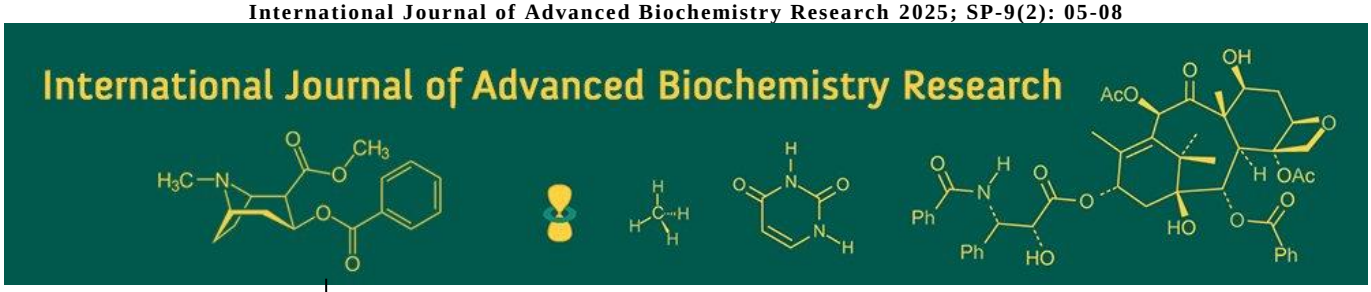

ISSN Print: 2617-4693
ISSN Online: 2617-4707
IJABR 2025; SP-9(2): 05-08
www.biochemjournal.com
Received: 04-11-2024
Accepted: 09-12-2024

E Sumer
MVSc, Department of Livestock Production & Management, C.V.Sc & A.H, Selesih, Aizawl, Mizoram, India

G Kalita
Professor, Department of Livestock Production & Management, C.V.Sc & A.H, Selesih, Aizawl, Mizoram, India

R Goswami
Professor, Department of Livestock Production & Management, C.V.Sc & A.H, Selesih, Aizawl, Mizoram, India

S Rahman
Professor, Department of Veterinary Extension Education, C.V.Sc & A.H, Selesih, Aizawl, Mizoram, India

FA Ahmed
Professor, Department of Animal Reproduction Gynaecology & Obstetricts, C.V.Sc & A.H, Selesih, Aizawl, Mizoram, India

JK Chaudhary
Assistant Professor, Department of Animal Genetics and Breeding, C.V.Sc & A.H, Selesih, Aizawl, Mizoram, India

S Pakyntein
MVSc, Department of Livestock Production & Management, C.V.Sc & A.H, Selesih, Aizawl, Mizoram, India

Corresponding Author:
Dr. E Sumer
MVSc, Department of Livestock Production & Management, C.V.Sc & A.H, Selesih, Aizawl, Mizoram, India

Milking and calf rearing management practices of crossbred dairy cattle in Khasi and Jaintia Hill districts of Meghalaya

E Sumer, G Kalita, R Goswami, S Rahman, FA Ahmed, JK Chaudhary and S Pakyntein

DOI: https://doi.org/10.33545/26174693.2025.v9.i2Sa.3682

Abstract
A study was conducted on milking and calve rearing management practices of crossbred dairy cattle in Khasi and Jaintia Hill districts of Meghalaya. The main aim of the study was to analyze the present milking and calve rearing management practices adopted by the farmers in the two districts. The interview schedule was developed, and the data was collected randomly from two districts, Khasi hill (60 farmers) and Jaintia hill (60 farmers). The data collected were primary data includes various types and methods of both milking and rearing of calves. The software used for analysis were IBM SPSS Statistics Version 26 and Microsoft Excel. No farmers used machine milking and all the farmers (100.00%) followed stripping method of hand milking and also they milked (100.00%) their cow twice daily. All farmers (100.00%) dry their cow for 3 months or less and also followed colostrum feeding for calves less than 3 hours after birth (100.00%) and 77.50 percent fed them colostrum three times daily. Majority of the farmers (52.50%) practices by letting the calves suck one quarter or one teat of the cow's udder at the time of colostrum feeding. Majority of the calves were weaned (51.67%) at the age of 3-8 month and dewormed (54.17%) at 3-4 months of age. The study concluded that for better performance and production of the dairy farm, the modern way of milking and scientific calf management practice need to be adopted by the farmers in the Khasi and Jaintia Hill Districts of Meghalaya.

Keywords: Milking, calve management, colostrum, weaning

Introduction
Milking management is an important aspect of dairy farm activities. The benefits of providing clean milk for dairy farmers are substantial (Bashir and Kumar, 2013) [2]. Adopting appropriate management methods improves the animals' ability to produce, especially in milch animals where it increases milk supply and provides more revenue for dairy farmers through milk sales (Gupta *et al.*, 2008) [7]. Scientific milking management strategies such as enhanced milking technique, sanitary milk production, and better milk let down could improve the overall output and quality of milk (Patbandha *et al.*, 2015) [10]. Additional, inadequate housing comfort leads to a decrease in animal welfare and milk production (Mandal *et al.*, 2016) [9]. Colostrum feeding is crucial for giving a newborn calf the nutrition and immunity it needs to fight against infections in the early stages of its life. Since calves represent the dairy industry's future, they ought to be raised using scientific management techniques, yet calf management is unfortunately an overlooked aspect of this field (Khadda *et al.*, 2010) [8]. Keeping these ideas in mind, attempts were undertaken to conduct a study on milking and calve-rearing management practices of crossbred dairy cattle in the Khasi and Jaintia Hill Districts of Meghalaya.

Materials and Methods
Study area
The study was conducted in the Khasi and Jaintia Hill Districts of Meghalaya.

Data collection
An organised interview schedule with all necessary questions and observations on variables

was created. The schedule was pre-tested on non-sample respondents from the study area. Based on the replies, the schedule was adjusted as necessary to ensure that both appeared professional. To gather real data, a modified interview schedule and observational methods were employed.

Results

Milking Management Practices

Methods of milking

The present research reported that all dairy farmers (100.00%) followed the stripping way of milking (Table 1). Full hand milking is the most effective hand milking method as it is fast, stimulates natural suckling by the calf and less chance of injury as compared to striping and knuckling method (Thomas *et al.,* 1991) [16]. In the study area. It was observed that stripping method was mostly used might be because the teats of crossbred cattle were shorter in length and the risk of injuring the cow's teat is less when compared to knuckling. Vineesha *et al.* (2019) [17] found that majority (60.00%) of the farmers followed stripping method of milking in West Bengal and the findings were comparable with the present study.

Time of milking

The present study revealed that all farmers (100.00%) in the research area milked their cows twice a day (Table 1). In the study area, it was found that the farmers were unable to milk their cow more than twice a day. The main cause might be milking more than two times a day was a laborious work and also the farmers were engaging in other activities during the course of the day. The results of the present study were similar with Sreedhar *et al.* (2017) [15], who reported that all respondent milked their animals twice a day in the Rayalaseema region of Andhra Pradesh. Patel and Sabapara (2019) [11] and Rathva *et al.* (2019) [12] also reported similar findings.

Drying of dairy cattle

Based on the present study (Table 1), all farmers (100.00%) dry their cows for 3 months or less. Dry period was important because it give rest to the cow's udder and opportunity to recuperate its condition lost during lactation and also produces higher production during the succeeding lactation (Etgen and Reaves, 1980) [6]. In the study area, it was observed that the farmers achieved longer lactation length when they dry their cows for 3 months or less and also to maintain the cow wellness during the third trimester of the gestation period. The results of the present study were similar to Deb *et al.* (2023) [5], who reported that the majority of the farmers (93.33%) practiced drying off their dairy cattle almost exclusively. The findings were also found to be in agreement with Sreedhar *et al.* (2017) [15], Patel and Sabapara (2019) [11] and Rathva *et al.* (2019) [12]

Calf rearing practices

Time of colostrum feeding

The present study revealed that all dairy farmers (100.00%) provided colostrum to newly born calves immediately within 2 hours after calving (Table 2). The intestinal wall of the calves will allow the gamma-globulin to pass through the intestine to the blood streams only for a short period of time after the calve was born so that they will be absorbed as globulin and provide antibodies to the new born but after the first 1-2 hour after birth the gut permeability will be closed and the gamma globulin will be broken down in the wall of intestines and gets absorbed as protein (Thomas *et. al.,* 1991) [16]. In the study area, it was observed that when colostrum was given within 2 hours after birth, the calves used to be free from any infections or abnormalities during the first few months of their life. The results of the present study were in agreement with Deb *et al.* (2023) [5], who reported that 75.83 percent of farmers fed colostrum to the calves within two hours of birth in Tripura. The findings of Sabapara *et al.* (2015) [13] and Saurav *et al.* (2023) [14] were also in agreement with the present results. On the contrary, Choudhary *et al.* (2017) [3] found that 76.88 percent of the farmers fed their calves colostrum after drooping of placenta in Udaipur district of Rajasthan.

Frequency of colostrum feeding

Based on data (Table 2), the research revealed that the majority of farmers (77.50%) fed colostrum to their calves three times a day, while 22.50 percent did it twice. It was observed in the present study that most farmers fed their cattle feed three times a day and with the same way they give their calves colostrum three times a day. The findings were not recorded from any article as there was very less research done on this particular parameter.

Quantity of colostrum fed

The present research concluded that majority of farmers (52.50%) fed one quarter of colostrum to their calves, followed by ad libitum feeding (24.17%), feeding as per body weight (18.33%) and feeding half quarter (5.00%) (Table 2). The first feeding of colostrum should be at least 3 litres because calf depends on the successful passive transfer of these maternal antibodies from the colostrum in order to defend itself against infection until its own active immunity begins to work (AFDA, 2017) [1]. In the study area, it was observed that, after post calving, when the farmers milked the cow, they left one quarter of colostrum for the newly born calf to sucked.The findings were in agreement with Choudhary *et al.* (2017) [3], who reported that 57.50 percent of the farmers allowed their calves to sucked one quarter of colostrum in Udaipur district of Rajasthan. Comparable results were shown by Deb *et al.* (2023) [5]. On the contrary, Sabapara *et al.* (2015) [13] reported that 65.98 percent fed ad libitum colostrum to their calves in Surat district.

Weaning of calves

The study as per table 2, revealed that the majority of farmers (51.67%) weaned their calves for 4-5 months, while others let them do so for 3-5 months (4.17%). According to the study, 51.67 percent of the dairy farmers weaned their calves for 4-5 months because majority of the farmers let their calves to suck the dam for more than 4 months before weaning them, so that their calves will not suffer from any unwanted diseases or developed any abnormal conditions but in case of male calves they usually weaned them at 2 months of age before selling them. The findings were in agreement with Rathva *et al.* (2019) [12] in Navsari district of Gujarat and reported that the majority of farmers weaned their calves at 3 months and above.

Age of deworming of calves

Based on the data (Table 2), majority (54.17%) of calves were dewormed between the ages of 3-4 months, followed

by 2-3 months (4.17%) and above 4 months (4.17%). The remaining 37.50 percent of dairy farmers do not dewormed their calves. In the study area, it was observed that the farmers usually dewormed their calves 1 week prior to vaccination and also the farmers were aware of the significance of deworming for improved calf health and growth. Similar findings were made by Sabapara *et al.* (2015) [13] in Surat district of Gujarat and Deb (2022) [4] in Tripura with the present study and reported that 48.67 and 99.17 percent of the farmers, respectively dewormed their calves regularly.

Table 1: Milking management practices followed by different categories farmers

S. N	Particulars	Categories	Small herds farmers (10)	Medium herd farmers (95)	Large herd farmers (15)	Overall (120)
			N (%)	N (%)	N (%)	N (%)
1	Method of milking					
	Hand Milking	Full hand	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
		Knuckling	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
		Stripping	10 (100.00)	95 (100.00)	15 (100.00)	120 (100.00)
	Machine Milking		0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
2	Time of Milking	Morning	10 (100.00)	95 (100.00)	15 (100.00)	120 (100.00)
		Evening	10 (100.00)	95 (100.00)	15 (100.00)	120 (100.00)
3	Drying of cows	>3 months	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
		≤3 months	10 (100.00)	95 (100.00)	15 (100.00)	120 (100.00)

Table 2: Calves management practices followed by different categories farmers

S. N	Particulars	Categories	Small herds farmers (10)	Medium herd farmers (92)	Large herd farmers (15)	Overall (120)
			N (%)	N (%)	N (%)	N (%)
1	Time of colostrum feeding	<2 hr of birth	10 (100.00)	95 (100.00)	15 (100.00)	120 100.00
		2-4 hr of birth	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
		After dropping of placenta	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
2	Frequency of feeding colostrum	Twice a day	2 (20.00)	19 (20.00)	6 (40.00)	27 (22.50)
		Thrice a day	8 (80.00)	76 (80.00)	9 (60.50)	93 (77.50)
3	Quantity of colostrum fed	Ad-lib quarter	2 (20.00)	24 (25.26)	3 (20.00)	29 (24.17)
		One quarter	6 (60.00)	51 (53.68)	6 (40.00)	63 (52.50)
		Half quarter	0 (0.00)	4 (4.21)	2 (13.33)	6 (5.00)
		As per body weight	2 (20.00)	16 (16.85)	4 (26.67)	22 (18.33)
4	Weaning of calves (Months)	<3 months	5 (50.00)	40 (42.11)	8 (53.33)	53 (44.17)
		3-8 months	5 (50.00)	50 (52.63)	7 (46.67)	62 (51.67)
		>8 months	0 (0.00)	5 (5.26)	0 (0.00)	5 (4.17)
5	Age of deworming of calves	2-3 months	1 (10.00)	3 (3.16)	1 (6.67)	5 (4.17)
		3-4 months	3 (30.0)	52 (54.74)	10 (66.66)	65 (54.17)
		Above 4 months	0 (0.00)	4 (4.21)	1 (6.67)	5 (4.17)
		Not dewormed	6 (60.00)	36 (37.89)	3 (20.00)	45 (37.50)

Conclusion

The study concluded that the dairy farmers can improved the milking practices by using modern practices by introduction of milking machine which can complete the milking within a short amount of time, less injury to the teats and the farmers can even perform milking thrice daily for more milk output and also the farmers need to improve calf's management practices in this region with the help of scientific management practice which was unfortunately neglected in the Khasi and Jaintia hill district of Meghalaya.

Conflict of Interest

There is no conflict of interest for the authors of this work.

Data Availability Statement

The corresponding author will have access to the data mentioned in the article.

Author's contribution

ES: Involved in investigation, data collection, preparing original draft; GK, RG, SR, FAA, SJ, SM: Engaged in conceptualization, methodology, supervision and final editing; JKC: Involved in editing, technique and statistical analyses.

Reference

1. AFDA (Agriculture and Food Development Authority), Teagasc – the Agriculture and Food Development Authority; 2017. Available at: https://www.teagasc.ie/media/website/animals/beef/dairy-beef/Segment-002-of-Section1-The-Newborn-Calf.pdf. Accessed on 16 November 2023.
2. Bashir BP, Kumar VG. Milking management practices followed in selected areas of the Kottayam district of Kerala state. Journal of Life Sciences. 2013;5(1):53-55.
3. Choudhary S, Gurjar ML, Choudhary V, Meel P, Rohlan K, Ganguly S. Study on cattle calf rearing and health care practices in relationship to herd size in non-tribal area of Udaipur district of Rajasthan. Journal of Entomology and Zoology Studies. 2017;5(4):546-549.
4. Deb. Study on management practices, performance and welfare status of dairy cattle reared under dairy cooperative societies in Tripura [M.V.Sc. thesis]. Imphal: CAU (Deemed University); c2022.
5. Deb D, Kalita G, Das H, Goswami R. Socio-economic profile and various management (healthcare, milking and calf rearing) practices followed by members of dairy cooperative societies of Tripura. The Pharma Innovation Journal. 2023;12(2):1635-1638.

6. Etgen WM, Reaves PM. Dairy cattle feeding and management. 6th ed. New York: John Wiley and Sons; c1980. p. 289.
7. Gupta DC, Suresh A, Mann JS. Management practices and productivity status of cattle and buffaloes in Rajasthan. Indian Journal of Animal Sciences. 2008;78(7):769-774.
8. Khadda BS, Lata K, Jadav JK, Kalash P, Kumar R. Study on calves management practices in tribal and non-tribal areas of Panchmahals district of Gujarat. Journal of Progressive Agriculture. 2010;1(1):84-86.
9. Mandal DK, Mandal A, Bhakat C, Chatterjee A, Karunakaran M. Effect of climatic stress on milk production in Crossbred Jersey cows herd. Journal of Agricultural Engineering and Food Technology. 2016;3(3):230-232.
10. Patbandha TK, Pathak R, Marandi S, Swain DK, Ahlawat AR. Milking management practices in Gir cattle and Jaffrabadi buffaloes in their habitat with due reference to disparity between the two species. Animal Science Reporter. 2015;4(9):123-130.
11. Patel PC, Sabapara GP. Milking management practices followed by dairy farmers in tribal areas of Valsad district of Gujarat. Indian Journal of Animal Production and Management. 2019;35(3-4):42-47.
12. Rathva AL, Sorathiya LM, Sabapara GP. Milking management practices followed at commercial dairy farms in urban and peri-urban areas of Navsari district of Gujarat. Veterinary Research International. 2019;7(4):263-266.
13. Sabapara GP, Fulsoundar AB, Kharadi VB. Survey of calf rearing practices followed at rural dairy farms in Surat district. Journal of Animal Research. 2015;5(2):257-261.
14. Saurav SK, Chakravarty R, Yadav P, Pandey S, Mishra S, *et al*. 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.
15. Sreedhar S, Reddy AN, Babu PR, Sudhakar BV, Kamalakar G, *et al*. Milking managemental practices and marketing of milk in Rayalaseema region of Andhra Pradesh. International Journal of Pure and Applied Bioscience. 2017;5(6):524-530.
16. Thomas CK, Sastry NSR, Ravikiran G. Dairy bovine production. Kalyani, India; c1991.
17. Vineesha SL. A study on milking practices among dairy owners in a rural community of Singur Block, Hooghly district, West Bengal, India. South Asian Research Journal of Bio Applied Biosciences. 2019;10(1):33-37.