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## Attitude and constraints in the adoption of scientific dairy farming practices in Dharmapuri district, Tamil Nadu

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### Abstract

The study was conducted from April 2025 to May 2025. This study assessed the attitudes towards dairy husbandry and constraints encountered by dairy farmers in five villages of Harur Block, Dharmapuri district, Tamil Nadu. The study adopted an ex post facto research design. A total of 60 dairy farmers were selected using a structured interview schedule. The collected data were analysed using frequency, percentage, mean, standard deviation, Weighted Mean Score (WMS) and Rank-Based Quotient (RBQ). The results revealed that 80.00 per cent of the respondents exhibited a neutral attitude towards dairy husbandry, while 10.00 per cent each belonged to the favourable and least favourable attitude categories. All the respondents (100.00%) expressed a favourable attitude towards artificial insemination as a breeding practice. A majority of the respondents (73.33%) showed a favourable attitude towards deworming of crossbred animals for internal parasites. The major constraints perceived by the respondents included the high cost of concentrate feed, inadequate knowledge regarding deworming and dehorning of animals and lack of awareness about government schemes. The findings highlighted the need to strengthen extension and advisory services, improve farmers' awareness of scientific dairy farming practices and government support programmes, and enhance farmers' access to training and institutional and veterinary support to improve dairy productivity and farmers' livelihoods.

**Keywords:** Attitude, constraints, dairy farmers, scientific dairy farming, Tamil Nadu

### Introduction

Agriculture, animal husbandry and dairying have played significant roles in human civilisation since ancient times (Balkrishna *et al.*, 2021) <sup>[6]</sup>. The livestock sector continues to be one of the most important components of the rural economy, providing employment and income to both agricultural households and landless families (Loura *et al.*, 2021) <sup>[17]</sup>. Animals contribute substantially to rural livelihoods by supplying nutrient-rich food products, draught power, dung as organic manure and domestic fuel, hides and skins, and a regular source of cash income (Chinnadurai *et al.*, 2018 <sup>[9]</sup>; Adhikari *et al.*, 2020 <sup>[2]</sup>). In India, small and marginal farmers together with landless agricultural labourers constitute the largest group of livestock owners and milk producers, making livestock rearing an integral part of rural livelihood systems (Himabindu *et al.*, 2014 <sup>[13]</sup>; Ram *et al.*, 2018 <sup>[24]</sup>; Maharana *et al.*, 2023 <sup>[18]</sup>). The livestock sector is also a major contributor to the national economy, accounting for 5.49% of the Gross Domestic Product (GDP) at current prices during 2023–24 (BAHS, 2025) <sup>[7]</sup>. Among the various livestock enterprises, dairy farming has emerged as one of the most important income-generating activities with considerable potential to improve the socio-economic status of rural households. India, which once faced a shortage of milk and depended on imports, has made remarkable progress in milk production through technological interventions and systematic dairy development programmes (Chand and Singh, 2023) <sup>[8]</sup>. In India, dairying is predominantly practised by smallholder farmers and often serves as a subsidiary occupation that provides year-round employment and supplementary income to rural families. Since agricultural activities are seasonal and generally provide employment for only eight to nine months of the year, dairying plays a vital role in ensuring livelihood security, particularly for small and marginal farmers and landless agricultural labourers (Maharana *et al.*, 2023) <sup>[18]</sup>. The adoption of scientific animal husbandry practices plays a crucial role in improving livestock productivity, enhancing

farmers' income and ensuring food security (Patil and Patil, 2016<sup>[21]</sup>; Singh *et al.*, 2020<sup>[27]</sup>; Arora *et al.*, 2022<sup>[4]</sup>; Choudhary *et al.*, 2022<sup>[10]</sup>; Meena *et al.*, 2024<sup>[19]</sup>). Improved breeding technologies, including artificial insemination, have contributed to improvements in milk production and productivity (Kona *et al.*, 2025)<sup>[14]</sup>. In recent years, dairy farming has also faced several emerging challenges, particularly those associated with climate change and animal health. Rising environmental temperatures increase the risk of metabolic disorders, lameness, mastitis and other health problems, thereby adversely affecting animal productivity and welfare (Acharya and Dixit, 2026)<sup>[1]</sup>. Consequently, the adoption of scientific dairy management practices has become increasingly important not only for improving productivity but also for maintaining animal health and welfare. Animal-based welfare indicators are considered reliable because they directly evaluate the condition of the animal and provide an accurate assessment of its current welfare status (Linstadt *et al.*, 2024<sup>[16]</sup>; Bajiya *et al.*, 2025<sup>[5]</sup>). Despite the availability of improved dairy technologies and several governmental programmes promoting scientific dairy farming, the adoption of recommended practices varies considerably among farmers due to differences in socio-economic characteristics, access to information, attitudes and the constraints encountered in dairy farming. Understanding the socio-economic profile of dairy farmers, their attitudes towards scientific dairy husbandry and the constraints affecting adoption is therefore essential for designing effective extension interventions and improving the adoption of scientific dairy farming practices. In Tamil Nadu, although various developmental programmes have been implemented to promote scientific dairy farming, the adoption of recommended practices remains unsatisfactory in many areas. Furthermore, limited information is available on the socio-economic characteristics, attitudes, and constraints of dairy farmers in the Dharmapuri district. Therefore, the present study was undertaken to analyse the attitudes and constraints to the adoption of scientific dairy farming practices among dairy farmers in the Dharmapuri district of Tamil Nadu and to generate information to support the formulation of appropriate extension strategies to enhance dairy productivity and farmers' livelihoods.

## Materials and Methods

### Location of the study

The study was conducted from April 2025 to May 2025 in the Dharmapuri district of Tamil Nadu, which was purposively selected for the present study. The district was located in the north-western part of Tamil Nadu between 11°47'40" to 12°33'40" N latitude and 77°33'30" to 78°40'00" E longitude. It was one of the drought-prone and socio-economically backward districts of the state, where livestock played a significant role in livelihood security.

Among the six blocks of the district, viz., Dharmapuri, Nallampalli, Morappur, Harur, Pappireddipatti and Pennagaram, Harur block was selected purposively based on its prominence in dairy farming. From the selected block, five villages, viz., Ellapudaiyampatti, Keeraipatti, Kelaparai, Muthanoor and Ettiyampatti, were selected purposively. From each village, twelve dairy farmers were selected using simple random sampling, constituting a total sample size of 60 respondents. Data were collected using a pre-tested structured interview schedule.

## Assessment of attitude of dairy farmers towards animal husbandry

The attitude of dairy farmers towards dairy husbandry was assessed using the attitude scale developed by Gupta and Sohal (1976)<sup>[12]</sup>, with slight modifications to suit the objectives of the study. The collected data were analysed using frequency, percentage, mean and standard deviation.

## Analysis of constraints perceived by dairy farmers in the adoption of scientific dairy farming practices

To assess the constraints perceived by dairy farmers, the respondents were asked to indicate their responses on a four-point continuum comprising most constraint, constraint, least constraint and not a constraint, with scores of 3, 2, 1 and 0, respectively. Based on the scores obtained, the constraints were ranked using the Weighted Mean Score (WMS) method, and their relative importance was determined using the Rank Based Quotient (RBQ) method proposed by Sabarathnam (1988)<sup>[25]</sup>.

$$RBQ = \frac{\sum_{i=1}^n F_i (n + 1 - i)}{N \times n} \times 100$$

Where:

$F_i$  = Frequency of farmers/key informants assigning the  $i^{th}$  rank to a particular constraint

$N$  = Total number of respondents

$n$  = Maximum number of ranks assigned

$i$  = Rank assigned (1, 2, 3, ...,  $n$ )

## Results and Discussion

### Attitude of Farmers towards Dairy Husbandry

Overall, the findings indicated that 80.00 per cent of the respondents exhibited a neutral attitude towards dairy husbandry. An equal proportion of the respondents (10.00% each) belonged to the least favourable and favourable attitude categories. Similar findings were reported by Singh *et al.* (2025)<sup>[28]</sup>.

**Table 1:** Distribution of respondents according to their attitude towards dairy farming (n=60)

| Category                    | Frequency | Percentage (%) |
|-----------------------------|-----------|----------------|
| Least favourable (Up to 14) | 6         | 10.00          |
| Neutral (15-18)             | 48        | 80.00          |
| Favourable (19 and above)   | 6         | 10.00          |

The individual responses obtained from the respondents are presented in Table 2. The findings revealed that all the respondents (100.00%) agreed that artificial insemination (AI) was a good breeding practice in dairy farming, indicating a highly favourable attitude towards the adoption of improved breeding technologies. None of the respondents was undecided or disagreed with this statement. The favourable attitude of all respondents towards artificial insemination as a breeding practice might be attributed to the widespread availability and accessibility of these services in the study area. In the study area, artificial insemination services are provided through Government Veterinary Dispensaries and Sub-centres at a nominal cost of approximately ₹10 per straw, making the technology affordable for dairy farmers. In addition, private veterinarians, Aavin and private dairy cooperative societies offer doorstep artificial insemination services, thereby ensuring timely breeding services for dairy animals. The

respondents might also have developed a favourable attitude due to the visible benefits of artificial insemination through the production of crossbred cattle with higher milk yield, better productivity and improved economic returns.

Regarding the statement that milch animals in the dry period could be neglected in terms of feeding, half of the respondents (50.00%) disagreed, while 40.00% remained undecided and only 10.00% agreed. These findings suggested that a higher proportion of the respondents recognised the importance of providing adequate feeding during the dry period, although a substantial proportion remained undecided.

Regarding scientific feeding, half of the respondents (50.00%) agreed that the milk yield of dairy animals could be increased through scientific feeding practices. However, 46.67% disagreed with the statement, while 3.33% remained undecided, indicating differing perceptions regarding the role of scientific feeding in improving milk yield.

In terms of vaccination practices, nearly two-thirds (63.33%) of the respondents agreed with the statement that vaccination against diseases such as Haemorrhagic Septicaemia (HS) and Foot and Mouth Disease (FMD) in milch animals was not regularly needed, while 26.67% were undecided and only 10.00% disagreed. This finding suggested the presence of misconceptions among a considerable proportion of the respondents regarding the importance of routine vaccination. The attitude might be attributed to the belief among many farmers that vaccination temporarily reduces milk yield, which could have discouraged them from considering regular vaccination as an essential management practice.

**Table 2:** Attitude of farmers towards dairy husbandry (n=60)

| Statement                                                                                  | Response  | Frequency | Percentage (%) |
|--------------------------------------------------------------------------------------------|-----------|-----------|----------------|
| In dairy farming, AI is a good breeding practice                                           | Agree     | 60        | 100.00         |
|                                                                                            | Undecided | 0         | 0              |
|                                                                                            | Disagree  | 0         | 0              |
| In dairy farming, milch animals in the dry period can be neglected in terms of feeding     | Agree     | 6         | 10.00          |
|                                                                                            | Undecided | 24        | 40.00          |
|                                                                                            | Disagree  | 30        | 50.00          |
| Through scientific feeding, the milk yield of dairy animals can be increased               | Agree     | 30        | 50.00          |
|                                                                                            | Undecided | 2         | 3.33           |
|                                                                                            | Disagree  | 28        | 46.67          |
| Vaccination against Haemorrhagic Septicaemia, FMD in milch animals is not regularly needed | Agree     | 38        | 63.33          |
|                                                                                            | Undecided | 16        | 26.67          |
|                                                                                            | Disagree  | 6         | 10.00          |
| In dairy farming, deworming of crossbred animals for internal parasites is a good practice | Agree     | 44        | 73.33          |
|                                                                                            | Undecided | 6         | 10.00          |
|                                                                                            | Disagree  | 10        | 16.67          |
| In dairy farming, it is good to keep animals loose in an enclosure                         | Agree     | 4         | 6.67           |
|                                                                                            | Undecided | 4         | 6.67           |
|                                                                                            | Disagree  | 52        | 86.66          |
| Milch animals do not need green fodder to their fill                                       | Agree     | 4         | 6.67           |
|                                                                                            | Undecided | 6         | 10.00          |
|                                                                                            | Disagree  | 50        | 83.33          |
| In dairy farming, crossbred cows are not better than buffaloes                             | Agree     | 4         | 6.67           |
|                                                                                            | Undecided | 6         | 10.00          |

The majority of the respondents (73.33%) agreed that deworming of crossbred animals for internal parasites was a

good practice, whereas 16.67% disagreed and 10.00% remained undecided. This indicated a favourable attitude towards parasite control measures in dairy farming.

Regarding housing management, the majority of the respondents (86.67%) disagreed with the statement that it was good to keep dairy animals loose in an enclosure, while 6.67% each agreed and remained undecided. This reflected a favourable attitude towards proper housing management practices. Similarly, a large majority of the respondents (83.33%) disagreed with the statement that milch animals did not need green fodder to their fill, while 10.00% were undecided and only 6.67% agreed. This reflected a favourable attitude towards the importance of providing adequate green fodder to dairy animals.

Likewise, 83.33% of the respondents disagreed with the statement that crossbred cows were not better than buffaloes, whereas 10.00% remained undecided and 6.67% agreed. This indicated that a large proportion of the respondents had a favourable perception of crossbred cows in dairy farming. In contrast, Paul *et al.* (2024) <sup>[22]</sup> reported that the majority of tribal farmers in Tripura were undecided about whether crossbred cows were superior to buffaloes in dairy farming. During the survey, several respondents, particularly women, expressed that restraining and handling buffaloes were comparatively more difficult than managing crossbred cows. This preference might have been influenced by the relative ease of handling crossbred cows compared with buffaloes.

### Constraints perceived by dairy farmers in the adoption of scientific dairy farming practices

#### Constraints in breeding practices

The constraints encountered by dairy farmers in adopting scientific dairy farming practices are presented in Table 3. Among the breeding-related constraints, inadequate knowledge regarding pregnancy diagnosis between 45 - 90 days after breeding was perceived as the most important constraint (RBQ = 56.66). In contrast, lack of knowledge of oestrus signs (RBQ = 20.00), unavailability of veterinarians for artificial insemination during oestrus (RBQ = 10.00) and limited veterinary services (RBQ = 9.44) were perceived as relatively less important constraints. Alapati (2024) <sup>[3]</sup> reported that 86.70 per cent of women dairy farmers possessed knowledge regarding pregnancy diagnosis at three months after insemination. Somtiya *et al.* (2024) <sup>[29]</sup> also reported low conception rate through artificial insemination, poor-quality services from artificial insemination centres and difficulty in detecting silent heat as important breeding-related constraints among commercial dairy farmers. These findings indicated the need to strengthen farmers' knowledge regarding the appropriate timing and importance of pregnancy diagnosis. During the survey, several respondents perceived that animals failing to return to oestrus after artificial insemination were already pregnant and therefore did not consider pregnancy diagnosis necessary. In addition, some respondents believed that conducting pregnancy diagnosis before 90 days after breeding might increase the risk of abortion. These misconceptions highlighted the need for targeted extension programmes and veterinary guidance to improve farmers' awareness regarding the appropriate timing and importance of pregnancy diagnosis.

### Constraints in Feeding Practices

Under the feeding-related constraints, the high cost of concentrates (RBQ = 98.33) and the non-availability of mineral mixtures (RBQ = 94.44) were perceived as the most important constraints. This was followed by the high cost of dry fodder (RBQ = 53.89) and the non-availability of green fodder throughout the year (RBQ = 48.33), which were perceived as moderately important constraints. In contrast, the high cost of green fodder (RBQ = 13.33) was perceived as the least important constraint. Similar findings were reported by Meenia *et al.* (2022) <sup>[20]</sup>, who identified the high

cost of concentrate and unavailability of fodder throughout the year among the important constraints faced by dairy farmers in Jabalpur district of Madhya Pradesh. Dey *et al.* (2025) <sup>[11]</sup> also reported that insufficient access to quality feed in adequate quantities was a constraint to sustainable dairy production and emphasised the importance of cost-effective approaches for improving feed availability throughout the year. These findings highlighted the need to promote fodder cultivation, fodder conservation practices and low-cost feed formulation strategies to reduce feeding costs.

**Table 3:** Constraints encountered by dairy farmers in dairying (n=60)

| Sl. No   | Practices                                                           | Total Score | WMS  | RBQ   | Rank |
|----------|---------------------------------------------------------------------|-------------|------|-------|------|
| <b>A</b> | <b>Breeding practices</b>                                           |             |      |       |      |
| 1        | Lack of knowledge about oestrus signs                               | 36          | 0.60 | 20.00 | 2    |
| 2        | Lack of a veterinarian at the time of AI during oestrus             | 18          | 0.30 | 10.00 | 3    |
| 3        | Non-availability of veterinary services                             | 17          | 0.28 | 9.44  | 4    |
| 4        | Inadequate knowledge about pregnancy diagnosis between 45 - 90 days | 102         | 1.70 | 56.66 | 1    |
| <b>B</b> | <b>Feeding practices</b>                                            |             |      |       |      |
| 1        | High cost of green fodder                                           | 24          | 0.40 | 13.33 | 5    |
| 2        | High cost of dry fodder                                             | 97          | 1.62 | 53.89 | 3    |
| 3        | High cost of concentrates                                           | 177         | 2.95 | 98.33 | 1    |
| 4        | Non-availability of mineral mixture                                 | 170         | 2.83 | 94.44 | 2    |
| 5        | Non-availability of green fodder throughout the year                | 87          | 1.45 | 48.33 | 4    |
| <b>C</b> | <b>Health care practices</b>                                        |             |      |       |      |
| 1        | Inadequate knowledge about deworming & dehorning of animals         | 154         | 2.57 | 85.56 | 1    |
| 2        | Lack of knowledge about vaccination against contagious diseases     | 115         | 1.92 | 63.89 | 5    |
| 3        | Lack of knowledge about the isolation of sick animals               | 138         | 2.30 | 76.67 | 2    |
| 4        | Inadequate knowledge about the cleaning of cattle sheds             | 126         | 2.10 | 70.00 | 3    |
| 5        | Inadequate knowledge about the cleaning of animals                  | 125         | 2.08 | 69.44 | 4    |
| <b>D</b> | <b>General information practices</b>                                |             |      |       |      |
| 1        | Lack of awareness about clean milk production                       | 146         | 2.43 | 81.11 | 6    |
| 2        | Lack of knowledge about making value-added dairy products           | 177         | 2.95 | 98.33 | 3    |
| 3        | Lack of awareness about government schemes                          | 179         | 2.98 | 99.44 | 1    |
| 4        | Lack of awareness about cattle insurance practices                  | 175         | 2.92 | 97.22 | 4    |
| 5        | Lack of credit facilities                                           | 178         | 2.97 | 98.89 | 2    |
| 6        | Lack of awareness about weather forecasting                         | 154         | 2.57 | 85.56 | 5    |

\*WMS - Weighted Mean Score; \*RBQ - Rank Based Quotient

### Constraints in Health Care Practices

Regarding health care and management, inadequate knowledge regarding deworming and dehorning of animals was identified as the most important constraint (RBQ = 85.56), followed by lack of knowledge regarding isolation of sick animals (RBQ = 76.67), inadequate knowledge about cleaning of cattle sheds (RBQ = 70.00), inadequate knowledge about cleaning of animals (RBQ = 69.44) and lack of knowledge regarding vaccination against contagious diseases (RBQ = 63.89). Sangeetha *et al.* (2026) <sup>[26]</sup> also reported that lack of vaccination programmes was the foremost constraint perceived by dairy farmers affected by lumpy skin disease, followed by the distant location of veterinary hospitals. These findings emphasised the importance of regular training programmes, preventive health-care education and accessible veterinary advisory services for improving animal health management.

### Constraints Related to General Information

Under general information, lack of awareness about government schemes was perceived as the most important constraint (RBQ = 99.44), followed by lack of credit facilities (RBQ = 98.89), lack of knowledge about value-added dairy products (RBQ = 98.33), lack of awareness about cattle insurance practices (RBQ = 97.22), lack of

awareness about weather forecasting services (RBQ = 85.56) and lack of awareness about clean milk production (RBQ = 81.11). During the survey, many respondents were unaware of government schemes and support programmes relevant to dairy farming, including the Prime Minister's Employment Generation Programme (PMEGP) and livestock insurance under the National Livestock Mission (NLM). This lack of awareness indicated the need to strengthen farmers' access to information on financial assistance, insurance benefits and other support services relevant to dairy development. Lepcha *et al.* (2023) <sup>[15]</sup> reported that delayed service of animal health officials, irregular information on government schemes, lack of financial support from the government and non-availability of financial support were among the major concerns expressed by dairy farmers. Meenia *et al.* (2022) <sup>[20]</sup> also identified inadequate finance from banks for purchasing dairy animals as an important constraint and suggested simplifying the loan sanction procedure. Pouchepparadjou *et al.* (2024) <sup>[23]</sup> recommended wider access to livestock insurance, awareness programmes on hygienic milk production and government support for improving dairy farming practices. These findings highlighted the need to strengthen extension communication on government schemes, credit facilities, livestock insurance, value addition

and clean milk production, along with timely dissemination of weather-related information.

## Conclusion

The study revealed that most dairy farmers in the selected villages of Harur Block had a neutral attitude towards dairy husbandry, although favourable perceptions were observed for artificial insemination, deworming, green fodder feeding and crossbred cattle rearing. The major constraints were lack of awareness about government schemes, lack of credit facilities, inadequate knowledge about value-added dairy products, high cost of concentrates and limited knowledge about selected health-care practices. The need for formal dairy training emphasised the importance of regular extension programmes, farmer-oriented demonstrations, credit facilitation and improved advisory services. Strengthening institutional support was considered important for improving the adoption of scientific dairy farming practices in the study area.

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## Conflict of Interest

There is no conflict of interest.

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