



ISSN (E): 2277-7695
ISSN (P): 2349-8242
NAAS Rating: 5.23
TPI 2023; SP-12(10): 1798-1804
© 2023 TPI
www.thepharmajournal.com
Received: 08-08-2023
Accepted: 11-09-2023

Gaurav Singh
Department of Animal
Production, RCA, MPUAT,
Udaipur, Rajasthan, India

Deepak Singh
Department of Animal
Production, RCA, MPUAT,
Udaipur, Rajasthan, India

Surendra Singh
Department of Animal
Production, RCA, MPUAT,
Udaipur, Rajasthan, India

Dashrath Singh Chundawat
Department of Animal
Production, RCA, MPUAT,
Udaipur, Rajasthan, India

Corresponding Author:
Gaurav Singh
Department of Animal
Production, RCA, MPUAT,
Udaipur, Rajasthan, India

Different management practices followed by dairy farmers in Udaipur district of Rajasthan

Gaurav Singh, Deepak Singh, Surendra Singh and Dashrath Singh Chundawat

Abstract

A study on productive and reproductive performance of dairy animals was conducted in Non-Tribal and Tribal area of Udaipur district. Four villages were selected from each tehsil and from each village 10 respondents who possess minimum five dairy animals were selected randomly. The data was collected from 160 dairy farmers with the help of a well-structured pre-tested interview schedule by personal interview. Among Non-Tribal respondents, 52.50% of the respondents observed signs of heat detection like bellowing. 73.75% of the respondents avoided grazing of pregnant animals. For Tribal respondents, 71.25% observed bellowing, 20.00% noticed mounting and 51.25% preferred natural service for breeding. In feeding practices, 70.00% of Non-Tribal farmers practiced semi-stall feeding, while 96.25% fed green fodder and 63.75% were using a mixture of dry fodder. Among Tribal respondents, 37.50% practiced complete grazing and 81.25% fed green fodder. Both groups offered water to their animals twice a day. Non-Tribal preferred attached housing (73.75%) and loose housing (71.25%), while Tribal preferred separate housing (61.25%) and open yard housing (65.00%). Knuckling was the common milking method practiced by Non-Tribal (73.75%) and Tribal (80.00%) respondents. All farmers cleaned udder and teats before milking (100%), but cleaning of utensils with detergent and water was adopted by (82.50%) of Non-Tribal and (33.75%) of Tribal respondents. Non-Tribal farmers showed higher rates of isolating sick animals and practicing vaccination. Disposal methods for dead animals varied, with Non-Tribal opting for deep burial and Tribal leaving carcasses for decay or vultures.

Keywords: Udaipur dairy farmers, bellowing, isolation, knuckling, deep burial

Introduction

Dairy farming plays a pivotal role in the economy of our country. It helps in augmenting food supply, generating employment and raising nutritional level. Indian dairy represents one of the largest and fastest growing sectors. Dairy enterprise is a solution to many problems of agricultural, besides being an effective tool to improve socio-economic condition of rural income to farmer. Total milk production in the country during 2021-22 was 221.06 million tonnes. In the year 2021-22, the milk production has registered an annual growth rate of 5.29%. Top five milk producing States are Rajasthan (15.05%), Uttar Pradesh (14.93%), Madhya Pradesh (8.06%), Gujarat (7.56%) and Andhra Pradesh (6.97%). The per-capita availability of milk is 444 gram/day during 2021-22, which was increased by 17 gram/day over previous year. In 2020-21, the share of Livestock at constant prices in Agriculture Sector and total GVA was 30.13% and 4.9% respectively (Animal Husbandry Statistics -2023, GOI). As per the figures of 20th livestock census, India has over 535.78 million total livestock population in 2019 and out of which cattle population of India is 192.49 million which contribute, around 35.94% of the livestock population. The buffalo population of India is 109.85 million which accounts for 20.45% of livestock population. Among the livestock products, milk consists of the highest share, and it accounted for 67.20% of the livestock sector in 2017. Livestock sector makes multifarious contribution to overall welfare in terms of generating more employment opportunities, especially for the marginal and small farmers and landless labourers, alleviating poverty and stabilizing farm income in Rajasthan. The livestock sector is more labour intensive than crop production and accounts for a major share in rural employment with 4.5% annual growth as compared to 1.75% for all sectors and 1.1% for agriculture. Livestock is the best insurance against drought and famine and generate gainful employment in rural areas of Rajasthan. This sector has also the highest potential for rural self-employment generation at the lowest possible investment per unit. Development of livestock sector, therefore, is critical for rural prosperity.

As per the livestock census of 2012, there are 577.32 lakh animals and over 80.24 lakh poultry in the State. Rajasthan has about only 11.27% of the country's livestock population and contributes about 11% of the total milk production, 30% of the mutton and 31% wool produced in the country. Rajasthan ranks first in wool production followed by milk production. The state has rich and diverse genetic resources with nine well defined cattle breeds. The important breeds of cattle in the state are Tharparkar, Rathi, Gir, Kankrej, Nagouri, Haryana, Malvi, Sanchori and Mehwati. Murrah buffalo is the most preferred breed found in Rajasthan although Surti is also popular in the southern parts of Rajasthan. Very scanty reports on management of dairy animals are available in Tribal and Non-Tribal area. Hence there was need to study of some management aspects of dairy farmers under Tribal and Non-Tribal areas of Udaipur district.

Materials and Methods

The study was conducted in the Udaipur district of Rajasthan. Four tehsils of the district were under study, in which two tehsils were selected from Tribal group namely Kotra and Jhadol, while other two were from Non-Tribal group namely Mavli and Vallabhnagar. The tehsils were selected on the basis of highest dairy animal's population. Four villages were selected from each tehsil and from each village 10 respondents who possess minimum five dairy animals were selected randomly. The data was collected from 160 dairy farmers with the help of a well-structured pre-tested interview schedule by personal interview. The collected data were analyzed by using simple statistical methods like frequency, percentage, mean, standard deviation as follows:

1. Percentage and frequency

The percentage and frequency distribution of respondents were worked out for categorizing them with regards to personal characteristics and independent variables.

2. Mean score

It was obtained by dividing total score of each statement by total number of respondents.

$$\text{Mean score} = \frac{\text{Total score of each statement}}{\text{Total number of respondents}}$$

3. Mean% score (MPS)

It was calculated by multiplying total obtained score of the respondents by 100 and divided by the maximum obtainable score.

$$\text{MPS} = \frac{\text{Total score obtained by the respondent}}{\text{Maximum obtainable scores}} \times 100$$

4. Rank

Ranks were accorded in the descending order according to the mean% scores obtained. This was used to have in depth view of all the items related to the questions under consideration.

5. Standard deviation

Mean and standard deviation were used for categorizing the respondent into different categories and to find out the variability of the dependent and independent variable involved in the study.

$$s = \sqrt{\frac{\sum_{i=1}^n (x_i - \bar{x})^2}{n - 1}}$$

S = Standard deviation,

n = Sample size

$\sum X_i$ = Sum of total scores in sample

$\sum X_i^2$ = Sum of squares of score of each respondent in sample

Results and Discussion

This section of the chapter deals with the management practices of feeding, health care, housing, breeding management and milking practices were studied of all the 160 respondents and the different practices have been described in the following sub sections.

Different management practices followed by the dairy farmers

Breeding practices

The data in table 1 revealed in terms of heat detection, both Non-Tribal and Tribal farmers predominantly rely on bellowing as a sign, with higher percentages among Tribal farmers. Mounting and mucus discharge were also observed but to a lesser extent. Reduction in milk yield was a less commonly used indicator. When it comes to breeding procedures, natural service was more common among Tribal farmers, while Non-Tribal farmers tend to prefer artificial insemination. Some farmers, both Non-Tribal and Tribal, used a combination of both methods. Pregnancy diagnosis during gestation period varies, with a significant proportion of farmers not conducting any diagnosis. Self-diagnosis, calling a quack, and involving a veterinary doctor or livestock service assistant (LSA) were the other approaches adopted by farmers. The timing of insemination shows that mid heat was the preferred period for both Non-Tribal and Tribal farmers. However, some farmers opted for early or late heat as well. In terms of using a bull for natural service, community bulls were more commonly utilized by both Non-Tribal and Tribal farmers compared to using their own bulls. Extra care for pregnant animals includes avoiding grazing in advance stages of pregnancy, providing bedding material, and regular checkups by a veterinary doctor, these practices were relatively common among both Non-Tribal and Tribal farmers. During parturition, farmers often provided isolated sheds and may call a qualified veterinary doctor or LSA to handle the process. Colostrum feeding practices showed that a majority of farmers, both Non-Tribal and Tribal, provided colostrum in accordance with the recommended ratios based on the body weight of the calf or buffalo calf.

The above findings were in consonance with the findings of Sabapara *et al.* (2015) ^[13] who reported that majority (85.00%) of farmers in the Tribal areas of South Gujarat relied on mucus discharge and bellowing as the symptoms of heat; majority (96.50%) of farmers used AI for breeding their dairy animals; majority (98.00%) of the respondents allowed their female animals for breeding through AI or natural service between 12 and 18 hours after heat detection. However pregnancy diagnosis was followed by 64.00% respondents but only 12.50% of pregnancy diagnosis was done by a qualified veterinarian. Ashokbabu *et al.* (2021) ^[3] also revealed that 61.25% of respondents allowed their female animals for breeding through A.I. or Natural service at mid-heat period and (37.50%) of respondents allowed their female

animals for breeding at late heat period and only (1.25%) respondents allowed their animals at early heat period. Singh *et al.* (2020) [11] reported that the most of the farmers were feeding colostrum to the new born, special care was taken to the pregnant animals which are in line with the findings of the

present study. Malsawmdawngliana *et al.* (2016) [7] found that almost all the dairy farmers did not practice special care to heifers whereas majority (80.00%) of them practiced special care to pregnant cows.

Table 1: Breeding management practices

S. No.	Existing Breeding management practices	Non-Tribal (n ₁ =80)		Tribal (n ₂ =80)		Overall (n=160)	
		F	%	F	%	F	%
1.	Signs of heat detection observed by dairy farmer						
a)	Bellowing	42	52.50	57	71.25	99	61.87
b)	Mounting	20	25.00	16	20.00	36	22.50
c)	Mucus Discharge	15	18.75	4	5.00	19	11.87
d)	Reduction in milk yield	3	3.75	3	3.75	6	3.75
2.	Procedure followed for breeding by dairy farmer are						
a)	Natural service	11	13.75	41	51.25	52	32.50
b)	Artificial insemination	35	43.75	22	27.50	57	35.63
c)	Both	34	42.50	17	21.25	51	31.87
3.	Pregnancy diagnosis during gestation period						
a)	No diagnosis	21	26.25	34	42.50	55	34.38
b)	By self	8	10.00	3	3.75	11	6.87
c)	Calling a quack	13	16.25	21	26.25	34	21.25
d)	Veterinary doctor or LSA	38	47.50	22	27.50	60	37.50
4.	Time preferred for insemination of dairy animals						
a)	Early heat	29	36.25	12	15.00	41	25.62
b)	Mid heat	38	47.50	40	50.00	78	48.75
c)	Late heat	13	16.25	28	35.00	41	25.62
5.	In case of natural service source of bull						
a)	Own bull	31	38.75	40	50.00	71	44.37
b)	Community bull	49	61.25	40	50.00	89	55.62
6.	Extra care of pregnant animals by						
a)	Avoids grazing at advance stage of pregnancy	59	73.75	61	76.25	120	75.00
b)	Provide bedding material	15	18.75	13	16.25	28	17.50
c)	Regular checkup by the veterinary doctor	6	7.50	6	7.50	12	7.50
7.	Extra care of animal during parturition						
a)	Provides isolated shed	53	66.25	54	67.50	107	66.87
b)	Call a qualified veterinary doctor /LSA to handle	27	33.75	26	32.50	53	33.12
8.	Colostrum feeding						
a)	1/10 of body weight of calf	59	73.75	70	87.50	129	80.62
b)	1/15 of body weight of buffalo calf	21	26.25	10	12.50	31	19.37

F = Frequency, % = Percent

Feeding practices

Table 2 revealed the system of feeding, semi stall feeding was the most common practice among both Non-Tribal and Tribal farmers. Stall feeding and complete grazing were also practiced but to a lesser extent. Majority of farmers feed green fodder to their dairy animals, with a higher percentage among Non-Tribal farmers. Similarly, the majority of farmers chop the green fodder before feeding, predominantly among Non-Tribal farmers.

Preservation of excess green fodder was not commonly practiced among farmers, hay being the preferred method if preservation was done. Silage was not widely used. The type of dry fodder used varies, with a mixture of leguminous and Non-leguminous fodder being the most popular choice among both Non-Tribal and Tribal farmers. Treating dry fodder before feeding was not a common practice among farmers, with the majority not treating it. Concentrate feeding time shows variations, with a significant proportion of Tribal farmers preferred to feed concentrate prior to milking, while Non-Tribal farmers feed it after milking. The quantity of concentrate fed to lactating cows per day varies, with the highest percentage of Non-Tribal farmers feeding 5-6 kg of concentrate. Water provision generally occurs twice a day for the majority of farmers, although some provided water three

times a day. The supplementation of mineral mixture to dairy animals varies, with a significant percentage of Non-Tribal farmers providing more than 60 g/day, while Tribal farmers mostly do not provide or if provide then less than 20 g/day.

The results of the present study are in conformity with those of Kumar *et al.* (2017) [7] who reported that majority (58.3%) of the respondents preferred grazing and semi stall feeding system, followed by 41.7% of them practiced only stall feeding. Jarial *et al.* (2015) [14] also found that most of the respondents prefer semi stall and grazing feeding system. In the case of types of fodder fed to cattle, mostly dry fodder was fed due to its availability round the year and the green fodder was available only during the rainy seasons. The materials used for preparing homemade concentrate feed were maize, wheat, barley, gram grain and guar grain. On the whole, the respondents provided concentrate feed only to milch cattle. Jarial *et al.* (2015) [14] also found similar results of feeding concentrate to only milch animals. The average quantity of concentrate feed given was 4.9 kg/day/animal. In the case of mineral mixture, majority of the respondents did not feed any mineral mixture to cattle and some of them were aware about it and fed mineral mixture to their cattle. Very few farmers knew about preservation of fodder crop methods like hay and silage. Similarly, Ashokbabu *et al.* (2021) [3] also

found that majority of farmers were unaware of the importance of using chaffed dry and green fodders. It might be due to lack of chaff cutter, manger facilities, and inadequate knowledge of efficient utilization of feed and fodders in the study area. It was observed that majority of the respondents (82.91%) fed their animals with concentrate feed

at the time of milking and it was observed that all the respondents provided water *ad libitum* to their milch animals but restricted in frequencies being three times (45.42%), two times (29.17%) and free access of water (25.41%) was common in summer.

Table 2: Feeding management practices

S. No	Existing Feeding management practices	Non-Tribal (n ₁ =80)		Tribal (n ₂ =80)		Overall (n=160)	
		F	%	F	%	F	%
1.	System of feeding						
a)	Stall feeding	15	18.75	12	15.00	27	16.87
b)	Semi stall feeding	56	70.00	38	47.50	94	58.75
c)	Complete grazing	9	11.25	30	37.50	39	24.37
2.	The farmer feeds green fodder to dairy animals						
a)	Yes	77	96.25	65	81.25	142	88.75
b)	No	3	3.75	15	18.75	18	11.25
3.	The farmer chops the green fodder before feeding to dairy animals						
a)	Yes	75	93.75	30	37.50	105	65.62
b)	No	5	6.25	50	62.50	55	34.37
4.	Whether preserve the excess green fodder or not? If yes how you preserve green fodder						
a)	No	62	77.50	70	87.50	132	82.50
b)	Hay	16	20.00	10	12.50	26	16.25
c)	Silage	2	2.50	0	0.00	2	1.25
5.	Type of dry fodder used to feed the dairy animals						
a)	Leguminous	17	21.25	16	20.00	33	20.62
b)	Non Leguminous	12	15.00	31	38.75	43	26.87
c)	Mixture	51	63.75	33	41.25	84	52.50
6.	The farmer treat the dry fodder before feeding to dairy animals						
a)	Yes	8	10.00	6	7.50	14	8.75
b)	No	72	90.00	74	92.50	146	91.25
7.	Time preferred for concentrate feeding to dairy animals						
a)	After milking	6	7.50	68	85.00	74	46.25
b)	Prior to milking	54	67.50	9	11.25	63	39.37
c)	During milking	20	25.00	3	3.75	23	14.37
8.	Quantity of concentration fed to the lactating cow per day						
a)	1-2 kg	0	0.00	45	56.25	45	28.12
b)	2-3 kg	46	57.50	22	27.50	68	42.50
c)	3-4 kg and above	34	42.50	13	16.25	47	29.37
9.	Water provided to animals per day						
a)	Once in 24 hours	0	0.00	12	15.00	12	7.50
b)	Twice in 24 hours	52	65.00	46	57.50	98	61.25
c)	Thrice in 24 hours	28	35.00	22	27.50	50	31.25
10.	Whether provide mineral mixture to dairy animals or not? If yes then how much						
a)	< 20 g/day or not	9	11.25	75	93.75	84	52.50
b)	20-60 g/day	62	77.50	0	0.00	62	38.75
c)	> 60 g/day	9	11.25	5	6.25	14	8.75

f= Frequency, % = %

Housing management practices

Regarding the place of housing Table 3 revealed that, a majority of Non-Tribal dairy farmers had housing units attached to their residence, while Tribal farmers tends to had housing units away from their residence. However, a notable percentage of Tribal farmers had housing units attached to their residence. In terms of the type of housing, the loose housing system was predominantly followed by both Non-Tribal and Tribal farmers. Open yard housing was also practiced, particularly among Tribal farmers. The floor space provided to dairy animals for housing was mostly greater than 10 sq. feet per animal, with a higher percentage among Non-Tribal farmers. Cemented waterers were commonly used by both Non-Tribal and Tribal farmers. Plastic buckets were also used, especially by Tribal farmers. Cemented feeders were commonly used by Non-Tribal farmers, while wooden feeders are more popular among Tribal farmers. Iron feeders were used to a lesser extent. The majority of farmers did not

provide the same housing pen for different age groups of animals, although a significant percentage of Tribal farmers do follow this practice.

These findings are in line with the findings of Roy *et al.* (2020) ^[9] who reported that 74.17% of animal sheds were attached to the nearby house of farmers followed by 25.83% animal sheds away from farmer's house. The farmers can give proper attention to their animals which help in better management and that may be the reason farmers preferred their animal houses in the close vicinity of their houses. Sinha *et al.* (2009) ^[12] also found that majority of feeding manger were kuccha in rural areas but, in semi-urban and urban areas majority of the farmers had pucca manger although some farmers (15–19%) from all the areas, were using iron drum or tyre or wooden manger for their animals in urban areas, 36.7% farmers provided separate water through to the animal, which was less in rural and semi-urban areas. These findings were in agreement with the findings of Garg *et al.* (2005) ^[4] in

Baran district of Rajasthan where floor space was also found optimum in 74.4, 71.1 and 86.7% cases in rural, semi-urban and urban areas.

Table 3: Housing management practices

S. No	Existing housing management practices	Non-Tribal (n ₁ =80)		Tribal (n ₂ =80)		Overall (n=160)	
		F	%	F	%	F	%
1.	Place of housing followed by dairy farmer						
a)	Attached with residence	59	73.75	31	38.75	90	56.25
b)	Away from residence	21	26.25	49	61.25	70	43.75
2.	Type of housing followed by dairy farmer						
a)	Conventional	0	0.00	0	0.00	0	0.00
b)	Loose	57	71.25	28	35.00	85	53.12
c)	Open Yard	23	28.75	52	65.00	75	46.87
3.	Floor space provided to dairy animals for housing						
a)	>70 sq. feet/animal	68	85.00	71	88.75	139	86.87
b)	<70 sq. feet/animal	12	15.00	9	11.25	21	13.12
4.	What type of waterer						
a)	Cemented	72	90.00	37	46.25	109	68.12
b)	Iron	2	2.50	2	2.50	4	2.50
c)	Plastic Bucket	6	7.50	41	51.25	47	29.37
5.	What type of feeder						
a)	Cemented	56	70.00	22	27.50	78	48.75
b)	Iron	15	18.75	7	8.75	22	13.75
c)	Wooden	9	11.25	51	63.75	60	37.50
6.	Whether provides same housing pen for different age group of animals						
a)	Yes	13	16.25	70	87.50	83	51.88
b)	No	67	83.75	10	12.50	77	48.12

f = Frequency, % = Percent

Milking management

From the present study it was observed from table 4 that the majority of Non-Tribal and Tribal dairy farmers used the "Knuckling" milking method. All farmers, regardless of their background, clean the udder and teats before milking and wash their hands before milking. Cleaning of milking utensils was predominantly done using cleaning detergent and water by Non-Tribal farmers, while Tribal farmers often use sand and clean water. Regarding the storage of milk, a higher percentage of Non-Tribal farmers avoid storing milk near strong smelling or spicy materials compared to Tribal farmers. Overall, there were some variations in milking management practices between Non-Tribal and Tribal dairy farmers, but certain practices such as udder and teat cleaning and hand washing are universally followed.

The findings are in conformity with the findings of Kumar *et al.* (2017) [7] who reported that majority of farmers (88.80%) used knuckling method of milking followed by 8.5% using full hand milking method and 2.7% used stripping method. It showed that the respondents of the present study were not much aware about the benefits of the full hand milking method. In the case of clean milk production, only 20% of the respondents followed washing of hands before milking. Because majority of the farmers were not aware about the drawbacks caused by the unhygienic milk handling which clearly indicated the lack of knowledge about the clean milk production practices at field level. Majority of the farmers were not maintaining cleanliness in their house and milking premises. About 69.50% of the farmers never washed or cleaned their cattle, followed by 30.50% had bathed their cattle weekly once in summer season and monthly once in winter season. Jarial *et al.* (2015) [14] also revealed that most

of the farmers never wash or clean their cattle. Most of the people followed washing of udder with normal water before milking in the present study but Jarial *et al.* (2015) [14] reported that majority of the respondents did not follow this practice. Further, most of the respondents were not aware of removal of hair from the udder and the practice of discarding the first two streams of milk from each teat. Very less percentage of farmers were found using properly cleaned milk utensils which is very important in hygienic milking practices. Instead of using separate utensils for milking, most of them were habitual in using of utensils which were commonly used in their kitchen and most of the time they uses only normal water for cleaning of milking utensils.

Health management practices

It was observed that from table 5 that a higher percentage of Non-Tribal farmers isolate sick animals compared to Tribal farmers. Vaccination of dairy animals was practiced by a higher percentage of Non-Tribal farmers compared to Tribal farmers. Regarding the control of ectoparasites, spraying insecticide method and dusting insecticide powder were the commonly used methods by both Non-Tribal and Tribal farmers. However, a higher percentage of Tribal farmers reported using None of the above methods, such as smoke, for ectoparasite control. When an animal falls sick, Non-Tribal farmers were more likely to seek assistance from a veterinary doctor or livestock service assistant, while Tribal farmers rely more on local empirical knowledge. Dead animal disposal methods vary, with deep burial being the preferred method for Non-Tribal farmers and leaving the dead animal for decay or vultures being more common among Tribal farmers. Overall, there were some differences in health management practices

between Non-Tribal and Tribal dairy farmers, particularly in terms of isolating sick animals, vaccination practices, and treatment approaches for sick animals.

The results of the present study are in conformity with those of Malsawmdawngliana *et al.* (2016) [7] who reported that control of ectoparasite was practiced by only 4.00% of the dairy farmers. Regarding Prophylactic measures, only 38.00% of the respondents were going for vaccination against contagious diseases prevalent in the area such as foot and mouth disease (FMD). The high cost associated with the

vaccination, lack of awareness and insufficient attention of the veterinarian might be the probable causes for low vaccination in the area. Naval disinfection of the newly born calf was practiced by only 28.00% of the farmers. It was found that majority (63.00%) of the respondents were getting treated their sick animal by para-vets and the rest by the veterinarians (43.00%) and use of Indigenous Technical Knowledge (ITK) accounted about 4.00% of the treatments. It was observed that in most part of the study area, veterinary doctors were not available when needed by the dairy farmers.

Table 4: Milking management practices

S. No.	Existing Milking management practices	Non-Tribal (n ₁ =80)		Tribal (n ₂ =80)		Overall (n=160)	
		F	%	F	%	F	%
1.	Milking method that the farmer uses						
a)	Full hand	6	7.50	6	7.50	12	7.50
b)	Knuckling	59	73.75	64	80.00	123	76.87
c)	Stripping	10	12.50	10	12.50	20	12.50
d)	Machine Milking	5	6.25	0	0.00	5	3.13
2.	Does the farmer clean udder and teats before milking						
a)	Yes	80	100.00	80	100	160	100.00
b)	No	0	0.00	0	0	0	0.00
3.	Does the farmer wash hands before milking						
a)	Yes	80	100.00	80	100.00	160	100.00
b)	No	0	0.00	0	0.00	0	0.00
4.	Materials used by the farmer for cleaning of milking utensils						
a)	Sand and clean water	6	7.50	48	60.00	54	33.75
b)	Ash and water	8	10.00	5	6.25	13	8.12
c)	Cleaning detergent and water	66	82.50	27	33.75	93	58.12
5.	Does the farmer avoids storage of milk near strong smelling or spicy materials						
a)	Yes	47	58.75	12	15.00	59	36.87
b)	No	33	41.25	68	85.00	101	63.13

f = Frequency, % = %

Table 5: Health management practices

S. No.	Existing health management practices	Non-Tribal (n ₁ =80)		Tribal (n ₂ =80)		Overall (n=160)	
		F	%	F	%	F	%
1.	Whether isolates the sick animal						
a)	Yes	62	77.50	19	23.75	81	50.62
b)	No	18	22.50	61	76.25	79	49.38
c)	Weekly	57	71.25	66	82.50	123	76.88
2.	Does the farmer practices vaccination of dairy animals						
a)	Yes	67	83.75	53	66.25	120	75.00
b)	No	13	16.25	27	33.75	40	25.00
3.	Methods the farmer uses for control of ectoparasites						
a)	Spraying insecticide method	25	31.25	5	6.25	30	18.75
b)	Dusting insecticide powder	46	57.50	13	16.25	59	36.87
c)	None of the above (Smoke etc.)	9	11.25	62	77.50	71	44.38
4.	In case an animal falls sick what course of action the farmer take						
a)	Use of local empirical knowledge	4	5.00	44	55.00	48	30.00
b)	Calling a quack	9	11.25	4	5.00	13	8.12
c)	By veterinary doctor/LSA	67	83.75	32	40.00	99	61.88
5.	How does the farmer dispose of dead animals						
a)	Deep burial	17	21.25	6	7.50	23	14.37
b)	Leaves as such for decay/vultures	63	78.75	74	92.50	137	85.63

f = Frequency, % = Percent

Conclusion

It was observed that majority of the Non-Tribal respondents, observed signs of heat detection such as bellowing (52.50%) and mounting (25.00%). Additionally, 73.75% of Non-Tribal farmers provided extra care to pregnant animals by avoiding grazing at an advanced stage of pregnancy. Among Tribal respondents, signs of heat detection such as bellowing (71.25%) and mounting (20.00%) were also observed, and natural service (51.25%) was the preferred breeding

procedure. Data pertaining to feeding and watering practices revealed that among Non-Tribal respondents, the majority practiced semi-stall feeding (70.00%) and fed green fodder to dairy animals (96.25%). Additionally, 63.75% of Non-Tribal farmers used a mixture of dry fodder for feeding. Among Tribal respondents, the prevalent feeding practice was complete grazing (37.50%), and 81.25% of Tribal farmers fed green fodder to dairy animals. Regarding watering practices, the preferred frequency was twice in 24 hours for both Non-

Tribal (65.00%) and Tribal (57.50%) farmers. The results pertaining to housing management practices revealed that Non-Tribal farmers prefer housing attached to the residence (73.75%), while Tribal farmers prefer housing away from the residence (61.25%). Additionally, loose housing is more common among Non-Tribal farmers (71.25%), while Tribal farmers prefer open yard housing (65.00%). Knuckling was the most common milking method for both groups (73.75% for Non-Tribal and 80.00% for Tribal farmers). All farmers clean udder and teats before milking (100% for both groups). The majority of farmers use cleaning detergent and water for cleaning milking utensils (82.50% Non-Tribal, 33.75% Tribal). Non-Tribal farmers demonstrated higher rates of isolating sick animals and practicing vaccination. Disposal methods for dead animals also vary, with Non-Tribal farmers opting for deep burial while Tribal farmers often leave the carcass for decay or vultures.

Acknowledgments

The authors thankfully acknowledge the dedication and support of Late Dr. S. C. Jingar who made his immense contribution in their research work.

References

1. 20th Livestock census. Department of animal husbandry and dairying. Ministry of fisheries, animal husbandry and dairying, government of India, New Delhi; c2019.
2. Annual report, Department of Animal Husbandry and Dairying, Ministry of Fisheries, Animal Husbandry and Dairying, Government of India; c2021-22.
3. Ashokbabu CH, Saratchandra A, Harikrishna CH, Venkateswarlu M. Milking management practices followed by dairy farmers in Northern Telangana State. *Indian Journal of Veterinary and Animal Sciences and Research*. 2021;50(5):51-58.
4. Garg MK, Jain LS, Chaudhary JL. Studies on housing, feeding and milking management practices of dairy cattle in Baran district of Rajasthan. *Indian Journal of Dairy Science*. 2005;58(2):123-128.
5. Kumar D, Prakash V, Meena AK, Kumar D, Singh D. Existing housing management practices followed by dairy farmers in Hadoti region of Rajasthan. *The Pharma Innovation Journal*. 2023;12(3):3036-3040.
6. Kumar S, Subash S, Jangir R. Studies on feeding and milking management practices adopted by indigenous cattle farmers in Thar deserts of Rajasthan. *Journal of Animal health and production*. 2017;5(1):14-18.
7. Malsawmdawngliana R, Rahman S. Management practices followed by the dairy farmers of Mizoram, India. *Journal of Livestock Science*. 2016;7(4):220-225.
8. Prajapati VS, Odedra MD, Gamit VV, Ahlawat AR, Patel HA. An overview of feeding management practices followed by the dairy farmers in a different state of India. *Journal of Entomology and Zoology Studies*. 2021;9(1):2248-2254.
9. Roy SK, Meena BS. Management practices followed by the dairy farmers in Karnal district of Haryana. *Journal of Community Mobilization and Sustainable*. 2020;15(1):80-86.
10. Singh AS, Sidhu PK, Aparna, Kaur H. Selective breeding, feeding and management practices followed by dairy farmers in Punjab. *International Journal of Current, Microbiological and Applied Sciences*. 2019;8(8):754-759.
11. Singh S, Singh B. Scientific dairy management practices followed by dairy farmers in South-Western Punjab. *Journal of Krishi Vigyan*. 2020;9(1):302-305.
12. Sinha RK, Dutt T, Singh RR, Bhushan B, Singh M, Kumar S. Feeding and housing management practices of dairy animals in Uttar Pradesh. *Indian Journal of Animal Sciences*. 2009;79(8):829-833.
13. Sabapara GP, Fulsoundar AB, Kharadi VB. Existing housing management practices followed by rural dairy animal owners in Surat district of Gujarat. *International Journal of Farm Sciences*. 2015;5(4):299-308.
14. Rao UM, Sood YR, Jarial RK. Subtractive clustering fuzzy expert system for engineering applications. *Procedia Computer Science*. 2015 Jan 1;48:77-83.