ISSN: 0976-3031

Available Online at http://www.recentscientific.com

CODEN: IJRSFP (USA)

International Journal of Recent Scientific Research
Vol. 8, Issue, 11, pp. 21327-21332, November, 2017

International Journal of Recent Scientific Research

DOI: 10.24327/IJRSR

Research Article

MAJOR CROP FARMING PATTERN AND SPATIAL DISTRIBUTION: A STUDY OF ANANTAPURAMU DISTRICT

Jayalalitha Y[1] and Masthanaiah T[2]

Department of Geography, Sri Krishnadevaraya University, Anantapuramu, Andhra Pradesh

DOI: http://dx.doi.org/10.24327/ijrsr.2017.0811.1051

ARTICLE INFO

Article History:

Received 15th August, 2017
Received in revised form 25th September, 2017
Accepted 28th October, 2017
Published online 28th November, 2017

ABSTRACT

The concept of cropping pattern has always been a complex and dynamic phenomena. The cropping pattern of the region is a reflection of interplay of the diversified physical, socio-economic, technological and organizational factors. Any cropping pattern of given area at a particular point of time was the most efficient use of land and other resources. Main objectives of the study are that to study the spatial distribution of crop farming pattern and to observe the percentage share of irrigated cropping among individual crops in Anantapuramu district. For this study secondary data has been used and to examine the spatial distribution of crops in Anantapuramu district, the relative strength of each crop is calculated to the total cropped area of the component areal unit for the year of 2010-11.The major crops which are occupying more than 1 percent of area to the total cropped area of the district have been considered for the analysis. For the purpose of percentage share of irrigated cropping area eight major crops is computed to the total cropped area of the respective crop and also to the total irrigated area of the component areal unit i.e., mandal wise for the year of 2010-11. Findings reveal that there are 8 important crops which are occupying more than 1 percent of area to the total cropped area of the district and the proportion of Groundnut (70.74%) cultivated area is more among all other crops. Among pulses, Bengal gram is the major crop and it is second important crop in Anantapuramu district occupying nearly 8 percent of area to the total cropped area. Followed by red gram is accounting 6 percent. After groundnut, Sunflower farming is an important oil crop in Anantapuramu district occupying an area of 1.49 percent to the total cropped area. The crop is raised both under dry and irrigated conditions both in kharif and rabi seasons.

INTRODUCTION

Cropping pattern represents the spatial crop sequence in a given area at a particular point of time. It indicates the relative proportion of area under different crops at a given point of time. "Cropping pattern may be defined as the spatial and hierarchial arrangement and/or association of different crops at a point of time in a particular areal unit" (Ramanaiah, 1984, p.136). Such an exercise helps to identify the most significant crops of the region and their areal concentration and differentitaion in diversified regional agricultural economy. The agricultural prosperity of the region may also be understood and evaluated with the help of cropping pattern analysis. The concept of cropping pattern has always been a complex and dynamic phenomena. The cropping pattern of the region is a reflection of interplay of the diversified physical, socio-economic, technological and organizational factors. Any cropping pattern of given area at a particular point of time was the most efficient use of land and other resources. But however, that was not a static one. Here it is significant to state that no particular crop or cropping pattern can hold good for all times to come. It changes with progress in technology and socio-economic conditions. Even minor socio-economic changes, e.g., a change in the dietary habits of the rural people of Andhra Pradesh due to introduction and popularization of two rupees-1 kg. Rice scheme has significantly affected the millet farming and as result some of the inferior Food grain crops are getting slowly eliminated from the cropping pattern. Hence, under the influence of dynamic socio-economic, technological and political factors, the concentration of a variety of crops gets continuously modified to such an extent that, some times some crops get absolutely replaced in course of time. Thus, a study of changing spatial distributional pattern of cropping provides comprehensive picture of crop geography of any region (Krishna Kumari, 1991).

Before the green revolution period the cropping pattern was different to the present system of cropping pattern, i.e., wheat and rice were not as significant as it is distributed

Corresponding author:* **Jayalalitha Y
Department of Geography, Sri Krishnadevaraya University, Anantapuramu, Andhra Pradesh

today(Yasir,1997). Dry land farming is, generally, associated with subsistence occupation since the early periods, as the farmers generally produced food grains and pulses. By producing about half of the food grain production, more than 80 percent of oil seeds production and a major share of the pulses, dryland farming in India supports the food security of a considerable proportion of the population in the country (RangaRajan, 1999). Since, Independence, India witnessed considerable changes in land use and cropping pattern. Increasing population pressure and attendant demand for land to accommodate various other activities are the prime drivers of change. Land use change records spatio-temporal variations like population growth (Vaidya, 2004). The agriculture is the chief source of livelihood for millions of people in the world and particularly for Indians. Spectacular break through in agricultural research, technology development and dissemination under the Umbrella of green Revolution have been the major factors in increasing both agricultural production and productivity (Hurakadli, 2005). The delineation of the regions of agricultural homogeneity was mostly based upon the spatial distribution of crops. Dikshit has opined that "the crop pattern is the most sensitive indicator of the condition of agricultural landscape and activity, and therefore, agricultural regionalization can be attempted on the basis of the dominant crops" (Neeraja, 2006).

In developing economy like India the importance of agriculture is both Crucial and pervasive. Despite concerted industrialization in the last five decades, agriculture occupies a place of importance in the Indian economy. Since Independence considerable progress has been made in the sphere of agricultural development in India in terms of increasing in crop production and productivity technological development and crop diversification (Ray, 2005). Agriculture has made great progress in India during the last few decades due to the development and use of new and improved agricultural technologies. But the spread of these new agricultural technologies is concentric to a few states or regions. An analysis of fluctuation in agricultural production facilitates to know the state of agricultural product's and also gives the clue for maintaining stable growth through appropriate selection of agricultural strategy (Soma Rog, 2008).

The new agricultural input, machineries have brought a considerable area under cultivation and have also enhanced productivity to a greater extent. There is a great need to understand and analyze the position of individual crop in the agricultural complex. The study of crop-combination and crop diversification has become of great significance (Virendra Singh, 2010). Crop diversification patterns, like that of crop concentration, have great relevance in the agricultural landuse studies. Crop diversity is and important component of the crop geography of region. It refers to crop variety. Larger the number of crops grown in an area during a year with each occupying equal proportion of crop land, the higher is crop diversification (Hanga Ragi,2010). The land is considered as an important resource, so an assessment and improvement of the use of land are essential to any siginificant increase in food supply especially in developing countries of the world. In most of the developing countries there is an urgent need to extend and improve the exploitation of land resources to achieve the maximum output of crops, live stock and timber as well as to ensure the productive capacity of the land (Hanga Ragi, 2011). In India due to variation in physic-cultural conditions several crops are grown in different parts of the country but ironically Indian agriculture is largely dominated by the predominance of food crops. In an area the prevalent landuse and cropping system are the cumulative results of numerous interrelated physical and non-physical factors (Vibha Singh,2013).

The main objectives of the study are to examine the spatial distribution of crops in Anantapuram district, similarly to study the percentage share of irrigated cropping among individual crops in Anantapuram district.

METHODOLOGY

To study the spatial distribution of crops in Anantapuram district, the relative strength of each crop is calculated to the total cropped area of the component areal unit for the year 2010-11.

Table 1 General Crop Farming Patterns in Anantapuram District, 2010-11

Crop	Cropped Area in hectares	Percentage of Gross Sown Area	Irrigated area in hectares	Percentage to Respective crop total area	Total irrigated area (%)
Groundnut	834070	70.74	28568	3.42	17.27
Bengalgram	94241	7.99	1182	1.25	0.7
Redgram	66013	5.59	29	0.1	0.01
Paddy	59801	5.07	59683	99.8	36.08
Total fresh fruits	33639	2.85	31886	94.73	19.27
Sunflower	17615	1.49	6734	38.23	4.07
Jowar	15880	1.34	4574	28.8	2.76
Maize	15476	1.31	13057	84.37	7.89
Spices& Condiments	10413	0.88	2872	27.58	1.74
Total Vegetables	6371	0.54	6260	98.26	3.78
Cotton	4338	0.36	1767	40.73	1.07
Ragi	2432	0.21	2291	94.2	1.38
Horse gram	2182	0.18	111	5.08	0.07
Chillies	1968	0.17	1968	95.09	1.19
Onions	1926	0.16	1847	0.09	1.11
Green gram	874	0.074	0	0.0	0.0
Black gram	573	0.048	0	100	0.0
Sugarcane	243	0.02	243	14.02	0.15
Total	1178967	100	165393	14.02	100.0

The major crops which are occupying more than 1 percent of area to the total cropped area of the district have been considered for the analysis. The percentage share of irrigated cropping for the 8 major crops is computed to the total cropped area of the respective crop and also to the total irrigated area of the component areal unit i.e., mandal for the year 2010-11.By this one can understand the strength of individual crop share under irrigation within that respective crop area and also the percentage share of each crop in the total irrigated area.

General Crop Farming in Anantapuram District: Table-1 reveals that the general cropping pattern mainly there is a dominance of dry farming in the district over wet farming due to lack of protected irrigation facilities. There are identified 8 important crops which are occupying more than 1 percent of area to the total cropped area of the district. These are Groundnut (70.74%), Bengal gram (7.99%), Red gram (5.59%), Paddy (5.07%), Total fresh fruits (2.85%), Sunflower (1.49%), Jowar (1.34%) and Maize (1.31%). The sum of cropped area of these eight crops comprises to 96.38 percent and the remaining 3.62 percent of area is occupied by minor crops such as Horse gram, Green gram, Black gram, Raagi, other minor millets, Chillies, Onions, Condiments and Spices, Cotton and Vegetable crops. The major share of oil crops i.e., Groundnut and Sunflower together comprises 72.23 percent of the total cropped area of the district. It shows the dominance of oil crop cultivation, especially groundnut in the district. The second major group is pulses, mainly Bengal gram and Red gram together accounts for 13.58 percent of area to the total cropped area. After Oil seeds, Pulses occupy second place in crop cultivation. Next comes, Paddy the major food grain crop accounting for 5.07 percent of area to the gross cropped area.

Millets and fresh fruit crops occupy fourth and fifth places in the crop farming of the district with 2.89 percent and 2.85 percent respectively.

Spatial Distribution of Groundnut Farming: (Fig.1) Groundnut is by far the most-important and extensively grown crop in the district. About two thirds of the total cropped area i.e., 70.74 percent of area is under groundnut crop. Anantapur district is the chief cultivating area of groundnut both in terms of area and production in Andhra Pradesh state. The irrigated groundnut crop to the total groundnut cropped area of the district is only 3.42 percent, and the irrigated groundnut crop percentage to the total irrigated area of the district is 17.27 percent.

At mandal level, very high concentration of groundnut(>80%) cultivation is noticed in 24 mandals of the district, with a maximum area in Kanganapalle with 96.18 percent followed by Rayadurg, Kalyandurg, Kadair, Anantapuram, Raptadu, Settur, Kambadur, Dharmavaram, Bathalapalle, Mudigubba, N.P kunta, Gandlapenta, Nallamada, Bukkapatnam, C.K.palle, Ramagiri, Gudibanda, Rolla, Agali, Puttaparthi, O.D.cheruvu, Nallacheruvu and Gorantla mandals. High (60-80%) concentration of groundnut cultivation is found in another 24 mandals of the district. Nearly Two thirds of the mandals are under very high (>80%) to high (60-80%) concentration of groundnut cultivation. Moderate concentration (40-60%) is reported in 8 mandals, low (20-40%) concentration in 5 mandals of the district. Very low (<20%) proportion of groundnut cropped area is observed only in Vidapanakal and Hindupur mandals, with 18.89 percent and 17.81 percent respectively.

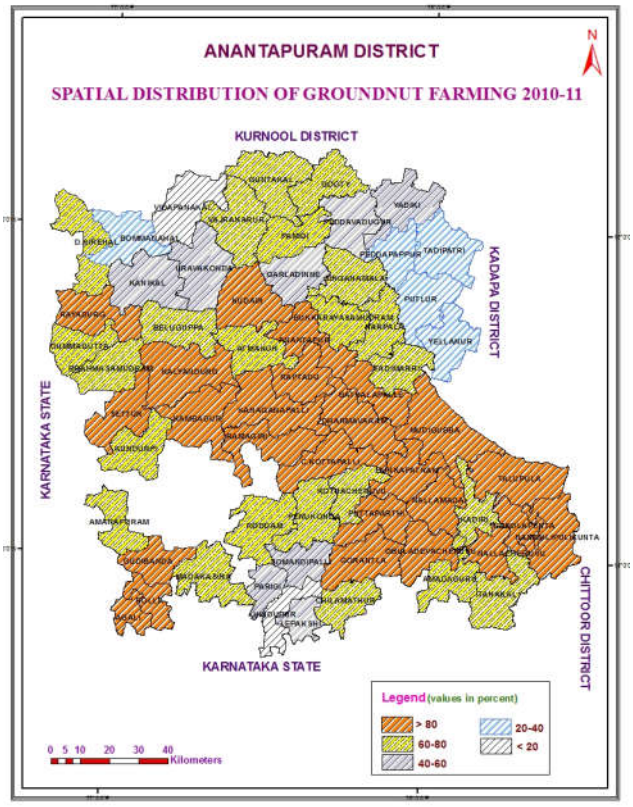

Fig 1

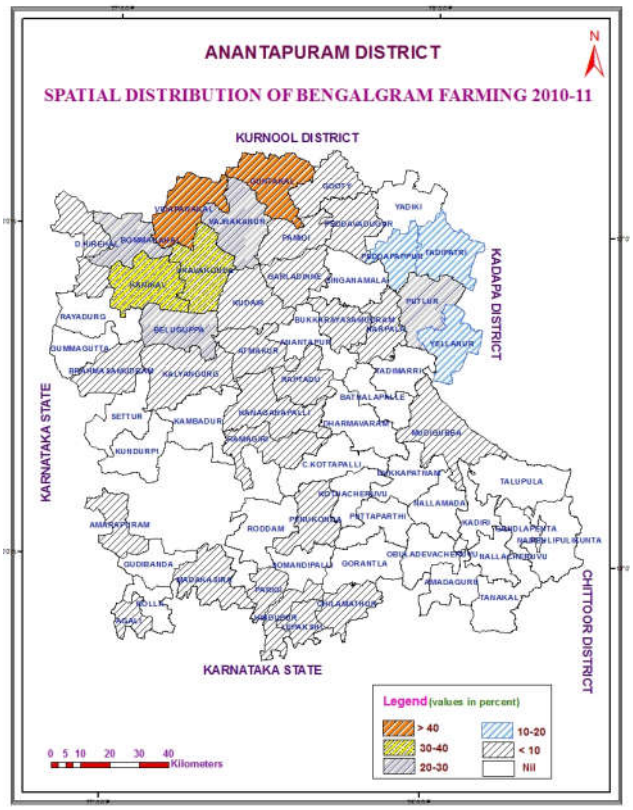

Fig 2

Spatial Distribution of Bengal Gram Farming: (Fig.2) Among pulses, Bengal gram is the major crop and it is second important crop in Anantapur district occupying about 7.99 percent of area to the total cropped area. The irrigated Bengal gram crop to the total Bengal gram cropped area is 1.25 percent and 0.7 percent to the total irrigated area of the district. It shows that most of the Bengal gram is under dry farming. In 2010-11, very high (>40%) concentration of Bengal gram farming is noticed in Guntakal (75.14%) and Vidapankal (41.99%) mandals, and high (30-40%) concentration in Uravakonda (37.65%) and Kanekal (36.96%) mandals. Moderate concentration (20-30%) is confined to 4 mandals, namely, Vajrakaur, Bommanahal, Putlur and Beluguppa. In Tadipathri, Peddapappur and Yellanur mandals, low (10-20%) concentration of Bengalgram is reported. Very low (<10%) concentration is found in 27 mandals of the district, and in 25 mandals, the crop farming is completely absent.

Spatial Distribution of Red Gram Farming: Red gram is the third major crop in the district during 2010-11 (Fig 3) and is second important crop among pulses. The crop accounting for about 5.59 percent to the total cropped area of the Anantapur district with 66013 hectares. The irrigated Red gram area is only 29 hectares which is very insignificant. It shows that, Red gram is more of dry farming crop. Spatially, Very high (>10%) concentration of Red gram cultivation registered in Atmakur (13.16%), Mudigubba (12.21%), B. K. samudram (11.98%) and Hindupur (11.52%) mandals. High (7.5-10%) concentration in 14 mandals, Medium concentration (5-7.5%) in 20 mandals, low (2.5-5%) in 19 mandals and very low (<2.5%) in D.Hirehal, Rayadurg, Kanekal, Bommanahal, Gummagatta and Brahmasamudram mandals.

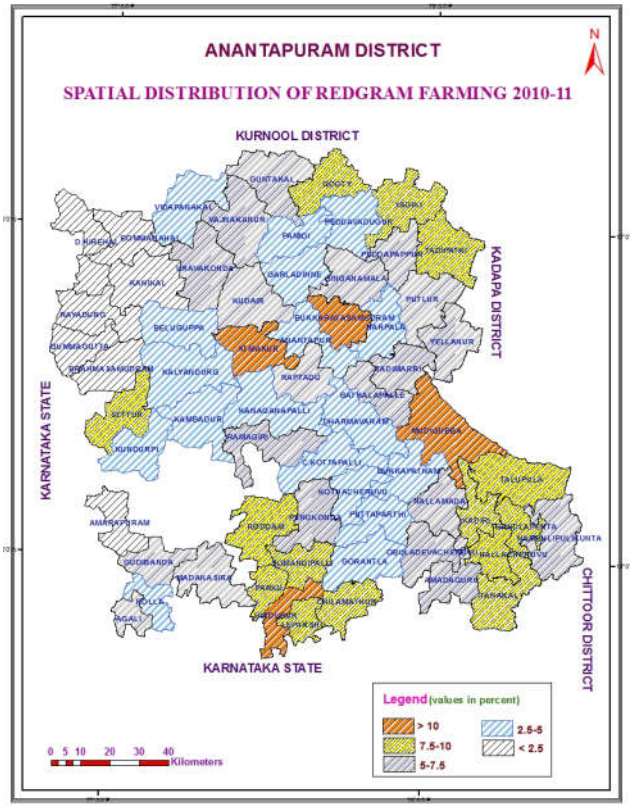

Fig 3

Spatial Distribution of Paddy Farming: (Fig-4) Paddy is the fourth important crop cultivated in Anantapur district. Due to lack of abundant water facilities, the crop is confined to only 5.07 percent to the total cropped area of the district. It is predominantly cultivated as an irrigated crop. The irrigated Paddy crop to the total paddy cropped area is 99.80 percent and it reveals the importance of irrigation for paddy farming. It accounts to 36.08 percent to the total irrigated area of Anantapur district. Paddy is cultivated mostly as kharif crop because of more rainfall in that season and extensive irrigation facilities available during this season. The spatial distribution of paddy farming in Anantapuram district varies from very high (>20%) concentration in Garladinne with 23.35 percent and Bommanahal with 21.59 per cent. High (15-20%) concentration is not registered in any of the mandals during 2010-11. Moderate (10-15%) concentration found in 6 mandals, low (5-10%) concentration in 15 mandals and very low (<5%) in maximum number of 40 mandals.

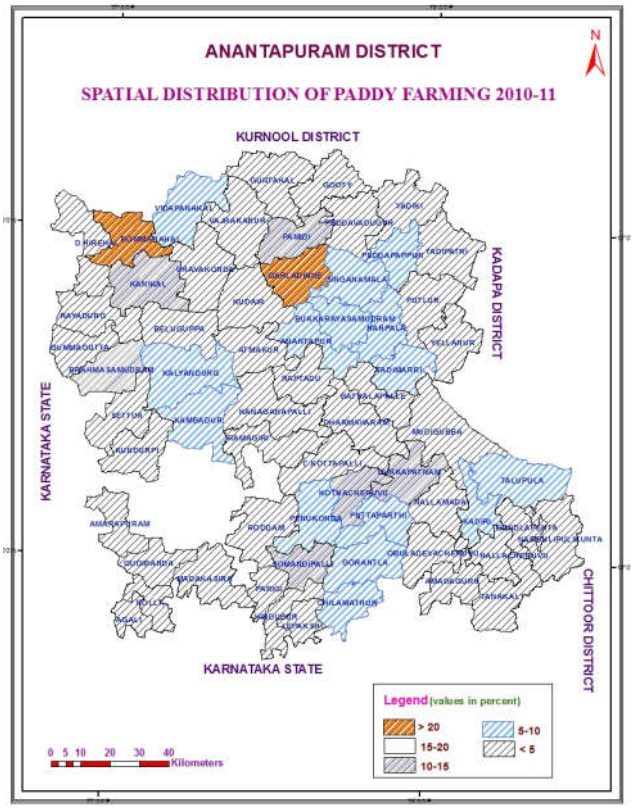

Fig 4

Spatial Distribution of Total Fresh and Dry Fruit Farming: (Fig.5) A variety of fruit crops are cultivated in Anantapur district, namely, Grapes, Papaya, Sapota, Anjur, Regu, Konda Regu, Custard apple, Musk Melon, Water melon, Pomegranate, Banana, Guava, Oranges, Batavia, Acid lime, Mangoes etc. The total area under fruit crops in the district accounts to 2.85 percent to the total cropped area. The irrigated fruit cropped area to the total fruit cropped area accounts to 94.73 percent and 19.27 percent to the total irrigated area. It reveals the significance of irrigation in cultivating fruit crops. In Anantapur district most of the farmers are adopting drip irrigation and sprinklers in the cultivation of fruit crops, which

is a modern technology of irrigation for the economical utilization of limited sources of water.

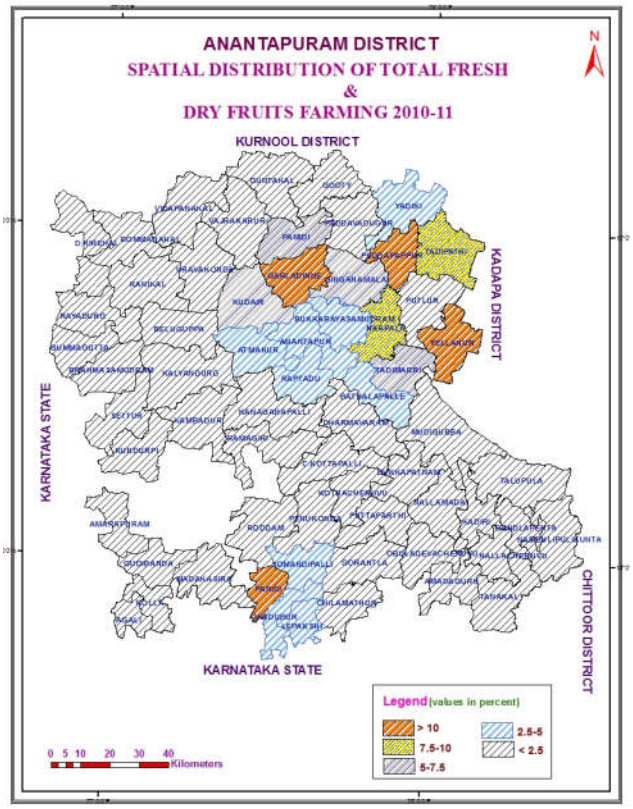

Fig 5

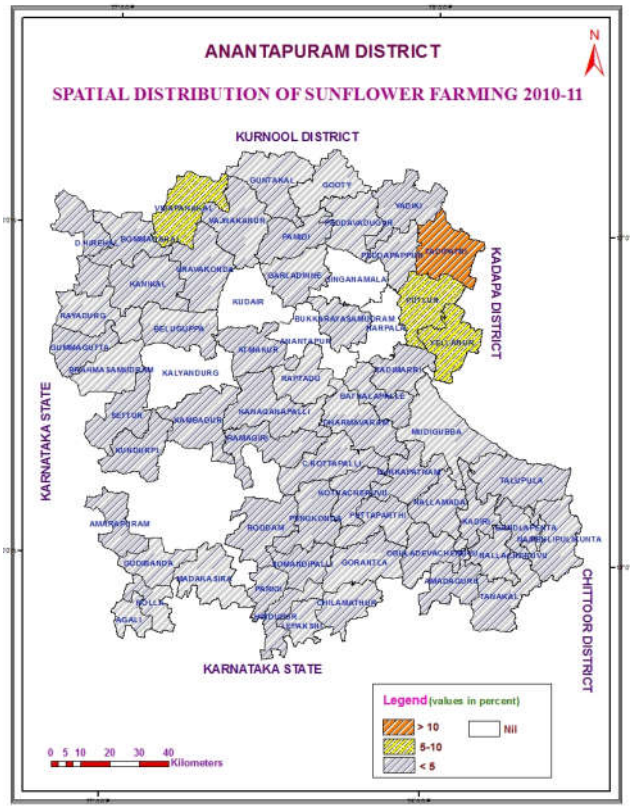

Fig 6

Spatially, the fruit crops occupied very high (>10%) concentration in 4 mandals during 2010-11, namely, Yellanur (18.72%), Garladinne (17.96%), Peddapappur (17.20%) and Parigi(12.34%). High concentration (7.5-10%) in Tadipathri and Narpala mandals, moderate concentration (5.75%) in Pamidi, Kudair, Singanamala and Tadimarri mandals. Low (2.5-5%) to very low (<2.5%) concentration of fruit crop farming in the district is noticed in 9 mandals and 44 mandals, respectively.

Spatial Distribution of Sunflower Farming: (Fig.6) After groundnut, Sunflower farming is an important oil crop cultivated in Anantapur district occupying an area 1.49 percent to the total cropped area. The crop is raised both under dry and irrigated conditions both in kharif and rabi seasons. The irrigated sunflower area to the total sunflower cropped area is 38.23 percent and 4.07 percent to the total irrigated area of the district during 2010-11. It is an emerging oil seed crop in most of the parts of the state. Spatially, high (>10%) concentration of Sunflower cultivation is registered in only Tadipatri mandal with 19.11 percent followed by moderate concentration (5-10%) in Vidapanakal (9.3%), Putlur (8.27%) and Yellanur (6.91%). Low concentration (<5%) of sunflower farming is reported in rest of the 54 mandals, excluding, Kalyandurg, Kudair, Singanamala, Narpala and Anantapur, where sunflower farming is completely absent.

Spatial Distribution of Jowar Farming: (Fig.7) Jowar is an important millet crop occupying seventh place among all the crops in Anantapur district during 2010-11. It is spread over an area of 1.34 percent to the total cropped area of the district. The irrigated Jowar to the total Jowar cropped area accounts to 28.8 percent and 2.76 percent to the total irrigated area of the district.

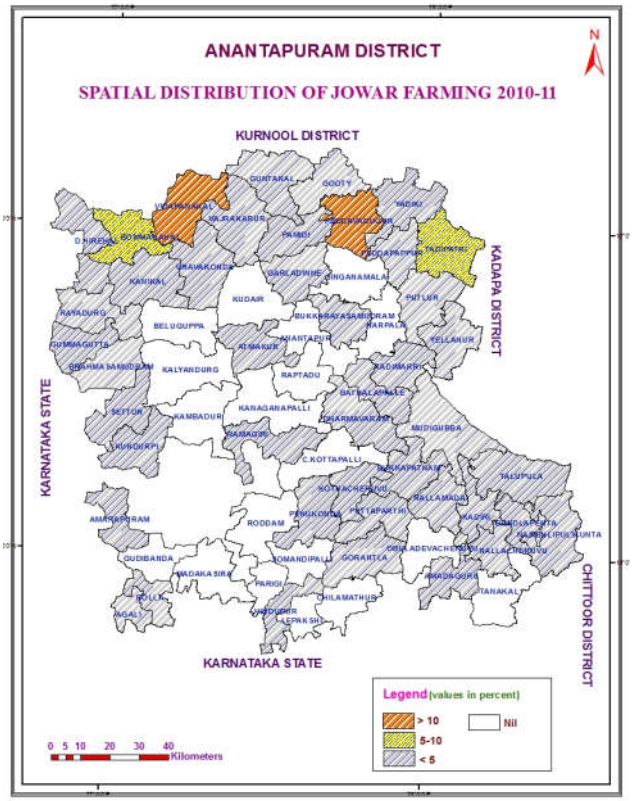

Fig 7

In the spatial concentration of Jowar crop, high (>10%) is found in Peddavadugur (16.25%) and Vidapankal (11.23%) mandals followed by moderate (5-10%) in Tadipathri (7.26%) and Bommnahal (5.82%). Low (<5%) concentration of jowar cultivation is noticed in the remaining mandals (39) excluding Beluguppa, Kalyandurg, Kudair, Singanamala, Narpala, Bukkarayasamudram, Anantapur, Raptadu, Kundurpi, Kambadur, C.K palle, Roddam, Madakasira, Gudibanda, Parigi, O.D.Cheruvu, Tanakal, Somandepalle, Lepakshi and Chilamathur, where Jowar crop is completely absent.

Spatial Distribution of Maize Farming: (Fig 8).Maize is another millet crop, occupying 8th place among all the crops in Anantapuram district during 2010-11.

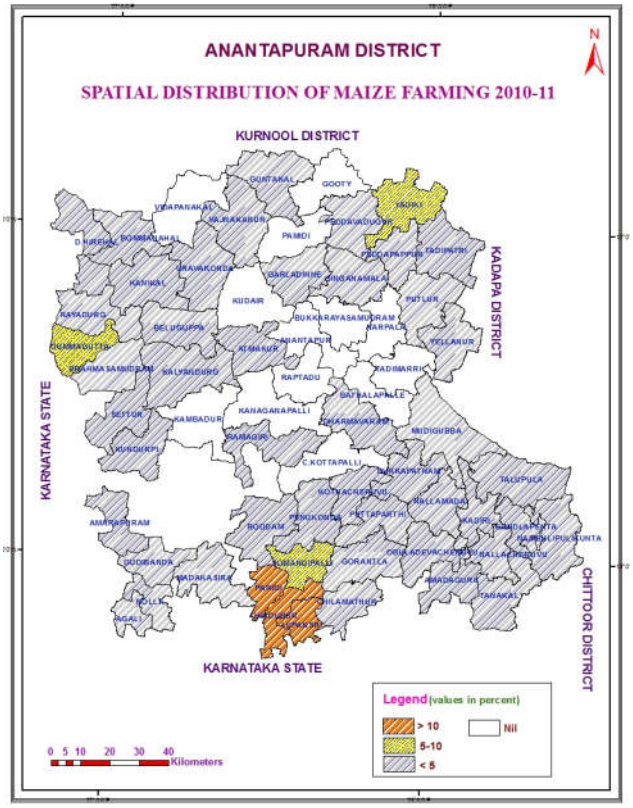

Fig 8

Maize spreads over an area of 15476 hectares with a percentage of 1.31 in the district. The irrigated maize is 84.37 percent to the total maize cropped area, which reveals that most of the maize is under irrigation farming. Its share to the total irrigated area of the district is 7.89 percent. High spatial concentration (>10%) of Maize is confined to Hindupur with maximum area (50.14%) followed by Lepakshi (20.8%) and Parigi (15.29%). Moderate concentration (5-10%) is found in Somandepalle (9.97%), Gummagatta (5.62%) and Yadiki (5.39%) mandals.

In 43 mandals, Maize crop is low (>5%) and in 14 mandals namely, Vidapanakal, Gooty, Pamidi, Kudair, Singanamala, Narpala, B.K.Samudram, Anantapuram, Raptadu, Kambadur, Kanaganapalle, Bathalapalle, Tadimarri and C.K.palle, Maize crop has not gained ground during 2010-11.

References

1. Ramanaiah, Y.V., (1984) pattern of land use and cropping in Andhra Pradesh, An Unpublished Ph.D. Thesis Dept. of Geography , S.V. University, Tirupati .
2. Krishnakumari. A,(1991) An unpublished Ph.D thesis, entitled, "A Study on Changing pattern of general land use, cropping and modernization on agriculture in Nellore district, Andhrapradesh" submitted to Department of Geography Anantapur.
3. Yasir Saeed Hanafi & Mansoor Ali (1997) Changing Cropping Pattern and Agricultural Development in Uttar Pradesh page 21.
4. S. Rangarajan & R.Rajkumar (1999*)* Changing Cropping Patterns in Dryland Agriculture. A case study of Panruti block, Tamilnadu. *The Indian Geographical Journal*, volume. 74, No.2, Dec 1999, p. 81-92.,
5. B.C vaidya (2004) Changes in Land Use and Cropping Pattern in the Cotton Belt of Vidarbha: A case study annals of National Association of Geographers India, volume: XXIV, Number. 2, Dec. 2004, P. 65-73.
6. S.M Hurakadli (2005) Disparities in the levels of Agricultural 2005. P. 131-137. Crops Productivity in Raichur district A spatio-temporal Analysis. *Indian journal of Regional Science* vol. XXXVII, No.1,
7. K. Neeraja, B. krishnareddy and Y.V.Ramanaiah (2006) *Crop Regions, Crop Combinations and Crop Diversitication in Nellore District, Andhra Pradesh*. The Indian Geographical Journal volume.79, June & December (2004), No.1&2. P. 45-50.
8. Soma Rog (Adhi Kari) (2008)" A study of Crop-output Fluctuation in India during post Green Revolution period". *Indian Journal of Regional Science*, volume. XXXX, No.1, 2008, p.53-66.
9. Dr. Virendra Singh and Dr. Abdul Wohab(2010) Crop Combination and Crop Diversification in the Ganga Yamuna Doab. *The North Indian Geographical Journal* Uttar Bharat Bhoogol Patrika volume .40, No.1, March-2010, p. 152-155.
10. S.S. Hangaragi (2010) Patterns of Crop Diversification in Bagal Kot district, Karnataka. The Deccan Geographer volume. 48, No.1, June-2010, p.49-57.
11. S.S. Hangaragi (2011) Spatio-temporal Changes in Cropping Pattern in Bagal Kot district, Karnataka. The Deccan Geographer volume. 49, No.1, June-2011, p.27-42.
12. Vibha Singh & Jagadish Singh (2013) Patterns of Crop Combination and Diversification in Chandauli District, Uttar Pradesh. The Deccan Geographer volume. 51, No. 1&2, June-Dec 2013, p.17-21.

****