GEOGRAPHICAL ANALYSIS

RESEARCH ARTICLE

A Geographical Analysis of Agricultural Conditions in Chamarajanagara District

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Abstract

Agriculture is one of the oldest occupations of human being. As the knowledge of man has increased, several new aspects were introduced into the field of Agriculture. After Independence, more emphasis has been given for the development of Agriculture. New technology has been induced in this field. Hence the cropping pattern and others have significantly changed. Here an attempt has been made to understand the various facets of Agriculture in the district. Work Participation rate, Net Sown Area, Net Area irrigated and cropping pattern have been discussed here. Weaver's method has been used to know the Crop combination. Lorenz and Gini Coefficient have been adopted to measure the inequality in agriculture in the study area.

Keywords: Net Area Sown; Crop combination; Lorenz Curve; Gini-coefficient.

Introduction

Agriculture plays an important role in our economy. Agricultural sector not only provides food and raw materials, but also provides employment for the people. Even today the main occupation of our people is agriculture and its allied activities. Nearly 54.6% of population are engaged in agriculture and its allied activities (2011 census). It contributed 17.4% to the country's Gross Value Added during 2016-17. The Government of India has set a target to doubling the farmer income by 2022. Scientific interventions developed by Indian Council of Agricultural Research (ICAR) to increase the production of food grains by 5.4 times and horticultural crops by 10.1 times, since 1951 to 2017. New technology and methods were introduced in agriculture. Hence various aspects of agriculture are changing from time to time and place to place. In this paper the scholars are discussing about the changes which took place in Work participation rate, Net sown area, Net irrigated area and Cropping pattern in Chamarajanagara district.

Objectives

In this paper the scholars have made an attempt

To understand the Spatio-temporal pattern of work participation rate in the district.

- To know the changes taken place in the Net sown area and Net area irrigated in the study region.
- To analyze the talukwise cropping pattern in the district.

Methodology

Secondary data has been used in this study. It has been collected from District Statistical Office & Census of India. Simple Statistical tools are used for analysis purpose. To understand the crop combination, Weaver's method has been adopted. Lorenz curve and Gini Coefficient techniques have been used to observe the inequalities of the spatial distributions. Simple thematic maps are used for analysis.

Study Area

In 1997, Chamarajanagara district has been carved out from old Mysore District. Chamarajanagara, Gundlupet, Kollegala and Yelandur taluks were transferred to a newly formed district. It consist 16 hoblis, 130 Grama Panchayaths & 509 inhabited villages. It covers an area of 5671.71 Sq.Km of area. It extends from 76^0 43' N to 77^0 46' North Latitudes, 11^0 35' E to 12^0 18' East Longitudes. Mandya, Mysuru, Bangalore (Rural) are located towards North and North-west of this district, Tamilnadu state in the East & South, Kerala state towards South-west and West.

The district is in southern maidan region and undulating, mountain. It experiences dry agro-climate. The district is drained by Cauvery river, which runs along the border of the Kollegal taluk in the district. Suvarnavathy and Chikkahole are the tributaries of the Cauvery. Reddish brown forest soil,Yellowish grey to greyish sandy loam soils and Mixed soils are found in the district.

Work participation rate

Every person in the population is a consumer of goods and services. Few people in the population participate in the productive activities. There are two groups in the population like Workers or economically active and Non-workers or economically inactive. Crude work participation rate is defined as the ratio of total workers to the total population of a region. It is expressed in terms of percentage. It is useful to study because, it explains that how many people are engaging in different economic activities. Here, total work participation rate and workers engaged in Agricultural activities are studied in two different time periods as shown in Table 1.

During 1975-76, the district has 36.09% of total workers to total population. Chamarajanagara taluk has highest total number of workers (36.24%) in the district and Gundlupete taluk has recorded the lowest (35.73%) workers in the district. After 40 years of time, the work participation rate in the study region was increased to 47.19% from 36.09%. Gundlupete taluk which recorded lowest in 1975-76 stands first in the district (49.25%) in 2015-16. In the same period, Yelandur taluk has recorded lowest number of workers in the district during 2015-16 as shown in Table 1.

When we observe workers engaged in agricultural activities in the district during 1975-76, more than 75% of workers were engaged in Agricultural activities. Gundlupete taluk has registered highest number of workers involved in agricultural activities (78.64%) in the district, whereas Kollegala taluk has the least (72.98%) number of workers engaged in Agricultural activities in the district. After 40 years of time, the number of workers was increased in the district, but the number of workers engaged in agricultural activities has greatly declined from 75.39% to 47.40%. Nearly 28% of workers were shifted to non-agricultural activities during this period. The highest number of workers engaged in agricultural activities was declined in Kollegala taluk by 30% during this period. Except Yelandur taluk, all other taluks have less than 50% of workers involved in agricultural activities as shown in Table 1. It reveals that during the last 40 years, more number of workers diverted from agricultural activities in the district. In all the taluks more workers were shifted from agriculture to non-agricultural activities.

Net Sown Area

It shows the actual sown area during a year. It is also called as Net cropped area. It consist the land which is cultivated more than once in a year due to more water and other facilities. Here the scholars have compared the net sown area for 40 years of time. In 1975-76, nearly $1/3^{rd}$ of area of the district was under cultivation. Compared to other taluks of the district, Chamarajanagara taluk has highest percentage of net area sown to its geographical area (47.29%). It is found that, except Kollegala taluk (21.13%) in all other taluks, more than $1/3^{rd}$ of their geographical areas were under cultivation as shown in Table 2. In next four decades Net area sown was increased to 34.16%. More than 50% of geographical area of Yealandur taluk was under cultivation in this year. Nearly half of its area of Gundlupete taluk was also under cultivation. But less than $1/4^{th}$ of Kollegala taluk was under cultivation during this period. Nearly 2% of its area was increased for cultivation.

Net Area Irrigated

It is the area under irrigation by different sources. The regular supply of water to agricultural field enhances cropping pattern and others. In 1975-76, only 10.26% of net area sown was irrigated in the district. Yelandur is the only taluk which has more than $1/3^{rd}$ of net area sown under irrigation. Gundlupete taluk has lowest net area irrigated (5.60%) compared to other taluks of the district as shown in Table 2. After four decades, the net area irrigated was

increased from 19,203 hectares to 72270 hectares. In 2015-16, the percentage of net area irrigated to net area sown was increased to 37.12%. Except Gundlupete taluk, the taluks like Yelandur (61.43%) and Kollegala (53.27%) have more than half of their net area sown under irrigation. Tube wells and tanks are the major sources of irrigation in the district.

The development of irrigation also effects on cropping pattern in the district. Even though crops are cultivated on the basis of climate, the factors like water, market, soil and others. Here for study purpose seven major crops like Paddy, Jowar, Ragi, Groundnut, Cotton, Mulberry, Sugarcane and other crops (Pulses) are taken to understand the cropping pattern in the district.

The study of crop combination has significance in the field of Geography. It explains the relative position of crops in a region. It provides areal significance and spatial predomince of crops in a region. To identify crop combination in region, several methods have been developed by scholars like – Weaver, Thomas, Johnson, Doi and Rafiullah. In this paper, Weaver method has been used to findout crop combination in the district as shown in Table 3. In 1975-76, all eight crops are grown in Kollegala and Yelandur taluks, where net area irrigation was more than the other two taluks. It is found that eventhough, Gundlupete taluk has lowest percentage of net area irrigated, to net area sown, except the other crops and remaining seven crops were cultivated in this taluk. Four has been cultivated in Chamarajanagara taluk. After four decades of time in all the taluks, seven crops are cultivated as major crops. It has been noticed that even Chamarajanagara and Gundlupete taluks have seven culture as noticed in Table 3 and these variations are shown in Figure 1.

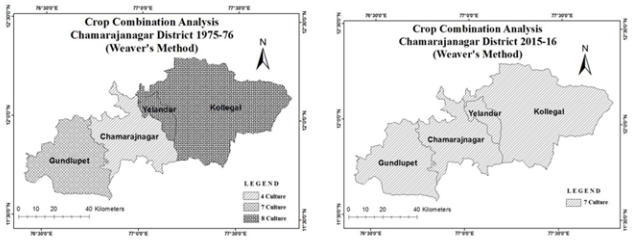

Fig. 1. Crop Combination (Weaver's Method)

To measure the level inequality, Lorenz curve has been used here. It is a measure to know the inequality in the distribution of crops and other attributes. The deviations of any curve from the line of equality shows the proportion of inequality. It has been observed in Figures 2 and 3.

The difference between net area sown and line of equality was more during 1975-76 and it slightly reduced during 2015-16 as observed in Figure 2. There was less area under irrigation to total geographical area has been observed during 1975-76. But it was slightly increased during 2015-16 as shown in Figure 3.

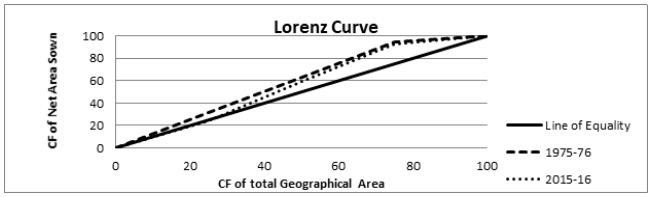

Fig. 2. Net Area Sown to Total Geographical Area (%)

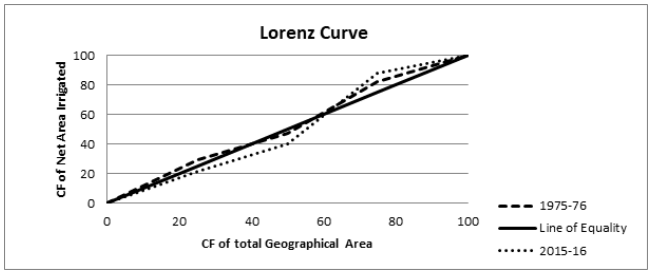

Fig. 3. Net Area Irrigated to Total Geographical Area (%)

Gini Coefficient is a measure of inequality which measures here the net area sown and net area irrigated for 1975-76 and 2015-16. The calculated value varies from 0 to 1. Higher the number (value) greater the inequality. When it is worked out for 1975-76 Gini value is 0.32 and reduced to 0.14 during 2015-16. It shows that the inequality has been reduced during these four decades between net areas sown and net area irrigated.

Conclusion and Findings

Agriculture is one of the major economic activities practiced in our country from ancient time. In these days major iniatives are taken to develop this sector. Due to development of science and technology, the field of agriculture has been changed significantly through the time. So, in the last 40 years of time the major changes taken place in few aspects in the field of agriculture has been discussed. The major findings are - when we observe the trend and pattern of rainfall in the district, from the past 11 years, the annual rainfall varies not only from time to time, but spatially also. When look into work participation rate, during 1975-76, it was 36.09% and increased to 47.19% in 2015-16. The dependency on agricultural activities was 75.39% in 1975-76 and reduced to 47.40% in 2015-16. Net area sown has significantly increased from 10.26% from 1975-76 to 37.12% in 2015-16. Net area irrigated is also increased from 32.84% to 34.16% during the same period. Crop combination has found that, it varries from taluk to taluk in different periods. Out of eight crops taken here for study purpose, seven crops were cultivated in all the taluks of the district during 2015-16. It is also well supported by Lorenz curve and Gini Coefficent. It is 0.32 during 1975-76

Table 1. Work participation in Chamarajanagara district (1975-76 & 2015-16) (ParenthesisIndicate %)

Sl. No.	Population and Workers	Year	Taluks				DISTRICT
			Chamarajanagara	Gundlupete	Kollegala	Yelanduru	
1	Total Population	1975-76	227576	139152	200971	48803	616502
		2015-16	357799	223070	357853	82069	1020791
2	Total Workers	1975-76	82469 (36.24)	49727 (35.73)	72645 (36.15)	17650 (36.17)	222491 (36.09)
		2015-16	163803 (45.78)	109858 (49.25)	172731 (48.27)	35301 (43.01)	481693 (47.19)
3	Workers engaged in Agricultural activities	1975-76	62222 (75.45)	39107 (78.64)	53015 (72.98)	13388 (75.85)	167732 (75.39)
		2015-16	80439 (49.11)	54488 (49.60)	75156 (43.51)	18227 (51.63)	228310 (47.40)

Source: Talukawise Plan Statistics, Mysore District (1977) & Chamarajanagara District at a Glance (2015-16).

Table 2. Pattern of Net area sown and Net area irrigated (1975-76 & 2015-16)

Sl. No.	Population and Workers	Year	Taluks				DISTRICT
			Chamarajanagara	Gundlupete	Kollegala	Yelanduru	
1	Total Geographical area (Hect)	1975-76	123078	140607	279743	26473	569901
		2015-16	123078	140607	279743	26473	569901
2	Net area sown (Hect)	1975-76	58206	60690	59098	9151	187145
		2015-16	46842	69250	64861	13739	194692
3	% of Net area sown to Geographical area	1975-76	47.29	43.16	21.13	34.57	32.84
		2015-16	38.06	49.25	23.19	51.90	34.16
4	Net area Irrigated (hect)	1975-76	5736	3398	6667	3402	19203
		2015-16	15700	13580	34550	8440	72270
5	% of Net area irrigated to Net area sown	1975-76	9.85	5.60	11.28	37.18	10.26
		2015-16	33.52	19.61	53.27	61.43	37.12

Source: Taluk wise Plan Statistics, Mysore District (1977) & Chamarajanagara District at a Glance (2015-16).

Table 3. Crop Combination of Chamarajanagara District (Weaver's method)

Sl No	Taluks	1975-76		2015-16	
		No. of crop combination	Crops	No. of crop combination	Crops
1	Chamarajanagara	04	Paddy, Jowar, Ragi & Groundnut	07	All crops except other crops
2	Gundlupete	07	All crops except other crops	07	All crops except other crops
3	Kollegala	08	All Crops	07	All crops except other crops
4	Yelandur	08	All Crops	07	All crops except other crops
DISTRICT		07	All crops except other crops	07	All crops except other crops

Source: Personal computation

and reduced to 0.14 during 2015-16. All these aspects show that there are several changes taken place in agriculture in various taluks of the district.

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