International Journal for Multidisciplinary Research (IJFMR)
E-ISSN: 2582-2160 ● Website: www.ijfmr.com ● Email: editor@ijfmr.com

Spatio-Temporal Analysis of Operational Land Holdings in Bassi tehsil, Jaipur Rajasthan

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Abstract

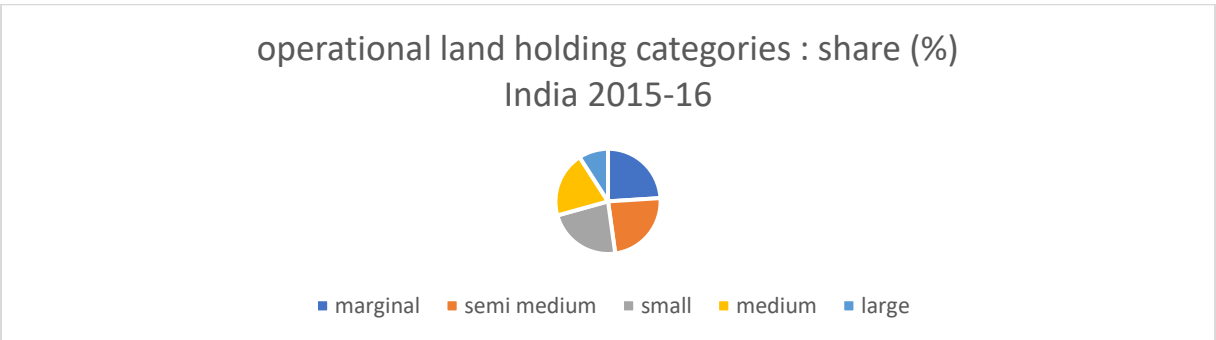
India is the most populous country in the world and with the increasing population the cultivable land resource is shrinking day by day. This has contributed to an increase in the number of operational land holdings but a reduction in their size which acts as a major barrier to make effective intervention in the advancement of agriculture. Operational land holding is the fundamental unit of decision making in agriculture and consequently for developmental programmes. This paper is an attempt to examine the findings related to spatial distribution of operational land holdings at micro level. In order to achieve the objectives of the study primary data has been gathered (2015-16) from respondent farmers and secondary data collected from tehsil headquarters and various other related departments. The study brings out that the average size of the operational land holding in the sample households of Bassi Tehsil is 1.42 hectare which is even less than half of the Rajasthan state average land holdings size of 3.07 hectare. Study also reveals that the unavoidable provision of law of inheritance is the primary cause of excessive fragmentation of land holdings in the tehsil.

Keywords: operational land holding, land fragmentation, law of inheritance

INTRODUCTION

In the context of spatial analysis of an agricultural land accurate knowledge of the structure of operational land holdings are imperative for effective and efficient planning. As per Agriculture Census 2015-2016, the total number of operational holdings in India numbered 146.45 million with an average size of 1.08 ha operating in an area of 157.82 million ha. The highest percentage share was observed in marginal category (24%) followed by semi-medium (23.8%), small (22.9%), medium (20.2%) and large category (9.1%) as shown in fig 1.0.

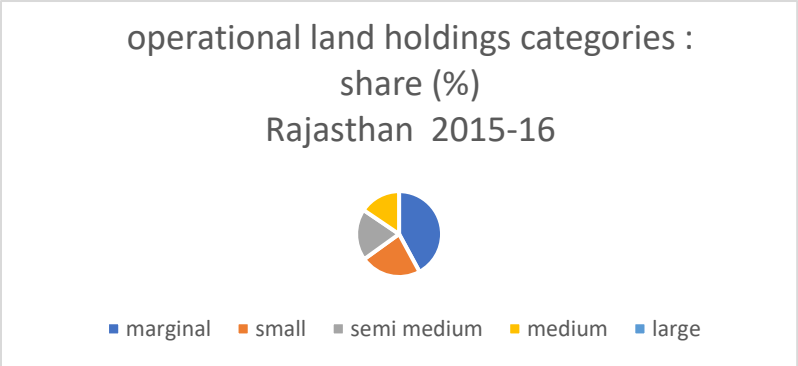
Fig1.0



Source: agriculture census 2015-16

Whereas Rajasthan accounts for only 7.65 million operational holdings with an average size of 2.73 ha. operating in 20.87 million ha. area during 2015-16. The ratio of classified land holdings to total land holdings of marginal, small, semi-medium, medium, and large categories is 40.12 per cent, 21.90 per cent, 18.50 per cent, 14.79 per cent and 4.69 per cent respectively (fig 2.0).

Fig.2.0



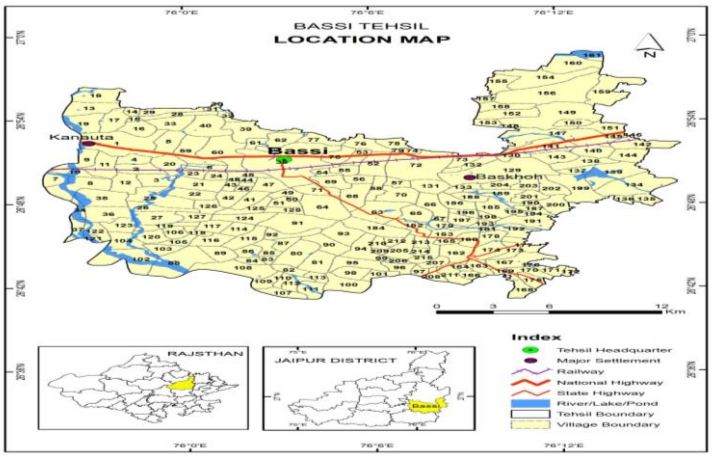
Source: agriculture census 2015-16

Morgan and Munton (1971) indicated that the social system has a bearing on holding and field systems and also on the settlement pattern and related problems of accessibility of fields. The influence of law of inheritance in governing the size of the holding is the root cause of one of the greatest impediments to agricultural development. Singh (1976) mentioned in the Indian context that the share of large farms and above was declining in both total number and total area whereas small and marginal farms were adding to their share in the total number of operational holdings as well as in the total area operated showing some definite signs of change in the direction of an equitable distribution. Burton and King (1982) indicated land fragmentation as the situation in which a single farm consists of numerous separated parcels. It is a fundamental rural spatial problem concerned with farms whose land is poorly organized at locations across space parcels. Haque (1987) indicated that distribution of operational holdings in India continued to be highly unequal among various size groups in all the states; although the degree of inequality was found to be comparatively less in the case of operational holdings. Chahal (1987) in his study on the disparity in the distribution of land holdings in Punjab examines the land use pattern, and the size distribution in Punjab. His study shows that the size distribution of ownership as well as of operational holdings showed wide disparity in terms of both area and number of holdings. Fernando (1991) suggested that, distribution of land was contributed to a reduction in the size of the land holding of most peasants in the subsistence or traditional sector. Many holdings are becoming smaller to small scattered strips, while in other areas there is a gradual depletion of soil fertility due to exhaustive methods of land. Accordingly it is believed that the subsistence or traditional agriculture has low levels of land concentration. Satasiya (2009) examine the change in structure of land holding and its impact on agricultural development in Gujarat. He founded that, the trend of holdings was going from large to medium and semi-medium farmers in Gujarat. Adamopoulos and Restuccia (2014) concluded that countries with high average incomes farms larger than 20 hectares operate 70 per cent of land while in the poorest countries 70 per cent of land is operated by farms smaller than 5 hectares. This means that average farm size is larger in countries with higher GDP (Gross Domestic Product).

Study area

Bassi Tehsil has been selected as study area primarily because the region is an important agricultural Tehsil and is one of the nearby Tehsil of Jaipur district of Rajasthan. Bassi Tehsil is located in the east of Jaipur district between 26°40' North and 26°59' North latitudes and longitudes 75°54' East to 76°20' East. National Highway No. 11 passes through Bassi. The study area has a total geographical area of 650.69 sq. km. The study area comprises of 215 villages in all, of which 210 are inhabited while 05 villages are uninhabited. There are 5 ILR circle namely Banskhov, Bassi, Devgaun, Kanota and Toonga with 44 Gram Panchayats and 43 Patwar Mandal. There are 3 Census Towns namely Bassi, Kanota & Baskhov and 1 Municipal Board Bassi in the study region (2015-16) (fig 3.0).

Fig 3.0



Objectives

To comprehend the spatial distribution pattern of operational land holdings in Bassi Tehsil.

Methodology

The study area comprises of 215 villages in all. About 10 per cent villages have been sampled from six physiographic units of the study area. Total 22 villages have been selected. Each sample village had been classified into five size classes according to Agriculture Census 2015-2016. The categorized sizes are marginal size class (less than 1 hectares), small size class (2-4 hectares), semi-medium size class (4-10 hectares) and large size class (above 10 hectares). Further 10 per cent households have been selected based on stratified random sampling from each size class.

Analysis and Findings

Distribution of number and area of operational land holdings by size class in Bassi Tehsil

According to size class distribution, the highest share of operational land holdings belongs to marginal size class with 64.38 per cent operating in 22.23 per cent of total area. Small and semi medium size classes clubbed together shares more than 28.15per cent operational land holdings with 40.31 per cent area. Medium size class possesses less than 6.5 per cent operational land holdings with more than 29 per cent area. The minimum share of 0.98 per cent operational land holdings belongs to large size class operating in an area of 8.41 per cent.

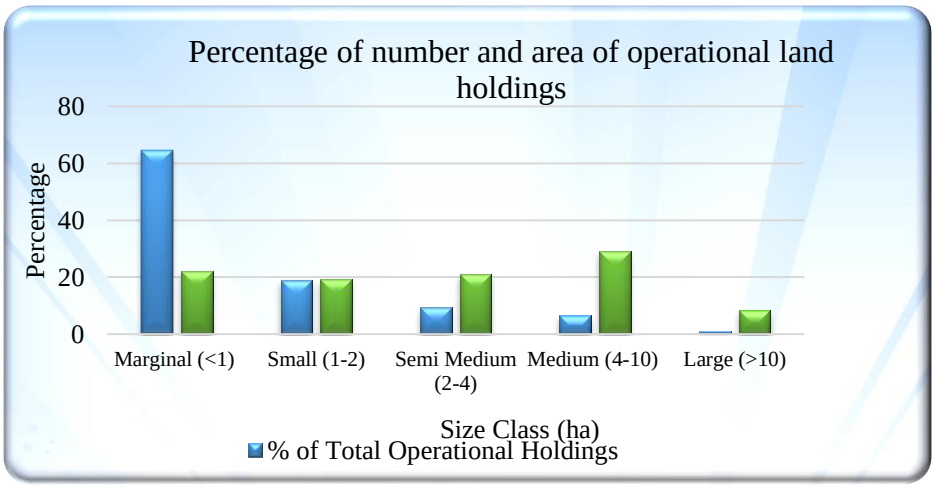
The average size of the operational land holding in the sample households of Bassi Tehsil is 1.42 hectare. The highest average size of operational land holdings belongs to large size class with 12.17 hectare followed by medium size class (6.34 hectares), semi-medium size class (3.20 hectares) and small size class (1.45 hectares). The lowest average size of the operational land holdings belongs to marginal size class with only 0.49 hectares as indicated in the Table 1.0 and figure 4.0

Table1.0 Number and area of operational land holdings in percentage

Size class (hectare)	Number of operational holdings	Percentage of total operational holdings	Area (Hectare)	Percentage of total area	Average Size per operational holdings
Marginal(below1)	526	64.38	257.35	22.23	0.49
Small (1-2)	154	18.85	222.52	19.32	1.45
Semi-Medium (2-4)	76	9.30	243.04	20.99	3.20
Medium (4-10)	53	6.49	336.25	29.05	6.34
Large (above 10)	08	0.98	97.40	8.41	12.17
All size class	817	100.00	1157.56	100.00	1.42

Source: Based on field survey by the researcher in the agriculture year 2015-16

Fig.4.0



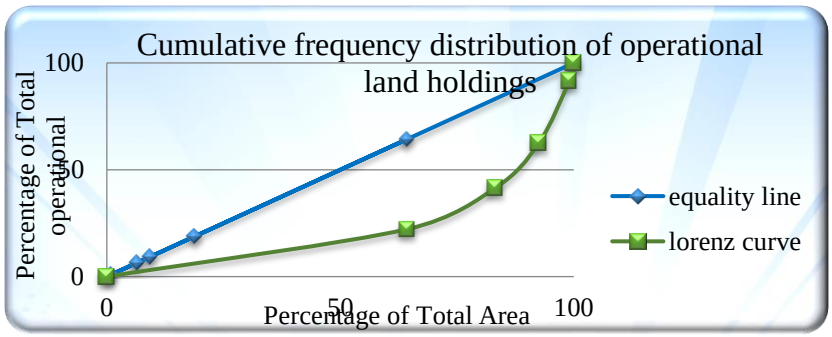
The spatial distribution of land holdings may be analysed through the Lorenz curve and the value of the concentration index. The Lorenz curve is a 100 x 100 graph with area equal to 10,000 units. The x axis represents the cumulative deciles distribution of the area of land and the y axis represents the cumulative deciles distribution of the number of holdings. If the cumulative area of the holding reported corresponds to the cumulative total number of holdings, and when plotted, the graph produces a diagonal straight line. If this is so, then we can say that there is equitable distribution of land. However, if the plotted line of the area and the number of holdings is far from the line of equity, which is the diagonal line, the value of the concentration index will help in the interpretation of the disparity in the distribution. The concentration index is the area between the Lorenz curve and the diagonal as a proportion of the total area under the diagonal. The higher the concentration index the less equitable is the land distribution as indicated by table 1.2 and figure 5.0.

Table: 1.2 Cumulative frequency distribution of operational holdings

Size Class (hectare)	Percentage of Total operational holdings	Cumulative Frequency	Percentage of Total Area	Cumulative Frequency
Marginal (below1)	64.38	64.38	22.23	22.23
Small(1-2)	18.85	83.23	19.32	41.55
Semi-Medium (2-4)	9.30	92.53	20.99	62.54
Medium (4-10)	6.49	99.02	29.05	91.59
Large (above 10)	0.98	100	8.41	100
All size class	100.00		100.00	

Source: Computed by researcher

Fig. 5.0



Source: Computed by researcher

Distribution of operational land holdings according to physiographic divisions

According to the physiographic divisions an area of 1157.56 hectare belongs to 817 operational holdings. Lower eastern plain shares the highest number of 288 operational holdings (37.81 per cent) operating in an area of 437.65 hectare (17.50 per cent). Middle semi-arid plain constitutes 21.66 per cent operational land holdings operating in an area of 22.77 per cent followed by Dhund basin with 17.50 per cent operational land holdings operating in area of 19.19 per cent. Central hilly area comprises with the lowest 2.57 per cent operational land holdings operating in4.69 per cent area. Semi-arid central highland and lower northern plain together holds for23.01 per cent operational land holdings operating in an area of 179.87 hectares (15.54 per cent) as shown in the Table 1.3.

Fig 6.0

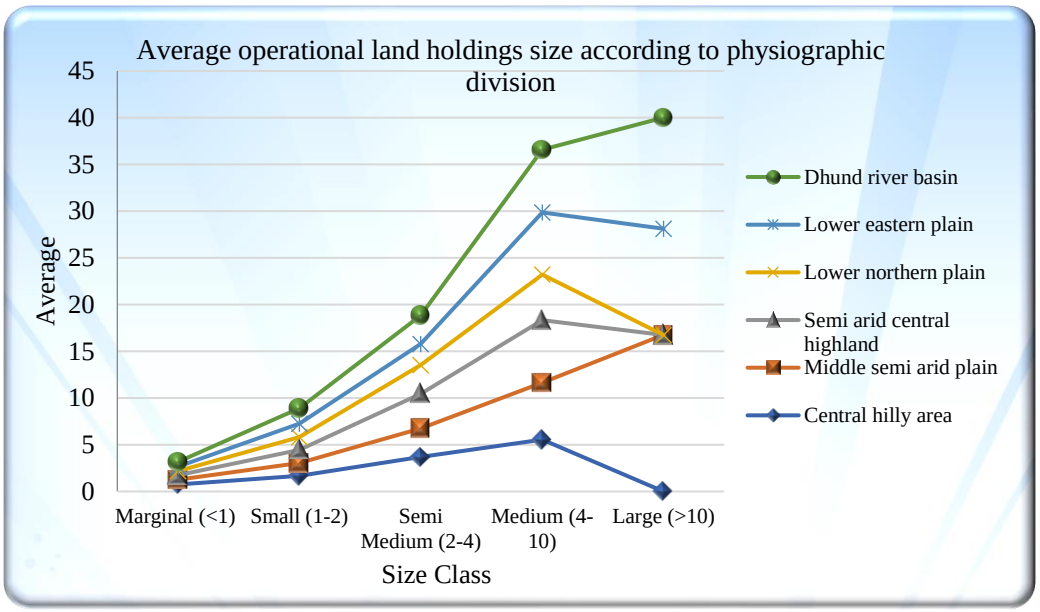


Table 1.3 Distribution of operational holdings according to physiographic divisions

Physiographic region	Distribution	Size Class (hectare)					All class size
		Marginal (below 1)	Small (1-2)	Semi-Medium (2-4)	Medium (4-10)	Large (above 10)	
Central hilly area	No. of operational holding	07	05	05	04	-	21 (2.57)
	Area(in ha.)	5.26	8.44	18.45	22.20	-	54.35 (4.69)
	Average	0.75	1.69	3.70	5.55	-	2.59
Middle semi-arid plain	No. of operational holding	106	36	21	13	01	177 (21.66)
	Area(in ha.)	54.46	48.85	64.22	79.26	16.76	263.55 (22.77)
	Average	0.51	1.36	3.06	6.10	16.36	1.49
Semi-aridcentral highland	No. of operational holding	67	12	04	04	-	87 (10.65)
	Area(in ha.)	32.00	16.85	14.76	26.70	-	90.31 (7.80)
	Average	0.48	1.40	3.69	6.68	-	1.04
Lower northern plain	No. of operational holding	79	11	08	03	-	101 (12.36)

	Area(in ha.)	35.04	15.11	24.76	14.65	-	89.56 (7.74)
	Average	0.44	1.37	3.09	4.88	-	0.89
Lower eastern plain	**No. of operational holding**	176	64	24	19	05	288 (35.25)
	Area(in ha.)	84.57	91.45	78.37	126.39	56.87	437.65 (37.81)
	Average	0.48	1.43	3.26	6.65	11.37	1.52
Dhund river basin	**No. of operational holding**	91	26	14	10	02	143 (17.50)
	Area(in ha.)	46.02	42.82	42.48	65.05	23.77	222.14 (19.19)
	Average	0.51	1.65	3.03	6.71	11.38	1.55

Source: Based on field survey by the researcher in the agriculture year 2015-16
Note: Parenthesis indicates the percentage

The average size of the operational land holdings in the sample households of Bassi Tehsil is 1.42 hectare. According to physiographic divisions highest average size of operational land holdings belongs to Central hilly area with 2.59 hectare. Dhund river basin with 1.55 hectare, lower eastern plain with 1.52 hectare, middle semi-arid plain with 1.49 hectare and semi-arid central highland with 1.04 hectare. Lowest average size of operating land holdings are found in lower northern plain with only 0.89 hectares as indicated in the Table 1.3 and figure 6.0.

Conclusion:

The land holding distribution in the Bassi Tehsil is highly uneven. The small scale agricultural operation along with the marginalization of land holding is the main characteristic feature across farm households of the study area. Moreover, the average size of operational holdings of the sample holdings is 1.42 hectare which is even less than half of the Rajasthan state average land holdings size of 3.07 hectare. The number and size of operational holdings is directly linked with the pressure of population, the economic requirements and fertility of land in the country. This highly skewed distribution of land itself is a major barrier to make effective intervention in the advancement of agriculture. Marginal size class constitutes the highest number of operational land holdings with lowest average holding size. Landholding distribution in different social groups is dominated by Schedule Tribe.

To address these challenges, strategies like land consolidation, promoting cooperative farming, providing training and support to smallholder farmers and education among farmers can be implemented to control fragmentation.

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