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Estimation of Potential Economic Benefits of Livestock Farming in Rural Madhya Pradesh

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ABSTRACT

The study was carried out using the secondary data on income, expenditure, productive assets and indebtedness of agricultural households in Madhya Pradesh collected from the Situation Assessment Survey (SAS) conducted by the National Sample Survey Office (NSSO) in 70th round (2012-13). The household level data on various parameters was first extracted for Madhya Pradesh and brought into suitable form for carrying out analysis in SPSS. Tabular analysis was employed to analyze the potential economic benefits of livestock farming. The findings revealed that marginal and small farmers earned only 26-27 per cent of income of large farm households. Scheduled Caste and Scheduled Tribes who constitutes nearly 43.5 per cent of total farm households in Madhya Pradesh earns only 33.8 and 33.4 per cent, respectively of the income of OBC farmers. Among the regions, farmers in the northern and central regions of the state earn the highest income while those in the southern and vindhya regions earn the lowest income. in spite of farmers' high satisfaction in selling milk to cooperatives (72-75%), the share of cooperatives and government agencies was very less in procuring milk from farm households (3-5.5%) in the state.

INTRODUCTION

Recently, the central government announced to measure agricultural progress by real income of farmers and not by gross production of agricultural commodities based on the recommendations of National Commission on Farmers. The Government of India has set a target to double the income of rural farm households by 2022, which was probably driven in light of evidence of agrarian distress (Chandrasekhar and Mehrotra, 2016). The most appropriate measure of farmers' well-being is the level of farm income (Chand et al., 2015). The rural farm households earn their income from various sources like cultivation of crops, animal husbandry, wages and salaries, non-farm business, etc., but there is hardly any source that can give time series estimates of income of farmers. Ranganathan (2015) estimated the average annual income of agricultural households from crop cultivation, livestock, non-farm business and wages and salaries to be Rs. 6,960, Rs. 9,943, Rs. 6,138 and Rs. 24,847, respectively, during 2012-13. Income from crop cultivation (47%) forms the largest component of total income, followed by wages and salaries (32%), but the fastest growth rate of 14.3 per cent was reported for income from livestock during 2002-03 to 2012-13, while the growth rates of income from cultivation, wages and salaries and non-farm business were 3.7 per cent, 1.4 per cent and -0.1 per cent, respectively. The share of agricultural activities including crop cultivation and livestock in the total monthly per capita income of agricultural households was highest for Madhya Pradesh (76.5%) among all the states during 2012-13 (GOI, 2013). More than 72 per cent of population of the state resides in rural areas and having 70.8 per cent agricultural households among the rural households (GoMP, 2016). Madhya Pradesh recorded 18 per cent growth in agriculture during 2015-20 which is the highest among all the states in the country. The average

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annual income of a rural farm household in Madhya Pradesh was Rs. 74,712, with the growth rate of 6.91 per cent from 2003 to 2013. Livestock sector alone contributed 12 per cent to the total annual income of rural farm households in the state (GOI, 2013). Out of the total receipts from farming of animals, milk constituted 74 per cent in Madhya Pradesh (GOI, 2014). As the income from livestock increased at a faster rate as compared to other sources of income of farm households, it reflects the wide scope for augmenting the income of rural farm households from livestock sector. There is considerable diversity in agricultural and livestock production conditions in India. It is, therefore, important to understand the economic and developmental role of livestock at a disaggregated level and formulate region-specific policy to achieve the target in a short span of time. The study was undertaken to validate the hypothesis that dairy carries untapped potential in augmenting the income of agricultural households in the state.

METHODOLOGY

Data was collected from the Situation Assessment Survey (SAS) of agricultural households during the 70th round (2012-13) of National Sample Survey Office (NSSO) for the agricultural year 2012-13 for MP which was collected in two visits. The survey covered 1941 agricultural households during visit-1 and 1925 agricultural households during visit-2 from 250 villages spread across the state. Information was collected on various parameters like receipts and expenses from livestock, volume of milk and income from milk sale, agencies to which farmers sell milk, etc.

The current analysis focused primarily on the information related to income from livestock farming of agricultural households in Madhya Pradesh. There was 11.53 per cent increase in livestock population in the state from 2012 to 2019 (GOI, 2012-13). Income from farming of animals is the net income (gross income minus cost of production) that households earn from production of milk, meat, eggs, wool and fish, and from sale of live animals. The household level data on various parameters was first extracted for Madhya Pradesh and brought into suitable form for carrying out analysis in SPSS. Tabular analysis was employed to analyze the potential economic benefits of livestock farming in Madhya Pradesh. Income from livestock farming was estimated across various landholding categories, social groups and NSS state regions. Information on volume and 'all sale value' of milk was used to estimate the price of milk (Rs per litre) across various landholding categories. The share of milk sold to various agencies vis-à-vis the level of farmers' satisfaction in selling to them across various landholding categories was analyzed. For this, the agricultural households were classified into four categories with respect to size of landholding, i.e., marginal (<1 ha), small (1-2 ha), medium (2-4 ha) and large (> 4 ha).

RESULTS AND DISCUSSION

The estimates of monthly income from livestock farming by agricultural households in Madhya Pradesh in 2013 was presented across landholding categories, across social groups and across NSS state regions of agricultural households in the state. Then the study was focussed to assess the inter-seasonal variation in income from milk sale as it accounts for more than two-third of the value of livestock output for rural farm households. It is generally accepted that the perishable nature of milk and low procurement facilities in rural set-up forces small and marginal farmers to indulge in distress sale, which affects their returns adversely due to presence of improper disposal channel.

Income from livestock farming in Madhya Pradesh

Table 1 depicts the significant disparities in income from livestock farming across various landholding categories. The income from livestock faming was found to be increasing with the increase in landholding size, contributing highest to the income of large farmers followed by medium farmers. Marginal farmers earned the least income from livestock farming, they earn 26.01 per cent of the income of large farmers. Income of small farmers was almost equal to that of marginal farm households who earned 27.27 per cent of large farmers' income from livestock farming. Hence, it is apparent that the quantum of land possessed was an important determinant of rural livelihoods which justifies the need of targeting marginal and small farmers to augment their income from farming of animals. The earlier study by Birthal et al., (2008) also revealed that the livestock is an important source of income at the lower end of land distribution in India and it also has an equalizing effect on income distribution. It implied that if the constraint due to small holding were to be mitigated, strategies for broad based growth of rural livestock sector would be required.

Table 2 revealed that 30.8 per cent of the total rural farm households in the state belong to Scheduled Tribes (ST), while 12.7 per cent, 44.7 per cent and 11.7 per cent belong to Scheduled Caste (SC), Other Backward Castes (OBC) and others category, respectively. The ST and SC population together constituted 43.5 per cent of total rural farm households in MP but together they earned lesser income as compared to all other categories. The OBC farmers earned the highest monthly income, followed by farmers in the 'Others'. In spite of their good share in population, farm households belonging to SC, ST and Others earned 33.8 per cent, 33.4 per cent and 85.2 per cent of the income of OBC farmers from livestock farming, respectively. For the upliftment of socio-

Table 1. Average monthly income from livestock across various landholding classes in MP

Land class	Average monthly income from livestock (₹)	Deviation from overall income
Marginal (<1 ha)	539	-217
Small (1-2 ha)	565	-191
Medium (2-4 ha)	1282	526
Large (>4 ha)	2072	1316
Overall	756	

Source: Authors estimates based on NSSO 70th Round data (2012-13)

Table 2. Average monthly income from livestock across various social groups in MP

Social categories	Share in population (%)	Average monthly income from livestock (₹)	Deviation from overall income
ST	30.8	364	-392
SC	12.7	369	-387
OBC	44.7	1091	335
Others	11.7	930	174
Overall	100	756	

Source: Authors estimates based on NSSO 70th Round data (2012-13)

economic status of the tribal and the weaker sections of the society, including small and marginal farmers, animal husbandry played a significant role (GoMP, 2017).

Table 3 provides the NSS state region-wise farm households income in MP. Among the regions, farmers in the northern and central regions earned the highest income while in the southern and vindhya regions earned the lowest income. Farm households in the northern region earns ₹ 1,422 per month while households in the southern region earned ₹ 216 per month. This is just 15.2 per cent of what the farm households earned in the northern region. This clearly reveals the importance of focusing the attention on the southern and vindhya (eastern) region of MP to harness the potential of livestock sector which will act as a buffer against climatic shocks to crop production in these regions.

Seasonal differences in income from milk sales across various landholding classes in Madhya Pradesh

The situation assessment survey of NSSO has been conducted twice to collect information from same set of sample households to represent two major agricultural seasons in a year. The first visit was made during January to July, 2013 and the second during August to December, 2013 to collect the information on various parameters for last 30 days prior to date of survey during the agricultural year 2012-13. It has been represented visit-1 as season-1 while visit-2 as season-2 to look into the variation in various items.

Table 4 compared the average monthly milk sale by farmers during season-1 and season-2 across different landholding categories. The study indicated that the landsize have strong correlation with farmer's income. All the parameters such as quantity, sale value and prices, increases with the increase in landholding size during both the seasons and the values are higher in season-2 as compared to season-1. Large farmers got the advantage of large herd size and good management practices which enable them to sell more quantity of milk and earns more income from livestock as compared to other farm households, especially marginal and small farmers. Marginal and small farmers together sell nearly 57 and 64 per cent of total milk sold by the large farmers during season-1 and season-2, respectively, while they earned only 54-59 per cent of the total income earned by large farm households. There was significant improvement in performance of marginal farmers in season-2 which may be due to higher production and better price in season-2 as compared to season-1.

Table 5 compares the share of milk sold to various agencies during season-1 and season-2 by farm households belonging to different landholding categories in 2012-13. The study observed that the milk marketing channels of marginal and medium farmers was dominated by local traders with the highest share (45-55%) in the volume of their milk sales followed by direct sale to other households in both the seasons. Small farmers sell maximum volume

Table 3. Average monthly income from livestock across NSS regions in MP

NSS Region	Average monthly income from livestock (₹)	Deviation from overall income
Vindhya	535	-221
Central	949	-193
Malwa	711	-45
South	216	-540
South West	814	58
Northern	1422	666
Overall	756	

Source: Authors estimates based on NSSO 70th Round data (2012-13)

Table 4. Average monthly milk sales in MP: Season-1 and Season-2 in 2012-13

Particulars	Season	Marginal	Small	Medium	Large	Overall
Total quantity sold (Litre)	Season-1	26	27	63	93	36
	Season-2	31	27	64	91	39
Total sale value (¹)	Season-1	586	669	1616	2304	875
	Season-2	787	689	1637	2491	998
Sale price (¹ /Litre)	Season-1	22.5	24.8	25.7	24.8	24.4
	Season-2	25.4	25.5	25.6	27.4	25.6

Source: Authors estimates based on NSSO 70th Round data (2012-13)

Table 5. Share of milk sold to different agencies in MP: Season-1 and Season-2 in 2012-13

Particulars	Season	Marginal (%)	Small (%)	Medium (%)	Large (%)	Overall (%)
Directly to other households	Season-1	34.4	50.6	32.4	13.9	39.4
	Season-2	40.1	38.1	35.0	18.2	36.2
Local traders	Season-1	49.1	39.7	56.0	46.7	48.8
	Season-2	53.1	34.1	54.8	27.0	47.0
Commission agents	Season-1	0.0	0.0	0.8	10.4	1.5
	Season-2	0.9	2.4	2.9	21.5	3.8
Co-operatives& Govt. agency	Season-1	4.8	3.0	4.0	3.4	4.1
	Season-2	4.8	4.0	5.5	0.8	4.4
Processor	Season-1	0.0	3.0	0.0	0.0	0.6
	Season-2	0.0	1.3	0.8	1.0	0.6
Others	Season-1	11.7	3.7	6.9	25.5	10.6
	Season-2	1.1	20.1	1.1	31.6	8.0
Overall	Season-1	100.00	100.00	100.00	100.00	100.00
	Season-2	100.00	100.00	100.00	100.00	100.00

Source: Authors estimates based on NSSO 70th Round data (2012-13)

Table 6. Level of farmer satisfaction vis-à-vis various agencies in Season-1 and 2, 2012-13

Particulars	Season	Satisfactory	NS-lower than market price	NS-delayed payments	NS-deduction for loans borrowed	NS-other cause
Directly toother households	Season 1	74.30	25.70	0.00	0.00	0.00
	Season 2	82.30	17.70	0.00	0.00	0.00
Local Traders	Season 1	61.00	38.30	0.10	0.50	0.00
	Season 2	50.50	49.50	0.00	0.00	0.00
Commission agents	Season 1	13.80	86.20	0.00	0.00	0.00
	Season 2	39.30	60.70	0.00	0.00	0.00
Co-op & Govt. agencies	Season 1	72.70	27.30	0.00	0.00	0.00
	Season 2	75.30	23.40	0.00	1.30	0.00
Processors	Season 1	8.60	0.00	0.00	91.40	0.00
	Season 2	0.00	52.60	0.00	47.40	0.00
Others	Season 1	100.00	0.00	0.00	0.00	1.00
	Season 2	100.00	0.00	0.00	0.00	0.00
Overall	Season 1	69.10	29.90	0.10	0.80	1.00
	Season 2	66.40	33.30	0.00	0.30	0.00

Source: Authors estimates based on NSSO 70th Round data (2012-13)

of milk directly to other households followed by local traders in both the seasons while large farmers sell maximum quantity of milk to local traders in season-1 and to 'Others' in season-2. Cooperative and government agencies captured very less share of 3-5 per cent among all the landholding classes, which may be due to less availability of cooperative and government agencies in rural areas. Co-operatives procure maximum marketed surplus from marginal farm households in season-1 and medium farmers in season-2. The share of processors was almost negligible among all the categories in both the seasons, which shows the lack of adequate procurement and processing facilities in rural areas. Commission agents do not play an active role in procuring milk from all the farmers in rural areas except the large farmers who sell nearly 10.4 per cent of their total milk to them during season-1 and 21.5 per cent during season-2. Similar findings was also reported by Das et al., (2020) in their study in Meghalaya.

Table 6 depicts the level of satisfaction obtained by farmers in selling milk to various agencies in season-1 and-2, respectively. Farmers seem to be highly satisfied when they sell milk to 'Others' while least satisfied by selling it to the processors and commission agents in both the seasons. Commission agents offer lesser price than the market price which decreases the producer's share in consumer rupee and hence it was not profitable to farmers. Processors do not pay the whole amount to farmers as they deduct the loan repayment amount from the payment which does not incentivize the farmers to sell milk to them. Farmers were also satisfied with selling to cooperatives and government agencies along with direct sale to other households. Similar finding was also reported by Sathisha et al., (2018) in their study in Karnataka. They were moderately satisfied with local traders, probably because they offer lesser price than the actual market price, which decreases farmers' returns during both the seasons.

CONCLUSION

The marginal and small farmers earned only 26-27 per cent of income of large farm households so they should be brought at the forefront of the income enhancing strategies to achieve the goal of doubling of farmers' income by 2022. Scheduled Tribes and Scheduled Caste who constituted nearly 43.5 per cent of total farm households in the state are lagging behind in livestock development, which demands targeted approach towards these groups of farm households. Further, there is a need to focus the attention of policy makers on the southern and vindhya regions of Madhya Pradesh where the income of rural households from livestock farming is very low as compared to that of other regions of MP. A single blanket policy cannot work for the whole state as there is wide intra-state variation which requires location specific policy to harness the untapped potential of livestock to achieve the target. As far as different agencies are concerned, farmers are most satisfied when they directly sold to 'others' households and co-operative agencies. One of the possible reasons of higher satisfaction by selling to these agencies might be better price and prompt payment. Co-operatives presence is low i.e., 4.8 per cent share in milk sell by marginal farmers, but they are highly satisfactory in both the seasons. So there is need to harness the presence of co-operatives in these regions to improve the livelihood of marginal and small farmers. The identification of poor farmers belonging to various social groups and their location has important policy implication amidst the push to double income of rural farm households in a short period of time. The implications of this study are specific in nature.

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