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Challenges encountered by dairy farmers in Udaipur district of Rajasthan

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Abstract

Dairy farming holds significant importance in the social and economic structure of Udaipur, Rajasthan. This study was conducted within Udaipur district and focused on four specific tehsils: Mavli, Vallabhnagar (NT), Kotra and Jhadol (T). In each of these tehsils, four villages were chosen, and from each village, ten dairy farmers who owned at least five dairy animals were randomly selected. A total of 160 dairy farmers participated in this study, providing data through well-structured, pre-tested interview schedules conducted in person. The collected data was subsequently analysed using basic statistical methods, including frequency, percentage, mean per score (MPS), and standard deviation (S.D). The study's findings shed light on the challenges that dairy farmers face, affecting critical aspects of their livelihoods. These challenges were diverse, covering nutrition and breeding constraints affecting the health and genetics of dairy animals, housing issues highlighting the need for affordable and proper facilities, and healthcare management obstacles due to limited access to veterinary services and costly treatments. Additionally, marketing constraints, such as low milk prices and limited market access, coupled with gaps in record-keeping and value-added product knowledge, hindered farmers' profitability and growth opportunities.

Keywords: Udaipur dairy farmers, non-tribal, tribal, mean percentage score, standard deviation

Introduction

Dairy farming occupies a crucial position in our nation's economy. It plays a vital role in bolstering food supply, creating employment opportunities, and enhancing nutritional standards. The dairy sector in India stands as one of the largest and most rapidly expanding industries. Dairy farming is not only a solution to numerous agricultural challenges but also serves as an effective tool for elevating the socio-economic status of rural communities and the income of farmers. In the fiscal year 2021-22, India achieved a total milk production of 221.06 million tonnes, with an impressive annual growth rate of 5.29%. The top five states contributing to this remarkable production are Rajasthan (15.05%), Uttar Pradesh (14.93%), Madhya Pradesh (8.06%), Gujarat (7.56%), and Andhra Pradesh (6.97%). The per-capita milk availability reached 444 grams per day in 2021-22, marking a 17-gram increase compared to the previous year. In the fiscal year 2020-21, the livestock sector, when considering constant prices, accounted for 30.13% of the Agriculture Sector and 4.9% of the total Gross Value Added (GVA). According to the 20th livestock census, India's total livestock population in 2019 exceeded 535.78 million, with cattle contributing 35.94% (192.49 million) and buffalo accounting for 20.45% (109.85 million) of the livestock population. Among all livestock products, milk occupies the lion's share, constituting 67.20% of the livestock sector in 2017. This underscores the profound significance of the dairy industry in our nation's agricultural landscape. In addition, to optimize production and thereby increase profitability, dairy farmers rely on their limited resources, including inputs, the potential of their animals, and the quality of the feed. Effective scientific management and the skill of the farmer can certainly enhance their profits. However, milk producers frequently encounter a multitude of challenges that impact various aspects of milk production, encompassing breeding, feeding, health management, infrastructure, technical issues, social and psychological factors, economic constraints, and marketing difficulties, all of which can have varying degrees of severity. These constraints can either impede or facilitate the expansion of milk production in the country.

Taking these factors into account, the current study was undertaken with the specific aim of identifying the challenges faced by both Tribal and Non-Tribal milk producers engaged in dairy farming in the Udaipur district of Rajasthan.

Materials and Methods

The research was conducted within Udaipur district, Rajasthan, focusing on four tehsils in the region. Two of these tehsils, Kotra and Jhadol, were selected from the Tribal group, while the other two, Mavli and Vallabh Nagar, were chosen from the Non-Tribal group. The selection of tehsils was based on the highest population of dairy animals. In each tehsil, four villages were carefully chosen, and from each village, a random selection of 10 dairy farmers who owned a minimum of five dairy animals was carried out. This approach led to data collection from a total of 160 dairy farmers through well-structured, pre-tested interview schedules conducted in person. The collected data was subjected to various analytical methods, including:

Percentage and Frequency

This approach involved determining the percentage and frequency distribution of dairy farmers, allowing for the categorization of dairy farmers concerning their personal characteristics and independent variables.

Mean Score

The mean score was computed by dividing the total score of each statement by the total number of dairy farmers. This formula was applied:

$$\text{Mean score} = \frac{\text{Total score of each statement}}{\text{Total number of dairy farmers}}$$

Mean percentage score (MPS)

It was calculated by multiplying total obtained score of the dairy farmers by 100 and divided by the maximum obtainable score.

$$\text{MPS} = \frac{\text{Total score obtained by the respondent}}{\text{Maximum obtainable scores}} \times 100$$

Rank

Ranks were assigned in descending order according to the Mean Percentage Scores obtained. This ranking approach allowed for a more comprehensive understanding of all items related to the questions under consideration.

Standard deviation

Mean and standard deviation were used for categorizing the respondent into different categories and to find out the variability of the dependent and independent variable involved in the study.

$$s = \sqrt{\frac{\sum_{i=1}^n (x_i - \bar{x})^2}{n-1}}$$

S = Standard deviation, n = Sample size

$\sum X_i$ = Sum of total scores in sample

$\sum X_i^2$ = Sum of squares of score of each respondent in sample

Results and Discussion

This section of the chapter is focused on examining the challenges encountered by dairy farmers. To assess the various constraints that farmers face when adopting improved animal husbandry practices such as breeding, feeding, housing and management, marketing, and healthcare, a well-suited scale was developed. For each of these constraints, a mean percentage score was calculated and then ranked accordingly. This approach helped us gauge the severity and significance of each constraint as perceived by the dairy farmers.

1. Breeding Constraints

Table 1. revealed several notable breeding constraints, including low productivity in local breeds, recurrent breeding issues in dairy animals, a shortage of pedigree bulls for natural breeding, limited familiarity with breeding practices, underwhelming outcomes from artificial insemination, and the absence of accessible artificial insemination facilities. These constraints significantly impact breeding efficiency and the genetic enhancement of dairy animals.

These findings align with those reported by Meena *et al.* (2012) [8], who also emphasized the prevalence of recurring breeding problems in milch animals as a primary constraint in animal breeding. This recurring issue may be attributed to inadequate nutrition provided to milch animals. The insufficiency of pedigree bulls for natural breeding services and a lack of knowledge about artificial insemination were identified as the second and third most significant constraints, respectively. Meanwhile, the subpar services available at artificial insemination centers were ranked fourth in terms of impact.

Table 1: Constraints of breeding practices:

S. No.	Breeding Constraints	Non-Tribal (n ₁ =80)		Tribal (n ₂ =80)		Overall (n=160)	
		MPS	Rank	MPS	Rank	MPS	Rank
1.	Lack of pedigree bull for natural services	77.08	II	79.17	III	78.13	III
2.	Repeat breeding in dairy animals	66.67	III	94.17	I	80.42	II
3.	Lack of knowledge about breeding practices	41.67	V	49.58	VI	45.63	VI
4.	Low productivity of local breeds	90.00	I	93.75	II	91.88	I
5.	Unsatisfactory results of artificial insemination	63.33	IV	64.17	IV	63.75	IV
6.	Unavailability of AI facilities	39.58	VI	57.92	V	48.75	V

MPS=Mean Percentage Score, n= Total number of dairy farmers

2. Feeding constraints: Table 2 highlights the major challenges encountered, which primarily revolve around issues related to feed and nutrition for dairy animals. These challenges encompass the unavailability of high-quality green fodder, a shortage of feed and fodder, the high cost of

concentrate feed, insufficient knowledge about proper feeding practices, lack of awareness regarding green fodder preservation and the creation of hay and silage, limited pasture land, and a lack of knowledge about mineral

supplements. These constraints directly impact the nutrition and feeding effectiveness of dairy animals.

These findings closely mirror those reported by Meena *et al.* (2012) [8]. Their research identified the most prominent constraint in dairy farming as the continuous unavailability of green fodder throughout the year. Other significant challenges included the lack of knowledge about the proper and scientific feeding of dairy animals, the scarcity of cattle

feed, the high cost of concentrated feed, as well as the expenses related to green and dry fodder. In addition, inadequate knowledge about mineral supplements, unfamiliarity with hay preparation, and insufficient grazing lands were ranked as constraints. The shortage of sufficient pasture land for animal grazing was the last constraint, likely due to the ample availability of land in the hilly Tribal regions.

Table 2: Constraints of feeding practices

S. No.	Feeding Constraints	Non-Tribal (n ₁ =80)		Tribal (n ₂ =80)		Overall (n=160)	
		MPS	Rank	MPS	Rank	MPS	Rank
1.	Non-availability of quality green fodder	48.8	VII	71.3	V	60.00	VII
2.	Shortage of feed and fodder	63.3	V	74.6	IV	68.96	IV
3.	High price of concentrate	61.3	VI	69.2	VI	65.21	V
4.	Inadequate knowledge about proper/scientific feeding of dairy animals	72.5	III	85.8	III	79.17	II
5.	Inadequate knowledge about conservation of green fodder or making hay and silage	87.5	I	95.8	I	91.67	I
6.	Short age of pasture land	80.4	II	48.3	VII	64.38	VI
7.	Lack of knowledge about Mineral mixture	67.5	IV	87.5	II	77.50	III

MPS=Mean Percentage Score, n= Total number of dairy farmers

3. Management constraints: Table 3 revealed that both Non-Tribal and Tribal farmers encountered challenges related to their lack of knowledge in scientific housing practices. This highlights the need for educational programs to enhance their understanding in this area. Additionally, the high cost of constructing proper housing was a common issue, which requires efforts to promote more cost-effective solutions. Both groups also faced distinct housing problems, emphasizing the importance of ensuring housing availability. Lastly, the inadequate care and management of pregnant and lactating animals were areas of concern,

indicating a need to improve farmers' skills in this aspect.

These findings are consistent with those of previous studies, such as Tailor *et al.* (2012) [8], which identified a lack of knowledge about scientific housing as a major constraint in Udaipur. Singh *et al.* (2017) [7] found that many farmers were not following a regular schedule for providing feed and water to their animals. Lack of management skills for monitoring animal health and welfare was another important constraint, followed by a lack of awareness about safe handling of animals to reduce the risk of injury, pain, and distress.

Table 3: Management Constraints

S. No.	Management Constraints	Non-Tribal (n ₁ =80)		Tribal (n ₂ =80)		Overall (n=160)	
		MPS	Rank	MPS	Rank	MPS	Rank
1.	Lack of knowledge about scientific housing for dairy	83.33	II	95.42	I	89.38	II
2.	High cost of construction	79.17	III	86.67	III	82.92	III
3.	Separate housing problem	89.58	I	90.83	II	90.21	I
4.	Poor care and management of pregnant animals/lactating animals	54.17	IV	71.67	IV	62.92	IV

MPS=Mean Percentage Score, n= Total number of dairy farmers

4. Marketing constraints

The findings from Table 4 revealed that the farmers in the study area face significant challenges in marketing their dairy products. These include low and unrewarding milk prices, difficulties in accessing profitable markets, a lack of knowledge regarding keeping proper records, the absence of cooperative societies in their villages, and limited understanding of how to create value-added dairy products. These constraints hamper the farmers' ability to increase their profits and explore new opportunities in the market.

These results are consistent with a study by Kavitha *et al.* (2020) [10], which also highlighted key constraints faced by dairy farmers in marketing. The most prominent challenges included receiving low prices for milk, having to travel long distances to reach milk societies, and facing exploitation by middlemen or milk vendors. In addition, farmers reported limitations in their purchasing power and a reduced capacity to bear financial risks as important socio-psychological constraints.

Table 4: Marketing constraints

S. No.	Marketing Constraints	Non-Tribal (n ₁ =80)		Tribal (n ₂ =80)		Overall n=160	
		MPS	Rank	MPS	Rank	MPS	Rank
1.	Non remunerative price of milk	75	III	83.8	IV	79.38	III
2.	Poor availability and access to profitable market	66.7	IV	81.7	V	74.17	V
3.	Lack of knowledge of record keeping	99.2	I	99.2	I	99.17	I
4.	Lack of co-operative society in village	78.8	II	86.7	III	82.71	II
5.	Lack of knowledge about making value added dairy products	54.2	V	96.7	II	75.42	IV

MPS=Mean Percentage Score, n= Total number of dairy farmers

5. Health care management constraints

The data in Table 5 highlights the primary challenges in managing the health of dairy animals. These include a lack of knowledge about vaccinating against contagious diseases, limited understanding of deworming and proper animal care, a shortage of veterinary services in the village, and the high costs associated with veterinary treatments.

These findings are consistent with a study by Rajadurai *et al.* (2018) [6], which found that all dairy farmers faced high

veterinary service costs, with reproductive disorders being a significant concern. Additionally, a significant percentage of dairy farmers encountered reduced access to veterinary hospitals and timely veterinary services. Similarly, studies by Patil *et al.* (2009) [9] and Tailor *et al.* (2012) [8] also reported that farmers identified high medicine costs, insufficient knowledge about disease prevention and control, and a lack of nearby veterinary hospitals as constraints in managing the health of their dairy animals.

Table 5: Health care constraints

S. No.	Health care Constraints	Non-Tribal (n ₁ =80)		Tribal (n ₂ =80)		Overall n=160	
		MPS	Rank	MPS	Rank	MPS	Rank
1.	Lack of knowledge about vaccination against contagious disease	7.22	IV	16.22	IV	23.44	IV
2.	Lack of knowledge About deworming/cleaning and grooming/isolation of sick animals	44.58	II	75.83	II	60.21	II
3.	Lack of veterinary services in the village	40.83	III	73.33	III	57.08	III
4.	Costly veterinary treatment	68.33	I	83.33	I	75.83	I

MPS=Mean Percentage Score, n= Total number of dairy farmers

Conclusion

The challenges faced by dairy farmers encompassed various critical aspects of their livelihoods. These challenges ranged from nutritional and breeding constraints that affected the health and genetic improvement of dairy animals to housing issues, which emphasized the need for affordable and proper facilities. Additionally, healthcare management and access to veterinary services posed significant hurdles, impacting the well-being of the livestock. Finally, marketing constraints, including low milk prices and limited market access, along with gaps in record-keeping and value-added product knowledge, hindered farmers' profitability and growth opportunities. To tackle these various challenges effectively, it's essential to adopt a comprehensive approach. This approach should involve providing education, improving infrastructure, and establishing support systems. By doing so, we can enhance the long-term sustainability of dairy farming in the study area.

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