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Marketing of Milk in Various Agro-climatic Zones of Jammu and Kashmir

S.A. Wani and M.H. Wani*

Division of Agricultural Economics and Marketing, Sher-e-Kashmir University of Agricultural Sciences
and Technology of Kashmir, Shalimar Campus, Srinagar- 191 121, Jammu and Kashmir

Abstract

The study has examined the prevailing marketing system, utilization, marketed surplus / consumption, channels of distribution, processing / demand and supply scenario of milk in Jammu and Kashmir. The study is based on the primary data collected from 150 households rearing milch animals, 20 vendors and 20 milk shops from each delineated agro-climatic zones, besides qualitative and quantitative information obtained from co-operative / private dairy owners involved in milk trade. Crossbred cows have been found to have higher productivity than of buffaloes and indigenous cows. Marketed surplus as percentage of total production varies from 68 per cent in intermediate zone to 73 per cent in sub-tropical zone. Overall, sale price of milk has shown a highly erratic trend, irrespective of the zone. Per capita milk consumption varies from 338 g/day in intermediate zone to 569 g/day in sub-tropical zone and is higher in each zone than minimum quantity recommended by the Indian Council of Medical Research. Producer share in consumer rupee has been found highest in channels I and IV. The dairy cooperative, a most significant market functionary in milk trade, is either missing or handles meagre quantity of milk. The study of milk processing has revealed that profit per litre in packaged milk is encouraging. Also, organized sector meets only 21.76 per cent and 16.32 per cent demand of the cities and towns of Kashmir and Jammu divisions, respectively. The study has suggested that an integrated dairy development project should be implemented in the state to boost milk production with regular / remunerative market to the milk producers and to capture a major share of urban milk markets with regular supply of quality milk.

Introduction

The changing dietary pattern has been instrumental in increasing the consumption of milk in the state of Jammu and Kashmir during the past two decades. It has become more important because of the fact that the area under pulses has reduced, thereby inviting attention on the import of milk from the neighbouring states to regulate supplies and maintaining nutritional status of the people. The agro-climatic conditions of the state are diverse and as such favour livestock rearing. In addition with only 31 per cent net sown area and 0.66 ha average holding size, it supports 10 million population of the state (DES, 2005). The 75 per cent population of the state is rural with agriculture as

the main stay and livestock-rearing as the subsidiary one. These two sectors of rural economy are interdependent. The agriculture and allied sectors contribute about 38 per cent to the state gross domestic product of which 11 per cent, 9 per cent and 7 per cent are contributed by livestock, crop, and horticulture sectors, respectively (Economic Survey, 2007).

As per Livestock Census of 2005-06, the state has 8.24 million livestock, comprising 2.85 million cattle, 0.54 million buffalo, 3.56 million sheep and 1.29 million goat population. The estimated milk production is 1430.43 thousand tonnes with 360 g per capita per day availability. The state with 3.20 million milch animals showed the dependency ratio of 3.4 persons per livestock. The results of the Livestock Census also revealed a decline of 7 per cent, 47.60 per cent, 36.70

* Author for correspondence,
Email: dr.masoodulhaq@rediffmail.com

per cent and 9.0 per cent in cattle, buffalo, sheep and goat population and of 10 g / day / capita in milk availability over the previous Livestock Census (DES, 2006), but in totality milch cattle population in the state is impressive (> 50% crossbreds) and productive. However, despite this fact, milk distribution system in J&K has been quite exploitative and traditional with the organized sector handling only 1.70 and 5.0 per cent of the total liquid milk production and marketed surplus. Lack of a regular outlet of milk has made the producers extremely dependent on the milk vendors/shops, who exploit them by not paying remunerative prices, thereby leaving the producers with no incentive to increase their milk production. The urban consumers are also harassed by this market chain as it supplies poor quality and adulterated milk at exorbitant rates. The situation is alarming in the state and to reverse these trends, it is essential that an integrated dairy development project is implemented to boost milk production, to provide a regular and remunerative market to the milk producers and capture a major share of urban milk markets with regular supply of quality milk, which is otherwise being captured rapidly by the neighbouring state of Punjab.

In this backdrop, a study was undertaken under NAT Project entitled "Livestock crop production system analysis for sustainable production systems" during the year 2004-05 to examine the pattern of milk production, utilization, marketed surplus, market functionaries for different channels in distribution of milk.

Data and Methodology

The state has four agro-climatic zones, viz. subtropical (JK-1), intermediate (JK-2), valley temperate (JK-3) and cold arid (JK-4). Four districts, one each from each agro-climatic zone were delineated and from each district, one block representing the particular micro-climate of the district was purposively selected. The study is based on the primary data collected through survey method for which a questionnaire was specifically designed. Cooperative / Private dairy owners and managers were interviewed to obtain quantitative and qualitative information on milk production, consumption and trade, etc. Multi-stage cluster sampling technique was followed to draw the ultimate sample of households for collection of primary data from cluster of 5-7 villages drawn from each block. Different livestock-based production systems were

identified from each block and 150 households rearing milch animals were randomly selected through proportional allocation method making a sample size of 600 households. To examine the milk marketing channels, 20 vendors and 20 milk shops were also selected from each delineated zone. The secondary data was collected from various sample survey reports on livestock census. Primary and secondary data collected from different functionaries in milk trade through the survey method were subjected to analysis. The data for profile of organized cooperative / private sector in liquid milk marketing in the four agro-climatic zones of Jammu and Kashmir was collected during the year 2007-08.

Results and Discussion

Productivity of Milk

The analysis of daily yield of milk per lactating and milch animal is of paramount importance in dairy enterprise. As expected cross-bred cows had higher productivity than buffaloes and indigenous cows (Wani and Wani, 2007; Patel, 1993). The data revealed that there was not marked difference in between the average productivity of lactating and milch buffaloes of zones JK-1 and JK-2. The superiority of genetic production potential of lactating and milch cross-bred cows of zones JK-1 and JK-3 is evident from the higher yield recorded in these zones than in zones JK-2 and JK-4. The same trend was observed for local cows of different zones.

The variation in milk production by lactating and milch crossbred as well as local cows of the different zones was perhaps due to the adoption of modern animal husbandry practices in zones JK-1 and JK-3. Low production potential of crossbred cows in zones JK-2 and JK-4 may probably be attributed to late adoption of crossbred cows. Low productivity of crossbred and local cows in zone JK-2 may be due to the paucity of feed and fodder as livestock concentration per household was higher in the zone. In zone JK-4, low productivity could also be attributed to scarce feed resources and inclement weather conditions of the zone.

The average daily milk yield per lactating and milch goat was higher in zones JK-1 and JK-2 than in zones JK-3 and JK-4. The possible reason could be the congenial environment prevailing in the former for efficient goat production (Table 1).

Table 1. Average productivity of lactating and milch animals in different agro-climatic zones of Jammu & Kashmir
(Qty in litres/day)

Zones/ District	Lactating animals			Milch animals			Goats	
	Buffalo	Crossbred cow	Local cow	Buffalo	Crossbred cow	Local Cow	Lactating	Milch
JK-1	5.64	7.08	4.27	4.18	5.48	2.84	0.64	0.41
JK-2	5.80	5.93	3.73	4.01	4.16	2.37	0.68	0.48
JK-3	-	7.28	4.61	-	5.79	3.09	0.59	0.39
JK-4	-	5.40	3.62	-	3.61	2.22	0.53	0.35

Production, Utilization and Marketed Surplus of Milk

The dairying sector in Jammu and Kashmir is largely under-developed. Milk producers are ill-organized and suffer from severe handicaps in marketing of their milk profitably. The milk marketing is still primitive, basically due to the product characteristics and consumer necessities (Wani and Mathur, 1992). The relationship between level of milk production and its disposal and other parameters was analyzed in the delineated agro-climatic zones and the data is presented in Table 2. A perusal of Table 2 reveals that average daily milk production per household in zones JK-1, JK-2, JK-3 and JK-4 was 9.82 L, 7.76 L, 10.92 L and 6.23 L, respectively. Zone-wise share in total milk production was more of cattle in zone JK-3 and of buffaloes in zone JK-1.

The overall daily consumption of milk per household in different agro-climatic zones showed more or less a uniform trend. However, households in zones JK-1 and JK-2 utilized a higher quantum of milk for milk products and in zones JK-3 and JK-4, it was the fluid milk. Marketed surplus as percentage of total production varied from 68 per cent in zone JK-2 to 73 per cent in zone JK-3. However, in cold arid zone only 54 per cent of total milk production was the marketed surplus. Sale price of buffalo milk was higher than of cow milk because of higher fat content in the buffalo milk. Overall, the sale price of milk showed an erratic trend, irrespective of agro-climatic zones. It was only Rs 9.00 to Rs 9.25 per litre in zones JK-1 and JK-3 but varied from Rs 10.04 to Rs 12.40 per litre in zones JK-2 and JK-4.

Consumption

The consumption of milk is one of the important indicators of judging the impact of dairy development

on rural community (Singh and Singh, 1994a; 1994b). The present production level of milk in the J&K state provides per capita availability of 360g per day, which is higher than the recommended minimum quantity of 250g per day by the Nutritional Advisory Committee of Indian Council of Medical Research (ICMR, 1989). In the present study, the per capita milk consumption was found as 569 g, 338 g, 512 g and 497 g in zones JK-1, JK-2, JK-3 and JK-4, respectively (Table 2). Thus, different agro-climatic zones exhibited a considerable variation in per capita consumption of milk. Since milk consumption is governed by several factors including dietary habits and availability, apparently no particular reason could be spelled out to this erratic and increased consumption of milk than the minimum requirements recommended by ICMR.

Distribution

The sale of milk through different channels and price paid by agencies, etc. was studied in the delineated zones (Table 3). The figures indicate that the percentage of households selling milk was highest in the valley temperate zone (80%), followed by subtropical (69%), intermediate (38%) and lowest in cold arid zone (29%). The obvious reason for this variation could be the marketable surplus of households. In terms of price efficiency, it was observed that the price paid by consumer/Dairy Co-operative Societies was highly efficient followed by milk shop and vendor in all delineated zones.

The study has observed that milk vendors in zones JK-1 and JK-3 were important marketing functionaries in terms of quantum of milk handled by them. However, in zones JK-2 and JK-4, producers directly supplied milk to consumers. A similar trend was observed in agencies preferred by farmers in other zones. The milk marketing channels included dairy cooperative societies

Table 2. Production, consumption and marketed surplus of milk in different agro-climatic zones/districts* of J&K

Zone/ District	Total milk production		Milk utilized in the household (L)		Milk sold		Sale price of milk (Rs/L)		Milk sold as %age to total production	Per capita milk consumption (g)			
	Cow	Buffalo	Total	As fluid	For product	Cow	Buffalo	Total			Cow	Buffalo	Mixture [#]
JK-1	4.06	5.76	9.82	1.65	1.17	3.02	3.98	7.00	8.70	9.25	9.06	71.28	569
JK-2	4.56	3.20	7.76	1.13	1.34	3.04	2.25	5.29	9.75	10.45	10.04	68.17	338
JK-3	10.92	-	10.92	2.19	0.73	8.00	-	8.00	9.25	-	9.25	73.26	512
JK-4	6.23	-	6.23	2.48	0.35	3.40	-	3.40	12.40	-	12.40	54.57	497

Notes: * Data collected during the year 2004-05 under ICAR Sponsored project "Livestock Crop Production Systems Analysis for Sustainable Crop Production"

[#]Mixture of cow and buffalo milks

Table 3. Distribution of milk marketing agencies and price offered in different agro-climatic zones/districts of J&K

Zone/ District	No. of households		Price paid by agencies			Qty. of milk supplied to agencies			Agencies preferred by farmers (%)			(Qty in litres/day)			
	Selling milk	Not selling milk	Total	Coop.	Milk vendor	Halwai/ milk shop	Coop. society	Milk vendor	Halwai/ milk shop	Coop. society	Milk vendor		Halwai/ milk shop		
				society											
JK-1	104	46	150	9.5 (15.0)	8.94 (12.0)	9.12 (12.5)	9.50	0.65	4.70	1.19	0.46	15	10	45	30
JK-2	87	63	150	NA	9.32 (13.0)	9.77 (13.5)	10.25	-	0.62	1.12	3.55	NA	3	10	87
JK-3	121	29	150	9.50 (15.0)	9.23 (12.0)	9.50 (12.0)	9.50	0.80	6.51	0.48	0.21	18	65	17	-
JK-4	43	107	150	NA	11.12 (15.0)	-	12.44	-	0.10	-	3.30	NA	-	-	100

Notes: Figures within the parentheses represent consumers' price paid to the functionary.

Difference between price paid by agencies and price paid by consumers represents price spread in a channel.

(DCS), vendors, halwais / milk shops / wholesalers as important marketing intermediaries and market functionaries. Four important marketing channels from milk shed were identified in Jammu and Kashmir. In the urban areas, the producer share in consumer rupee was highest in channel I (Producer-Dairy Cooperative Society-Consumer) and channel IV (Producer-Consumer), followed by channel III (Producer-Halwai / Milk shop-Consumer) and was lowest in channel II (Producer-Milk vendor-Consumer). Consumers' price was recorded lowest in channels II and III compared to pasteurized milk supplied by cooperative milk plants in channel I. However, in actual practice, the margin of different intermediaries was higher by way of adulteration. A perusal of channels revealed that cooperative society, a significant market functionary in milk trade, was either missing or volume of milk handled by it was very low in the study areas.

Profile of Major Organized Market Players in Jammu and Kashmir

Jammu and Kashmir Milk Producers Cooperative Limited (JKMPCL) is the oldest organization with two milk plants, one each at Srinagar and Jammu, and is the state level federation of 186 and 130 dairy cooperative societies, respectively. The pasteurization capacity of these two plants is 30000 litres / day (LPD) each and presently, 10000 -12000 LPD and 7000–8000 LPD are sold from Srinagar and Jammu, respectively as pasteurized liquid milk under the brand name, 'Snowcap' with the financial and technical assistance from Gujarat Cooperative Milk Federation Limited. Recently, JKMPCL has started marketing of curd and flavoured milk also.

Khyber Agro farms Pvt. Ltd is the biggest milk plant of Jammu and Kashmir functioning in the Kashmir Valley with pasteurization capacity of 1 lakh LPD. Being the market leader, it introduced packaged milk five years ago under the name of 'Khyber' in Srinagar city. Presently, it sells 50000–60000 LPD, of which 60 per cent is procured from the neighbouring state of Punjab and 40 per cent from the local network of vendors / wholesalers, etc. The plant has started selling of curd also under the brand name of *Khyber dahi* with good market demand. M/s Zum Zum Milk Products Pvt. Ltd, another private sector milk plant in Kashmir, have recently made their entry in the packaged milk marketing and sell about 2000 litres milk/day.

In Jammu division, JK Dairy Processing Cooperative Ltd is the major player in liquid milk marketing. However, it meets the demand of 46000 LPD of standard milk to Indian Army in Jammu and Kashmir. The plant with the processing capacity of 60000 LPD also sells 7000 LPD pasteurized milk under brand name of 'Surya' in the Jammu city. The major supply (70%) of the plant is procured from Punjab and rest from local market through agents. In the Jammu division, Punjab State Cooperative Milk Producers Cooperative Ltd Federation also sells 11000 LPD Verka brand packaged milk (Table 4).

The study on processing of milk plants has revealed that per litre profit in marketing of packaged liquid milk is encouraging. Overall scenario is that organized sector has tremendous scope to grow by diversifying its activities towards home delivery, milk parlours / shops/ booths, road side vendors, value addition and doorway to the virgin areas of the state.

Balancing Supply and Demand through Organized Sector

The current milk production in the state is 697.5 thousand tonnes and 732.91 thousand tonnes with marketed surplus of 235.06 thousand tonnes and 246.98 thousand tonnes in the divisions of Kashmir and Jammu, respectively. Though Jammu division has more marketable surplus but milk shed is scattered on hilly tracts at longer distances from the main consumption centres.

Nutritional Status

The nutritional demand of Srinagar and Jammu cities dependent on marketed surplus based on 2001 Census calculated @250g/day/capita minimum requirement worked out to be 81.98 thousand tonnes and 33.76 thousand tonnes and that of other towns as 112.90 thousand tonnes and 23.26 thousand tonnes in the Kashmir and Jammu divisions, respectively. On the other hand, these estimates based on current per capita per day availability of 360 g of milk in the state are 30.55 per cent higher than nutritional demand. Organized sector supplies 24.82 thousand tonnes and 9.31 thousand tonnes of milk in Srinagar and Jammu and thus meets 30.27 per cent and 27.57 per cent nutritional requirements of these two major cities and only 12.76 per cent and 16.32 per cent if towns of Kashmir and Jammu divisions are also included. In the

Table 4. Comparative profile of major organized market players in Jammu and Kashmir

Particulars	JKMPCL, Srinagar	Khyber Agro Farms Ltd	Zum Zum Dairy Products	JKMPCL Jammu	JK Dairy Coop. Processing	Punjab State Cooperative Milk Producers Federation
Procurement base	186 dairy cooperative societies	Wholesalers local /Punjab	Vendors / Milk shops	130 dairy cooperative societies	Wholesalers Local / Punjab	Dairy Cooperative societies
Name of brand	<i>Snowcap</i>	<i>Khyber</i>	<i>Zum Zum</i>	<i>Snowcap</i>	<i>Surya</i>	<i>Verka</i>
Procurement source	Local milk shed	40% local 60% Punjab	Local collection	Local milk shed	30% local 70% Punjab	Punjab milk shed
Capacity pasteurization (LPD)	30000	100000	10000	30000	60000	N.A
Sales (litres/day)	10000-12000	50000-60000	2000	7000-8000	Army 45000 Local 7000	11000
Procurement price (Rs)	12.50-13.00	13.00-14.00	13.00-14.00	12.50-13.00	13.00-14.00	-
Processing including transportation charges (Rs)	3.50-4.00	3.50-4.00	3.50-4.00	3.50-4.00	3.50-4.00	-
Sale price (Rs)	20 (toned milk)	20 (toned milk)	20 (toned milk)	20 (toned milk)	24 Standard milk 20 toned milk	20 (toned milk)
Distribution system / Commission (per L)	Distributors: Rs 0.70 Retailers: Rs 1.00	Direct distribution / Retailers Rs 1.00	Direct distribution / Retailers Rs 1.00	Distributors: Rs 0.70 Retailers: Rs 1.00	Direct distribution / Retailers Rs 1.00	Distributors: Rs 0.70 Retailers: Rs 1.00
Net profit after commission (Rs/L)	1.30-2.30	1.50-2.50	1.50-2.50	1.30-2.30	1.50-2.50	-

Note: The data represents the profile of organized sector collected during year 2007-08

foregoing analysis of current production, marketed surplus, nutritional demand and per capita availability, a wide gap was observed between processed viz-a-viz low quality milk supplied in towns and cities of J&K by vendors, / milk shops. Presently, state is receiving per day 11000 litres of processed milk, 'Verka' brand and 51000 litres of raw milk from Punjab. The situation demands immediate and pragmatic planning on priority for the development of infrastructure, processing, distribution network to match the demand and tap the scattered marketed surplus in milk shed of the state.

Conclusions

Productivity and production, consumption and marketed surplus of milk have been found encouraging and higher than the national average. Milk distribution system has been observed traditional and exploitative with organized sector handling only 5 per cent of the marketed surplus of milk. The analysis has revealed that dairying offers a vast potential for development in the state. Integration of dairying with processing/ value-addition has ample scope in the state and can help to boost milk production, and increase income and employment to producers and urban consumers with regular supply of quality milk and its products at reasonable prices. Besides, encouragement of the private processing sector, government should replicate Anand model in the cooperative dairy enterprise in the virgin areas of the state to tap marketed surplus in scattered milk-shed.

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