Biological Forum – An International Journal **(SI-AAEBSSD-2021) 13(3b): 186-189(2021)**

ISSN No. (Print): 0975-1130
ISSN No. (Online): 2249-3239

Economic Analysis of Production and Marketing of Milk in Karnataka

Revappa, M. Rebasiddanavar[1]*, Ajay Verma[2], R. Raju[3] and Aditi Agrawal[4]
[1]Ph.D. Scholar, Department of Agricultural Economics, University of Agricultural Sciences, Dharwad, (Karnataka), India.
[2]Principal Scientist, ICAR-Indian Institute of Wheat and Barley Research, Karnal, (Haryana), India.
[3]Senior Scientist, Division of Agricultural Economics, ICAR-Indian Agricultural Research Institute, New Delhi, India.
[4]Ph.D. Scholar, Division of Agricultural Economics, ICAR-Indian Agricultural Research Institute, New Delhi, India.

(Corresponding author: Revappa, M. Rebasiddanavar)*
(Received 01 July 2021, Accepted 01 October, 2021)
(Published by Research Trend, Website: www.researchtrend.net)

ABSTRACT: The present study has investigated the production and marketing of milk in Dharwad and Mandya districts, representing the Northern and Southern dry zones of Karnataka. There is regional differences in milk production within the state. The current study has made an effort to find out the factors influencing milk production in Karnataka. The primary data was collected from 100 dairy households during 2019-20, with the help of well-structured interview schedule by employing the personal interview approach. Along with standard procedure for estimation of marketed surplus of milk, the basic statistical tools such as mean, percentage and ratios were employed for the data analysis. The total milk production in Karnataka during 2019-20 was found to be 159.64 lakh liters per day (LLPD). However, the milk maximum contribution was made by the crossbred cows with the production of 108.78 LLPD, this was followed by the buffalo and local cows to the tune of 3.67 and 47.19 LLPD, respectively. Total milk production in the study area in 2019-20 was accounted to 22.12 LLPD, out of which the milk production by Mandyaand Dharwad districts were 17.52 LLPD (79%) and 4.60 LLPD (21%), respectively. The study revealed that the per litre cost of milk production was highest for local cows (₹28.56) followed by buffalo (₹26.66) and crossbred cows (₹19.30). However, the per litre net return from milk production was highest in the case of buffalo (₹11.51) followed by a crossbred cow (₹8.26) and local cow (₹2.98). A policy focus is needed to increase the net returns by reducing the cost of milk production, this may be achieved by providing major inputs to the dairy farmers at remunerative prices.

Keywords: Economic analysis, Milk production, Marketing channel, Dharwad, Mandya, Karnataka.

INTRODUCTION

Dairy industry has played an essential role in the socio-economic development of millions of rural households in India since many decades. The livestock sector contributes 4.2 per cent Indian Gross Domestic Product (GDP) and shares 25.6 per cent of the total agriculture GDP. India has the largest stocks of buffaloes and cows in the world, contributes 22 per cent of global milk production and with an annual growth rate of 4.5 per cent. Dairy ensures the livelihood security to 70 million farm families in the country. During 2019-20, the total milk production in India was 198.4 million tonnes. The per capita milk availability in the country is 394g per day, one of the highest as compared to 294g per day milk availability in the world (GOI, 2020). Twenty-two state federations in the country operate with 170 district-level milk unions along with more than 76,000 village-level co-operative societies and 11 million milk producer members. On an average, 15 million liters per day of milk is collected by these agencies. Karnataka ranks 11th largest milk-producing state with total milk production of 4.10 metric tonnes, constituting about 5 per cent of the country's total milk production. Further, Karnataka ranks third in India in the procurement of milk by the Milk Producers' Co-operative Societies.

Production and marketing of milk has played a significant role in enhancing the employment opportunities in the dairy sector, apart from meeting the milk requirements of the consumers. The milk production gets tremendous encouragement only from the premium returns, which is possible through effective marketing strategies (Siwach and Dhaka, 1993). Milk produced in selected areas can be distributed easily to unproduced places by following proper and timely marketing processes, although the significant production is confined to few pockets. Hence, the production and marketing of milk and milk products assume equal importance for the development of the dairy sector. In this context, the present study has attempted to analyse the economics of milk production and its marketing status in Karnataka.

MATERIALS AND METHODS

The present study is based on primary data collected from dairy stakeholders from Karnataka state during 2019-2020. Karnataka has 10 Agro-climatic zones, out of which two zones, namely, Northern dry zone and Southern dry zone were purposively selected for the present study. One district from each zone i.e., Dharwad district from the Northern dry zone and Mandya district from the Southern dry zone was selected. Hebballi block from Dharwad district and Krishnarajpete block from Mandya district was randomly selected for the study. From each block, two villages were randomly selected. From each village 25 respondents were selected for the study, constituting a total of 100 respondents. The required information was recorded with the aid of pre-tested and well-structured interview schedules. The total milk produced by all the milch animals in households was reckoned as per day milk production for a household.

Per capita per day milk availability =Total milk production of household / Family size.
Per capita per day milk consumption = Quantity of milk retained at home / Family size.
Marketed Surplus of Milk = Total Milk Production – Total Milk Consumption.
Ps = (Pf / Pc) * 100

Where, Ps is the Producer's share in the consumer's rupee
Pf is the Producer's price
Pc is the Consumer's price

RESULTS AND DISCUSSION

A. Production and marketed surplus of Milk

Total milk production in Karnataka was found to be 158.86 LLPD, in which more than half of the milk production was contributed by crossbred cows which produced 108.8 LLPD (68.50%), while milk contributed by buffalo and local cows were found to be 3.66 and 47.20 LLPD, respectively (Table 1).The primary survey revealed that the total milk production in the study area was found to be 22.12 lakh liters per day (LLPD). Out of which, Mandya district, being the dominant producer contributed about 79 per cent of the total milk with the production of 17.52 LLPD, which was followed by Dharwad district with a production of 4.60 LLPD (21%). The average milk yield from the crossbred cows were found to be 8.77 liter/day *i.e.* 8.31 liter/day in Dharwad and 9.24 liter/day in Mandya district. The average milk yield obtained from buffalo and local cows were found to be 5.46 and 3.78 litres per day, respectively (Table 1). The studies by Kumar (1996) and Sirohi *et al.* (2007) found similar results. Overall marketed surplus of milk was estimated to be 82.89 per cent and was highest for large category households (84.15%) followed by medium (82.63%) and small category households (80.76%) (Fig. 1). Similar results were found by Arun (2003) and Meena and Bhavendra (2015) in their study.

Table 1: Milk production by various categories of animals in Karnataka.

Animal type	No of milking animals	AverageYield (Ltr/animal/day)	Total Production (LLPD)
Crossbred	12,40,415(48.53)	8.77	108.78(68.14)
Buffalo	67,137(2.63)	5.46	3.67 (2.30)
Local cow	12,48,440(48.84)	3.78	47.19 (29.56)
Total	25,55,992(100.00)		159.64 (100.00)

Figures in parenthesis indicates percent to respective column total.
Source: Author's estimation based on no. of milking animals and average yield per animal

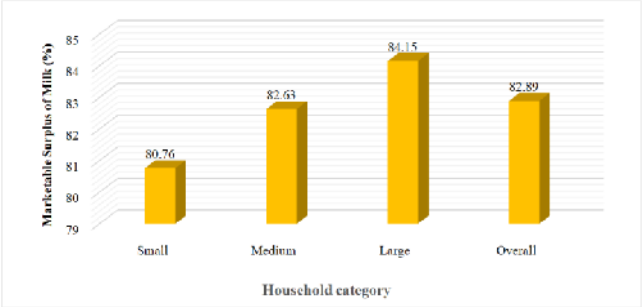

Fig. 1. Proportion of marketed surplus of milk per household in the study area.

The study revealed that the average milk production in the study area for small, medium and large category of households were in the tune of 33.80, 45.18 and 66.26 litres per day, respectively (Table 2 and Fig. 2). The average number of people residing in each household were about 4.86, 4.70 and 5.27 in case of small, medium and large category of households, respectively. Considering the above fact, the per capita production of milk in the study area was directly proportional to the size of households. i.e. large farmers produce the highest milk i.e., 12.57 litres per day milk as compared to small (6.95 litres per day) and medium (9.61 litres per day) farmers. Bhawar *et al.* (2020) found similar results in their study.

Table 2: Per capita milk availability in the study area.

Category/items	Small	Medium	Large
Average milk production of household(Litre/day)	33.80	45.18	66.26
Average number of people in households	4.86	4.70	5.27
Per capita availability of milk(Litre/day)	6.95	9.61	12.57

Source: Authors estimation based on primary data

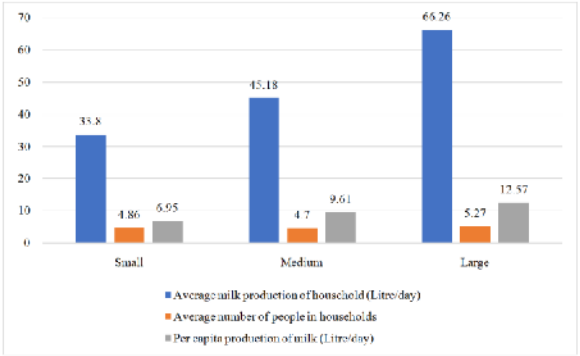

Fig. 2. Per capita availability of milk in the study area.

B. Milk marketing channels in the study area

The study revealed that the following informal milk marketing channels were found to be active in the study area:

I. Producer-Consumer
II. Producer - Creameries (A)- Consumer
III. Producer - Milk Vendor (A)- Consumer
IV. Producer- Milk Vendor (B)- Creameries (B)- Consumer
V. Producer- co-operatives- Consumer

In channel-I, since the milk was directly sold to consumers by the farmers, the entire amount of the consumers' price was received by the producers *i.e.* ₹37 (Table 3). Therefore, producer's share in consumer's rupee was found to be 100 per cent in channel-I. In the case of channel-II, the average price received by the producer from creamery-A was ₹37 and the price paid by the consumer was ₹46.80. Therefore, producers' share in consumers' rupee was worked out to be 79.05 per cent and the share of creamery-A was found to be 20.94 per cent. In channel-III, average price received by the producer from vendor-A was ₹36.60 and the average price paid by the consumers was found to be ₹47.80. In this channel, the producers' share was estimated to be 76.56 per cent and vendor-A accounted for a share of 23.43 per cent in consumers' rupee. In the case of channel-IV, which involves both the creamery-B and the vendor-B, the average price received by the producer was worked out to be ₹36.20 and the price paid by the consumer was ₹49.00. The producers' share was worked out to be 73.87 per cent, out of which the share of creamery-B and vendor-B were estimated to be 9.60 per cent and 16.32 per cent of the consumers' rupee, respectively. In the case of channel-V producers share in consumers' rupee was found to be second highest. The average price received by the producer from cooperatives was ₹33.50 and the price paid by the consumer was ₹42. Therefore, producers share in consumers' rupee was worked out to be 79.76 per cent, and the share of cooperatives was found to be 20.24 per cent. The results obtained in case of marketing efficiency of different channels was found to be in accordance with the research conducted by Singh (2016).

Table 3: Marketing cost, marketing margin and price spread in different milk marketing channels.

Particulars	Channel-I	Channel-II	Channel-III	Channel-IV	Channel-V
Net receipt to producer(₹/litre)	37	37	36.60	36.20	33.50
Marketing cost(₹/litre)	0	2.60	3.98	5.18	2.70
Marketing margin(₹/litre)	0	7.20	12.22	12.62	5.80
Consumers' price(₹/litre)	37	46.88	47.80	49.00	42
Price spread(₹/litre)	0	8.68	16.20	17.80	8.50

C. Analysis of price spread in different marketing channels

In the case of channel-I, the price spread was zero due to the absence of any intermediaries and direct disposal of milk from producer to consumers (Table 4). Price spread was estimated in case of channel-II, channel-III, channel-IV and channel-V were to the extent of ₹8.68, ₹16.20, ₹17.80 and ₹8.50, respectively. The price spread was found to be highest in the case of channel-IV due to the involvement of both creamery-B and vendor-B in the marketing process. Therefore, the more is the number of intermediaries involved in the marketing channel, the higher will be the price spread and the lower will be the efficiency of the marketing channel. In the case of channel-V due to the involvement of a smaller number of intermediaries, the price spread was found to be lower and hence the efficiency was higher as compared to other marketing channels in the study area. The marketing cost was found to be highest in the case of channel-IV involving creamery-B and vendor-B (₹5.18), followed by channel-III (₹3.98) and channel–II (₹2.86). Marketing margin was observed as highest in the case of channel-IV (₹12.62) as followed by channel-III (₹12.22), channel-II (₹11.54) and channel-V (₹5.80). Similar findings were reported by many authors in different states (Vedamurthy and Chauhan, 2005; Yogi *et al*. 2007; Singh, 2013; Singh, 2016; Agrawal and Raju, 2021).

Table 4. Producers' share in consumers' price in different milk marketing channels in Karnataka

Intermediaries	Channel-I	Channel-II	Channel-III	Channel-IV	Channel-V
Producer	37.00 (100.00)	37.00 (79.05)	36.60 (76.56)	36.20 (73.87)	33.50 (79.76)
Creamery	0	9.80 (20.94)	0	4.80 (9.70)	0
Vendor	0	0	11.20 (23.43)	8.00 (16.32)	0
Co operative	0	0	0	0	8.50 (20.24)
Consumers' Price	37.00	46.80	47.80	49.00	42.00

Figures in parentheses indicate percentage to consumers' price

Plate 1: Interaction with farmers of study area during data collection.

CONCLUSION

Indigenous cattle were found to be dominating the bovine composition in the study are but their productivity was very low so there is need to increase the productivity of indigenous cattle by adopting proper feeding and management practices in these areas. Marketed surplus of milk was found to be 82.89 per cent and it was highest for large category households followed by medium and small category households. Marketing efficiency was observed to be highest in case of channel-V while least in case of Channel-IV. The present study suggests that the producers should dispose of their milk through those channels in which minimum marketing agencies were involved, i.e., Channel–V as it gave higher returns to the producer-farmer in comparison to other channels in the study area. Majority respondents were selling the milk through various marketing channels other than co-operative structure in the study area. This is mainly due to the distant locations of primary milk producer's co-operative societies in rural areas. Hence, there is need to establish primary milk producer's co-operative societies in the nearby producing areas.

Acknowledgement. I would like to thank my advisor, Dr. Ajay Verma, Principal Scientisr, ICAR-IIWBR, Karnal, for his guidance and support during my M.Sc. at ICAR-National Dairy research Institute, Karnal (Haryana). I would like to thank all the authors for contributing in this article.

Conflict of Interest. I declare no conflict of interest by the authors.

REFERENCES

Agrawal, A. & Raju, R. (2021). Marketed surplus and milk marketing channels in Madhya Pradesh: Implications for dairy farmers and traders. *Indian Journal of Dairy Science, 74*(2): 150-158.

Arun, K. (2003). Factors affecting the marketed surplus of milk in Vellur district of Tamil Nadu state: A case study. *Journal of Agricultural and Resource Economics, 51*: 459-474.

Bhawar, R. S., Dixit, P. K. & Sivaram, M. (2020). Constraints faced by the dairy farmers in production and marketing of milk in northern dry zone of Karnataka. *Indian Journal of Dairy Sciences, 73*(3): 1-7

GOI (2020). National Dairy development Board (NDDB) Statistics, NDDB, Anand, India, Accessed from http://www.nddb.coop/English/Statistics/Pages/Livestock-Sector-GDP.

Kumar, P. & Balishter (1996). Economics of Crossbred cow and Murrah buffalo. A study in Firozabad district of Uttar Pradesh. *Indian Journal of Dairy and Biosciences, 49*(6): 371-375.

Meena, G.L. & Bhavendra, T. (2015). Marketed surplus, consumption and disposal pattern of milk in Banswara district of Rajasthan. *Asian Journal of Animal Sciences, 10*(2): 193-197.

Singh, P. (2016). Economic analysis of traditional milk supply chain in Ranchi district of Jharkhand. *Indian Journal of Economics and Development, 12*: 490-520.

Singh, V. (2013). Economic Analysis of Traditional Milk Marketing Chain in Karnal District of Haryana. *M.V.Sc. Thesis* submitted to ICAR-National Dairy Research Institute (Deemed University), Karnal, Haryana.

Sirohi, S., Joshi, B. K. & Kumar, Y. (2007). Economics of milk production: variations across productivity levels. *Indian Journal of Dairy Sciences, 60*(2): 124-128.

Siwach, R. & Dhaka, J. P. (1993). Production and marketed surplus of milk in Rohtak district of Haryana. *Journal of Dairying, Foods and Home Sciences, 12*(1): 1-7.

Vishnoi, R., Dixit, P. K. & Mageswari, U. M. (2014). Economics of milk production in plain and hill regions of Uttarakhand State, *Indian Journal of Dairy Science, 67*(6): 523-530.

Vedamurthy, K.B. & Chauhan, A.K. (2005). Economic analysis of milk marketing in Shimoga district of Karnataka. *Indian Journal of Agricultural Marketing, 19*: 39-48.

Yogi, R.K., Chauhan, A.K. & Sharma, S.P. (2007). Economics of milk marketing in Jaipur district of Rajasthan. *Indian Journal of Dairy Science. 60*: 307-312.