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Changing patterns of Crop diversification in Nellore District, Andhra Pradesh

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Abstract

The magnitude of agricultural diversification shows the impact of physical, socio-economic and techno-organizational influents, especially physical environs. It is increasingly recognized that a study of the spatial patterns of agricultural diversification is of vital importance and almost indispensable in understanding the competition that goes on among different agricultural activities for space. In general, it appears that keen competition for agricultural land and adoption of judicious crop rotation for the maintenance of soil fertility are associated with a mixed farming system rather than crop specialization. But, the choice of a cropping system is dependent primarily on physical variables and secondarily on technical and economic considerations. In certain pockets of irrigated lands, contrastingly crop specialization is more prominent rather than crop diversification. To observe this, an endeavour is made here to study the geographical patterns of crop diversification in Nellore district of Andhra Pradesh, where irrigation plays major role in the cultivation of crops. Gibbs-Martin Index of diversification is applied here for the crop data of two trienniums i.e., 1987-90 and 2012-15.

Introduction

The diversification in structural forms of agriculture such as Cropping pattern, live stock structure or agricultural enterprises explains the possibility or necessity to raise a variety of these forms which possess nearly an even proportion. Essentially, it is an indicator of multiplication of agricultural activities which obviously involve intense competition among various activities for space. The keener the competition the higher the magnitude of diversification, and lesser the competition, greater will be the trend towards specialization or monocultural farming, where emphasis is on one or two crops. Agricultural diversification is now almost

a normal feature of stable agriculture and progressive farm management in most of the extensive agricultural parts of the world. In fact, this has been made possible by modern irrigation and the use of fertilizers, high yielding varieties, pesticides and mechanization technologies. Besides, there are other factors which force the cultivators to take to crop live stock or enterprise diversification. For complete comprehension of the geography of crops, live stock or agricultural enterprise of a region, the interpretation of their diversification is essential. In view of the importance of these attributes of agriculture, it is attempted here to measure and map the degree of crop diversification in Nellore District.

Study area

Nellore district the southern most coastal district of Andhra Pradesh lies between $13^{\circ} 30'$ and $15^{\circ} 6'$ of the Northern latitude and $79^{\circ} 51'$ and $15^{\circ} 6'$ of the Eastern longitude. It is bounded on the north by Prakasam district, on the east by Bay of Bengal, on the South by Chittoor district and Thiruvallur district of Tamil Nadu and on the west by Veligonda hills which separate it from Cuddapah District. The principal rivers which drain the district are the Pennar River and other streams of occasional and torrential in character are Kandleru and Boggeru. The district spreads over an area of 13,07,000 hectares and accounts for 4.75 per cent of the total geographical area of the state. The Net area sown is reported as 3,33,451 hectares in the district. According to 2011 census the total population of the district accounts to 29.64 lakhs and the density of population is 227 Persons/sq.km.

Objectives

The main Objective of the present study is to identify the crop diversifications in two time periods i.e. between the trienniums 1987-90 and 2012-15 in Nellore District. To bring out the changes in the diversifications in 25 years period.

Database and Methodology

In the present study, secondary data pertaining to General cropping pattern for two trienniums i.e., 1987-90 and 2012-15 have been collected from the Government records and reports from Chief planning officer, Hand book of Statistics, Agricultural office of Nellore District taking 'Mandal' as Unit. Simple statistical techniques such as percentages and averages have been used to analyse the data. To find out the crop diversification ranges, Gibbs-Martin diversification index method is applied and the changes in Crop diversification have been studied for 25 years period.

Results and Discussions

Crop Diversification (1987-90)

The degree of crop diversification for the Nellore district is measured as 0.42. It shows that agricultural pattern in the district is less diversified. The cropping pattern is almost specialised in the coastal low land region and more diversified in the western part of the district (Fig-1). The range of degree of diversification in the district is between 0 and 0.63. The highest value of crop diversification is 0.83 in Duttalur followed by Vinjamur 0.79. Very high (>0.8) to high (0.51-0.80) diversification is observed in 28 per cent of mandals in the district. Moderate (0.41- 0.60) diversification is found in 20 per cent of mandals. Low (0.21-0.4) to very low (0.01-0.21) diversification in 30 per cent of the mandals. In about 22 per cent of mandals there is only specialisation of crops and no

diversified pattern. It is found that the specialisation of crops is mostly confined to the Pennar delta i.e. in Bogole, Jaladanki, Kodavalur, Allur, Vidavalur, Dagadarthi, Indukurpet, Nellore, Venkatachalam and Manubolu. This is confirmed by the fact that their diversification index is Zero. It is clear from the preceding discussion that cultivation is more intensive, stable and highly productive in the crop specialisation and low diversification areas, where irrigated farming is common.

Crop Diversification (2012-15)

The degree of crop diversification for the entire district is measured as 0.228 which reveals that the degree of crop diversification is insignificant in the study area. The monopoly of Paddy cultivation in the coastal region is responsible for crop specialisation in Nellore district. In the Western part of the district the degree of diversification is relatively higher with a highest value of 0.763 in Kaligiri mandal. Very high (>0.8) category of diversification is completely absent in Nellore district (Fig-1). High diversification (0.6-0.8) is found in 7 mandals namely Kaligiri, Kaluvoya, Varikuntapadu, Anumasamudrampeta, Podalakur, Udayagiri and Atmakur.

Moderate diversification (0.4-0.6) is observed in 9 mandals, low diversification (0.2-0.4) is found noticed in 6 mandals. Very low diversification (<0.2) is also completely disappeared during the study period. In about 24 mandals the degree of diversification is calculated as "Zero" which represents specialisation of crops especially Paddy.

Changes in Crop Diversification (1987-90 to 2012-15)

The index of crop diversification in the district has slightly decreased from 0.42 to 0.228 in Nellore district during 25 years of period. In the very high degree of diversification Zone (>0.8), no mandal is reported after 25 years period (Table-1). In the Zone of 0.6-0.8 index values there is a decrease of 5 mandals. No change is observed in the moderate diversification Zone (0.4-0.6). There is a decrease of 6 mandals in the low diversification Zone (0.2-0.4) during 25 years period. And there is a total disappearance of very low degree of diversification Zone (<0.2) after 25 years period. Remarkably "Zero" index of diversification Zone has been increased to 24 mandals from 10 mandals in the study period. The overall index of the diversification of Nellore district has also been decreased from 0.420 (1987-90) to 0.228 (2012-15) with a net decrease of 0.192 during in 25 years period.

Conclusions

The district experienced relatively lower degree of diversification and it is decreased further during 25 years of period. An index value of 0.42 is observed during 1987-90 and 0.228 in 2012-15, which reveals the trend of crop specialisation rather



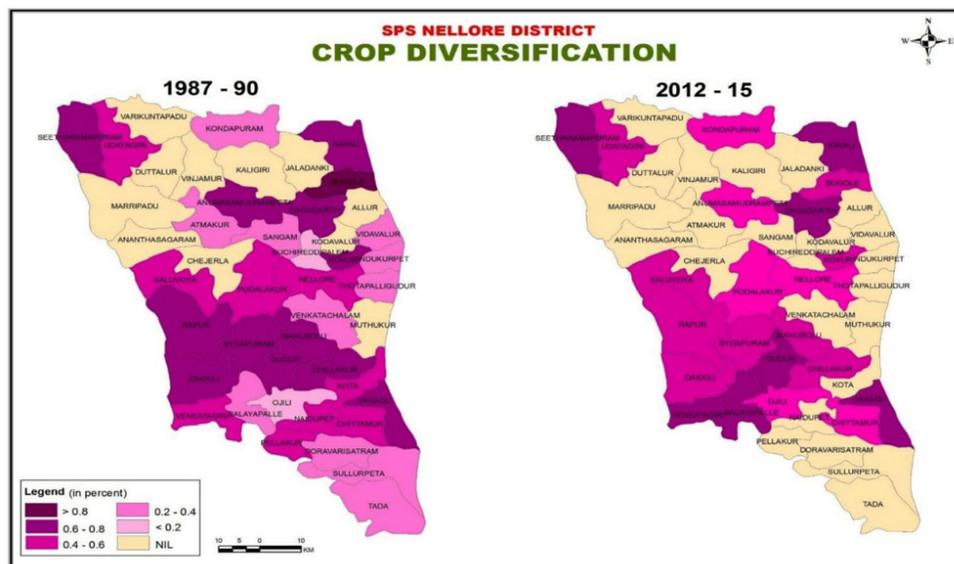


Fig. 1. SPS Nellore District

Table 1. Changes in crop diversification of Nellore district (1987-90 & 2012-15)

Sl. No.	Crop Diversification	No. of Mandals in each category		Decrease / Increase in 25 years period
		1987-90	2012-15	
1	>0.8	1	NIL	-1
2	0.6 – 0.8	12	7	-5
3	0.4 – 0.6	9	9	No change
4	0.2 – 0.4	12	6	-6
5	<0.2	2	NIL	-2
6	0 index	10	24	+14
7	Nellore District	0.42	0.228	Decrease in Diversification (0.192)

than crop diversification in Nellore district. The Zero index of diversification is found in about 10 mandals during 1987-90 and 24 mandals in 2012-15. This also supports the tendency of crop specialisation Nellore especially with Paddy domination due to the availability of irrigation facilities and traditional background of Paddy cultivation right from the historical days in the district.

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