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Characterization and statistical analysis of milking and housing management practices among crossbred cattle farmers in Jaipur District of Rajasthan

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Abstract

The present study was conducted to characterize and statistically analyse milking and housing management practices among crossbred cattle farmers in Jaipur district of Rajasthan. Data were collected from 200 respondents, covering a total of 887 cows (416 from Chomu and 471 from Amer), through structured and pre-tested interviews. The results revealed that knuckling (74%) was the predominant method of milking, followed by full-hand milking (20.5%), whereas machine milking was practiced by only 5.5% of the farmers. The majority of the respondents (97.5%) milked their animals twice a day. About 93.5% of farmers cleaned the udder and teats before milking, while 29.5% washed their hands prior to milking. Most of the respondents (87.5%) cleaned milking utensils using detergent and water, reflecting awareness of hygienic milk production practices. In terms of housing management, 71% of farmers kept their cattle houses attached to their residences, and 85% used iron sheet roofs. The floor type was mainly kachcha (46.5%) or partly pucca (34.5%), and 58.5% of respondents reported having pucca boundary walls. Only 45.5% had mangers within their sheds, while 57% used dry sand and 43% used crop residues as bedding materials. Proper drainage systems were reported by nearly half of the respondents. Overall, the findings indicate that crossbred cattle farmers in Jaipur district follow moderate levels of hygienic and structural management practices. There is, however, considerable scope for improving hand hygiene, adoption of pucca housing structures, and scientific housing layouts to enhance animal comfort, udder health, and milk quality.

Keywords: Crossbred cattle, milking method, housing practices, hygienic milk, udder cleaning, frequency, flooring, bedding, Rajasthan

Introduction

The dairy sector constitutes a significant component of the Indian agricultural economy, contributing substantially to rural livelihoods, nutritional security, and employment generation with nearly 70% of the rural population dependent on them for livelihood (Economic Survey of India, 2022–23). The increasing demand for milk and milk products has led to a shift toward the rearing of crossbred cattle, which are known for their superior milk production potential. The average daily milk yield per animal is 9.82 kg for exotic cows, 8.35 kg for crossbred cows, 4.20 kg for indigenous cows, and 4.73 kg for non-descript buffaloes. In Rajasthan, particularly in Jaipur district, dairy farming has emerged as an important supplementary source of income for rural households. The productivity of crossbred cattle depends largely on the management practices adopted by farmers. Among these, milking and housing management play a crucial role in determining milk yield, quality, and animal health. Crossbred cattle perform best within a thermoneutral zone of 18–24°C, while heat stress occurs at 32–35°C, reducing feed intake and milk production (Aggarwal and Singh, 2006) ^[1]. In the arid and semi-arid climate of Rajasthan, especially in Jaipur district, high temperatures, low humidity, and poor ventilation increase heat stress in dairy animals. Therefore, scientific housing management is essential for maintaining animal health, welfare, and productivity. Scientific milking practices, including hygienic handling, regular milking intervals, and proper udder care, are essential to prevent diseases such as mastitis and ensure quality milk production.

However, in many rural areas, farmers continue to follow traditional practices due to lack of awareness, limited resources, and inadequate access to extension services. This results in wide variability in management practices and ultimately affects dairy productivity. Therefore, it is essential to systematically assess and analyse these practices to identify existing gaps and suggest appropriate interventions. The present study aims to characterize and statistically analyse the milking and housing management practices adopted by crossbred cattle farmers in Jaipur district of Rajasthan.

Materials and Methods

The present study was conducted in Jaipur district of Rajasthan, purposively selected for its highest crossbred cattle population. Two tehsils (Chomu and Amer) with the highest number of crossbred cattle were chosen and from each tehsil ten villages were selected based on cattle density, totaling 20 villages. From each village 10 farmers were randomly selected, yielding a sample size of 200 respondents covering a total of 887 cows (416 from Chomu and 471 from Amer). Data were collected during 2023–2024 through a pre-tested interview schedule via personal interviews, visual observations and direct measurements. The schedule comprised management-related parameters. Statistical analyses such as frequency, percentage, chi-square test and p-value calculations were employed to interpret the data meaningfully and identify significant differences across variables.

Results and Discussion

1 Milking management practices

1.1 Method of Milking

Results revealed that most respondents practiced the knuckling method (74%), followed by full-hand milking (20.5%) and machine milking (5.5%). Similar results were observed by Kumar *et al.* (2017) [13] and Swathi (2017) [14], while Vineesha *et al.* (2019) [17] reported higher use of stripping. The predominance of knuckling indicates reliance on traditional techniques, possibly due to lack of training and limited access to modern equipment. The low adoption of machine milking reflects the need to promote mechanized milking for improved milk hygiene and animal welfare.

1.2 Frequency of Milking

It was observed that 95.5% of farmers milked their animals twice daily, while a few practiced milking thrice a day. These results are consistent with Sumer *et al.* (2022) [12] and Patel *et al.* (2022) [4], who also noted that twice-a-day milking is the most common practice across India. The uniform adoption suggests farmers' preference for maintaining milk yield and udder health while balancing labor efficiency.

1.3 Cleaning of Udder and Teats Before Milking

Findings showed that 93.5% of farmers cleaned udders and teats before milking, indicating good hygienic awareness. Similar trends were reported by Rathore (2010) [6], Tiwari and Rajeev (2022) [15], and Vinod *et al.* (2022) [18], who found this practice nearly universal among dairy farmers. Regular cleaning helps reduce bacterial contamination, ensuring better milk quality and animal health. However, a small percentage of farmers still neglected this step, highlighting a need for further awareness programs.

1.4 Washing Hands Before Milking

Only 29.5% of respondents washed their hands before milking, while the majority did not follow this practice. This finding contrasts with Borar and Rajeev (2022) [2] and Swathi (2017) [14], who reported higher levels of handwashing among dairy farmers. The low prevalence observed here suggests inadequate hygiene knowledge and emphasizes the need for training on clean milking techniques to prevent microbial contamination.

1.5 Cleaning of Milking Utensils

It was found that 87.5% of respondents used detergent and water for cleaning milking utensils, 7.5% used ash, and 5% used sand with water. Similar results were reported by Swathi (2017) [14], Varma *et al.* (2021) [16], and Singh *et al.* (2023) [10], indicating that most farmers recognize the importance of utensil hygiene. Regular cleaning with detergent ensures better milk quality and helps prevent spoilage, reflecting satisfactory hygiene awareness among the dairy farmers in the study area.

Table 1: Milking practices adopted by crossbred cattle rearers

S. No.	Milking Practices	Chomu		Amer		Overall		χ^2 value	P Value
		f	%	f	%	f	%		
1.	Method of milking								
a	Full hand	18	18.00	23	23.00	41	20.5	1.455	0.483
b	Knuckling	75	75.00	73	73.00	148	74.00		
c	Stripping	0	0.00	0	0.00	0	0.00		
d	Machine	7	7.00	4	4.00	11	5.50		
2.	Frequency of milking								
a	Two times	98	98.00	97	97.00	195	95.5	0.205	0.651
b	Three times	2	2.00	3	3.00	5	2.5		
3.	Clean udder and teats before milking								
a	Yes	96	96.00	91	91.00	187	93.50	2.057	0.152
b	No	4	4.00	9	9.00	13	6.50		
4.	Wash hand before milking								
a	Yes	34	34.00	25	25.00	59	29.50	1.947	0.163
b	No	66	66.00	75	75.00	141	70.50		
5.	Cleaning of milking utensils								
a	Sand and clean water	6	6.00	4	4.00	10	5.00	1.143	0.565
b	Ash and water	9	9.00	6	6.00	15	7.50		
c	Cleaning detergent and water	85	85.00	90	90.00	175	87.50		

2. House management practices

2.1 Site of Animal House

It was observed that most respondents (70%) kept their cattle attached to their residence, followed by 9% on farms and 20% away from home. A higher proportion in Amer (80%) maintained attached housing than in Chomu (54%), showing a significant difference. Similar observations were made by Singh *et al.* (2024) ^[9] and Tiwari and Rajeev (2022) ^[15], while Rajadurai *et al.* (2020) ^[5] reported more separate housing. The preference for attached housing may be due to limited land and the convenience of daily care.

2.2 Type of Housing System

Findings revealed that a majority (50.50%) of farmers adopted loose housing, 34% used sheds, and 15.50% had mixed systems, with no significant regional difference. These results are consistent with Singh *et al.* (2024) ^[9] and Narsimha *et al.* (2019) ^[3], who found loose housing popular for its comfort and ventilation. Variations from Sabapara (2010) ^[7] may be linked to local climate and economic factors.

2.3 Type of Roof

The study found that iron sheet roofs were most common (85%), followed by cement concrete (9%) and asbestos (6%), with no thatched roofs. The results differ from Saurav *et al.* (2023) ^[8] and Sabapara (2010) ^[7], who reported higher use of thatch. The widespread use of iron sheets reflects modernization, affordability, and their suitability to regional weather.

2.4 Type of Floor

Results showed that 46.50% of respondents had kachcha (mud) floors, 34.50% used mixed flooring, and 19% had pucca floors, with a significant location-wise difference. Similar findings were noted by Sabapara (2010) ^[7], Rajadurai *et al.* (2020) ^[5], Singh *et al.* (2020) ^[11], and Tiwari and Rajeev (2022) ^[15]. The shift toward pucca and mixed floors indicates gradual improvement in housing hygiene and durability.

2.5 Space Provided for Housing

It was found that farmers maintained nearly similar space standards in both tehsils for lactating, dry, and pregnant animals, showing no significant difference. This uniformity suggests consistent awareness and adherence to recommended housing space requirements.

2.6 Type of Boundary Wall

Observation revealed that 58.50% of farmers had pucca boundary walls, 34% used barbed wire fencing, and 7.50% had partial or kachcha boundaries. These findings align with Rajadurai *et al.* (2020) ^[5] and indicate a growing focus on

durability and security in cattle housing.

2.7 Materials Used for Flooring

It was noted that 48.50% of respondents used no special flooring material, 29% used bricks, 13% stone slabs, and 9.50% concrete. A significant difference existed between areas. These results support Rajadurai *et al.* (2020) ^[5] and Saurav *et al.* (2023) ^[8], reflecting a gradual shift toward durable and hygienic flooring, although cost limits widespread concrete use.

2.8 Presence of a Manger in Shed

Findings indicated that 54.50% of farmers lacked mangers, while 45.50% had them, with no significant difference between tehsils. The proportion was higher than that reported by Rajadurai *et al.* (2020) ^[5] but lower than Singh *et al.* (2024) ^[9]. The moderate adoption highlights improving awareness but also the continued influence of traditional practices.

2.9 Type of Manger Used

Among farmers with mangers, 38% used common cement, 33% individual cement, 15.50% stone slabs, and 13.50% double-tier mangers. The high use of cement mangers (71%) suggests better feeding hygiene and improved infrastructure, contrasting with Rajadurai *et al.* (2020) ^[5], who found greater reliance on wooden or floor mangers.

2.10 Drainage System

Results showed that 51.50% of farmers had pucca drains, while 48.50% had kachcha systems, with slightly better adoption in Amer. Though not significant, the trend marks improvement over Sabapara (2010) ^[7], where only 6% had pucca drains, indicating increased hygiene and waste management awareness.

2.11 Housing of Different Categories of Animals

It was observed that 45% of respondents housed animals separately by category, while others kept cows with calves (23.50%), males and females apart (16.50%), or all together (15%). The lack of significant variation across tehsils suggests similar management awareness levels.

2.12 Type of Bedding Material Used

Findings revealed that 57% of farmers used dry sand, and 43% used crop residues as bedding, with no significant regional difference. These results differ from Saurav *et al.* (2023) ^[8], who found a higher preference for wheat straw. The greater use of sand bedding in this study reflects awareness of its hygienic and comfort benefits for dairy animals.

Table 2: House management practices adopted by Crossbred cattle

S. No.	House management	Chomu		Amer		Overall		χ^2 value	P Value	
		f	%	f	%	f	%			
1	Site of animal house									
a	Attached with residence	62	62.00	80	80.00	142	71.00	8.904	0.012	
b	At your farm	10	10.00	8	8.00	18	9.00			
c	Away from residence	28	28.00	12	12.00	40	20.00			
2	Type of housing system									
a	Loose	48	48.00	53	53.00	101	50.50	1.479	0.477	
b	Shed	38	38.00	30	30.00	68	34.00			
c	Mix	14	14.00	17	17.00	31	15.50			

3	Type of roof									
a	Asbestos	7	7.00	5	5.00	12	6.00	1.246	0.536	
b	Iron sheet	86	86.00	84	84.00	170	85.00			
c	Thatched	0	0.00	0	0.00	0	0.00			
d	Cement concrete	7	7.00	11	11.00	18	9.00			
4	Type of floor									
a	Kachcha	57	57.00	36	36.00	93	46.50	9.350	0.009	
b	Pucca	17	17.00	21	21.00	38	19.00			
c	Both	26	26.00	43	43.00	69	34.50			
5	Space provided for housing (Sq.ft./animal)									
a	Lactating area/animal	36	27.69	35	26.92	71	27.74	0.148	0.928	
b	For dry area/animal	30	23.80	30	23.08	60	23.44			
c	Pregnant area/animal	60	47.61	65	50.00	125	48.82			
6	Type boundry wall									
a	Full pucca (made of cement and concrete)	54	54.00	63	63.00	117	58.50	2.230	0.328	
b	Partially pucca and partially kuccha	7	7.00	8	8.00	15	7.50			
c	Barbed wire fencing	39	39.00	29	29.00	68	34.00			
7	Materials used for flooring									
a	Bricks	33	33.00	25	25.00	58	29.00	10.472	0.015	
b	Stone slabs	7	7.00	19	19.00	26	13.00			
c	Concrete Cement	6	6.00	13	13.00	19	9.50			
d	Not any	54	54.00	43	43.00	97	48.50			
8	Presence of manger in shed									
a	Yes	43	43.00	48	48.00	91	45.50	0.504	0.478	
b	No	57	57.00	52	52.00	109	54.50			
9	Type of manger used									
a	Cement and concrete manger common for all animals	35	35.00	41	41.00	76	38.00	2.448	0.485	
b	Cement and concrete manger for individual animal	31	31.00	35	35.00	66	33.00			
c	Made by double tire manger for individual animal	16	16.00	11	11.00	27	13.5			
d	Made by stone slabs	18	18.00	13	13.00	31	15.50			
10	Drainage system									
a	Pucca nali or drainage channel	46	46.00	57	57.00	103	51.50	2.422	0.120	
b	Kuccha nali or drainage channel	54	54.00	43	43.00	97	48.50			
11	Housed of different categories of animals									
a	Males and females together	0	0.00	0	0.00	0	0.00	6.940	0.074	
b	Males and females separately	20	20.00	13	13.00	33	16.50			
c	Cows with their Calves	28	28.00	19	19.00	47	23.50			
d	All categories separately	36	36.00	54	54.00	90	45.00			
e	All together	16	16.00	14	14.00	30	15.00			
12	Type of bedding material used									
a	Dry Sand	56	56.00	58	58.00	114	57.00	0.082	0.194	
b	Crop waste products / waste fodder	44	44.00	42	42.00	86	43.00			

Conclusion

The study on milking and housing management practices of crossbred cattle rearers in Chomu and Amer tehsils revealed satisfactory adoption of scientific practices with some regional variations. Milking practices were largely hygienic, as most farmers followed proper udder and teat cleaning and used appropriate materials for cleaning utensils, reflecting a good understanding of milk hygiene and quality maintenance. However, handwashing before milking was found to be relatively less common, indicating a need for awareness on personal hygiene and its impact on milk safety.

In terms of housing management, the majority of respondents maintained their animal sheds close to their residences and preferred loose or semi-loose housing systems, which are suitable for crossbred cattle under local climatic conditions. Roofing materials and drainage systems were generally adequate, although the prevalence of kachcha or partially pucca floors suggests room for improvement in shed sanitation and durability. Significant regional differences in site selection and flooring materials indicate variation in infrastructure investment and resource availability.

Overall, the results suggest that crossbred cattle rearers in the study area are progressively adopting improved milking and

housing practices, though further emphasis on shed design, flooring improvement, drainage management, and hygienic handling during milking is essential. Strengthening farmer training and extension support on scientific housing and milking management can further enhance animal productivity, milk quality, and overall dairy farm efficiency.

Conflict of Interest

Not available

Financial Support

Not available

References

1. Aggarwal A, Singh M. Effect of water cooling on physiological responses, milk production and composition of Murrah buffaloes during hot-humid season. *Indian Journal of Dairy Science*. 2006;59(6):386-389.
2. Borar K, Rajeev. Management practices followed by dairy farmers in Kanarpura village of Rajasthan. *The Pharma Innovation Journal*. 2022;11(6):2578-2582.

3. Narsimha B, Rajanna N, Chandra AS, Ekambaram B. Analysis of Deoni cattle housing and health care management practices in Telangana. *The Pharma Innovation Journal*. 2019;8(2):621-625.
4. Patel HA, Odedra MD, Ahlawat AR, Gamit VV, Prajapati VS, Agravat PH. A review on milking management practices of dairy animal in India. *The Pharma Innovation Journal*. 2022;11(10):109-112.
5. Rajadurai A, Rajamanickam K, Ali MS, Kumeravelu N. Housing management practices of dairy cows in Villupuram district of Tamil Nadu. *The Pharma Innovation Journal*. 2020;9(7):1-4.
6. Rathore RS. Study on feeding management practices of dairy cattle in Churu district of Rajasthan. Bikaner (IN): Rajasthan University of Veterinary and Animal Sciences; 2010.
7. Sabapara GP, Desai PM, Kharadi VB, Saiyed LH, Singh RR. Housing and feeding management practices of dairy animals in the tribal area of South Gujarat. *Indian Journal of Animal Sciences*. 2010;80(10):22-27.
8. Saurav SK, Chakravarty R, Yadav P, Pandey S, Mishra S, Chandran V. Feeding and housing management practices of dairy animals followed by dairy farmers of North Bihar. *Biological Forum – An International Journal*. 2023;15(1):69-74.
9. Singh AK, Upadhyay PK, Singh D, Solanki D, Kumar V, Kumar S, *et al.* Studies on different breeding management practices and housing management practices of cattle in Hardoi district of Uttar Pradesh. *International Journal of Agriculture Extension and Social Development*. 2024;7(9):183-190.
10. Singh G, Singh D, Singh S, Chundawat DS. Different management practices followed by dairy farmers in Udaipur district of Rajasthan. *The Pharma Innovation Journal*. 2023;12(10):1798-1804.
11. Singh PK, Sankhala G, Singh PK, Jadoun YS. Management practices for rearing of Gangatiri cattle in native tract. *Indian Journal of Animal Research*. 2020;54(7):905-911.
12. Sumer P, Singh R, Kharsati K. Milking practices and management of dairy farmers in Meghalaya. *Indian Journal of Animal Research*. 2022;56(5):512-518.
13. Kumar S, Subash S, Jangir R. Feeding and milking management practices adopted by indigenous cattle farmers in Thar Desert of Rajasthan. *Journal of Animal Health and Production*. 2017;5(1):14-18.
14. Swathi YY, Reddy R, Babu SD, Rao SD. Milking management practices by crossbred milk producers in rural and urban areas of YSR Kadapa district. *International Journal of Science, Environment and Technology*. 2017;6(2):1315-1320.
15. Tiwari A, Rajeev. Management practices followed by dairy farmers in Chaheru village of Punjab. *The Pharma Innovation Journal*. 2022;11(6):1486-1490.
16. Varma CG, Teja A, Praveen CS, Swathi Y. Milking management practices in buffaloes of north coastal Andhra Pradesh. *The Pharma Innovation Journal*. 2021;10(5):66-68.
17. Vineesha R, Dutta TK, Ghosh S. Milking management practices followed by dairy farmers in Hooghly district of West Bengal. *Indian Journal of Dairy Science*. 2019;72(3):345-350.
18. Vinod P, Reddy AG, Sreenivasulu D. Milking practices followed by dairy farmers in Andhra Pradesh, India. *Indian Journal of Dairy Science*. 2022;75(4):456-461.

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