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Feeding and Breeding Problems Faced by Dairy Farmers in Middle Gujarat

[1]Ashish B Mahera and [2]RS Pundir

[1]Assistant Professor & Head, Department of Marketing Management, International Agribusiness Management Institute, Anand Agricultural University, Anand, Gujarat, India

[2]Principal & Dean, International Agribusiness Management Institute, Anand Agricultural University, Anand, Gujarat, India

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Corresponding Author: Ashish B Mahera

Abstract

Dairy farming is an important source of income for rural households in India. However, farmers deal with ongoing challenges in feeding and breeding management that limit productivity and profitability. This study was conducted in Middle Gujarat and involved 320 dairy farmers. Henry Garrett's ranking technique was used to identify and prioritize the reported problems. The findings showed that in feeding management, high feed costs were the biggest challenge, followed by insufficient knowledge about balanced rations and seasonal shortages of green fodder. Farmers had limited awareness of urea-treated straw and silage preparation, and the lack of fodder seeds further hindered their feeding practices. In terms of breeding management, the low genetic potential of local animals was the biggest concern. Other issues included poor conception rates in artificial insemination, repeat breeding, and inadequate access to timely AI services. To improve dairy productivity and profitability, it is crucial to enhance farmers' understanding of scientific feeding and breeding practices. Access to quality inputs and services also needs to be improved.

Keywords: Dairy farming, feeding, breeding, feed, fodder, artificial insemination, silage

1. Introduction

Dairy farming is a critical activity mainly for rural people in India. Farmers primarily keep dairy animals, including buffalo, crossbred cows, and indigenous cows, for milk production. Farmers sell milk to customers, cooperatives, or private companies that are prevalent in the market. Farmers are also earning income from the sale of byproducts, such as dung. Indian farmers are facing various problems. These problems hinder production, which in turn is responsible for the overall loss of the farmers. In Gujarat, the dairy co-operative system is well established, but farmers still face challenges in adopting scientific and better management practices in dairy farming. Previous studies have pointed out several issues that dairy farmers deal with in different areas of the state. Farmers struggled with high feed costs (Patel *et al.*, 2013; Patel *et al.*, 2015; Sabapara, 2014) [7, 6, 9], year-round lack of green fodder (Patel *et al.*, 2013) [7] and low milk prices (Patel *et al.* & Sabapara, 2014) [9]. Other issues, such as the high costs of dairy animals and equipment (Patel *et al.*, 2015) [6] and high construction expenses (Sabapara, 2014) [9], were found to be the main problems in Gujarat. This study aims to identify the feeding and breeding problems faced by dairy farmers in the Middle Gujarat region.

Materials and Methods

Sampling Design

This study was conducted in Middle Gujarat to investigate problems faced by the dairy farmers in feeding management. A total of 320 dairy farmers were selected from the study area. Four districts, namely Kheda, Anand, Panchmahals, and Mahisagar, were selected from Middle Gujarat. Two talukas from each selected district were chosen randomly for the study. Hence, a total of eight talukas were selected. From the Kheda district, Kapadvanj and Thasra talukas were selected. From the Anand district, Khambhat and Borsad talukas were selected. From the Panchmahals district, Shehera and Godhra talukas were selected, and from the Mahisagar district, Virpur and Balasinor talukas were selected for the study. Four villages were selected from the selected talukas. These villages had a population of milch animals, including buffalo and cows. Thus, a total of 32 villages were selected for the study. Ten dairy farmers were selected from each village. Thus, the total sample size of 320 dairy farmers was used for the study.

Problems faced by the farmers

Farmers face many problems in dairy farming. Different issues related to Feeding and Breeding management were studied. Henry Garrett's ranking technique was employed to examine the problems faced by farmers.

Garrett Ranking Technique

As per this method, respondents were asked to assign the rank of all problems, and the outcomes of such ranking were converted into a score value with the help of the following formula:

$$\text{Percent Position} = \frac{100\,(R_{ij} - 0.5)}{N_j}$$

Where,
R_{ij} = Rank given for the i^{th} variable by the j^{th} respondent
N_j = Number of variables ranked by the j^{th} respondent
With the help of Garrett's Table, the percent position estimated was converted into scores. Then, for each factor, the scores of each individual were added, and the total value of scores and the mean value of scores were calculated. The factor having the highest mean value was considered to be the most critical factor (Garret & Woodworth, 1969).

Results and Discussion

To meet the stipulated objectives, studying the feeding and breeding problems faced by the dairy farmers, a total of 320 dairy farmers were analyzed to identify the issues faced by the farmers in the study area.

Problems Faced by Farmers in Feeding Management

The feeding of dairy animals is crucial and has a direct impact on animal productivity, health, and reproductive efficiency. However, dairy farmers face several challenges that hinder their feeding practices. The findings, as shown in Table 1, reveal the challenges faced by farmers in implementing effective feeding management practices in the study area.

Table 1: Problems faced by farmers in feeding management (n=320)

Feeding Problems Faced by Farmers	Garrett Mean Score	Rank
High Feed cost	76.10	1
Lack of knowledge of balanced ration	70.93	2
Non-availability of green fodder around the year	60.98	3
Lack of awareness about straw urea treatment	53.00	4
Lack of knowledge about silage preparation	45.23	5
Lack of availability of fodder crop seeds	39.08	6
Non-availability of dry fodder around the year	32.08	7
Inadequate knowledge of the cultivation of fodder crops throughout the year	23.61	8

Source: Field survey

As shown in the table, the high cost of feed emerged as the most persistent problem in the study area. Feed prices have risen continuously for many years. It has become a burden on dairy farmers, especially small and marginal farmers, as it significantly increases the cost of milk production. The feed cost is dependent on several factors, including increasing input costs, rising fuel charges, inflation, and higher production costs. This finding is consistent with the observations of Patel & Sabapara (2023) [8], who found that due to high feed costs, many farmers underfeed the animals. Many other authors, such as Jadav & Joshi (2018) [2] and Lakshmirpriya *et al.* (2023), have found that feed expenses account for over 65% of the total cost of milk production. The second major problem was the lack of knowledge about balanced rations. Many farmers continue to feed their animals traditional feed and fodder without understanding the nutritional requirements of dairy animals, which results in poor productivity and health-related issues. Farmers were not much aware of the nutritional composition of the feed they were feeding and the actual nutritional requirements of the animals. Many agencies, like agricultural universities, government animal husbandry departments, cooperative milk dairies, and private agencies, focus on ration balancing for dairy animals. Still, there is a vast scope for improving the knowledge of dairy farmers regarding the nutritional requirements of animals and the nutrient content of area-specific feed and fodder. These kinds of initiatives are desirable and may be beneficial to both farmers and the nation.

Another significant problem was the non-availability of green fodder throughout the year, which ranked third. Green fodder availability is highly seasonal due to its dependence on the monsoon and irrigation facilities, and the majority of green fodder production occurs during the Kharif season. Farmers were using shedha grass (bunds) and other available green fodder options. Farmers were forced to use more dry fodder due to the unavailability of green fodder. Many farmers fed wheat straw to their animals during the summer season, primarily in the dry areas of Virpur and Balasinor talukas, which led to numerous cases of impaction problems in the animals. Moreover, the lack of awareness regarding straw urea treatment and silage preparation was ranked fourth and fifth, respectively. To increase the nutrients of dry fodder like paddy straw, it should be treated with urea. Farmers had less awareness about the urea treatment of such straw. Silage is also a good option for storing green fodder, as it maintains its nutritional value and is palatable. However, farmers had less knowledge about silage preparation. Other problems, such as the unavailability of fodder crop seeds, the non-availability of dry fodder throughout the year, and inadequate knowledge about cultivating fodder crops, were ranked seventh, eighth, and ninth, respectively. Farmers in the study area faced several feeding-related problems. Priority should be given to reducing feed costs and enhancing farmers' knowledge of scientific feeding practices to improve the profitability and sustainability of dairy farming in the study area.

2. Problems Faced by Farmers in Breeding Management

Breeding is one of the most critical factors that determine the productivity and profitability of dairy farming. Despite various government and private initiatives to improve animal reproduction through artificial insemination (AI) and breed improvement programs, dairy farmers continue to face several breeding-related problems that create a hindrance to herd development. Problems related to breeding are mentioned in Table 2 as reported by dairy farmers.

Table 2: Problems faced by farmers in breeding management (n=320)

Breeding Problems Faced by Farmers	Garrett Mean Score	Rank
Lower genetic potential of the local animals	71.08	1
Poor conception rate in AI	60.61	2
Repeat breeding	56.43	3
Unavailability of a timely AI facility at the village	49.13	4
Lack of good-quality bulls for natural services	37.07	5
Unavailability of a purebred animal	24.68	6

Source: Field survey

The first-ranked breeding problem reported by the farmers was the lower genetic potential of local animals. Many indigenous cattle and nondescript animals in Gujarat exhibit lower milk yield compared to the exotic and crossbred animals. Mainly, this problem was observed in indigenous cows and buffalo. Productivity depends on many factors, and genetic potential is one of the essential pillars of productivity. If an animal does not possess good genetic makeup, other management practices will not give the desired results, which limits the income potential of dairy farmers. Breed improvement through AI or natural service with quality bulls is essential, but often not accessible to all farmers. This is also influenced by the fact that high-yielding animals require better management, which many smallholders may not be able to provide (Meena *et al.*, 2020) [4]. The poor conception rate in AI, ranked second, reflects the limitations in AI delivery, including poor semen quality, improper handling and storage, inadequate technical skills among inseminators, and insufficient heat detection by farmers. This problem often leads to frustration among farmers and reduces their trust in scientific breeding methods. Similar findings were reported by Pata *et al.* (2018) [5] and Patel & Sabapara (2023) [8], who observed a poor conception rate in AI. Regular training and refresher courses for AI technicians can be conducted to counter this issue.

The third-ranked issue was repeat breeding. Repeat breeding refers to the failure of an animal to conceive, even after consecutive inseminations, despite having regular estrus cycles. This issue leads to increased calving intervals, additional costs on re-insemination, and overall economic losses for farmers. Similar concerns have been documented by Patel & Sabapara (2023) [8], who highlighted that repeat breeding is a common reproductive disorder because of poor heat detection, nutritional imbalance, and substandard AI practices.

The unavailability of timely AI services at the village level was the fourth-ranked problem identified in the study area. Farmers in the study area experienced some issues with the delivery of AI services. Although cooperative dairies and government support have made AI services available in the market, according to the problems reported by farmers, the system has been unable to provide timely AI services, which significantly reduces conception rates. The lack of good quality bulls for natural service and the unavailability of purebred animals were ranked fifth and sixth, respectively. These issues suggest that while AI is widely promoted, natural breeding is still relied upon in many areas due to repeat breeding cases, low trust in AI services, and other factors. However, quality bulls for natural service were not readily available in the study area.

The following suggestions may be adopted to resolve some problems based on field experience and review literature: (1) Scientific feeding techniques such as ration balancing, urea-treated straw, and mineral supplementation should be widely promoted among farmers. (2) To reduce feed costs, farmers should be made aware of the use of locally available, low-cost feed ingredients. High-quality indigenous dairy animals should be made available, and artificial insemination using superior semen should be promoted to enhance genetic potential and improve productivity.

Conclusion

The present study on the problems faced by dairy farmers in feeding and breeding management reveals that high feed costs emerged as the most persistent issue, primarily affecting small and marginal farmers due to rising input prices and inflation. Many farmers lacked awareness of balanced rations and continued with traditional feeding practices, resulting in poor productivity. Seasonal scarcity of green fodder increased dependence on dry fodder, such as wheat straw, often causing health issues. Knowledge about urea treatment and silage preparation was limited. Other issues included the unavailability of fodder seeds and the inconsistent year-round supply of green and dry fodder. Low genetic potential of local animals, particularly indigenous cows and buffaloes, was the primary breeding concern. Poor conception rates from artificial insemination (AI), repeat breeding, and lack of timely AI services were common. The shortage of high-quality bulls and purebred animals led many farmers to rely on natural breeding. Dairy farming may flourish if farmers are given training in scientific feeding and breeding management.

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Conflict of Interest: None.

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