# *The Individually Owned Agricultural Landholdings in Jammu Province of Jammu and Kashmir: Assessing the Growth and Inequality (2000-2015)*

Monika Choudhary, Inder Jeet Singh and Som Raj

Research Journal of Agricultural Sciences
An International Journal

P- ISSN: 0976-1675
E- ISSN: 2249-4538

Volume: 13
Issue: 03

*Res. Jr. of Agril. Sci.* (2022) 13: 646–652

CARAS

Res. Jr. of Agril. Sci. (May-Jun 2022)
13(3): 646–652

ISSN: 0976-1675 (P)
ISSN: 2249-4538 (E)

www.rjas.org

*Full Length Research Article*

# The Individually Owned Agricultural Landholdings in Jammu Province of Jammu and Kashmir: Assessing the Growth and Inequality (2000-2015)

Monika Choudhary*[1], Inder Jeet Singh[2] and Som Raj[3]

Received: 25 Jan 2022 | Revised accepted: 30 Apr 2022 | Published online: 23 May 2022


## A B S T R A C T

The agricultural sector today is facing the biggest challenge of decreasing size of landholdings in India. This sector is under humongous stress as the inequality in the distribution of individually owned operational landholdings in the agricultural population determines their economic and social wellbeing. In this paper an attempt has been made to identify the level of inequality in the distribution of individually owned agricultural landholdings and along with this the growth rate in the number and area of individually owned landholdings has also been calculated taking into account the two time periods i.e., 2000-2001 and 2015-2016. This study has been conducted with respect to Jammu Province of the Union Territory of Jammu and Kashmir and is entirely based on the secondary data. Statistical techniques like Gini Coefficient, Growth Rate etc. have been used to examine the objectives of this study. High level of inequality in the distribution of the operational landholdings and increasing number of marginal landholdings has been observed. Reducing area under all the size classes of the holdings is one of the main highlights of this study.

***Key words*:** Operational landholdings, Inequality, Gini coefficient, Growth rate, Marginal landholdings

The Agricultural land in India is facing the brunt of robust development in the commercial as well as residential space. Over the past few decades, the size of farmlands has been showing a declining trend, undermining the future of this sector. Apart from this, the ever-increasing population is resulting into further fragmentation of agricultural landholdings. Also, the size of agricultural landholdings that a household possess is an important determinant of the food and nutritional security of that household [1]. As per the All-India Report on Agricultural Census 2015-2016, an operational agricultural landholding is the land utilized for agricultural production either partly or wholly and this land is operated in the form of a single technical unit. Also, this operational landholding is operated by only one person or with others without considering its size, locational aspects, title or legal form. And the person who is responsible for the operation of the operational holding is known as an operational holder. An operational holder is further classified as Individual, Joint and Institutional operational holder. An Individual Operational holding is a holding which is operated by one person or a group of persons belonging to the same household. And if these persons belong to different households but they share the responsibility of the operation of the landholding then it is known as Joint Operational holding. Whereas, Institutional holdings are holdings like government farms, cooperative farms, lands managed by trusts etc.

The present land inequality in the world poses a threat to the livelihood of about 2.5 billion people engaged in agriculture as small landholders. The high land inequality is evident from the fact that about top 10 per cent of the rural population holds around 60 per cent of the land value whereas the lower half of this population holds only 3 per cent of the land value [2]. The regions of South Asia and Latin America have the highest level of agricultural land inequality [3]. In Africa the development patterns are determined by the land concentration resulting from the increased commercial pressure on land [4].

In the recent decades the proportion of small and marginal agricultural holdings is showing an increasing trend as was observed in the Agricultural Census India report of 2015-2016, where it rose to 86.21 per cent from 84.97 per cent as was recorded in the previous census of 2010-2011. In India the total area operated by the small and marginal agricultural landholders has increased at the expense of area held by medium and large farmers [5]. In addition to this India's average operational landholdings size has shrunk by 6 per cent from 2010-11 to 2015-2016 [6]. Nagaland has the highest average size of operational landholdings i.e., 5 hectares and Kerala has the lowest i.e., 0.5 hectares [7]. In the eastern and north-eastern states, the proportion of area under the large landholdings is relatively small [8]. Gendered patterns of operational landholdings have also been reported as in the states of Rajasthan, Gujarat and Haryana an increase in the unequal

* **Monika Choudhary**
✉ monicachoudhary512@gmail.com

[1-3] Department of Geography, University of Jammu, Jammu - 180 006, Jammu and Kashmir, India

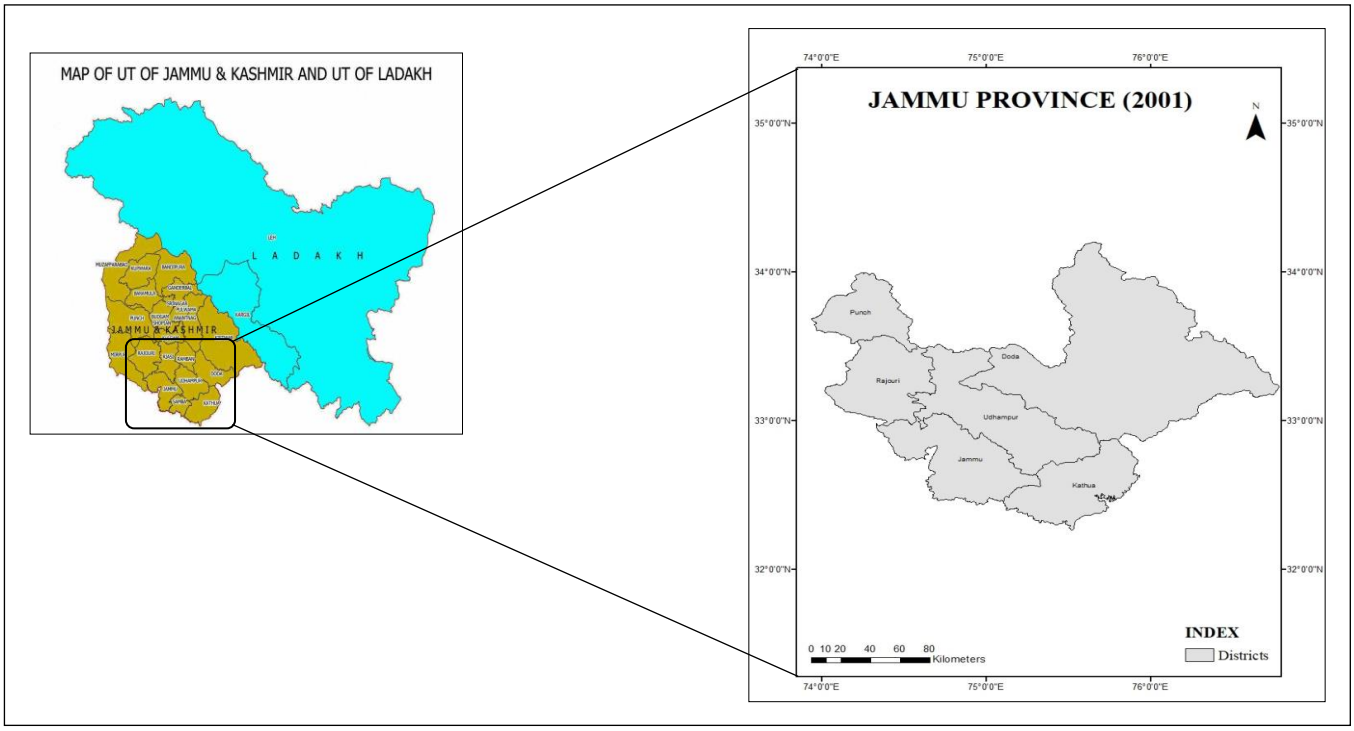
distribution of landholdings among males have been witnessed whereas in the states like Gujarat, Haryana and Punjab have witnessed the same trend in the case of females [9]. In India the land distribution pattern also varies in accordance to the various social groups. The scheduled tribe population has the higher proportion of landless households and those who have landholdings belong to the category of marginal landholders [10]. Gender inequality is also prevalent in the distribution of the number and area of landholdings among the tribals [11]. Among the scheduled caste population of Tamil Nadu, a negative trend is observed in all size classes except the marginal size class [12]. This is not the case in all other states for example in West Bengal the scheduled caste population is in a better position in terms of access to land as compared to other states [13].

The economy of Jammu and Kashmir is predominantly dependent on the agriculture sector and its allied activities. About 71 per cent population of the Union Territory is engaged in it and about 70 per cent population of the Jammu Division is engaged in the same [13]. Hence, an understanding of the pattern of distribution of landholdings in this region is important to ascertain the social and economic development of the people. The state of Jammu and Kashmir is facing the problem of fragmentation of land [14]. A decrease of 2.27 per cent in number and 5.92 per cent in area of operational landholdings has been recorded from 2010-11 to 2015-2016. In this region the marginal landholdings constitute the maximum share of the operational landholdings with 83.79 per cent followed by Small i.e., 11.29 per cent, Medium i.e., 4.10 per cent, Semi-Medium i.e., 0.78 per cent and Large i.e., 0.04 per cent landholdings. The marginal landholdings also occupy the maximum area i.e., 47.18 per cent of the total area of the operational holdings. The average landholding size has been declining in the Union Territory since 1976-1977 and at present it has come down to 0.59 hectares [15].

The feasibility of the agricultural sector is jeopardized by the declining state of many of its aspects. Still a large proportion of population is dependent on agriculture for its livelihood. In order to sustain this population agricultural needs to be transformed into a profitable activity especially for the small and marginal farmers. Also, land redistribution is an efficient poverty elevation tool [16]. However, the programs and policies targeting land distribution have various shortcomings and an inadequate knowledge of the impacts of these redistribution programs and non-participation of all the stakeholders in these efforts is a cause of concern [17]. An effort to redistribution resulting into reduction in the land concentration may bring about increased equality as well as productivity of the landholdings in spite of limited resources [18].

## MATERIALS AND METHODS

Jammu Province is the part of the Union Territory of Jammu and Kashmir. It is located between 32° 17/ N to 34° 12/ N latitude and 73° 58/ E to 76° 47/ E longitude [19]. This region is comprised of varied physical as well as cultural characteristics. This region lies to the southwest of the mighty Pir Panjal Range and is marked by plains, hills and mountains from south to north. In 2006, the districts were reorganized in this erstwhile state and the numbers of districts were increased from 6 to 10.




This study is entirely based on the secondary data. This data has been obtained from the Government of Jammu and Kashmir Report on 7th Agricultural Census 2000-2001 and 10th Agricultural Census 2015-2016 prepared under the Financial Commissioner (Revenue), Planning and Statistical Wing. Jammu Province at the time of the Agricultural Census Report 2000-2001 comprised of only 6 districts whereas in 2015-2016, the total number of the districts were 10 which were increased in the year 2006. For the present study the base year taken is 2000-2001 and hence the data has been analyzed on the basis of these 6 districts. Agricultural Census (2015-2016) data of the newly formed districts was clubbed with their parent districts.

In order to identify the change in the number and area of the operational landholdings growth rate has been calculated for a time period of 2000-2001 to 2015-2016.

$$\text{Growth Rate} = \frac{V_{present} - V_{base}}{V_{base}} \times 100$$

Where;

$V_{present}$ is the value of the present year and

$V_{base}$ is the value of the base year

In order to analyze the level of inequality Lorenz curve has been drawn and Gini Coefficient has been calculated by using the following formula, as has been described by Poonia [20]:

$$\text{Gini coefficient} = \frac{1}{1000}[\sum X_i Y_{i+1} - \sum Y_i X_{i+1}]$$

Where;

$X_i$ is the cumulative percentage value of the variable on the X axis and

$Y_i$ is the cumulative percentage value of the variable on the Y axis of the Lorenz Curve

The value of Gini Coefficient ranges from 0 to 1, where 0 represents perfect equality and 1 represents perfect inequality.

The Lorenz Curve as proposed by Lorenz in 1905 and is a tool which provides us with the information about proportion of one variable in the hands of another variable. The shape of the Lorenz Curve itself is a good indicator of the extent of inequality there is in a particular distribution [21]. The more this curve is bent the more concentration there is [22]. The Gini Coefficient is based on this Lorenz Curve and is described as the ratio of the area between the line of equality and the Lorenz curve to the total area under the line of equality [23]. Apart from measuring income inequality, the Gini Coefficient has application in many other fields e.g., land inequality etc. [24].

## RESULTS AND DISCUSSION

*Growth rate from 2000-2001 to 2015-2016*

The area under agriculture has decreased substantially over the years because of the conversion of the agricultural land for other non-agricultural purposes. This has put an increased pressure on the available cultivable land to produce more in terms of quality as well as quantity in order to sustain the increasing population. Increasing fragmentation of land, decreasing number of large land holdings and decreasing farm size, are the major factors for the ill performance of this sector [20]. Therefore, it is highly imperative to assess the changes in the distribution of operational holdings over time [25].

Here, an attempt has been made to analyze the growth rate in regard to the number and area of the various size classes of individually owned operational landholdings with respect to all the districts in the Jammu Province for the agricultural census years of 2000-2001 to 2015-2016 (Table 1).

i) *Number of individually owned landholdings: Trends and patterns*

Jammu province has experienced a decrease of -7 per cent in the total number of landholdings for the period taken into consideration. This could be possibly due to the fact that being a physiographically diverse region, in the northern mountainous part a very small proportion of land is put under cultivation and due to the rapid urbanization taking place in the province people are shifting from agriculture to other sectors for employment. This can be supported by the fact that with the decreasing number, area under landholdings is also decreasing. This trend of negative growth rate has been followed by all the size classes except the marginal landholdings which have experienced an increase of 3 per cent as a result of increasing population pressure and inheritance law resulting to further fragmentation. The highest decrease has been recorded in the case of large landholdings i.e., -61 per cent followed by medium i.e., -50 per cent, semi-medium i.e., -48 per cent and small landholdings i.e., -27 per cent.

Among all the size classes, the number of marginal landholdings have increased in all the districts except for Jammu district (-12 per cent) and Doda district (-2 per cent). The highest increase recorded in this category is in the case of Rajouri district i.e., 29 per cent which can be attributed to the fact that Rajouri has experienced second highest increase in the population i.e., 33 per cent from 2001-2011 [26] along with the highest decadal increase in its rural population i.e., 31.2 per cent from 2001-2011 [26]. The high rate of negative growth rate noted in Jammu district is possibly due to the fact that it is the most urbanized and literate district of the province with more number of people leaving agriculture and shifting to other sources of income.

Table 1 District and size class (ha) wise growth rate in the number of individually owned landholdings of Jammu province

| Size class (ha) / Districts | Marginal (<1) | | | Small (1-2) | | | Semi-Medium (2-4) | | | Medium (4-10) | | | Large (>10) | | | All size classes | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2000-01 | 2015-16 | Growth rate (%) | 2000-01 | 2015-16 | Growth rate (%) | 2000-01 | 2015-16 | Growth rate (%) | 2000-01 | 2015-16 | Growth rate (%) | 2000-01 | 2015-16 | Growth rate (%) | 2000-01 | 2015-16 | Growth rate (%) |
| Jammu | 99721 | 88101 | -12 | 22644 | 16481 | -27 | 8795 | 5344 | -39 | 504 | 742 | 47 | 8 | 17 | 113 | 131672 | 110685 | -16 |
| Kathua | 30379 | 31194 | 3 | 7596 | 5424 | -29 | 4360 | 2259 | -48 | 754 | 401 | -47 | 8 | 4 | -50 | 43097 | 39282 | -9 |
| Udhampur | 44834 | 46498 | 4 | 13394 | 7825 | -42 | 8402 | 2554 | -70 | 1777 | 343 | -81 | 39 | 5 | -87 | 68446 | 57225 | -16 |
| Rajouri | 26282 | 33994 | 29 | 9280 | 8151 | -12 | 4195 | 2452 | -42 | 689 | 344 | -50 | 31 | 5 | -84 | 40477 | 44946 | 11 |
| Poonch | 18950 | 19592 | 3 | 4383 | 3490 | -20 | 1909 | 1199 | -37 | 278 | 183 | -33 | 5 | 1 | -80 | 25520 | 24465 | -4 |
| Doda | 79174 | 77906 | -2 | 13284 | 10890 | -18 | 5007 | 3120 | -38 | 484 | 217 | -55 | 2 | 0 | -100 | 97951 | 92133 | -6 |
| Jammu province | 289340 | 297285 | 3 | 70581 | 51409 | -27 | 32668 | 16928 | -48 | 4481 | 2231 | -50 | 93 | 36 | -61 | 397163 | 367889 | -7 |

Source: Agricultural Census of J&K, (2000-2001) & (2015-2016)

The small landholdings have experienced a negative growth rate in all the districts during 2000-2015. The maximum decrease has been witnessed in Udhampur district i.e., -42 per cent and the minimum decrease have been witnessed in the case of Rajouri district i.e.-12 per cent. These observations can be correlated to the fact that Udhampur in spite of it being a hilly district has the second highest urban population of 15.5 per cent [26] and Rajouri has the highest percentage of rural population i.e., 91.9 per cent [26]. Similarly, all the districts of the province have recorded a negative growth rate in the number of semi-medium operational landholdings. Here again the maximum decline has been witnessed in Udhampur district i.e., -70 per cent and minimum by the Poonch district i.e., -37 per cent. Although the decline in this category is quite high for all the districts.

In the case of medium landholdings interestingly all the districts except Jammu district have experienced a declining trend. Here again Udhampur district has recorded the maximum negative growth rate of -81 per cent. However, Jammu district has recorded a positive growth rate of 47 per cent in this category. Similarly in the large landholdings only Jammu district has experienced a positive growth rate and rest all the districts have shown a declining trend. Particularly in Doda district the decline is almost by -100 per cent as there are no large landholdings recorded in the year 2015-2016 as against the two large landholdings recorded in 2000-2001. Here the decline in all the districts is more than 50 per cent and on an average the decline is highest among all the size classes. The increase in the number of medium and large landholdings recorded in Jammu district can be due to the reason that some

of these landholdings even after being inherited still belong to the large landholdings category. In addition to this the farmers in Jammu district are more affluent and these rich large farmers are investing in the purchase of more landholdings, particularly from marginal farmers as Jammu district has recorded maximum decline in marginal landholdings (-12 per cent).

An important observation to note here is that on the whole only Rajouri district has recorded an increase of 11 per cent in the number of total landholdings. Rest all the districts have experienced a decrease in the number with the maximum decline being observed by Jammu and Udhampur district i.e., -16 per cent each, followed by Kathua district i.e., -9 per cent, Doda district i.e., -6 per cent and Poonch district i.e., -4 per cent. The increase of landholdings in Rajouri district is attributed to the fact that it has recorded maximum increase (29 per cent) in marginal landholdings while remaining districts have observed either negative growth or little positive growth in marginal landholdings.

ii) *Area of individually owned landholdings: Trends and patterns*

(Table 2) provides with the scenario of area of landholdings under different size classes in Jammu province and the changes recorded from 2000-2001 to 2015-2016.

In Jammu Province the area under individually owned operational landholdings has been decreasing for the aforesaid period. The maximum decline in the area has been recorded in the case of large landholdings i.e., -63 per cent followed by medium i.e., -51 per cent, semi-medium i.e., -49 per cent, small i.e., -30 per cent and marginal landholdings i.e., -14 per cent. On an average a decline of -31 per cent has been observed in the area occupied by the agricultural landholdings in the province. This decline in the area of landholdings can be possibly due to the reasons of urbanization and the conversion of agricultural land for nonagricultural purposes and consequent decline in the net sown area of the region. The province is experiencing a fast pace development especially in the districts located in the southern plain region. Development of new highways, roads etc are eating into the agricultural land; for example, Jammu district is experiencing a lateral expansion along the NH 44 and the construction of the semi-ring-road project of 58 kms.

On observing the trends in accordance to the various categories of landholdings, it can be observed that in the case of area under marginal landholdings all the districts of the province have shown a declining trend except in Rajouri district. The Rajouri district has recorded an increase in the area under the marginal landholdings i.e., 8 per cent which corresponds to the exceptional increase in the number of marginal landholdings as was noted in table no. 1. The maximum decline in the area has been recorded in Jammu district i.e., -22 per cent followed by Kathua district i.e., -18 per cent, Doda district i.e., -15 per cent, Poonch district i.e., -7 per cent and Udhampur district i.e., -5 per cent. The maximum decline in Jammu district is related to the decline in the number of landholdings in this category as observed earlier.

Table 2 District and size class (ha) wise growth rate in the area of individually owned landholdings of Jammu province

| Size class (ha) / Districts | Marginal (<1) | | | Small (1-2) | | | Semi-Medium (2-4) | | | Medium (4-10) | | | Large (>10) | | | All size classes | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2000-01 | 2015-16 | Growth rate (%) | 2000-01 | 2015-16 | Growth rate (%) | 2000-01 | 2015-16 | Growth rate (%) | 2000-01 | 2015-16 | Growth rate (%) | 2000-01 | 2015-16 | Growth rate (%) | 2000-01 | 2015-16 | Growth rate (%) |
| Jammu | 43541.99 | 34014.8 | -22 | 34214.42 | 23210.75 | -32 | 23427.2 | 13902.55 | -41 | 2526.81 | 3788 | 50 | 154.84 | 281.55 | 82 | 103865.3 | 75197.65 | -28 |
| Kathua | 11691.96 | 9573.2 | -18 | 11519.3 | 7459.5 | -35 | 12462.71 | 5979.1 | -52 | 3996.48 | 2041.8 | -49 | 126.88 | 48 | -62 | 39797.33 | 25101.6 | -37 |
| Udhampur | 17489.38 | 16568.9 | -5 | 19777.52 | 10662.45 | -46 | 22411.36 | 6691.15 | -70 | 9402.34 | 1768.35 | -81 | 504.67 | 64.2 | -87 | 69585.27 | 35755.05 | -49 |
| Rajouri | 12099.35 | 13019.45 | 8 | 13330.81 | 11206.15 | -16 | 11276.46 | 6503.85 | -42 | 3594.28 | 1817.05 | -49 | 508.18 | 56.25 | -89 | 40809.08 | 32602.75 | -20 |
| Poonch | 7389.99 | 6858.9 | -7 | 5936.82 | 4804.65 | -19 | 4990.51 | 3159.7 | -37 | 1378.32 | 946.13 | -31 | 62.41 | 12.5 | -80 | 19758.04 | 15781.88 | -20 |
| Doda | 29590.74 | 25191.1 | -15 | 18459.52 | 14618.62 | -21 | 13001.62 | 8065.3 | -38 | 2300.63 | 672.05 | -71 | 21.44 | 0 | -100 | 63373.85 | 48547.05 | -23 |
| Jammu province | 121803.4 | 105226.4 | -14 | 103238.3 | 71962.1 | -30 | 87569.86 | 44301.65 | -49 | 23198.86 | 11434.38 | -51 | 1378.42 | 508.9 | -63 | 337188.8 | 233433.4 | -31 |

Source: Agricultural Census of J&K, (2000-2001) & (2015-2016)

In the case of small landholdings all the districts have experienced a negative growth rate. The maximum decrease in this category was seen in Udhampur district i.e., -46 per cent and the minimum decrease was seen in Rajouri district i.e., -16 per cent. Similarly, the semi-medium landholdings present a very similar trend as all the districts have experienced a negative growth rate. Here again the maximum negative growth rate has been recorded in Udhampur district i.e., -70 per cent and the minimum decrease has been recorded in Poonch district i.e., -37 per cent. The declining trend presented by the area under small and semi-medium landholdings does corresponds to the trends observed in the number of landholdings in these categories as per the (Table 1).

Taking into consideration the medium landholdings all the districts have experienced a negative growth except Jammu district. Udhampur district again records the maximum decline in the area i.e., -81 per cent followed by Doda district i.e., -71 per cent, Kathua district and Rajouri district i.e., -49 per cent respectively. The minimum decline in this category has been observed in the case of Poonch district i.e., -31 per cent. Similarly taking into account the large landholdings all the districts have experienced a decline in the area under this category except Jammu district. An interesting fact to note here is that in Doda district the decline is almost of -100 per cent as there were no landholdings recorded in the census year of 2015-2016. Following Doda district, the maximum decline has been observed by Rajouri district i.e., -89 per cent, Udhampur district i.e., -87 per cent, Poonch district i.e., -80 per cent and Kathua district i.e., -62 per cent. Jammu district has recorded an increase in the area under the medium and large landholdings of about 50 per cent and 82 per cent respectively which correspond to the increase in the number of landholdings as observed in (Table 1).

Considering all the size classes on the whole the maximum decline in the area under the operational landholdings has been observed in Udhampur district i.e., -49 per cent followed by Kathua district i.e., -37 per cent, Jammu district i.e., -28 per cent, Doda district i.e., -23 per cent, Rajouri and Poonch district i.e., -20 per cent respectively. Hence, the area under the individually owned operational landholding has been declining, highlighting the fact that the area under agriculture have been declining over the past few decades. As the result of urbanization and the growth of residential property more and more agricultural land is being taken over. Also, it can be noted that the decline in area is much greater than the decline in the number of the landholdings.

*Inequality using the Lorenz Curve and Gini Coefficient*

According to the National Statistical Office, Lorenz Curve is a cumulative frequency curve that draws a comparison between the prevailing distribution and the uniform distribution representing equality. Here an effort has been made to identify

the level of inequality using the Gini Index and the Lorenz Curve for the Scheduled Caste, Scheduled Tribe and the Others Category in the Jammu Province as per the Agricultural Census of Jammu and Kashmir, 2015-2016 (Table 3).

Table 1 Gini coefficient and cumulative percentages for number and area of individually owned landholdings in the Jammu province (2015-2016)

| Size class | (ha) | SC | | | ST | | | Others | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | No | Area | Gini | No | Area | Gini | No | Area | Gini |
| Marginal | Below 0.5 | 61.79 | 26.42 | 0.429 | 53.71 | 17.97 | 0.468 | 58.61 | 19.80 | 0.483 |
| | 0.5-1.0 | 84.91 | 53.96 | | 78.83 | 43.29 | | 80.07 | 43.52 | |
| Small | 1.0-2.0 | 96.73 | 83.38 | | 93.96 | 74.42 | | 94.47 | 74.60 | |
| Semi- | 2.0-3.0 | 99.09 | 93.69 | | 98.05 | 88.29 | | 98.21 | 88.54 | |
| Medium | 3.0-4.0 | 99.81 | 98.23 | | 99.19 | 93.92 | | 99.32 | 94.38 | |
| Medium | 4.0-5.0 | 99.95 | 99.36 | | 99.72 | 97.31 | | 99.70 | 97.02 | |
| | 5.0-7.5 | 100.00 | 99.89 | | 99.94 | 99.22 | | 99.96 | 99.32 | |
| | 7.5-10 | 100.00 | 99.91 | | 99.99 | 99.84 | | 99.99 | 99.77 | |
| Large | 10-20 | 100.00 | 100.00 | | 100.00 | 100.00 | | 100.00 | 99.93 | |
| | 20.0 & above | 100.00 | 100.00 | | 100.00 | 100.00 | | 100.00 | 100.00 | |

Source: Agricultural Census of J&K, (2015-2016)

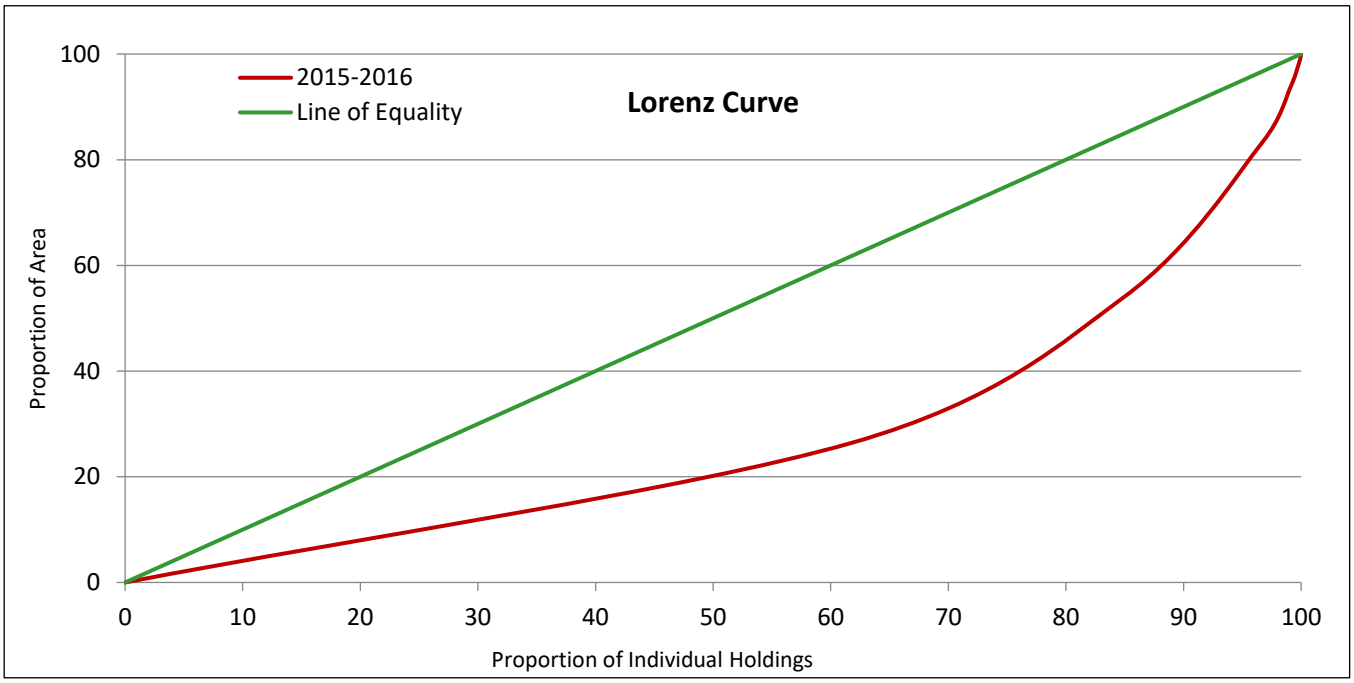



Fig 1 Lorenz curve for the scheduled caste population

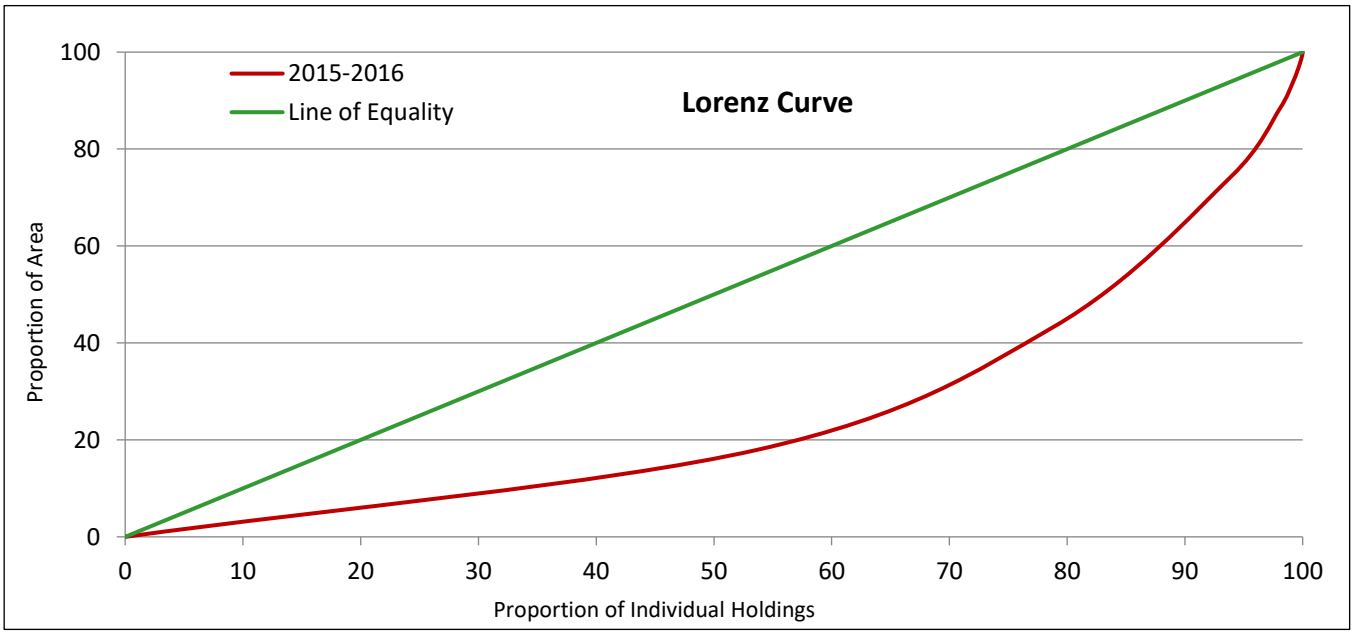



Fig 2 Lorenz Curve for the scheduled tribe population

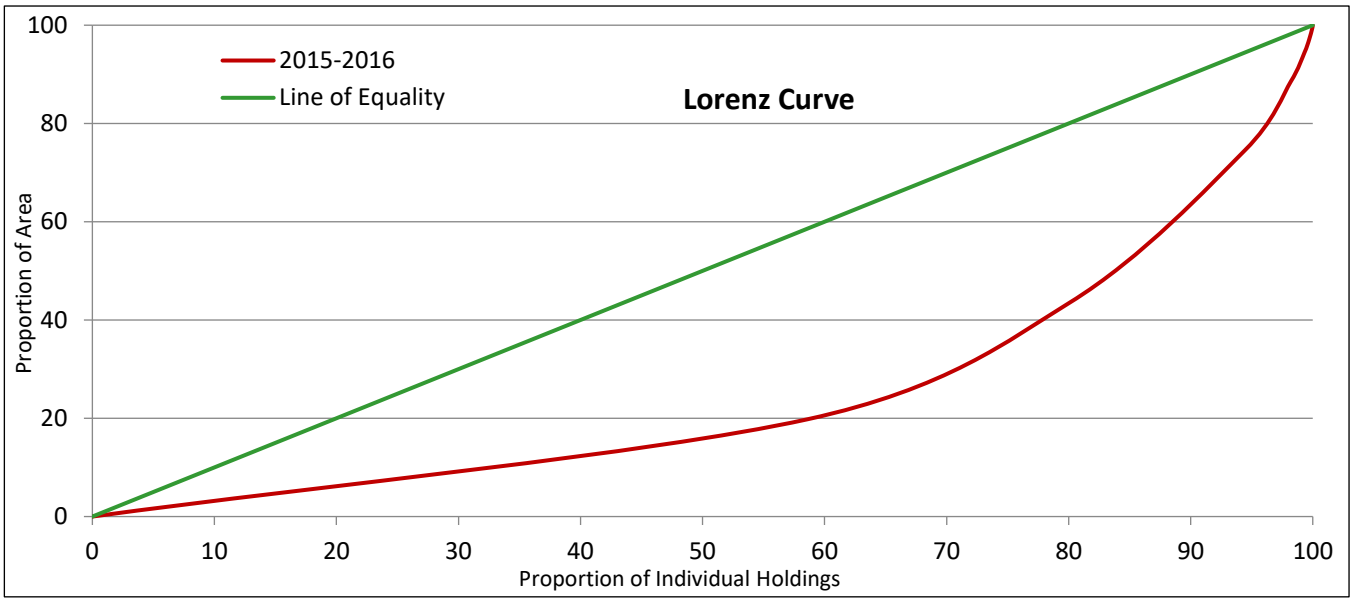



Fig 3 Lorenz Curve for the others category

In Jammu province the value of the Gini Coefficient for the Scheduled Caste, Scheduled Tribe and Others category has been reported to be quite high i.e., 0.429, 0.468 and 0.483 respectively. These values represent a high level of inequality in the distribution of individually owned operational holdings. Also, the Lorenz Curve for the above-mentioned categories is far away from the line of Equality indicating a high level of inequality. This high level of inequality is indicative of the fact that in the province all the landholdings do not hold the same amount of the area or the landholdings are highly unequally distributed with respect to the area they hold. There is very little difference observed in the values of the Gini coefficient calculated for the scheduled caste, scheduled tribe and others category. However, the individually owned operational landholdings in the Scheduled Caste population have the lowest level of inequality of all the three groups followed by the scheduled tribe and others.

Taking the scheduled caste population into consideration it can be clearly interpreted that 84.91 per cent of the landholdings belong to the marginal landholdings category and these landholdings hold 53.96 per cent of the total area under individual landholdings. Herein, 61.79 per cent of the individuals owned less than 0.5 hectares of land. In addition to this, around 97 per cent of the landholdings in this category are the small and marginal landholdings accounting for 83.38 per cent of the total area. In the Scheduled Tribe category 78.83 per cent of the landholdings belong to the marginal landholdings category taking up to 43.29 per cent of the total area under landholdings. About 53.71 per cent of the individuals here owned less than 0.5 hectares of land. Here again a very high percentage of landholdings i.e., 93.96 per cent are the small and marginal landholdings holding 74.42 per cent of the total area under landholdings. Similarly taking into consideration the others category about 80 per cent land holdings are the marginal landholdings accounting for 43.52 per cent of the total area. In this category also a very high percentage i.e., 58.61 per cent of individuals hold less than 0.5 hectares of land. Also, small and marginal landholdings constitute 94.47 per cent of the total landholdings and comprising of 74.6 per cent of the total area under landholdings. Therefore, all the three categories of population in the province have somewhat similar situation with the domination of small and marginal landholdings.

The shape of the Lorenz curve drawn for all the categories indicates that a large proportion of population (more than 50 per cent) is having a small proportion of the area of the landholdings. This inequality has many implications for the agricultural sector as it reduces the productivity of our farm lands as there exists an inverse relationship between land inequality and output per hectare [27].

*Recommendations*

Following are the few key points that can be taken into consideration in order to address the issues related to agricultural landholdings highlighted by this study.

- Consolidation of smaller landholdings by facilitating leasing of land and reorganization of landholdings can prove to be a possible measure to control the further fragmentation of landholdings in the study area. In order to achieve this objective Government needs to maintain proper land records to carry out such a complex process.
- Revision of the inheritance law to accommodate and allot the landholdings in a less scattered manner should be contemplated.
- Agricultural sector in the Jammu Province is declining and becoming a non-attractive entity for the youth. In order to change this narrative, Government needs to work towards curbing the push factors associated with it.
- Specific economic and regulatory incentives should be provided to the farmers along with reducing the human capital constraints by equipping farmers with adequate farming knowledge.
- Furthermore, the southern plain part of the province has a huge potential for increasing cropping intensity and encouraging diversification of crops which will increase the productivity and will supplement farm income especially of the small and medium farmers.
- In the northern mountainous part of the Province Government can provide assistance for the cultivation of off-season vegetables and increasing horticulture production. Additionally, the region has immense potential for organic farming which needs to be capitalized.

## CONCLUSION

It is quite palpable from this study that the agricultural sector of the Jammu Province requires much more focused and planned approach in order to induce some progressive development in this sector. Agricultural land fragmentation and

the decreasing number and area of the individual agricultural landholdings are one of the major causes of concern and this fact requires immediate attention of the authorities. The number of marginal landholdings is on the rise and this situation demands more impetus from the government in enhancing the productivity of these landholdings and increasing the income of the marginal farmers. On the whole Jammu Province is experiencing a decline in the number and area of the operational landholdings. Only the Rajouri District of the province has recorded an increase in the number of landholdings, rest all the districts are observing a declining trend. The level of inequality in the distribution of individually owned agricultural landholdings in the province is still very much high and persistent. A large proportion of the landholdings hold a very small proportion of the area and therefore these small holdings are vital for the sustenance of a large number of farmers. Not much improvement has been made in this regard. Proper policy framework and development programs particularly targeting the above-mentioned problems are the need of the hour. Much incentives needs to be directed to improve the productivity of the farmers especially the small and medium farmers as they hold the key to the food security in the Jammu Province.

## LITERATURE CITED


1. Rammohan A, Pritchard B. 2014. The role of landholding as a determinant of food and nutrition insecurity in rural Myanmar. *World Development* 64: 597-608.
2. Chacko S. 2020. Land inequality threatens livelihood of 2.5 bln: *Report in Down To Earth*. Available at https://www.downtoearth.org.in/news/agriculture/land-inequality-threatens-livelihood-of-2-5-bln-report-74418.
3. Bauluz L, Govind Y, Novokmet F. 2020. *Global land inequality*. Working Paper 2020/10, World Inequality Database, available at https://wid.world/document/global-land-inequality-world-inequality-lab-wp-2020-10/.
4. Cipollina M, Cuffaro N, D'Agostino G. 2018. Land inequality and economic growth: A meta-analysis. *Sustainability* 10(12): 4655.
5. Kareemulla K, Krishnan P, Ravichandran S, Kumar BG, Sharma S, Bhatta R. 2021. Spatiotemporal analysis of size and equity in ownership dynamics of agricultural landholdings in India vis-à-vis the world. *Sustainability* 13(18): 10225.
6. Mukherjee S. 2018. Indian farm size shrank further by 6% in 5 years to 2015-16, census shows" in Business Standard.
7. Krishnan VB. 2018. What the agriculture census shows about land holdings in India" in The Hindu.
8. Rawal V. 2008. Ownership holdings of land in rural India: Putting the record straight. *Economic and Political Weekly* 43(10): 43-47.
9. Sharma N. 2019. Distribution of operational holdings in India. Rural Development: A holistic perspective. Research India Press, New Delhi, India. pp 96-122.
10. Arun JV, Premkumar A. 2018. Operational holdings of land among Schedule Tribes: Trends and challenges. *SJCC Management Research Review* 8(2): 40-49.
11. Arun JV, Premkumar A. 2020. Land holdings of tribal women: Evidence from agricultural census. In book: Empowerment of Tribal Women in South India: Gender Perspectives. Kalpaz Publications. pp 13-20.
12. Selvaraj N, Arun JV. 2017. Landholdings in Tamil Nadu: Issues and challenges. *The Voice: An International Refereed Research Journal* 4(1): 79-89.
13. Agriculture Production and Farmers Welfare Department, J&K, UT. 2021. Agriculture Statistics. Available at http://www.jkapd.nic.in/documents/PDF/Agri%20Stat.pdf.
13. Bakshi A. 2008. Social inequality in land ownership in India: A study with particular reference to West Bengal. *Social Scientist* 36(9/10): 95-116.
14. Kumar P, Nain MS. 2013. Socio-economic study of small farmers of Jammu and Kashmir. *Indian Journal of Extension Education* 49(3): 143-148.
15. Financial Commissioner (Revenue), Government of Jammu and Kashmir. Report on 10th Agriculture Census 2015-2016.
16. Keswell M, Carter MR. 2014. Poverty and land redistribution. *Journal of Development Economics* 110: 250-261.
17. Azadi H, Vanhaute E. 2019. Mutual effects of land distribution and economic development: Evidence from Asia, Africa and Latin America. *Land* 8(6): 96.
18. Kaushik KK. 1993. Inequality in the distribution of land holdings in Himachal Pradesh. *Agricultural Economics Research Review* 6(2): 110-119.
19. Mir AM. 2009. *Geography of Jammu: A Regional Analysis*. Dilpreet Publishing House, New Delhi, India.
20. Poonia M. 2015. Operational land holdings in India: Trend and inequality analysis (1995 – 2011). *Learning Community* 6(1): 87-100.
21. Melkamu M, Bannor RK. 2015. Estimation of agricultural resource inequality in India using Lorenz curve and Gini coefficient approach. *International Journal of Current Research and Academic Review* 3(4): 174-184.
22. Lorenz MO. 1905. Methods of measuring the concentration of wealth. *American Statistical Association* 9(70): 209-219.
23. Ramzai J. 2020. Clearly explained: Gini coefficient and Lorenz curve. Towards Data Science, available at https://towardsdatascience.com/clearly-explained-gini-coefficient-and-lorenz-curve-fe6f5dcdc07.
24. Cullis J, Koppen BV. 2007. Applying the Gini coefficient to measure inequality of water use in the Olifants river water management area, South Africa. International Water Management Institute, Sri Lanka: International Water Management Institute. (IWMI Research Report 113. pp 25.
25. Sharma HR. 1994. Distribution of landholdings in rural India, 1953-54 to 1981-1982: Implications for land reforms. *Economic and Political Weekly* 29(39): A117-A128.
26. Census of India. 2011. *District Census Handbook*. Directorate of Census Operations: Jammu and Kashmir.
27. Vollrath D. 2007. Land distribution and international agricultural productivity. Agriculture and Applied Economics Association, Oxford University Press 89(1): 202-216.