An Economic Analysis of Dairy Farming in Ballari District with Special Reference to Siruguppa Taluka

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Abstract

The present study titled "An Economic Analysis of Dairy Farming in Ballari District with Special Reference to Siruguppa Taluka" aims to assess the economic viability and socio-economic dimensions of dairy farming in the region. The primary objectives are to assess the income structure, cost components, and overall profitability of dairy farmers in Siruguppa Taluka of Ballari District, identify variations across different categories of farmers, and analyse the socio-economic characteristics of dairy farmers and determine how factors such as education, landholding, herd size, access to credit, veterinary services, and marketing channels influence their dairy farming practices. The study is based on primary data, collected from dairy farmers in selected villages of Siruguppa Taluka using a multi-stage sampling method. The data were analysed using simple statistical tools, such as averages, percentages, and tabular representation, to draw meaningful insights into the economic performance of dairy farming households. The findings indicate that although dairy farming contributes meaningfully to household income, farmers continue to face constraints such as unstable milk prices, high feed costs, inadequate veterinary services, and informal credit reliance. These challenges limit profitability and hinder the potential expansion of dairy activities. The study policy-related suggestions and recommendations introduce price stabilisation mechanisms through cooperatives or government intervention to reduce the impact of fluctuating milk prices. Establish additional milk collection centres in Siruguppa taluka to ensure timely procurement and better bargaining power for farmers. Promote direct marketing platforms and digital payment systems to enhance transparency and reduce dependency on middlemen. Encouraging long-term tie-ups between dairy farmers and the Karnataka Milk Federation (KMF) or private dairies for assured procurement is essential. Enhancing these support mechanisms could significantly improve the profitability and sustainability of dairy farming in Siruguppa Taluka and similar rural settings.

Keywords: Dairy Farming, Milk Production, Cost and Returns, Socioeconomic Factors, Livestock Diversity

Introduction

Dairy farming has been an important part of the agricultural landscape for thousands of years. India, a predominantly agrarian economy, has approximately 68.8 per cent of its population living in villages, where livestock play a crucial role in socio-economic life. Livestock provide high-quality foods such as milk, cheese, butter, ghee, etc. India is not only one of the top producers of milk in the world, but also the largest consumer of milk and milk products. Due to the shortfall in supply, we must import significant amounts of milk products to meet internal demand. Agriculture and animal husbandry have a symbiotic relationship, in which the agricultural sector provides feed and fodder for the livestock and animals provide milk, manure and draught power for various agricultural operations. The dairy sector is instrumental in bringing about socio-economic transformation in India.

It has created many employment opportunities and provided improved nutritional benefits. The allied sectors of Indian agriculture are steadily emerging as robust growth centres and promising sources for improving farm income.

India holds the distinction of being the world's largest producer of milk, contributing approximately 24% to the global output. The dairy sector plays a vital role in the country's economy, contributing around 5% to the GDP and providing direct employment to over 80 million farmers, with women comprising the majority of the workforce. From 2014–15 to 2023–24, India's milk production grew at a compound annual growth rate (CAGR) of 5.62%, increasing from 146.31 million tonnes to 239.3 million tonnes. The country also has the highest livestock population globally, totalling 536.76 million, including 303.76 million bovines and 148.8 million goats. The key states leading in dairy production are Uttar Pradesh, Maharashtra, Himachal Pradesh, Madhya Pradesh, Punjab, Rajasthan, and Tamil Nadu (Dairy Sector in India, 23 April 2025).

In Karnataka majority of the population is dependent on Agriculture and allied activities. As per the 20th Livestock Census, Karnataka has 3.03 crores of livestock and 5.95 crores of poultry population and its share in all India was 5.41% and 6.98% respectively. The share of Animal Husbandry in total Gross State Domestic Product (GSDP) of the state was 3.78%. During 2022-23, in Cow and Buffalos milk production, India ranked first in the world in cow and buffalo milk production. During 2022-23, Karnataka state stands 9th rank among the States. The production of milk in the state was 12.83 million metric tons during the year 2022-23.

Agriculture and animal husbandry in rural India are closely connected and mutually beneficial, forming a crucial foundation of the rural economy. Crops supply essential inputs such as fodder and crop residues for livestock, while livestock enhance agricultural productivity by providing manure, draft power, and supplemental income through milk, meat, and other by-products. This interdependence supports better resource use, reduces risks, and improves livelihood stability for rural families. For small and marginal farmers especially, combining dairy farming with crop cultivation increases land productivity and offers regular income during off-season periods. The integration of these sectors not only supports rural economies but also contributes significantly to the nation's food and nutrition security.

Background of the Study Area

Siruguppa is one of the seven taluks in the Ballari (Bellary) district of Karnataka. The taluk comprises 84 villages and 2 towns. According to the 2011 Census of India, Siruguppa has 52,180 households and a total population of 2,69,104, including 1,34,246 males and 1,34,858 females. The local economy is primarily driven by agriculture. The Tungabhadra River and its tributary, the Hagari, flow through this region, providing essential water resources. Irrigation facilities are largely supported by the Tungabhadra Dam at Hospet, benefiting areas like Siruguppa and Kampli taluks.

Ballari district spans an area of 8,450 square kilometers and has a population of approximately 24.52 lakh, comprising seven talukas. The Tungabhadra River and its tributary, the Hagari, are the primary water bodies in the region. A dam constructed across the Tungabhadra at Hospet facilitates irrigation for the talukas of Ballari, Hospet, and Siruguppa. The district's economy is predominantly agrarian. Of the total workforce of 11.16 lakh individuals, around 7.75 lakh reside in rural areas. Among them, approximately 2.58 lakh (22.24%) are cultivators, while 4.06 lakh (36.37%) work as agricultural laborers. The Net Sown Area (NSA) is about 4.42 lakh hectares, and the Gross Cropped Area (GCA) is around 5.37 lakh hectares. Key crops cultivated in the district include paddy, jowar, maize, groundnut, cotton, sunflower, onion, and chillies.

Review of Literature

N. Munishami Gowda and S.N. Yogish (2024): in their study "An Economic Analysis of Dairy Sector in India with Special Reference to Milk Dairy Co-Operatives in Karnataka", the current study holds significant relevance as it aims to explore and address various challenges faced by the cooperative dairy sector in both Karnataka and Tamil Nadu. Dairy farming serves as a crucial livelihood activity in rural

regions, and in this regard, the active participation of dairy cooperatives along with government support is essential to uplift and sustain the rural economy.

Nilam V Chaudhary., et al., (2022); in their research work on "An economic analysis of milk production of crossbred cow in Banaskantha district of Gujarat", this study relied entirely on primary data gathered from 120 dairy farmers in the Banaskantha district of Gujarat, who were categorized according to landholding size into marginal, small, medium, and large groups. Findings indicated that large-scale farmers earned the highest net income from crossbred cows, followed by medium, marginal, and then small farmers. The research also found that the cost of maintaining milch cows was notably higher than that of dry cows, with variable costs accounting for 92.09% for milch cows and 78.36% for dry cows.

Chale S., et al., (2018); in their article on "Economic Analysis of Milk Production in Kohima District of Nagaland", the study's findings reveal that the average daily maintenance cost for crossbred cows was higher than that for local breeds. However, because of their superior milk yield, crossbred cows proved to be more economically viable for milk production. The research highlights the financial aspects—both costs and returns—associated with milk production across various species of milch animals and herd-size categories. It concludes that dairy farming is a profitable activity that supports the livelihood of farmers, benefits intermediaries, and contributes to consumer nutritional well-being. The data was gathered from 100 households engaged in dairy farming as either a primary or secondary occupation during the 2017–18 period.

Jaspreet Singh and Parminder Kaur (2020); in their article on "An Economic Analysis of Milk Production among Different Breeds of Milch Animals in Punjab", the study indicated that buffalo milk production yielded higher profitability compared to that of crossbred and indigenous cows. This was largely attributed to the higher market price of buffalo milk (Rs. 40.59), owing to its greater fat content, compared to cow milk, which averaged Rs. 28.21 per litre. The findings showed that buffaloes were more cost-effective in terms of milk production. The analysis was based on primary data collected during 2017–18 from 80 dairy farmers-comprising

40 small, 26 medium, and 14 large-scale producers-located in Ludhiana and Patiala, two of Punjab's leading milk-producing districts in the central region.

Sanjay B. Sapkal., et al., (2024); in their work on "Economic Analysis of Dairy Farming under Drought Prone Area in Maharashtra State of India", the study examined the financial dimensions of dairy farming, with particular emphasis on the socio-economic profile of farmers, the economic sustainability of dairy operations, and the key challenges encountered in the sector. Findings indicated that, although crossbred cow milk production involves higher total costs per lactation, it proves to be more profitable than buffalo milk production. The research relied entirely on primary data collected through a multistage stratified random sampling technique.

Saurabh Sharma, Herojit Singh and Sabbithi Pavan (2023); in their study on "Socio-economic Determinants of Dairy Farmers' Knowledge on Dairy Farming Practices in Uttar Pradesh, India", the study highlighted that farmers' varying socio-economic statuses and educational levels had a notable impact on their decision-making in dairy farming. Buffaloes formed the major portion of livestock, while considerable differences were observed in milk yield among crossbred animals. Employing a primary data-based methodology, the research adopted a multistage purposive-cum-random sampling technique and collected data from 60 dairy farmers for analysis.

Bhimraj Jakhar., et al., (2020); in their analysis on "Economic Analysis of Gowshala (Dairy Farm) Banaras Hindu University", the study found that the production costs exceeded the income generated from the farm, rendering the dairy enterprise economically unviable. This imbalance, where expenditures surpassed revenues, led to financial unsustainability. The analysis was based on secondary data collected from the dairy farm inventory at Banaras Hindu University for the period 2012 to 2017.

Jadav J.V., Dhandhalya M.G. and Swaminathan B (2016); in their research work on "An Economic Analysis of Milk Production on Different Farm Sizes in Junagadh District of Gujarat", the study emphasized the need to raise awareness about the value of high-yielding indigenous breeds such as the Jafarabadi buffalo and Gir cow. It highlighted

that farmers achieved better returns by rearing these breeds compared to other native buffalo and cow varieties. The economic analysis of milk production from cows and buffaloes was conducted in Junagadh district of Gujarat during 2014, based on data collected from 144 randomly selected milk producers across twelve villages in three talukas.

Napinder Kaur., et al., (2024); in this study on "Cost-Benefit Analysis of Buffalo Milk Production in India", this study seeks to evaluate the cost structure and profitability of buffalo milk production in Punjab, India, to assess the economic sustainability of dairy farming. The findings indicate that the average daily cost of maintaining a milch buffalo is 180.16. The primary source of income is derived from the sale of fluid milk, with net earnings estimated at 6.42 per litre. The research is grounded in primary data collected in 2019 from 420 dairy farmers across varying landholding categories-landless, marginal, small, medium, and large-spanning 21 villages in three distinct agro-climatic regions of Punjab. A multi-stage sampling method was employed to select both villages and participants.

Statement of the Problem

The problem of dairy farming in Siruguppa Taluka stems from several challenges that hinder the growth and sustainability of the sector. Farmers in the region face issues such as low milk yield due to outdated farming practices, insufficient access to quality feed and veterinary care, and limited infrastructure for milk storage and transportation. Moreover, market fluctuations, inadequate pricing mechanisms, and lack of government support further exacerbate these problems, making it difficult for dairy farmers to achieve consistent income. These challenges not only affect the livelihood of the farmers but also limit the potential for dairy farming to contribute significantly to the local economy. Addressing these issues is crucial for improving productivity, ensuring fair market access, and promoting the overall development of dairy farming in Siruguppa.

Research Gap

Although a considerable amount of research has been done on dairy farming, the proposed study on the costs and returns of dairy farming identifies several significant research gaps. Considerable studies on the milk production process have been carried out in the growth, but few studies exist on budget preparation in dairy farming. but this study is related to the cost and income of dairy farming.

Gap is the lack of updated primary data on input–output relationships, feed expenditure patterns, informal credit reliance, and price volatility experienced by dairy farmers in Ballari district. Prior studies seldom incorporate recent shifts in milk procurement systems, local cooperative functioning, and market access issues that directly affect farmer income. Thus, a focused economic analysis of dairy farming in Siruguppa taluka is needed to fill this critical gap by providing grounded, farmer-specific evidence that can inform local policy interventions and strengthen the dairy sector in this underserved region.

Objectives of the Study

- To assess the income structure, cost components, and overall profitability of dairy farmers in Siruguppa Taluka of Ballari District, and to identify variations across different categories of farmers.
- To analyse the socio-economic characteristics of dairy farmers and determine how factors such as education, landholding, herd size, access to credit, veterinary services, and marketing channels influence their dairy farming practices.

Need of the Study

The need to study dairy farming in Siruguppa Taluku arises from the critical role it plays in the livelihood of local farmers and the rural economy. Siruguppa, being an agricultural region, faces several challenges such as low milk productivity, lack of modern farming techniques, limited access to veterinary services, and fluctuating market prices. Understanding these issues through a focused study can help identify potential solutions for improving dairy production, enhancing income levels for farmers, and fostering sustainable agricultural practices. Furthermore, the study can guide policymakers in developing strategies to support dairy farmers, provide necessary infrastructure, and ensure the long-term viability of dairy farming in the region.

Methodology

The study is undertaken by collecting both secondary and primary sources of data and information. However, the main focus of the study is on primary sources. A multi-stage sampling method has been followed in the collection of primary data. The stages are as follows:

Data Source

Stage-I: Selection of the District

The study focuses on Ballari district, which is part of the Hyderabad Karnataka Region. Siriguppa taluka is selected for its significant dairy farmers activities and its contribution to the region's economy.

Stage-II: Selection of the Study Area

Siruguppa Taluka has a substantial number of rural households engaged in dairy farming, primarily as a supplementary source of income alongside agriculture and wage labour. This makes the region suitable for analysing the economic role of dairy farming in supporting rural livelihoods, especially for small and marginal farmers.

Stage-III: Selection of Respondents

A total of 63 respondents has been selected from various dairy farmers activities across the five-village using a simple random sampling method. Respondents include entrepreneurs, and, workers involved in the dairy farmer's industrial sector.

Sample Size: determining the sample size is crucial for ensuring the validity and reliability of all statistical analyses. The selection criterion was based on the formula proposed by Krejcie and Morgan (1970).

$$s = \frac{X^2 NP(1-P)}{d^2(N-1) + X^2 P(1-P)} \qquad (1)$$

$s = X2N(1-P) \ d2(N-1) + X2P(1-P)$

Collected secondary data from the animal husbandry training centre on sheep breeding process information. calculation and analysis of data using tabulation and graphing methods like pie charts, bar charts, and line charts as required study needed.

Scope and Limitation of the Study

This study has been conducted in the present period and regionally this study mainly covers some areas coming in Siruguppa taluk of district level Ballari of Karnataka state, dairy farming process, and cost and returns to understand the situation of dairy farming in Karnataka. This study is based on the primary data present.

Research Results, Discussion and Interpretation

Table 1 Estimations of Milk production in Karnataka During 2009-2024
(Figures in '000 tonnes)

Years	Milk Production	Percentage %
2009-10	4821	4.08
2010-11	5113	4.32
2011-12	5448	4.61
2012-13	5718	4.84
2013-14	5997	5.07
2014-15	6123	5.18
2015-16	5370	4.54
2016-17	6562	5.55
2017-18	7137	6.04
2018-19	7901	6.68
2019-20	9031	7.64
2020-21	10937	9.25
2021-22	11796	9.98
2022-23	12830	10.85
2023-24	13463	11.39
Total	118247	100

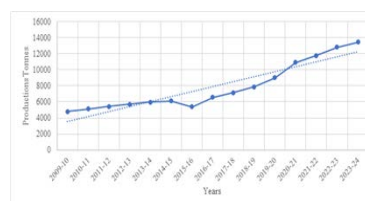**Source:** Department of Animal Husbandry and Dairying

Figure 1 Estimations of Milk production in Karnataka During 2009-2024

The data table 1 on milk production in Karnataka over the 15-year period from 2009–10 to 2023–24 shows a consistent and impressive upward trend, reflecting the structural strengthening of the dairy sector. Starting from 4,821 thousand tonnes in 2009–10, the milk output increased steadily to reach 13,463 thousand tonnes in 2023–24. This represents nearly a 179% rise in overall production, demonstrating the importance of dairy farming as a supplementary livelihood source for rural households. The growth trajectory has been particularly strong after 2016–17, where the sector saw a sharp increase year after year, with the highest annual growth observed in 2020–21. An important observation is the temporary decline in milk production during 2015–16, where output fell to 5,370 thousand tonnes from 6,123 thousand tonnes the previous year. This dip might be attributed to drought-like conditions, fodder shortages, or fluctuations in procurement prices that could have discouraged producers.

Table 2 The Livestock Population in Study Region

S.l No.	Taluks	Chattels	Buffalo
1	Ballari	30218	20714
2	Sanduru	35415	13379
3	Kampli	12698	8843
4	Kurugodu	13728	7384
5	Siruguppa	22518	15714
Total		114577	66034

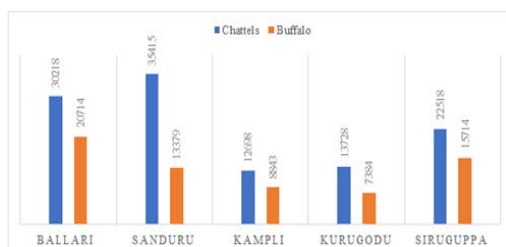**Source**: Ballari At Glance (Cattle and Buffalo 20th censes)

Figure 2 Livestock population in study region

The livestock population data for the study region reveals notable variation across taluks in Ballari district. Ballari taluk leads with 30,218 cattle and 20,714 buffaloes, indicating its significant role in livestock farming. Sanduru follows closely with 35,415 cattle but has a relatively lower buffalo population of 13,379. Siruguppa also shows a substantial livestock presence, recording 22,518 cattle and 15,714 buffaloes, suggesting its importance in both dairy and draught animal use. Kampli and Kurugodu have comparatively smaller livestock numbers. Overall, the region has a total of 1,14,577 cattle and 66,034 buffaloes, highlighting the importance of livestock as a livelihood source, especially in taluks like Ballari, Sanduru, and Siruguppa.

Gender-wise Distribution of Respondents

The table presents the gender composition of the respondents engaged in dairy farming. Out of a total of 63 respondents, 36 respondents (57 per cent) are female, while 27 respondents (43 per cent) are male. This indicates a higher participation of women in dairy farming activities in the study area. The close percentage also reflects balanced gender representation in the context being studied. (Appendix Table 1).

Age-wise Distribution of Respondents

The table shows the distribution of dairy farmers according to different age groups. Out of 63 respondents, the largest proportion belongs to the 30–40 years age group, accounting for 35 respondents (56 per cent). This indicates that dairy farming in the study area is predominantly managed by individuals in their economically active and productive age. The 40–50 years age group constitutes 15 respondents (24 per cent), reflecting the continued involvement of experienced farmers in dairy activities. The 20–30 years group comprises 8 respondents (13 per cent), suggesting moderate participation of younger individuals, possibly due to alternative employment opportunities or migration. The smallest share is observed in the 50–60 years age group, with only 5 respondents (8 per cent), indicating reduced involvement of older farmers in physically demanding dairy operations. (Appendix Table 2)

Social Category-wise Distribution of Respondents

The table depicts the distribution of dairy farmers across different social categories in the study region. Out of 63 respondents, the majority belong to the Other Backward Classes (OBC), accounting for 40 respondents (63 per cent). This indicates that dairy farming is a widely adopted livelihood activity among OBC households in the study area. Respondents from the Scheduled Tribes (ST) constitute 12 respondents (19 per cent), followed by the Scheduled Castes (SC) with 6 respondents (10 per cent). The presence of these socially disadvantaged groups highlights the role of dairy farming as an inclusive economic activity, offering income support and employment opportunities to vulnerable sections of society. The General category represents the smallest share, with 5 respondents (8 per cent). (Appendix table 3)

Family Size-wise Distribution of Respondent's

The table presents the distribution of respondents based on family size in the study region. Out of 63 respondents, the majority belong to small families with 1 to 5 members, accounting for 37 respondents (59 per cent). This indicates a predominance of nuclear or small household structures among dairy farmers in the study area. Households with 5 to 10 members constitute 12 respondents (19 per cent), while 10 to 15 members account for 10 respondents (16 per cent), reflecting the continued presence of joint family systems in some cases. Only 4 respondents (6 per cent) belong to families with more than 15 members, indicating that very large families are relatively uncommon. (Appendix table 4).

Education level of the Respondents

The table illustrates the educational profile of dairy farmers in the study region. Out of 63 respondents, 20 respondents (32 per cent) are illiterate, indicating a relatively high level of educational deprivation among dairy farming households. This highlights the continued dependence of many farmers on traditional knowledge and practices in managing dairy activities. Among the literate respondents, the largest share has completed high school education, accounting for 17 respondents (27 per cent), followed by those with middle school education at 12 respondents (19 per cent). Primary school education is reported by 8 respondents (13 per cent), while only 6 respondents (10 per cent) have attained college-level education, reflecting limited access to higher education in rural areas. (Appendix table 5)

Religion Status of the Respondent's Study Region

The table presents the religious composition of respondents in the study region. Out of a total of 63 respondents, the majority belong to the Hindu community, accounting for 49 respondents (78 per cent). This reflects the broader demographic pattern of rural areas in Ballari district, where Hindu households constitute the dominant population group. Respondents from the Muslim community account for 4 respondents (6 per cent), while those belonging to Christianity represent 2 respondents (3 per cent). The category of 'Others' includes 8 respondents (13 per cent), indicating the presence of diverse religious groups in the study area. Although smaller in number, these groups also actively participate in dairy farming activities. (Appendix table 6)

Landholding Pattern of the Respondents

The table presents the distribution of dairy farmers based on landholding size in the study region. Out of 63 respondents, 20 respondents (32 per cent) belong to the marginal farmer category, indicating that a significant proportion of dairy farmers operate with very limited land resources. This reflects the importance of dairy farming as a livelihood option for small landholders in the region. Large farmers constitute 15 respondents (24 per cent), followed by medium farmers with 12 respondents (19 per cent). This indicates that dairy farming is not confined only to small and marginal farmers but is also practiced by farmers with relatively larger landholdings, possibly due to better access to fodder, capital, and infrastructure. Additionally, 8 respondents (13 per cent) fall under the small farmer category, while an equal proportion (13 per cent) are landless farmers, highlighting the role of dairy farming in providing income opportunities even to households without agricultural land. (Appendix table 7)

Distribution of Respondents by Cow Ownership

The table shows the distribution of dairy farmers based on the number of cows owned in the study region. Out of 63 respondents, 24 respondents (38 per cent) own between 1 and 5 cows, indicating that small-scale dairy farming is the most common practice in the area. Respondents owning 5 to 10 cows account for 19 respondents (30 per cent), reflecting a moderate level of dairy investment and commercial orientation among a section of farmers. A smaller proportion, 10 respondents (16 per cent), own 11 to 20 cows, suggesting relatively larger dairy operations. Notably, 10 respondents (16 per cent) do not own cows, implying reliance on other livestock such as buffaloes or engagement in non-dairy livelihood activities within the sample. (Appendix table 8)

Respondents having Livestock Population Buffalo

The table presents the distribution of dairy farmers based on the number of buffaloes owned in the study region. Out of 63 respondents, the majority, 35 respondents (56 per cent), own between 1 and 5 buffaloes, indicating that small-scale buffalo rearing is the predominant practice in Siruguppa Taluka. Respondents owning 5 to 10 buffaloes account for 17 respondents (27 per cent), suggesting a moderate level of commercial engagement in buffalo-based dairy farming. A smaller group of 8 respondents (13 per cent) maintain 11 to 20 buffaloes, reflecting relatively larger herd sizes and higher investment capacity. Only 3 respondents (5 per cent) do not own buffaloes, indicating that buffalo rearing is more widespread than cow rearing in the study area. (Appendix table 9)

Sources of Finance for Dairy Farming

The table shows the distribution of respondents according to the sources of finance used for dairy farming activities. Out of 63 respondents, the largest proportion, 20 respondents (32 per cent), rely on microfinance loans, indicating a strong dependence on non-traditional and semi-formal credit sources for meeting dairy-related expenses. Government-subsidized loans are accessed by 17 respondents (27 per cent), reflecting the role of public support schemes in promoting dairy farming, particularly among small and marginal farmers. Commercial bank loans account for 12 respondents (19 per cent), while cooperative bank loans are used by 11 respondents (17 per cent), suggesting moderate access to formal institutional credit in the study area. A small fraction of respondents, 3 respondents (5 per cent), depend on landowners or private lenders, highlighting limited but continued reliance on informal credit sources. (Appendix table 10).

Marketing Channels Used for Milk Sales

The table illustrates the distribution of respondents based on the marketing channels used for selling milk. Out of 63 respondents, the highest proportion, 22 respondents (35 per cent), sell their milk through milk collection centres, indicating their importance as the primary marketing outlet in the study area. Cooperative societies are used by 17 respondents (27 per cent), reflecting their significant role in providing assured procurement, stable prices, and timely payments. Local markets account for 16 respondents (25 per cent), suggesting that a considerable number of farmers prefer nearby markets due to ease of access and immediate cash returns. A smaller share of respondents, 8 respondents (13 per cent), sell milk directly to consumers, which may offer better price realization but is limited by scale, time, and transportation constraints. (Appendix table 11).

Occupational Distribution of the Respondents

The table presents the occupational structure of respondents in the study region. Out of 63 respondents, the largest proportion, 22 respondents (35 per cent), are engaged primarily as agricultural labourers, indicating a high dependence on wage labour for livelihood security. Respondents combining cultivation with agricultural labour account for 13 respondents (21 per cent), reflecting the limited size of landholdings and the need to supplement farm income with wage employment. Another 17 respondents (27 per cent) are involved in agriculture along with self-employment, suggesting diversification of income sources to manage economic risks. A smaller proportion, 6 respondents (10 per cent) combine agriculture with business activities, while 5 respondents (8 per cent) fall under the 'others' category. (Appendix table 12)

Reasons for Adopting Dairy Farming

The table explains the major reasons reported by respondents for adopting dairy farming as a livelihood activity. Out of 63 respondents, the largest proportion, 29 respondents (46 per cent), reported that dairy farming was initiated to increase household income. This highlights the economic motivation behind dairy farming and its importance as a regular source of cash income in the study region. Another 21 respondents (33 per cent) indicated that dairy farming was adopted to diversify sources of income, reflecting the need to reduce dependence on agriculture alone, especially in a region prone to climatic uncertainties. Additionally, 13 respondents (21 per cent) reported improving food security as the primary reason, emphasizing the role of dairy farming in meeting household nutritional needs through regular access to milk and milk products. (Appendix table 13)

Time Spent on Dairy Farming Activities (Daily)

The table shows the distribution of respondents based on the amount of time spent daily on dairy farming activities. Out of 63 respondents, the highest proportion, 22 respondents (35 per cent), spend around 5 hours per day on dairy-related work, indicating the labour-intensive nature of dairy farming in the study area. Another 15 respondents (24 per cent) reported spending more than 5 hours daily, reflecting higher herd sizes or greater involvement in activities such as feeding, cleaning, milking, and marketing. 16 respondents (25 per cent) spend approximately 4 hours per day, while 10 respondents (16 per cent) devote about 3 hours daily to dairy farming, suggesting relatively smaller-scale operations or reliance on family labour sharing. (Appendix table 14)

Daily Milk Production of Respondents

The table presents the distribution of dairy farmers based on the quantity of milk produced per day. Out of 63 respondents, 17 respondents (27 per cent) produce between 5 and 10 litres per day, making this the most common production range in the study area. This indicates that a majority of farmers operate at a small to medium scale of milk production. Another 15 respondents (24 per cent)

report daily production levels of 10 to 15 litres, while 12 respondents (19 per cent) produce 15 to 20 litres per day, suggesting relatively higher productivity among a section of farmers. A smaller proportion, 9 respondents (14 per cent), produce more than 20 litres daily, indicating comparatively commercial-oriented dairy operations. At the lower end, 10 respondents (16 per cent) produce only 3 to 5 litres per day, reflecting limited herd size or lower-yielding animals. (Appendix table 15)

Milk Price per Litre in Different Markets

The table presents the average price received per litre of milk by respondents across various marketing channels. The highest average price, 35 per litre, is realised in the local market, although only 6 respondents sell milk through this channel. This suggests that while local markets offer better prices, their limited scale and irregular demand restrict wider participation. The private market is used by 22 respondents, offering an average price of 30 per litre, making it a relatively attractive option in terms of price and accessibility. The milk society (cooperative) is the most commonly used channel, with 30 respondents, but offers a comparatively lower average price of 27 per litre. Despite lower prices, cooperatives remain popular due to assured procurement, regular payments, and reduced marketing risk. The 'others' category, used by 5 respondents, provides the lowest average price at 26 per litre. (Appendix table 16)

Perception of Reliable Milk Prices

The table presents the respondents' views on whether they receive reliable prices for their milk. Out of 63 respondents, only 25 respondents (40 per cent) reported that they get reliable prices, whereas the majority, 38 respondents (60 per cent), indicated that they do not receive stable or predictable prices for their milk. This finding highlights a significant price uncertainty in the dairy sector of Siruguppa Taluka. Factors contributing to this uncertainty may include fluctuations in market demand, dependence on middlemen, seasonal variations in milk production, and lack of strong cooperative or institutional support. The high percentage of farmers not receiving reliable prices can negatively affect

income stability, investment in dairy activities, and overall profitability. (Appendix table 17)

Income from Dairy Farming

The table presents the distribution of respondents based on their monthly income from dairy farming. Out of 63 respondents, the largest proportion, 22 respondents (35 per cent), earn between 10,000 and 15,000 per month, with an average income of 14,370, indicating that a significant number of farmers generate a moderate level of income from dairy activities. 18 respondents (29 per cent) earn between 5,000 and 10,000, with an average income of 9,600, while 14 respondents (22 per cent) earn less than 5,000 per month, averaging 4,500, suggesting that a notable share of farmers operate on a small-scale or supplementary basis. A smaller group, 9 respondents (14 per cent), earns more than 15,000, with an average of 28,500, reflecting relatively commercial and large-scale dairy operations. (Appendix Table 18)

Savings from Dairy Farming

The table presents the distribution of respondents based on their average monthly savings from dairy farming. Out of 63 respondents, the largest proportion, 23 respondents (37 per cent), save between 10,000 and 15,000, with an average saving of 5,000, indicating that dairy farming enables a substantial segment of farmers to accumulate moderate savings. 18 respondents (29 per cent) save between 5,000 and 10,000, averaging 2,000, while 13 respondents (21 per cent) save less than 5,000, with an average of 1,500, reflecting limited saving capacity among smaller-scale farmers. A smaller group, 9 respondents (14 per cent), achieves savings above 15,000, with an average of 8,000, representing large-scale or highly profitable dairy operations. (Appendix table 19)

Expenditure on Dairy Farming

The table presents the distribution of respondents based on their average monthly expenditure incurred for dairy farming activities. Out of 63 respondents, the largest proportion, 23 respondents (37 per cent), spend between 1,000 and 5,000, with an average expenditure of 500, reflecting the relatively low input costs for small-scale dairy operations. 18 respondents (29 per cent) spend between 5,000 and 10,000, averaging 1,500, while 13 respondents (21 per cent) incur expenses between 10,000 and 15,000, with an average of 2,000, indicating medium-scale dairy activities with higher input requirements. A smaller group, 9 respondents (14 per cent), spend above 15,000, averaging 3,500, representing large-scale or commercially oriented dairy farms with greater herd sizes and input usage. (Appendix table 20)

Major Findings

- Women play a significant role in dairy farming, comprising 57% of respondents, highlighting the women-centric nature of the activity.
- The majority of respondents (56%) are in the 30–40 years age group, indicating that dairy farming is largely managed by the economically active population.
- Most dairy farmers belong to the OBC category (63%), reflecting the importance of dairy as a livelihood among backward communities.
- The majority of respondents own small to medium-sized herds, with 38% having 1–5 cows and 56% having 1–5 buffaloes.
- Milk production varies widely, with 27% producing 5–10 litres/day and 14% producing more than 20 litres/day, indicating differences in herd size, breed quality, and feeding practices.
- Dairy farming requires a significant daily labour input, with 35% of respondents spending 5 hours per day and 24% spending more than 5 hours, emphasizing the labour-intensive nature of the sector.
- Monthly income from dairy farming is moderate to high, with 35% earning 10,000–15,000, and a smaller segment (14%) earning more than 15,000, highlighting the potential for substantial earnings from larger or better-managed operations.
- Expenditure on dairy farming is relatively manageable, with 37% spending 1,000–5,000 per month, and an overall average monthly expenditure of 7,500.
- The most commonly used marketing channels are milk collection centres (35%) and

cooperatives (27%), while local markets provide higher average prices (35 per litre) but are used by a small number of respondents.

- Only 40% of respondents reported receiving reliable prices, indicating significant price uncertainty and vulnerability to market fluctuations.
- Farmers rely on a mix of microfinance (32%), government-subsidized loans (27%), and commercial/cooperative bank loans (36%), while a few depend on informal sources like landowners.
- The reliance on microfinance indicates easy accessibility but may also involve higher interest costs, suggesting the need to improve access to formal credit at lower rates.,
- The main reason for adopting dairy farming is to increase household income (46%), followed by diversifying sources of income (33%) and improving food security (21%), indicating that dairy farming serves both economic and nutritional objectives.
- Farmers face fluctuating milk prices, limited access to quality feed, inadequate veterinary services, and dependence on informal credit, which restrict growth and profitability.
- Overall, the average monthly income from dairy farming across all respondents is 56,970, highlighting that dairy farming provides a meaningful contribution to household earnings in Siruguppa Taluka.
- Overall, the average monthly savings from dairy farming across all respondents is 16,500, indicating that dairy farming is not only a source of income but also contributes to household financial stability and capital accumulation.
- Overall, the average monthly expenditure from dairy farming across all respondents is 7,500, highlighting that while dairy farming requires investment in fodder, veterinary care, labour, and maintenance, the expenditure remains manageable relative to the income generated.

Major Suggestions
Enhancement of Dairy Infrastructure

Establish more milk collection centres and chilling units in Siruguppa Taluka to improve market access and reduce spoilage.

- Upgrade veterinary service facilities, including mobile veterinary units, to ensure timely treatment and vaccination of livestock.
- Improved Access to Quality Feed and Fodder
- Promote the cultivation of high-yielding fodder crops and develop community fodder banks to address seasonal feed shortages.
- Encourage farmers to adopt balanced feeding practices to improve milk yield and herd health.
- Financial Support and Credit Access
- Expand government-subsidized loan schemes and facilitate low-interest institutional credit for small and marginal dairy farmers.
- Reduce dependence on informal and high-interest loans by strengthening cooperative banking and microfinance regulation.
- Market Linkages and Price Stabilization
- Strengthen cooperative societies to provide assured procurement, timely payments, and fair milk prices.
- Introduce real-time market information systems to help farmers make informed decisions on milk sale and reduce price uncertainty.
- Encourage direct-to-consumer marketing and value addition (e.g., paneer, ghee, yogurt) to increase income.

Capacity Building and Training

- Conduct regular training programs on modern dairy practices, including breed improvement, animal health management, and hygiene.
- Provide financial literacy programs to help farmers manage income, savings, and investments effectively.

Promotion of Women in Dairy Farming

- Given that women are the major contributors to dairy activities, implement gender-sensitive policies, such as women-only training sessions, access to credit, and cooperative membership.

Encouragement of Youth Participation

- Develop programs to attract young people into dairy farming through entrepreneurship support, skill development, and technology adoption.

Research and Technology Support

- Conduct on-farm research to identify high-yielding breeds, cost-effective feeding systems, and disease-resistant animals suitable for the semi-arid conditions of Siruguppa.
- Promote adoption of ICT tools, such as mobile apps for veterinary support, milk pricing, and market information.

Policy Integration and Support

- Integrate dairy development into rural livelihood programs to ensure that small and marginal farmers benefit from government schemes.
- Implement monitoring and evaluation mechanisms to track the impact of policies and adjust strategies based on farmer needs.

Conclusion

Dairy farming in Siruguppa Taluka of Ballari District plays a crucial role as a supplementary livelihood source for rural households, particularly for small and marginal farmers, women, and disadvantaged communities. The study reveals that while dairy farming contributes significantly to household income, savings, and food security, farmers face numerous challenges, including fluctuating milk prices, limited access to quality feed, inadequate veterinary services, and dependence on informal credit.

The findings indicate that most farmers operate small to medium herd sizes, with daily milk production ranging widely, reflecting variations in resource availability, management practices, and socioeconomic factors. Despite moderate profitability, there is significant potential to enhance productivity, income, and market access through targeted interventions, capacity building, and policy support.

In conclusion, dairy farming in Siruguppa Taluka is not only an economic activity but also a risk-coping and livelihood-sustaining strategy. Strengthening infrastructure, improving institutional support, promoting modern feeding and breeding practices, and ensuring price stability are essential to make dairy farming more profitable, sustainable, and inclusive, thereby contributing to rural development in the region.

Appendix:

Appendix 1 Gender-wise Distribution of Respondents

S.L NO.	Gender	Respondent	Percentage (%)
1	Male	27	43
2	Female	36	57
Total		63	100

Appendix 2 Age-wise Distribution of Respondents

S.L/NO	Age-groups	Respondent	Percentage
1	20- 30	8	13
2	30-40	35	56
3	40-50	15	24
4	50-60	5	8
Total		63	100

Appendix 3 Social Category-wise Distribution of Respondents

S.L/NO	Social Category	Respondent	Percentage %
1	SC	6	10
2	ST	12	19
3	OBC	40	63
4	GENERAL	5	8
Total		63	100

Appendix 4 Family Size-wise Distribution of Respondents

S.L/NO	Family size	Respondent	Percentage (%)
1	1 to 5	37	59
2	5 to 10	12	19
3	10 to 15	10	16
4	More then 15	4	6
Total		63	100

Appendix 5 Educational Status of the Respondents

S.L/NO	Literacy level	Respondent	Percentage (%)
1	Primary School	8	13
2	Middle School	12	19
3	High School	17	27
4	College	6	10
5	Illiteracy rate	20	32
Total		63	100

Appendix 6 Religion-wise Distribution of Respondents

S.L/NO	Religion	Respondent	Percentage (%)
1	Hindu	49	78
2	Muslim	4	6
3	Christianity	2	3
4	Others	8	13
Total		63	100

Appendix 7 Landholding Pattern of the Respondents

S.L/NO	Farmer land holdings in acre	Respondents	Percentage (%)
1	Marginal	20	32
2	small	8	13
3	medium	12	19
4	large	15	24
5	No land	8	13
Total		63	100

Appendix 8 Distribution of Respondents by Cow Ownership

S.L/NO	Cows	Respondents	Percentage (%)
1	1 to 5	24	38
2	5 to 10	19	30
3	11 to 20	10	16
4	Not cows	10	16
Total		63	100

Appendix 9 Distribution of Respondents by Buffalo Ownership

S.L/NO	Buffalo	Respondent's	Percentage %
1	1 to 5	35	56
2	5 to 10	17	27
3	11 to 20	8	13
4	Not cows	3	5
Total		63	100

Appendix 10 Sources of Finance for Dairy Farming

S.L/NO	Credit or Loans name	Respondents	Percentage
1	Government Subsidized loan	17	27
2	Commercial Bank Loan	12	19
3	Cooperative Bank loan	11	17
4	Micro Finance Loans	20	32
5	Land owners	3	5
Total		63	100

Appendix 11 Marketing Channels Used for Milk Sales

S.L/NO	Milk Sales	Respondents	Percentage %
1	Local market	16	25
2	Cooperatives	17	27
3	Direct to consumer	8	13
4	Milk collection centre	22	35
Total		63	100

Appendix 12 Occupational Distribution of the Respondents

S.L/NO	Occupation	Respondents	Percentage %
1	Agriculture labour	22	35
2	Cultivator and Agri Labour	13	21
3	Agriculture and self-employment	17	27
4	Agriculture and Business	6	10
5	Others	5	8
Total		63	100

Appendix 13 Reasons for Adopting Dairy Farming

S.L/NO	Reason for start dairy farming	Respondent	Average of respondent
1	To increase Income	29	46
2	To Increase food security	13	21
3	To Diversify source of income	21	33
Total		63	100

Appendix 14 Time Spent on Dairy Farming Activities (Daily)

S.l/No	Duration	No. of Respondent	Percentage
1	3 hours	10	16
2	4 hours	16	25
3	5 hours	22	35
4	5 and above	15	24
Total		63	100

Appendix 15 Daily Milk Production of Respondents

Sl No.	Production of milk per day	No. of Respondents	Percentage
1	3 to 5	10	16
2	5 to 10	17	27
3	10 to 15	15	24
4	15 to 20	12	19
5	20 +	9	14
Total		63	100

Appendix 16 Milk Price per Litre in Different Markets

Sl. No.	Items	No. of Respondents	Average price of per liter milk
1	Local Market	6	35
2	Private Market	22	30
3	Milk Society	30	27
4	Others	5	26
On An average Rs. Per litre		63	29.5

Appendix 17 Perception of Reliable Milk Prices

Sl. No.	Get Reliable Prices	No. of Respondents	Percentage
1	Yes	25	40
2	No	38	60
Total		63	100

Appendix 18 Income from Dairy Farming

Sl. No.	Items	An Average Income (In Rs) Per M	No. of Respondents	Percentage
1	1000-5000	4500	14	22
2	5000-10000	9600	18	29
3	10000-15000	14370	22	35
4	15000 and above	28500	9	14
	Total	56970	63	100

Appendix 19 Savings from Dairy Farming

Sl. No.	Items	An Average Savings (in Rs)	No. of Respondents	Percentage
1	1000-5000	1500	13	21
2	5000-10000	2000	18	29
3	10000-15000	5000	23	37
4	15000 and above	8000	9	14
	Total	16500	63	100

Appendix 20 Expenditure on Dairy Farming

Sl. No.	Items	An Average Expenditure (in Rs)	No. of Respondents	Percentage
1	1000-5000	500	23	37
2	5000-10000	1500	18	29
3	10000-15000	2000	13	21
4	15000 and above	3500	9	14
	Total	7500	63	100

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