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SPATIAL ANALYSIS OF AGRICULTURAL DEVELOPMENT IN JALORE DISTRICT, RAJASTHAN

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Abstract:

Agriculture is very important economic activity of human in the world. Even today also, it is the main source of livelihood for millions of people in India. In the last few decades, there have been considerable changes in almost parameters of agriculture development in India due to educational development, spreading among farmers, increasing in utilisation of land and production, application of high-yield seeds, pesticides, chemical fertilizers and development of irrigation facilities. But, these changes in agriculture are not uniform all over the country either spatially or temporally. About 75% population of the Jalore district is directly and indirectly dependent on agricultural activities for livelihood. But, agricultural development is not satisfactory and uniform in the district. Therefore, this study is an attempt made to identify the spatial pattern of agricultural development in the nine Tehsils of the district. The analysis has been made on the basis of Tehsil wise data (2015) collected from Zila Sankhyiki Rooprekha. The standard score technique has been use to analyse the level of agricultural development. The study shows regional disparity and the main region reason is capital is capital investment. So government should not only focus on agricultural development but also focus on equivalent development of all blocks of the district. Therefore the blocks with low levels of agricultural development should be given top priority so that they may come to the level of developed area and the concept of planning with sustainable development may be fulfilled.

Keywords: Agriculture, Chemical Fertilizers, High-Yielding Seeds, Irrigation Facility Livelihood, Pesticides.

Introduction:

Agriculture is very important economic activity in the world, special in rural area of developing and under developing countries. Agriculture is the primary source of livelihood for millions of people in India at present time. It is the back bone of Indian economy and it plays vital role in economy. Today, agriculture and allied sectors contributed about 25 percent in Gross Domestic Product, while about 65 percent population is dependent on agriculture for their livelihood, and it still forms the hub of India's economy. Agricultural development is essential to note in few last decades that as a result of educational development and spreading among farmers, there have been considerable changes in almost all parameters of agriculture in India and an increase in utilisation of the land and production, use of high-yielding seeds, pesticides, chemical fertilizers, and irrigation facilities. It has become reasonably possible to fulfil the demands of continuously increasing population of the country. In the last few decades, there have been considerable changes in almost parameters of agriculture development in India due to educational development, spreading among farmers, increasing in utilisation of land and production, application of high-yield seeds, pesticides, chemical fertilizers and development of irrigation facilities. But, these changes in agriculture are not

uniform all over the country either spatially or temporally. Agricultural development enhances socio-economic development due to increase in per capita income. There is an overall improvement in the quality of life. Large number of studies is there on the issues of agricultural development attempted by the geographers, economist, sociologist and other researcher in the national and state level. They all have tried to understand the pattern, problems, and prospect of agricultural development as a multidimensional concept.

The analysis of the existing agricultural development of the any region is necessary for fulfilment of the objective of balanced regional development in rural area of the country. This study is an attempt to identify the spatial pattern and disparities in level of agricultural development with special reference to Jalore district. Jalore district is rural dominate area and very backward in socio-economic development. Nearly, 75% population of this district is directly and indirectly dependent on agriculture activities for livelihood. But, agricultural development is not satisfactory and uniform in the district. Therefore, this study has been made to identify the spatial pattern of agricultural development in the nine Tehsils of the district. The study shows that only two tehsils are in the high level category of agricultural development, and three tehsil are in moderate level category. The remaining four tehsils are in low level category.

Study Area:

Jalore district is situated at the south-western corner of Rajasthan state adjoining the Gujarat state between 24^0 37' to 25^0 49' North latitude and 71^0 11' to 73^0 05' East longitude. The district is bounded by Barmer district on the North-West, by Pali district on the North-East, by Sirohi district on the South-East and by Banaskantha district of the Gujarat state on the South. The district covers an area of 10,640 square kilometres with 867,677 hectare cultivated area, where 1828,730 persons (including 936,634 males and 892,096 females) inhabite. There are nine trehsils in Jalore district like Ahore, Bagora, Bhinmal, Chitalwana, Jalore, Jaswantpura, Raniwara, Sanchore, and Sayla. Jalore district is situated in semi-desert climatic condition of Thar Desert in Rajasthan state. The average annual rainfall in the district is 370 mm and temperature is 44^0 C.

Objectives of the Study:

The present study has the following objectives:

- To find out the status of agricultural development in each block and identify the backward blocks of the district.
- To describe the spatial pattern and distribution of agricultural development in the district.
- To highlight the factors responsible for the regional disparity in agricultural development of Jalore district.

Data Base and Methodology:

The present analysis is based on tehsil level secondary data. Data regarding indicators of agriculture development are collected from *Zila sankhyiki rooprekha* for the year 2015 and district

census handbook for the year 2011 of the Jalore district. Following ten indicators are selected for measuring the agricultural development.

X1= Percentage of total cropped area to net geographical area.

X2= Percentage of total irrigated area to total cropped area.

X3= Percentage of area sown more than once to total cropped area.

X4= percentage of area under food grain crops to total cropped area.

X5= percentage of area under pulses crops to total cropped area.

X6= percentage of area under oil seeds crops to total cropped area.

X7= percentage of area under commercial crops to total cropped area.

X8= percentage of total cultivators to total workers.

X9= percentage of total agricultural labour to total workers.

X10= per hundred hectare on area electric/diesel pump.

Table.1: Development Indicators of agricultural Development

Sr. No.	Tehsil	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10
1.	Jalore	55.83	39.87	38.94	29.28	6.46	60.84	3.42	26.21	25.77	1.58
2.	Sayla	66.20	64.50	31.01	44.91	3.12	38.18	13.79	69.40	14.64	2.41
3.	Ahore	63.70	17.43	5.87	26.02	49.81	22.52	1.66	33.44	30.00	0.32
4.	Bhinmal	71.74	57.36	23.48	57.63	11.38	20.58	10.41	45.58	17.52	2.86
5.	Bagora	56.38	49.79	37.44	48.74	2.48	20.45	28.33	74.88	11.80	3.56
6.	Jaswantpura	43.43	44.29	18.51	47.84	16.10	28.97	7.09	46.04	20.65	0.34
7.	Raniwara	61.08	53.33	14.45	61.22	5.62	30.07	3.08	52.68	16.24	2.00
8.	Sanchore	78.65	78.65	33.33	45.11	8.99	24.10	21.79	73.52	13.03	1.56
9.	Chitalwana	61.93	44.89	31.47	43.48	6.13	7.52	42.87	72.98	11.69	0.34
Max		78.65	78.65	38.94	61.22	49.81	60.84	42.87	74.88	30.00	3.56
Min		43.43	17.43	5.87	26.02	2.48	7.52	1.66	26.21	11.69	0.32
Mean		62.10	50.01	26.06	44.92	12.23	28.14	14.72	54.97	17.93	1.66
SD		10.05	17.02	11.23	11.48	14.71	14.85	13.87	18.50	6.41	1.17

Souece: Zila Sankhyiki Rooprekha, 2015-16

The data obtained have been standardized or computed into standard score based on the Z-score technique which explains the departure of individual observations expressed in a comparable form. The given formula is as follows:

$$Zi = \frac{x - \bar{x}}{sd}$$

Where,

Zi= standard score for the ith variable
Xi=Actual value of the variable
x= individual variable
sd= standard deviation of variable
$\bar{x}$ *= Mean of variable*

Further, the results of the standard score obtained for different indicators, were aggregated in order to find out the composite index or composite standard score so that the regional differences in the level of development of various tehsils may be obtained at uniform scale. The positive values relating to the tehsils score show high level of agricultural development and negative value the low level of development. The composite standard score may be algebraically expressed as

$$CSS = \frac{\sum Zij}{n}$$

Where,

CSS= composite standard score
Zij=Z- score of variable in j tehsil
N= Number of variables

Spatial analysis of agricultural Development:

Agriculture is multidimensional process. This is a key component rural development. There is legitimate aspiration of the people in rural areas to improve their living standard and to share the fruits of development. The main aims of agricultural development are to increase of agricultural production. Agriculture is the main stay of almost all tehsils. Nevertheless, the extent of utilization of agriculture potential and the level attained vary from tehsil to tehsil.

Table.2: Composite Standard Score Values of Agricultural Development

Sr. No.	Tehsil	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	CSS	Rank
1.	Jalore	-0.62	-0.60	1.15	-1.36	-0.39	2.20	-0.81	-1.55	1.22	-0.07	-0.084	6
2.	Sayla	0.41	0.85	0.44	0.00	-0.62	0.68	-0.07	0.78	-0.51	0.64	0.259	2
3.	Ahore	0.16	-1.91	-1.80	-1.65	2.55	-0.38	-0.94	-1.16	1.88	-1.14	-0.439	9
4.	Bhinmal	0.96	0.43	-0.23	1.11	-0.06	-0.51	-0.31	-0.51	-0.06	1.02	0.184	4
5.	Bagora	-0.57	-0.01	1.01	0.33	-0.66	-0.52	0.98	1.08	-0.96	1.62	0.230	3
6.	Jaswantpura	-1.86	-0.34	-0.67	0.26	0.26	0.06	-0.55	-0.48	0.42	-1.13	-0.403	8
7.	Raniwara	-0.10	0.19	-1.03	1.42	-0.45	0.13	-0.84	-0.12	-0.26	0.29	-0.078	5
8.	Sanchore	1.65	1.68	0.65	0.02	-0.22	-0.27	0.51	1.00	-0.76	-0.09	0.416	1
9.	Chitalwana	-0.02	-0.30	0.48	-0.12	-0.41	-1.39	2.03	0.97	-0.97	-1.13	-0.086	7

On the basis of composite standard score, tehsils are categorised in various level of agricultural development. On this basis Jalore district has been divided in three categories of agricultural development.

Table.3: The level of Agricultural Development in Jalore District

Sr. No.	Category	CSS Value	Tehsils	
			Number	Name
1.	High development	Above 0.25	2	Sanchore, Sayla
2.	Moderate development	- 0.08 to 0.25	3	Bagora, Bhinmal, Raniwara
3.	Low development	Below - 0.08	4	Jalore, Chitalwana, Jaswantpura Ahore

1. **High Development:** Two tehsils come under in this category namely Sanchore (0.416) and Sayla (0.259). These tehsils record high level of agricultural development due to a variety of reasons. The cultivators have better irrigation facilities due to Narmada Canal Project in Sanchore tehsil and Better ground water availability for irrigation in Sayla Tehsil. In these high developed areas, agriculture is under sown more than once areas.
2. **Moderate Development:** The moderately developed region includes three tehsils like Bagora (0.230), Bhinmal (0.184) and Raniwara (-0.078). Fertile land is available in these tehsils but irrigation facilities are not available and not equally distribute in whole area. Lack of modern agricultural technology and Irrigation facilities are main reasons responsible for agricultural development. But the use of fertilizers, farmer awareness and cropping intensity are moderate so agricultural development is of moderate level in this region.
3. **Low Development:** In this category includes four tehsils i.e. Jalore (-0.084), Chitalwana (-0.086), Jaswantpura (-0.403), and Ahore (-0.439). The irrigation facilities are very poor and unequally distribute in Jalore and Ahore tehsil. Chitalwana tehsil gets irrigation facility from Narmada Canal Project which is not available for all villages. Jalore and Jaswantpura tehsil are located in Arawali hilly areas so these blocks also facing problem regarding lack of cultivated land.

Suggestions:

The following suggestion may be adopted for equal agricultural development in district.

1. The Narmada Canal Project should be extended to Bhinmal, Bagora, and Raniwara tehsils and Jawai irrigation project whole Ahore tehsil.
2. The farmers should be aware for adaptation of modern irrigation system like drop irrigation system in the entire district.
3. Agro-based industries should be promoted in highly developed areas to reduce employment pressure in the agricultural sector.
4. Dairy farming and horticulture should be promoted in those villages, which are located in Arawali hilly area.
5. Commercial crops should be encouraged in high availability of water for irrigation facilities areas.
6. Farmer training centre should be established at Gram Panchayat level for training of modern agricultural technology.

Conclusion:

The level of agricultural development is not uniform in the study area. The tehsils which have high level of agricultural development are not in need of any special efforts, because already they have well developed facilities for agricultural development. But in the tehsils which have moderate and low level development, need special attention on irrigation, technical knowledge and fertilizers etc. So that their level of agricultural development could be raised. In order to increase the land under irrigation in Jalore, Ahore, Jaswantpura and chitalwana tehsil, Government should promote more and more distribution of water for irrigation through construction of canals in unirrigated land, which not only increases the double cropped area but also provided the irrigation facility during dry condition. Government should encourage training programmes which will help in sharing the techniques of the

agricultural development and to increase the awareness among farmers. Use of fallow land for cultivation has helped in increasing the land under agriculture in Jalore and Jaswantpura tehsil.

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