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## AGRICULTURE LANDUSE PATTERN IN CHANDRAGIRI MANDAL, CHITTOOR DISTRICT, ANDHRA PRADESH, INDIA

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**Abstract:** *In this paper an attempt has been made to analyze the agricultural land use pattern at micro level in Chandragiri mandal. This study is based on secondary data collected from revenue records. Agricultural production is influenced by physical, socio-economic, technological and organization factors. An endeavour is made here to study the crop combination regions in Chandragiri mandal of Chittoor district for the year 2008-2009. This is a normal year for agricultural phenomenon in the mandal. The crop data has been computed with the help of Weaver demarcated crop technique of crop combination. The study region covers an area of 1184.52 Sq.km. or 1, 12,572 Hectares and a population of 83,987 (2011 provisional figures). Chandragiri mandal is located at the central part of the District. It is bordered by the 'humid zone' of Nellore district and Tamil Nadu state in the east and northeast and the 'arid zone' of Anantapur District on the west it became a "Rainshadow" area and experiences the 'semiarid' climatic conditions. It is one of the mandal of Chittoor district. The study area lies in a morphologically transitional zone between the interior Plateau of Karnataka in the west and the Coastal plain of Bay of Bengal in the east which is about 150 Km. from the study area. In addition, the north-south running Eastern Ghat ranges run in the middle of the Chittoor District forming its backbone and the water divide for many streams. It gives off number of branches in and around the district and one such branch by name Seshachalam Hill Ranges passed through the study area. The world famous Lord Sri Venkateswara Temple is situated on the Seshachalam hills. The Temple is situated outside the boundary of the study area on the east. The Mandal slopes down from west to east from an average elevation of about 750 mts., on the west to about 150 mts., on the east Tirupati railway station which is hardly 10 Km from the study area is situated at an elevation of 120 mts. above MSL. By computing crop ranks and using Weaver's techniques of crop combination in Chandragiri mandal has identified five crop combination. Such type of study represents real situation of cropping pattern in Chandragiri mandal and helps to planners and agricultural scientist for agricultural planning at village level.*

**Key words:** *Landuse pattern, Crop combination, Crop ranking, Cropping pattern.*

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## **INTRODUCTION**

Cropping pattern means the proportion of area under various crops at a point of time. The crop statistics are used to denote cropping pattern. It is however, a dynamic concept as no cropping pattern can be good and ideal for all times to come. The cropping pattern differs from macro to micro region, both in space and time and governed largely by the physical, cultural and technological factors. The physical environment provides a wide range of possibilities for growing crops to be grown and how much of it is to be devoted to different crops. Also social and cultural values strongly influence the cropping pattern especially in the countries where agriculture and tradition, which affect the growing of crops. These crops are not always being grown where they are best adopted to, nor where they can be grown most economically.

Except physical elements which take a comparatively longer time to change their determinants belonging to the traits change very fast. Technological advancement such as irrigation, soil and water conservation, adoption of high yielding varieties of seeds, use of chemical, fertilizers and pesticides, improvement in the means of transpiration, marketing and storage facilities, price incentives and above all the change in mental attitude of farmers, the makers, the researchers and politicians have brought a tremendous change in cropping pattern. Considering above all factors the author has viewed the study area and concludes that a similar situation is prevailing in Chandragiri Mandal, therefore in this chapter, parameters dealing with ranking of crops, crop combination, crop concentration and crop intensity are adopted.

In Chandragiri Mandal land and water resources are limited, their maximum use is must for increased production of food grains to the demands of increasing population. As irrigation covers only small area, so far, the cropping pattern with the district are largely controlled by the duration and intensity of rainfall and generally vary from place to place. Therefore, rainfed crops would continue to dominate the cropping pattern rather than irrigated crops.

## **LOCATIONAL AND SPATIAL ASPECTS OF THE STUDY AREA**

Chandragiri Mandal in Chittoor District derives its name from Chandragiri, its head quarters town. It is located  $13^{\circ}20'$  to  $13^{\circ}50'$  N and  $79^{\circ}5'$  to  $79^{\circ}30'$  E. It is bordered by Rajampeta Revenue Division of Kadapa district in the north and Penumuru mandal of Chittoor district in the south and Tirupati rural and Vedurukuppam mandals of Chittoor district in the East and



Pulicherla and Y.V. Palem mandals of Chittoor district in the west. It is situated in the northeastern part of the Chittoor district with a distance of 54 Km. from Chittoor town and 10 km. from Tirupati town. It is one of the smallest mandals of the district covering an area of 1184.52 Sq.km. or 1,12,572 Hectares and a population of 83,987 (2011 provisional figures). It is included in the Survey of India Topographical sheets of  $57\frac{0}{2}$  and  $57\frac{0}{6}$  on a scale of 1:50,000.

This Study area was originally included in the North Arcot district of Madras Presidency. When Chittoor district was newly formed on 1<sup>st</sup> April 1911, it was divided into 15 Taluks and 65 Firkas. Later on in the year 1982 the whole Taluks and Firkas were changed and 'Mandals' were emerged in the place of Firkas, and Hamlets. So, 'Chandragiri Mandal' was newly formed by the inclusion or deletion of some of the villages from the neighbouring mandals. Now this mandal he divided into 23 Revenue villages and 29 hamlets.

## **OBJECTIVES**

The Present paper aims to understand the spatial aspects of land, water and agricultural resources and to know the state of availability and their utilization for better development and to preserve them for the future generations by adopting better management practices. To asses the crop ranking and crop combination regions in Chandragiri Mandal in Chittoor District.

## **DATA BASE AND METHODOLOGY**

The data pertaining to landuse and cropping pattern was collected from Statistical Department, PWD and Agriculture Department, at village level for a period of 10 years from 1999-2000 to 2008-2009 to study spatial distribution, concentration, variability, intensity, changes over a period of time, crop combinations etc., adopting various techniques. The maps were used to correlate with physical and climatic elements to bring out the relationship among land, water and agricultural resources of Chandragiri Mandal.

For the delineation of crop combinations, a more reliable and rational approach was adopted by Weaver. In his study of crop combination regions in the middle west, Weaver demarcated crop associations development in terms of variables based on certain differences which are relative and not so absolute. This method which is based on statistical approach is more scientific and hence authentic. In his study he has taken into account the



percentage of the harvested cropped land occupied by each crop that held as much as one percent of total cultivated land in each of 1,081 countries covered in his work. Weaver calculated deviation of the real percentage of crops for all the possible combinations in the component areas units against theoretical standard. The theoretical curve for the standard measurement was calculated as follows –

Monoculture	=	100 per cent of the Gross Cropped Area of one crop
Two Crop combination	=	50 per cent in each of two crops
Three Crop combination	=	33.33 per cent in each of three crops
Four Crop combination	=	25 per cent in each of four crops
Five Crop combination	=	20 per cent in each of five crops and so on

For the determination of the minimum deviation for each of the component area units the Standard Deviation method was used in the following way.

$$\sigma = \sqrt{\frac{\sum d^2}{n}}$$

However, Weaver has pointed out the relative rank of the amount of deviation among the several possible combinations as was desired by him and not the actual magnitude of the deviation, the square root was extracted in accordance with the standard deviation formula.

The special used variant procedure can, therefore, be expressed as follows –

$$\sigma = \sqrt{\frac{\sum d^2}{n}}$$

Where 'd' is the difference between the actual crop percentages in a given areas unit and appropriate percentage in the theoretical curve and 'n' is the number in a given combination.

Weaver's method has admirably been accepted and applied for the demarcation of crop combinations by geographers. The technique, however, gives most unwidely combinations for the areas units of high specialization.

### **CROP COMBINATION BY J.C. WEAVERS METHOD**

In the calculation of J.C. Weavers minimum deviation Techniques are used, to identical the crop combination In study area, identified the Konareddi kandriga village crop combination



is identified. Mono crop is 5112.2, two crop combination is 640.00, three crop combination is 101.2, four crop combination is 38.4 and five crop combination is 29.1, The lowest value in 29.1. So, the crop combination is five crop combination is identified in this village (Table No. 6.1).

From the analysis at crop combination by J.C. Weavers Method is adopted the study area. In Chinna Ramapuram village the lowest value is 33.5, so, the crop combination is four crop combination (Table No 6.2) and Bhimavaram village crop combination is identified in 24.3. So the crop combination is four crop combination in table no.6.3. In that connection Seshapuram village crop combination is monocrop is 4816.3, two crop combination is 487.7, Three crop combination is 71.7, four crop combination is 32.5 and five crop combination is 72.2. The lowest value in 32.5. So, the crop combination is four crop combination is identified in this village (Table No-6.4).

In the Table No-6.5. Pulliahgaripalli revenue village, crop combination is identified is 56.5. The lowest value is best crop combination is four crop combination (Table No.6.5.). In connection with the crop combination is identified in Arepalli village, the lowest value in 44.4. So, the crop combination is four crop combination (Table No. 6.6). Next revenue village namely Nagaptla crop combination is identified the lowest value in 8.52. This is the best crop combination in that village Table No. 6.7. Ramireddy Palli village is next one crop combination of the study area. The lowest value is identified in 70.7. This is the best crop combination like four crop combination table No. 70.7.

The ninth Revenue village namely Narasingapuram village identified the crop combination, the lowest value is 44.9. In this village four crop combination is identified. (Table No. 6.9) In this connection lowest value in 3.0 the best crop combination is three crop combination (Table No. 6.10). Kotala Village is eleventh revenue village, the crop combination, mono crop is 1288.8, Two crop is 791.3, Three crop is 634.1, four crop is 549.8 and five crop combination is 491.2 The lowest value is 491.2 (Table No. 6.11).

Agarala Village crop combination is identified mono crop is 3410, Two crop is 461.5, three crop is 127.9, four crop is 116.9 and five crop is 155.3. Here lowest value is 127.9. This is best crop combination in this Village (Table No. 6.12). Dorna Kambala village crop combination is identified them. Here the lowest Value is 194.38. Three crop combination is best crop combination in this village, Table. No. 6.13. Next one the mandal head quarter



Chandragiri Village crop is 283, three crop is 75, four crop combination is 168.5 and five crop is 208.8. Here lowest value is 75 (Table. No. 6.14). Mittapalem village crop combination is identified. Here the lowest value is 92.93. Three crop combination is best crop combination (Table No. 6.15). Thondavada village crop combination is mono crop is 2981.1, two crop is 204.62, three crop is 162.2, four crop combination is 225.8 and five crop combination is 252.04. The best crop combination is 162.2, four crop combination is 225.8 and five crop combination is 252.04. The best crop combination is 162.2. (Table No. 6.16). Shanambatla village crop combination is mono is 3881.2, two crop is 215, three crop is 514.8, four crop is 165.5 and five crop combination is 210.98. The lowest value is 165.5. Four crop combination is best crop combination (Table. No. 6.17).

The Chintagunta village Crop combination is identified 164.8. Three crop combination is best and lowest value in this village. (table no. 6.18). Panabakam revenue village crop combination is mono crop is 4134.4, two crop combination is 75.07 and five crop is 95.8. Here the lowest value is 75.07. So, the crop combination is four crop combination. (table no. 6.19) Kalroad Palli village crop combination is mono crop is 3600, two crop is 4987.005, three crop is 131.93, four crop is 110.1 and five crop is 121.2. So, the crop combination is four crop, value is 110.1 (Table No. 6.20). Next one village, namely Mungilipattu Kothapalli crop combination is mono crop is 4096, two crop is 340, three crop value is 70.6, four crop value is 81, and five crop combination value is 128. The lowest value is 70.6. So, the crop combination is three crop combination (Table No. 6.21). Mamundur village crop combination is mono crop value is 3398.8, two crop value is 283, three crop value is 46.6, four crop value is 151.15 and five crop value is 171.5. Here the lowest value is 46.6. So, the crop combination is three combination (Table No. 6.22). Here table No. 6.23, Itepalli village crop combination is mono crop value is 4802.4, two crop value is 374.3, three crop value is 59.2, four crop value is 56.7 and five crop combination is 126.8. Here the lowest value is 56.7. This is best crop combination So, the crop combination is four crop combination.

## **J.C. WEAVER'S MINIMUM DEVIATION METHOD**

### **Monoculture**

In Chandragiri Mandal no single village was emerged as monoculture during the study period 1997-1998, but during the year 2007-2008, Panapakam village has monoculture and grown the crop groundnut.



### **Two Crop Combinations**

In the year 1997-98 Shanambatla village had two crops i.e. groundnut and paddy, whereas during 2007-2008, Chinnaramapuram, Seshapuram, Arepalli, Dornakambala, Chandragiri and Thondavada villages have two crops combination, i.e. paddy and groundnut.

### **Three Crop Combinations**

During 1997-98, Nagapatla, Reddivaripalli, Dornakambala, Chandragiri, Mittapalem, Thondavada, Chintagunta, Panapakam, Mungilipattukothapalli, and Mamanduru villages had three crop combinations. The crops grown in these villages are paddy, groundnut and ragi. During 2007-2008, Konareddikandriga, Pullaiahgaripalli, Narasingapuram, Reddivaripalli, Kotala, Mittapallem, Shanambatla, Chintagunta and Kalroadpalli were continued to have three crops combination. Apart from these villages three crops combinations were found in the village of Konareddikandriga. The crops grown are ragi, groundnut and paddy. (Table 6.24 and Fig. 6.1)

### **Four Crop Combinations**

During 1997-98, Bhimavaram, Seshapuram, Pullaiahgaripalli, Arepalli, Agarala, Kalrodipalli and Itepalli villages have four crop combination, the crops grown are ragi, paddy, groundnut and minormilletts. During 2007-2008, the same villages had grown four crop combinations.

### **Five Crop Combinations**

During 1997-98, Konareddikandriga, Narasingapuram and Kotala villages had five crops combinations. The crops grown in these combinations are paddy, ragi, groundnut minormilletts and vegetables. During 2007-2008, Ramireddypalli village had five crops combination in the study area.

The crop combination from one village to another have changed due to poor soils, variations in the prices of the agricultural products, irregularity in rainfall occurrence, impact of urban centres, etc. So it is suggested to strengthen these combinations by the way of extending all possible infrastructure to the soil, so as to get higher yields and to get excellent efficiency in agriculture in this region.



**Table – 1**  
**Chandragiri Mandal**  
**CROP COMBINATION BY J.C. WEAVER'S MINIMUM**  
**DEVIATION METHOD**

S. No.	Name of the Village	1997-1998	2007-2008	Change in No. of Crops
1	Konareddikhandriga	5 Crops P, RG, M, SC, GN	4 Crops RG, SC, GN, P	1
2	Chinnaramapuram	3Crops P, SC, GN,	2 Crops RG, GN	1
3	Bhimavaram	4 Crops RG, M, P, GN	3 Crops GN, RG, SC	1
4	Seshapuram	4 Crops GN, SC, RG, M	2 Crops RG, GN	2
5	Pullaiahgaripalli	4 Crops P, GN, SC, M	4 Crops P, SC, GN, RG	Nil
6	Arepalli	4 Crops M, GN, SC, RG	2 Crops RG, GN	2
7	Nagapatla	3 Crops P, RG, GN	2 Crops RG, GN	1
8	Ramireddipalli	4 Crops OP, P, GN, SC	3 Crops GN, SC, P	1
9	Narasingapuram	5 Crops P, SC, RG, GN, M	4 Crops RG, GN, P, SC	1
10	Reddivaripalli	3 Crops GN, RG, P	4 Crops P, GN, RG, SC	-1
11	Kotala	5 Crops P, RG, SC, GN, M	4 Crops SC, P, GN, RG	1
12	Agarala	4 Crops M, SC, GN, RG	4 Crops P, GN, RG, SC	Nil
13	Dornakambala	3 Crops P, GN, RG	2 Crops RG, GN	1
14	Chandragiri	3 Crops P, GN, RG	2 Crops GN, RG	1
15	Mittapalem	3 Crops GN, P, RG	3 Crops GN, P, RG	<i>Contd.....</i>
16	Thondavada	2 Crops GN, RG	2 Crops GN, RG	Nil
17	Shanambatla	2 Crops GN, P	3 Crops P, SC, GN	-1
18	Chintagunta	3 Crops P, GN, RG	3 Crops P, GN, SC	Nil
19	Panapakam	3 Crops	1 Crop	2



S. No.	Name of the Village	1997-1998	2007-2008	Change in No. of Crops
		P, GN, RG	GN	
20	Kalroadpalli	4 Crops GN, SC, RG, P	3 Crops P, SC, GN	1
21	Mungilipattukothapalli	3 Crops GN, RG, P	3 Crops P, GN, SC	Nil
22	Mamanduru	3 Crops P, GN, RG	4 Crops M, GN, RG, P	1
23	Itepalli	4 Crops P, GN, RG, SC	5 Crops GN, P, RG, SC, M	-1

**Note :** RG = Ragi; P= Paddy; SC= Sugarcane; GN=Groundnut; M= Mango

**Source :** Computed from the data collected.

### Ranking of Crops

Ranking of crops is the percentage area under each crop was ascertained simply by ranking them for each Revenue village in order to have percentage of the total net sown area occupied by each crop. Ranking of crops gives an insight into the geographical reality of the cropping pattern. Moreover, ranking of crops helps in knowing the crops which complete with each other to gain more hectarage under cultivation. After assessing the relative strength of different crops in geographical unit with the process of planning can be initiated more rationally for the optimum use of the available land for cultivation. A judicious use of land with adequate inputs, in fact can help in raising the agricultural production even in the less fertile soil. Thus, the study is useful in reducing the agricultural income and economy.

### Ranking Methods

Ranking method can be studied by descriptive and qualitative ways to delineate the raking of individual crops according to their areas importance in each component unit. The crop with the larger percentage share of the net sown area forms the first ranking crop and the crop with the next largest share becomes and second ranking crop. Similar calculations have been made up to 5th ranking of crops (Table No.2 & 3) and the resultant patterns have been plotted in for the year 1997-98 and 2007-08.

### First Ranking Crops

Paddy (Rice) is the most dominant crop during 1997-98, there were only two crops that is Paddy and Groundnut which are first ranking crops in the study area. Paddy was the first



ranking Crop in the villages namely Konareddikhandriga, Chinnaramapuram, Bhimavaram, Seshapuram, Pullaiahgaripalli, Arepalli, Nagapatla, Ramireddipalli, Narasingapuram, Reddivaripalli, Kotala, Agarala, Dornakambala, Panapakam, Kalroadpalli, Mungipatlukothapalli, Mamanduru and Itepalli. Groundnut was cultivated in the villages such as Chandragiri, Mittapalem, Thondavada, Shanambatla and Chintagunta etc. (Fig.6.2).

During 2007-2008 also Paddy and Groundnut are dominant crops, which were cultivated as first ranking crop in the Mandal. Paddy was cultivated in the villages of Chandragiri, Kotala, Dornakambala, Panapakam and Seshapuram. Groundnut was cultivated in Narasingapuram, Kotala, Thondavada, Mittapalem, Reddivaripalli and Itepalli villages.

The comparative ranking position of two periods shows that paddy has been increasing as first ranking crop in eastern villages. The continuation of the same rainfed crops are due to lack of no extension of irrigational facilities because of limited water resources in the mandal, the traditional crops are continued from 1997-98 and 2007-08.

### **Second Ranking Crops**

Ragi and Sugarcane are the most dominant crops in the study area during 1997-98. Ragi and Sugarcane were Second Ranking Crops in the Mandal. It is interesting to note that in a span of 10 years there is no increase or decrease of the cropped area in both the cases. The decreasing trends in the distribution of rainfall its variability are the major reasons for the stand still nature of both the crops (Fig.6.3).

During 2007-08 also Ragi and Sugarcane are dominant crops, which were cultivated as second ranking crops in the study area. Ragi and Paddy were replaced by Ragi and Sugarcane. The change was due to the demand of food grain and commercial purpose. As the population in the study area are more prone to commercial food grains.

### **Third Ranking Crops**

During 1997-98, the third ranking crops were Sugarcane, and Ragi. They were cultivated in the villages of Konareddikhandriga, Chinnaramapuram, Bhimavaram, Pullaiahgaripalli, Arepalli, Nagapatla, Ramireddipalli, Narasingapuram, Reddivaripalli, Kotala, Agarala, Dornakambala and Chandrigiri. Ragi was cultivated in the villages of Mittapalem, Thondavada, Shanambatla, Chintagunta, Panapakam, Kalroadpalli and Seshapuram.

During 2007-08, Ragi crop was only the third ranking crop which was dominant in the villages of Konareddikhandriga, Chinnaramapuram, Bhimavaram, Pullaiahgaripalli, Arepalli,



Nagapatla, Ramireddipalli, Narasingapuram, Reddivaripalli, Kotala and Seshapuram. Sugarcane crop cultivated as third ranking crop was observed in the villages such as Agarala, Dornakambala, Chandragiri, Mittapalem, Thondavada, Shanambatla and Chintagunta (Fig.6.4).

During 1997-98 and 2007-08 period, Sugarcane and Ragi were continued and dominated in the study area. Due to the non-availability of water sources of irrigation as the wells were dried up in the summer season.

#### **Fourth Ranking Crops**

During 1997-98 there are fourth ranking crops dominated in the study area. Vegetables was dominant and cultivated in seven villages such as Konareddikhandriga, Chinnaramapuram, Bhimavaram, Pullaiahgaripalli, Arepalli, Nagapatla and Seshapuram. Other pulses are cultivated in the villages like Chandragiri, Mittapalem, Thondavada, Shanambatla, Chintagunta, Panapakam and Kalroadpalli etc. Paddy is cultivated as fourth ranking crop in Mungilipattukothapalli, Mamanduru and Itepalli villages (Fig.6.5).

During 2007-08, there are four fourth ranking crops dominated in the study area. They are pulses, vegetables, groundnut and mango. Other pulses crops were dominated and cultivated in six villages such as Konareddikhandriga, Chinnaramapuram, Bhimavaram, Pulliahgaripalli, Arepalli and Nagapatla etc. Vegetables are cultivated in six villages, such as Ramireddipalli, Narasingapuram, Reddivaripalli, Kotala, Agarala, and Dornakambala. Groundnut was cultivated in Chandragiri, Mittapalem, Thondavada, Shanambatla, Chintagunta, Panapakam and Kalroadpalli villages. Mango crop was cultivated in three villages, i.e., Mungilipattukothapalli, Mamanduru and Itepalli etc.

The change from 1997-98 and 2007-08 shows that minor millets replaced by other pulses in Konareddikandriga Chinnaramapuram, Bhimavaram, Pullaiahgaripalli, Arepalli, Nagapatla villages respectively. The change was due to the demand of food grain etc, for the population in the mandal.

#### **Fifth Ranking Crops**

During 1997-98 to crops are identified as fifth ranking crops. They are 1 mango and vegetables. Mango crop was dominant in fifteen villages such as Konareddikhandriga, Chinnaramapuram, Bhimavaram, Pullaiahgaripalli, Arepalli, Nagapatla, Ramireddipalli, Shanambatla, Chintagunta, Panapakam, Kalroadpalli, Mungilipattukothapalli, Mamanduru



and Itepalli villages respectively. Vegetables was cultivated in Narasingapuram, Reddivaripalli, Kotala, Agarala, Dornakambala, Chandrigiri, Mittapalem and Thondavada villages. (Fig.6.6).

During 2007-08 two crops are recognized as fifth ranking crops. They are 1. Major millets and 2. Paddy. Minor millets was dominant in six villages i.e., Konareddikhandriga, Chinnaramapuram, Bhimavaram, Pulliahgaripalli, Arepalli and Nagapatla etc. Paddy was dominant in nine villages such as Ramireddipalli, Narasingapuram, Reddivaripalli, Kotala, Agarala, Dornakambala, Chandrigiri, Mittapalem and Thondavada etc. Mango crop was dominant and replaced by none in the same villages in the study area. These commercial and food crops were replaced due to increasing value and better yield. These crops use to give more yield and crops were grown more than once in a year. The investment is to be more on agricultural land, but the economic conditions of farmers is good.

**Table - 2**  
**Chandragiri Mandal**  
**Ranking of Crops 1997-98**

S.No	Name of the Revenue Village	1997-98				
		First	Second	Third	Fourth	Fifth
1	Konareddikhandriga	P	R	SC	VG	M
2	Chinnaramapuram	P	R	SC	VG	M
3	Bhimavaram	P	R	SC	VG	M
4	Seshapuram	P	R	SC	VG	M
5	Pullaiahgaripalli	P	R	SC	VG	M
6	Arepalli	P	R	SC	VG	M
7	Nagapatla	P	R	SC	VG	M
8	Ramireddipalli	P	R	SC	G.N	M
9	Narasingapuram	P	R	SC	G.N	VEG
10	Reddivaripalli	P	R	SC	G.N	VEG
11	Kotala	P	R	SC	G.N	VEG
12	Agarala	P	R	SC	G.N	VEG
13	Dornakambala	P	R	SC	G.N	VEG
14	Chandragiri	G.N	R	SC	G.N	VEG
15	Mittapalem	G.N	SC	R	G.N	VEG
16	Thondavada	G.N	SC	R	G.N	M
17	Shanambatla	G.N	SC	R	G.N	M
18	Chintagunta	G.N	SC	R	G.N	M
19	Panapakam	P	SC	R	G.N	M



20	Kalroadpalli	P	SC	R	G.N	M
21	Mungilipattukothapalli	P	SC	R	R	M
22	Mamanduru	P	SC	R	R	M
23	Itepalli	P	SC	R	R	M

**Source:** Computed from the data collected.

**Note:** GN: Groundnut, P: Paddy, SC: Sugarcane, Veg: Vegetables, R: Ragi

**Table - 3**  
**Chandragiri Mandal**  
**Ranking of Crops 2007-2008**

S.No	Name of the Revenue Village	2007 – 2008				
		First	Second	Third	Fourth	Fifth
1	Konareddikhandriga	P	R	R	VG	VG
2	Chinnaramapuram	P	R	R	VG	VG
3	Bhimavaram	P	R	R	VG	VG
4	Seshapuram	P	R	R	VG	VG
5	Pullaiyahgaripalli	P	R	R	VG	VG
6	Arepalli	P	R	R	VG	VG
7	Nagapatla	P	R	R	VG	VG
8	Ramireddipalli	P	R	R	VG	P
9	Narasingapuram	G.N	R	R	VG	P
10	Reddivaripalli	G.N	R	R	VG	P
11	Kotala	G.N	R	R	VG	P
12	Agarala	P	R	SC	VG	P
13	Dornakambala	P	SC	SC	VG	P
14	Chandragiri	P	SC	SC	VG	P
15	Mittapalem	G.N	SC	SC	VG	P
16	Thondavada	G.N	SC	SC	VG	P
17	Shanambatla	G.N	SC	SC	VG	M
18	Chintagunta	G.N	SC	SC	VG	R
19	Panapakam	P	SC	R	VG	P
20	Kalroadpalli	G.N	SC	R	VG	P
21	Mungilipattukothapalli	G.N	SC	G.N	M	M
22	Mamanduru	G.N	SC	G.N	M	M
23	Itepalli	G.N	SC	G.N	M	M

**Source:** Computed from the data collected.

**Note:** P–Paddy, R- Ragi, GN – Groundnut, SC – Sugarcane, VG – Vegetable, M – Mango.



## **CONCLUSION:**

The crop combination techniques given by J.C. Weaver shows that there are five crop combinations in the mandal during the year 1997-98. Monoculture shows the domination of groundnut only. The two crop combination shows paddy and groundnut. The three crop combination shows that paddy, groundnut and ragi are more dominant. The four crop combination shows that ragi, paddy, groundnut and minor millets are predominated. The five crop combination shows that paddy, ragi, groundnut, minor millets and vegetables.

During 2007-08 the same combinations are continued with minor changes. This shows clearly that the peasants are forced to cultivate the same crops as they gain much market value when compared with other crops.

The volume of change in cropping pattern from 1997-98 to 2007-08 shows a low increase of less than 2 per cent in paddy cultivation. It is due to increase in well irrigation. The increase of groundnut cultivation ranges from 2.28 per cent in 1997-98 to 3.13 per cent in 2007-08. This shows a minimum increase of 1.15 per cent. The increase of other crops like sugarcane and ragi is also minimum in the mandal.

The increase of population growth is continuous and hence the demand for paddy and groundnut is considerably increased. In general, the food crop like paddy and the non-food crop like groundnut dominates the cropping pattern of the mandal. So, they are treated as 'Agricultural Resources'.

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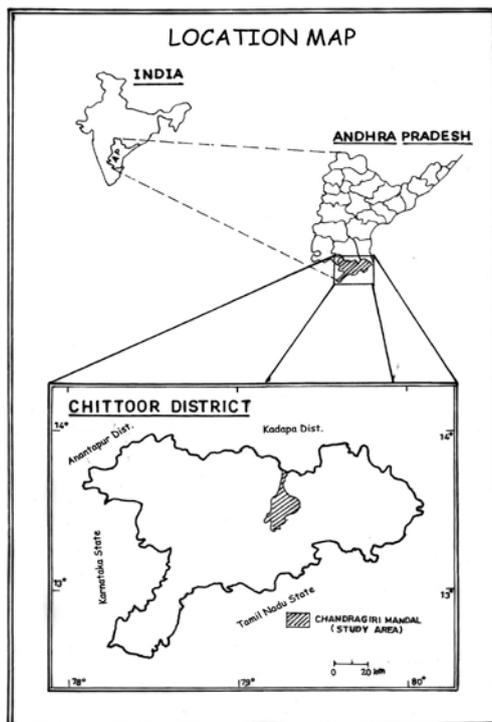


Fig. 1



Fig. 2

