

SPATIAL PATTERNS OF AGRICULTURAL WORKERS IN RAJASTHAN: 2011

Shivjeet Kaur*, Sandeep Kaur and Sohal K.S

Department of Geography, Punjabi University Patiala, Punjab, India

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ABSTRACT

The present paper is aim to reveal the spatial patterns of agricultural workers in Rajasthan and factors responsible. Achieving this objective, the study is divided into four parts: Firstly, the patterns of agricultural workers are discussed, secondly distribution of cultivators is explained; thirdly existing patterns of agricultural labourers are revealed; and finally conclusions are drawn. The study has deduced that the percent share of agricultural workers to total workers is 62.09 percent which varies from 35.50 percent in Jaipur district to 83.20 percent in Pratapgarh district in 2011. It is further found that the spatial patterns of agricultural workers in Rajasthan are heterogeneous. But in case of cultivators, their average shares to agricultural workers is 73.38 percent in Rajasthan which is noted lowest of 50.64 percent in Pali district and highest of 83.33 percent in Jhunjhunu district. It is found that the share of cultivators depends on size of land holdings, extent of irrigation, magnitude of farm mechanization, degree of development of agricultural infrastructure etc. While, agricultural labourers comprise of 36.27 percent of the total agricultural workers and varies between lowest of 11.60 percent in Jhunjhunu district and highest of 49.30 percent in Pali district. It is also observed that agricultural labourers have registered high share of agricultural workers in districts with medium to large size of land holdings, semi -commercial nature of agriculture, less opportunities in non- agricultural activities etc. The present paper is empirical in nature and based on secondary sources of data. District is taken as unit of study. Statistical methods and cartographic techniques are applied.

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INTRODUCTION

Agriculture is the backbone of Indian economy. India is highly dependent on agriculture as vast land is used for it. There is no doubt that agriculture plays an important role in the overall growth of the country and so it is necessary to ensure agricultural development. In India, about 69 per cent of the total population depends on agriculture and is major source of livelihood for people.

Agriculture also plays important role almost in the economy of the each country of the world. Today, some developing nations depend on agriculture for over fifty percent of their annual income. In study region, agriculture contributes about 55 per cent to the total income. (Bhalla, 1997) The present study explains spatial patterns of total workers, agricultural workers, cultivators and agricultural labourers. These are discussed below;

Study area (Fig.1):

Rajasthan is the largest state of india, covering 3,42,274 sq km area. Its latitudinal and longitudinal extent lies between 23°3' N to 30°12' N and 69°30' E and 78°17' E respectively.

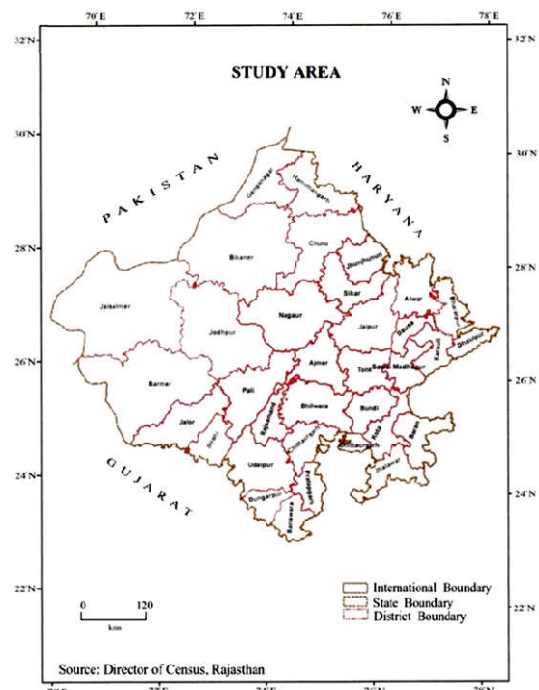


Fig 1

Its neighboring states are Punjab, Haryana, Uttar Pradesh, Madhya Pradesh and Gujarat. It forms international boundary with Pakistan in the west. The average annual rainfall of

*Corresponding author: Shivjeet Kaur

Department of Geography, Punjabi University Patiala, Punjab, India

Rajasthan is 52cms.Its maximum temperature is of 53c at Ganganagar during summers and minimum temperature of 4c in winters at Churu. Its topography varies from sandy to rocky and varieties of soils are found. According to 2011 census, the average density of population is 200 persons per sq km. For administrative purposes, there are 33 districts.

Objectives

1. The objectives of the present study are to reveal the spatial patterns of Total workers, Agricultural workers, Cultivators, Agricultural labourers.
2. To find out the factors responsible for affecting their share.

Methodology and Sources of Data

The study is empirical in nature and based on secondary sources of data. Unit of study is district. Simple statistical methods and cartographic techniques are applied.

DISCUSSION

Spatial Patterns of Agricultural Workers in Rajasthan: 2011 are discussed under the following five heads;

- Total Workers
- Agricultural workers
- Cultivators
- Agricultural Labourers
- Conclusions

Spatial patterns of total workers in Rajasthan 2011;

Workers are those who work in any economic activity either temporarily or part time or full time .Total workers also include marginal workers and main workers. (<https://dictionary.cambridge.org/example/english/total-employee>).According to 2011 census, per cent share of total workers to total population of Rajasthan is 43.60 per cent and which varies between 37.2 per cent in Jaipur district to 55.5 per cent in Pratapgarh district. Fig. 2 is mapped to show the spatial distribution of total workers in the state which portrays the following three categories;

High category of total workers (> 52 per cent)

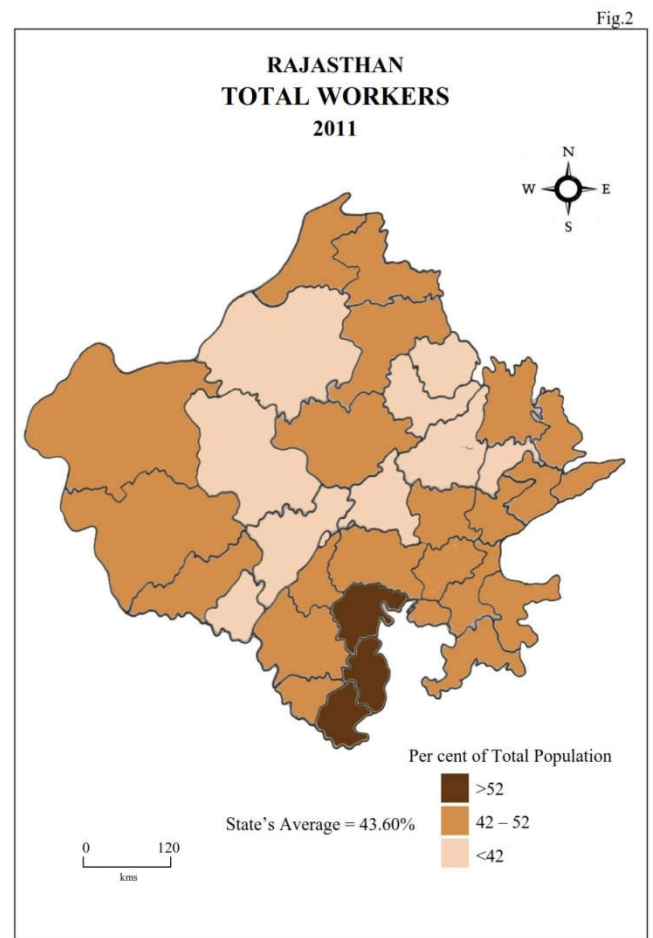
This category covers three districts and confines to southern parts of Rajasthan. These districts are Banswara, Pratapgarh and Chittaurgarh. Here, main reasons of high per cent share of workers are presence of number of industries, commercial establishments, developed agriculture etc. Thus large number of workers engaged in these activities and consequently leads to their high proportion.

Table 1 Total workers as percent of Total population in Rajasthan: 2011

Sr. no.	Districts	Per cent
1.	Ganganagar	46.30
2.	Hanumangarh	47.12
3.	Bikaner	47.11
4.	Churu	44.32
5.	Jhunjhunu	41.91
6.	Alwar	46.50
7.	Bharatpur	42.02
8.	Dhaulpur	43.41
9.	Karauli	43.10
10.	Sawai Madhopur	43.30
11.	Dausa	41.90
12.	Jaipur	37.21
13.	Sikar	37.22

14.	Nagaur	43.11
15.	Jodhpur	40.42
16.	Jaisalmer	43.10
17.	Barmer	46.20
18.	Jalor	49.00
19.	Sirohi	40.50
20.	Pali	41.31
21.	Ajmer	40.81
22.	Tonk	45.71
23.	Bundi	47.42
24.	Bhilwara	47.63
25.	Rajasmad	47.63
26.	Dungarpur	46.23
27.	Banswara	51.00
28.	Chittaurgarh	52.00
29.	Kota	38.40
30.	Baran	45.20
31.	Jhalawar	48.61
32.	Udaipur	44.50
33.	Pratapgarh	55.50
34.	Total	43.60

Source: Census of Rajasthan (2011)



Source: Census of Rajasthan, 2011

Moderate category of total workers (42 to 52 percent)

It is the largest category which has twenty one districts and contains 63.64 per cent of the total occurrences. In this category, per cent share of workers varies between 42 per cent to 52 per cent. It is found in three belts and first belt lies in northern parts including the districts of Ganganagar, Hanumangarh, Churu and Nagaur. These are mainly agriculturally predominant areas. The second belt comprises of western parts of the state and has three districts namely Jaisalmer, Barmer and Jalor. While, the third belt is the largest and covers fourteen districts namely: Alwar, Bharatpur, Dhaulpur, Karauli, Sawai Madhopur, Tonk, Bhilwara, Rajasmad, Udaipur, Dungarpur, Bundi, Kota, Jhalawar and

Baran. The reasons for moderate proportion of workers are predominance of agriculture, number of industries, mining activities etc. Owing to all these reasons mentioned above, the share of total workers is noted moderate.

Low category of total workers; (< 42 per cent)

Nine districts form this category and these are Dausa, Jaipur, Ajmer, Sirohi, Pali, and Bikaner, Sikar, Jhunjhunu and Jodhpur districts. It largely covers central parts of the study region .In all these districts, reasons responsible for low per cent share of total workers are under developed agriculture, lack of major industries, low urbanizations, trend among the people to migrate other states in search of employments etc.

To sum up, it is concluded that areas of industrialization, mining and tourism are having high share of workers. While, areas with moderate developed agriculture supplemented by industrial and mining activities have noted moderate share of total workers. But districts with low to moderate rainfall, lack of irrigation facilities, lack of industries, under developed agriculture, low urbanization, etc. have registered low share of total workers, because people from these districts often migrate either to big towns in the state or to Punjab or National Capital Region Delhi.

Spatial patterns of Agricultural workers in Rajasthan; 2011

A person, who is working in agriculture, usually a manual worker. The livelihood of thousands of agricultural workers depends on these enterprises. (<https://www.collinsdictionary.com/dictionary/english/agricultural-worker>) Agricultural workers maintain crops, tend to livestock, perform physical labor, operate machinery etc. They include cultivators and hire agricultural labourers. (<https://stats.oecd.org/glossary/detail.asp?ID=1864>. Total agricultural workers in Rajasthan are 185,585,34 which comprise 62.09 per cent of the total work force in 2011 and shows that majority of the workers are engaged in agriculture. The distribution of agricultural workers is highly variable which is evident from table no. 2. The per cent share of agricultural workers is noted highest of 83.8 per cent in Pratapgarh district and lowest of 35.5 per cent in Jaipur district. Spatial patterns of agricultural workers are shown in Fig. 3 which portrays the following three categories;

High category of agricultural workers (> 70 percent)

It covers nine districts and has scattered spatial pattern. Their concentration is high in south- eastern districts namely; Banswara, Pratapgarh, Chittorgarh, Baran, and Jhalawar. Here high per cent share of agriculture workers is owing to small size of land holdings, high extent of irrigation and developed agriculture. In Karauli district, its proportion is also high because of lack of industrial activities and most of the people are engaged in agricultural activity. But districts of Churu, Jalor, and Barmer are agriculturally backward owing to inadequate irrigation facilities, lack of industries and commercial activities. As a result, share of agricultural workers is noted high.

Moderate category of agricultural workers (60 to 70 per cent)

Fourteen districts form this category and region’s average of 62.9 per cent lies in it. It comprises of 42.4 per cent of total occurrences. Districts fall in this category are; Hanumangarh, Bikaner, Jhunjhunu, Alwar, Bharatpur, Sawai Madhopur, Dausa, Nagaur, Jaisalmer, Tonk, Bundi, Bhilwara, Dungarpur

and Udaipur. While districts lie in eastern parts of the study region have develop agriculture as compare to central parts. But in case of Jaisalmer, Bikaner, Nagaur, and Jhunjhunu districts, agriculture is backward and most of the farmers engage in livestock activities. These are reasons for moderate share of agriculture workers in this category.

Low category of agricultural workers (< 60 per cent)

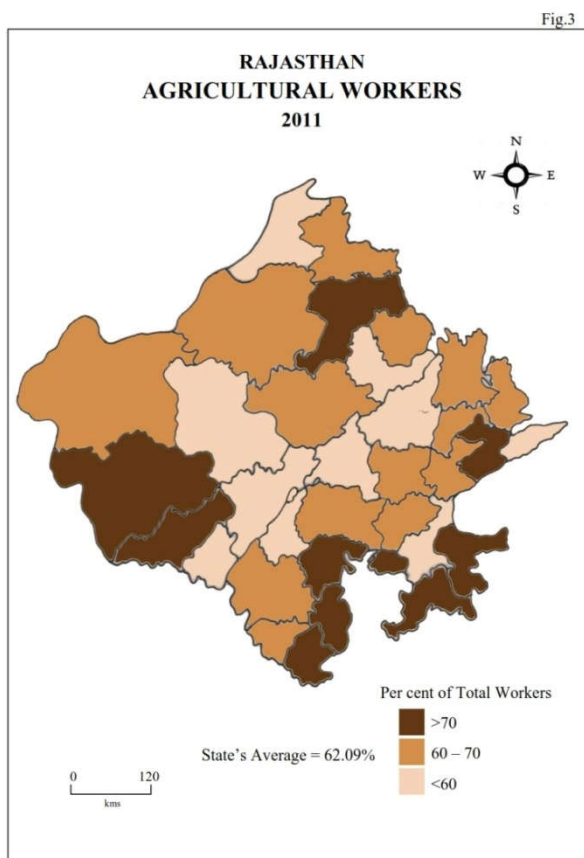
It lies largely in central parts of the study region and includes ten districts namely; Ganganagar, Dhaulpur, Jaipur, Sikar, Ajmer, Pali, Jodhpur, Sirohi, Rajasmand and Kota. In case of Jaipur district, most of the workers are engaged in non agricultural activities owing to urbanization because of Jaipur city being the state capital. In rest of districts of this category, per cent share of agricultural workers is low, because of stony topography owing to Aravalis, low extent of irrigation, less developed agricultural infrastructure, etc. As a result, most people of these areas are generally shifted to the neighboring states of Punjab and Haryana or in big cities for employment and consequently, resulted in to low share of agricultural workers.

Table 2 Agricultural Workers as per cent of total workers in Rajasthan: 2011

Sr. no.	Districts	Per cent of Total workers
1.	Ganganagar	54.64
2.	Hanumangarh	64.32
3.	Bikaner	61.14
4.	Churu	73.17
5.	Jhunjhunu	66.01
6.	Alwar	65.29
7.	Bharatpur	69.07
8.	Dhaulpur	58.15
9.	Karauli	71.62
10.	Sawai Madhopur	69.51
11.	Dausa	68.26
12.	Jaipur	35.51
13.	Sikar	58.52
14.	Nagaur	69.93
15.	Jodhpur	56.03
16.	Jaisalmer	61.02
17.	Barmer	73.83
18.	Jalor	72.63
19.	Sirohi	52.82
20.	Pali	57.01
21.	Ajmer	42.12
22.	Tonk	67.70
23.	Bundi	68.81
24.	Bhilwara	62.50
25.	Rajasmand	57.03
26.	Dungarpur	64.20
27.	Banswara	81.30
28.	Chittaurgarh	71.84
29.	Kota	36.73
30.	Baran	72.71
31.	Jhalawar	78.50
32.	Udaipur	61.62
33.	Pratapgarh	83.83
34.	Total	62.09

Source: Census of Rajasthan (2011)

Thus, above discussion reveals that spatial pattern of agricultural workers is heterogeneous in nature. The areas with adequate irrigation facilities, developed agriculture, lack of industries etc. have registered high share of agricultural workers. While districts with poor irrigation facilities, low to moderate rainfall, rain fed farming, under developed agriculture, presence of industries, etc. have recoded low share of agricultural workers. But rest of the districts have moderate share of agricultural workers.



Source: Census of Rajasthan, 2011

Spatial patterns of Cultivators in Rajasthan 2011;

Those agricultural workers who till land, manage farm, perform every type of work at their own farm or farm taken on rent are called cultivators (Kumar, et. al.2017). During 2011, Rajasthan has 136,188,70 cultivators which comprise of 73.38% of the total agricultural workers. The share of cultivators in the state is highly variable which is noted lowest of 50.64 per cent in Pali district and highest of 88.33 per cent in Jhunjhunu district. Fig.4 is mapped for showing spatial distribution of cultivators which is discussed below;

High category of cultivators (> 80 percent)

It includes eight districts and has two belts. First belt covers the districts of Bikaner, Churu, Jaipur, Alwar, Dausa, Sikar and Jhunjhunu. Here owing to small and medium size of land holdings, low extent of irrigation, less developed agriculture and few employment opportunities in secondary activities, which compel the farmers to work at their farms themselves because they cannot afford hired labour force and this lead to high share of cultivators. The second belt comprises Barmer district and here reasons for high share of cultivators are also the same.

Moderate category of cultivators (70 to 80 per cent)

It covers twelve districts and comprises of 36.30 per cent of the total occurrences. Districts fall in this category are Jaisalmer, Jodhpur, Nagaur, Tonk, Sawai Madhopur, Karauli, Dhaulpur, Bhilwara, Chittaurgarh, Pratapgarh, Banswara, and Jalor.

Low category of cultivators (< 70 percent)

This category includes thirteen districts and has three belts and one patch. First belt covers the districts of Ganganagar and

Hanumangarh. Here, share of cultivators is recorded below 70 per cent owing to adequate irrigation facilities, large size of land holdings, mechanized farming etc.

Table 3 Cultivators as per cent of agricultural workers in Rajasthan: 2011

Sr. no.	Districts	Per cent
1.	Ganganagar	53.79
2.	Hanumangarh	68.94
3.	Bikaner	82.78
4.	Churu	86.68
5.	Jhunjhunu	88.33
6.	Alwar	80.57
7.	Bharatpur	67.71
8.	Dhaulpur	75.56
9.	Karauli	74.40
10.	Sawai Madhopur	77.91
11.	Dausa	83.67
12.	Jaipur	15.01
13.	Sikar	14.91
14.	Nagaur	26.39
15.	Jodhpur	29.00
16.	Jaisalmer	24.87
17.	Barmer	14.96
18.	Jalor	24.25
19.	Sirohi	44.08
20.	Pali	49.35
21.	Ajmer	32.74
22.	Tonk	74.19
23.	Bundi	69.21
24.	Bhilwara	77.29
25.	Rajasmand	66.07
26.	Dungarpur	55.27
27.	Banswara	73.13
28.	Chittaurgarh	78.58
29.	Kota	50.95
30.	Baran	53.92
31.	Jhalawar	61.04
32.	Udaipur	64.02
33.	Pratapgarh	75.99
34.	Total	73.38

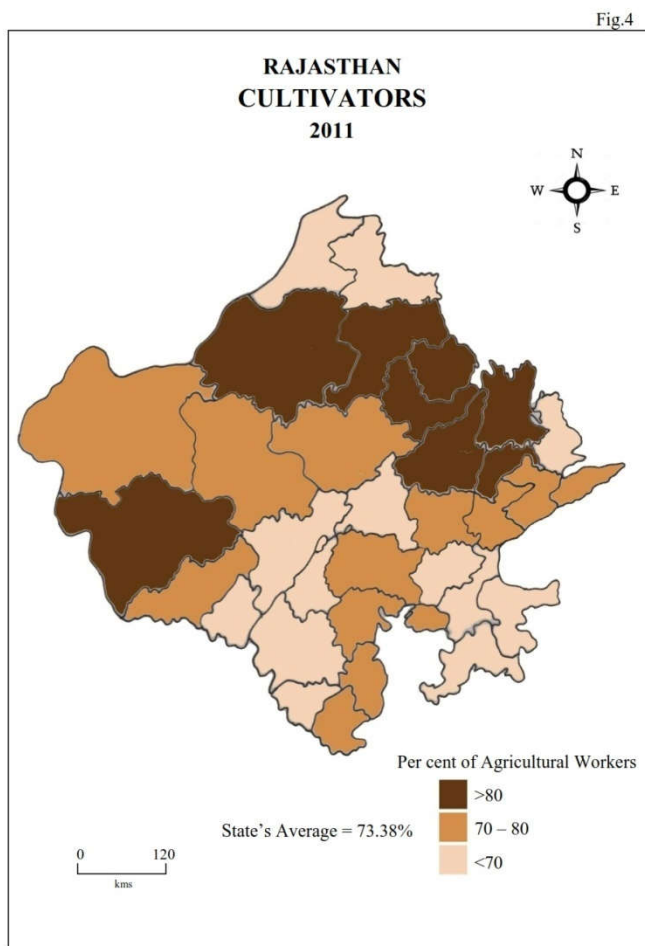
Source: Census of Rajasthan (2011)

Due to these reasons, farmers hire agricultural labour force to work at their farms which lead to low share of cultivators. While second belt covers eastern districts namely; Kota, Bundi, Jhalawar, and Baran which have good numbers of industries, small size of land holdings, Here owing to high rainfall, large size of land holdings, wheat- rice and wheat-maize predominant cropping pattern, farmers require to hire laborers to work at their felids etc. All these factors are responsible for low share of cultivators in this belt. In Bharatpur district, the share of cultivators is also recoded low.

It is deduced that districts with medium to large size of land holdings, low extent of irrigation, less developed agricultural infrastructure, backward agriculture, etc. have registered high share of cultivators. But areas with medium size of land holdings, moderate to high extent of irrigation, developed agriculture, etc. have registered low share of cultivators.

Spatial patterns of Agricultural Labourers in Rajasthan 2011

“An agricultural labour who is basically unskilled and unorganized and has little for its livelihood, other than personal labour”(https://www.slideshare.net/rakeshm11/agricultural-labour).



Source: Census of Rajasthan, 2011

Agricultural labourers are persons employed in agriculture on wages, whether in cash or kind for his/her livelihood.” (Singh, 2007) In words of Patrick Hanks(2005)“Agricultural labourer is a person who is hired by an employer on wages (kind or cash) for involving in science, art, and business of cultivating land including growing of crops and rearing of live-stock to sustain life.” In a developing economy the change in the pattern of employment indicated by a fall in the number at agricultural labourers and labour households should be welcome unless the erstwhile agricultural labourers shifted to less productive jobs or were rendered unemployed (Kumar rajan). According to 2011 census, the share of agricultural labourers to agricultural workers is noted 36.27 percent in the study area, but their per cent share is recorded lowest of 11.6 percent in Jhunjhunu district and highest of 49.3 per cent in Pali district. Fig.5 is mapped to show the distributional pattern of agricultural labourers and it exhibits the following three categories;

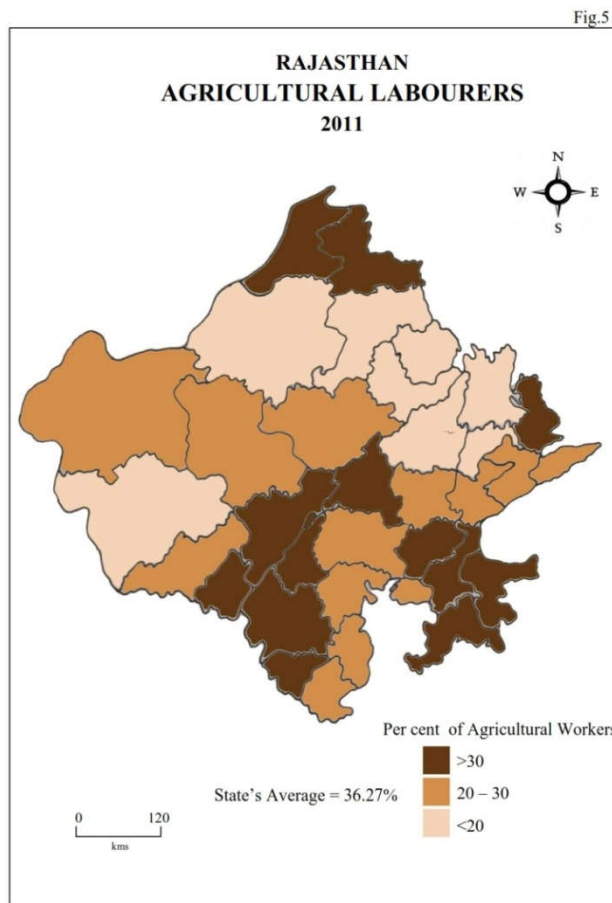
High category of agricultural labourers (> 30 per cent)

It has thirteen districts namely; Ganganagar, Hanumangarh, Bharatpur, Ajmer, Pali, Sirohi, Rajasmand, Udaipur, Dungarpur, Bundi, Kota, Baran and Jhalawar. In this category, the share of agricultural labourers is high owing to large size of land holdings, irrigation facilities, semi commercial nature of agriculture, etc. Because owing to developed agriculture and large size of land holdings, farmers are in better economic position to hire labour to work in their fields.

Table 4 Agricultural labourers as per cent of agricultural workers in Rajasthan: 2011

Sr. no.	Districts	Per cent
1.	Ganganagar	46.20
2.	Hanumangarh	31.05
3.	Bikaner	17.21
4.	Churu	13.31
5.	Jhunjhunu	11.66
6.	Alwar	19.42
7.	Bharatpur	32.38
8.	Dhaulpur	24.43
9.	Karauli	25.59
10.	Sawai Madhopur	22.08
11.	Dausa	16.32
12.	Jaipur	15.01
13.	Sikar	14.91
14.	Nagaur	26.39
15.	Jodhpur	29.00
16.	Jaisalmer	24.87
17.	Barmer	14.96
18.	Jalor	24.25
19.	Sirohi	44.08
20.	Pali	49.35
21.	Ajmer	32.74
22.	Tonk	25.80
23.	Bundi	30.78
24.	Bhilwara	22.70
25.	Rajasmand	33.96
26.	Dungarpur	44.72
27.	Banswara	26.72
28.	Chittaurgarh	21.41
29.	Kota	49.04
30.	Baran	46.07
31.	Jhalawar	38.95
32.	Udaipur	35.97
33.	Pratapgarh	24.00
34.	Total	36.27

Source: Census of Rajasthan (2011)



Source: Census of Rajasthan, 2011

Moderate category of agricultural labourers (20 to 30 per cent)

This category includes twelve districts and covers 36.3 per cent of the total occurrences. These districts are Jaisalmer, Jodhpur, Nagaur, Jalor, Banswara, Pratapgarh, Chittaurgarh, Tonk, Sawai Madhopur, Karauli, Dhaulpur and Bhilwara. Here, agricultural development varies from semi develop to develop, better economic position of farmers etc., which lead to moderate per cent share of agricultural labourers.

Low category of agricultural labourers (< 20 per cent)

There are two belts of low category. First belt covers seven districts namely; Bikaner, Churu, Jhunjhunu, Sikar, Jaipur, Alwar, and Dausa. Here agriculture is under developed, nearly absence of irrigation facilities, small size of land holdings, poor economic condition of farmers etc. All these factors have compelled farmers to work themselves on their fields because they are not in a position to hire more agricultural labourers owing to their poor economic condition. This has resulted in to low share of agricultural labourers. Same is the case with second belt which has Barmer district where owing to lack of irrigational facilities and low rainfall, agriculture is in a pitiable condition that leads to low share of agricultural labourers.

To sum up, it is concluded that districts with medium to large size of land holdings, irrigation facilities, semi-commercial nature of agriculture etc have registered high share of labourers. But areas with small size of land holdings, low irrigational facilities, under developed agriculture, etc. have registered low share of agricultural labourers.

CONCLUSION

From the above discussion, the following conclusions are drawn:

1. In the case of Total workers, it is concluded that areas of industrialization, mining and tourism are having high share of workers. While, areas with moderate developed agriculture supplemented by industrial and mining activities have noted moderate share of total workers. But districts with low to moderate rainfall, lack of irrigational facilities, lack of industries, under developed agriculture, low urbanization, etc have registered low share of total workers, because people from these districts often migrate either to big towns in the state or to Punjab or National Capital Region Delhi.

2. In respect of agricultural workers, it is revealed that spatial patterns of agricultural workers are heterogeneous in nature. The areas with adequate irrigational facilities, developed agriculture, lack of industries etc. have registered high share of agricultural workers. While districts with poor irrigation facilities, low to moderate rainfall, rain fed farming, under developed agriculture, presence of industries, etc. have recorded low share of agricultural workers. But rest of the districts have moderate share of agricultural workers.
3. It is deduced that high share of cultivators is registered in districts with medium to large size of land holdings, low extent of irrigation, less developed agricultural infrastructure, backward agriculture, etc. But areas with medium size of land holdings, moderate to high extent of irrigation, developed agriculture etc. have registered low share of cultivators.
4. But in case of agricultural labourers, it is observed that districts with medium to large size of land holdings, developed irrigational facilities, semi commercial nature of agriculture etc have registered high share of agricultural labourers. But areas with small size of land holdings, low irrigational facilities, under develop agriculture etc. have registered low share of agricultural labourers.

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