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The names and affiliations of all authors are provided below, following the references.

Knowledge level regarding scientific dairy farming among commercial dairy farmers in Buldana district of Maharashtra

PM Sathe¹, GJ Panchbhai², DM Badukale³, KY Deshpande⁴, PS Bankar⁵, SD More⁶, SV Tirpude⁷, AV Khawale⁸

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ABSTRACT

The present study was undertaken to assess the knowledge level of commercial dairy farmers regarding improved dairy farming practices in Buldana district of Maharashtra. The study was conducted in thirteen purposively selected blocks of Buldana district, from which five commercial dairy farms having a herd size of ten or more milch animals were selected from each block, resulting in a total sample of 65 commercial dairy farms. Data were collected through personal interviews using a structured and pre-tested interview-cum-assessment schedule during the period from 1 October 2024 to 10 January 2025. The knowledge level of the respondents regarding improved dairy management practices was assessed using the knowledge scale developed by Jena *et al.* 2019 with suitable modifications.⁵ The findings revealed that the respondents possessed comparatively higher knowledge regarding breeds, with a mean score of 4.11 ± 0.07 , whereas the mean score for breeding management was 7.28 ± 0.14 . Knowledge scores for feeding and housing management were 4.26 ± 0.13 and 2.92 ± 0.09 , respectively. Moderate levels of knowledge were observed for health management (6.17 ± 0.10) and general livestock management practices (6.11 ± 0.12). The overall mean knowledge score was 30.90 ± 0.34 , indicating a moderate level of knowledge among commercial dairy farmers regarding improved dairy farming practices. The findings indicate the need for strengthening farmer-oriented extension and training programmes, particularly in scientific feeding, breeding, housing and health management. Regular technical guidance, capacity-building programmes and improved access to livestock advisory services may help enhance farmers' knowledge and adoption of recommended dairy farming practices and contribute to improved productivity and sustainability of commercial dairy enterprises in Buldana district.

Keywords: Commercial dairy farming, Dairy farmers, Knowledge level, Improved dairy farming practices, Livestock management, Buldana district

Introduction

Indian dairy husbandry has emerged as one of the most dynamic and fastest-growing components of the country's agricultural economy. Globally, India stands as the leading producer of milk, contributing approximately 25 per cent of the world's total milk output. Historically, milk production in India has increased substantially, from 17 million tonnes during 1950–51 to 247.87 million tonnes during 2024–25, with per capita milk availability reaching 485 g/day. (Nagrale *et al.*, 2015) ^[1] According to the 20th Livestock Census, India possesses approximately 192.4 million cattle and 109.85 million buffaloes, representing a substantial bovine resource for the livestock sector. (Sinha *et al.*, 2009) ^[2] Beyond its macroeconomic significance, livestock rearing serves as an important source of livelihood and income for rural households. Dairying contributes to income diversification and provides employment and self-employment opportunities, particularly for small and marginal farmers, landless labourers and rural women. (Singh *et al.*, 2015) ^[3] Despite India's leading position in total milk production, productivity per animal remains an important constraint to further improvement in dairy production. (Bhabhor *et al.*, 2020) ^[4]

Dairy farming is an important livelihood option in Maharashtra, particularly in the rainfed regions of Vidarbha, where a large proportion of agricultural land depends on rainfall.⁵ Knowledge of improved dairy farming practices is essential for efficient management of dairy animals and for improving productivity through appropriate feeding, breeding, housing and health management practices.⁶⁻⁸ Adequate knowledge of scientific dairy husbandry enables farmers to make appropriate management decisions, while exposure to training and extension services can facilitate the understanding and adoption of improved dairy farming technologies.⁶⁻⁸

Within Maharashtra, Buldana district has considerable scope for commercial dairy farming. However, dairy farmers may face challenges associated with the continued use of traditional management practices and inadequate access to technical information and advisory services. Such constraints can influence the efficient uti

Corresponding Author: PM Sathe

Department of Livestock Production and Management, Post Graduate Institute of Veterinary and Animal Sciences, Akola, Maharashtra 444104, India

lization of available resources and the adoption of improved dairy farming technologies. (Jena *et al.*, 2019) [5] Therefore, a localized assessment of farmers' knowledge regarding scientific dairy management practices is important for identifying specific knowledge gaps and developing need-based extension and training interventions.

For the purpose of the present investigation, knowledge level was operationally defined as the extent of understanding and retention of recommended dairy animal husbandry practices by commercial dairy farm operators. Assessment of such knowledge can provide useful information for identifying areas requiring further technical guidance and capacity building. Therefore, the present study was undertaken to assess the knowledge level of commercial dairy farmers regarding improved dairy farming practices in Buldana district of Maharashtra.

Material and methods

Study area

The study was conducted in Buldana district of Maharashtra, India, during the period from 1 October 2024 to 10 January 2025. Buldana district is situated in the western part of the Vidarbha region of Maharashtra between 19°51' N to 21°17' N latitude and 75°57' E to 76°49' E longitude. The district covers an area of approximately 9,661 km² and comprises 13 administrative tehsils, namely Buldana, Chikhli, Deulgaon Raja, Khamgaon, Shegaon, Malkapur, Motala, Nandura, Mehkar, Lonar, Sindkhed Raja, Jalgaon Jamod and Sangrampur. The district forms part of the Deccan Plateau and has varied topography influenced by the Ajanta and Satpura ranges. The climate is predominantly monsoonal, with rainfall generally occurring from June to October.

Research design and sampling

An ex-post facto research design was adopted for the present investigation. All 13 administrative blocks of Buldana district were included in the study. Five commercial dairy farms were selected from each block, resulting in a total sample of 65 commercial dairy farms. For inclusion in the study, a commercial dairy farm was required to maintain at least 10 lactating animals. Proportional sampling was followed to ensure representation from different parts of the district, considering the population of dairy animals.

Data collection

Primary data were collected through a pre-structured interview-cum-assessment schedule developed in accordance with the objectives of the study. The schedule was prepared in English and Marathi to facilitate clear understanding by the respondents. It contained relevant and concise questions covering the required study parameters. The investigator personally visited the selected dairy farms and conducted face-to-face interviews with the farmers between 9:00 am and 6:00 pm during the study period. Information was collected through personal interviews and assessment of available farm resources. Before each interview, the purpose and significance of the study were explained to the respondent. Questions were asked systematically, and necessary clarification was provided wherever required. The responses were recorded in the schedule and checked for completeness at the end of each interview.

Knowledge assessment

The knowledge level of commercial dairy farmers regarding improved dairy management practices was assessed using the knowledge scale developed by Jena *et al.* (2019) [5], with suitable modifications for the present study. The assessment covered major aspects of dairy management, including breed, breeding, feeding, housing, health and general livestock management practices. The knowledge test consisted of items related to recommended dairy farming practices, and responses were recorded and scored according to the prescribed scoring procedure. The maximum attainable score for the knowledge test was 50, comprising 5 marks for breed, 10 marks for breeding, 10 marks for feeding, 5 marks for housing, 10 marks for health and 10 marks for general livestock management practices.

The present study was based on a field survey conducted among commercial dairy farmers and did not involve any experimental procedures, intervention, or invasive handling of animals. Therefore, ethical approval from the Institutional Animal Ethics Committee was not required. However, the study was conducted in accordance with standard guidelines for social science and extension research, ensuring informed consent, confidentiality, and voluntary participation of all respondents.

Statistical analysis

The collected data were tabulated, computerized, and subjected to statistical analysis. Mean and standard error were calculated using standard statistical procedures as described by Snedecor *et al.* (1989) [6]. The results were interpreted and presented in tabular form for meaningful comparison and discussion.

Results and discussion

Knowledge level of commercial dairy farmers

The knowledge level of commercial dairy farmers regarding improved livestock management practices is presented in Table 1. The mean knowledge score for breed-related information was 4.11 ± 0.07 out of an assigned score of 5. The mean score for breeding management was 7.28 ± 0.14 out of 10, while the mean scores for feeding and housing management were 4.26 ± 0.13 and 2.92 ± 0.09 , respectively.

The mean knowledge score for health management was 6.17 ± 0.10 out of 10, whereas the corresponding score for general livestock management practices was 6.11 ± 0.12 . The overall mean knowledge score was 30.90 ± 0.34 out of a maximum attainable score of 50.

The findings indicated that knowledge varied across the different components of dairy management. The relatively higher score for breed-related information indicated comparatively better understanding of breed characteristics among the respondents. The scores obtained for feeding and housing management indicated scope for improvement in areas related to balanced feeding, housing conditions and hygienic management. Knowledge of health and general livestock management practices was comparatively moderate.

The overall moderate knowledge level observed in the present study is comparable with the findings of (Patel *et al.*) [7] who reported a moderate level of knowledge among commercial dairy farmers regarding scientific dairy farming practices. Previous studies have also reported variations in farmers' knowledge and management practices across different livestock production systems. (Singh *et al.*, 2015) [3], (Bhabhor *et al.*, 2020) [4] Similar observations were reported in studies conducted among dairy farmers in different districts of Maharashtra. (Dhondge, 2024) [8]–(Tayade, 2026) [9] Such differences may be associated with variations in farmers' exposure to extension services, participation in training programmes, access to technical information and availability of livestock advisory services.

The findings emphasize the importance of strengthening need-based extension programmes for commercial dairy farmers. Particular attention should be given to scientific feeding, reproductive management, hygienic housing and preventive health care. Regular training, demonstrations and technical advisory services may help improve farmers' understanding of recommended dairy farming practices.

Conclusion

The study revealed that commercial dairy farmers in Buldana district possessed a moderate overall level of knowledge regarding improved dairy farming practices, with an overall mean knowledge score of 30.90 ± 0.34 . Although comparatively better knowledge was observed in certain areas, particularly breeds, noticeable knowledge gaps existed in breeding, feeding, and housing management practices. Moderate knowledge in health and general livestock management further indicated that the respondents had a basic understanding of scientific dairy husbandry but required additional technical support for comprehensive and efficient management of their dairy enterprises.

The observed variations in knowledge across different management domains highlight the importance of need-based extension interventions rather than generalized training programmes. Therefore, systematic training programmes, demonstrations, regular advisory services, and effective dissemination of scientific dairy farming technologies should be strengthened, with particular emphasis on balanced feeding, scientific breeding management, hygienic housing, and preventive health care. Improving farmers' technical knowledge through sustained extension support may facilitate better management decisions, enhance utilization of available resources, and contribute to improved productivity and economic sustainability of commercial dairy farming in Buldana district.

Table 1. Mean score $\pm$ standard error values of knowledge level of commercial dairy farmers

Knowledge Area	Assigned score	Score Obtained
Breed	5	4.11 $\pm$ 0.07
Breeding	10	7.28 $\pm$ 0.14
Feeding	10	4.26 $\pm$ 0.13
Housing	5	2.92 $\pm$ 0.09
Health	10	6.17 $\pm$ 0.10
General	10	6.11 $\pm$ 0.12
Overall	50	30.90 $\pm$ 0.34

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Authors

PM Sathe

Department of Livestock Production and Management, Post Graduate Institute of Veterinary and Animal Sciences, Akola, Maharashtra 444104, India

GJ Panchbhai

Department of Livestock Production and Management, Post Graduate Institute of Veterinary and Animal Sciences, Akola, Maharashtra 444104, India

DM Badukale

Department of Livestock Production and Management, Post Graduate Institute of Veterinary and Animal Sciences, Akola, Maharashtra 444104, India

KY Deshpande

Department of Livestock Production and Management, Post Graduate Institute of Veterinary and Animal Sciences, Akola, Maharashtra 444104, India

PS Bankar

Department of Livestock Production and Management, Post Graduate Institute of Veterinary and Animal Sciences, Akola, Maharashtra 444104, India

SD More

Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola, Maharashtra 444104, India

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SV Tirpude

Department of Livestock Production and Management, Post Graduate Institute of Veterinary and Animal Sciences, Akola, Maharashtra 444104, India

AV Khawale

Assistant Professor, MJFCVAS, CHOMU, Jaipur, Rajasthan, India