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IMPACT OF LANDHOLDING SIZE ON LIVING CONDITIONS OF FARMERS IN BAREILLY DISTRICT, UTTAR PRADESH

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Abstract

This study investigates the impact of landholding size on the living conditions of farmers in Bareilly district of Uttar Pradesh. The study also examines the block-wise status of the living conditions of farmers. Bareilly district has a significant portion (59.3 per cent) of its population engaged in farming activities. However, despite the importance of agriculture, the living conditions of farmers remain a critical concern, associated with various socio-economic factors influencing their well-being. To reveal this fact, eight indicators related to the living conditions of farmers have been taken for quantitative analysis. The study depicts widespread disparity in the levels of living conditions of farmers on account of composite score of 0.91 recorded by Bithrichainpur block to 0.08 witnessed by Faridpur block. The study further reveals that the living conditions of the farmers are proportionally associated with the size of landholdings. The insights gained from this study can be used for policy and decision-making to drive positive change in the rural farming communities of Bareilly district.

Keywords: Living conditions, Farmers, Spatial distribution, Composite score, Bareilly district.

Introduction

The status of living conditions among farmers is a critical aspect of rural development, particularly in agrarian countries like India. Agriculture and its allied sectors are the major sources of livelihood for the majority of the population in India (Muyanga and Jayne, 2014). Indian agriculture is often seen as the backbone of our country. However, it is facing serious problems (Rao, 1993; Ghosh, 1996; Chand, 2004; Saqib et al., 2016). The farmers, who once transformed India from a food-deficient nation to a food-secure one, are now struggling to make their needs at the year's end to support themselves. Despite several efforts, on the part of the government they are still struggling to support themselves and their

families (Chand et al., 2011; Mishra, 2014; Keshava, 2023; Veerapandi and Ramanathan, 2023). The agrarian structure of India has been undergoing a process of reduction in size of farms and increase in the marginalization of holdings for the past several decades which has led to low agricultural productivity and lower living conditions of the farmers (Jayne et al., 2003; Doti, 2017; Kumar and Moharaj, 2023). The process of marginalization of holdings has been witnessed by all the states in the country, though the extent of marginalization varies from state to state. The proportion of marginal holdings is over 75 per cent in the states of Assam, Bihar, Kerala, Odisha, Tamil Nadu, Uttar Pradesh and West Bengal (Singh, 2013). The above changes in the agrarian structure of

India have far reaching implications for agricultural growth and poverty alleviation. The small land base of the Indian farmer is one of the major factors contributing to poor living conditions of the farmers (Kachroo et al., 2015; Anupama and Falk, 2018). Landholdings have attributed larger impact on the living conditions of the farmers in both spatial and temporal aspects. Larger landholdings have larger impact on the stability of income due to larger scale of economies and diversified production options, it also provides better access to the resources such as credit, agricultural inputs and modern farming techniques which are beneficial for the agricultural productivity and income (Singh et al., 2018). Larger landholdings attribute towards livelihood security which uplifts the farmers from poverty and food insecurity. It also provides opportunities to invest in infrastructure, machinery and modern technology which leads to improved agricultural productivity and living standard. Larger landholdings attribute to the social and economic position of the farmers in the society having higher position in case of larger landholdings and lower in case of small holding (Rao and Deshpande, 1986; Kumar, 2008; Urfels et al., 2023). The size of the landholding also influences the farming practices with larger farms having better resources to adopt environmentally sustainable practices. In developing or least developed nations, size of landholdings plays an important role for the imbalanced development within and between the communities both spatially and temporarily (Singh and Nayak, 2018). In the light of above, this study takes a comprehensive approach to examine, the spatial variation in the living conditions of the farmers and shows how the size of landholdings influences the socio-economic

conditions and vulnerabilities of farmers in Bareilly district of Uttar Pradesh.

Objectives of the Study

Major objectives of the study are:

- to assess and analyze the spatial pattern of living conditions of the farmers, and
- to find out the relation between landholding size and the living conditions of the farmers of Bareilly district.

Study Area

The district Bareilly is a part of the Rohilkhand division of Uttar Pradesh. It is named after its headquarter i.e., Bareilly city. The district is located in the northwestern part of Uttar Pradesh. It lies between 28° 01' to 28° 51' N latitudes and 78° 58' to 79° 47'E longitudes and comprises a total area of 4120 km² (Fig.1). The district has six subdivisions: Aonla, Baheri, Bareilly, Faridpur, Nawabganj and Meerganj. Apart from this, the district has been divided into 15 development blocks, namely Baheri, Bhadpura, Bhuta, Bithrichainpur, Faridpur, Fatehganj West, Alampur Jafrabad, Kyara, Majhgwan, Meerganj, Nawabganj, Ramnagar, Richha, Bhojipura and Shergarh. According to the 2011 Census of India, the population of Bareilly district is 44,48,358 persons. The sex ratio in the district is 887 females for every 1000 males. The average literacy rate is 58.49 per cent. The district recorded 25 per cent growth rate of population during 2001-2011. According to census 2011, 31.05 per cent people are under the working class. Out of the total working population 38.59 per cent are cultivators, 31.19 per cent agricultural labourers, 8.06 per cent are household industry workers and remaining 22.04 percent are involved in other working

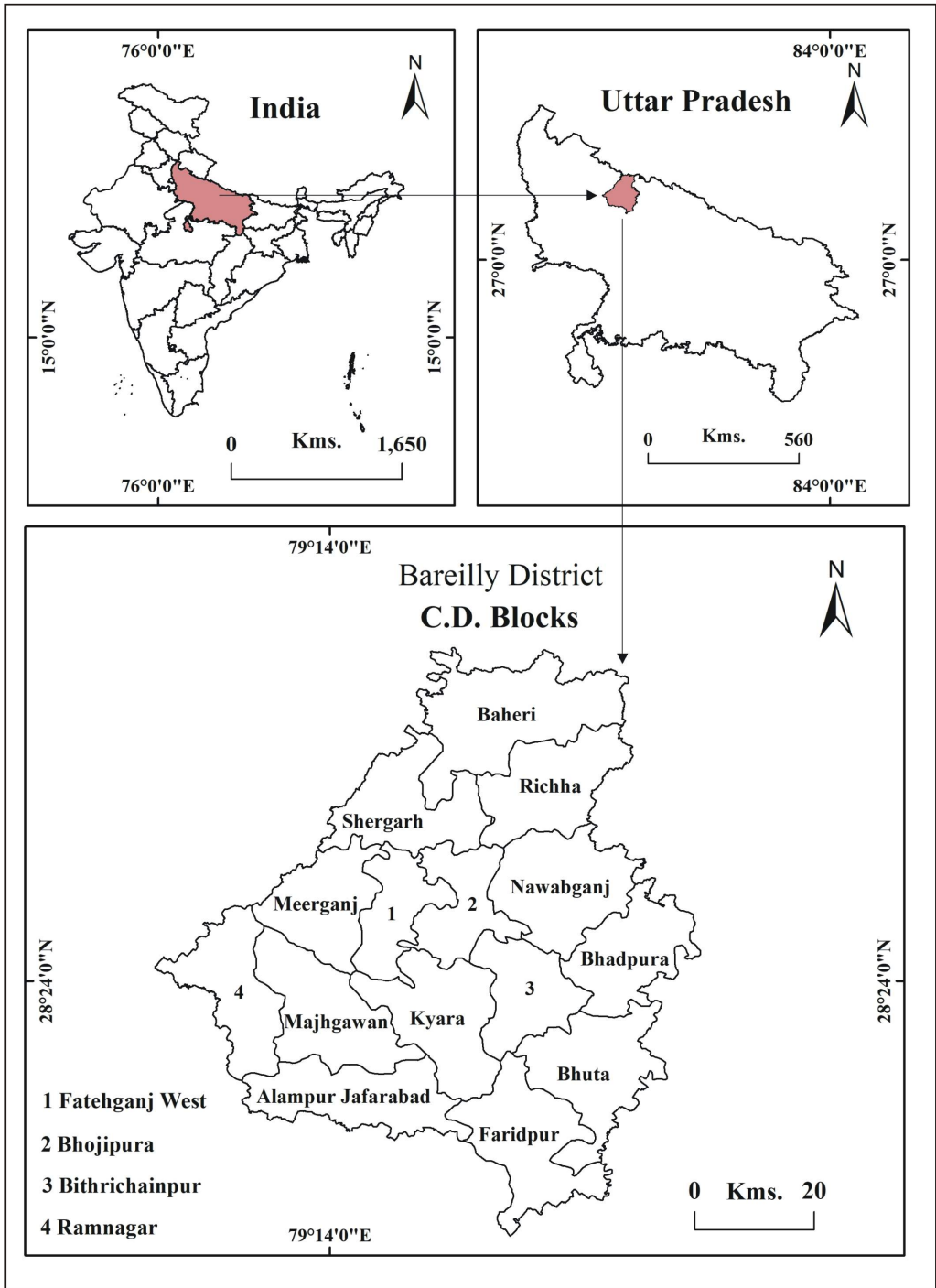


Fig. 1

activities. Bareilly district is a part of the southern upper Ganga Plain and belongs to the Tarai region, where agriculture is the main occupation. The district is remarkably fertile, and the irrigation infrastructure is well developed. Sugarcane, rice, wheat, maize, pulses etc. are the major crops cultivated in the district.

Database and Methodology

The present study is mainly based on primary data collected during 2021 to examine various aspects of the living conditions of farmers in the Bareilly district. Formula devised by Yamane (1970) has been applied to calculate sample size at 96 per cent (0.04 per cent) accuracy level. On the basis of this, 450 samples have been collected from 15 development blocks. Only the cultivators have been selected as samples. One village from each development block has been selected as sample village. Taking into account the scheme adopted by the Agriculture Census conducted by the Ministry of Agriculture & Farmers Welfare, the farmers have been divided into five categories, depending upon the size of operational landholdings which are as follows: Marginal (less than 1.00 hectare), Small (1.01-

2.00 hectares), Semi-medium (2.01-4.00 hectares), Medium (4.01-10.00 hectares) and large landholdings (10 hectares or above). Further, to assess the quality of living conditions of farmers, the study has considered eight indicators (Table 1).

For normalization of data, Dimension Index (DI) method has been used in this study. It is a simple technique to scale numerical data within a specific range, varying between 0 and 1. The formula used for normalization of data is as under:

$$\text{Dimension Index} = \frac{x - \text{min}}{\text{max} - \text{min}}$$

where x is the original value of data point, min is the minimum value of the attribute of the data set and max is the maximum value of the attribute in the data set.

After normalization of data, composite score has been calculated by adding up the normalized values and dividing the results by the total number of variables. It has been done to determine the levels of quality of living conditions of farmers. By synthesizing diverse indicators into a single measure, composite scores provide valuable insights which help policymakers, researchers, and people who work on development projects to get a better

Table 1
Bareilly District: Selected Variable to Assess Living Conditions of Farmers

Variables	Description
X ₁	Percentage of literate farmers
X ₂	Percentage of farmers having high annual income (>150000 Rs.)
X ₃	Percentage of farmers having pucca houses
X ₄	Percentage of farmers having house of 4 or more rooms
X ₅	Percentage of farmers having house with toilet facility
X ₆	Percentage of farmers having house with separate kitchen facility
X ₇	Percentage of farmers using liquefied petroleum gas fuel
X ₈	Percentage of farmers have savings (annually, 5000 or more)

Source: Compiled by Authors.

picture of what farmers need. It helps them to see what's going well and what needs to be improved in farmers' lives (Talukder et al., 2017). The results obtained from the composite score have also been classified into five categories of farmers based on their land-holding size. Finally, tables and maps have been created for interpreting and analyzing the results.

Results and Discussion

Spatial Pattern of Living Conditions of Farmers

Areas of High Level of Living Conditions

Bithrichainpur and Fatehganj West

blocks with composite scores of 0.91 and 0.69, respectively fall in this area recording high level of living conditions (Table 2; Fig. 2). Among these blocks, the level of living conditions is highest in Bithrichainpur block, because it has recorded highest Dimension Index (DI) scores in literacy rate (1.00), high annual income (1.00), toilet facility (1.00), house with kitchen facility (1.00), farmers using liquefied petroleum gas (LPG) fuel (1.00) and savings (1.00). The block has recorded higher DI scores than the district average in all variables. Therefore, the block has witnessed the best living conditions for farmers in the district.

Table 2
Bareilly District: Block-wise Dimension Index Values and Composite Score of the Indicators of Living Conditions

Blocks	Dimension Index Values of the Indicators of Living Conditions								Composite Score
	X ₁	X ₂	X ₃	X ₄	X ₅	X ₆	X ₇	X ₈	
Areas of High Level Living Conditions									
Bithrichainpur	1.00	1.00	0.80	0.50	1.00	1.00	1.00	1.00	0.91
Fatehganj West	0.90	0.52	1.00	1.00	0.57	0.93	0.29	0.27	0.69
Areas of Moderate Level Living Conditions									
Majhgawan	0.80	0.33	0.20	0.40	0.86	0.93	0.76	0.18	0.56
Shergarh	0.90	0.58	0.10	0.30	0.43	0.60	0.62	0.64	0.52
Richha	0.40	0.18	0.50	0.80	0.71	0.67	0.57	0.18	0.50
Meerganj	0.50	0.40	0.60	0.60	0.29	0.53	0.57	0.27	0.47
Nawabganj	0.40	0.18	0.90	0.80	0.14	0.33	0.33	0.45	0.44
Ramnagar	0.30	0.25	0.30	0.40	0.71	0.47	0.57	0.00	0.38
Alampur Jafrabad	0.70	0.18	0.10	0.00	0.57	0.57	0.56	0.18	0.36
Areas of Low Level Living Conditions									
Kyara	0.30	0.42	0.40	0.60	0.00	0.27	0.10	0.55	0.33
Bhojipura	0.00	0.33	0.20	0.50	0.00	0.80	0.10	0.27	0.28
Bhuta	0.50	0.00	0.40	0.40	0.57	0.07	0.00	0.09	0.25
Baheri	0.10	0.00	0.50	0.20	0.29	0.67	0.00	0.18	0.24
Bhadpura	1.00	0.17	0.10	0.00	0.29	0.07	0.14	0.09	0.23
Faridpur	0.50	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.08
District Average	0.55	0.30	0.41	0.43	0.43	0.53	0.37	0.29	0.42

Source: Compiled by Authors.

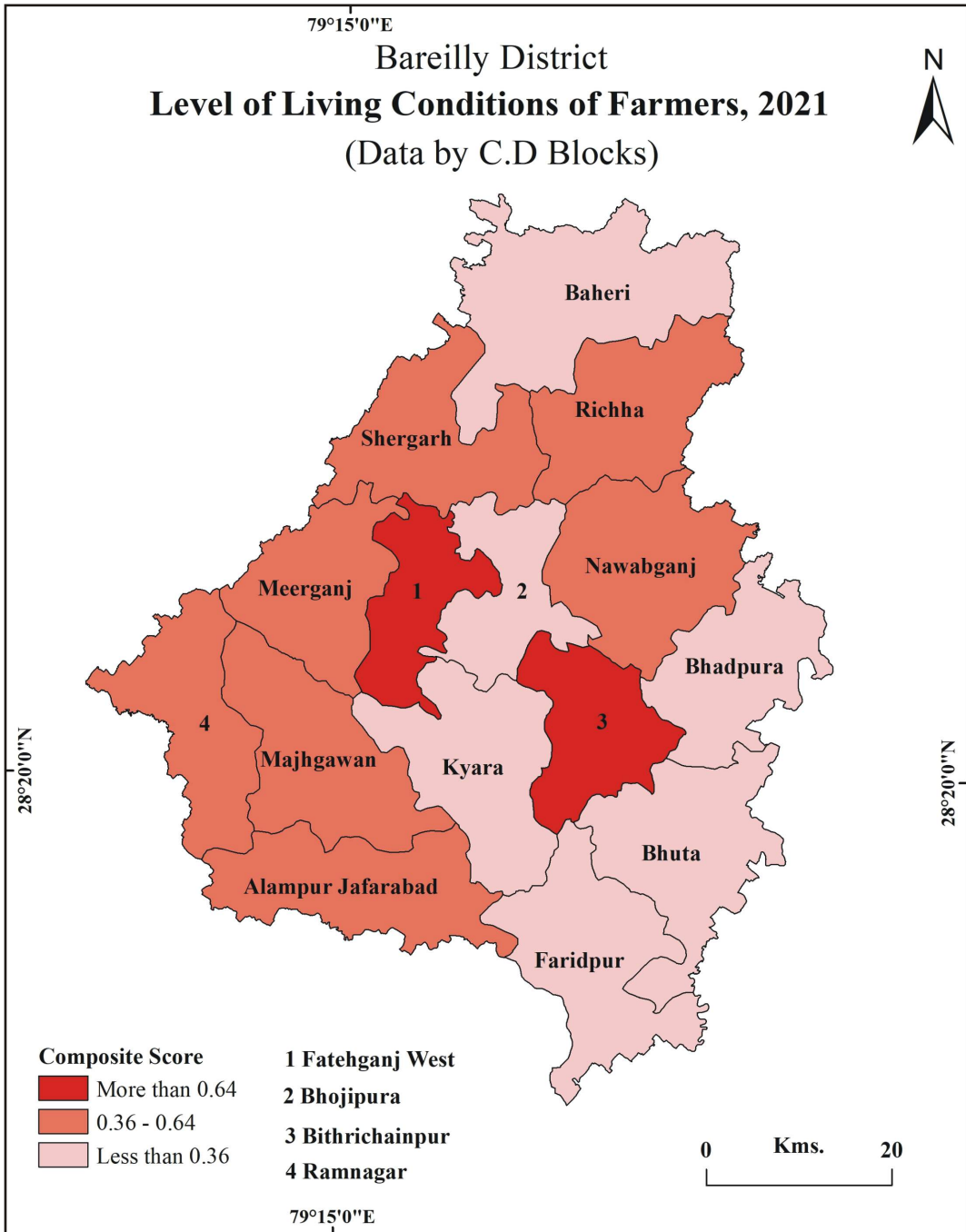


Fig. 2

Similarly, Fatehganj West block has also witnessed the highest DI scores in pucca house (1.00) and house with 4 or more rooms (1.00). It also has the second highest DI scores in house with separate kitchen facility (0.93) and literacy rate of farmers (0.90). Similarly, the DI scores recorded by the block in house with toilet facility (0.57) and high annual income (0.52) are more than the district average. Although DI scores related to farmers using LPG fuel (0.29) and savings (0.27) are less than the district average, yet due to the higher values of other indicators this block falls in the areas of high level of living conditions of the farmers.

Thus, above mentioned blocks of the district fall in areas of high level of living conditions of the farmers. It is because of the fact that all indicators related to the quality of living condition together have played a significant role for resulting high quality of living conditions of farmers in these blocks.

Areas of Moderate Level of Living Conditions

By recording composite score values ranging between 0.36 and 0.56, the moderate level of living conditions has been recorded by seven blocks, namely Majhgawan (0.56) followed by Shergarh (0.52), Richha (0.50), Meerganj (0.47), Nawabganj (0.44), Ramnagar (0.38) and Alampur Jafarabad (0.36). Out of these seven blocks, the composite score of the five blocks is more than the district average. Among these blocks, the level of living conditions is comparatively higher in Majhgawan block. The block has recorded 0.56 composite score due to higher DI scores. It has recorded in house with kitchen facility (0.93), house with toilet facility (0.86), literacy rate (0.80), farmers using LPG fuel (0.76) and

high annual income (0.33). However, the block has witnessed lower DI scores in house with four or more rooms (0.40), pucca house (0.20) and savings (0.18) as compared to the district average.

Among the blocks in this category, the level of living conditions is comparatively lowest in Alampur Jafarabad block on account of lowest composite score (0.36) recorded by it. It has recorded lower DI scores than the district average in the case of farmers having house with 4 or more rooms (0.00) and other indicators like pucca house (0.10), high annual income (0.18), and savings (0.18). However, the block has witnessed higher DI scores than the district average in literacy rate (0.70), toilet facility (0.57), kitchen facility (0.57) and farmers using LPG fuel (0.56).

In Shergarh block, the DI scores in literacy rate of farmers (0.90), savings (0.64), use of LPG fuel (0.62), kitchen facility (0.60) and high annual income (0.58) are higher than district average. While in other indicators like pucca house (0.10) and house with four or more rooms (0.30), the DI scores are lower than the district average. The DI scores of houses with four or more rooms (0.80), toilet facility (0.71), kitchen facility (0.67), use of LPG fuel (0.57) and pucca house (0.50) recorded by Richha block are higher than the district average. While the DI scores recorded by it in high annual income (0.18), savings (0.18) and literacy rate (0.40) are lower than the district average. Similarly, Meerganj block has recorded higher DI scores than the district average in pucca house (0.60), use of LPG fuel (0.57) and high annual income (0.40), while in savings (0.27), toilet facility (0.29) and literacy of farmers (0.50) the DI scores recorded by it are lower than the district average. Likewise, the DI scores of pucca house (0.90), house with

four and more rooms (0.80) and savings (0.45) recorded by Nawabganj block are higher than the district average. In contrast, the DI scores witnessed by it in other indicators like toilet facility (0.14), high annual income (0.18), kitchen facility (0.33) use of LPG fuel (0.33) and literacy (0.40) are lower than the district average. Ramnagar block has recorded a composite score of 0.38 only due to the higher DI scores than the district average in toilet facility (0.71) and use of LPG fuel (0.57), whereas in all other indicators, the DI scores witnessed by it are lower than the district average (Table 2).

In fact, all the blocks falling in this category have mixed characteristics with high as well as low scores of various indicators associated with level of living condition of the farmers, hence, recorded moderate level of status of living. Further, Majhgawan, Shergarh and Richha blocks have more orientation towards high level of living conditions, while Ramnagar and Alampur Jafarabad blocks have comparatively lower level of living conditions, hence inclined towards areas of low level of living conditions of the farmers.

Areas of Low Level of Living Conditions

There are blocks like Kyara with composite score of 0.33 followed by Bhojipura (0.28), Bhuta (0.25), Baheri (0.24), Bhadpura (0.23) and Faridpur (0.08) which have witnessed low level of living condition of farmers by recording lower values of composite scores than the other blocks (Table 2). Among the blocks falling in this category, the level of living condition of the farmers is at the lowest level in Faridpur block as it has registered zero DI scores in all the indicators except in literacy rate (0.50) and pucca houses (0.10). Likewise, in Bhadpura block, low level

of living conditions of the farmers has been registered due to lower DI scores it has recorded in house with 4 or more rooms (0.00), kitchen facility (0.07), savings (0.09), pucca houses (0.10), farmers using LPG fuel (0.14), high annual income (0.17) and toilet facility (0.29). However, this block has registered the highest DI score only in the literacy rate of farmers (1.00) which is more than the district average, while in all other indicators the Bhadpura block has witnessed lower DI scores than the district average.

Kyara block has the highest composite score in this category of living conditions of the farmers. It has recorded higher DI scores than the district average in house with four or more rooms (0.60), savings (0.55) and high annual income (0.42), while in other indicators like toilet facility (0.00), use of LPG fuel (0.10), kitchen facility (0.27), literacy rate (0.30) and pucca house (0.40) the block has registered lower DI scores than district average. Bhojipura block has been included in this category of blocks due to its lower DI scores of literacy rate (0.00), toilet facility (0.00), use of LPG fuel for cooking (0.10), pucca house (0.20) and savings (0.27). This block has recorded higher DI score than the district average only in kitchen facility (0.80), house with four or more rooms (0.50) and high annual income (0.33). Similarly, Bhuta block has recorded higher DI score than the district average only in the toilet facility (0.57) and literacy (0.50), while in other indicators, the DI scores registered by it are lower than the district average. Likewise, Baheri block has recorded higher DI score in kitchen facility (0.67) and pucca house (0.50), while in all the other indicators, it has registered lower DI scores the district average. Thus, on account of the lower DI scores recorded in most of the indicators than the district average, these

blocks fall in the category of areas with low living conditions of the farmers.

From the preceding analysis it can be stated that there are widespread inter-block disparities in the levels of the living conditions of the farmers. The study reveals that about 13 per cent blocks fall in the category of areas with high level of living conditions, while 47 per cent blocks fall under areas of medium level of living conditions of the farmers. Remaining 40 per cent blocks come under the areas with low level of living conditions of the farmers.

Relation between Landholding Size and Living Conditions of Farmers

Living Conditions of Marginal Farmers

The composite score related to the living conditions of marginal farmers is 0.06, which is lowest as compared to all other categories of the farmers (Table 3; Fig 3). It indicates that marginal farmers have relatively very poor living conditions. It is because of the low performance these farmers have recorded in most of the indicators as they have minimal resources to sustain their livelihood. Except for the literacy rate (0.43) and high annual income (0.06) in all other indicators, the DI score of marginal farmers is zero. Hence the overall, living condition of marginal farmers in the study area is very low as they have limited land resources as compared to other categories of farmers.

Living Conditions of Small Farmers

The composite score of living conditions recorded by small farmers is 0.25, which is higher than marginal farmers but much lower than the large, medium, and semi-medium farmers. The DI scores registered by small farmers in literacy rate and high annual income are zero. Similarly in other indicators like use of LPG fuel (0.07), house of 4 and or more

rooms (0.09), savings (0.40), pucca house (0.41), toilet facility (0.43) and kitchen facility (0.63), the DI scores recorded by these farmers are lower than the district average. However, they have relatively high performance in toilet facility and kitchen facility. Due to small land holdings, the farmers have fewer resources and therefore their living condition is also poor like marginal farmers.

Living Conditions of Semi-medium Farmers

The composite score witnessed by semi-medium farmers is 0.45 which indicates that they have performed relatively better on account of living conditions than small and marginal farmers. However, as compared to medium and large farmers, their composite score is low. The DI scores registered by semi-medium farmers in kitchen facility (0.80), toilet facility (0.65), savings (0.64) and pucca house (0.64) are higher than district average. However, they have witnessed lower DI scores than the district average in high annual income (0.06), use of LPG fuel (0.17), house with 4 rooms or more (0.19) and literacy rate of farmers (0.47). Although the DI scores in some of the indicators are lower, yet due to better performance of other indicators, the living condition of semi-medium farmers is better than the marginal and small farmers.

Living Conditions of Medium Farmers

Medium farmers have recorded the composite score of 0.72 for their living conditions (Table 3). It indicates that medium farmers have a relatively higher level of living conditions as compared to other categories such as semi-medium farmers, small farmers, and marginal farmers. Medium farmers have registered the highest DI scores in kitchen facility (1.00). Along with the kitchen facility,

the DI scores recorded for literacy rate (0.97), savings (0.92), pucca house (0.92), house with 4 or more rooms (0.85) and toilet facility (0.70) are higher than the district average. In other indicators like use of LPG fuel (0.20) and high annual income (0.21) the DI scores recorded by

the medium farmers are lower than the district average. Although the DI score of high annual income witnessed by medium farmers is lower than that of large farmers, yet it is higher than that of marginal, small, and semi-medium farmers. Hence, on account of the quality of

Table 3

Bareilly District: Dimension Index Values and Composite Score of the Indicators of Living Conditions of the Farmers

Farmers category	Indicators of Living Conditions								Composite Score
	X ₁	X ₂	X ₃	X ₄	X ₅	X ₆	X ₇	X ₈	
Areas of High Level Living Conditions									
Marginal	0.43	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.06
Small	0.00	0.00	0.41	0.09	0.43	0.63	0.07	0.40	0.25
Semi-medium	0.47	0.06	0.64	0.19	0.65	0.80	0.17	0.64	0.45
Medium	0.97	0.21	0.92	0.85	0.70	1.00	0.20	0.92	0.72
Large	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.99
District Average	0.57	0.27	0.59	0.43	0.56	0.67	0.29	0.59	0.50

Source: Compiled by Authors.

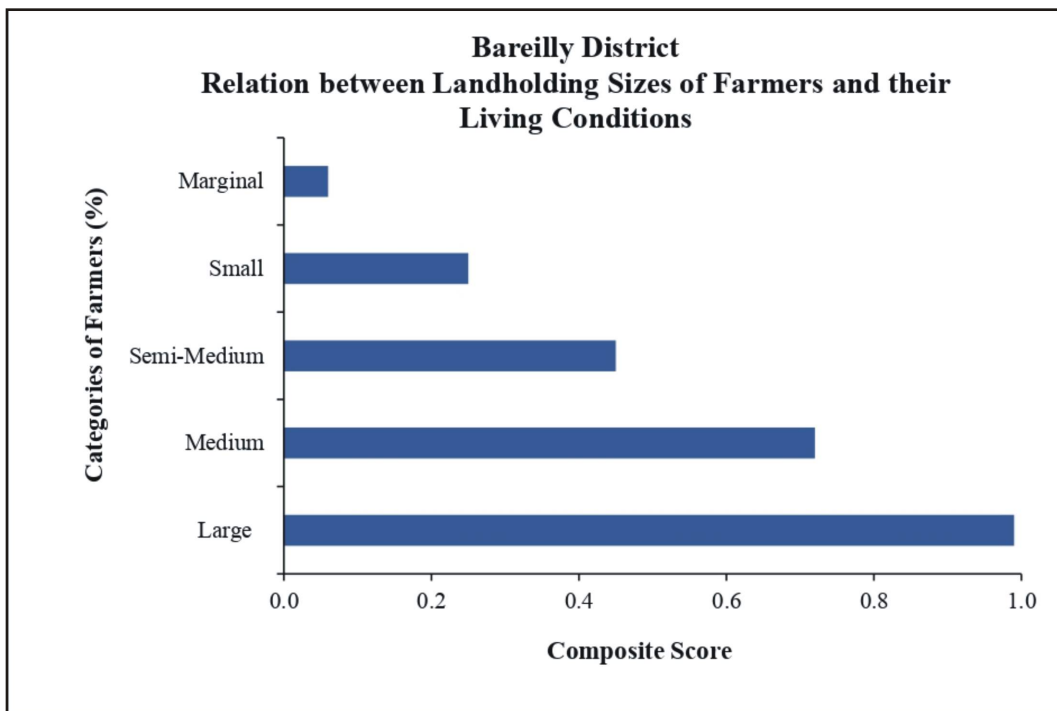


Fig. 3

living, the farmers with medium-sized land holdings are relatively better as compared to small landholders.

Living Condition of Large Farmers

Large farmers have recorded highest composite score of 0.99 on account of their living conditions. This value of composite score reveals that large farmers have better performance in most of the indicators taken to access their living conditions. This indicates a very strong overall standing of large farmers on account of their living conditions as compared to other categories of farmers like marginal farmers, small farmers, semi-medium farmers and medium farmers. Large farmers have recorded highest DI scores in literacy rate (1.00), high annual income (1.00), pucca house (1.00), house with 4 or more rooms (1.00), toilet facility (1.00), LPG fuel (1.00), and savings (1.00). The DI score of the kitchen facility (0.91) recorded by this category of farmers is also higher than the district average of 0.67. High performance of this category of farmers on account of all the indicators taken to access their living conditions can be attributed to their large size of landholdings which have a positive impact on all the indicators.

Conclusions

The study has highlighted the block-wise spatial pattern of living conditions of the farmers in Bareilly district of Uttar Pradesh. Bithrichainpur and Fatehganj West blocks have recorded highest composite score among all the 15 blocks indicating better living conditions of farmers as compared to the farmers of other blocks. Seven blocks namely, Majhgawan, Shergarh, Richha, Meerganj, Nawabganj, Ramnagar and Alampur Jafarabad

have been categorized as areas with moderate level of living condition of the farmers. Similarly, six blocks namely, Kyara, Bhojipura, Bhuta, Baheri, Bhadpura and Faridpur fall in areas with low-level of living conditions of the farmers. This study also shows the impact of landholding size on the living conditions of the farmers. The lowest composite score (0.06) recorded by marginal farmers shows that their living conditions are very poor. While, the composite score recorded by large farmers (0.99) shows that their living conditions are better than all other categories of farmers in the Bareilly district. However, disparities exist within each category, which needs targeted interventions to address the main constraints of disparities across different land holding sizes to improve the living conditions of the farmers.

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