

**Socio-Economic and Demographic Profile of the Milk Producers of Punjab: A Case Study
of District Bathinda**

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Introduction

Indian economy is predominately an agrarian economy. Agriculture sector is amalgamation of farming and livestock. Livestock is integral part of rural India as this is not only a source of income but also a livelihood. It provides a regular supplementary income and employment not only to millions of producers in the rural areas but also to a large number of people engaged in secondary and tertiary activities related to livestock business. It is an important occupation and a source of family income for large number of women in the rural areas. Women from millions of households in the country tend to rear cows and buffaloes at home while their husbands toil in the fields (Kurien, 2004). Besides, it generates employment for landless labour also.

It is interesting to note that growth in livestock income has always been higher than the growth in crop income even during the hey days of green revolution. Further since livestock income has been growing faster than the crop income, it has considerable potential to poverty reduction as well. Rapid growth in livestock production is more pro-poor than the growth in other sub-sectors of agriculture because of more egalitarian distribution of livestock compared to land (Birthal and Taneja, 2006).

Livestock production in India has been growing rapidly and the momentum is likely to continue in the near future as sustained income growth and rising urban population are fueling the rapid growth in demand for animal food products (Birthal and Taneja 2006). India continues to be the largest producer of the milk in the world. Several measures have been initiated by the government to increase the productivity of livestock, consequently the milk production increased significantly from 17 million tonnes in 1950-51 to 165.4 million tonnes in 2016-17 (GOI, 2017).

The per capita availability of milk has reached a level of 337 grams per day during the year 2015-16 which is more than world average of 299 grams per day in 2015 (GOI, 2017a)

Punjab, one of the leading agrarian states of India, which not only contributes a large chunk in the central pool of food grain stock, but also significantly contributes to country's milk production sector (NDDB,2014). In Punjab's agricultural sector, the livestock in general and dairy in particular are regarded as the engines of growth. The dairy enterprises are considered as a main treasure of the state's economy, particularly the rural sector. Dairy farming provides nutritious products, draught animal power and organic manure along with supplementary employment and it generates continuous flow of income and acts as cushion against income shocks arising due to crop failure. Another contribution of dairying is to assist in building a support mechanism for milk producers without disturbing their agro-economic system. Thus, the diversification of agriculture with dairying has emerged as a major strategy in the state for improving and stabilizing the income inflows and providing opportunities of gainful employment (Kaur et al, 2014).

Database and Methodology

The present study is mainly based on the primary data, which has been collected with the help of schedules and observations from the selected households in the district Bathinda of Punjab for the year 2017-18. For the selection of sampled households multistage random sampling technique was followed. District Bathinda was selected at the first stage. In the second stage one village from each block of the district was selected randomly. Overall nine villages were selected. A comprehensive list of all the households from all nine villages having at least one milch animal was prepared. In the next stage, sampled households were stratified into different categories on the basis of land holding such as - landless, marginal, small, semi-medium and others (medium and large). Further, at the household level 10 per cent of the total households from each category were selected. On the basis of above methodology 216 households were selected randomly.

Current Status of Milk Production in Punjab

Milk production is an old age subsidiary occupation in the rural areas of Punjab. It is at sixth rank in terms of milk production among all states in India. Per capita availability of milk in Punjab is the highest in the country (NDDB, 2014). Milk production and per capita availability

of milk over time in Punjab is presented in Table 1. Significance growth in milk production can be observed during the last few decades in the state. The total milk production was 1.8 million tonnes in 1970-71 which increased to 11.3 million tonnes during 2016-17. Punjab produced about 6.8 per cent of the country's total milk production during 2016-17. Per capita availability of milk in the state shows a substantial increase from 437 grams per day in 1970-71 to 1075 grams per day in 2016-17. The per capita availability of milk in Punjab is much higher as compared to the overall average for the country as a whole. During 2016-17, it was 1075 grams per day in the state as compared to national average of 355 grams per day and it is above the minimum recommendations of Indian Council of Medical Research (ICMR) of 250gms per day (Kashish and Dhawan, 2015).

Table 1: Milk production and Per capita Availability of Milk in Punjab and India

Year	Punjab		India		Percentage share of Punjab to India's Milk Production
	Milk production (million tonnes)	Per capita availability (gms/day)	Milk production (million tonnes)	Per capita availability (gms/day)	
1970-71	1.8	437	22	112	8.3
1980-81	3.2	541	31.6	128	10.2
1990-91	5.1	682	53.9	176	9.5
2000-01	7.8	870	80.6	220	9.6
2010-11	9.4	931	121.8	281	7.7
2015-16	10.8	1032	155.5	337	6.9
2016-17	11.3	1075	165.4	355	6.8

Source: Department of Animal Husbandry, Dairying and Fisheries, Ministry of Agriculture (2017).

Socio Economic Characteristics of Sampled Households

The contribution of the milk production has always been too important, in the terms of employment generation as well as income generation especially for marginal and small farmers and women in the agricultural sector of Punjab. A crop production is a seasonal income generating activity, whereas dairying enables the farmers to meet the daily cash needs of their family. It poses an important question here that whether the activity of milk production has any impact on improving the social as well as economic conditions of farmers. In this perspective, here an attempt has been made to document the important characteristics of the respondent households which include family size, education, religion, social groups, experience in milk production, herd composition and size.

Family Size

Family size and its composition is an important contributing factor in bovine rearing because it is a labour intensive activity and much of the labour requirements are met from family itself. The information regarding the family size of the sampled respondents has been shown in Table 2. It shows that most of the sampled respondents (49.06 per cent) fall in the family size of 4 to 6 members category, this finding is in line with result of Kashish and Dhawan (2015). The proportion of those lying in this category of family size is the highest for the marginal farmers category (58.54 per cent), followed by small farmers (57.69 per cent), medium and large farmers (52.00 per cent), landless (46.30 per cent) and semi-medium farmers (31.82 per cent). On the whole, about 9 per cent of the sampled households have a family size up to 4 members, about 49 per cent have a family size of 4 to 6 members, about 26 per cent have a family of 6 to 8 members and about 15 per cent have more than 8 members.

Table 2: Distribution of Sampled Households According to Family Size

Household Size	Landless	Marginal Farmer	Small Farmer	Semi Medium Farmer	Others (Medium+Large)	Overall
Upto 4	2 (3.70)	4 (9.76)	5 (9.62)	8 (18.18)	1 (4.00)	20 (9.26)
4-6	25 (46.30)	24 (58.54)	30 (57.69)	14 (31.82)	13 (52.00)	106 (49.06)
6-8	20 (37.04)	7 (17.07)	11 (21.15)	15 (34.09)	4 (16.00)	57 (26.39)
8 and Above	7 (12.96)	6 (14.63)	6 (11.54)	7 (15.91)	7 (28.00)	33 (15.28)
Total	54 (100.00)	41 (100.00)	52 (100.00)	44 (100.00)	25 (100.00)	216 (100.00)

Source: Field Survey 2017-18.

Figures in the brackets indicates the percentage to the respective total

Age of the Head of Family

Table 3 shows the age of the head of the family. It revealed that most of the heads of the sampled households belong to the age category of 55 years and above. We can observe from the table that 41.20 per cent of the sampled households belonged to this age group, though there are variations in this proportion across the categories. We can see that 52.27 per cent of the semi-medium farmers, 44.23 per cent of the small farmers, 40.00 per cent of medium and large farmers, 35.19 per cent of the landless and 34.15 per cent of the marginal farmers belong to this age group. Further, we can also see that about 7 per cent of the heads of sampled households are

up to 35 years old, about 23 per cent are of the age between 35-45 years, about 29 per cent are having age between 45-55 years.

Table 3: Distribution of Sampled Households According to Age of the Head of the Household

Age	Landless	Marginal Farmer	Small Farmer	Semi Medium Farmer	Other (Medium+Large)	Overall
Up to 35	7 (12.96)	1 (2.44)	4 (7.69)	2 (4.55)	1 (4.00)	15 (6.94)
35-45	14 (25.93)	8 (19.51)	15 (28.85)	6 (13.64)	7 (28.00)	50 (23.15)
45-55	14 (25.93)	18 (43.90)	10 (19.23)	13 (29.55)	7 (28.00)	62 (28.70)
55 and above	19 (35.19)	14 (34.15)	23 (44.23)	23 (52.27)	10 (40.00)	89 (41.20)
Total	54 (100.00)	41 (100.00)	52 (100.00)	44 (100.00)	25 (100.00)	216 (100.00)

Source: Field Survey 2017-18.

Figures in the brackets indicates the percentage to the respective total

Education Status of the Head of the Household

The development of the milk production sector, like any others occupation, depends on the production methods adopted. The adoption of a better production method or a scientific techniques depends upon the education level of the producers. In case of milk producers, well educated producers can play an important role in developing the milk production occupation. In modern era, development of milk production sector depends upon the knowledge and education level of the producers. The distribution of sampled households according to education of the household head is shown in Table 4. We can see that out of the total sampled households about 29 per cent of the heads of the families were illiterate, about 57 per cent were having education up to matric level, 6 per cent were having education up to senior secondary level and about 7 per cent of the heads have attained education up to graduation or above. The illiteracy level was the highest in landless category (44.44 per cent). The highest proportion of heads of the sampled households who were graduates or having education above graduation level, was found in case of medium and large farmers (20 per cent), followed by small farmers (11.54 per cent) and further followed by semi-medium category (9.09 per cent). We can further observe that out of the sample respondents, neither landless nor marginal farmers have a qualification of graduation or

above. About 48 percent of the head of sampled households were either illiterate or have education up to primary level. Due to the lack of proper education farmers are unable to adopt the scientific techniques. It can also be observed from the table that as the size of land holding increases, education level also increases.

Table 4: Distribution of Sampled Households according to Education Status of the Head of the Household

Education Level	Landless	Marginal Farmer	Small Farmer	Semi Medium Farmer	Others (Medium+Large)	Overall
Illiterate	24 (44.44)	17 (41.46)	10 (19.23)	9 (20.45)	3 (12.00)	63 (29.17)
Primary	8 (14.81)	11 (26.83)	10 (19.23)	7 (15.91)	4 (16.00)	40 (18.52)
Middle	12 (22.22)	4 (9.76)	6 (11.54)	4 (9.09)	3 (12.00)	29 (13.43)
Matric	6 (11.11)	8 (19.51)	16 (30.77)	16 (36.36)	9 (36.00)	55 (25.46)
Senior Secondary	4 (7.41)	1 (2.44)	4 (7.69)	4 (9.09)	1 (4.00)	14 (6.48)
Graduation and Above	0 (0.00)	0 (0.00)	6 (11.54)	4 (9.09)	5 (20.00)	15 (6.94)
Total	54 (100.00)	41 (100.00)	52 (100.00)	44 (100.00)	25 (100.00)	216 (100.00)

Source: Field Survey 2017-18.

Figures in the brackets indicates the percentage to the respective total

Social Status

The information regarding social status of the sampled households is presented in Table 5. Most of the sampled farming households in district Bathinda belonged to general category, as 56 per cent of the marginal farmers, 85 per cent of the small farmers and all the sampled semi-medium, medium and large farmers belong to the general category. Among sampled landless households, about 81 per cent households belonged to SCs (Schedule Castes), about 13 per cent to general category and remaining 6 per cent belonged to BCs (Backward classes). Among the marginal farmers about, 24 per cent of the sampled households belonged to SC category, about 20 per cent to BC category and the remaining to general category. While considering an overall picture, about 66 per cent sampled household belonged to general category, 25 per cent to SC category and about 9 per cent of the sampled households belonged to BC category.

Table 5: Distribution of Sampled Households According to Social Status of Households

Caste	Landless	Marginal Farmer	Small Farmer	Semi Medium Farmer	Others (Medium+Large)	Overall
General	7 (12.96)	23 (56.10)	44 (84.62)	44 (100.00)	25 (100.00)	143 (66.20)
BC	3 (5.56)	8 (19.51)	8 (15.38)	0 (0.00)	0 (0.00)	19 (8.80)
SC	44 (81.48)	10 (24.39)	0 (0.00)	0 (0.00)	0 (0.00)	54 (25.00)
Total	54 (100.00)	41 (100.00)	52 (100.00)	44 (100.00)	25 (100.00)	216 (100.00)

Source: Field Survey 2017-18.

Figures in the brackets indicates the percentage to the respective total

Religion

Table 6. Explains the distribution of respondents according to their religion. Table shows that about 97 percent of the total sampled households belong to the Sikh religion while only 3 per cent of the households belonged to Hindu religion. Rani (2015) in her work found that 94.67 per cent of the farmers involved in milk production activity, belong to the Sikh community. The Census of Punjab also shows that 70.89 per cent of the population of district Bathinda belongs to Sikh religion (Census of India, 2011). Further, we can see in the Table that 91 per cent of the landless households belong to the Sikh religion whereas 7 per cent of them belong to Hinduism and only 2 per cent belong to the Islam.

Table 6: Distribution of the Households According to their Religion

Religion	Landless	Marginal Farmer	Small Farmer	Semi Medium Farmer	Others (Medium+Large)	Overall
Sikhism	49 (90.74)	41 (100.00)	52 (100.00)	42 (95.45)	25 (100.00)	209 (96.76)
Hinduism	4 (7.41)	0 (0.00)	0 (0.00)	2 (4.55)	0 (0.00)	6 (2.78)
Islam	1 (1.85)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	1 (0.46)
Total	54 (100.00)	41 (100.00)	52 (100.00)	44 (100.00)	25 (100.00)	216 (100.00)

Source: Field Survey 2017-18.

Figures in the brackets indicates the percentage to the respective total

Experience in Milk Production

The experience of heads of sampled households in milk production activity has been depicted in table 7. A perusal of the table 7 reveals that about half of the heads of total sampled households were having experience of less than 30 years in milk production activity while the remaining half heads of households were having more than 30 years of experience. The table further reveals that the proportion of the milk producers who were having the experience between 20 to 30 years in milk production activity was the highest for marginal farmers as about 49 per cent marginal farmers having experience in milk production between 20 to 30 years followed by other (medium and large) farmers (40 per cent), landless and small farmers (37 per cent each) and semi medium farmers (34 per cent). The overall situation of the milk producers in terms of experience in milk production activity is of the order that about 39 per cent of the households were having experience between 20 to 30 years, about 35 per cent of them were having experience between 30 to 40 years, about 14 per cent were having experience of more than 40 years and only about 2 per cent of the households were having milk production experience less than 10 years.

Table 7: Distribution of Sampled Households According to their Experience in Milk Production

Years	Landless	Marginal Farmer	Small Farmer	Semi Medium Farmer	Others (Medium+Large)	Overall
Up to 10	4 (7.41)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	4 (1.85)
10-20	11 (20.37)	1 (2.44)	6 (11.54)	3 (6.82)	0 (0.00)	21 (9.72)
20-30	20 (37.04)	20 (48.78)	19 (36.54)	15 (34.09)	10 (40.00)	84 (38.89)
30-40	13 (24.07)	15 (36.59)	19 (36.54)	21 (47.73)	8 (32.00)	76 (35.19)
40 and above	6 (11.11)	5 (12.20)	8 (15.38)	5 (11.36)	7 (28.00)	31 (14.35)
Total	54 (100.00)	41 (100.00)	52 (100.00)	44 (100.00)	25 (100.00)	216 (100.00)

Source: Field Survey 2017-18.

Figures in the brackets indicates the percentage to the respective total

Herd Composition and Size

The information regarding the number of bovines with sampled households and their herd composition has been presented in table 8 and table 9. It was concluded that the proportion of milch animals for landless, marginal, small, semi-medium and other farmers was of the order of

64.97, 67.36, 67.17, 68.04 and 72.58 per cent respectively. The proportion of milch animals was comparatively higher for others (medium and large) category of farmers as compared to landless, marginal, small and semi-medium farmers. The proportion of young stock (males and females up to 2 years) was relatively higher for landless category as compared to all the farmer categories. On the other hand only about 3 per cent of the total sampled households have draft animals. This was due to the fact that Use of draft animals has reduced significantly due to increased mechanisation of farming in Punjab (Singh, 2015). The detail regarding the average number of animals on sampled households is given in table 9. A perusal of the table reveals that the average number of animals on landless, marginal, small, semi-medium and others farmer categories came out to be 2.91, 4.71, 6.33, 7.75 and 4.96 respectively. On overall basis the average number of animals came out to be 5.30.

Table 8: Composition of Animals Among Sample Households in District Bathinda, 2017-18

Animals	Landless	Marginal Farmer	Small Farmer	Semi Medium Farmer	Others (Medium+Large)	Overall
Milch Animals	102 (64.97)	130 (67.36)	221 (67.17)	232 (68.04)	90 (72.58)	775 (67.74)
Draft Animals	3 (1.91)	10 (5.18)	8 (2.43)	9 (2.64)	4 (3.23)	34 (2.97)
Young Stock	52 (33.12)	53 (27.46)	100 (30.40)	100 (29.33)	30 (24.19)	335 (29.28)
Total	157 (100.00)	193 (100.00)	329 (100.00)	341 (100.00)	124 (100.00)	1144 (100.00)

Source: Field Survey 2017-18.

Figures in the brackets indicates the percentage to the respective total

Table 9: Average Number of Animals Among Sample Households in District Bathinda, 2017-18

Animals	Landless	Marginal Farmer	Small Farmer	Semi Medium Farmer	Others (Medium+Large)	Overall
Milch Animals	1.89	3.17	4.25	5.27	3.6	3.59
Draft Animals	0.06	0.24	0.15	0.2	0.16	0.16
Young Stock	0.96	1.29	1.92	2.27	1.2	1.55
Total	2.91	4.71	6.33	7.75	4.96	5.30

Source: Field Survey 2017-18.

Concluding remarks:

The analysis of socio economic profile of sampled households showed that the majority of the households had family size of 4 to 6 members. As far as the age of the head of family was concerned it was found that on an average 41 per cent of the household's head were of the age of 55 years and above. Majority of the farmers were having experience in milk production activity for 20 to 30 years. Majority of the land holding households belong to general category and Sikh religion, on the other hand, about 81 per cent of the landless households belong to SC category. The average number of milch animals found to be highest for semi medium farmers as compare to other farming categories. About 46 per cent of the total bovines were with the marginal and small farmers. Education level of the sampled households shows that about 44 per cent of the landless households and 24 per cent of the land holders were illiterate. It can also be conclude from the analysis that the education level increases with the increase in the size of land holdings. Neither landless nor marginal farmer households has even a single member with graduation level of education. There is need to educate the milk producing farmers to adopt the scientific techniques which will help them to improve production.

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