

Production, Consumption and Marketed surplus of Milk in Patiala and Faridkot Districts - A Study of Punjab State

Updesh Khinda,

Assistant Professor,
Innocent Hearts Group of Institutions,
Jalandhar, India.

Dr. Rohan Sharma,

Assistant Professor,
Innocent Hearts Group of Institutions,
Jalandhar, India.

ABSTRACT

Global milk production has mounted up more than 50 % in the last three decades, i.e. during 1983-2013 from 500 million tonnes to 769 million tonnes. Since 1970's, most of the augmentation in milk production has been witnessed in South Asia, New Zealand, United States of America, Germany, France, Australia and Ireland are the countries which are having highest milk surpluses India, the world's largest milk producing nation recorded a growth of 6.26 % in milk production, whereas the world milk production has shown a growth of 3.1 %. In 2014-2015, in milk production, India is trailed by the United States of America, China, Pakistan and Brazil. It was predicted by the Food and Agriculture Organization of the United Nations in 2013 that India would grow up to 141 million tonnes in 2014 (FAO, 2013). India is contributing almost 18.5 % of the world's population. An increase in the number of herd size as well as an increase in milk productivity led to increase milk production in India in the recent times (Press information Bureau, Ministry of Finance, GOI, 2015). In present study an attempt is made to study the production, consumption and Marketed surplus milk by different categories of milk producers. Both secondary and primary data was used. Primary data is collected from two districts Faridkot and Patiala. The data is analysed by using averages, t-test and Z-test. Milk production is higher in Patiala district (86.33 lts) compared to Faridkot district (78.39 lts) and the difference between the two was statistically significant. In contrast, consumption of milk due to large average family size was higher in the Faridkot (5.68 lts) as compared to Patiala district (4.35 lts) and the difference was statistically significant. In the study area, a very high percentage of marketed surpluses were observed. With more production and less consumption, the marketable surplus of milk was higher in Patiala compared to Faridkot district.

Keywords: Milk Production, Milk Consumption, Marketed Surplus, Agriculture.

INTRODUCTION:

Livestock sector is a significant sub sector of Indian agriculture and it accounted for 4.11% of GDP at current prices during 2012-13 (Statmilk, 2015). The livestock sector in the form of bee keeping, poultry, rearing of sheep for wool and dairying etc. is a major source of subsidiary income for farmers. There is a strong and inseparable relationship between agriculture and livestock sector. Global milk production has mounted up more than 50 % in the last three decades, i.e. during 1983-2013 from 500 million tonnes to 769 million tonnes. Since 1970's, most of the augmentation in milk production has been witnessed in South Asia, New Zealand, United States of America, Germany, France, Australia and Ireland are the countries which are having highest milk surpluses India, the world's largest milk producing nation recorded a growth of 6.26 % in milk production, whereas the world milk production has shown a growth of 3.1 %. In 2014-2015, in milk production, India is trailed by the United States of America, China, Pakistan and Brazil. It was predicted by the Food and Agriculture Organization of the United Nations in 2013 that India would grow up to 141 million tonnes in 2014 (FAO, 2013).

It has been observed that as India is having immense potential for dairy sector, so there is need to know the marketed surplus, which actually leads towards more sales as well as exports of milk and milk products. So we have planned to conduct this study titled "Production, Consumption and Marketed Surplus of Milk- A Study of Punjab" with the following specific objectives:

1. To study the production of milk among different categories of Milk Producers in Punjab.
2. To study the consumption of milk in Punjab.
3. To study the marketed surplus of milk among different categories of Milk Producers in Punjab.

REVIEW OF LITERATURE:

(Anbu et al. 2012) conducted a research titled "An Empirical Study on Dairy Co-operative Societies which satisfies the Dairy Farmers" used 'Bhanja Scale' to measure the satisfaction level of Dairy farmers of Tamil Nadu. They found that most of the farmers are getting economic benefits from the services provided by Dairy cooperatives, which led towards rise of satisfaction level of member farmers.

(Bhupal 1999) in his study on "Production and Utilization Pattern of Milk at the Rural Producer's Level in Punjab" brought to light that out of total produced milk (6476 lits) in a day in Punjab, 64 percent was to be contributed by only small and medium farmers. About 46 and 54 percent of total produced milk was retained for self consumption by small and medium farmers respectively. The role of private milk vendors in handling sale of milk was also very important.

(Gangwar et al. 1989) analyzed the milk production and consumption in Haryana state in a study entitled as "An Economic Analysis of Production and Consumption on Different Sizes of Farms in Haryana State". They revealed that 62 per cent of the total milk produced on different herd size farms in the state was consumed by the family itself and 38 per cent was sold as milk and milk products. Small farmers marked about only 39 and 36 per cent, respectively. Per capita per day consumption was 491ml on small farms, 640 ml on medium farms and 884 ml on the larger farms.

(Gupta et al. 1995) in a study on "Consumption and Disposal of Milk in Churu District (Rajasthan)" identified that the milk production was highest in winter. They further revealed that due to lack of adequate marketing facilities, a major portion of the total milk produced by the producers was retained for family consumption and it was relatively higher in summer compared to the rainy and winter seasons. More than half of milk was consumed in the form of milk, about 1/4th in the form of ghee and 1/6th for tea preoperational farms, 640 ml on medium farms and 884 ml on the larger farms.

(Khamkar 2014) in a study "The Consumption Pattern of Dairy Products by Indian Consumers since 2000" brought to light that the successful implementation of the Operation Flood Programme augmented the development of the Dairy Sector in India. The development of dairy sector in the recent past is mainly demand driven. There is a tremendous rise in demand and consumption of dairy products in India and also at international level. Almost 54 % of total produced milk is consumed by the milk producer themselves. 66 % is marketed through informal channel and the remaining is sold through formal channel.

Islam et al (2014) conducted a study on "Adoption of Improved Dairy Husbandry Practices by the Dairy Farmers of Sundarpukhuri Milk Co-operative Society in Assam". They tried to access the adoption of improved fodder, artificial insemination, good veterinary facilities and marketing facilities. They exhibited that almost 95 percent milk producers adopted high breed milch animals and 97 percent milk producers started selling milk in organized market. Among the organized market, the first choice to sell the milk is co-operative dairies.

Rangasamy et al (2007) in a study "Milk Procurement Cost for Co-operative and Private Dairy Plants in Tamil Nadu – A Comparison" have highlighted some key points related to the dairy industry. He came with some suggestions comprising installation of 24 hours big cooling systems to store milk, mainly in rural areas, arranging induction and training programs for milk producers, increasing the role and responsibility of cooperative societies in marketing of milk, reducing the cost of producing milk as well as transportation cost

RESEARCH METHODOLOGY:

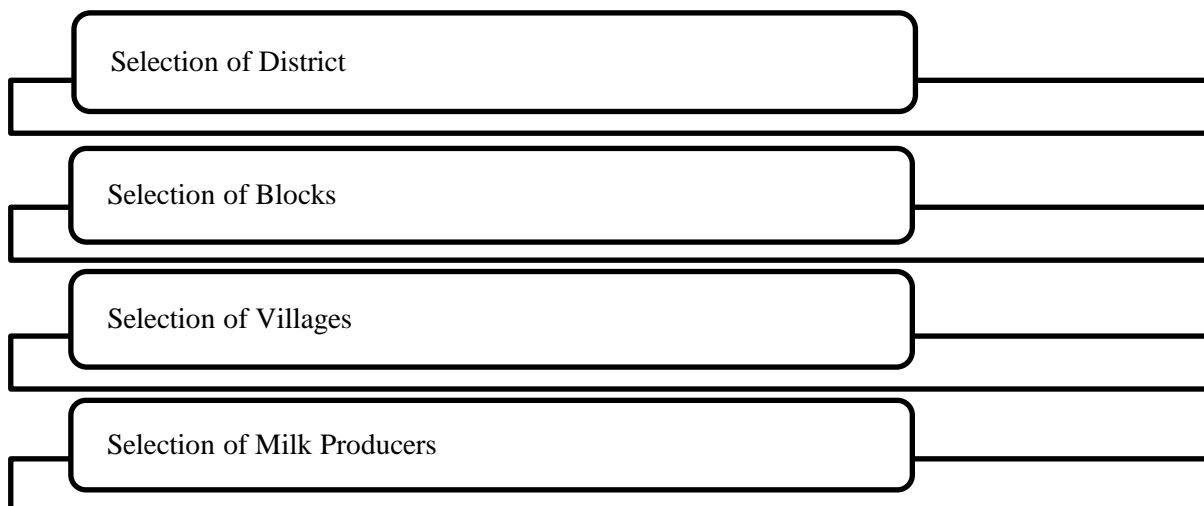
Locale of the Study:

Punjab state is the locale of the study.

Sampling Design:

The sample of the study is based on multistage stratified random sampling technique. District wise list of milch animals (cows and buffaloes) was prepared. On the basis of concentration of milch animals, all the districts

were clubbed into two groups (below 2.5 and above 2.5 milch animals). One district from each group would be selected (Patiala and Faridkot).Two blocks would be randomly selected from each district. Three villages from each block would be randomly selected. Total 12 villages were selected.



Analysis of Data:

The data was analyzed by using simple as well as advanced statistical tools. Simple techniques like frequencies, percentages, averages, etc. and advanced statistical tools like t-test and Z-test were applied to analyze the data.

RESULTS AND DISCUSSIONS:

Before going for discussion on the production, consumption and marketable surplus of milk, it is relevant here to have an overview of the personal profile of the milk producers.

Table1: Different Categories of Milk Producers on the basis of Herd Size

Small Milk Producers	Medium Milk Producers	Large Milk Producers
4-7 Herd Size	7-13 Herd Size	13-Above Herd Size

Age:

A perusal of Table 2 revealed that the highest proportion i.e. 34.72 percent in Patiala district and 41.18 percent in Faridkot district) were in the group 30-40 years.

This was followed by in the age groups of 40-50 years, where there were 30.56 percent in the Patiala and 27.97 percent in the Faridkot district. As much as 18.06 and 19.12 percent of the respondents in Patiala and Faridkot district respectively, were under 30 years of age while those above 50 years of age were 15.28 percent in the Patiala and 11.76 percent in the Faridkot districts

Table 2: Distribution of Milk Producers According to Age

Age (years)	Small		Medium		Large		Total	
	No.	%age	No.	%age	No.	%age	No.	%age
Patiala								
<30	5	15.63	3	14.29	5	26.32	13	18.06
30-40	14	43.75	4	19.05	7	36.84	25	34.72
40-50	10	31.25	9	42.86	3	15.79	22	30.56
>50	2	6.25	5	23.81	4	21.05	11	15.28
	Faridkot							
<30	3	10.34	3	14.29	7	38.89	13	19.12
30-40	13	44.83	10	47.62	5	27.78	28	41.18
40-50	10	34.48	5	23.81	4	22.22	19	27.94
>50	3	10.34	3	14.29	2	11.11	8	11.76

Source: Author’s Calculation .

Category-wise analysis revealed that in Patiala district the highest proportion of small (43.75 percent) and large size milk producers (36.84 percent) were in the age group of 30-40 years while the highest proportion of medium sized producers (42.86 percent) were from 40-50 years of age. In contrast, in Faridkot district the highest proportion of small (44.83 percent) and medium sized farmers (47.62 percent) were in the age group of 30-40 years while the highest proportion of large sized milk producers (38.89.50percent) were below 30 years of age.

Educational Level:

Formal education may enable a person for a better planning and execution of the production and marketing process while enhances the decision making capacity that can increase the earnings. Thus it becomes essential to know the educational status of the respondents. The educational level of milk producers is shown in Table 3.

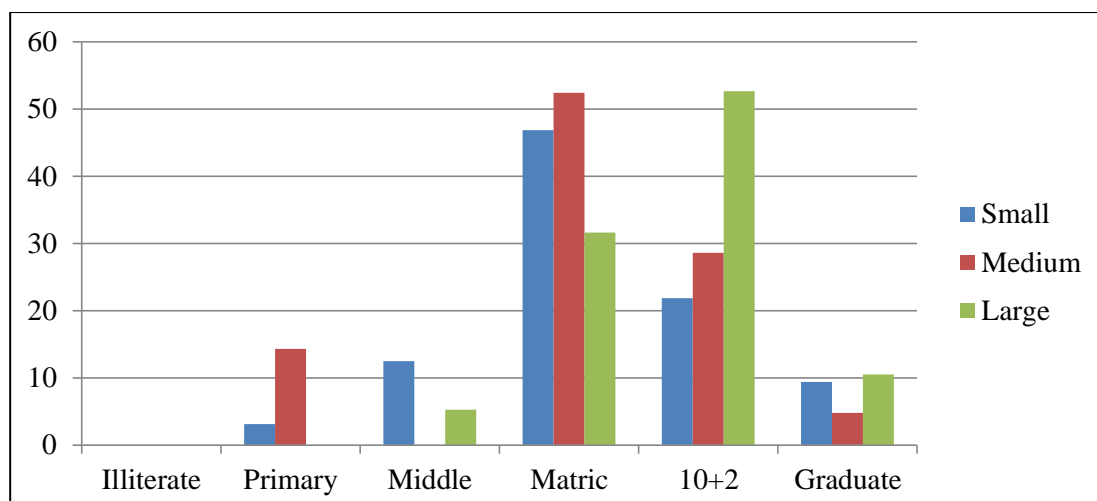
Table 3: Distribution of Milk Producers According to Educational Level

Educational Level	Small		Medium		Large		Total	
	No.	%age	No.	%age	No.	%age	No.	%age
Patiala								
Illiterate	2	6.25	0	0.00	0	0.00	2	2.78
Primary	1	3.13	3	14.29	0	0.00	4	5.56
Middle	4	12.50	0	0.00	1	5.26	5	6.94
Matric	15	46.88	11	52.38	6	31.58	32	44.44
10+2	7	21.88	6	28.57	10	52.63	23	31.94
Graduate	3	9.38	1	4.76	2	10.53	6	8.33
Faridkot								
Illiterate	4	13.79	3	14.29	1	5.56	8	11.76
Primary	4	13.79	4	19.05	0	0.00	8	11.76
Middle	7	24.14	4	19.05	3	16.67	14	20.59
Matric	9	31.03	7	33.33	8	44.44	24	35.29
10+2	5	17.24	2	9.52	5	27.78	12	17.65
Graduate	0	0.00	1	4.76	1	5.56	2	2.94

Source: Author’s Calculation

The information given in Table 3 reveals that in Patiala district only 2.78 percent of respondents were illiterate. Among the literates 44.44 percent were matriculates, 31.94 percent were intermediates while those having primary, middle and graduation levels education were 5.56, 6.94 and 8.33 percent respectively. In comparison the illiteracy among the respondents was higher (11.76 percent) in the Faridkot district. Among the literates 35.29 percent were matriculates, 20.59 percent middle, 17.65 percent 10+2, 11.76 percent upto primary and only 2.94 percent were graduates.

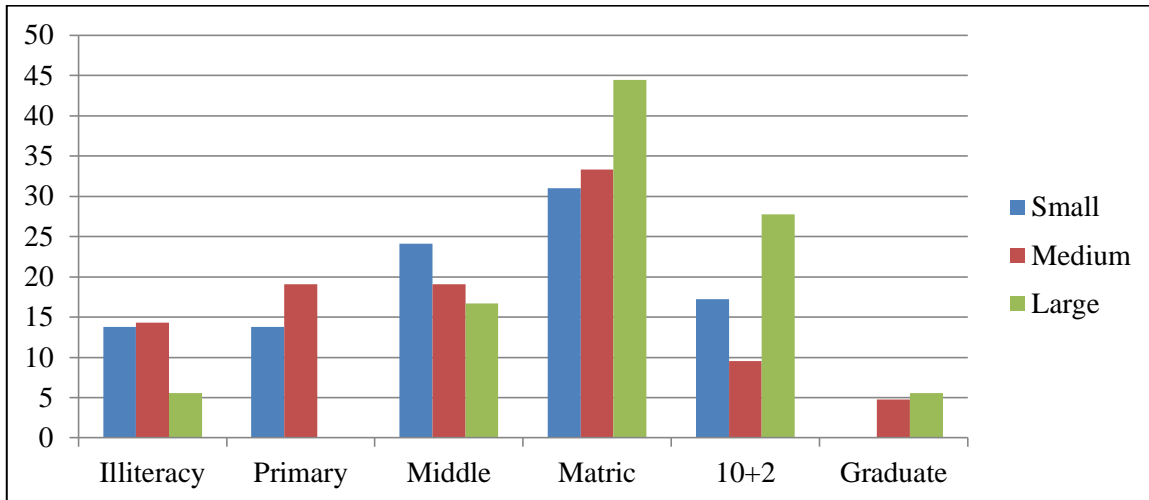
Figure 1: Distribution of Milk Producers According to Educational Level, Patiala District



Source: Author’s Calculation

Category-wise analysis showed that in Patiala district illiteracy existed only among 6.25 percent of the small farmers. The highest proportion of small (46.88 percent) and medium sized producers (52.38 percent) were matriculates while the highest proportion of large sized producers (52.63percent) was 10+2 pass outs. In contrast, in Faridkot district literacy existed among all sized producers but was much higher among small (13.79 percent) and medium producers (14.29 percent) compared to large producer (5.56 percent). The highest proportion of small (31.03 percent), medium (33.33 percent) and large producers 44.44 percent) were matriculates.

Figure 2: Distribution of Milk Producers According to Educational Level, Faridkot District

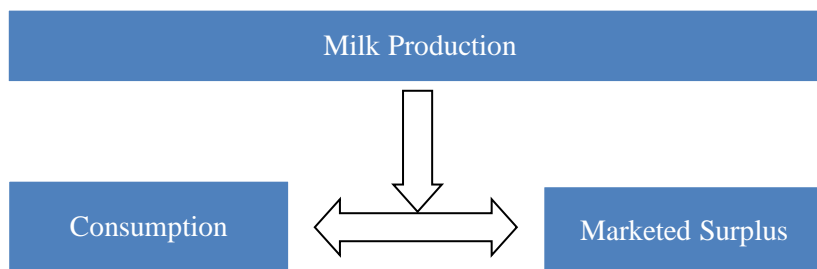


Source: Author’s Calculation

ANALYSIS OF DATA:

Production, Consumption and Marketed Surplus of Milk on the Sampled Dairy Farmers:

Figure 3: Production, Consumption and Marketed Surplus of Milk in Patiala and Faridkot Districts of Punjab



The production of milk was higher in Patiala district (86.33lts) as compared to that in Faridkot district (78.39 lts) and the difference was statistically significant as indicated by the t-value of 2.47statistically significant as indicated by the t-value of 2.47.

In contrast, consumption of milk was higher in Faridkot district (5.68 lts) as compared to that in Patiala district (4.35 lts) and the difference was statistically significant as conveyed by the t-value of 2.28. This is due to larger average family size in Faridkot district as compared to that in Patiala district . Category-wise analysis revealed that in Patiala district average family sizes were 5.12, 6.18 and 6.16 persons for small, medium and large sized producers respectively. In Faridkot district average family size was comparatively higher for all the three sized producers, which was 7.10, 6.62 and 7.35 persons for small, medium and large-sized producers respectively With more production and less consumption, the marketed surplus of milk was higher in Patiala district (81.98 lts) compared to Faridkot district (72.70 lts) and the difference was statistically significant as indicated by the t-value 2.52.

Category-wise average daily milk production, consumption and marketable surplus of milk was highest in case of large producers followed by the medium and small sized producers in both the districts. However, the difference in production, consumption and marketed surplus in the two districts was statistically significant across the small and large sized producers but not for the medium sized producers.

Table 4: Production, Consumption and Marketed Surplus of Milk in Patiala and Faridkot Districts (litres/day)

Particulars	Small		Medium		Large		Total	
	Qty	%age	Qty	%age	Qty	%age	Qty	%age
Patiala								
Production	55.37	100.00	72.41	100.00	153.87	100.00	86.33	100.00
Consumption	3.81	6.88	4.68	6.46	4.91	3.19	4.35	5.04
Marketed Surplus	51.56	93.12	67.73	93.54	148.96	96.81	81.98	94.96
Faridkot								
Production	44.65	100.00	77.15	100.00	134.18	100.00	78.39	100.00
Consumption	5.31	11.89	5.64	7.31	6.34	4.72	5.68	7.25
Marketed Surplus	39.34	88.11	71.51	92.69	127.84	95.28	72.70	92.75
t-values: Patiala vs Faridkot								
Production	3.21**	1.31	3.98**	2.47*				
Consumption	2.17*	1.56	2.37*	2.28*				
Marketable Surplus	3.84**	1.63	4.67**	2.52**				

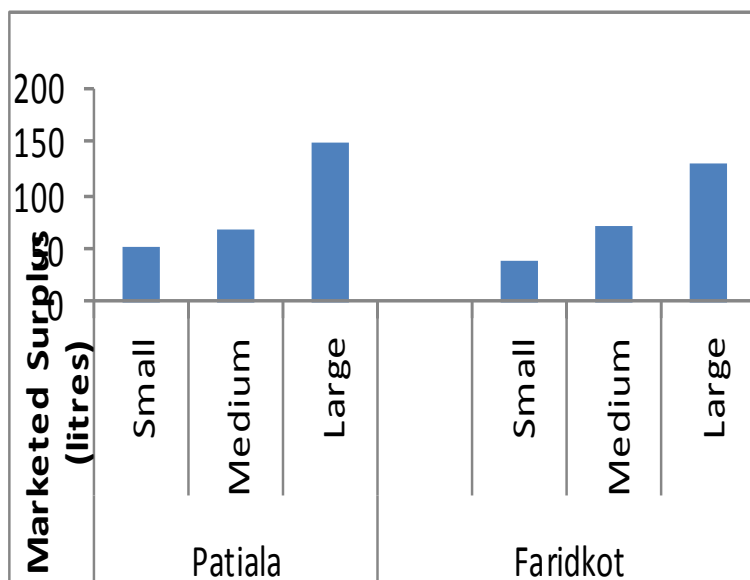
** : significant at 1% level

* : significant at 5% level

* : significant at 5% level

Source: Author’s Calculation

Figure 4: Marketed Surplus of Milk Dairies



Source: Author’s Calculation

Milk Consumption Pattern in Patiala and Faridkot Districts:

The information given in Table 4 revealed that the respondents consumed more than half of the milk retained for home consumption as fluid milk in both districts, being 53.69 percent in Patiala and 64.60 percent in Faridkot. The remaining milk was converted into products like curd, ghee and cheese. Major portion of this milk was utilized for making curd being 37.15 percent in Patiala and 21.90 percent in Faridkot district. As much as 5.34 percent and 3.82 percent of the milk in Patiala and 9.46 percent and 4.04 percent of the milk in Faridkot district was converted into ghee and cheese respectively. 3.82 percent of the milk in Patiala and 9.46 percent and 4.04 percent of the milk in Faridkot district was converted into ghee and cheese respectively.

Category-wise it was discernible that in Patiala district, the proportion of milk consumed as fluid milk was higher for the larger sized producers (57.23 percent) as compared to that for small (52.75 percent) and medium sized producers (51.50 percent). Proportion of milk converted into curd was higher for the small (41.73 percent) and medium sized producers (40.81 percent) while the proportion of milk converted to ghee was more for the large sized producers (10.59 percent). In Faridkot district, the proportion of milk consumed as fluid milk was comparatively higher for small (67.23 percent) and medium sized farmers (66.13 percent).

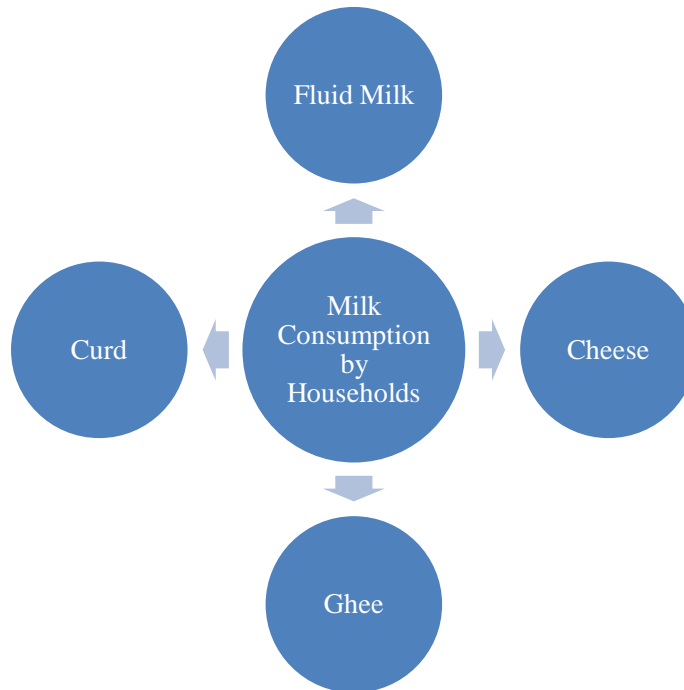
Table 5: Split up of Milk Consumption in Patiala and Faridkot Districts (litres/day)

Forms of Consumption	Small		Medium		Large		Total	
	Qty	%age	Qty	%age	Qty	%age	Qty	%age
Patiala								
Consumption	3.81	100.00	4.68	100.00	4.91	100.00	4.35	100.00
Fluid Milk	2.01	52.76	2.41	51.50	2.81	57.23	2.34	53.69
Curd	1.59	41.73	1.91	40.81	1.34	27.29	1.62	37.15
Ghee	0.09	2.36	0.19	4.06	0.52	10.59	0.23	5.34
Cheese	0.12	3.15	0.17	3.63	0.24	4.89	0.17	3.82
Faridkot								
Consumption	5.31	100.00	5.64	100.00	6.34	100.00	5.68	100.00
Fluid Milk	3.57	67.23	3.73	66.13	3.77	59.46	3.67	64.60
Curd	1.23	23.18	1.26	22.34	1.25	19.72	1.24	21.90
Ghee	0.40	7.53	0.46	8.16	0.85	13.41	0.54	9.46
Cheese	0.11	2.06	0.19	3.37	0.47	7.41	0.23	4.04

Source: Author’s Calculation

Same was the pattern of curd consumption. Only 2.06 percent and 3.37 percent of milk was converted into cheese by small and medium milk producers, while the same figure came to be 7.41 percent in the case of large sized milk producers in Faridkot district.

Figure 5: Milk Consumption by Households



This indicated that even though at the farm level, the total milk consumption was nearly stable throughout the year, but the milk utilization pattern for the fluid milk and its derivatives experienced seasonal changes in both the districts. This is because nearly half of the flush and lean periods of milk production coincided with the winter and summer seasons. Increased demand of curd during the lean period was met through substitution with fluid milk retained for home consumption.

FINDINGS OF THE PRESENT STUDY:

- Milk production was higher in Patiala district (86.33 lts) compared to Faridkot district (78.39 lts) and the difference between the two was statistically significant.
- In contrast, consumption of milk due to large average family size was higher in the Faridkot (5.68 lts) as compared to Patiala district (4.35 lts) and the difference was statistically significant.

- In the study area, a very high percentage of marketed surpluses were observed. With more production and less consumption, the marketable surplus of milk was higher in Patiala compared to Faridkot district.
- With more production and less consumption, the marketable surplus of milk was higher in Patiala (81.98 lts) compared to Faridkot (72.70 lts) district and the difference was statistically significant.
- Category-wise average daily milk production, consumption and marketable surplus of milk was highest in case of large producers followed by the medium and small sized producers in both the districts. However, differences in production, consumption and marketed surplus in the two districts was statistically significant across the small and large sized producers but not for the medium sized producers.
- Category-wise it was discernible that in Patiala district, the proportion of milk consumed as fluid milk was higher for the larger sized producers (57.23 percent) as compared to that for small (52.75 percent) and medium sized producers (51.50 percent).
- In Faridkot district, the proportion of milk consumed as fluid milk was comparatively higher for small (67.23 percent) and medium sized farmers (66.13 percent).
- Major portion of this milk was utilized for making curd being 37.15 percent in Patiala and 21.90 percent in Faridkot district.

REFERENCES:

- Anbu, A. & Sampathkumar, T. J. (2012). An Empirical Study On Dairy Cooperative Societies Which Satisfies The Dairy Farmer's. *International Journal of Management*, 3 (2),177 – 185.
- Bhupal, D. S. (1999). *Production and Utilization Pattern of Milk at the Tural Producers Level in Punjab*. Research Study by Agricultural Economics Research Centre, University of Delhi.
- Gangwar, A .C, Panghal, .S. & Kumar, K. (1989). An Economic Analysis of Production and Consumption on Different Sizes of Farms in Haryana State. *Indian Journal of Dairy Science*, 42, 678-83.
- Gupta, J. N . & Raj, D. (1995). Consumption and Disposal of Milk in Churu District (Rajasthan). *Indian Dairyman*, 47, 42-45.
- Islam & Rafiqu (2016). Adoption of Improved Dairy Husbandry Practices by the Dairy Farmers of Sundarpukhuri Milk Co-operative Society in Assam. *Indian Journal of Dairy Science*, 69(4), 505-510.
- Khamkar, K. S. (2014). The Consumption Pattern of Dairy Products by Indian Consumers Since 2000. *Asian Journal of Management Sciences*, 2(3), 170-178.
- Rangasamy, N. & Dhaka, J. P. Milk Procurement Cost for Co-operative and Private Dairy Plants in Tamil Nadu – A Comparison. *Journal of Agricultural Economics*, 62(4), 679–693.
