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Dairy farming practices adopted among the rural farmers of Telangana

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Abstract

Dairy farming is one of the most significant livelihood enterprises for rural households in Telangana, contributing substantially to nutritional security, income generation and employment. Despite its economic importance, adoption of scientifically recommended dairy farming practices varies considerably across farmers due to socio-economic, institutional and infrastructural factors. The present study was undertaken to assess the adoption of dairy farming practices among rural farmers in Telangana across four major dimensions: feeding and grazing, breeding, health care and milking practices. A total of 120 dairy farmers were selected from three zones of Telangana using a multistage sampling procedure. Data were collected through a structured interview schedule. Adoption rates were calculated using frequency and percentage, and dimension-wise Mean Index was computed for ranking. The findings revealed that breeding practices ranked first (Mean Index: 73.25), followed by health care (56.73), feeding and grazing (44.20), and milking practices (37.50). Nearly half of the respondents (49.17%) exhibited medium adoption, while 31.66 per cent and 19.16 per cent fell under low and high adoption categories, respectively. The study highlights major gaps in balanced feeding, preventive health care, and hygienic milk production practices, emphasizing the need for targeted extension interventions and capacity-building initiatives to enhance dairy productivity and rural livelihoods in Telangana.

Keywords: Dairy farming, adoption behaviour, rural farmers, Telangana, feeding practices, breeding practices, health care, milking hygiene

Introduction

Dairy farming forms the backbone of rural economies in many developing regions, offering stable income, nutritional security and employment opportunities to smallholder families. In India, dairy production not only contributes substantially to the national milk supply but also supports livelihood resilience among rural communities. In Telangana state, dairy farming plays a dual role by strengthening household food security and providing cash income through milk sales.

The success of dairy enterprises depends on the adoption of recommended husbandry practices such as balanced feeding, scientific breeding, preventive health care, and hygienic milking. Adoption behaviour is complex and influenced by farmers' socio-economic profiles, awareness levels, extension contact, access to veterinary services, and resource availability (Yadav & Naagar, 2021) ^[11].

Several Indian studies have emphasized the importance of adoption of dairy practices. For instance, Sathisha *et al.* (2018) ^[9] found that education, income, herd size, and extension contact were significant determinants of adoption of good dairy farming practices among commercial dairy farmers in Karnataka, influencing animal health, hygienic milking, and feeding practices.

Research from Maharashtra under the Kamdhenu Dattak Gram Yojana also observed uneven adoption of recommended dairy practices, with higher adoption in breeding and feeding but lower adoption in milking hygiene and animal management domains, reflecting persistent gaps in technology transfer.

Despite these insights, there is limited systematic analysis of dairy adoption behaviour specifically for rural dairy farmers in Telangana. Understanding the practice-wise adoption pattern and determining how farmers implement recommended dairy practices is critical to designing effective extension strategies and policy interventions.

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Methodology

The study was conducted in Telangana state using a multistage sampling procedure. Telangana was divided into three zones based on agro-climatic and administrative considerations. From each zone, 40 dairy farmers were selected randomly, resulting in a total sample of 120 respondents actively engaged in dairy farming.

Primary data were collected using a structured interview schedule covering four dimensions: feeding and grazing practices, breeding practices, health care practices, and milking practices. Each practice was recorded as adopted or not adopted. Adoption rates were calculated using frequency and percentage. Dimension-wise Mean Index was computed using the formula:

Mean Index = (Total score obtained/Maximum possible score) × 100

Respondents were categorized into low ($\leq 33.33\%$), medium ($33.34-66.66\%$), and high ($\geq 66.67\%$) adoption levels.

Results and discussion

Table 1 indicates the practices wise analysis. Among feeding and grazing practices, Open grazing (79.17%) ranked first among feeding practices, indicating heavy dependence on traditional feeding systems. Provision of clean drinking water (59.16%) ranked second. These findings suggest that farmers prioritize basic animal needs but rely largely on low-input feeding systems.

Scientific feeding practices such as balanced ration feeding (26.67%), mineral mixture supplementation (10.00%), and green fodder cultivation (28.33%) recorded low adoption. Balanced feeding is critical for improving milk yield and reproductive efficiency, yet limited awareness and financial constraints hinder adoption.

Similar findings were reported by Rathod *et al.* (2011) [6], who observed poor adoption of balanced feeding due to high cost and lack of technical knowledge. FAO (2019) [4] also emphasized that smallholder dairy farmers often face input constraints affecting improved feeding practices.

Among breeding practices, artificial insemination (AI) was highest in your study, indicating effective service availability and acceptance of genetic improvement tools. Similar evidence is reported in a multi-state Indian analysis on AI adoption, which noted that AI adoption is widespread but often partial due to gaps in management and follow-up practices (Aditya *et al.*, 2016) [1].

At the same time, your low adoption of pregnancy diagnosis and other follow-up actions reflects this “partial adoption” phenomenon. The Indian AI adoption study (Aditya *et al.*, 2016) [1] specifically emphasized that adoption is not always complete in practice, which can reduce the expected reproductive gains.

Among health care practices, veterinary consultation and timely treatment were high in your study, suggesting a strong curative orientation. Similar findings where farmers seek treatment services more readily than routine prevention—are commonly observed in dairy adoption research, where preventive practices are constrained by awareness, costs, and routine follow-up systems (Kumawat, 2012) [5].

In your results, preventive practices like deworming and vaccination were low. Interestingly, the Puducherry study reported relatively wide adoption for health care practices including vaccination and deworming (Ravi *et al.*, 2024) [7], indicating that preventive adoption can improve when awareness and delivery mechanisms are stronger.

Among milking practices, washing udder/teats and washing hands were relatively higher in your study, reflecting adoption of visible, low-cost hygiene behaviours. Similar observations were reported in a hygienic milking practices study where about 80% washed udder before milking (Singh *et al.*, 2020) [10].

However, your most critical finding—post-milking teat dipping (0%)—matches published evidence that teat dipping is extremely low among smallholders. Singh *et al.* (2020) [10] reported that only 2% practiced post-milking teat dipping, which supports your conclusion that this practice is largely neglected (Singh *et al.*, 2020) [10].

Similarly, a clean milk production study reported moderate cleaning of udder/teats but weak adoption of other quality practices (Bafanda *et al.*, 2018) [12].

Another milking management study reported very low adoption of teat dips (14%), again supporting your result that teat dipping is among the weakest practices in the field (2019 study in IJABR).

Table 1: Practice wise analysis of adoption

Sl. No	Practice	Adoption rate	Rank
I	Feeding and grazing Practices		
1	Open grazing	79.17	1
2	Feeding of cut grass to animals	13.33	6
3	Balanced ration feeding	26.67	5
4	Mineral mixture was used regularly	10.00	7
5	Green fodder was cultivated for dairy animals or not adopted	28.33	4
6	Clean and sufficient drinking water was provided daily or not adopted	59.16	2
7	Pregnancy allowances	33.33	3
II	Breeding Practices		
1	Artificial insemination	85.83	1
2	Natural breeding	22.50	5
3	Timely heat detection was followed or not adopted	60.00	2
4	Insemination withing 12 hours of heat detection	43.00	3
5	Whether pregnancy diagnosis was done after breeding or not adopted	28.33	4
6	Maintenance of male buffalo	12.50	6
III	Health care Practices		
1	Regular vaccination was carried out for dairy animals or not adopted	31.66	7
2	Deworming was practiced periodically or not adopted	10.83	11
3	Control measures against ticks and ectoparasites were adopted or not adopted	53.33	4
4	Timely treatment was given to sick animals or not adopted	66.66	2
5	Veterinary services were consulted regularly	74.16	1
6	Sick animals were separated from healthy animals or not adopted	56.66	3
7	Separation of pregnant animal from the herd	37.50	6
8	Keeping the animal and newly born calf at warm place just after calving	53.33	4
9	Daily cleaning of animals	18.33	8
10	Construction of shed	16.66	9
11	Daily cleaning of shed with water	13.33	10
IV	Milking Practices		
1	Washing of hands before milking	63.33	3
2	Washing of udder and teats before and after milking	76.66	1
3	Full hand method of milking	60.83	4
4	Testing for mastitis detection	30.00	6
5	Post milking dipping of teats	0.00	9
6	Calf is allowed to suckle before and after milking	65.00	2
7	Leaving animal to stand for some time after milking	35.83	5
8	Separation of sick animals' milk from healthy animals' milk	27.50	7
9	Availability of refrigerated storages	15.83	8

Dimension wise analysis

Table 2 presents the dimension-wise mean index and ranking of dairy farming practices adopted by rural farmers in Telangana. The findings indicate clear variation across the four dimensions.

Breeding practices ranked first (Mean Index: 73.25). The higher adoption can be attributed to strong institutional support and easy accessibility of artificial insemination services. Farmers perceive breeding technologies as directly linked to improved milk yield and economic returns. Since artificial insemination is service-based and supported by trained personnel, adoption becomes easier compared to management-intensive practices. However, lower adoption of pregnancy diagnosis suggests partial implementation of reproductive management.

Health care practices ranked second (Mean Index: 56.73). Farmers showed better adoption of curative practices such as veterinary consultation and treatment of sick animals, indicating a reactive approach. Preventive measures like vaccination and deworming were comparatively less adopted due to limited awareness and irregular follow-up.

Feeding and grazing practices ranked third (Mean Index: 44.20). While traditional practices such as open grazing were widely followed, scientific feeding methods like balanced ration feeding and mineral supplementation were poorly adopted. Financial constraints, lack of technical knowledge, and limited land for fodder cultivation may explain the lower adoption.

Milking practices ranked last (Mean Index: 37.50). Although basic hygiene was moderately adopted, advanced practices such as mastitis testing and teat dipping were neglected. Limited awareness and absence of quality-based pricing incentives likely contributed to this low adoption.

Table 2: Dimension wise analysis

Sl. No	Practice	Mean Index	Rank
1	Feeding and grazing Practices	44.20	3
2	Breeding Practices	73.25	1
3	Health care Practices	56.73	2
4	Milking Practices	37.50	4

Distribution of respondents

Table 3: Distribution of the respondents

Sl. No	Category	Frequency (f)	Percentages (%)
1	Low adoption (= <33.33)	38	31.66
2	Medium adoption (33.34-66.66)	59	49.17
3	High adoption (66.67-100.00)	23	19.16
Total		120	100.00

Out of 120 respondents, 49.17 per cent exhibited medium adoption, 31.66 per cent low adoption, and only 19.16 per cent high adoption of recommended dairy farming practices. The predominance of medium adoption clearly indicates that a majority of farmers are partially adopting scientific practices rather than implementing the complete package of recommended dairy management. Farmers tend to adopt those practices that are easily accessible, institutionally supported, or perceived to provide immediate economic benefits, such as artificial insemination and veterinary consultation. However, practices that require continuous

management, technical knowledge, behavioural change, and financial investment—such as balanced ration feeding, mineral supplementation, preventive health care, mastitis detection, and post-milking teat dipping—remain inadequately adopted.

The considerable proportion of farmers under the low adoption category further highlights gaps in awareness, training, and extension contact. Financial limitations, limited land resources for fodder cultivation, irregular veterinary follow-up, and absence of quality-based milk pricing mechanisms may also contribute to lower levels of comprehensive adoption. The relatively smaller percentage of high adopters suggests that only a limited number of farmers possess adequate technical knowledge, resource availability, and exposure to extension services required for complete adoption.

This distribution pattern indicates that while awareness about improved dairy practices exists among farmers, the transition from awareness to full-scale adoption is incomplete. Therefore, targeted capacity-building programmes, need-based training, and strengthened extension support are essential to move farmers from medium and low adoption levels toward comprehensive scientific dairy management practices

Conclusion

The study concludes that adoption of dairy farming practices among rural farmers in Telangana varies across dimensions. Breeding practices show highest adoption due to strong institutional support, while milking hygiene and preventive health care practices remain weak. Feeding management also requires improvement through awareness and input support.

The findings emphasize the need for targeted extension programs focusing on balanced feeding, preventive health campaigns, mastitis control, and hygienic milk production. Strengthening extension contact, organizing training programmes, and promoting quality-based pricing mechanisms can enhance adoption and improve rural dairy productivity.

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