CHAPTER III

FACTORS INFLUENCING CROPPING PATTERN AND FARMING TECHNIQUES
In this Chapter, it is proposed to review the relative importance of different factors, identified by the earlier research studies of individuals and institutions, as exercising considerable influence on the cropping pattern and farming techniques of an area. The most important factors identified by them are: climate, particularly rainfall, soils, educational level of the farmers, size of holding, proximity to urban areas and the like. The earlier studies have also shown that the farmers of Rayalaseema are generally rational in the allocation and utilisation of available resources. Their studies also indicate the rationale of the cropping pattern adopted in the district and the suitability of different types of agricultural implements used in the district taking into account the agro-climatic conditions.

CLIMATE: In deciding the cropping pattern and farming techniques, climate, particularly rainfall plays an important role, followed by other variables like temperature and wind. On the basis of climate, the world is divided into four broad classes viz. humid, subhumid, semi arid and arid areas.
A semi arid climate, as we find in the world does not necessarily mean a half way house between the two extreme climates viz. humid and arid, but a mixture, where a dry season alternates with a humid season.

A further characteristic of semi arid regions is that, the drier, the climate, the greater the variability of the rainfall, so that years of scanty rainfall may alternate with seasons of above average rainfall, and, the dividing lines between arid, semi arid, and humid may shift from year to year. In arid regions the characteristic is that mostly 50% of the annual rain will occur in 10 to 15% of rainy days. It is a paradox that the drier the climate, the greater will be the havoc caused by rainfall. Precipitation in arid regions generally occurs as torrential rains.

In the arid and semi arid areas, the dry surface soil has to be wetted by rain to field capacity, before any moisture can penetrate, to at least 10 to 12 cms at

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1. Isaac Arnon 'Physiological aspects of dry land farming' (Ed) U.S. Gupta, Oxford Publishing Co., New Delhi, 1975 p.1


3. Issac Arnon. 'Physiological aspects of dry land farming'. Opcit p.99
which depth it will be relatively safe from evaporation and will contribute effectively to crop production.

The effective rainfall is the minimum rainfall occurring on a single occasion that ensures at least some water storage under favourable soil conditions. For the rain water to reach the safe depths in the soil (10-12 cm) there should be as much as 15-20 cm of rain for a single performance. This type of effective rainfall normally amounts to about 1/3 of the total annual rainfall.

In warm dry regions the combination of favourable temperature and the large amount of sunshine make possible very high levels of crop production possible, if moisture supply is adequate and crop management efficient.

Notwithstanding the major influence of rainfall on yield levels, crop yields are not always directly proportional to the amount of precipitation. Generally

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4. Ibid p. 106


6. Issac Arnon Physiological aspects of dry land farming Op cit p.62
yield levels are determined by the amount of precipitation above the basic minimum required to enable the crop to achieve maturity\(^7\).

The minimum rainfall for producing a crop in the dry region is estimated at 250–300 mm in winter rainfall areas and, 500 mm in summer rainfall areas\(^8\).

Again, crop yields are not proportional to the rainfall or to the available water. Crops must use a considerable quantity of water before they can give any grain yield at all, crops grown in areas of erratic rainfall must be able to withstand drought without their yields being too seriously affected. Sorghums and wheat can recover from a severe wilt occurring at any time up to the onset of heading, but Maize which is more drought sensitive will recover from a wilt occurring up to the third or fourth leaf stage. However the yield of all cereals is reduced if the crop suffers a wilt during the period from ear emergence to early grain development. But in the case of groundnut and cotton which have indeterminate habit of flowering, even if one flush of

\(^7\) Ibid p.10

flowering is lost, they will produce more flowers after the rains have come again. It has been found that a well distributed rainfall of just 15 cms during the life span of Bajra gave high yields as against the years when rainfall was much but ill distributed. Well distributed rainfall may be expected only 2 or 3 times in a decade.

The crop planning should be so made that known probable periods of drought do not synchronise with the critical periods of crop growth. In cereals the critical periods are earing, pollination, seed formation. If drought synchronises with critical periods it will have disastrous effect on crop yield.

As there is no possibility of knowing in advance the kind of rainfall, its distribution, and the season, the crops and their varieties to be grown, and

11. Issac Arnon. Physiological aspects of dry land farming Opcit. p.65
the management practices must be adopted to the wide range of possible conditions, from near arid to highly favourable.\textsuperscript{12}

In general water stress, except at the most critical time will have less effect on the yield of grain than the plants total growth\textsuperscript{13}.

The critical periods in the crop growth period of different crops when yields are likely to get affected are - peg formation and pod development in groundnut, 30 days after sowing when emergence, flowering and grain setting starts in Jowar at ear emergence\textsuperscript{14} in the case of Korra (setaria italica). Bajra is sensitive to drought immediately after sowing. Rayalaseema region of which Anantapur is a part, where all these crops are grown extensively is known as the stalking ground of famines, is a typical dry tract, and a famine zone of south India\textsuperscript{15}.

The National Commission on Agriculture analysed the rainfall and cropping pattern of Andhra Pradesh,

\textsuperscript{12} Ibid p.5
\textsuperscript{13} Ibid p.35
talukwise and gave the following findings for the
taluks of Anantapur district. Gooty and Tadpatri
taluks have an annual rainfall of 55-60 cm spread
over 35-40 days with the month of September contributing
more. The total rainfall of August and September months
accounts for 40% of annual rainfall. There are no
consecutive months in this zone with more than 10 cm
of rainfall per month. In this zone the rainfall months
are four, (February to May) with less than 5 cm/p.m.
In the period June to September for the month of
September, the rain is 10-20 cms while for the other
three months it is less than 5 cm.

In Kalyandurg, Rayadurg, and Uravakonda taluks
the annual rainfall is about 50 cm in 33 rainy days.
The months of September and October contribute 40% of
annual rainfall and of the two September gives more
(10 cm and above). The month of May accounts for more
than 5 cm of rain while for the months February to April
the rain fall is less than 5 cm. In the period June to
September, for the month of September the rainfall is
between 10-20 cm. And among the remaining three months

15. National Commission on Agriculture. Rainfall
and Cropping pattern in Andhra Pradesh. Vol. I
p.12
one month accounts for 5-10 cm and two other months for less than 5 cms. In the period October to January for the month of October it is between 5-10 cm and for the remaining three months the rain is less than 5 cm

In Kadiri, Hindupur, Penukonda, Dharmavaram, Anantapur, Madakasira taluks the rainfall is between 50 to 60 cm received in 35 to 40 days, September accounting for the maximum rain. September and October contribute about 40% of annual rainfall and both the months account for 10-20 cm per month.

In the period from February to May, May has rains between 5-10 cm and for the remaining months, it is less than 5 cm per month. In the period June to September, September has 10-20 cm. Two other months account for rain between 5-10 cm and another month for less than 5 cm

SOIL: Soil is an important factor, coming next only to climate in deciding the type of crops that can be grown on it and the farming techniques that are to be

17. Ibid p.21
13. Ibid p.22
adopted. The physical and chemical properties of soils have an influence at their own on the crop choice and farming techniques. On these properties of the soil, fertility and finally productivity are dependent. The important physical properties of soil are, texture, structure, soil depth, land slope, and the organic matter content. The important chemical property is the soil reaction. These properties of the soils regulate the soil microclimate which is important for root growth and nutrient uptake. It helps to maintain optimal soil moisture conditions by regulating initially the fertility status and ultimately the productivity.

If the soils are of deeper depth and loose in nature, root crops, tuber crops, and rhizomes can be grown. Such loose soils are well drained and are easily workable. But the moisture holding capacity in the medium to light soils is comparatively low and the crops on these soils suffer drought easily though they are easily workable. Proper land and water management are essential to keep the land productive. When soil organic matter is present at optimum level it can hold the soil moisture and maintain better aeration.

The red soils which are comparatively easy to work, are well drained and are fit for monsoon-season-cropping, (June to September) called as Khariff, Hungari or Punasa season. This type of soil which is extensive in area in Anantapur district is largely poor and thin and is wholly dependent on South West monsoon. Its failure spells disaster resulting in scarcity of food, fodder and employment 20.

The black soils, to a larger extent, will be unworkable in the monsoon season due to their poor capacity in conducting water down the profile. For this reason they remain slushy for a long time. So these soils are good for cropping in the post monsoon season, as they have good water holding capacity and are suitable for growing crops which thrive on stored moisture. So these soils are good for rabi cropping more than for Kharif season cropping 21. As these soils are fairly deep, deep rooted crops like cotton are grown, these soils, and hence the name black cotton soils 22. The fertility status of these soils, is fairly good but their organic

21. The National Commission on Agriculture Part VI p.11
matter content is very low. These soils can be made productive by improving their physical conditions, so as to improve their water holding capacity. This can be attempted by improving the infiltration capacity of the soil and organic matter content.

Speaking about the Anantapur soils, the National Commission on Agriculture observes' light shallow soils covering approximately 80% of the cultivated area, have compact subsoils, which restrict root penetration and proliferation and these soils are cropped in Kharif. Rabi is confined only to black soils occupying 20% of the district. Hence readjustment of Kharif and Rabi areas depending on the season is not possible and the focus should be on improving and stabilising production of Kharif crops.

Stamp L.D. observed that the yield and growth of a crop in a field represent the true agricultural value of land and is an index for the measurement of productivity of the field as it represents not only the natural fertility of the soil and the prevalent climatic conditions, but also is the result of efficiency of the

23. Ibid p.14
24. Ibid p.16/17
farming system and farming community.25

In brief, soil fertility is an extremely complex property involving all the qualities both of soil and climate.25

But productivity of soil is not always restricted by its fertility and climate. Both these constraints to productivity can be overcome through adoption of suitable technology. For example in Israel the farm output had more than doubled during 1952-59. For this land has not been the main source of growth and modern factors of production have been important.27 Further in Israel the ratio of population to land suitable for farming is high. The land is not of high quality and no one would have rated the prospects for agriculture as bright.23

25. Stamp L.D. The Land of Britain its use and misuse London 1948 p.360
Itally, Austria and Greece for example with less areable land per capita, than India and with farm land inferior to that of India have increased their agricultural production at a rate of 3.0, 3.3 and 5.7 per cent per year respectively compared to 2.1% for India.29

Agricultural production in Japan has been increasing at the rate of 4.6% per year while in India it was 2.1% (1952-59). If differences in farm land had been a strong factor, the ratio of agricultural growth should have been the other way round. On per capita basis, India has six times as much agricultural land as Japan and the quality of land in India is better than in Japan. Irrigated area in India on a per capita basis is also more than three times that of Japan.30

Moreover crops like bajra and groundnut are grown on soils which require little soil moisture for their growth and facility to produce the end product. Accordingly groundnut and bajra are grown in red soils. Jowar can be grown in black soils which have greater capacity for soil moisture.31

30. Ibid p.21
EDUCATION: Educational level of the farmer has an impact on the adoption of new technology by him. A farmer from an educated family is more amenable for a change than an illiterate farmer.

Speaking of the importance of education on efficient agriculture, the World Bank observed that a recently introduced and particularly profitable crop in the Terai region in Uttar Pradesh is wheat and other things being equal there is a strong link between farmers' education and efficiency in wheat production. The World Bank further observed that primary education helps in eradicating poverty and improving agricultural efficiency. A seamless web of factors that entrap families in poverty can perhaps best be broken by providing primary education. Men and women with even a little of education seem consistently better able to improve agricultural efficiency. Further skills in agriculture can be acquired through better education. Japan's excellence in agriculture is due to high level of farming skills and the amount of schooling that the farm people of Japan have acquired compared to the low level of skills.

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33. Ibid p.80
and general illiteracy that still prevail in rural India. For practising efficient agriculture, the farmers need not be of agricultural heritage. At Israel, the people who entered upon agriculture were not skilled at farming for the Israel cultivators were non-farm people but most of them had a good deal of schooling. And now Israel is a country having competitive agriculture.

In general farmers who are limited to traditional agricultural factors are more secure in what they know about the factors they use than farmers who are adopting and learning how to use new factors of production.

However the fact that people are illiterate does not mean that they are insensitive to the standards set by marginal costs and returns in allocating the factors that they have at their disposal. What it does indicate is that the human agent has fewer capabilities than he would have if he had acquired the skills and useful knowledge associated with schooling. Although schooling

34. T.W. Schultz. Transforming Traditional Agriculture. The Lyall Book Depot, Ludhiana p.21.1
35. Ibid p.18
36. Ibid p.31
may increase greatly the productivity of human agent, it is not a prerequisite to an efficient allocation of existing stock of factors.

The farmer of Rayalaseema is not an indolent person though he seems to be uneducated. Sri V. Pitchi Reddy, member of the Rayalaseema Development Board quotes Mr. J.C. Molony on Deccan division from his census report of 1911 - at first glance the great black plains, the aching wilderness of stone, the bare dusty roads and summer air, half dust and wholly heat realize vividly that abomination of desolation without the prop of imagination, he has learnt a sage economy of effort. His 'Pani Poddu' (time to work) denotes not so much a disinclination to work, as a recognition that it is foolish to squander industry of which the reward is not sure.

However Mr. D. Aurora the then District Collector of Anantapur has a different experience to narrate, regarding the unwillingness of even educated farmers to take to a well meaning suggestion. Sankara Reddy, G.M. and Satyanarayana Moorthi, L.V.V. conducted research on the rainfall pattern during kharif period in Anantapur.

37. Ibid p.49
district for a period of 50 years. Their conclusion was 'altering the sowing period to the second fortnight of July and sowing short duration varieties which mature by the end of October appears to be best possible solution to get over the problem of drought. This finding was discussed with a group of 20 farmers in each block, almost 300 farmers in all by Sri D. Aurora. While accepting the conclusions on the probability of rainfall periods not even one of them was ready to accept the altering of sowing period from June to the last half of July. The change was too drastic and those (farmers) do not forget, were all educated progressive farmers'.

To sum up 'the farmer in traditional agricultural areas, according to Prof. T.W. Schultz' though poor is efficient and will respond to new techniques if they would prove to be profitable'.

**HOLDING SIZE**: has its own influence on the cropping pattern and farming techniques adopted, more so, in a


drought prone area. The smaller the holding, the greater is the preference of the farmer to grow all the crops to meet his needs for subsistence and the preference would be naturally for food and drought resistant crops. Secondly due to smallness of holding under uncertain rainfall, the farmer prefers to grow more crops as an insurance against the risk of crop failure. As the capacity to produce agricultural surplus is limited for a variety of reasons, the farmers' credit worthiness will be at a low level and so he will not be in a position to grow capital intensive commercial crops. Another is the difficulty to use machines for doing agricultural operations. i.e. tractorisation of agriculture would not be possible, yet another constraint is on the technological side - the traditional practices are time-tested and the skills and infra structural facilities for practising traditional agriculture are available to him in the village. Any improved method will be in the realm of the unknown for which risk and uncertainty may be more. The farmer feels that a known devil is better than an unknown angel.


The smallness of holding so holds him up from taking a chance as there is no insurance against risk of crop failure either from Government or any other agency. Thus the holding size limits the change from old to new systems of cropping. But experience in other parts of the world has been otherwise.

In Israel the large farms (Kibbutzim) have done well but relatively they have been less efficient than the (Moshavim) small farms. Small farms have a strong preference for mixed cropping. However more crops are grown in kharif season on large farms with shallow soils and they generally use mixed cropping to alleviate the risk of crop failure. There is thus no uniform relationship between the size of the farm and the importance of different crops in the cropping pattern.

Mr. Jodha, N.S. of ICRISAT after conducting village surveys in Semi-arid tropies (SAT) areas is of the view that cropping patterns vis-à-vis size of farm do not reveal uniform trends in all villages. This

42. Ibid

suggests that in practicing cropping pattern many complex factors, that can not be fully explained in terms of the holding size, are involved.\(^44\)

India has six times as much agricultural land as Japan\(^45\) but India's agricultural production is only \(\frac{1}{3}\) of Japan. This therefore indicates that if the cultivated area is more agricultural production need not necessarily be more. Same is the case with regard to the size of holding.

In this connection it is of interest to note that Anantapur district has fairly large sized farms.\(^46\)

**PRICE** : Price of the farm produce influences the area used under different crops, if other factors do not affect the area cropped adversely. Prof. D.R. Gadgil observed 'A large number of studies' have been conducted by economists in recent years on the subject of relation

\(^{44}\) N.S. Jodha. Resource base April 1977 Opcit


between variations in acreage and in prices of particular crops. "The detailed work that we did on individual cropping pattern of farmers indicates that the possibility of the farmer reacting immediately to price variations was somewhat limited. The farmer was influenced chiefly by the ruling level of prices over a series of years and was not anxious to change his cropping pattern merely because of a casual annual fluctuation. Studies in the groundnut, cotton and Jowar regions like Khandesh show that the farmers shifted generally from cotton to groundnut in the thirties, because cotton market was very depressed and shifted back 10 to 15 years later because of contrary changes in relative price."

Speaking on the effect of price on production of crops Mr. K.V. Ramana Rao observed - 'It is therefore legitimate to assess that the predominant factors influencing the cropping pattern and agricultural production in an year are prices of the agricultural commodities in the proceeding year and rainfall of the current year.'


The influence of price on individual crops is given below:

RICE: The production of this crop is affected by both price and rainfall. Of the two price seems to have greater influence on production.

BAJRA AND KORRA: Price has no influence on production of these crops. The elasticities of production with reference to price are negative for these crops. Even in years when rainfall was deficient, favourable price has not induced the cultivators to step up the production of these crops contrary to the expected tendency of the cultivators.

GROUNDNUT: The elasticity of production with reference to price is negative. The favourable shift in prices does not appear to have any influence on the production of this crop which is not consistent with the normal tendency of producers. 49.

TRANSPORT AND COMMUNICATION:

Transport and communication are essential for the flow of commodities from the village to urban areas.

49. Ibid pp. 166 & 167
and vice versa. The world development report of 1982 expressed the view that on a simpler level basic roads are essential for getting agriculture moving. Measures to raise their production without transport and communications are of little use, because their crops cannot reach a market and they are cut off from new technology, inputs, and ideas.\(^\text{50}\).

Anantapur district has a fairly developed road system, though rural roads to a large extent are fair weather roads. The instances of villages getting cut off with the main roads and urban centres are not reported.

The Minister for Irrigation and P.W.D. of Andhra Pradesh State, Mr. N. Srinivasulu Reddy said that road length was the highest in Anantapur district with 1800 K.M. and that the Government has taken over 11,000 K.M. of Panchayatraj roads from 1975\(^\text{51}\).

**IRRIGATION**

Commercial agriculture in place of subsistence agriculture is a possibility, in areas having assured


\(^{51}\text{ Indian Express - News Paper (daily) 18-5-1984.}\)
irrigation. In addition adoption of advanced technology and intensive land use will be possible only with irrigation. Change in the cropping pattern through substitution is again possible with the extension of irrigation facilities.

C.M. Shah in his investigations in Saurashtra found that over a period of time when irrigation facilities were made available, cotton and groundnut which earlier were the competitive crops, the former gave way to the latter over-time. 52.

C. Ramalingam reported that the availability of irrigation water generally encouraged the growing of cash crops on larger area 53.

N.S. Jodha qualifies the above statement saying that farmers prefer to irrigate high value crops on smaller areas rather than irrigating a large area of low value crops 54. However S.M. Shah and P.V. Mathur Shah expressed a contrary view in relation to irrigation 55.

The influence of urban centres on the cropping pattern and farming techniques is likely to be high. Nearness to urban centres gives scope for putting more area under fruits, flowers and vegetables. In some areas fodder for milch cattle also occupies more area. M. Meenakshi Malya investigated this aspect by selecting six villages from two districts of Tamil Nadu state and divided the villages into two groups.

1. Those under urban influence
2. Those that are not under urban influence

Based on the data collected from 382 cultivators she noticed significant urban influence on the cropping pattern adopted in the villages nearer to urban areas. Such villages had relatively larger area under cash crops compared to the villages situated otherwise. Further, the cropping pattern adopted besides being dependent on physical characteristics of the field is also influenced partly by locational factors like being next to village dwellings, where problems of watch and ward will be minimum.

MARKETING

When good markets are available for the produce, the area under such crops is likely to be large.

Mr. M.M. Malya inferred that cropping pattern was influenced positively by distance of the village from market place, more than that of the size of holding, credit availability and assets of irrigation. A similar conclusion was arrived at by Mr. Z.Y. Jasdanwalla. Crop patterns and practices have necessarily to be adopted to the changing market situation.

CROPPING PATTERN AND FARMING TECHNIQUES

Farming based wholly upon the kind of factors of production that have been used by farmers for generations can be called traditional agriculture and such a man who farms as his forefathers did cannot produce much food.

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The main objective of arable farmers in the traditional agricultural areas is usually to produce cereals preferably wheat. The farmers do not usually adhere rigorously to any of the rotations. If the rains are early and abundant and the season bodes well they are usually tempted to sow a wider area than that allocated to a cereal or millet in the rotation 61.

During the post independence period although the agricultural sector received much attention over vast areas in the country about 75 to 80% of crop production has continued to remain traditional in character. Conditions of static technology and cultural practices established over the generations pervade the scene 62. Similar view was expressed by Mr. J.S. Kanwar, Ex-Deputy Director General of Indian Council of Agricultural Research 63.

Mr. Jagjivan Ram, the then Union Minister for Agriculture in his inaugural address, observed that the

63. J.S. Kanwar. Preface to the 'Proceedings of the symposium on Cropping Patterns', Opcit 1
cropping pattern in India has risen out of necessity. The urge of the farmer to become self reliant in matter of cereals, pulses and vegetables from the limited land, has given rise to the practice of multiple cropping, inter cropping and crop rotations. I will say that there has been some scientific basis that the cropping patterns in India developed and sustained themselves inspite of the vagaries of nature through the centuries.

Successful crop production in regions of frequent drought requires methods and practices for providing or maintaining sufficient available water for crop growth.

A change in the cultural practice from ploughing to surface tillage increases root penetration and gave substantially higher yields. The higher yields are at best equal to ploughing when moisture is limited.

Even in unirrigated areas there is considerable scope for improvement, but the intensity of cropping cannot be increased very much. The production per unit

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64. Jagjivan Ram. Inaugural address. Proceedings of symposium on cropping patterns. Opcit p.4
To test the suitability of a crop for a soil and climate zone, productivity efficiency analysis for various crops is made by using relative average yield index and relative spread index of the crop.

\[
\text{Relative yield index} = \frac{\text{Mean yield for the crop in the district}}{\text{Mean state yield}} \times 100
\]

\[
\text{Relative spread index} = \frac{\text{Area of the crop expressed as a % to the total cultivated area in the district}}{\% \text{ area under the crop in the state}} \times 100
\]

90% of relative spread and yield index is considered efficient.

Mr. S.S. Bhatia suggested the following method for measuring agricultural efficiency which includes cropping pattern and farming techniques thus:

68. Ibid. p.19
\[ \sum_{j=1}^{p} = 1 \ E_{ij} \ c_{ij} \]

\[ I_{i} = \frac{\sum_{j=1}^{p} E_{ij} \ c_{ij}}{\sum_{j=1}^{p} c_{ij}} \]

where \( E_{ij} = \frac{Y_{ij}}{Y_{j}} \times 100 \)

Where \( I_{i} \): Index of crop productivity in the \( i \) th district

\( Y_{ij} \): Yield per acre of \( j \)th crop in \( i \)th district

\( Y_{j} \): Yield per acre of \( J \)th crop in the region

\( c_{ij} \): Proportionate share of the land under \( j \)th crop in the total cropped area of the district

The normally practiced crop mixtures in the red soils of the district are

1. Jonna, Cowpea, Seasamum, Green gram
2. Jonna, Sun hemp
3. Jonna, Red gram
4. Korra, Red gram
5. Korra, Gaster
6. Korra, Cotton
7. Groundnut - Red gram
8. Groundnut - Sajja
9. Groundnut - cotton

While in black soils they are:

1. Jonna - Safflower
2. Jonna - Bengal gram
3. Safflower - Bengal gram
4. Horse gram - Cotton
5. Groundnut - Cotton
6. Korra - Cotton
7. Jonna - Korra

The popular crop rotations in the district are:

1. Paddy - Ragi or Paddy - Paddy
2. One year rotation in red soils
   (a) Jonna - Groundnut
   (b) Cotton - Jonna
   (c) Korra - Jonna
   (d) Castor - Jonna

Three year rotation in black soils has been:

Jonna - Cotton - Corriander/Korra/Bengal gram.

Other rotations are:

Groundnut - Korra
Ragi - Paddy
Chillies - Ragi
Groundnut - Sajja

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It may be noted that drought is common during the period June to August in Anantapur district. However 65 to 75% of kharif sowings are done in June after the first rains.

The picture regarding dry lands is not very encouraging it may be said that under the existing conditions of rainfall and other seasonal factors, dry lands have evolved cropping patterns which ordinarily do not offer much scope for modification.

The cropping pattern over sixties in Andhra Pradesh reflect a disturbing trend. Over three fourths of the sown area continued to be under cereals and pulses, a character of traditional cropping. Inspite of low yields per acre, Jowar, Bajra, Groundnut, Wheat, Sesamum continue to be grown and cannot be explained, but for the subsistence character of farming. For Anantapur district Dr. Ch. Krishna Moorthi recommends cultivation of Bajra in place of Jowar and in soils less than 9" depth grasses in place of crops.

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71. N.C.A.E.R. Backward districts of Andhra Pradesh Op cit p.61
Cropping seasons in vogue for different crops in the district are

**Jonna**: Mostly grown in Kalyandurg, Rayadurg, Anantapur, Tadpatri, Urvakonda taluks. The crop is sown in the months of May-June, under kharif sowings and September-October under rabi sowings. In black soils of Tadpatri it is sown in August.

**Bajra**: is mostly a rainfed crop of kharif season. Sown when season for Jowar fails. It is grown in Kadiri, Hindupur, Kalyandurg and Rayadurg taluks.

**Ragi**: is grown in three seasons under irrigable dry conditions. The seasons are April/May, June/July and September/October. This crop is grown in areas where paddy is grown, when sufficient water for raising paddy is not available. The taluks of Madakasira, Hindupur, Penukonda and Kadiri form the ragi belt in the district. In Hindupur and Madakasira taluks the crop is sown under wells. Dibbling of seedlings behind plough furrow after the start of South West Monsoon is the practice under irrigable dry conditions.
Korra is grown under rainfed conditions both in red and black soils. It is sown in the months of July-August. Another season is August-September. The taluks of Tadpatri, Gooty, Anantapur and Rayadurg constitute the Korra region.

Horse gram: 'Grow gram on gravelly ground' is a statement true in the case of this district. It is a crop of the last resort. It is mostly grown in Kalyandurg, Dharmavaram and Anantapur taluks.

The All India Co-ordinated Project for Dry farmers the following recommended farming techniques for dry crops in the district:

1. Application of phosphatic fertilisers to dry crops
2. Sowing across slope - along contour
3. Maintainance of optimum plant population as in pure crop even in mixed crop
4. Deep ploughing once in three years
5. Timely weeding preferably 25 to 30 days after sowing
6. Timely intercultivation for obtaining soil to prevent moisture evaporation
7. Formation of dead furrows at the distance of 2 meters before the receipt of rain after sowing.

The central team which visited drought prone areas in the states of Andhra Pradesh and Maharashtra in 1979 found that most of the farmers as saying that there was no significant increase in production due to adoption of dry farming technology in one way or other in their fields. Further the farmers of these areas complained that the recommended technology was costly and beyond the economic reach of the farmers.\textsuperscript{76}

The tendency of the farmer from rainfed areas is to keep the area under food and fodder crops adequate enough to meet the requirement of the family and farm labour and to grow cash crops that is, cotton, groundnut, chillies in the rest of the area.\textsuperscript{77} The productivity of agriculture in Rayalaseema has been stabilised at a relatively low level.\textsuperscript{78}

The agricultural implements used are time honoured which are simple to construct and easy to repair.

\begin{itemize}
\item Ibid p.25
\end{itemize}
They proved a marvel to the western engineers who attempted
to effect improvement in the original model without
much success.

It has also been reported that though the drought
prone area farmer is oppressed by nature, he is prepared
to innovate and change. It has also been demonstrated
that he is an economic creature in India as elsewhere and
that he is interested in raising his production and
income.

Against the background of this survey of the
important factors affecting the cropping pattern and
farming techniques the position obtaining in the district
of Anantapur during the decade of 1970–80 is analysed in
Chapters IV and V.

80. R.A. Johnson. The Ford Foundations involvement in
Intensive Agricultural Development in India with
emphasis on multiple cropping. Proceedings of
symposium on cropping pattern. Opcit p.264
81. Ibid p.264