International Journal of Bio-resource and Stress Management https://ojs.pphouse.org/index.php/IJBSM

Crossref

IJBSM March 2026, 17(3): 01-10 **Article** AR6872

Research Article *Social Science*

DOI: HTTPS://DOI.ORG/10.23910/1.2026.6872

Assessment of Dairy Cattle Management Practices Followed by Cooperative Dairy Farmers in North-Eastern Hilly State, Tripura

Debapritam Deb[1], Girin Kalita[2], Abhishek Paul[2], Ranjana Goswami[2], Rajat Buragohain[3] and Hemen Das[4]

[1]Dept. of Livestock Production Management, West Bengal University of Animal and Fishery Sciences, Kolkata, West Bengal (700 037), India

[2]Dept. of Livestock Production and Management, [3]Dept. of Animal Nutrition, [4]Dept. of Physiology and Biochemistry, CVSc & A.H., CAU, Selesih, Aizawl, Mizoram (796 014), India

Open Access

Corresponding debapritam96lpm@gmail.com

0009-0001-2072-1898

ABSTRACT

A comprehensive field study was conducted from August, 2023 to January, 2024 in Tripura, India to understand dairy management practices among cooperative members. Three districts were selected, and a total of 120 respondents were randomly sampled. Based on herd size, the respondents were categorized into three groups: small (< 3 animals), medium (3–8 animals), and large herd (> 8 animals). Using a structured interview schedule, data were gathered on feeding, breeding, housing, milking, calf care, along with reproductive and healthcare management practices. Results showed that dairy cattle were reared semi-intensively, were fed an average daily ration of 5.92±0.39 kg green fodder, 1.85±0.07 kg concentrate, and 7.34±0.27 kg dry fodder per animal. Bran was the predominant concentrate ingredient. Artificial insemination was the primary breeding method (85.83%). In terms of housing, most farmers used concrete flooring (64.17%) and employed a tie-barn system (76.67%), with corrugated galvanized iron (GI) sheet roofing. The average floor space per animal was 19.37±0.52 sq ft while the overall roof height was 9.38±0.19 ft.The manual "knuckling" milking method was used by the majority (64.17%) of farmers. Most farmers (87.5%) dried off pregnant animals two months before parturition and administered colostrum within two hours of birth. Calf deworming was nearly universal (97.5%), though no dehorning was practiced. Repeat breeding and anestrous were the most common reproductive problems. While deworming was widespread, routine vaccination was lacking. In case of illness, Majority of farmers (83.33%) sought treatment from private practitioners.

KEYWORDS: Cooperative, dairy cattle, management, Tripura

***Citation* (VANCOUVER):** Deb et al., Assessment of Dairy Cattle Management Practices Followed by Cooperative Dairy Farmers in North-Eastern Hilly State, Tripura. *International Journal of Bio-resource and Stress Management,* 2026; 17(3), 01-10. HTTPS://DOI.ORG/10.23910/1.2026.6872.

Data Availability Statement: Legal restrictions are imposed on the public sharing of raw data. However, author have full right to transfer or share the data in raw form upon request subject to either meeting the conditions of the original consents and the original research study. Further, access of data needs to meet whether the user complies with the ethical and legal obligations as data controllers to allow for secondary use of the data outside of the original study.

Conflict of interests: The author has declared that no conflict of interest exists.

RECEIVED on 12th December 2025 RECEIVED in revised form on 23rd February 2026 ACCEPTED in final form on 10th March 2026 PUBLISHED on 18th March 2026

1. INTRODUCTION

India's rural economy relies heavily on its dairy sector, and animal husbandry plays a vital role. The rural economy in India plays a pivotal role in agricultural livelihoods and supports over two-thirds of rural households (Biradar and Kumar, 2013). Small and marginal farmers, as well as very low-income landless laborers, are closely associated with livestock. Effective management raises profitability by lowering production costs (Bhagat et al., 2021). Today, the dairy industry offers families triple benefits: income, a meaningful employment, and supplemental food (Rajeev et al., 2016). Dairy farming offers farmers a year-round, profitable enterprise, provided that animal management is conducted efficiently. India's rural economy is significantly shaped by the livestock industry. For rural households, it is a significant income generating activity (Singh et al., 2018). Good animal welfare is also associated with better management practices, resulting in better productivity (Deb et al., 2025). Beyond supplying essential nutrition, dairy operations serve as a vital income stream for rural families (Singodia et al., 2019). Cooperative dairy expansion provides a solution for an effective milk marketing system, reasonably priced cattle feed, regulated pricing, etc., for the rural people. Given the livestock's genetic potential, its production is primarily dependent on management practices, which vary greatly among different agro-climates (Khadda et al., 2017). Since ancient times, raising native cattle in the fields for agricultural purposes has been a customary means of subsistence for indigenous people (Prabex et al., 2025). The state of Tripura has an agrarian economy, with more than 44% of its workforce directly dependent on agriculture and allied activities (Anonymous, 2021–22). Livestock-based dairying represents a crucial livelihood strategy in Tripura, especially among smallholder farmers. The majority of these producers engage in small-scale dairy operations, predominantly utilizing locally available indigenous cattle, along with a limited number of crossbred animals. As of Anonymous (2023), cattle comprised 56.08 % of Tripura's total livestock population, with 7.39 lakh cattle in the state- 6.16 lakh indigenous and 1.29 lakh crossbred or exotic animals. The high percentage of native cattle can be attributed to a variety of adaptation processes that allow them to thrive and reproduce in challenging environments and fight off diseases (Hagos, 2016). Despite of all these benefits, they are not at all highly productive (Mwai et al., 2015). Cattle in Tripura fulfill multiple roles: providing milk, manure, draft power, and fuel. For many smallholder farmers, milk essentially functions as a cash crop. Per capita milk availability in Tripura for 2023–24 was 163.38 g day^{-1} (Anonymous, 2024). Farmers in the region typically abstain from standardized feeding regimes and instead rely on locally available feed resources. Farmers need to be aware that using better animal breeding and feeding strategies can boost animal productivity (Gupta et al., 2020). The dairy industry's overall profit is impacted by the efficiency of heat detection, rapid insemination, and pregnancy detection (Prajapati et al., 2015). Several management strategies are required to preserve animal health, reduce calf mortality, and boost dairy cow productivity (Saurav et al., 2023). Small-scale farmers usually maintain herds consisting of indigenous cows-often two to twelve per household, sometimes supplemented by crossbred animals (Chakrabarti et al., 2023). Higher milk yield and quality, better health and breeding performance, and greater returns on investment are the results of adopting advanced management techniques (Bhoj et al., 2023). It is essential to comprehend the livestock management practices used by farmers in order to determine the advantages and disadvantages of the rearing techniques and to develop appropriate intervention strategies (Khadda et al., 2017).

2. MATERIALS AND METHODS

The study was conducted for a period of 6 months from August, 2023 to January, 2024 in Tripura, where three districts were purposively selected: these districts represented approximately 40% of the state's cattle population and housed nearly 86% of cooperative societies (Anonymous, 2022-23). Within each district, eight cooperative societies were selected by simple random sampling, and five members from each society were further chosen at random, yielding a total of 120 respondents (40 per district). A structured interview schedule was developed and pretested in the field. Primary data were gathered through face-to-face interviews and observations conducted by a three-member research team; results were pooled, and concordant observations were retained. The collected data were scored, tabulated, and analyzed using descriptive statistics, frequency distributions, percentages, and ANOVA tests using MS Excel and SPSS to derive meaningful inferences.

3. RESULTS AND DISCUSSION

3.1. Feeding management practices

The feeding practices of different farmer categories are summarized in Table 1. Most farmers used grazing or a combination of grazing and stall feeding, with few relying solely on stall feeding, similar to the findings of Tekade et al. (2024) and Kalambe et al. (2025). The average green fodder offered by small, medium, and large farmers were 5.96±0.88, 5.47±0.53, and 7.92±0.56 kg $animal^{-1}$ day^{-1}, respectively. Overall concentrate and dry fodder intake averaged 1.85±0.07 and 7.34±0.27 kg $animal^{-1}$ day^{-1}. Concentrate and dry fodder supply were significantly higher (p<0.01) in medium and large herds than in small herds.

Table 2 depicts the type of feed provided to the animals. The

Table 1: Supply of feedstuffs to dairy cattle

Feedstuffs	Small herd farmers (Mean±SE)	Medium herd farmers (Mean±SE)	Large herd farmers (Mean±SE)	Overall (Mean±SE)
Green fodder quantity (kg)	5.96±0.88	5.47±0.53	7.26±0.56	5.92±0.39
Concentrate mix. quantity (kg)	1.39a±0.11	2.02b±0.08	2.02b±0.15	1.85±0.07
Dry fodder quantity (kg)	7.45±0.46	7.95±0.4	5.29±0.34	7.34±0.27

Means bearing different superscripts in a row differ significantly (p<0.01)

farmers usually allowed the animals to graze outside, or they themselves cut and carried the green grass for their animals. Most provided local field grass (80.83%) and paddy straw (89.17%) as dry fodder (Table 2), consistent with Sampath (1990), who found feeding of local grass was common practice among the farmers. Bran was the most common concentrate (91.67%), followed by grains (82.5%) and cakes (72.5%). Melesse et al (2023) also reported brans and cakes were widely used in developing countries as primary concentrate supplement. Salt was supplied by 53.33% of farmers, while only 12.78% used mineral mixtures, similar to Garg et al. (2005) (13.33%). However, the results differ from Sabapara et al. (2016), who found that 30.5% of farmers in Gujarat, provided mineral supplements. Tap water was the main drinking source (48.33%), followed by hand pumps (25.83%), tube wells (22.5%), and ponds (3.33%).

3.2. *Breeding management practices*

Breeding is crucial for livestock improvement and productivity. As shown in Table 3, 85.83% of farmers used artificial insemination (AI), 9.17% used both AI and natural service, and only 5% relied solely on natural service, aligning with Rathore et al. (2010). The high use of AI may reflect farmers' awareness of its genetic benefits and the limited availability of purebred sires. Most farmers (87.5%) depended on private inseminators due to the lack of veterinary doctors similar to Panda et al. (2022). Sex-sorted semen was commonly used (58.33%), followed by semen from selected bulls (36.67%), similar to the findings of Mekonnen and Gebremariam (2024). Key estrus signs-bellowing, mucus discharge, and mounting-were recognized by 61.9% of large, 52.31% of medium, and 50% of small farmers (overall 53.33%), consistent with Sabapara et al. (2015). Heat detection was mostly carried out during

Table 2: Types of fodder and concentrate provided

Type	Particulars	Small herd farmers (34)		Medium herd farmers (65)		Large herd farmers (21)		Overall (120)	
		N	%	N	%	N	%	N	%
Green	Dhub grass	33	97.06	50	76.92	14	66.67	97	80.83
	Napier+para +Congo signal	0	0.00	0	0.00	1	4.76	1	0.83
	Dhub+Napier	1	2.94	7	10.77	6	28.57	14	11.67
	Dhub+Para	0	0.00	4	6.15	0	0.00	4	3.33
	Dhub+Cowpea	0	0.00	4	6.15	0	0.00	4	3.33
Dry	Paddy straw	34	100.00	59	90.77	14	66.67	107	89.17
	Wheat straw	0	0.00	6	9.23	7	33.33	13	10.83
Concentrate ingredient	Cake	23	67.65	45	69.23	19	90.48	87	72.50
	Bran	32	94.12	58	89.23	20	95.24	110	91.67
	Grains	24	70.59	59	90.77	16	76.19	99	82.50
	Mineral mixture	4	11.76	8	12.31	3	14.28	48	12.78
	Common salt	15	44.12	33	50.77	16	76.19	64	53.33
Water supply	Tube well	4	11.76	10	15.38	13	61.90	27	22.50
	Pond	4	11.76	0	0.00	0	0.00	4	3.33
	Hand pump	9	26.47	17	26.15	5	23.81	31	25.83
	Tap water	17	50.00	38	58.46	3	14.29	58	48.33

Table 3: Breeding practices of different categories of farmers

Particulars		Small herd farmers (34)		Medium herd farmers (65)		Large herd farmers (21)		Overall (120)	
		N	%	N	%	N	%	N	%
Method of breeding	Natural	3	8.82	3	4.62	0	0.00	6	5.00
	A.I.	26	76.47	56	86.15	21	100.00	103	85.83
	Both	5	14.71	6	9.23	0	0.00	11	9.17
Type of bull used for natural breeding	Own bull	0	0.00	0	0.00	0	0.00	0	0.00
	Village bull	8	23.53	9	13.85	0	0.00	17	14.17
Type of inseminator	Self	0	0.00	0	0.00	0	0.00	0	0.00
	Veterinarian	0	0.00	3	4.62	6	28.57	9	7.50
	Private inseminator	31	91.18	59	90.77	15	71.43	105	87.50
Type of semen	Progeny tested bulls	0	0.00	0	0.00	0	0.00	0	0.00
	Selected bull	15	44.12	26	40.00	3	14.29	44	36.67
	Non selected bull	0	0.00	0	0.00	0	0.00	0	0.00
	Sexed semen	16	47.06	36	55.38	18	85.71	70	58.33
	Selected and Non selected bull	0	0.00	0	0.00	0	0.00	0	0.00
Method of heat detection	Bellowing	2	5.88	0	0.00	0	0.00	2	1.67
	Clear mucus discharge	0	0.00	3	4.62	0	0.00	3	2.50
	Frequent urination	0	0.00	0	0.00	0	0.00	0	0.00
	Bellowing and clear mucus discharge	15	44.12	24	36.92	4	19.05	43	35.83
	Clear mucus discharge and mounting	0	0.00	4	6.15	4	19.05	8	6.67
	Bellowing, clear mucus discharge and mounting	17	50.00	34	52.31	13	61.90	64	53.33
Time of heat detection	Morning	6	17.65	11	16.92	7	33.33	24	20.00
	Evening	4	11.76	12	18.46	0	0.00	16	13.33
	Morning and evening	24	70.59	42	64.62	14	66.67	80	66.67

both morning and evening by the majority of the farmers (66.67%).

3.3. Housing management practices

The various housing management practices are summarized in Table 4. The majority of farmers followed a semi-intensive system, grazing animals from morning to evening and housing them in tie barns from evening to morning, with none adopting a loose housing system, consistent with Pundir et al. (2014) and Chakrabarti et al. (2023). Concrete flooring was most common among large herds (95.24%), followed by medium (61.54%) and small herds (50%), with an overall preference for concrete or brick-paved floors (64.17%), while 35.83% used earthen floors without proper drainage. These results align with Sharma et al. (2019), Rathore et al. (2010) and Sohane et al. (2004), and, reflecting the emphasis on hygiene and ease of cleaning. Corrugated galvanized iron (GI) sheets were the most widely used roofing material (85.83%), followed by thatch (12.5%), and asbestos (1.67%), with none using cement concrete roofing, likely due to lower per capita income and limited investment in permanent structures, as also noted by Bhoj et al. (2023).

Regarding summer management, about 50% of small, medium (44.63%), and large (47.62%) herd farmers relied solely on bathing to reduce heat stress. Additionally, 38.24% of small, 40% of medium, and 19% of large herd farmers

Table 4: Housing practices under different categories of farmers

Particular		Small herd farmers (34)		Medium herd farmers (65)		Large herd farmers (21)		Overall (120)	
		N	%	N	%	N	%	N	%
Housing system	Loose housing	0	0.00	0	0.00	0	0.00	0	0.00
	Tie barn	24	70.59	47	72.31	21	100.00	92	76.67
	Tie barn+tethering	10	29.41	18	27.69	0	0.00	28	23.33
Type of floor	Concrete(RCC/brick paved)	17	50.00	40	61.54	20	95.24	77	64.17
	Earthen without a gutter	17	50.00	25	38.46	1	4.76	43	35.83
	Non-slippery	22	64.71	38	58.46	16	76.19	76	63.33
	Good drainage	19	55.88	34	52.31	16	76.19	69	57.50
	Grooved with sloping	12	35.25	13	20.00	10	47.62	35	29.17
Roof materials	Thatched	6	17.65	7	10.77	2	9.52	15	12.50
	Corrugated GI sheet (tin)	28	82.35	56	86.15	19	90.48	103	85.83
	Cement concrete	0	0.00	0	0.00	0	0.00	0	0.00
	Asbestos	0	0.00	2	3.08	0	0.00	2	1.67
Microclimatic protection	Wet cloth/gunny bag hanging	0	0.00	0	0.00	0	0.00	0	0.00
	Fans/ exhaust fans+bathing	0	0.00	0	0.00	6	28.57	6	5.00
	Bathing only	17	50.00	29	44.62	10	47.62	56	46.67
	Good shady tree in loafing area	0	0.00	0	0.00	0	0.00	0	0.00
	Good shady tree in loafing area+ bathing of cows	13	38.24	26	40.00	4	19.05	43	35.83
	Fans+good shady tree in loafing area+bathing	4	11.76	10	15.35	1	4.76	15	12.50

provided shaded areas under trees in combination with bathing. Overall, 46.67% practiced only bathing, 35.83% combined tree shade with bathing once daily, and 12.5% used a more comprehensive approach with fans, shade, and bathing (Table 4). Manjunath et al. (2024) reported similar findings that dairy producers use multiple cooling methods in different combinations, including shade, sprinklers, and fans that were more effective than shade alone at reducing body temperature in cattle.

Table 5 presents the mean Standard Animal Units (SAUs) as defined by Sirohi et al. (2019), which were 2.75±0.03, 4.93±0.16, and 10.38±0.37 for small, medium, and large herds, respectively, with an overall average of 5.27±0.26 SAUs. The mean total area per SAU was 57.58±2.43, 92.96±4.01, and 176.81±11.13 sq. ft for small, medium, and large herds, averaging 97.61±4.68 sq. ft across all categories. The mean floor area per SAU was 20.89±0.83, 19.24±0.76, and 17.34±1.18 sq. ft, with no significant differences among herd sizes. While the overall mean (19.37±0.52 sq. ft) slightly exceeded the Anonymous (2010) minimum requirement of 19 sq. ft, it fell well below the Anonymous (2005) standard of 65 sq. ft per animal, highlighting a shortfall in meeting national housing standards. These results contrast with Chandra (2018), who reported 55.46±6.97 sq. ft per animal in Gaushalas in Haryana, reflecting variability by operation type and region. Regarding shed design, the average roof heights were 8.98±0.27ft, 9.36±0.24 ft, and 10.07±0.70 ft for small, medium, and large herds, respectively, with an overall mean of 9.38±0.19 ft. These values are below the Anonymous (2005) minimum of 12 ft, indicating inadequate vertical ventilation across all herd sizes. These findings align with Sumer et al. (2025) in Meghalaya.

Table 6 depicts that the average manger length per Standard Animal Unit (SAU) was 88.27±3.38 cm, 74.26±2.85 cm, and 65.27±4.10 cm for small, medium, and large herds, respectively, with an overall mean of 76.65±2.11 cm, slightly above the minimum recommendation of 75 cm by Anonymous (2005). In contrast, the overall mean manger width (49.63±1.39 cm) and height (42.45±1.15 cm) were below the BIS standards of 60 cm and 50 cm, respectively. Large herds had the greatest manger width (53.45±3.63 cm), while small herds had the lowest (41.45±2.01 cm).

Table 5: Floor space availability and roof height across different categories

Particular	Small herd farmers (Mean±SE)	Medium herd farmers (Mean±SE)	Large herd farmers (Mean±SE)	Overall (Mean±SE)
SAU (number)	2.75±0.03	4.93±0.16	10.38±0.37	5.27±0.26
Total area (ft^2)	57.58a±2.43	92.96b±4.01	176.81c±11.13	97.61±4.68
Area/SAU (ft^2)	20.89±0.83	19.24±0.76	17.34±1.18	19.37±0.52
Roof height (ft)	8.98±0.27	9.36±0.24	10.07±0.7	9.38±0.19

Means bearing different superscripts in a row differ significantly (p<0.01)

Table 6: Feeding space availability across various categories

Manger dimension	Recommended dimension	Small herd farmers (Mean±SE)	Medium herd farmers (Mean±SE)	Large herd farmers (Mean±SE)	Overall (Mean±SE)
Length/SAU (cm)	75	88.27±3.38[a]	74.26±2.85[a]	65.27±4.10[b]	76.65±2.11
Width (cm)	60	41.45±2.01[a]	52.67±1.87[b]	53.45±3.63[b]	49.63±1.39
Height (cm)	50	39.97±1.86[a]	45.13±1.47[a]	38.17±3.38[b]	42.45±1.15

Means bearing different superscripts in a row differ significantly (p<0.01)

For height, medium herds recorded the highest (45.13±1.47 cm) and large herds the lowest (38.17±3.38 cm). These deviations indicate potential limitations in feeding space, which may affect animal comfort and feeding efficiency similar to DeVries et al. (2004)

Table 7 represents milking and calf-rearing management practices. Overall knuckling (64.17%) was the major milking method practiced by the farmers, followed by stripping (30.83%) and full hand milking (5.00%), while none followed machine milking. Singh et al. (2018) and Tewari et al. (2018) reported similar results. The majority of the farmers practiced drying off two months before parturition (87.5%) and fed colostrum within two hours of birth (76.67%) and no one fed colostrum according to the body weight to the calves. Boopathi and Sasikala (2024); and Robber et al. (2021) reported similar findings. Deworming of calves (97.5%) was practiced by almost all farmers and none of them practiced dehorning.

Table 8 shows the reproductive problems, their remedy and healthcare management. It can be observed that in most of

Table 7: Milking and calf rearing management practices followed by different farmers

Particulars		Small herd farmers (34)		Medium herd farmers (65)		Large herd farmers (21)		Overall (120)	
		N	%	N	%	N	%	N	%
Method of milking									
Hand milking	Full hand	0	0.00	5	7.69	1	4.76	6	5.00
	Knuckling	22	64.70	40	61.53	15	71.43	77	64.17
	Stripping	12	35.29	20	30.77	5	23.81	32	30.83
Machine milking		0	0.00	0	0.00	0	0.00	0	0.00
Dry off practice		32	94.12	58	89.23	15	71.43	112	87.5
Colostrum feeding	Within two hours of birth	26	76.47	48	73.85	18	85.71	92	76.67
	After dropping the placenta	8	23.53	17	26.15	3	14.29	28	23.33
Basis of fed colostrum	Adlib quarter	13	38.23	18	27.69	12	57.14	43	35.83
	Offering one quarter	21	61.76	47	72.31	9	42.86	77	64.17
	As per body weight	0	0.00	0	0.00	0	0.00	0	0.00
Deworming of calves		32	94.12	65	100.0	20	95.23	119	97.5
Dehorning		0	0.00	0	0.00	0	0.00	0	0.00

Table 8: Reproductive problem, their remedy and healthcare in dairy cattle

Particulars		Small herd farmers (34)		Medium herd farmers (65)		Large herd farmers (21)		Overall (120)	
		N	%	N	%	N	%	N	%
Reproductive problem	Repeat breeding	9	26.47	4	6.15	2	9.52	15	12.50
	Repeat breeding+anestrous	7	20.59	15	23.08	13	61.90	35	29.17
	Repeat breeding+Frequent vaginal discharge	4	11.76	6	9.23	0	0.00	10	8.33
	Anestrous	2	5.88	2	3.08	0	0.00	4	3.33
	Delayed onset of cyclicity	0	0.00	5	7.69	0	0.00	5	4.17
	Anestrous+Delayed onset of cyclicity	6	17.65	20	30.77	6	28.57	32	26.67
	Repeat breeding+Delayed onset of cyclicity	6	17.65	13	20.00	0	0.00	19	15.83
Remedy of reproductive problem	Advice from veterinarian	8	23.53	17	26.15	5	23.81	30	25.00
	Advice from private practitioner	26	76.47	48	73.85	16	76.19	90	75.00
	Mineral supplements	0	0.00	4	6.15	0	0.00	4	3.33
Healthcare practices	Deworming	22	64.70	38	58.46	16	76.19	76	63.33
	Vaccination	8	23.53	33	50.77	9	42.86	50	41.67
Treatment of sick animals	Veterinary doctor	2	5.88	13	20.00	5	23.81	20	16.67
	Private practitioner	32	94.12	52	80.00	16	76.19	100	83.33

the dairy animals, repeat breeding with anestrous was the major reproductive problem (29.17%), followed by anestrous with delayed onset of cyclicity (26.67%). These results align with Khan et al. (2016). Most of the farmers took advice from the private practitioner (75%) for getting rid of these reproductive problems, followed by the veterinarian (25%). Only 6.15% medium herd farmers provided mineral supplements as a remedy for reproductive problems. Similar findings were reported by Saurav et al. (2023), who observed that 60% of farmers sought assistance from local veterinary service providers, while only 20% consulted qualified veterinary doctors. This trend may be attributed to the limited availability of certified veterinarians, along with the greater accessibility and lower cost of doorstep services offered by private practitioners. Most farmers dewormed their adult animals every 3 to 4 months (63.33%). Tewari et al., 2018, reported similar results in Uttarakhand. This shows the farmers were aware about the importance of deworming. Vaccination however was not commonly practiced (41.67%) by most of the farmers and private practitioner was consulted for the treatment of sick animals (83.33%). Similar findings were reported by Kebede et al (2025) and Hopker et al. (2021). This could be because no government veterinary facilities were available nearby to the study area and transportation of dairy animals were also quite difficult.

4. CONCLUSION

Management practices were superior among medium-herd farmers compared to small and large herds. However, when viewed collectively, the management practices were found to be average across all herds. Breeding and calf-rearing practices were generally good, while housing, feeding, hygiene, and heat-stress mitigation require improvement. Sustainable dairy development in hilly regions should emphasize genetic improvement of local cattle, promoting home-grown fodder, access to affordable quality feed, veterinary services, and imparting knowledge and training in modern dairy management practices.

5. ACKNOWLEDGEMENT

The authors gratefully acknowledge the Hon'ble Vice Chancellor, CAU, Imphal, for the invaluable support, and the Dean, CVSc. & A.H., Aizawl, Mizoram, whose guidance and assistance were instrumental in the completion of this work.

6. REFERENCE

Anonymous, 2005 Bureau of Indian Standards (BIS) IS 11799 : 2005 – Recommendations for cattle housing for a rural milk producer. Published by BIS (FAD 5 Division). Available from BIS archive and

standard catalogue. https://archive.org/details/gov.in.is.11799.2005. Accessed on 26th December, 2025.

Anonymous, 2010. Ch10 Animal housing: Cattle housing, Food and Agriculture Organization. Available from: https://www.fao.org/4/s1250e/s1250e11.htm. Accessed on 26th December, 2025.

Anonymous, 2021-22. Economic Review of Tripura Directorate of Economics and Statistics, Planning (statistics) Department, Government of Tripura, Agartala, https://estats.tripura.gov.in/sptripuradashboard/index3.jsp, Accessed on 22nd January, 2026.

Anonymous, 2022-23. Annual Administrative Report Directorate of Animal Resource Development Department, Government of Tripura. https://ardd.tripura.gov.in/sites/default/files/2023-10/Annual%20Administrative%20Report%20of%202022-2023.pdf, Accessed on 22nd January, 2026.

Anonymous, 2023. Animal Resources Development Department (2023). Livestock statistics of Tripura. Government of Tripura. https://ardd.tripura.gov.in Accessed on 22nd January, 2026

Anonymous, 2024 Basic Animal Husbandry Statistics, https://dahd.nic.in/sites/default/filess/BAHS2024.pdf. Accessed on 26th December 2025.

Bhoj, S., Gaur, G.K., Tarfdar, A., Singh, M., 2023. Management practices of dairy animals in the Tarai region of Uttarakhand. The Indian Journal of Animal Sciences 93(04), 395–400. https://doi.org/10.56093/ijans.v93i04.113580 Accessed on 26th December, 2025.

Bhagat, V., Bhonsle, D., Nety, S., Dinkar, P., Yogi, S., Nandanwar, A.K., Soni, A., 2021. Feeding and breeding management practices of dairy cattle in Surajpur district of Chhattisgarh. Asian Journal of Agricultural Extension, Economics & Sociology 39(12), 161–167. DOI: 10.9734/AJAEES/2021/v39i1230815.

Biradar, N., Kumar, V., 2013. Analysis of fodder status in Karnataka. Indian Journal of Animal Sciences 83(10), 1078-1083. Available from: https://www.researchgate.net/publication/258217064_.

Boopathi, V., Sasikala, V., 2024. Evaluation of housing and summer management practices adopted by buffalo farmers in Namakkal District, Tamil Nadu. International Journal of Advanced Biochemistry Research 9(3), 227–229. https://doi.org/10.22271/veterinary.2024.v9.i3Sd.1461 Accessed on 26th December 2025.

Chakrabarti, A., Singh, V., Das, B., 2023. Performance evaluation and characterization of indigenous Tripuri Cattle. International Journal of Chemical and Lifesciences, 12(7), 2501-2508. https://doi.org/10.21746/ijcls.2023.12.7.1.

Chandra, S., 2018. Study on husbandry practices, performance and welfare of cattle in Gaushala in Haryana. https://books.google.com/books/about/Husbandry_Practices_Performance_and_Welf.html?id=dnIMxQEACAAJ. .

Deb, D., Kalita, G., Ranjana, G., Abhishek, P., Buragohain, R., Das, H., 2025. Welfare Issues on Dairy Farms in Tripura, India, as Identified Through On-Farm Inspection. Journal of Applied Animal Welfare Science, 1–13. https://doi.org/10.1080/10888705.2025.2527701.

DeVries, T.J., Von Keyserlingk, M.A.G., Weary, D.M., 2004. Effect of feeding space on the inter-cow distance, aggression, and feeding behavior of free-stall housed lactating dairy cows. Journal of Dairy Science 87(5), 1432–1438. https://doi.org/10.3168/jds.S0022-0302(04)73293-2.

Garg, M.K., Jain, L.S., Chaudhary, J.L., 2005. Studies on housing, feeding, and milking management practices of dairy cattle in the Baran district of Rajasthan. Indian Journal of Dairy Science 58(2), 123–128. Available from: https://eurekamag.com/research/004/331/004331159.hp?srsltid=AfmBOoqroFPwqcxyhiKTpZFKItS669gcS1JT2WdsnD1CqI2DeUwBBvzP.

Gupta, L., Khandelwal, Y., Jat, J., 2020. Feeding and breeding management practices followed by livestock farmers in Banswara District of Rajasthan. International Journal of Livestock Research 10(3), 176-183. doi: 10.5455/ijlr.20191005090906.

Hagos, B., 2016. Ethiopian cattle genetic resources and unique characteristics under a rapidly changing production environment. A review. International Journal of Science and Research 6(12), 1959–1968. https://doi.org/10.21275/ART20179194.

Hopker, A., Pandey, N., Bartholomew, R., Blanton, A., Hopker, S., Dhamorikar, A., Sargison, N., 2021. Livestock vaccination programme participation among smallholder farmers on the outskirts of National Parks and Tiger Reserves in the Indian states of Madhya Pradesh and Assam. Plos One 16(8), e0256684. https://doi.org/10.1371/journal.pone.0256684.

Kalambe, S.K., Kandalkar, Y.B., Deokar, D.K., Dhage, S.A., Lokhande, A.T., 2025. Management strategies for Kathani cattle: Insights into feeding and care. International Journal of Veterinary Sciences and Animal Husbandry SP-10(1), 71–74. https://doi.org/10.22271/veterinary.

Kebede, G., Moje, N., Shafi, A., Kassahun, R., Merera, O., Leta, S., Amenu, K., 2025. Investigation of veterinary service delivery and service providers on

dairy cattle farms in central Ethiopia. BMC Veterinary Research 21(1), 125. https://doi.org/10.1186/s12917-025-04599-x.

Khadda, B.S., Kanak, L., Kumarj, R., Jadav, K., 2017. Existing cattle husbandry practices followed by the farmers in semi-arid region of central Gujarat. The Indian Journal of Animal Sciences 87(1), 113–117. https://doi.org/10.56093/ijans.v87i8.73528.

Khan, M.H., Manoj, K., Pramod, S., 2016. Reproductive disorders in dairy cattle under semi-intensive system of rearing in North-Eastern India. Veterinary World 9(5), 512. doi: 10.14202/vetworld.2016.512-518.

Manjunath, K.V., Maiti, S., Garai, S., Reddy, D.A., Bhakat, M., Aggarwal, A., Mondal, G., 2024. Impact of temperature humidity index-based climate services for Murrah buffaloes of India on operational decision-making and economic outcome of the farm. Climate Services 36, 100522. https://doi.org/10.1016/j.cliser.2024.100522.

Mekonnen, T., Gebremariam, T., 2024. Cattle artificial insemination service in developing countries: efficiency, major challenges and economic loss: a review. Biotechnology Journal International 28(4), 18–40. DOI:10.9734/bji/2024/v28i4725.

Melesse, A., Bezabih, M., Adie, A., Asmare, Y., Prasad, K.V., Devulapalli, R., Duncan, A.J., 2023. Price-quality relationships for the main livestock feed types in the Ethiopian feed market. Frontiers in Animal Science 4, 1194974. https://doi.org/10.3389/fanim.2023.1194974.

Mwai, O., Hanotte, O., Kwon, Y.J., Cho, S., 2015. African indigenous cattle: unique genetic resources in a rapidly changing world. Asian-Australasian Journal of Animal Sciences 28(7), 911. DOI: 10.5713/ajas.15.0002R.

Panda, P., Tiwari, R., Joshi, P., Dutt, T., 2022. Artificial insemination service delivery by paravets of State Animal Husbandry Department (SDAH): An assessment of four states of India. The Indian Journal of Animal Sciences 92(6), 776–781. https://doi.org/10.56093/ijans.v92i6.124911.

Prabex, S., Rahman, S., Tochhawng, L., 2025. Existing rearing and management practices of indigenous cattle of Manipur, India. International Journal of Veterinary Sciences and Animal Husbandry 10(1), 147–152. https://doi.org/10.22271/veterinary.2025.v10.i1c.2011.

Prajapati, V.S., Singh, R.R., Kharadi, V.B., Chaudhary, S.S., 2015. Status of breeding and health care management practices of dairy bovines in the rural and urban areas of South Gujarat of India. Journal of Animal Science Advances 5(11), 1514–1521. DOI: 10.5455/jasa.20151118111001.

Pundir, R.K., Malik, S., Singh, P.K., Sharma, D., Sadana, D.K., 2014. Indigenous cattle of Tripura: Characterization and performance evaluation. Indian Journal of Animal Sciences 84(9), 974–77. https://doi.org/10.56093/ijans.v84i9.43546.

Rajeev, R.K., Singh, R., Kumar, N., Kumar, P., 2016. Level of cattle rearing practices followed by farmers of Indo-Gangetic plain zone. Indian Journal of Animal Sciences 86(6), 715–719. https://doi.org/10.56093/ijans.v86i6.

Rathore, R.S., Singh, R., Kachwaha, R.N., Kumar, R., 2010. Existing management practices followed by the cattle keepers in Churu district of Rajasthan. The Indian Journal of Animal Sciences 80(8), 798–805. https://www.researchgate.net/publication/296771977_.

Robbers, L., Bijkerk, H. J., Koets, A.P., Benedictus, L., Nielen, M., Jorritsma, R., 2021. Survey on colostrum management by dairy farmers in the Netherlands. Frontiers in Veterinary Science 8, 656391. https://doi.org/10.3389/fvets.2021.656391.

Sabapara, G.P., Fulsoundar, A.B., Kharadi, V.B., 2015. Milking and health care management practices followed by dairy animal owners in the rural areas of the Surat district of Gujarat. Scholars Journal of Agriculture and Veterinary Sciences 2(2A), 112–117. DOI: 10.36347/sjavs.2015.v02i02.007.

Sabapara, G.P., Padheriya, Y.D., Kharadi, V.B., 2016. A field survey of feeding and breeding practices at Peri Urban Buffalo farms of Surat city, Gujarat. Journal of Animal Research 6(5), 933. DOI: 10.5958/2277-940X.2016.00121.2.

Sampath, S.R., 1990. Feeding strategies for high yields and optimum reproductive performance. Dairy Cattle Production, 134. Available from: https://www.academia.edu/download/35057445/Dairy_Cattle_Production.pdf#page=141.

Saurav, S.K., Chandran, V., Lepcha, C.Y., Chakravarty, R., Ponnusamy, K., 2023. Existing dairy management practices followed by cattle and buffalo owners of northern Bihar. Journal of Animal Research 13(5), 839–846. https://doi.org/10.30954/2277-940X.05.2023.26.

Sharma, A., Kennedy, U., Schuetze, C., Phillips, C.J., 2019. The welfare of cows in Indian shelters. Animals 9(4), 172. https://doi.org/10.3390/ani9040172.

Singh, V., Goswami, S.C., Kumar, V., Choudhary, P., Jhirwal Rupali Shringi, A.K., 2018. Milking and calf rearing management practices followed by Gir cattle owners for conservation of Gir cattle in Ajmer District of Rajasthan. International Journal of Livestock Research 8(12), 160–167. http://dx.doi.org/10.5455/ijlr.20180507101226.

Singodia, M., Rewani, S.K., Baindha, A., Chand, S., Rajoria, S., Singh, V., 2019. Constraints faced by livestock farmers in utilization of livestock services in Jaipur district of Rajasthan, India. Indian Research Journal of Extension Education 19, 104–107. https://www.researchgate.net/publication/335062527_.

Sirohi, S., Chand, P., Sharma, D., Saxena, R., 2019. Estimation of bovine equalizing units in India: A regional perspective. Indian Journal of Animal Sciences 89(9), 1009–1013. https://doi.org/10.56093/ijans.v89i9.93784.

Sohane, R.K., Jha, P.B., Kumari, A., 2004. Land utilization, feed recourses, feeding practices, milk production and disposal pattern in the management of buffaloes in selected villages of Punjab. The Indian Journal of Animal Sciences 53(7), 771–772. https://epubs.icar.org.in/index.php/IJAnS/issue/view/.

Sumer, E., Kalita, G., Goswami, R., Rahman, S., Ahmed, F.A., Chaudhary, J.K., Pakyntein, S., 2025. Housing and feeding management practices of crossbred dairy cattle in Khasi and Jaintia hill districts of Meghalaya. International Journal of Advanced Biochemistry Research 9(2), 20–25. https://doi.org/10.33545/26174693.2025.v9.i2Sa.3687.

Tekade, A.S., Motghare, AB., Wankhede, B.R., Borkar, V.D., Bansode, S.N., 2024. Feeding and management practices followed by crossbred cattle owners in Hingna Tahsil of Nagpur district. International Journal of Veterinary Sciences and Animal Husbandry SP-9(5), 131–134. https://doi.org/10.22271/veterinary.

Tewari, H., Kumar, S., Rath, R., Tyagi, K., 2018. Existing housing and breeding management practices adoptedby dairy farmers in Tarai region of Uttarakhand, India. Indian Journal of Animal Research 52(3), 449–453. doi: 10.18805/ijar.11467.