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Evaluation of housing and summer management practices adopted by buffalo farmers in Namakkal District, Tamil Nadu

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Abstract
A study was conducted to examine the housing and summer management practices of buffalo farmers in the Namakkal district of Tamil Nadu. A random sample of 120 farmers was selected for this study. The findings revealed that 75% of the farmers housed their buffaloes in thatched roof sheds with mud flooring, accounting for 91.66% of the cases. Additionally, 16.66% of the respondents provided cement concrete mangers for their buffaloes. Most farmers were found to heap dung in manure pits, which was later utilized as farmyard manure. The buffalo sheds generally had proper ventilation. The study suggested that enhancing the knowledge of housing management among buffalo farmers in the Namakkal district could lead to improved buffalo management and subsequently better livelihoods.

Keywords: Buffalo, management, ventilation, wallowing

Introduction
Buffaloes are integral to the rural economies of many developing nations across Asia, with India being a prominent example. They play a central role in the social, economic, and cultural fabric of rural Indian communities, serving as versatile assets for milk, meat, and draught power. Despite India's leading position in milk production, the productivity of dairy animals, particularly buffaloes, lags behind other regions within the country. This disparity underscores the need for closer attention to the factors influencing buffalo performance and productivity. Livestock productivity is influenced by a combination of genetic factors and environmental conditions. In this context, ensuring proper housing facilities for buffaloes becomes paramount. Adequate housing not only mitigates the stress imposed by summer conditions but also fosters an optimal microenvironment, promoting hygiene and reducing the incidence of diseases. Addressing housing needs, therefore, holds significant potential for enhancing buffalo productivity and welfare in the region.

Despite their significance, buffalo farming faces several challenges. Inadequate housing facilities, suboptimal management practices, and seasonal variations, particularly during the scorching summer months, pose considerable hurdles to the well-being and productivity of buffaloes. Addressing these challenges requires a deeper understanding of the housing and summer management practices adopted by buffalo farmers, especially in regions like the Namakkal District, where climatic conditions can exert significant stress on both animals and farmers alike. The success and sustainability of the buffalo farming sector heavily rely on the efficacy of housing and summer management practices adopted by farmers. Understanding these practices is crucial not only for enhancing productivity but also for ensuring the welfare of the animals and the livelihoods of the farmers. In light of these considerations, this study embarks on an exploration of the housing and summer management practices followed by buffalo farmers in the Namakkal District of Tamil Nadu

Materials and Methods
The present field survey was conducted by collecting data from buffalo farmers in the Namakkal district of Tamil Nadu, India, during the period from March 2022 to May 2023, which included two summer seasons.

Using a random sampling method, data was collected from 120 buffalo farmers. These farmers were interviewed at their doorsteps using a pre-tested interview schedule designed for this purpose. Sufficient time was given to each farmer to recall and provide accurate values using the memory recall method. Family members of the farmers were also involved in data collection to ensure the accuracy of the information. Data was gathered through oral appraisals and direct observations, focusing on various aspects such as the type of housing, floor and roof materials, type of manger, ventilation, disposal of manure, and summer management practices. The collected data were then subjected to appropriate statistical analysis to determine the distribution of respondents according to the selected variables of the study.

Results and Discussion

It was observed that out of 120 farmers, 110 (91.66%) were providing shelter for their buffaloes. Among them, 66.6% had separate housing facilities for their buffaloes, while 25% used part of their residence for housing. In contrast, 8.3% of buffalo farmers did not provide shelter and housed their animals under tree shade. The findings of this study align with those of Diviyalakshmi *et al*. (2020) [1], who reported that 88.7% of farmers provided housing for their buffaloes, while 11.3% housed their buffaloes under tree shade or in temporary structures. Additionally, the results are consistent with the studies conducted by Mishra *et al*. (2018) [3] and Tewari *et al*. (2018) [11].

Table 1: Housing management practices followed by the selected buffalo farmers in the study area

Sr. No.	Housing management practices		Total number of farmers (n=120)	Per centage
1.	Provision of shed	Present	110	91.66
		Absent	10	8.33
2.	Location of shed	Separate shed	80	66.66
		Attached with residence	30	25.00
		Under tree shade	10	8.33
3.	Type of housing	Thatched roof shed	90	75.0
		Galvanized roof shed	10	8.33
		Concrete roof shed	2	1.66
		G.I sheet roof shed	5	4.16
		Mangalore tile roof shed	3	2.50
4.	Type of orientation	East -west	85	70.83
		North-south	35	29.16
5.	Type of flooring	Mud	110	91.66
		Concrete	10	8.33
6.	Cleanliness of shed	Satisfactory	75	62.5
		Not satisfactory	25	20.83
7.	Adequate floor space	Adequate	115	95.83
		Not Adequate	5	4.16
8.	Proper ventilation of animals	Available	113	94.16
		Not available	7	5.83
9.	Type of Manger	Cement trough	20	16.66
		Local made trough	100	83.33
10.	Drainage system	Proper	10	8.33
		Not proper	110	91.66
11.	Manure pit	Present	118	98.33
		Absent	2	1.66

Type of shed

In the present study, it was noted that the majority of farmers (87.5%) provided thatched roofs for their buffaloes, while 8.3% used galvanized roofs. This result aligns with the findings of K. Kishore *et al*. (2013) [2], who reported that 84.13% of buffalo farmers used thatched roofs. The findings are also in agreement with those of Sabapara *et al*. (2010) [7] and K. Prasanthi *et al*. (2024) [6]. However, the results of the present study do not align with the findings of Senthil kumar *et al*. (2005) [10], which were conducted in Chennai and indicated different housing practices.

Type of orientation

In the present investigation, the majority of buffalo sheds were oriented in the east-to-west direction (70.83%), compared to 29.16% oriented north-to-south. This observation aligns with the findings of K. Prasanthi *et al*. (2024) [6], who reported that 68% of buffalo farmers in Puducherry oriented their sheds east-to-west, while 32% were oriented north-to-south. It also agrees with Diviyalakshmi *et al*. (2020) [1], who found a similar east-to-west orientation for buffalo houses in Tamil Nadu. This type of orientation helps protect the animals from heat stress in the tropical climate, as noted by Sastry and Thomas (2015) [9]. The results of the present study indicate that the majority of buffalo farmers prioritize the orientation of their animal sheds to mitigate heat stress.

Type of floor

It was observed that 91.6% of farmers were using mud as the flooring material for buffalo houses, while only 8% used cement concrete. These results align with the findings of K. Prasanthi *et al*. (2024) [6] and Pata *et al*. (2018) [5], who also reported that buffalo farmers predominantly used mud flooring, with some using concrete flooring. However, these findings contradict those of Diviyalakshmi *et al*. (2020) [1], who observed that 80% of farmers provided concrete flooring for buffalo sheds, with only 20% using mud flooring.

Ventilation

Cross ventilation was observed in all buffalo sheds in the study area. This observation is consistent with the findings of Viswakarma *et al*. (2018) [12] and K. Prasanthi *et al*. (2024) [6], who reported similar ventilation practices in the Jabalpur

district of Madhya Pradesh and the Yanam region of Puducherry, respectively.

Manger

In the present study, it was found that 83.33% of farmers used locally made mangers, while 16.6% of farmers were maintained cement concrete mangers. The results indicated that the majority of buffalo farmers did not provide proper mangers for feeding and fodder. Additionally, farmers were not aware that improper mangers or the absence of mangers could lead to feed and water waste. These findings are in agreement with Diviyalakshmi *et al*. (2020) [1], who found that most farmers in Tamil Nadu provided temporary mangers. However, the results contrast with the findings of K. Prasanthi *et al*. (2024) [6] and Sabapora (2017) [8], who reported that the majority of farmers used cement mangers.

Drainage system

In this study, most buffalo farmers provided housing facilities, but drainage was present in only 8.33% of the sheds. These results are in agreement with K. Prasanthi *et al*. (2024) [6], who reported that only 8% of buffalo sheds had proper drainage facilities, and with Pata *et al*. (2018) [5], who observed that about 21% of buffalo farmers provided drainage systems in their sheds. However, the findings contrast with those of Kishore *et al*. (2013) [2], who found that around 94% of farmers had proper drainage systems, while only 6% did not.

Manure pit

The majority of buffalo farmers (95.23%) stored manure in manure pits, while the remaining 4.16% did not. This result aligns with Paramasivam *et al*. (2012) [4], who observed that 85% of dairy farmers in Tamil Nadu stored manure in pits. However, this study does not agree with K. Prasanthi *et al*. (2024) [6], who found that 73.3% of buffalo farmers heaped dung on the land near the shed without using pits. It also contradicts Kishore *et al*. (2013) [2], who observed that 100% of farmers used manure directly without storing it in pits.

Summer management

The different summer management practices followed by buffalo farmers are provided in Table 2. Almost all farmers in the study area kept their animals under the shade of trees during the day. Additionally, 90% of the farmers manually splashed water on the animals' bodies, while only 10% practiced wallowing during the hottest part of the day in certain parts of the study area. The limited number of farmers practicing wallowing is due to the scarcity of water bodies in the area. Hot and dry climatic conditions, along with the heat intolerance of buffaloes, necessitate summer management practices such as wallowing, sprinkling, and splashing water to improve buffalo performance during the summer.

Table 2: Summer management practices followed by buffalo farmers in the study area

Sr. No.	Summer management Practices	Total number of farmers (n=120)	Percentage
1.	Under shade of tree	120	100
2.	Wallowing	5	4.16
3.	Splashing of water	110	91.66
4.	Sprinkling of water	2	1.66
5.	Fixing fans	2	1.66

Conclusion

In the Namakkal district of Tamil Nadu, 90% of farmers provided proper housing for their buffaloes. However, among those who provided housing, the majority did not include proper mangers or drainage facilities. Ventilation was present in all buffalo sheds. Due to the limited number of water bodies in the study area, only 4.16% of respondents allowed their buffaloes to wallow during the daytime in the summer months. Scientific housing management is crucial for enhancing the production performance of dairy buffaloes. Therefore, it is important to train farmers on various aspects of scientific buffalo management, with a strong emphasis on housing management. This study aims to contribute to the improvement of buffalo production performance, resulting in better economic returns for the farmers.

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