



International Journal of Agriculture Extension and Social Development

ISSN Print: 2618-0723
ISSN Online: 2618-0731
NAAS Rating (2026): 5.04
IJAESD 2026; 9(9): 873-878
www.extensionjournal.com
Received: 13-07-2026
Accepted: 12-08-2026
Published: 24-09-2026

Manjima Mohan

PG Scholar, Department of Agricultural Extension Education, College of Agriculture, Vellayani, Thiruvananthapuram, Kerala, India

Aparna Radhakrishnan

Assistant Professor, Department of Agricultural Extension Education, College of Agriculture, Vellayani, Thiruvananthapuram, Kerala, India

Shyam Suraj SR

Special Officer, College of Dairy Science and Technology, Thiruvananthapuram, Kerala, India

Atheena UP

PhD Scholar, Department of Agricultural Extension Education, College of Agriculture, Vellayani, Thiruvananthapuram, Kerala, India

Allan Thomas

Dean of Faculty (Basic Sciences & Humanities; Professor and Head, Department of Agricultural Extension Education, Kerala Agricultural University), Thiruvananthapuram, Kerala, India

Corresponding Author:

Manjima Mohan

PG Scholar, Department of Agricultural Extension Education, College of Agriculture, Vellayani, Thiruvananthapuram, Kerala, India

Climate-smart dairy farming practices in Kerala: Constraints faced by women farmers

Manjima Mohan¹, Aparna Radhakrishnan², Shyam Suraj SR³, Atheena UP⁴, Allan Thomas⁵

DOI: <https://www.doi.org/10.33545/26180723.2026.v9.i9l.4287>

ABSTRACT

Climate change presents considerable challenges to dairy production, necessitating the adoption of climate-smart practices to improve the resilience, productivity and sustainability of dairy farming systems. However, the adoption of such practices by women dairy farmers may be influenced by a range of economic, technological, institutional, social and environmental constraints. The present study was undertaken to identify and prioritise the major constraints perceived by women dairy farmers in the adoption of climate-smart practices in Kerala. The study was conducted in Thiruvananthapuram and Wayanad districts, which are prominent milk-producing districts of the state. The Delphi technique was employed to identify and refine the relevant constraint statements, resulting in a final set of 15 common constraints for assessment. The perceived importance of each constraint was assessed using a three-point scale and prioritised based on the total scores obtained. Data were collected from 174 women dairy farmers, comprising 88 respondents from Thiruvananthapuram and 86 from Wayanad. In Thiruvananthapuram, the high initial investment required for adopting climate-smart dairy technologies was identified as the foremost constraint, followed by heat stress and high humidity affecting the productivity of crossbred cows and the lack of assured markets and price incentives for products from climate-smart farms. In Wayanad, high initial investment was ranked as the most important constraint, followed by the increasing occurrence of extreme events such as floods and landslides and the limited availability of women-friendly extension services with respect to timing and location. The findings indicate that financial, climatic, market, and extension-related constraints play an important role in limiting the adoption of climate-smart dairy practices among women farmers. Improving access to affordable technologies and financial assistance, strengthening climate-resilient farm infrastructure and providing gender-responsive extension services could facilitate greater adoption of climate-smart practices. The study further emphasises the importance of developing location-specific strategies to address the varying constraints associated with climate-smart dairy farming across different agro-ecological and farming contexts in Kerala.

Keywords: Climate-smart dairy farming, Women dairy farmers, Adoption, Constraints, Delphi technique

Introduction

Climate change and increasing climatic variability have emerged as major challenges to agricultural and livestock production, particularly through fluctuations in temperature and rainfall, frequent extreme weather events, changing water availability and other environmental stresses. Dairy production is highly vulnerable to such climatic variations, as changes in climatic conditions can influence animal performance, feed and fodder availability, water requirements, disease incidence and the adequacy of existing farm infrastructure. In this context, the adoption of climate-smart practices has gained importance as a means of sustaining farm productivity, enhancing the resilience of dairy production systems to climatic stresses and promoting environmentally sustainable production (Arunya *et al.*, 2025; Vishvanathan *et al.*, 2025)^[1, 2].

Women play a significant role in dairy farming and contribute substantially to various farm operations such as feeding, milking, cleaning, animal health management, fodder management and routine maintenance of dairy units. Nevertheless, their involvement in dairy activities may not always be accompanied by equitable access to the resources and services required for adopting improved practices. Constraints related to financial resources, suitable technologies, extension and advisory services, markets and land, along with limited participation in farm-level decision-making, can affect both the adoption and sustained utilisation of climate-smart practices. Similar technological, institutional, financial and resource-access barriers have been documented in studies concerning the adoption of agricultural technologies and sustainable management practices (Ammann *et al.*, 2022; Aznar-Sánchez *et al.*, 2020; Puppala *et al.*, 2023)^[3, 4, 5].

Therefore, identification of the constraints associated with adoption is important for gaining a better understanding of the factors that hinder the effective implementation of climate-smart practices among dairy farm

ers. Determining the relative importance of these constraints can provide valuable insights for extension personnel, development organisations and policymakers in formulating interventions that address farmers' specific requirements. Earlier studies have employed systematic approaches for identifying and prioritising barriers to distinguish the relative significance of constraints affecting the adoption of agricultural practices and technologies (Kumar *et al.*, 2021; Parra *et al.*, 2022; Pittala *et al.*, 2023)^[6, 7, 8]. Among such approaches, the Delphi technique provides a systematic means of obtaining expert opinions and establishing consensus regarding relevant issues or constraints, and has been utilised in studies related to agricultural technologies, sustainability and production systems (Ammann *et al.*, 2022; Flinzberger *et al.*, 2020; Mahdavi *et al.*, 2020; Ghag *et al.*, 2025)^[3, 9, 10, 11].

Against this background, the present study was undertaken to identify and prioritise the constraints perceived by women dairy farmers in the adoption of climate-smart practices, with particular emphasis on economic, technological, institutional, social and environmental factors affecting their adoption in dairy-based farming systems.

Materials and methods

Study area

The study was carried out in Thiruvananthapuram and Wayanad districts of Kerala, selected on the basis of their importance in milk production within the state. The selected districts exhibit considerable variation in their farming situations and agro-ecological conditions, providing an appropriate setting for examining the constraints encountered by women dairy farmers in adopting climate-smart dairy practices. The present study constituted part of a broader investigation on climate-smart practices among women involved in dairy-based integrated farming systems.

Sampling procedure

A multistage sampling procedure was adopted for selecting the respondents. Thiruvananthapuram and Wayanad districts were purposively selected considering their prominence in milk production in Kerala. From the selected districts, women dairy farmers engaged in dairy-based farming systems were identified and included for assessing the constraints associated with the adoption of climate-smart dairy practices. The study comprised a total of 174 women dairy farmers, from which 88 were selected from Thiruvananthapuram and 86 from Wayanad.

Instrument and data collection

Primary data were gathered using a pre-tested interview schedule specifically developed for the study. The constraints affecting the adoption of climate-smart dairy practices were identified through expert consultation followed by the Delphi technique. The Delphi approach was used to systematically obtain expert opinions and assess the relevance and importance of the potential constraints, thereby facilitating the refinement and finalisation of the constraint statements for subsequent assessment among the respondents.

Initially, 20 potential constraint statements were identified through consultation with experts, as presented in Table 1. The statements covered multiple dimensions associated with the adoption of climate-smart dairy practices, including economic, technological, institutional, social and environmental dimensions. Based on the responses obtained through the Delphi exercise, 15 common constraint statements were finalised for assessment among women dairy farmers in both Thiruvananthapuram and Wayanad districts. The finalised constraints covered aspects such as financial requirements for climate-smart technologies, availability of climate-resilient fodder varieties, maintenance of modern dairy equipment, knowledge of silage preparation, availability of electricity and water, awareness regarding climate-smart integrated practices, accessibility of women-friendly extension services, access to veterinary and agricultural extension per-

sonnel, livestock insurance, market incentives, credit facilities, land ownership and tenure rights, and climatic and social constraints.

Table 1. Constraints identified

Sl. No	Constraints Identified
Technological and Economic constraints	
1	High initial investment required for adopting climate-smart dairy technologies
2	Limited access to quality climate-resilient fodder varieties
3	Complexity of maintaining automated/modern dairy equipment
4	Limited knowledge of "Silage" making to combat summer feed gaps.
5	Inadequate and irregular availability of electricity and water for climate-smart dairy and IFS practices.
Knowledge and Institutional Constraints	
6	Poor awareness of climate-smart "Integrated" practices.
7	Limited availability of women-friendly extension services in terms of timing and location.
8	Infrequent access to veterinary and agricultural extension personnel.
9	Inadequate insurance coverage against climate-related livestock loss
10	Lack of assured markets and price incentives for products from climate-smart farms.
11	Local Grama Panchayat schemes are not well-aligned with climate-resilient goals.
12	Low "Digital Literacy" for using weather-forecast-based farm alerts.
Socio-economic and Gender-Specific Constraints	
13	Triple burden of household work, caregiving and dairy farming.
14	Lack of credit facilities without collateral (Gold/Land).
15	Limited land ownership/tenure rights
16	Social norms restricting women's participation in off-site training & community-based decision-making platforms or cooperatives.
Environmental and Physical Constraints	
17	Heat stress and high humidity significantly reduce milk yield (drop in milk fat/SNF) of crossbred cows.
18	Declining land area for fodder due to urbanization in Kerala.
19	Small and fragmented landholdings make waste treatment plots difficult.
20	Increasing frequency of extreme events like floods or landslides disrupts the farm cycle.

Measurement and scoring of constraints

The perceived importance of the identified constraints was assessed using a three-point rating scale, as presented in Table 2. The respondents were asked to indicate the level of importance of each constraint by assigning scores of 3 for Highly Important, 2 for Moderately Important, and 1 for Less Important. A higher score represented a greater perceived influence of the respective constraint on the adoption of climate-smart dairy practices.

For each constraint, the scores assigned by all respondents were summed to obtain the total score. The maximum attainable score for a constraint was determined by multiplying the total number of respondents by the maximum score assigned to an individual response. Accordingly, the maximum attainable score was 264 for Thiruvananthapuram (88 × 3) and 258 for Wayanad (86 × 3).

Table 2. A three-point scale rating based on importance

Level of importance	Score	Meaning
Highly Important	3	The constraint has a strong influence on the adoption of climate-smart dairy practices
Moderately Important	2	The constraint has a moderate influence on the adoption of climate-smart dairy practices
Less Important	1	The constraint has little or no influence on the adoption of climate-smart dairy practices.

Statistical analysis

The data collected were analysed using total scores and corresponding ranks to determine the relative importance of the constraints perceived by women dairy farmers in the adoption of climate-smart dairy practices. For each constraint, the total score was obtained by summing the scores assigned by all the respondents. Based on the total scores, the constraints were arranged in descending order, with the constraint receiving the highest score being assigned Rank I, followed by the subsequent constraints in order of their scores.

Result and discussion

A district-wise comparison was carried out to assess the variations in the relative importance of the identified constraints between Thiruvananthapuram and Wayanad districts. The identified constraints were also examined under five broad dimensions, namely economic, technological, institutional, social and environmental factors, to provide a comprehensive understanding of the barriers influencing the adoption of climate-smart dairy practices. The findings highlight the multidimensional nature of constraints associated with the adoption of sustainable and climate-smart agricultural technologies, which is in accordance with the observations reported in earlier studies (Aznar-Sánchez *et al.*, 2020; Kumar *et al.*, 2021; Vishvanathan *et al.*, 2025)^[4, 6, 2].

Constraints perceived by women dairy farmers in Thiruvananthapuram district

The district-wise ranking of constraints perceived by women dairy farmers in Thiruvananthapuram is presented in Table 3.

In Thiruvananthapuram district, the high initial investment required for the adoption of climate-smart dairy technologies emerged as the most important constraint, securing Rank I with a total score of 238. This finding indicates that the financial burden associated with adopting climate-smart technologies was perceived as the major barrier by the respondents. The prominence of financial and economic constraints in the adoption of agricultural technologies has also been reported in earlier studies (Ammann *et al.*, 2022; Aznar-Sánchez *et al.*, 2020; Vishvanathan *et al.*, 2025)^[3, 4, 2].

Heat stress and high humidity affecting the productivity of crossbred cows ranked II, with a total score of 230, underscoring the significance of climatic stresses in influencing dairy production. Lack of assured markets and adequate price incentives for products from climate-smart farms occupied Rank III (227), suggesting that inadequate market support and economic returns may discourage farmers from making investments in climate-smart practices.

The complexity involved in maintaining automated or modern dairy equipment and the increasing occurrence of extreme climatic events such as floods and landslides jointly secured Rank IV (210). This reflects the combined influence of technological and environmental challenges on the adoption of climate-smart dairy practices. Similar difficulties associated with the accessibility, operation and implementation of advanced agricultural technologies have been reported in previous studies (Puppala *et al.*, 2023; Ammann *et al.*, 2022)^[5, 3].

Limited availability of women-friendly extension services with respect to suitable timing and location occupied Rank VI, highlighting the importance of providing extension support that is more accessible and responsive to the specific needs and time constraints of women farmers. The triple burden of household responsibilities, caregiving and dairy farming was ranked seventh, indicating the challenges arising from the multiple roles performed by women and the competing demands on their time and labour.

Among the constraints receiving comparatively lower rankings, inadequate insurance coverage against climate-related livestock losses recorded the lowest total score of 119, indicating that it was perceived as relatively less important than the other constraints. Infrequent access to veterinary and agricultural extension personnel, along with inadequate and irregular availability of electricity and water, also occupied comparatively lower positions in the overall ranking. These findings suggest that, in Thiruvananthapuram, financial requirements, climatic stresses, market-related limitations and technological challenges were perceived as more prominent barriers to the adoption of climate-smart dairy practices than the relatively less frequently reported service and infrastructure-related constraints.

Constraints perceived by women dairy farmers in Wayanad district

The ranking of constraints perceived by women dairy farmers in Wayanad district is presented in Table 4.

In Wayanad district, the high initial investment required for the adoption of climate-smart dairy technologies emerged as the most important constraint, securing Rank I with a total score of 229. This finding indicates that the financial burden associated with adopting climate-smart technologies was perceived as a major barrier to adoption among women dairy farmers. The increasing frequency of extreme climatic events, particularly floods and landslides, ranked second with a total score of 225, highlighting the vulnerability of dairy farming to climate-related disruptions in the district. The significance of extreme rainfall and climate-induced vulnerability in agricultural production systems has also been reported by Arunya and Krishnaveni (2025)^[1].

Table 3. Constraints perceived by women dairy farmers in Thiruvananthapuram district

Constraints	Total Score	Rank
High initial investment required for adopting climate-smart dairy technologies	238	I
Heat stress and high humidity significantly affect the productivity of crossbred cows	230	II
Lack of assured markets and price incentives for products from climate-smart farms	227	III
Complexity of maintaining automated/modern dairy equipment	210	IV
Increasing frequency of extreme events such as floods and landslides disrupts farm activities	209	V
Limited availability of women-friendly extension services in terms of timing and location	207	VI
Triple burden of household work, caregiving and dairy farming	192	VII
Limited land ownership/tenure rights	188	VIII
Lack of awareness about climate-smart integrated dairy practices	183	IX
Limited availability of credit without collateral	177	X
Limited access to quality climate-resilient fodder varieties	151	XI

(continued on next page)

Constraints	Total Score	Rank
Small and fragmented landholdings make it difficult to establish waste-treatment facilities	139	XII
Infrequent access to veterinary and agricultural extension personnel	127	XIII
Inadequate and irregular availability of electricity and water for climate-smart dairy and IFS practices	124	XIV
Inadequate insurance coverage against climate-related livestock loss	119	XV

Limited availability of women-friendly extension services with regard to suitable timing and location occupied Rank III (221), emphasising the need for extension mechanisms that are more accessible, convenient and responsive to the requirements of women farmers. Lack of assured markets and adequate price incentives and inadequate and irregular availability of electricity and water secured the fourth and fifth ranks, respectively. The relatively higher position of electricity and water-related constraints in Wayanad compared with Thiruvananthapuram suggests that basic infrastructural limitations may have a greater bearing on the adoption of climate-smart dairy practices in the district.

Similarly, small and fragmented landholdings occupied Rank VII in Wayanad, compared with Rank XII in Thiruvananthapuram. This comparatively higher ranking indicates that limited and fragmented land resources may pose greater challenges for establishing waste-management facilities and other climate-smart infrastructure in Wayanad. The role of land availability, access and structural limitations as barriers to agricultural development and technology adoption has also been highlighted in previous studies (Aznar-Sánchez *et al.*, 2020; Reghunath *et al.*, 2023)^[4, 12].

The triple burden of household responsibilities, caregiving and dairy farming ranked eighth, followed by limited land ownership or tenure rights at ninth and lack of access to credit without collateral at tenth. At the lower end of the ranking, inadequate insurance coverage against climate-related livestock losses occupied Rank XV, indicating that it was perceived as comparatively less important than the other constraints assessed by the respondents in Wayanad.

Overall, the findings indicate that financial investment, climate-related risks, extension accessibility, market support and basic infrastructure constituted the more prominent constraints perceived by women dairy farmers in Wayanad, whereas insurance-related limitations were considered relatively less important.

Table 4. Constraints perceived by women dairy farmers in Wayanad

Constraints	Total Score	Rank
High initial investment required for adopting climate-smart dairy technologies	229	I
Increasing frequency of extreme events such as floods and landslides disrupts farm activities	225	II
Limited availability of women-friendly extension services in terms of timing and location	221	III
Lack of assured markets and price incentives for products from climate-smart farms	214	IV
Inadequate and irregular availability of electricity and water for climate-smart dairy and IFS practices	212	V
Complexity of maintaining automated/modern dairy equipment	210	VI

Constraints	Total Score	Rank
Small and fragmented landholdings make it difficult to establish waste-treatment facilities	198	VII
Triple burden of household work, caregiving and dairy farming	189	VIII
Limited land ownership/tenure rights	186	IX
Limited availability of credit without collateral	181	X
Limited access to quality climate-resilient fodder varieties	178	XI
Lack of awareness about climate-smart integrated dairy practices	158	XII
Heat stress and high humidity significantly affect the productivity of crossbred cows	141	XIII
Infrequent access to veterinary and agricultural extension personnel	128	XIV
Inadequate insurance coverage against climate-related livestock loss	126	XV

Comparative analysis of constraints between the two districts

A comparison of the constraint rankings presented in Table 5 revealed both commonalities and district-specific differences between Thiruvananthapuram and Wayanad.

The district-wise comparison indicated that high initial investment required for adopting climate-smart dairy technologies was the only constraint that occupied Rank I in both districts, demonstrating that financial limitations constituted a common barrier to the adoption of climate-smart technologies among women dairy farmers. The importance of financial and institutional constraints in agricultural technology adoption has also been documented in previous studies (Kumar *et al.*, 2021; Vishvanathan *et al.*, 2025)^[6, 2].

However, considerable differences were observed in the perceived importance of climate-related constraints across the two districts. Heat stress and high humidity affecting the productivity of crossbred cows occupied Rank II in Thiruvananthapuram, but were ranked thirteenth in Wayanad. In contrast, increasing frequency of extreme events such as floods and landslides was ranked second in Wayanad and fourth in Thiruvananthapuram. This variation may be attributed to differences in the local climatic and geographical characteristics of the two districts, resulting in differential exposure to specific climate-related risks.

Women-friendly extension services, availability of electricity and water, and small and fragmented landholdings emerged as relatively more important constraints in Wayanad. These findings point towards the greater relevance of accessibility and infrastructural limitations in influencing the adoption of climate-smart dairy practices in the district. On the other hand, lack of awareness occupied Rank IX in Thiruvananthapuram and Rank XII in Wayanad, suggesting that awareness itself was not perceived as a major impediment to adoption in either district.

Overall, the comparative findings indicate that the constraints experienced by women dairy farmers were multidimensional, encompassing financial, climatic, infrastructural, technological and institutional aspects. The results further suggest that adequate awareness of climate-smart practices alone may not necessarily translate into their adoption, as financial limitations, infrastructural inadequacies, technological difficulties and institutional barriers may continue to restrict implementation. This interpretation is in agreement with earlier studies which have demonstrated that barriers to the adoption of sustainable and climate-smart agricultural technologies are complex and multidimensional, persisting even when farmers recognise the potential bene

fits of such practices (Aznar-Sánchez *et al.*, 2020; Parra *et al.*, 2022; Puppala *et al.*, 2023)^[4, 7, 5].

Table 5. Comparative analysis of constraints between the two districts

Constraints	Thiruvananthapuram Rank	Wayanad Rank
High initial investment required for adopting climate-smart dairy technologies	I	I
Limited access to quality climate-resilient fodder varieties	XI	XI
Complexity of maintaining automated/modern dairy equipment	IV	VI
Inadequate and irregular availability of electricity and water for climate-smart dairy and IFS practices	XIV	V
Lack of awareness about climate-smart integrated dairy practices	IX	XII
Limited availability of women-friendly extension services in terms of timing and location	VI	III
Infrequent access to veterinary and agricultural extension personnel	XIII	XIV
Inadequate insurance coverage against climate-related livestock loss	XV	XV
Lack of assured markets and price incentives for products from climate-smart farms	III	IV
Triple burden of household work, caregiving and dairy farming	VII	VIII
Limited availability of credit without collateral	X	X
Limited land ownership/tenure rights	VIII	IX
Heat stress and high humidity significantly affect the productivity of crossbred cows	II	XIII
Increasing frequency of extreme events such as floods and landslides disrupts farm activities	V	II
Small and fragmented landholdings make it difficult to establish waste-treatment facilities	XII	VII

Conclusion

The study identified a range of economic, technological, institutional, social and environmental constraints influencing the adoption of climate-smart dairy practices among women dairy farmers in Kerala. High initial investment required for adopting climate-smart dairy technologies emerged as the most important constraint in both Thiruvananthapuram and Wayanad, emphasising the financial burden associated with the adoption of such technologies. The significance of financial, institutional and technological barriers is in line with findings reported in earlier studies on agricultural innovation and climate-smart technology adoption (Ammann *et al.*, 2022; Kumar *et al.*, 2021; Vishvanathan *et al.*, 2025)^[3, 6, 2].

The district-wise analysis, however, revealed considerable variation in the nature and relative importance of the constraints. Heat stress and high humidity were more prominent concerns in Thiruvananthapuram, whereas floods and landslides assumed greater importance in Wayanad. In addition, women-friendly extension services, availability of electricity and water, and fragmented landholdings were comparatively more important constraints in Wayanad, highlighting the influence of local infrastructural and contextual conditions on adoption.

The findings emphasise the need for a district-specific and context-responsive strategy to promote climate-smart dairy farming in Kerala. Priority interventions should focus on reducing the financial burden of adoption through subsidies, affordable credit and appropriate financial support, while strengthening climate-resilient infrastructure, market incentives and accessible, gender-responsive extension services.

Flexible extension delivery mechanisms that consider the time and mobility constraints of women farmers could further facilitate technology uptake. Climate-specific interventions should focus on heat-stress management in vulnerable areas and disaster preparedness and resilient infrastructure in flood- and landslide-prone regions.

Addressing these interconnected constraints through locally appropriate interventions can facilitate the wider adoption and sustained use of climate-smart dairy practices, thereby strengthening the resilience, sustainability and productivity of dairy-based farming systems in Kerala. The importance of context-specific strategies in overcoming barriers to the adoption of sustainable and climate-smart agricultural practices has also been emphasised by previous studies (Arunya *et al.*, 2025; Aznar-Sánchez *et al.*, 2020; Vishvanathan *et al.*, 2025)^[1, 4, 2].

Acknowledgement

The authors gratefully acknowledge the women dairy farmers of Thiruvananthapuram and Wayanad districts for their valuable participation and cooperation throughout the data collection process. The authors also sincerely acknowledge the support and guidance provided by the faculty and staff of the Department of Agricultural Extension Education, College of Agriculture, Vellayani, which contributed significantly to the successful completion of the study.

References

1. Arunya KG, Krishnaveni M. Heavy rainfall resilience: Adoption of climate smart agriculture among marginal farmers in a sub-basin of India. *Journal of Environmental Engineering and Landscape Management*. 2025;33(4):428–439.

2. Vishvanathan V, Thalagala NT, Thibbotuwawa A, Nielsen P, Bocewicz GK. Barriers to the adoption of climate-smart agriculture strategies in the horticulture supply chain. *IFAC-PapersOnLine*. 2025;59(24):362–367.
3. Ammann J, Umstätter C, El Benni N. The adoption of precision agriculture enabling technologies in Swiss outdoor vegetable production: A Delphi study. *Precision Agriculture*. 2022;23:1354–1374.
4. Aznar-Sánchez JA, Velasco-Muñoz JF, López-Felices B, del Moral-Torres F. Barriers and facilitators for adopting sustainable soil management practices in Mediterranean olive groves. *Agronomy*. 2020;10(4):506.
5. Puppala H, Peddinti PRT, Tamvada JP, Ahuja J, Kim B. Barriers to the adoption of new technologies in rural areas: The case of unmanned aerial vehicles for precision agriculture in India. *Technology in Society*. 2023;74:102335.
6. Kumar S, Raut RD, Nayal K, Kraus S, Yadav VS, Narkhede BE. To identify industry 4.0 and circular economy adoption barriers in the agriculture supply chain by using ISM-ANP. *Journal of Cleaner Production*. 2021;293:126023.
7. Parra G, Garcia-Lopez LJ, Piqueras JA, García R. Identification of farmers' barriers to implement sustainable management practices in olive groves. *Sustainability*. 2022;14(11):6451.
8. Pittala A, Satyanarayana CH, Reddy MS, Shivaji A, Sammaiah B. Constraints prioritisation in sheep rearing in Mahabubnagar district of Telangana. *The Pharma Innovation Journal*. 2023;SP-12(8):922–928.
9. Flinzberger L, Zinngrebe Y, Plieninger T. Labelling in Mediterranean agroforestry landscapes: A Delphi study on relevant sustainability indicators. *Sustainability Science*. 2020;15:1369–1382.
10. Mahdavi H, Allahyari MS, Damalas CA, Dunn ES. Drivers and barriers for organic rice (*Oryza sativa* L.) production in northern Iran: Experts' consensus using the Delphi method. *Biological Agriculture & Horticulture*. 2020;36(2):96–106.
11. Ghag N, Shedage S, Sonar H, Jagtap S. Unveiling the hurdles confronting compressed biogas plants: A comprehensive research analysis for sustainable energy solution. *Discover Applied Sciences*. 2025;7:635.
12. Reghunath N, Sreedaya GS. Constraints in implementation of land reforms policies as perceived by agricultural labourers of erstwhile Cannanore district of Kerala, India. *Asian Journal of Agricultural Extension, Economics & Sociology*. 2023;41(12):16–20.

How to cite this article: Mohan M, Radhakrishnan A, SR SS, UP A, Thomas A. Climate-smart dairy farming practices in Kerala: Constraints faced by women farmers. *International Journal of Agriculture Extension and Social Development*. 2026;9(9):873-878. doi: <https://www.doi.org/10.33545/26180723.2026.v9.i9l.4287>