e) N.A. (v) Nil. (vi) Mass selected—*Bajra* ; A H. reduce spacing 3'-Groundnut. (vii) Unirrigated. (viii) 2 weedings and 1 interculturing. (ix) 33.25". (x) Groundnut—13.10.1953 ; *Bajra*-24.10.1953.

3. TREATMENTS :

A. Groundnut alone.
B. *Bajra* alone.
C_1. Groundnut and *Bajra* mixed in 10 : 1 ratio of rows.
C_2. Groundnut and *Bajra* mixed in 8 : 1 ratio of rows.
C_3. Groundnut and *Bajra* mixid in 6 : 1 ratio of rows.
C_4. Groundnut and *Bajra* mixed in 4 : 1 ratio of rows.
C_5. Groundnut and *Bajra* mixed in 2 : 1 ratio of rows.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 2. (iv) (a) 69'×57' for A and B and 69'×13.5' for C. (b) 60'×57' for A and B and 60'×10.5' for C. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Water lodging observed. Normal. (ii) Nil. (iii) Yield data. (iv) (a) 1952—contd. (b) No. (c) Nil. (v) (a) N.A. (b) N.A. (vi) Nil. (vii) Prices of *Bajra* and Groundnut for Amreli are taken from "Season and crop Report"—1952-54 Bombay State (Table VI, Groundnut Rs. 16.44 per B.M. *Bajra* Rs. 11.00 per B.M.

5. RESULTS :

(i) 294.07 Rs./ac.
(ii) 108.40 Rs./ac.
(iii) Treatment differences (in terms of money value of the produce) are highly significant.
(iv) Av. value of produce in Rs./ac.

Treatment	A	B	C_1	C_2	C_3	C_4	C_5
Av. value	290 53	86.80	478.14	597.01	281.42	219.14	105.40

S.E./mean =76.66 Rs./ac.

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Crop :- Wheat and Gram (*Rabi*). Ref :- Gj. 52(301).

Site :- Agri. Res. Stn., Arnej. Type :- 'X'.

Object :—To find out a suitable ratio of legume and cereal for mixed cropping.

1. BASAL CONDITIONS :

(i) (a) No. (b) Wheat. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Arnej. (iii) 25.10.1952. (iv) (a) N.A. (b) Drilled. (c) 40 lb./ac. for wheat and 20 lb./ac. for gram. (d) Between rows—12". (e) N.A. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) 15". (x) 26.2.1953.

2. TREATMENTS :

1. Gram alone.
2. Wheat alone.
3. Gram and wheat in ratio 2 : 1.
4. Gram and wheat in ratio 4 : 1.
5. Gram and wheat in ratio 6 : 1.
6. Gram and wheat in ratio 8 : 1.
7. Gram and wheat in ratio 10 : 1.

3. DESIGN :

(i) R B.D. (ii) (a) 7. (b) N.A. (iii) 2. (iv) (a) 37'×39'. (b) 33'×33' for 1, 2, and 7 ; 36'×30.5' for 3 and 6 ; 35'×31.1' for 4 and 5. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1952--1958. (b) and (c) No. (v) (a) and (b) N.A. (vi) Nil. (vii) Prices of wheat and gram, for Ahmedabad Dist. taken from Season and Crop Report 1952-1953 Bombay state, farm prices of certain commodities-table VI''. Wheat--Rs. 20 per Bengal maund and Gram—Rs. 22 per Bengal maund.

5. RESULTS :

(i) 107.83 Rs./ac.

(ii) 12.96 Rs /ac.

(iii) Treatment differences (in terms of money value of produce) are not significant.

(iv) Av. value of produce in Rs./ac.

Treatment	Av. value
1.	83.40
2.	105.40
3.	121.80
4.	111.80
5.	104.80
6.	124.60
7.	103.00
S.E./mean	= 9.17 Rs./ac.

Crop :- Wheat and Gram *(Rabi)*. Ref :- Gj. 53(328).

Site :- Agri. Res. Stn., Arnej. Type :- 'X'.

Object : To find out suitable ratio of legume and cereal for mixed cropping.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Wheat. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Arnej. (iii) 25.10.1953. (iv) (a) N.A. (b) Drilled. (c) 40 lb./ac. for wheat and 20 lb./ac. for gram. (d) Between rows--12". (e) N.A. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) Nil. (ix) 34.71". (x) Gram 28.2.1954 and wheat 2.3.1954.

2. TREATMENTS :

1. Gram alone.
2. Wheat alone.
3. Gram and Wheat in ratio 2 : 1
4. Gram and Wheat in ratio 4 : 1.
5. Gram and Wheat in ratio 6 : 1.
6. Gram and Wheat in ratio 8 : 1.
7. Gram and Wheat in ratio 10 : 1.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 2. (iv) (a) 37' × 39'. (b) 33' × 33' for 1, 2 and 7 ; 30' × 30.5' for 3 and 6 ; 35' × 31.1' for 4 and 5. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil (iii) Grain yield. (iv) (a) 1952—1958. (b) and (c) No. (v) (a) and (b) N.A. (vi) Nil. (vii) Prices of Wheat and Gram for Ahmedabad district taken from "Season and Crop Report" for 1953—1954 Bombay State (table VI). Wheat Rs. 18 per Bombay maund and Gram Rs. 18 per Bombay maund.

5. RESULTS :

(i) 117.40 Rs./ac.

(ii) 28.16 Rs./ac.

(iii) Treatment differences (money value of produce) are not significant.

(iv) Av. value of produce in Rs./ac.

Treatment	Av. value
1.	115.80
2.	134.00
3.	126.40
4.	118.80
5.	105.20
6.	110.20
7.	111.40
S.E./mean	= 19.92 Rs./ac.

Crop :- Jowar+Lang (*Rabi*). Ref :- Gj. 52(300).

Site :- Agri. Res. Stn., Bhuwa. Type :- 'X'.

Object :—To study the suitability of growing *Lang* as a mixture with *Jowar*.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Black cotton soil. (b) N.A. (iii) *Jowar* on 8.9.1952 and *Lang* 23.9.1952. (iv) (a) N.A. (b) Drilled. (c) *Lang* 40 lb./ac. and *Jowar* 8 lb./ac. (d) 24". (e) N.A. (v) Nil. (vi) *Jowar* no. 8 and *Lang* T-2-12. (vii) Unirrigated. (viii) 1 thinning, 1 interculturing and 1 weeding. (ix) 24.43". (x) *Jowar* 11.2.1953 and *Lang* 22.2.1953.

2. TREATMENTS :

1. *Lang* alone.
2. *Jowar* alone.
3. 2 rows of *Lang*+1 row of *Jowar*.
4. 4 rows of *Lang*+1 row of *Jowar*.
5. 6 rows of *Lang*+1 row of *Jowar*.
6. 8 rows of *Lang*+1 row of *Jowar*.
7. 10 rows of *Lang*+1 row of *Jowar*.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 2. (iv) (a) 42'×30' for treatment 1, 2, 3 and 5 ; 40'×30' for treatment 4 ; 36'×30' for treatment 6 and 44'×30' for treatment 7. (b) 40'×30' for treatment 1, 2, 3 and 5 ; 38'×30' for treatment 4 ; 34'×30' for treatment 6 and 42'×30' for treatment 7. (v) N.A. (vi) Yes.

4. GENERAL :

(i) *Jowar* normal. *Lang* growth stunted. (ii) Grass hoppers and stem borer attack. Gammaxene was dusted. (iii) Grain yield. (iv) (a) 1952—1955. (b) No. (c) Nil. (v) (a) N.A. (b) Nil. (vi) Nil. (vii) Prices of *Jowar* and *Lang* received from Agricultural Officer, A.R.S., Tarcha. *Jowar*-Rs. 6.12 per *kacha* md. ; *Lang*-Rs. 7.00 per *kacha* maund.

5. RESULTS :

(i) 77.78 Rs./ac.
(ii) 5.66 Rs./ac.
(iii) Treatment differences are highly significant.
(iv) Av. value of produce in Rs./ac.

Treatment	Av. valve
1.	12.70
2.	189.85
3.	112.89
4.	75.50
5.	69.51
6.	45.92
7.	38.11

S.E./mean = 5.66 Rs./ac.

Crop :- Lang+Jowar (*Rabi*). Ref :- Gj. 53(362).

Site :- Agri. Res. Stn,, Bhuwa. Type :- 'X'.

Object :—To study the suitability of growing *Lang* as a mixture with *Jowar*.

1. BASAL CONDITIONS :

(i) (a) *Chinamug-Jowar*. (b) *Chinamug*. (c) Nil. (ii) (a) Black cotton soil. (b) N.A. (iii) 28.9.1953. (iv) (a) N.A. (b) Drilled. (c) *Lang* 40 lb./ac. and *Jowar* 8 lb./ac. (d) Between rows 24". (e) N.A. (v) Nil. (vi) *Jowar* no. 8, *Lang* T-2-12. (vii) Unirrigated. (viii) 1 interculturing and 1 weeding. (ix) 29.55". (x) *Lang* 27.1.1955 and *Jowar* 14.2.1954.

2. TREATMENTS :

1. *Lang* alone.
2. *Jowar* alone.
3. *Lang* and *Jowar* in 2 : 1 ratio of row
4. *Lang* and *Jowar* in 4 : 1. ratio of row
5. *Lang* and *Jowar* in 6 : 1. ratio of row
6. *Lang* and *Jowar* in 8 : 1. ratio of row
7. *Lang* and *Jowar* in 10 : 1. ratio of row

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 2. (iv) a 42'×30' for treatment 1, 2 and 3 ; 40'×30' for treatment 4 ; 36'×30' for treatment 6 and 44'×30' for treatment 7. (b 40'×30' for treatment 1, 2, 3 and 5 ; 38'×30' for treatment 4 ; 34'×30' for treatment 6 and 42'×30' for treatmen. 7. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1932–1955. (b) No. (c) Nil. (v) (a) N.A. (b) N.A. (vi) Nil. (vii) Prices of *Jowar* and *Lang* received from Agricultural Officer, A.K.S. Jancha. *Jowar*-Rs 11.55/*Kacha* md, ; *Lang*-Rs. 3.19/*Kacha* md.

3. RESULTS :

(i) 95.36 Rs./ac.
(ii) 114.92 Rs./ac.
(iii) Treatment differences are not significant.
(iv) Av. value of produce in Rs./ac.

Treatment	Av. value
1.	33.03
2.	173.69
3.	67.88
4.	86.57
5.	84.03
6.	117.79
7.	104.54

S.E./mean = 81.27 Rs./ac.

Crop :-Cotton and Paddy (*Kharif*). Ref :-Gj. 5 (298).

Site :-Agri. Res. Stn., Dabhoi. Type :-'MX'.

Object :—To study the N and P_2O_5 requirements with and without F.Y.M of Cotton and Paddy.

1. BASAL CONDITIONS ;

(i) (a) *Jowar*-Cotton and Paddy. (b) *Jowar*. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Dabhoi. (iii) Paddy 18.6.1952. Cotton 16.6.1952. (iv) (a) N.A. (b) Paddy-drilled ; Cotton-dibbled. (c) Paddy 7 lb./ac ; Cotton 5 lb./ac. (d) N.A. (e) Cotton 3-4 seeds per dibble. (v) Nil. (vi) Cotton-*Vijay* ; Paddy-*Sarice*. (vii) Irrigated. (viii) N.A. (ix) 28.53". (x) Paddy 20.10.1952, Cotton-N.A.

2. TREATMENTS :

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

(1) 3 levels of N as A/S+cake in the ratio of 1 : 1 : N_0=0, N_1=30 and N_2=60 lb./ac.
(2) 3 levels of P_2O_5 as Super : P_0=0, P_1=30 and P_2=60 lb./ac.
(3) 2 levels of F.Y.M. : F_0=0 and F_1=5 C.L./ac.

3. DESIGN :

(i) 3×3×2 Fact. in R.B.D. (ii) (a) 18. (b) N.A. (iii) 4. (iv) (a) 62'×36'. (b) 50'×24'. (v) 6' alround. (vi) Yes.

4. GENERAL :

(i) For want of rains, the paddy crop failed.to attain its normal growth. (ii) Nil. (iii) Seed cotton yield only. (iv) (a) 1952—1955. (b) No (c) Nil. (v) (a) and (b) Nil. (vi) Nil. (vii) Paddy was drilled in between two lines of cotton. For this year, Paddy crop failed completely.

5. RESULTS :

(i) 433 lb./ac.
(ii) 64.61 lb./ac.
(iii) Main effect of N and interaction N×F are highly significant. Others are not significant.

(iv) Av. yield of *kapas* in lb./ac.

	N_0	N_1	N_2	Mean	F_0	F_1
P_0	403	404	484	432	455	409
P_1	402	472	462	446	435	456
P_2	380	413	476	423	418	428
Mean	396	430	474	433	436	431
F_0	404	466	436			
F_1	387	393	511			

S.E. of marginal mean of N or P. =13.20 lb./ac.
S E. of marginal mean of F =10.80 lb./ac.
S.E. of body of table N×F or P×F =18.65 lb./ac.
S.E. of body of table N×P =22.84 lb./ac.

Crop :-Paddy and Cotton (*Kharif*). Ref :-Gj. 53(326)
Site :-Agri. Res. Stn., Dabhoi. Type :-'MX'.

Object :—To study the N and P_2O_5 requirements with and without F.Y.M. of Cotton and Paddy.

1. BASAL CONDITIONS

(i) (a) *Jowar*-Cotton and Paddy. (b) *Jowar*. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Dabhoi. (iii) Paddy 15.6.1953, Cotton 5.6.1953. (iv) (a) N.A. (b) Paddy drilled, Cott n—dibbled (c) Paddy-12 lb./ac. (d) 6'×2' cotton. (e) Cotton 3-4 seeds per dibbie. (v) Nil (vi) Paddy- *Sarica*; Cotton- *Vijay* (vii) Irrigated. (viii) 4 weedings, 8 interculturings and thinning cotton to one plant/hill. (ix) 45.25". (x) Paddy 18.10. 1953. Cotton 27.1.1954 to 22 3.1954.

2. TREATMENTS :

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

(1) 3 levels of N as A/S +cake in the ratio of 1 : 1 : N_0=0, N_1=30 and N_2=60 lb./ac.

(2) 3 levels of P_2O_5 as Super: P_0=0, P_1=30 and P_2=60 lb./ac.

(3) 2 levels of F.Y.M. : F_0=0 and F_1=5 C.L./ac.

3. DESIGN :

(i) 3×3×2 Fact in R.B.D. (ii) (a) 18. (b) N.A. (iii) 4. (iv) (a) 62'×36'. (b) 50'×24'. (v) 6' alround. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Paddy grain and straw ; cotton seed yield. (iv) (a) 1952—1955. (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) Nil. (vii) Prices for cotton and paddy for Baroda Distt. taken from 'Season and Crop Report' 1953—1954, Bombay State, Table VI. Cotton—40 Rs. per Bengal maund, and paddy—14.50 Rs. per Bengal maund.

5. RESULTS :

(i) 427 Rs./ac.

(ii) 59.02 Rs./ac.

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

(iv) Av. value of produce in Rs./ac.

	N_0	N_1	N_2	Mean	F_0	F_1
P_0	386	414	451	417	400	434
P_1	378	402	466	416	425	406
P_2	417	442	477	449	474	424
Mean	397	419	468	427	433	421
F_0	396	431	471			
F_1	398	408	458			

S.E. of marginal mean of N or P = 12.05 Rs./ac.
S.E. of the marginal mean of F. = 89.84 Rs./ac.
S.E. of body of table N×P = 20.57 Rs./ac.
S.E. of body of table N×F or P×F = 17.03 Rs./ac.

Crop :-Groundnut and Maize. Ref :-Gj. 53(196).

Site :-Agri. Res. Stn., Dohad. Type :-'X'.

Object :—To study the effect of mixed cropping of legume and cereal in different proportions.

1. BASAL CONDITIONS :

(i) (a) Maize (*Kharif*)—Gram (*Rabi*). (b) Maize and Gram. (c) Maize crop was manured at 5 C.L./ac. of F.Y.M. (ii) (a) Light brown. (b) Refer soil analysis, Dohad. (iii) N.A. (iv) (a) N.A. (b) Maize and groundnut drilled. (c) to (e) N.A. (v) Nil. (vi) Spanish peanut No. 5. (vii) Unirrigated. (viii) 2 interculturings. (ix) 18.64". (x) N.A.

2. TREATMENTS :

1. Groundnut alone.
2. Maize alone.
3. Groundnut and maize in 2 : 1 ratio of rows.
4. Groundnut and maize in 4 : 1 ratio of rows.
5. Groundnut and maize in 6 : 1 ratio of rows.
6. Groundnut and maize in 8 : 1 ratio of rows.
7. Groundnut and maize in 10 : 1 ratio of rows.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 2. (iv) (a) 30'×35'. (b) 26'×30'. (v) One row on either side and 3' on both the ends. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Nil. (iii) Grain yield. (iv) (a) 1952—1955. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) Experiment failed in 1952. (vii) Prices of Groundnut and Maize for Panch Mahal district are taken from "Season and crop report" 1953—54 Bombay State (Table VI). Groundnut Rs. 15.44 per Bengal maund and Maize Rs. 10 12 per Bengal maund.

5. RESULTS :

(i) 161.84 Rs./ac.

(ii) 35.10 Rs./ac.

(iii) Treatment differences (money value of produce) are not significant.

(iv) Av. value of produce in Rs./ac.

Treatment	Av. value
1.	157.21
2.	133.19
3.	172.29
4.	185.41
5.	171.45
6.	156.93
7.	156.37
S E./mean	=24.82 Rs./ac.

Crop :-Cotton and Groundnut (*Kharif*). **Ref :-Gj. 52(228).**

Site :-Groundnut Res. Stn., Junagadh. **Type :-'X'.**

Object :—To study the suitability of growing Cotton as a mixture with Groundnut.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Groundnut. (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Junagadh. (iii) Groundnut : 14.6.1952 and cotton : 30.6.1952. (iv) (a) No ploughing and 2 to 3 harrowings. (b) Dibbling. (c) —. (d) Between rows 3' (for all crops) and between plants—2" for groundnut and 6" for cotton. (e) One for groundnut and 2 to 3 for cotton and thinning out all but one. (v) 5 C.L./ac. of F.Y.M. applied in furrows 15 days before sowing. (vi) Cotton—Kalyan ; Groundnut—spreading type. (vii) Unirrigated. (viii) Two interculturings and two weedings. (ix) 24.11". (x) 5.11.1952, 12.1.1953 and 4.2.1953.

2. TREATMENTS :

1. Groundnut alone.
2. Groundnut 6 rows and cotton 2 rows.
3. Groundnut 2 rows and cotton 2 rows.
4. Cotton alone.

3. DESIGN :

(i) L. Sq. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) 50'×48'. (b) 44'×24'. (v) 3'×12'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) N.A. (iii) *Kapas* and pod yield. (iv) (a) 1952—1957 (modified in 1955). (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) The lay out of the experiment is N.A., so analysed as R.B.D. (vii) Prices of produce collected from, G.R.S. Junagadh. Price of Cotton Rs. 0.19 per lb. and groundnut Rs. 0.25 per lb.

5. RESULTS :

(i) 171 Rs./ac.

(ii) 15.30 Rs./ac.

(iii) Treatment differences are highly significant.

(iv) Av. value of produce in Rs./ac.

Treatment	Av. value
1.	242
2.	203
3.	171
4.	69
S.E./mean	=7.65 Rs./ac.

Crop :- Cotton and Groundnut (*Kharif*). Ref :- Gj. 52(312).

Site :- Groundnut Res. Stn., Junagadh. Type :- 'X'.

Object :—To study the suitability of growing Cotton as a mixture with Groundnut.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Jowar* (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Junagadh. (iii) 19.6.1953. (iv) (a) No ploughing, 2 to 3 harrowings. (b) Dibbling. (c) N.A. (d) Between rows 3', between plants 2" for groundnut, 6" for cotton. (e) No. of seeds per dibble, one for Groundnut and 2-3 for cotton and thinned to one. (v) 5 C.L./ac. of F.Y.M. applied in furrows 15 days before sowing. (vi) Unirrigated. (vii) N.A. (viii) 2 interculturings and 2 weedings. (ix) 20.34". (x) Groundnut 23.10.1953, cotton 5.2.1954.

2. TREATMENTS :

1. Groundnut alone.
2. 2 rows of groundnut and 2 rows of cotton.
3. 6 rows of groundnut and 2 rows of cotton.
4. Cotton alone.

3. DESIGN :

(i) L. Sq. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) 50'×48'. (b) 44'×24'. (v) 3'×12'. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) N.A. (iii) Yield data. (iv) (a) 1952-1957 (modified in 1955). (b) No. (c) Nil. (v) (a) N.A. (b) N.A. (vi) Experiment analysed as R.B.D. as the layout was N.A. (vii) Prices of produce collected from G.R.S. Junagadh : cotton Rs. 0.23 per lb. and groundnut Rs. 0.25 per lb.

5. RESULTS :

(i) 295 Rs./ac.
(ii) 44.92 Rs./ac.
(iii) Treatment differences are highly significant.
(iv) Av. value of produce in Rs./ac.

Treatment	Av. value
1.	413
2.	300
3.	370
4.	98
S.E./mean	=22.46 Rs./ac.

Crop :- Jowar and Tur (*Kharif*). Ref :- Gj. 52(296).

Site :- Agri. Res. Stn., Surat. Type :- 'X'.

Object :—To study the effect of growing *Tur* as a mixture with *Jowar*.

1. BASAL CONDITIONS :

(i) (a) *Jowar*-cotton. (b) Cotton. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surat. (iii) 9.8.1952. (iv) (a) N.A. (b) Drilling. (c) 8 lb./ac. of *Jowar* and 20 lb./ac. of *Tur*. (d) 3'×1'. (e) —. (v) Nil (vi) *Jowar* B.P. 53 (late); *Tur* local (medium). (vii) Unirrigated. (viii) Two interculturings and one weeding. (ix) 19.98". (x) *Jowar* 21.1.1953; *Tur* 9.2.1953.

2. TREATMENTS :

1. *Jowar* alone. Net plot size 54'×30'.
2. *Tur* alone. Net plot size 54'×30'.
3. *Tur*+*Jowar* mixed in the ratio of 2 : 1, Net plot size, 54'×23'.
4. *Tur*+*Jowar* mixed in the ratio of 4 : 1, Net plot size, 54'×30'.
5. *Tur*+*Jowar* mixed in the ratio of 6 : 1, Net plot size, 54'×21'.
6. *Tur*+*Jowar* mixed in the ratio of 8 : 1, Net plot sixe, 54'×27'.
7. *Tur*+*Jowar* mixed in the ratio of 10 : 1, Net plot size, 54'×33'.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 2. (iv) (a) N.A. (b) As per treatments. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Below normal. (ii) Severe attack of Striga on *Jowar* which affected the yield very much. (iii) Grain and fodder yield. (iv) (a) 1952—1959. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) N.A. (vii) Due to attack of Striga on crops the growth was below normal and uneven. The yield of *Jowar* under treatment 1 was very much below normal (reasons N.A.) which was mainly responsible for significant result. Prices supplied by A.R.S, Surat : *Jowar* Rs. 5.50 per 40 lb. and *Tur* Rs. 8.25 per 40 lb.

5. RESULTS :

(i) 79.88 Rs./ac.
(ii) 21.03 Rs./ac.
(iii) Treatment differences are significant,
(iv) Av. value of produce in Rs./ac.

Treatment	Av. value
1.	12.77
2.	84.70
3.	90.88
4.	101.51
5.	108.90
6.	91.56
7.	68.84
S.E./mean	=14.87 Rs./ac.

Crop :- Jowar and Tur (*Kharif*). Ref :- Gj. 53(368).

Site :-Agri. Res. Stn., Surat. Type :- 'X'.

Object :—To study the effect of *Tur* as a mixture with *Jowar*.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Cotton. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Deep black cotton soil. (b) Refer soil analysis, Surat. (iii) 26.8.1953. (iv) (a) N.A. (b) Drilled. (c) *Jowar* 8—10 lb./ac. and *Tur* 20 lb./ac. (d) 3'×1'. (e) N.A. (v) Nil. (vi) *Jowar* B.P.-53 and *Tur* (local). (vii) Unirrigated. (viii) 2 weeding, 1 thinning and 4 interculturings. (ix) 58.00". (x) *Jowar* 20.2.1954 and *Tur* 16.3.1954.

2. TREATMENTS :

1. *Jowar* alone. Net plot size 54'×30'.
2. *Tur* alone. Net plot size 54'×30'.
3. *Tur* and *Jowar* in ratio of 2 : 1 Net plot size 54'×27'.
4. *Tur* and *Jowar* in ra 4 : 1 Net plot size 54'×30'.
5. *Tur* and *Jowar* in ratio of 6 : 1 Net plot size 54'×21'.
6. *Tur* and *Jowar* in ratio of 8 : 1 Net plot size 54'×27'.
7. *Tur* and *Jowar* in ratio of 10 : 1 Net plot size 54'×33'.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 2. (iv) (a) N.A. (b) As per treatments. (v) No. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Heavy attack of borer on *Jowar* and *Tur* up to 50%. (iii) Grain and fodder yield. (iv) (a) 1952—contd. (modified in 1954-1955). (b) and (c) No. (v) (a) and (b) N.A. (vi) Nil. (vii) Price of *Jowar* Rs. 5.37 per maund and *Tur* Rs. 4.87 per maund

5. RESULTS :

(i) 62.52 Rs./ac.
(ii) 12.61 Rs./ac.
(iii) Treatment differences are highly significant.
(iv) Av. value of produce in Rs./ac.

Treatment	Av. value
1.	122.08
2.	44.77
3.	70.58
4.	56.74
5.	55.53
6.	48.67
7.	39.26
S.E./mean	= 8.92 Rs./ac.

Crop :- As per rotation. Ref :- Gj. 53(311)/52(187).

Site :- Groundnut Res. Stn., Junagadh. Type :- 'R'.

Object :—To find out the best rotational system for the crops.

1. BASAL CONDITIONS :

(i) (a) and (b) As per treatments. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Medium black 2' to 2½' deep. (b) Refer soil analysis, Junagadh. (iii) 19.6.1953. (iv) (a) No ploughing, 2 to 3 harrowings. (b) Groundnut and Cotton dibbled, *Bajra* and *Jowar*—drilled. (c) 10 lb./ac. for *Bajra* and *Jowar*. (d) Between rows 3" for all crops, between plants for Groundnut 2", for cotton 6" ; for *Bajra* and *Jowar*—irregular. (e) 1 for Groundnut, 2 to 3 for cotton and others thinned out to one. (v) 5 C.L./ac. of F.Y.M. applied in furrows 15 days before sowing. (vi) Groundnut—Kopergaon, Cotton—Kalyan, *Bajra* and *Jowar*—local. (vii) Unirrigated. (viii) 3 interculturings and 3 weedings. (ix) 50.54". (x) 23.10.1953 (Groundnut), 7.10.1953 (*Bajra* and *Jowar*), 5.2.1954 (Cotton).

2. TREATMENTS :

7 rotations as follows :

1. Groundnut every year.
2. Groundnut—*Bajra*.
3. Groundnut—*Jowar*.
4. Groundnut - Cotton.
5. Cotton every year.
6. *Jowar* every year.
7. *Bajra* every year.

3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) 50' × 24'. (b) 44' × 12'. (v) 3' × 6'. (vi) No, as per rotation.

4. GENERAL :

(i) Good. (ii) *Tikka* 5%. (iii) Grain and fodder yield. (iv) (a) 1952—continued (modified in 1958-59). (b) Yes, as per treatments. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) Experiment was not analysed in 1952 as it was the first year of experimentation, only mean yield in lb./ac. are given here ; Cotton—315.6, Groundnut—308.6, *Bajra*—306.2 and *Jowar*—249.5.

5. RESULTS :

I. Crop : Groundnut

(i) 1223 lb./ac.
(ii) 194.8 lb./ac.
(iii) Treatment differences are significant.
(iv) Av. yield of pod in lb./ac.

Treatment	Av. yield
1.	959
2.	1377
3.	1170
4.	1387
S.E./mean	= 97.4 lb./ac.

II. Crop : *Bajra*

(i) 330.3 lb./ac.
(ii) 47.97 lb./ac.
(iii) Treatment differences are not significant.
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	309.8
2.	350.8
S.E./mean	= 23.99 lb./ac.

III. Crop : *Jowar*

(i) 210.9 lb./ac.
(ii) 42.21 lb./ac.
(iii) Treatment differences are not significant.
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	213.0
2.	208.7
S.E./mean	= 21.10 lb./ac.

IV. Crop : Cotton

(i) 340.1 lb./ac.
(ii) 82.97 lb./ac.
(iii) Treatment differences are not significant.
(iv) Av. yield of *kapas* in lb./ac.

Treatment	Av. yield
1.	368.4
2.	329.8
S.E./mean	= 42.99 lb./ac.

Crop :-Cotton-Jowar-Tur (*Kharif*). Ref :-Gj. 48(113).

Site :-Agri. Res. Stn., Surat. Type :- 'R'.

Object :—To study the best rotation for the tract.

1. BASAL CONDITIONS :

(i) (a) As per treatments. (b) Cotton. (c) Nil. (ii) (a) Deep black cotton soil. (b) Refer soil analysis, Surat. (iii) N.A. (iv) (a) N A. (b) Cotton-dibbling ; *Jowar* and *Tur* drilling. (c) Cotton-4-5 seeds/dibble *Jowar* and *Tur* 8-10 lb./ac. (d) Cotton-6′×2′ ; *Jowar* and *Tur*-3′×1′. (e) —. (v) Nil. (vi) N.A. (vii) (viii N.A. (ix) N.A. (x) N.A.

2. TREATMENTS :

11 rotations as follows :

1. Cm every year.
2. Cm—C
3. Jm every year.
4. Jm—J
5. Cm—J
6. C—T
7. Cm—T
8. J—T
9. Jm—T
10. Cm—J—T
11. Cm—T—J

Details of rotations :

C = Cotton unmanured.
Cm = Cotton manured with 5 C.L./ac. of F.Y.M.
J = *Jowar* unmanured.
Jm = *Jowar* manured with 5 C.L./ac. of F.Y.M.
T = *Tur* unmanured.

3. DESIGN :

(i) R.B.D. (ii) (a) 22. (b) N.A. (iii) 6. (iv) (a) 62′×30′. (b) 50′×18′. (v) 6′ alround. (vi) No. (as per rotation)

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Yield data. (iv) (a) 1948—continued. (b) No, (as per rotation.) (c) Nil. (v) (a) No. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

I. Crop : Cotton.

(i) 304 lb./ac.
(ii) 59.77 lb./ac.
(iii) Treatment differences are not significant.
(iv) Av. yield of *kapas* in lb./ac.

Rotation No.	(1)	(2)	(2)	(5)	(6)	(7)	(10)	(11)
Crop	Cm	Cm	C	Cm	C	Cm	Cm	Cm
Av. yield	279	283	336	289	321	290	291	339

S.E./mean =24.41 lb./ac.

II. Crop : Jowar.

(i) 819 lb./ac.
(ii) 152.5 lb./ac.
(iii) Treatment differences are not significant.
(iv) Av. yield of grain in lb./ac.

Rotation No.	(3)	(4)	(4)	(5)	(8)	(9)	(10)	(11)
Crop	Jm	Jm	J	J	J	Jm	J	J
Av. yield	930	815	796	823	801	839	770	774

S.E./mean =62.3 lb./ac.

III. Crop : Tur.

(i) 488 lb./ac.
(ii) 104.4 lb./ac.
(iii) Treatment differences are not significant.
(iv) Av. yield of grain in lb./ac.

Rotation No.	(6)	(7)	(8)	(9)	(10)	(11)
Crop	T	T	T	T	T	T
Av. yield	470	579	438	474	492	476

S.E./mean =42.6 lb./ac.

Crop :- Cotton-Jowar-Tur (*Kharif*). Ref :- Gj. 49(145)/48(113).

Site :- Agri. Res. Stn., Surat. Type 'R'

Object :—To study the best rotation for the tract.

1. BASAL CONDITIONS :

(i) (a), (b) and (c) As per treatments. (ii) (a) Deep black cotton soil. (b) Refer soil analysis, Surat. (iii) Cotton—7.1949. *Jowar* and *Tur*—23.7.1949. (iv) (a) N.A. (b) Cotton—dibbling ; *Jowar* and *Tur*—drilling. (c) N.A. (d) Cotton 6'×2' ; *Jowar* and *Tur*—3'×1'. (e) N.A. (v) Nil. (vi) Cotton—Suyog ; *Jowar* B.P. 53 (vii) Unirrigated. (viii) 2 weedings, 1 thinning and 1 interculturing to each crop. (ix) 45.42". (x) Cotton—24.3.1950 and 10.4.1950 ; *Jowar*—3,4.2.1950 ; *Tur*—16.3.1950.

2. TREATMENTS :

11 rotations as follows :

1. Cm every year.
2. Cm—C
3. Jm every year
4. Jm—J
5. Cm—J
6. C—T
7. Cm—T
8. J—T
9. Jm—T
10. Cm—J—T
11. Cm—T—J

Details of rotations :

C = Cotton unmanured.
Cm = Cotton manured with 5 C.L./ac. of F.Y.M.
J = *Jowar* unmanured.
Jm = *Jowar* manured with 5 C.L./ac. of F.Y.M.
T = *Tur* unmanured.

3. DESIGN :

(i) R.B.D. (ii) (a) 22. (b) N.A. (iii) 6. (iv) (a) 62'×30'. (b) 50'×18'. (v) 6' alround. (vi) No. (as per rotation.)

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Yield data. (iv) (a) 1948—N.A. (b) No. (as per rotation.) (c) Nil. (v) (a) No. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

I. Crop : Cotton

(i) 571 lb./ac.
(ii) 82.35 lb./ac.
(iii) Treatment differences are highly significant.
(iv) Av. yield of *kapas* in lb./ac.

Rotation No.	(1)	(2)	(2)	(5)	(6)	(7)	(10)	(11)
Crop	Cm	C	Cm	Cm	C	Cm	Cm	Cm
Previous crop	Cm	Cm	C	J	T	T	T	J
Av. yield	452	548	476	573	645	653	678	540

S.E./mean = 33.63 lb./ac.

II. Crop : Jowar.

(i) 727 lb./ac.
(ii) 130.9 lb./ac.
(iii) Treatment differences are highly significant.
(iv) Av. yield of grain in lb./ac.

Rotation No.	(3)	(4)	(4)	(5)	(8)	(9)	(10)	(11)
Crop	Jm	J	Jm	J	J	Jm	J	J
Previous crop	Jm	Jm	J	Cm	T	T	Cm	T
Av. yield	627	562	603	778	761	852	805	825

S.E./mean = 53.5 lb./ac.

III. Crop : Tur.

(i) 396 lb./ac.
(ii) 133.7 lb./ac.
(iii) Treatment differences are not significant.
(iv) Av. yield of grain in lb./ac.

Rotation No.	(6)	(7)	(8)	(9)	(10)	(11)
Crop	T	T	T	T	T	T
Previous crop	C	Cm	J	Cm	J	Cm
Av. yield	387	399	369	405	388	430

S.E./mean = 54.6 lb./ac.

Crop :- Cotton-Jowar-Tur (*Kharif*). Ref :- Gj. 50(166)/49(145)/48(113).

Site :- Agri. Res. Stn., Surat. Type :- 'R'.

Object :—To study the best rotation for the tract.

1. BASAL CONDITIONS :

(i) (a), (b) and (c) As per treatments. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surat. (iii) 22.7.1950. Cotton ; 4 8.1950 *Jowar* and *Tur*. (iv) (a) N.A. (b) Cotton-dibbling ; *Jowar* and *Tur*-drilling (c) *Jowar* 8—10 lb. ac. Cotton-4-5 seeds/dibble ; *Tur*-8—10 lb /ac. (d) Cotton-6'×2' ; *Jowar* 3'×1' and *Tur* 3'×1'. (v) Nil. (vi) Cotton-*Suyog*. (vii) Unirrigated. (viii) 1 thinning, 3 interculturings and 2 weedings for Cotton, *Jowar* and *Tur*. (ix) 29.40". (x) 23.3.1951, Cotton ; 22.1.1951, *Jowar* and 7-3-51, *Tur*.

2. TREATMENTS :

11 rotations as follows :

1. Cm every year.
2. Cm –C
3. Jm every year.
4. Jm—J
5. Cm—J
6. C–T .
7. Cm—T.
8. J –T.
9. Jm—T.
10. Cm—J—T.
11. Cm—T—J.

Details of rotations :

C =Cotton unmanured.
Cm=Cotton manured with 5 C.L./ac. of F.Y.M.
J =*Jowar* unmanured.
Jm =*Jowar* manured with 5 C.L./ac. of F.Y.M.
T =*Tur* unmanured.

3. DESIGN :

(i) R.B.D. (ii) (a) 22. (b) N.A. (iii) 6. (iv) (a) 62'×30'. (b) 50'×18'. (v) 6' alround. (vi) No ; (as per rotation.)

4. GENERAL :

(i) Satisfactory. (ii) Stray borer attack on *Jowar* ; Pod-borre attack on *Tur*. (iii) *Kapas* yield. (iv) (a) 1948—contd. (b) No, (as per rotation). (c) Nil. (v) (a) No. (b)—. (vi) and (vii) Nil.

5. RESULTS :

I. Crop : Cotton

(i) 541 lb./ac.
(ii) 65.82 lb./ac.
(iii) Treatment differences are highly significant.
(iv) Av. yield of *kapas* in lb./ac.

Rotation No.	(1)	(2)	(2)	(5)	(6)	(7)	(10)	(11)
Crop	Cm	Cm	C	Cm	C	Cm	Cm	Cm
Previous crop	Cm	C	Cm	J	T	T	T	J
Av. yield	434	471	438	605	585	597	597	601

S.E./mean =26.88 lb./ac.

II. Crop : Jowar

(i) 468 lb./ac.
(ii) 150.0 lb./ac.
(iii) Treatment differences are highly significant.
(iv) Av. yield of grain in lb./ac.

Rotation No.	(3)	(4)	(4)	(5)	(8)	(9)	(10)	(11)
Crop	Jm	J	Jm	J	J	Jm	J	J
Previous crop	Jm	Jm	J	Cm	T	T	Cm	T
Av. yield	425	395	220	487	540	657	398	625

S.E./mean =61.3 lb./ac.

III. Crop : Tur

(i) 322 lb./ac.
(ii) 80.68 lb./ac.
(iii) Treatment differences are not significant.
(iv) Av. yield of grain in lb./ac.

Rotation No.	(6)	(7)	(8)	(9)	(10)	(11)
Crop	T	T	T	T	T	T
Previous crop	C	Cm	J	Jm	J	Cm
Av. yield	276	307	380	298	385	288

S.E./mean =32.94 lb./ac.

Crop :-Cotton, Jowar and Tur (*Kharif*). Ref :-Gj. 51(236)/50(166)/49(145)/48(113).

Site :-Agri. Res. Stn., Surat. Type :-'R'.

Object :—To study the best rotation for the tract.

1. BASAL CONDITIONS :

(i) (a) to (c) As per treatments. (ii) (a) Black cotton soil. (b) Refer soil analysis, Surat. (iii) 27.6.1951 Cotton ; 21.1.1951 *Jowar* and *Tur*. (iv) (a) N.A. (b) Cotton—dibbling ; *Jowar* and *Tur* drilling. (c) 4 to 5 seeds/dibble for cotton ; 8 to 10 lb./ac. for *Jowar* and *Tur*. (d) 3'×1' between rows for *Jowar* and *Tur* ; 6'×2' for cotton. (e) —. (v) Nil. (vi) Cotton— *Suyog* ; *Jowar*—B.P. 53. ; *Tur*—Local. (vii) Unirrigated. (viii) 1 thinning, 3 interculturings and 1 weeding for all crops. (ix) 30.1.52 and 23.3.1952 Cotton ; 1.2 1952 *Jowar* and 4.3.1952 *Tur*.

2. TREATMENTS :

11 rotations as follows :

1. Cm every year
2. Cm—C
3. Jm every year.
4. Jm—J
5. Cm—J
6. C—T
7. Cm—T
8. J—T
9. Jm—T
10. Cm—J—T
11. Cm—T—J

Details of rotations :

C =Cotton unmanured.
Cm=Cotton manured with 5 C.L./ac. of F.Y.M.
J =*Jowar* unmanured.
Jm =*Jowar* manured with 5 C.L./ac. of F.Y.M.
T =*Tur* unmanured.

F.Y.M. spread on 26.5.1951 and P_2O_5 on 12.7.1951.

3. DESIGN :

(i) R.B.D. (ii) (a) 22+22=44. (b) N A. (iii) 6. (iv) (a) 62'×30'. (b) 50'×18'. (v) 6' alround. (vi, No. (as per rotation).

4. GENERAL :

(i) Yields are low due to/less rains. (ii) Cotton attacked by boll worm ; *Tur* by pod-bore ; *Jowar* by Stem-borer. (iii) Grain yield. (iv) (a) 1948—49 (modified in 1951—52)—continued. (b) No, (as per rotation). (c) N l. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment has been modified in 1951—52 by inserting application of P_2O_5 to legume Crop taken in rotation. All the plots in a replication are horizontally divided in two equal parts thus making 44 unit plots in a replication. Wherever legume is to be grown, out of the two plots made by this division one net plot is to be selected at random and applied with Super at 100 lb./ac. For seperating the two plots unmanured and manured with P_2O_5 a strip of land 6' in width is left as a border in between. This border of 6' width is to be kept in between two plots of all the 22 treatments in a replication, thus reducing the net plot size from 50'×18' to 22'×18'. The yields of these net plots are to be recorded separately.

5. RESULTS :

I Crop : Cotton

(i) 100 lb./ac.
(ii) 19.17 lb./ac.
(iii) Treatment differences are highly significant.
(iv) Av. yield of *kapas* in lb./ac.

Rotation No.	(1)	(2)	(2)	(5)	6)	(7)	(10)	(11)
Crop	Cm	C	Cm	Cm	C	Cm	Cm	Cm
Previous crop	Cm	Cm	C	J	T	T	T	J
Av. yield	86	103	90	118	84	91	104	121

S.E./mean =5.53 lb./ac.

II Crop : Jowar

(i) 573 lb /ac.
(ii) 176.4 lb /ac.
(iii) Treatment differences are significant.
(iv) Av. yield of *jowar* in lb./ac.

Rotation No.	(3)	(4)	(4)	(5)	(8)	(9)	(10)	(11)
Crop	Jm	J	Jm	J	J	Jm	J	J
Previous crop	Jm	Jm	J	Cm	T	T	Cm	T
Av. yield	514	432	459	576	759	635	537	674

S.E./mean =50.9 lb./ac.

III. Crop : **Tur**

(i) 240 lb./ac.
(ii) 82.66 lb./ac.
(iii) Main effects of rotations are highly significant.
(iv) Av. yield of *tur* in lb./ac.

Rotation No.	(6)	(7)	(8)	(9)	(10)	(11)	Mean
Previous crop	C	Cm	J	Jm	J	Cm	
S uper	161	242	236	286	266	217	235
No Super	189	163	204	330	307	275	245
M ean	175	203	220	308	287	246	240

S.E. of row marginal mean =13.78 lb./ac.
S.E. of column marginal mean =23.86 lb./ac.
S.E. of body of table =33.75 lb./ac.

Crop :-Cotton, Jowar and Tur (*Kharif*). **Ref :-Gj. 52(374)/51(236)/50(166)/49(145)/48(113).**
Site :-Agri. Res. Stn., Surat. Type :-'R'.

Object :—To study the best rotation for the tract.

1. BASAL CONDITIONS :

(i) (a) to (c) As per treatments. (ii) (a) Black Cotton soil. (b) Refer soil analysis, Surat. (iii) Cotton 26.6.1952 ; *Jowar* and *Tur* ; 14.7.1952. (iv) (a) N.A. (b) Cotton—dibbled ; *Jowar* and *Tur*—drilled. (c) Cotton 4-5 seeds/dibble ; *Jowar* 8-10 lb./ac. ; *Tur* 12-15 lb./ac. (d) Cotton 6′×2′ ; *Jowar* and *Tur* 3′×1′. (e) —. (v) Nil. (vi) Cotton—Suyog ; *Jowar* B.P. 53. ; *Tur*—Local. (vii) Unirrigated. (viii) 1 thinning ; 2 weedings and 3 interculturings. (ix) 20.18″. (x) 3 to 25.3.1953 for Cotton ; 12.1.1953 for *Jowar* and 10.2.1953 for *Tur*.

2. TREATMENTS :

11 rotations as follows :

1. Cm every year
2. Cm—C
3. Jm every year.
4. Jm—J
5. Cm- J
6. C—T
7. Cm—T
8. J—T
9. Jm—T
10. Cm—J—T
11. Cm—T—J

Details of rotations :

C =Cotton unmanured.
Cm=Cotton manured with 5 C.L./ac. of F.Y.M.
J =*Jowar* unmanured.
Jm =*Jowar* manured with 5 C.L./ac. of F.Y.M.
T =*Tur* unmanured.
Tm =*Tur* manured with 100 lb./ac. of Super.

F.Y.M. spread on 30.5.1952 and P_2O_5 on 4.7.1952. Ref Gj. 51 (236) General (vii)

3. DESIGN :

(i) R.B.D. (ii) (a) 44. (b) N.A. (iii) 6. (iv) (a) main-plot : 62′×30′. (b) main-plot : 50′×18′ sub-plot : 22′×18′. (v) N.A. (vi) No, as per rotation.

4. GENERAL :

(i) Good. (ii) Slight attack of pod borer on *Tur* ; slight attack of boll worm on cotton ; slight attack of striga on *Jowar*. (iii) Grain and *kapas* yield. (iv) (a) 1948—49 (modified in 1951—52)—continued. (b) No, as per rotation. (c) Nil. (v) (a) No. (b) N.A. (vi) Nil. (vii) Yields of plots of cotton and *Jowar*, where *Tur* is not in rotation, are converted to the common plot size of 22′×18′ before analysis is taken up.

5. RESULTS :

I. Crop : **Cotton**
(i) 184 lb./ac.
(ii) 52.91 lb./ac.
(iii) Treatment differences are highly significant.

(iv) Av. yield of *kapas* in lb./ac.

Rotation No.	(1)	(2)	(2)	(5)	(6)	(6)	(7)	(7)	(11)	(10)	(10)
Crop	Cm	Cm	C	Cm	C	C	Cm	Cm	Cm	Cm	Cm
Prev. crop	Cm	C	Cm	J	Tm	T	Tm	T	J	Tm	T
Av. yield	112	136	178	261	201	233	170	159	238	176	160

S.E./mean (for 6, 7, 10) =21.60 lb./ac.
S E /mean (for 2, 5, 11) =15.27 lb./ac.

II Crop : Jowar

(i) 552 lb./ac.
(ii) 212.2 lb./ac.
(iii) Treatment differences are significant.
(iv) Av. yield of grain in lb./ac.

Rotation No.	(3)	(4)	(4)	(5)	(8)	(8)	(9)	(9)	(10)	(11)	(11)
Crop	Jm	Jm	J	J	J	J	Jm	Jm	J	J	J
Prev. crop	Jm	J	Jm	Cm	Tm	T	Tm	T	Cm	Tm	T
Av. yield	467	422	405	484	683	674	788	729	498	687	717

S.E./mean (for 8, 9, 11) =86.7 lb./ac.
S.E./mean (for 3, 4, 5, 10) =61.3 lb /ac.

III. Crop : Tur

(i) 261 lb./ac.
(ii) 78.54 lb./ac.
(iii) Main effect of rotation is significant. Others are not significant.
(iv) Av. yield of grain in lb./ac.

Rotation No.	(6)	(7)	(8)	(9)	(11)	(10)	
Prev. crop	C	Cm	J	Jm	Cm	J	Mean
Super	227	227	240	295	316	302	268
No Super	204	220	227	293	282	293	253
Mean	216	224	234	294	299	298	251

S.E. of row marginal mean =13.09 lb./ac.
S.E. of column marginal mean =22.67 lb./ac.
S.E. of body of table =32.07 lb./ac.

Crop :- Cotton-Jowar-Tur Ref :- Gj. 53(376)/52(374)/51(236)/50(166)/49(145)/48(113).

Site :- Agri. Res. Stn., Surat. Type :-'R'.

Object :—To study the best rotation for the tract.

1. BASAL CONDITIONS :

(i) (a), (b) and (c) As per treatments. (ii) (a) Black cotton. (b) Refer soil analysis, Surat. (iii) Cotton – dibbled on 19.6.1953 ; *Jowar* drilled on 2.8.1953 ; *Tur* on 25.8.1953. (iv) (a) and (b) N.A. (c) *Jowar* drilled at 8 to 10 lb./ac. *Tur* at 12 to 15 lb./ac. Cotton at 2½ to 3 lb./ac. (d) Between rows cotton 6', *Jowar* and *Tur* 3'; Between plants-Cotton—2', *Jowar* and *Tur*—1'. (e) N.A. (v) Nil. (vi) Cotton-Suyog, *Jowar*-B P. 53 ; *Tur*-Local. (vii) Unirrigated. (viii) Thinning Cotton on 31.7.1953 and 28.8.1953 ; *Jowar* 24.8.1953 ; *Tur*-29.9.1953 ; Weeding on 19.7.1953 ; 28.8.1953 for Cotton and 9.9.1952, 22.10.1953 for *Jowar* and *Tur*. (ix) 58.00". (x) Cotton on 10, 27.3.1954 ; *Jowar*-9.2.1954 and *Tur*-15.3 1954.

2. TREATMENTS :

11 rotations as follows :

1. Cm every year.
2. Cm—C
3. Jm every year.
4. Jm—J
5. Cm—J
6. C—T
7. Cm—T
8. J—T
9. Jm—T
10. Cm—J—T
11. Cm—T—J

Details of rotations :

C = Cotton unmanured.
Cm= Cotton manured with 5 C.L./ac. of F.Y.M.
J = *Jowar* unmanured.
Jm= *Jowar* manured with 5 C.L./ac. of F.Y.M.
T = *Tur* unmanured.
Tm= *Tur* manured with 100 lb./ac. of Super.

F.Y.M. spread on 31.5.1953 and P_2O_5 on 25.8.1953. Refer Gj. 51 (236) General (vii)

3. DESIGN :

(i) R.B.D. (ii) (a) 44. (b) N.A. (iii) 6. (iv) (a) 62'×30'. (b) 50'×18' for all plots excluding *Tur* plots ; For *tur*—gross : 31'×30' ; net : 22'×18'. (v) 6' all round the net plot. For tur : 6' on either side and 5' at one end and 3' at another. (vi) No, as per rotation.

4. GENERAL :

(i) Normal. (ii) Cotton-boll worm attack ; *Jowar*-heavy attack of borer due to which *Jowar* yield was below normal. *Tur*-heavy attack of pod borer. (iii) Seed-cotton ; *tur*-pods, *jowar*-grain. (iv) (a) 1948—1949. (Modified in 1951—1952)—continued. (b) No, as per rotation. (c) N.A (v) (a) and (b) No. (vi) and (vii) Refer Gj. 51(236).

5. RESULTS :

I. Crop : **Cotton**

(i) 682 lb./ac.

(ii) 93.51 lb./ac.

(iii) Treatment differences are highly significant.

(iv) Av. yield of *kapas* in lb./ac.

Rotation No.	(1)	(2)	(2)	(5)	(6)	(6)	(7)	(7)	(10)	(10)	(11)
Crop	Cm	C	Cm	Cm	C	C	Cm	Cm	Cm	Cm	Cm
Previous crop	Cm	Cm	C	J	Tm	T	Tm	T	Tm	T	J
Av. yield	552	534	575	628	820	909	905	865	855	785	600

S.E /mean (for 6, 7, 10) =38.18 lb./ac.

S.E./mean (for 1, 2, 5, 11) =26.99 lb./ac.

II. Crop : **Jowar**

(i) 337 lb./ac.

(ii) 158.0 lb./ac.

(iii) Treatment differences are highly significant.

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

Rotation No.	(3)	(4)	(4)	(5)	(8)	(8)	(9)	(9)	(11)	(11)	(10)
Crop	Jm	J	Jm	J	J	J	Jm	Jm	J	J	J
Previous crop	Jm	Jm	J	Cm	Tm	T	Tm	T	Tm	T	Cm
Av. yield	292	127	157	362	449	479	413	378	570	589	320

S.E./mean (for 8, 9, 11) =64.5 lb./ac.

S.E./mean (for 3, 4, 5, 10) =45.6 lb./ac.

III. Crop : **Tur**

(i) 150 lb./ac.

(ii) 40.54 lb./ac.

(iii) Only main effect of rotations is highly significant. Others are not significant.

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

Rotation No.	(6)	(7)	(8)	(9)	(10)	(11)	
Previous crop	C	Cm	J	Jm	J	Cm	Mean
Super	121	119	133	186	174	160	149
No Super	117	162	135	149	174	165	150
Mean	119	141	134	168	174	163	150

S.E. of row marginal mean = 6.76 lb./ac.

S.E. of column marginal mean =11.70 lb./ac.

S.E. of body of table =16.55 lb./ac.