ISSN: 2583-8288
Technical Article
Published on: 31/03/2025

Transforming Dairy Farming: A Case Study of Progressive Dairy Farmer of Mahisagar District, Gujarat

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DOI:10.5281/Vettoday.15161906

Abstract

This case study explores the transformative journey of Patel Krunalbhai Ambalal, an innovative dairy farmer from Movasa village, Mahisagar district, Gujarat. With a background in Mechanical Engineering and a commitment to sustainable dairy practices, Mr. Patel has revitalized his family's dairy farm, turning it into a profitable enterprise. His strategic adoption of scientific dairy techniques, efficient resource utilization, and advanced farm management practices exemplify how traditional dairy farming can be modernized. Patel's use of biogas, sustainable fodder cultivation, advanced breeding, and animal health management enhances profitability and reduces environmental impact, making his farm a model of success. The total annual income from the farm is ₹19,33,720, of which ₹17,98,720 (93.02%) is generated from milk sales. The total annual feed cost amounts to ₹12,02,675, which constitutes 84.18% of the total expenditure of ₹14,28,647. This results in an annual net profit of ₹5.05 lakhs, reflecting a profit margin of 35.35%.This case study aims to inspire small-scale dairy farmers to integrate scientific methods and innovative approaches for a sustainable, high-yield farming model.

INTRODUCTION

Animal husbandry is a key economic activity in rural India, providing significant employment and income. Despite having the largest population of milk-producing animals, India's dairy productivity remains low due to limited adoption of low-cost technologies. Many farmers perceive dairy farming as unprofitable due to high input costs, low milk prices, and poor access to modern techniques. Small and marginal farmers, who dominate the sector, face challenges in achieving economies of scale. This case study aims to motivate dairy farmers to adopt sustainable and profitable practices by utilizing local resources and adapting methods to their specific conditions.

METHODOLOGY

This research used a case study approach to examine the successful dairy farming practices of Mr. Krunalbhai Ambalal Patel from Movasa village, Mahisagar district, Gujarat. The case study method enables an in-depth analysis of specific events, decisions, and practices, providing valuable insights into agricultural success. Maxwell (1986) highlighted that this method is effective and cost-efficient for multidisciplinary agricultural research, fostering collaboration between social and natural scientists and farmers. Mr. Patel was selected for his recognized success in adopting scientific and innovative dairy practices, making him a leader in the local farming community. The research

followed criteria and procedures outlined by Murray et al. (1994) to ensure a thorough analysis.

RESULT AND DISCUSSION

The origins of this remarkable dairy farming success story trace back to 1995 when Patel Krunalbhai Ambalal's mother, Ushaben Patel, initiated the venture by purchasing a solitary cow from Punjab State. Today, the dairy farm stands as a testament to perseverance and innovation, housing 22 HF crossbred cows, 13 heifers, 6 calves and 2 buffaloes.

The economics of dairy farm is presented in Table 1. The dairy farm boasts an average daily milk production of 154 litres, which is marketed at ₹32 per litre to private dairy at Lunawada city. Total income from milk was ₹17,98,720 annually. Patel Krunalbhai Ambalal maximized the utility of cow dung by selling it at ₹1200 per trolley. An average of 70 trolleys of dung is produced in a year.

Further innovation comes through the installation of a Gobar Gas plant, which utilized three trolleys of dung annually to produce biogas for cooking. This initiative has earned him an additional ₹50,000 from biofertilizer. The sale of gunny bags added another ₹1000 to the farm's income stream. Gross return/Total income was ₹19,33,720 per year. The net profit of the farm was ₹5,05,073 in a year. The benefit-cost ratio was 1.35 of the farm. It indicates that an investment worth ₹1 on all inputs used for dairy farming has an output worth ₹1.35, which indicates that dairy farming is one of the profitable businesses and provides employment in rural areas. This finding is in line with the findings of Jadav and Joshi, (2018) and Swarnkar *et al.* (2023).

Sustaining the livestock required a daily supply of 980 kg of green fodder, cultivated on-site at a cost of ₹1.5 per kg. Dry fodder, including sorghum, wheat straw, and maize, amounts to 65 kg daily, incurring a cost of ₹ 5 per kg. Additionally, concentrate feed (50 kg) was dispensed daily. Concentrate feed costs ₹1175 for 50 kg. The total annual expenditure of dairy farm was presented in Table 1 revealed that cost of green fodder, dry fodder and concentrate feed was ₹5,36,550, ₹2,37,250 and ₹4,28,875, respectively. The cost of green fodder, dry fodder, and concentrate feed was 37.56%, 16.60%, and 30.02% of total expenditure on the dairy farm. Total annual feed cost of farm was ₹12,02,675 and its 84.18 per cent of total expenditure. A similar result was found by Singh *et al.* (2017), who reported that the total feed cost (green fodder, dry fodder, and concentrates) was 84.22 per cent on the overall basis of cows.

Table1. Economics of Dairy Farm in Indian Rupees (Annual)

Item	Quantity/Timeframe	Unit Cost (₹)	Total Cost (₹) & in per cent	Income (₹)
Milk Production	154 litres/day	32 per liter	-	17,98,720 (93.02%)
Dung Sales	70 trolleys/year	1,200	-	84,000 (4.34 %)
Bio-fertilizer Sales	-	-	-	50,000 (2.59 %)
Gunny Bags Sales	-	-	-	1,000 (0.05 %)
Green Fodder	980 kg/day	1.5	5,36,550 (37.56%)	-
Dry Fodder	130 kg/day	5	2,37,250 (16.60%)	-
Concentrate Feed	50 kg/day	1,175/50kg	4,28,875 (30.02%)	-
Mineral Mixture	2 kg/month	78	1,872 (0.13 %)	-
AI Procedures	100/year	100	10,000 (0.70 %)	-
Health care	-	-	45,000 (3.15 %)	-
Labor Costs	-	-	1,32,000 (9.24 %)	-
Electricity	12 months	2,000/month	24,000	-

			(1.68 %)	
Animal Shed	5,20,000 (2% depreciation per year)	-	10,400 (0.73 %)	-
Equipment	27,000 (10% depreciation per year)	-	2,700 (0.19 %)	-
Total Income	-	-	-	19,33,720
Total Costs	-	-	14,28,647	-
Net Profit	-	-	-	5,05,073
B:C ratio				1.35

A mineral mixture of 2 kg is incorporated, with a cost of 78 Rs/kg. So, total cost on mineral powder was ₹1872 per year. Annual treatment costs for the farm total ₹45,000, addressing significant diseases like Mastitis, Viral Infections, Laminitis, and Lumpy Skin Disease. The farm adheres to regular deworming practices and a vaccination regime against FMD, HS, and Lumpy Skin Disease. Meticulous attention is given to clean milk production, with measures such as 24/7 water access, regular veterinary check-ups, bathing animals every two to three days, and tick control strategies. Artificial insemination (AI) is a critical component of the breeding strategy. The annual requirement of 100 AI procedures, each costing ₹100, results in a total annual expenditure of ₹10,000.

The farm's infrastructure includes a well-constructed animal shelter built at a cost of ₹5.2 lakhs in the year 2001. Innovations like a fogger, installed in the year 2023 at ₹10,000, contribute to animal comfort. Notably, a milking machine (purchased for ₹55,000 in 2001), and a chaff cutter (procured for ₹17,000 in 2021) enhance efficiency. The monthly electricity bill amounts to ₹2000.

The farm employs two hired laborers, with one earning ₹200 per day and the other receiving an annual salary of ₹60,000. So, a total ₹1,32,000 cost on labour (9.24%). Additionally, two family members contribute six hours of work each day. A similar finding is reported by Singh *et al.* (2017). Patel Krunalbhai Ambalal's drive to succeed is fueled by his self-motivation and proactive pursuit of knowledge through Dairy Vigyan Kendra, Vejalpur, Kamdhenu University, Anand, and the study of relevant literature provided by the DVK.

Driven by a resolute commitment to scientific dairy practices, Patel Krunalbhai Ambalal has realized an annual net profit of ₹5.05 lakhs, with dairy farming contributing 35.35% to this substantial figure. His fervour for scientific dairy farming and his dedication to sharing his knowledge with rural youth underscores his contribution to the agricultural sector.

CONCLUSION

The case of Patel Krunalbhai Ambalal illuminates the potential of combining education, innovation, modern practices, and dedication to create a thriving and profitable dairy farming business. Through prudent investments in infrastructure, technology, and workforce management, he has transformed his family's dairy enterprise into a model of success, inspiring both his local community and the broader agricultural sector.

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