

## Feeding and Housing Management Practices of Dairy Animals Followed by Dairy Farmers of North Bihar

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**ABSTRACT:** A field study was conducted to get the first hand information about the existing dairy farming practices followed by the dairy farmers of North Bihar. The information about feeding and housing management practices was collected using a semi structured interview schedule from 180 respondents having at least 5 year experience in dairy farming and at least one animal in milk. Group stall feeding, common salt feeding were done by the majority of the respondents, and 79 per cent of the dairy farmers self-cultivated the green fodder. Only 23.89 per cent of the respondents fed mineral mixture to the lactating animals. In the housing management, the majority of the respondents had *kaccha* animal houses, had *kaccha* floors, and arranged smoke in the vicinity of animals to protect them from mosquitoes and flies. Majority of animal houses had good ventilation, optimum size, thatched roof and drainage channel was not there in majority of the animal houses. It was observed that the dairy farmers were unaware of the importance of concentrate mixture, balanced feeding, and proper housing management practices. In view of this fact, the study contributed in awareness of farmers regarding the importance of proper feeding and housing practices.

**Keywords:** North Bihar, dairy animals, dairy farming, feeding, housing management.

### INTRODUCTION

The rural economy of India is also heavily dependent on the dairy sector. It contributes significantly to Indian agriculture and provides for the livelihood of more than two thirds of the rural population (Biradar and Kumar 2013). The great majority of rural populations rely on dairy farming as one of their primary sources of sustenance and income (Srivastava, 2011). Dairy farming is said to be a lucrative business that pays farmers well throughout the year. Effective management of dairy animals is crucial for dairy farmers who want to make a profit. Efficiency in management lowers production costs, thus raising profitability. The production of milk is significantly affected by the housing management and the feed and fodder provided to the dairy animals. To fully utilise the potential of dairy animals, housing and feeding management are extremely important (Sinha *et al.*, 2009). The milk productivity of North Bihar was below the National average and even less than the average milk productivity of Bihar state as a whole (Keshava and Mandape 2001). Despite the increase in the livestock population in the last decade, the productivity

of the livestock sector is still not up to par in the region. Deoras *et al.* (2004) conducted a similar study in Rajnandangaon, Chhattisgarh plain, and found that, in rural areas, the vast majority of farmers (99.66%) did not favour chaffing of fodder, whereas only 6 per cent did so in urban areas. Around 93 per cent of farmers in urban areas and 100 per cent of farmers in rural areas put their livestock out for grazing. Crop leftovers such as paddy straw, wheat straw, and lakhdin (Lathyrus) straw were fed to livestock by farmers in rural (73%) and urban (67%) areas. Most often, unsanitary and unsafe home management practises were used. Similarly, Singh *et al.* (2020) in a similar study found that, dairy cows benefit from maximum health, output, and welfare when they are housed properly. Along with providing shelter, it is important to consider the right roofing material, roof angle, bedding material, ventilation, microenvironment, and structure for an appropriate manger, watering facility, gaseous and microbial load, temperature, and building materials. In another study conducted it was found that the vast majority (78%) of dairy farmers practised individual feeding, feeding their cows with green fodder, dry

fodder, and concentrate. Around 82.20 per cent of dairy farmers used common property resources as a source of fodder, while 61 per cent of dairy producers fed green fodder as a whole. Furthermore, in another study on housing management practices of dairy cows in Villupuram district of Tamil Nadu, it was found that the majority of dairy farmers (80.70%) provided shelter to their animals. The majority of homes had mud floors (80.19%), side walls (64.10%), and roofs made of either thatch (27.20%) or asbestos (72.20%). The shelters lacked basic amenities but had sufficient ventilation. The study on housing management practices followed by Gir cattle owners in Junagadh district of Gujarat found that the majority of Gir livestock owners (63.75%) offered traditional-style housing. The majority (63.75%) kept their animals inside the shed both during the day and at night, while 47.81 per cent of the Gir cattle owners' sheds were located close to their homes. Only 20.31 percent of Gir cow owners offered flooring with a slope that faced backwards, while 88.44 per cent of Gir cattle owners used pillars that were made of cement. The majority of respondents (87.50%) had mud floors. In a similar study conducted by Divyalakshmi *et al.* (2020), it was found that 86.70 percent of farmers kept their buffaloes in pucca shelters, the majority of which had tin roofs and cement concrete floors. Around 22.30 percent of farmers used fumigation of dried *Vitex Negundo* leaves once in a week. It was observed that less research regarding the housing and feeding management of dairy animals was conducted in Bihar, especially in Northern Bihar. Keeping this in mind, the present study was conducted to figure out the reasons for the low productivity by analysing the feeding and housing management practices followed by the dairy farmers of North Bihar.

## MATERIALS AND METHODS

The present study was conducted in North Bihar due to its low milk productivity and poor performance in the dairy sector. North Bihar was purposively selected, and three districts, namely Madhepura, Supaul, and Darbhanga, from North Bihar were selected on the basis of stratified random sampling. Two blocks from each district were randomly selected, one being the nearest and the other being the farthest from the district headquarters, making the total number of blocks six. Two villages from each block were randomly selected, making the total number of villages twelve, and fifteen respondents from each village were randomly selected, making the total sample size of 180 respondents. The dairy farmers, who had at least five years of experience in dairy farming and at least one animals in milk were selected for the study. Data collection was done using a well-structured, pre-tested, and standardized interview schedule developed for the intended purpose and through group discussion. The first-hand information was taken from the respondents during the study. The collected data were analysed using suitable statistical tools like frequency and percentage. The data included information about the feeding and housing management practices followed by the dairy farmers of North Bihar.

## RESULTS AND DISCUSSIONS

**Feeding management practices.** From the study (Table 1), it was found that the majority (86.66 %) of the respondents practiced group stall-feeding of their animals, followed by grazing, which accounted for 40.55 per cent of the respondents, and finally individual stall-feeding, which accounted for only 06.11 per cent respondents. These findings are in accordance to the findings of Sabapara (2016), as he also found that the majority of the respondents practiced group stall feeding. The majority of the respondents (78.88%) self-cultivated the fodder for feeding their animals, additionally, 21.12 per cent of the respondents purchased fodder from the market. These findings are in-line with the findings of Manohar *et al.* (2014). About 71.67 per cent of the respondents did not feed mineral mixture to their animals, while 23.89 per cent of the respondents fed mineral mixture only to their lactating animals, and only 4.44 per cent of the respondents fed mineral mixture to all their animals. These results are in accordance with the findings of Manohar *et al.* (2014). Further, 54.44 per cent of the respondents fed common salt to all their animals, while 37.22 per cent of the respondents fed common salt only to their lactating animals, and 8.34 per cent of the respondents did not feed common salt to their animals. These findings of the present study were found to be similar to the findings of Malik *et al.* (2005), as they also reported that about 88 per cent of the respondents fed common salt to their animals. It was also found that 85.55 per cent of the respondents fed green fodder to their animals after chopping, and 14.45 per cent of them fed green fodder as such to the animals. This finding was in-line with the finding of Sinha *et al.* (2009), who also reported that the majority of respondents fed green fodder after chopping. Furthermore, 95 per cent of the respondents fed the concentrate mixture after mixing it with the fodder, and only 5 per cent of them fed the concentrate mixture separately to their animals. The majority of the respondents (60.00%) fed a mixture of homemade and compounded cattle feed as concentrate feeding, 35.55 per cent of them fed only home produced ingredients, and only 04.45 per cent of respondents fed only compounded cattle feed. These findings are supported by the findings of Sabapara (2016). Around 98 per cent of the respondents fed their animals twice a day, and only 2.23 per cent of them fed thrice or more. Furthermore, around 93 per cent of the respondents fed wheat straw as the dry fodder, and only 2 per cent of the respondents fed rice straw as the dry fodder; around 05 per cent of them fed both (wheat straw and rice straw) as the dry fodder to their animals. These findings are in accordance with the findings of Kumar *et al.* (2017) who also reported that the majority of respondents used wheat straw as dry fodder for feeding their animals. The majority of the respondents (67.77%) provided water to the animals twice a day, and less than one third of the respondents provided water to the animals three times a day or more. 92.00 per cent of the respondents had a hand pump as a source of water, and around 8 per cent of the respondents had a bore well as a source of water. These

findings are in agreement with the findings of Sabapara and Fulsondar (2016). All the respondents fed the colostrum to the new-born calves. These findings are in agreement with the findings of Sabapara *et al.* (2010), who also reported that the majority of respondents fed colostrum to new-born calves.

**Housing Management.** From Table 2, it was revealed that in the study area, the majority (88.88%) of respondents kept their animals in “Kaccha” houses, whereas 11.12 per cent respondents kept their animals in “Pacca” houses. These findings are not in line with the findings of Malik *et al.* (2005), who reported that 64.00 per cent of the respondents provided “Pacca” sheds for their animals and that around 49.00 per cent did the deworming of the calves. Similarly, 88.88 per cent respondents kept their animals on “Kaccha” floors in the shed, whereas 11.12 per cent of the respondents kept their animals on concrete floors in the shed. These findings are in agreement with the findings of Kalyankar *et al.* (2008), who also reported that 91.56 per cent of the respondents provided “Kaccha” flooring to their animals in the animal houses. Similarly, the majority (93.33 %) of the respondents arranged smoke in the vicinity of animals, around 11.11 per cent respondents used mosquito repellent coils, and only 10.56 per cent respondents used mosquito nets to protect their animals from mosquitoes and flies. The majority of the respondents (55%) had good ventilation facilities in their animal houses, around 28 per cent had fairly good ventilation, and only 16 per cent had poor ventilation facilities in their animal houses. The majority of the respondents (86%) had the optimal size of animal houses, whereas only 14 per cent of the respondents did not have the optimal size of animal

houses. These findings are in accordance with the findings of Ahirwar *et al.* (2009). The majority (80.55%) of the respondents used wheat straw as the bedding material in winter, whereas only 19.00 per cent of the respondents used jute sack as the bedding material in winter. The majority of the respondents (61.12 %) had thatched roofs in their animal houses, whereas around 07.00 per cent of the respondent had tin roof, around 14.00per cent of the respondents had asbestos roofs, and around 18.00 per cent had *khaprail*(earthen plate) roofs. The majority (64%) of the respondents had dirty animal houses, whereas around 36 per cent of the respondents had fairly clean animal houses. These findings are supported by the findings of Yadav *et al.* (2019). This could be because of their lack of awareness about the importance of cleanliness of the shed. The majority (78.34%) of the respondents did not have a drainage channel or pit in the animal houses, whereas only 22 per cent of the respondents had a drainage channel in the animal houses. Similar results were obtained by Singh *et al.* (2015); Kumar *et al.* (2017). The majority of the respondents in the study area (97.78%) didn't provide a water trough in the animal shed, whereas only 2.22 per cent of the respondents provided a water trough in the animal shed. These findings are supported by the findings of Singh *et al.* (2007). A majority (91.11%) of the respondents had proper lighting provisions in the animal sheds, whereas only 8.89 per cent of the respondents didn't have a proper lighting provisions in the animal shed. These findings are supported by the findings of Patel *et al.* (2019), as the majority of the respondents provided proper lighting facilities in the animal shed.

**Table 1: Feeding management practices followed by the dairy farmers of North Bihar.**

Sr. No.	Particulars	Frequency (n=180)	Percentage
1.	Feeding of animals*		
	Grazing	73	40.55
	Group Stall Feeding	156	86.66
	Individual Stall Feeding	11	06.11
2.	Source of fodder		
	Self-Cultivated	142	78.88
	Purchased from market	38	21.12
3.	Feeding of mineral mixture		
	To All Animals	8	04.44
	To Only Lactating Animals	43	23.89
	Not fed	129	71.67
4.	Feeding of common salt		
	To All Animals	98	54.44
	To Only Lactating Animals	67	37.22
	Not fed	15	08.34
5.	Feeding green fodder		
	After chopping	154	85.55
	Given as such	26	14.45
6.	Method of feeding concentrate		
	Mixed with fodder	171	95.00
	Separately	09	05.00
7.	Feeding more concentrate during pregnancy		
		180	100
8.	Type of concentrate feeding*		
	Home produced ingredients only	64	35.55
	Only Compounded cattle feed	08	04.45
	Homemade+ compounded cattle feed	108	60.00
9.	No. of times of feeding		
	Once	0	0.00
	Twice	176	97.77
	Thrice or more	04	02.23

10.	Dry fodder mostly fed		
	Wheat straw	167	92.78
	Rice straw	04	02.22
	Both	09	05.00
11.	Frequency of watering		
	Once	0	0.00
	Twice	122	67.77
	Thrice or more	58	32.23
12.	Source of water		
	Well	0	0.00
	Pond	0	0.00
	Canal	0	0.00
	River	0	0.00
	Hand pump	165	91.66
	Bore well	15	08.34
13.	Feeding of colostrum to new born calf		
	Yes	180	100
	No	0	0.00

\*Multiple responses

**Table 2: Housing management practices followed by the dairy farmers of North Bihar.**

Sr. No.	Particulars	Frequency (n=180)	Percentage
1.	Housing type		
	<i>Kaccha</i>	160	88.88
	<i>Pacca</i>	20	11.12
2.	Floor type		
	<i>Kaccha</i>	160	88.88
	Concrete	20	11.12
3.	Protection of animals from mosquitoes and flies*		
	Mosquito Net	19	10.56
	Coil	20	11.11
	Smoke	168	93.33
4.	Ventilation in house		
	Poor	30	16.67
	Fairly good	51	28.33
	Good	99	55.00
	No provision of ventilation	0	0.00
5.	Size of house		
	Optimum	155	86.11
	Not optimum	25	13.88
6.	Use of bedding material in winter		
	Wheat straw	145	80.55
	Jute sack	35	19.45
	No bedding	0	0.00
7.	Type of roof		
	Thatched	110	61.12
	Tin	12	6.66
	Asbestos	26	14.44
	<i>Khaprail</i> (earthen plates)	32	17.78
8.	Cleanliness of house		
	Dirty	116	64.44
	Fairly Clean	64	35.56
9.	Drainage channel/pit in the animal shed		
	Yes	39	21.66
	No	141	78.34
10.	Provision of water trough in shed		
	Yes	04	02.22
	No	176	97.78
11.	Proper light provision in the animal shed		
	Yes	164	91.11
	No	16	08.89



**Fig. 1.** Interaction with the dairy farmers.



**Fig. 2.** Depiction of the dairy animals.

## CONCLUSION

The present study revealed that dairy farmers were unaware of the importance of concentrate mixtures, and balanced feeding, and dairy animals were fed twice on average. Group stall feeding was the most common method of feeding. The majority of respondents fed common salt to their dairy animals. Wheat straw was the most common dry fodder, and animals were watered twice by the majority of the respondents. The majority of the respondents provided *kaccha* houses and *kaccha* floors to the animals in the shed. The arrangement of smoke for the protection of animals from mosquitoes and flies was done by the majority of the respondents. Good ventilation, the optimal size of animal houses, and proper light provision were provided by the majority of the respondents. Extension efforts in the study area need to be strengthened to increase awareness among farmers regarding improved animal feeding practices and animal housing management.

## FUTURE SCOPE

Since only a few farmers were feeding mineral mixtures to all animals and the majority of farmers were unaware of the important animal management practices, therefore extension efforts in the study area need to be strengthened to increase farmer awareness regarding improved animal feeding practices in particular and animal management practices in general.

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**Conflict of Interest.** None.

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