

# AGRICULTURAL DEVELOPMENT IN HYDERABAD STATE, INDIA



INTERNATIONAL COOPERATION ADMINISTRATION

WASHINGTON 25, D.C.

PURCHASED THROUGH  
C. A. B. BOOK

AGRICULTURAL DEVELOPMENT

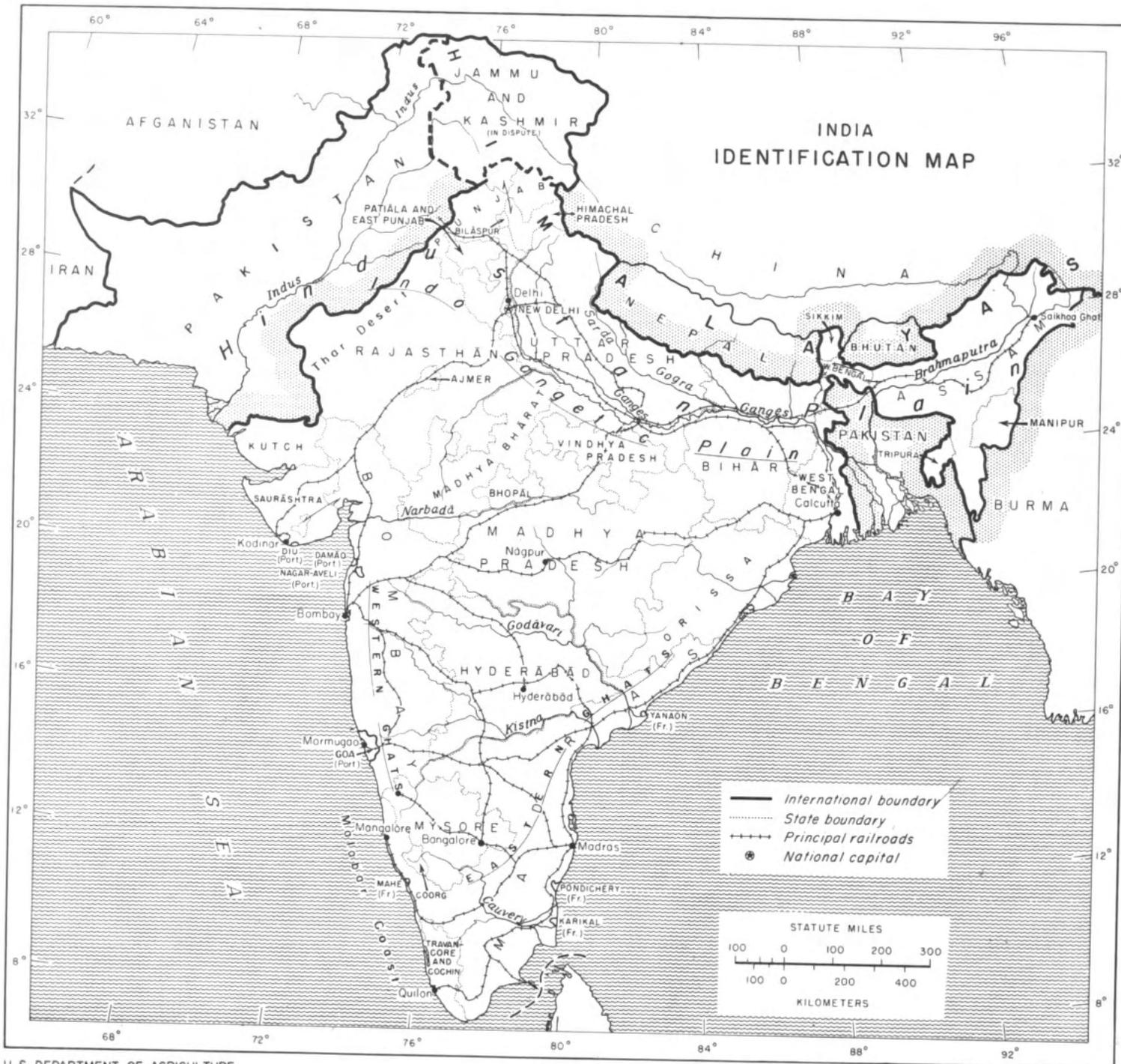
HYDERABAD STATE, INDIA

by

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INTERNATIONAL COOPERATION ADMINISTRATION  
Washington, D. C.

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ii

TABLE OF CONTENTS

Introduction . . . . .	1
Physical Features . . . . .	3
Soils and Rainfall . . . . .	3
Population . . . . .	6
Principal Crops . . . . .	6
Rice . . . . .	8
Groundnuts . . . . .	10
Castor . . . . .	10
Cotton . . . . .	13
Agricultural Marketing . . . . .	15
Agricultural Research . . . . .	16
Agricultural Information . . . . .	19
Agricultural Engineering . . . . .	19
Agricultural Education . . . . .	22

Cover: The village mote is hard on  
man and beast.

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and editing this report.

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## INTRODUCTION

India has been known for centuries as a land filled with many charms while at the same time considered as a country that would never be able to support its population with a standard of living above a mere existence. During the many years in which she struggled for her independence, it appeared to many that India was actually moving back the clock and destroying some of the progress she had made.

Since India became an independent Nation in 1947, things have changed and the spirit of Gandhi, whose leadership inspired millions to work for independence, continues to be the force in a dynamic democratic revolution designed to make India a strong nation with strong and healthy people.

Probably the single greatest problem India had to overcome in order to accomplish her objectives was that of food to feed her 360 odd million people. To accomplish this task a National plan called the "Grow More Food" program was started and every effort was made to strengthen



Preparation for greater service.

the agricultural departments of the various states. Large amounts of funds were spent in various ways and additional personnel was pulled into the program, but in the final analysis it was realized that such a program, which puts emphasis on production only, was not the answer to Indian food supply. More food was not an answer to the many problems the villages faced and since food alone would not solve difficulties, the villager was not aware of its importance beyond his individual needs.

After an inquiry made by a committee of the Government of India into the results of the Grow More Food Campaign, it was recommended that an entirely different approach be made to the food problem. Careful study of the proposal led to the present program of Community development in which agriculture has been able to make a tremendous advance throughout India. This program took into consideration the many sided problems of development and gained response from the villager because it helped him in solving those problems he was most interested in. As a result his confidence was won and he was enabled to realize other problems, one of which was the low agricultural production.

Hyderabad State is basically an agricultural State and while a great effort was made under the "Grow More Food" program, it still has a long way to go in basic agricultural education, research and extension. This report attempts to give the background of agricultural production in the state together with some of its shortcomings and problems, some of which are being overcome as the days go by.

## PHYSICAL FEATURES

Hyderabad State forms the eastern portion of the Deccan Plateau and lies between 15° 10' and 20° 40' N and 74° 40' and 81° 35' E. It is bounded on the north by Bombay State and Madhya Pradesh; on the east by Madhya Pradesh and Andhra State; on the south by Andhra State; and on the west by Bombay State. A large part of the area of the State consists of an extensive plateau of an average elevation of 1,250 feet above the sea level, with hills here and there rising to 2,500 feet.

There are no natural lakes in the State. The undulating nature of the country, however, lends itself to the construction of artificial reservoirs, some of which are large enough to deserve the name of lakes. Two artificial lakes called Osman and Himayat Sagar form a picturesque sight in the vicinity of the capital. The former, 18 square miles in area, serves at the same time as a reservoir of drinking water for the City and suburbs of Hyderabad. These lakes are small compared to the Nizam Sagar lake constructed by damming the river Majira by an embankment more than two miles long and covering an area of more than 50 square miles. This lake is used entirely for irrigation purposes. At present a hydro-electrical plant is being installed and will be in operation soon.

The Tungabhadra Project located in Raichur District is now nearing completion and will be the largest lake in the State. This will be used for irrigation and hydro-development for Hyderabad, Andhra and Mysore States. It was conceived and developed as a cooperative venture between Hyderabad and Madras State prior to the formation of the new State of Andhra. The water from this lake will be used to irrigate some 450,000 acres in Hyderabad and slightly less in Mysore and Andhra.

Throughout the eastern half of Telangana region of the State, one finds small tanks which vary in size from one or two acres to sometimes twenty-five to fifty acres. Most of these tanks were constructed four or five hundred years ago. Practically all of the normal rainfall in these areas is conserved. There are approximately 27,000 such tanks in existence at present.

There are three marked seasons during the year — rainy season from the beginning of June to the end of September, winter season from the beginning of October to the end of January and summer season from early February to the end of May.

## SOILS AND RAINFALL

The broad soil groups, determined mainly on the basis of the rock formation occurring in the State, are black soils (regar), laterites and sandy loams (chalka).

The black soil of regar is rich in plant nutrients such as lime, magnesia, iron and alkalies on which cotton and some of the dry crops grow

very well. It expands and becomes sticky when wet, while when dry it contracts and develops numerous cracks. Aurangabad, Parbhani, Nanded, Bhir and Osmanabad Districts, some parts of Bidar District, the northern portion of Gulbarga District and the northwestern part of Adilabad District are mainly composed of basaltic rock formation which give rise to black soils. The central portion of the Gulbarga District is composed of rocks of Bhima series, consisting of limestones, shales, and sandstones, which also give rise to black soils. The southern portion of the Gulbarga District consists mostly of pink and grey granites, traversed by dolerite dykes, quartz veins, bands of gold bearing hornblende schists and the rocks of Bhima series. The soil derived from these rocks is variable from place to place, but is for the most part black. The northern part of Raichur District consists of Dharwar rocks that are also covered with black soil. The rest of the soil in Taichur District though black, is essentially a transporting and shifting soil necessitating planned soil bunding. The black soil occurs also along the river banks of Krishna and Godavari in Mahbubnagar, Nalgonda, Warangal, Karimnagar and Adilabad Districts.

Sandy loam soils are found in Mahbubnagar, Malgonda, Warangal, Karimnagar, Adilabad, Medak, Nizamabad and Hyderabad Districts. They vary from sandy to loamy in different parts depending upon the rock composition.

A large part of the Hyderabad State is within the range of both the southwest and northeast monsoons. Both monsoons cover the period from the first of June to the last of September and nearly 84 percent of the annual rainfall is received during the monsoons. The average rainfall in the state over the last thirty years varied from a minimum of about 22 inches in 1940-41 to a maximum of 41 inches in 1933-34. Similarly the average amount of rainfall received in each district varies a good deal. On the basis of the same thirty years' average, Raichur has the lowest rainfall (23 inches) while Adilabad has the highest (43 inches).

Broadly speaking, the area comprising the four districts of Adilabad, Nizamabad, Karimnagar and Warangal has an annual average rainfall of about 38 inches, as compared with annual average rainfall of 33 inches in the area comprising Bidar, Parbhani, Nanded and Medak Districts. The area comprising the seven districts, viz., Hyderabad, Mahbubnagar, Gulbarga, Osmanabad, Bhir, Aurangabad and Nanded has an average rainfall of about 28 inches.

As usual, the amount and distribution of rain during the monsoon has a definite influence on the growth of crops. However, the rains received in pre-monsoon and post-monsoon periods, especially in the southern districts are of importance for paddy and irrigation. Similarly, good rains in the last month of the monsoon, i.e., September, are useful for Rabi or late season crops.



## POPULATION

The population of Hyderabad State, according to the 1951 census is 18,655,108 persons compared to 16,327,119 in 1941. The State ranks seventh among the States of the Indian Union in respect to population. The mean decennial growth rate of population in the period 1941-51 works 13.3 percent as against 12.5 percent for the whole of the Indian Union.

According to the figures furnished by the Commissioner of Land Records and Settlement, Hyderabad Government, the area of the State is 81,668 square miles. On this basis the density of population works out to 228 persons per square mile.

Of the total population, nearly 12,700,000 or 68.2 percent are dependent on agriculture as their principal source of livelihood while 5,900,000 or 31.8 percent are dependent on commerce, production (other than cultivation), transport and services. Of the 12,700,000 persons dependent on agriculture, 25.2 percent are cultivating laborers and 3.5 percent are agricultural rent receivers.

## PRINCIPAL CROPS

The principal crops grown in Hyderabad according to their relative importance are as follows:

Jowar (Sorghum)	28.5%	Gram	3.9%
Cotton	12.0%	Castorseed	3.3%
Groundnut (Peanut)	7.8%	Sesamum	3.3%
Paddy (Rice)	5.9%	Linseed	2.4%
Arhar	4.7%	Condiments & Spices	2.1%
Bajra	4.6%	Maize (Corn)	26.5%

In India, Hyderabad ranks as follows in relative importance of each crop:

<u>Name of Crop</u>	<u>Rank</u>	<u>Percentage of all India Production</u>
Castor	1st	58.9%
Sesamum	1st	22.9%
Jowar	2nd	19.3%
Peanuts	2nd	21.1%
Linseed	2nd	18.6%
Cotton	3rd	19.5%
Jute	4th	11.0%
Maize (Corn)	5th	5.1%
Bajra	6th	6.6%
Sugarcane	6th	3.1%
Tobacco	8th	2.4%
Gram	6th	4.9%
Paddy (Rice)	9th	2.1%

**1,00,000 TONS OF JOWAR GRAIN**

IS LOST EVERY YEAR

*Due to*

**JOWAR SMUT**

ఒక లక్ష టన్నుల జొన్న పంట

సాతనా కాటుక వ్యాధిచే నష్ట మగుచున్నది

*Treat the Seed with*

**SULPHUR**

పిత్తనాన్ని గంధకముతో  
మిశ్రమము చేయండి



**AND STOP THIS WASTE**

ఈ నష్టమును ఆపండి -

IT COSTS LESS THAN AN ANNA PER ACRE

ఎకరానికి అణాకు తక్కువగానే ఖర్చుగును

Charts like this one are prepared and used by the Agricultural Publicity Department for instruction of cultivators. They are customarily displayed at Exhibits and Agricultural Offices. Charts are usually 3 x 4 feet.

The recorded acreage under jowar showed a rapid decrease during 1942-43 (9,800,000) to 1948-49 (6,100,000). A part of the decrease may be due to diversion of area under jowar to pulses. However, from 1949-1950 onwards, there has been a tendency for the acreage to go up.

Jowar is grown in kharif and rabi seasons but the varieties grown in the two seasons are distinct in their characteristics. The kharif varieties are all white. Various pulses, oilseeds and fibre plants are generally grown mixed with kharif jowar. Safflower and linseed are usually grown mixed with rabi jowar.

The distribution of the two varieties over the different districts is regulated by the amount and distribution of rainfall and also by the depth and character of the soil. However, it is essentially a crop of deep and heavier soils.

Kharif jowar is customarily sown in June as soon as the land receives sufficient moisture from the southwest monsoon. Harvesting takes place about four to five months after sowing. It is grown in almost all the districts. However, about 72.5% of the total area under kharif crop is found in Muhbubnagar, Nalgonda, Adilabad, Parbhani, Nanded, Raichur, Osmanabad and Bidar districts. Rabi jowar is sown in September. It needs deep moisture retaining soil and sufficient late rainfall. Rabi jowar is largely grown in Gulbarga district and about 82.1% of the total area under Rabi jowar is found in Warangal, Adilabad, Aurangabad, Parbhani, Bhir, Gulbarga, Raichur and Osmanabad districts.

### Rice

Rice is the second most important crop grown in the State. In 1951-52 it occupied an area of about 1,600,000 acres representing about 2.1 percent of the acreage under it in the Indian Union. The area under rice in 1951-52 formed 5.9 percent of the total cropped area in that year while it was 9.0 percent of the area under food crops.

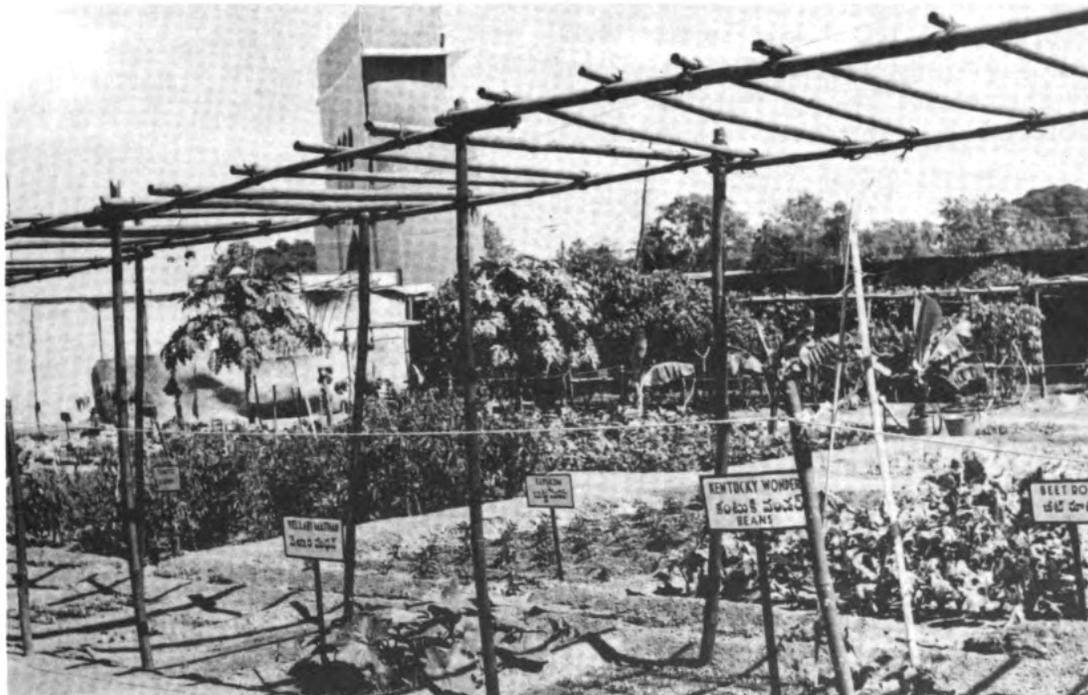
During the past decade the annual acreage under rice in the State varied from 1,200,000 acres (1942-43) to 1,600,000 acres (1951-52). Between 1946-47 and 1950-51 the acreage had not gone above 1,400,000 acres in any year. The decrease or increase in annual acreage is generally dependent on the amount of rainfall received during the sowing period and the availability of water in tanks and reservoirs.

However, in 1951-52 there was a sudden increase of about 300,000 acres over the acreage in 1950-51 which was largely due to the efforts of the State Government to bring more area under food crops.

Nearly 78 percent of the area under the crop is confined to Mahbubnagar, Nizamabad, Medak, Karimnagar, Warangal and Nalgonda districts, which receive good rainfall and are extensively served by a number of major and minor irrigation sources. The other districts in which rice is grown to some extent are Adilabad, Gulbarga and Hyderabad.



**Experiment showing difference in growth of covered and uncovered rice seed beds.**



**Agricultural exhibit at annual exposition held in Hyderabad.**

Customarily two crops of rice are grown in the year. Abi, i.e., monsoon or autumn rice, is sown at the end of June after the first showers of southwest monsoon and harvested in December and January. Tabi or Summer rice is sown in January and February and harvested in April and May. The proportion of area under Abi and Tabi rice in 1951-52 was 4 to 1.

With the introduction of the so-called Japanese method, which in reality is an improved Indian method, yields have increased greatly. In 1954 many farmers produced more than 7,000 lbs. of rice per acre and one yield of 10,800 lbs. per acre was attained.

Practices under this improved method include use of improved seed, adequate use of fertilizer, line planting for inter-tillage and adequate control of insects.

Pulses such as Tuar, Mung (Green gram), Kulthi (horse gram) and Chana (gram), are widely grown in the State. The total area under all pulses is about 5,100,000 acres representing 15 percent of its total area in the Indian Union.

Among the six oilseeds, groundnut, castor, linseed, sesamum, safflower and pape and mustard grown in the State, the first two are the more important commercial crops.

#### Groundnuts

The area under groundnut is about 2,100,000 acres, forming 17.6 percent of its acreage in the Indian Union. 7.8 percent of the total cropped area or 22.5 percent of the total area under all non-food crops in the State was occupied by Groundnut in that year. During 1943-44 to 1948-49 the area under groundnut consistently decreased from year to year. Since 1949-50 there has been a tendency in the opposite direction. It has, however, not reached the 1943-44 level.

#### Castor

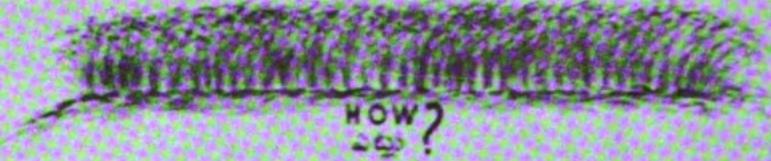
Well drained, light medium soils or rich sandy loams are suited for this crop. In Hyderabad State it is exclusively a kharif crop and is grown under dry conditions. It is sown in May and June, the early varieties being harvested in September and October and the late ones in November to January. Drought conditions after sowing and during flowering generally affect its yield.

In 1951-52 the area under Castor was 900,000 acres. It accounted for 63 percent of the total acreage under castor in the Indian Union. About 75 percent of the total acreage under castor was confined to Nalgonda and Mahbubnagar districts. Deep free soil is suitable for this crop. Some of the varieties are perennial. It is both a kharif and a rabi crop. In 1951-52, 62 percent of the total area was under rabi castor. The total outturn was about 61,000 tons, 78 percent of which came from Nalgonda and Mahbubnagar. Groundnut and castor are exported from the State in large quantities.

# LARGE YIELDS OF PADDY

YOU ALSO CAN GET

అధికమైన వరిపంట మరుసూడా పండించవచ్చును



USE  
IMPROVED  
SEEDS



మేలురకపు  
విత్తనాలను  
వాడండి

TRANSPLANT  
YOUR CROP



నారు నాటండి

USE  
GREEN MANURE  
OIL CAKE  
AM. SULPHATE  
FERTILIZER MIXTURE



పచ్చి వొట్టి  
గానుగపిండి  
అమ్మోనియమ్ సల్ఫేటు  
వరిమిశ్రమ ఎరువు  
డిపయోగించండి

SAVE YOUR CROP FROM  
PESTS & DISEASES



మీ పైరను చీడలు  
పురుగుల నుండి  
కాపాడండి

Rice Publicity Chart



A new method of transplanting paddy shown in this demonstration plot, Nizamsagar Community Project. Straight lines permit easy cultivation with various improved tools and allows for uniform growth of plants.



A demonstration of line planting of paddy permits inter-culture with a paddy weeder.

### Cotton

Cotton is the most important commercial crop of the State. In 1951-52 the area under this crop was 3,100,000 acres representing 19 percent of its total area in the Indian Union.

From 1944-45 onwards there was a sudden decrease in the area under cotton in the State. A part of the decrease may be ascribed to the Cash Crop Restrictions in force during that period. About 12 percent of the total cropped area or 34 percent of the area under non-food crop was under cotton during 1951-52.

Cotton is grown both in kharif and rabi seasons, 74 percent of its total area being covered by the kharif crop. Rabi cotton is largely confined to Raichur and Gulbarga districts which together account for 95 percent of the total area under it. Kharif crop is sown from June to mid-July and harvested from the end of October to the beginning of February, whereas rabi cotton is sown in September and early October and harvested from February to April. Both are grown under dry conditions in the State.

The chief factors that affect the yield of cotton adversely are heavy rains immediately after sowing and at the time of flowering.



**Dr. Krishnamurthy and laborer in field show the contrast between application of fertilizers.**

Hyderabad Georani, Hyderabad Omras, Hyderabad American, Kumtas and Jaiwani are the important trade varieties grown in the State. Hyderabad Georani occupies 32 percent of the total area. Hyderabad American is largely found in Aurangabad and Adilabad districts. Kumtas and Jaiwani are purely rabi varieties grown only in Raichur and Gulbarga districts and account for 20 percent of the total area. Most of the cotton produced in the States is exported.

### AGRICULTURAL MARKETING

There were in all 67 regulated markets in the States accounting for an annual turnover of 4,871 lakhs of O.S. rupees. Out of these, 18 markets had a market turnover of over Rs. 100 lakhs, 9 markets between Rs. 25 and 100 lakhs. Gulbarga district had the largest number of regulated markets (9) while Osmanabad district had the smaller number of regulated markets (1).

Important commodities covered by the Marketing Act are foodgrains, pulses, dals, oilseeds, condiments and spices, gur, sugar (unrefined) ghee, tobacco, cottonseed, cotton (Kapas, lint, and waste), and mangoes. The growers or the village merchants bring the produce for sale to the markets where the adatyas or commission agents conduct auction of the produce (in lots) on behalf of the sellers. At each of the regulated markets there is a market committee consisting of producers, traders and persons nominated by the Government. The main function of the committee is to have a check on any mal-practices which would jeopardize the interest of either the seller or the buyer. All the regulated markets in the State are served by adequate communications within the State but one serious drawback is that there are no direct rail or road connections with the important marketing centers in the adjacent States of Bombay or Madhya Pradesh.

Important commodities likely to require storage prior to marketing are cotton, groundnut pods, castor, linseed, sesamum, seed and kulthi. The period for which storage is necessary varies between a fortnight and 6 months. The Hyderabad Cooperative Commercial Corporation, a Government sponsored body, provided for the present the storage facilities at the regulated markets in the State, partly in its godowns and partly in private godowns. There are about 150 godowns constructed by the Corporation in almost all the taluk headquarters and in important towns, with an aggregate capacity of about 1,500,000 bags, averaging about 10,000 bags for each godown. Private godowns rented by the Corporation are over 1,000 in number in taluk headquarters and business centers with a storage capacity of 2,000,000 bags. There are no godowns at the disposal of the marketing authorities, the Banks and the Cooperative Societies. Godowns at the disposal of private persons, traders and millers are of different storage capacities, varying from 10,000 bags in a small place to 1,000,000 bags in a big business center like Raichur. The additional requirements are 50 percent of the present godown accommodation.

The growers and small traders obtain credit from commission agents. The commission agents, big merchants and wholesalers obtain

credit from the State Banks established in or near the market in most of the principal market towns. The rate of interest at which advances against the security of commodities are made differ according to the financing agency, the party financed, the extent of amount loaned and the relations between the parties concerned. The average rates of interest charged by private persons generally vary from 9 percent to 12 percent per annum, while the Commercial Banks charge interest at 5 percent to 6 percent per annum on loans amounting to more than 100,000 and less than 200,000 rupees respectively.

### AGRICULTURAL RESEARCH

Agricultural research was started in Hyderabad State some twenty-five years ago, with the establishment of the Main Research and Experimental Station at Himayatsagar and the appointment of the Economic Botanist and the Agricultural Chemist. Subsequently small research stations were opened in Parbhani, Warangal and Raichur, and other specialists were added to the staff. A cotton research station was established at Nanded in 1941. Special research stations were opened for studying the problems connected with irrigation in some of the new project areas. For the Tungabhadra Project a research station was opened at Dhadesugur. Similarly a farm and a small research station were established at Dindi for the Dindi Project. A small Fruit Research Station was started at Aurangabad for studying problems connected with the cultivation of grapes and citrus fruits.

Although there were a number of research stations, the facilities available at these places for research were indeed meager. Workers were few and equipment was inadequate.

In the Five Year Plan an important place has been given for the development of research, both for expanding the existing sections and for starting new lines of research work. For the main research station at Himayatsagar, a 3-Year Program of Development costing Rs. 11 lakhs, was sanctioned in 1951-52. This included laboratory sections, a new laboratory building, additional staff and additional facilities for field experimental work. A new Oilseeds Specialist's Section has been created with an oilseed specialist in charge, with headquarters at Himayatsagar and substations at Parbhani and Raichur. A new wheat research station with a large farm was started last year at Badnapur in Aurangabad district. It provides practically all the facilities required for research on wheat. This station also gives facilities for work on cotton and rabi jowar. Work on the improvement of the maize crop has been started under the joint auspices of the Indian Council of Agricultural Research and Hyderabad Government. The maize research station has been opened at Karimnagar. Recently a program for research on sugarcane has been sanctioned under the joint auspices of the Indian Central Sugarcane Committee and the State Government. The experimental stations at Warangal, Raichur, Rudroor and Dhadesugur have also been expanded very considerably by the acquisition of additional lands, construction of new laboratory buildings and the provision of other facilities. All the same, compared to

the magnitude of the problems awaiting solution, the research organization is still extremely inadequate. There are about 24 gazetted officers and 84 agricultural assistants now engaged in research work in the department. Approximately RS. 10.7 lakhs are spent every year on research.

The work of the various research sections of the Agricultural Department can be brought under three main heads, viz., 1) Crop improvement, 2) Soil problems, and 3) Control of pests and diseases.

(1) Much work has been done in the improvement of cotton, rice, jowar, wheat and castor crops.

There are now three improved varieties of cotton, viz., Gaorani-6, Gaorani-12 and Parbhani American. Gaorani-6 and Gaorani-12 are two of the best cottons in India now capable of spinning up to 34's. They are excellent in quality and fibre strength, and are in great demand from mills making high quality cloth. These cottons have given an additional income of Rs. 10 to 15 per acre to the growers in the last two years. Gaorani-6 has covered practically all the area suitable for it and Gaorani-12, about 50 percent of the area.

There are now 17 strains of improved rice and these are able to meet the demands from all kinds of growers, for fine, medium, coarse, or for late, medium and early varieties. Extensive district trials conducted over many years show that these varieties give from 10 to 20 percent increased outturn under ordinary conditions. One of these varieties, viz., H.R. 19 has been very popular with the competitors in the crop competition program and in the last tabi season it has given the record out-turn of 10,200 pounds per acre for the State. A seed multiplication and distribution program to cover the entire area under paddy with improved varieties was started in 1951 and more than 50 percent of the area has already been covered. It is expected that when all the area is completely covered by improved varieties, it will increase the production of rice by about 45,000 tons.

There are a number of improved varieties of jowar which are rapidly spreading in the State. One of them, M. 35-1, is a variety introduced from Bombay. There are also 2 kharif and 2 rabi varieties of jowar which are found very popular with growers. Already a very large area has come under these varieties in the last 2 years. But compared to the large area under jowar in the State and the varying climatic and soil conditions under which the crop is grown, the achievements have been insignificant, and there is great need for further strengthening the research work on this crop.

Hyderabad is the largest producer of castor in India. Work on the improvement of castor has been in progress for some years. Recently a seed distribution program was started for a newly improved variety called H.C. 6. It is expected that it will increase considerably the total production of the crop in the State and the profits to the grower.

Much work is being done on the improvement of fruit crops. The Indian Council of Agricultural Research is financing a program for developing grape cultivation and another program for improving the cultivation of custard apples in the State. Research work in these two crops is in progress at Aurangabad and at Sangareddy. Much has been done in popularizing a good variety of grape called Anab-e-Shahi. The performance of this variety in and around Hyderabad city has been very promising. It is anticipated that Hyderabad city and neighboring territory will soon become an important grape-producing center in India.

(2) Work on soils is confined largely to the problem arising from the supply of irrigation in the Nizamagar Project area, detailed soil survey having been completed in 2 talukas. This has helped greatly in planning the cropping programs in this area. Valuable work has also been done in the methods of reclaiming alkaline lands and on increasing the productivity of inferior lands. Similar work has also been done under the Dindi project (Nalgonda district) and work is in progress in the Tungabhadra project area.

It was observed that in heavy black soils paddy did not respond to ordinary manuring. Investigations have shown that this is largely due to phosphate deficiency. The application of a heavy dose of phosphate in the first two years helped to bring the land to a normal condition. In subsequent years, normal application of phosphates was found adequate. A substantial percentage of what is generally considered as alkaline soils can now be reclaimed by the application of heavy doses of phosphates and organic manures.

(3) A number of important pests and diseases in the State have been studied but the greatest contribution in this direction has been the building up of an organization for plant protection work. Last year a very severe out-break of rice hispa in Mahbubnagar district was brought under control in a very short time. Over 10,000 acres of paddy were dusted in the course of about three weeks. This controlled outbreak in the first stage only and prevented further breeding and infestation. During 1952-53, sulphur was distributed to treat about 1/4 of the total area under jowar to protect the crop against jowar smut; the losses from which work out to over one lakh tons of jowar grain every year for the State.

The Indian Central Oilseeds Committee is also financing the program for the improvement of oilseeds and investigations into the pest and disease of oilseed crops.

The Department has some highly qualified personnel doing research work, and much valuable work has been done. However, there are many problems that should be approached immediately. With the development of the Extension Service, many new problems are coming to light. For instance, this year in paddy cultivation, it has been found that when the recommended amount of fertilizer is applied, the standing crop lodges badly due to excessive growth of the plant, and many cultivators are upset regarding this problem. Now the research people must determine whether a variety can be produced to overcome this difficulty, or whether a stronger

stem cannot be produced which will solve the problem and at the same time maintain the production qualities of the plant.

Research is going to have to speed up its work within the next few years to meet the demands of the cultivators. The research people are prepared to meet the challenge and if they are given the minimum assistance in terms of equipment and material, will provide the knowledge essential for agricultural development. It will be necessary, however, to enter additional fields, such as Agricultural Engineering and Soil Conservation as far as the State Research Departments are concerned.

### AGRICULTURAL INFORMATION

The Department of Agriculture of Hyderabad has developed a very efficient Information Department and the State Information Department has done some outstanding work on various department activities. It is interesting to note, however, that the Department of Agriculture is the only department for publicity and information.

The Department of Agriculture has done a great deal in regard to charts, posters and other activities. However, much more work needs to be done in this field. If facilities are made available to the Department, all types of visual aids could be prepared, posters on a large scale, flannelgraphs and various publications and leaflets designed for various groups of people. Many of the required leaflets should be mainly pictures with very simple words, in order that the villagers may understand the meaning. All work designed for villages should be prepared for the masses and not for the few who read and write quite well.

It appears that the Agricultural Information Department could be developed as an overall Extension Information Office to serve not only the Agriculture Department, but other departments dealing with rural development. Each Department in turn could expect to have produced material as they might require. For instance, the Education Department would surely desire simple literary leaflets on agriculture, health and other subjects.

The Information Department should be able to produce such material. As a result of such an Extension Information Department, various materials required for all types of rural programs could be developed.

### AGRICULTURAL ENGINEERING

Many Indians have become quite concerned about the introduction of mechanical equipment. There has been much talk about the adoption of Western methods and the use of improved implements. Many people are under the impression that such a step would help to solve many of India's problems. Such people have not made a careful analysis of the existing conditions as we find them today.

# GROW MORE FOOD

ఆహారధాన్యము అధికంగా పండించండి

USE  
IMPROVED SEEDS



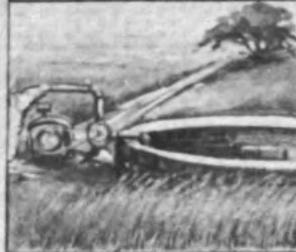
మేలు రకపు  
విత్తనాలను వాడండి

MANURE  
YOUR LANDS WELL



మీపొలాలకు  
ఎరువును  
బాగా వేయండి

IRRIGATE  
YOUR CROPS



మీపైర్లకు  
నరు కట్టండి

SAVE YOUR CROPS  
FROM  
PESTS & DISEASES



మీ పైర్లను  
చడలు పురుగుల  
నుండి కాపాడండి

CULTIVATE  
YOUR  
FALLOW LANDS



మీ టీళ్లను  
సేద్యము చేయండి

Publicity poster prepared by the  
Agricultural Information Department.

First of all, the one thing that India has today is manpower. Much of the manpower is employed only seasonally with the result that they are barely able to exist. Large mechanical equipment, introduced on a large scale, would immediately displace much of the agricultural labor.

Practically all the equipment would have to be imported which would result in India's spending large amounts of foreign exchange that she so badly needs for essential raw materials.

The use of mechanical equipment is not feasible with the average holdings of land ranging from one to a few acres.

Of course, there is a place in the agricultural economy for certain mechanized equipment. In Hyderabad State the Agricultural Department has 51 tractors which are used for reclaiming fallow and weed infested land. During the years immediately before and after independence, there was a great deal of strife in the rural areas. As a result many cultivators were not able to till their lands. These lands quickly became infested with weeds and scrub growth. It required great effort to bring these lands back under the plow. The Agricultural Department started a program to reclaim these lands. The program has been very successful and the Department has actually made money on the project, besides offering a service to the people. These tractors are operated in units of 10 to 20 tractors each, in order to provide adequate maintenance and repairs. This is the real key to the success of the program. Cultivators have also found that plowing with heavy equipment in the black cotton soils every few years will result in increased production. Certain mechanized equipment handled in the above manner can be used in India.

The average cultivator will own one or two pairs of bullocks as his sole means of power. His income will vary according to his holdings, but in any event it will be very little. One can easily see that mechanization is not an answer to his problems. However, there is a great need for improved implements in all areas. Implements that will fit his need and that he can afford will greatly contribute to productivity. There is no use designing a new plow that the villager can afford if his bullocks cannot pull the plow, or if it pulls a great deal heavier than his present plow. Hand tools must be designed to reduce human effort, but they must not require more energy than the under-fed laborer has to use at present. There is great scope for work in this field and perhaps in the near future some progress will be made along these lines.

Recently slow speed oil engines and shallow lift pumps have been introduced for well irrigation to replace the mote drawn by bullocks. These have proven valuable to the average cultivator for two reasons.

First of all, the constant pulling and backing required to lift a mote destroys the value of a pair of bullocks very soon. Secondly, with an engine and pump, the cultivator can irrigate a larger acreage, provided he has water, and at the same time an extra pair of bullocks is released for additional cultivation.

The Agricultural Engineer and his staff are also doing much work on boring old wells and in establishing minor lift irrigation projects where streams supply sufficient water and land suitable for irrigation exists.

### AGRICULTURAL EDUCATION

One of the greatest needs in Hyderabad today as far as agriculture is concerned is to develop coordination between research, extension and teaching. At present the Agricultural College is located at Osmania University at the edge of Hyderabad city while the main Agricultural Research station is located some 15 miles in the opposite direction from the city. This of course is not a great distance in terms of miles but there are other factors involved which puts them a great distance apart in their efforts.

The Agricultural Department is located within the Ministry of Agriculture and is responsible for all research and extension activities. The College of Agriculture under the direction of the University is responsible for all teaching and training of future agricultural technicians. The net result is that there is actually no relationship developed and the valuable contribution each can make to the other is being lost.

In addition to the above difficulties the Agricultural College was limited as to facilities in terms of buildings, land and equipment. Yet at the same time, the Agricultural Department had ample facilities, many of which could have been made available to the College.

In January of 1955, the Vice president of India laid the cornerstone for the new Agricultural College Building just across the road from the main Agricultural Research Station on some 300 acres of land, which had been originally purchased by the University for the College some ten years previously. As a result of this move, and with the establishment of an Extension Wing, the College should be able to make a much greater contribution in the future.

**DO NOT CIRCULATE**

