Short Research Article

Feeding and Breeding Management Practices of dairy cattle in Surajpur District of Chhattisgarh

Abstract

Nutritional requirement is exceptionally important and breeding practice is deciding factor for improvement of farm animals. The present field survey was conducted in district Surajpur of Chhattisgarh state to find out feeding and breeding management practice carried out by farmers. A predesigned questionnaire schedule formulated and data were collected from randomly selected 200 household of 10 village of district Surajpur. Heat detection on the basis of symptoms and artificial insemination as method of breeding was adopted by majority of farmers. Data regarding feeding practices reveals that 1/3rd farmers followed stall feeding and 2/3rd were using stall feeding along with grazing. Concentrate feeding practiced by 2/3rd respondents. Paddy and wheat straw were the main source of dry fodder in studied area.

Key word: Breeding, feeding, artificial insemination, farmer, concentrate, fodder.

Introduction

Livestock especially cattle and buffalo helps in improving the sustainable livelihood of famers along with enhancing economy of India. With 193 million cattle population. India stands 1st in cattle population in the world and Chhattisgarh state ranks 9th (99 million) in cattle population (Anonymous, 2019). Majority of animal owners families are engaged in agricultural activities throughout the year but agriculture is unable to provide employment and income to the farmers. In such circumstances, dairying constitutes an important

subsidiary occupation, source of providing livelihood and nutritional security to the vast majority of the majority of rural population. Livestock is directly linked with very poor landless labourers as well as small and marginal farmers. Efficient management reduces the cost of production thereby increasing the profitability. Crop residues are the major source of livestock feed (Kumar *et al*., 2018). Balancing of nutrients in ration along with improved mineral and vitamin supplementation is needed for improved productivity. Cattle in India are primarily fed on self-grown pastures, crop residues and fallow Rao and Hall, (2003). India is therefore considered to have a significant potential of increased milk yield by improved feeding such as use of concentrate in the feed (Duncan *et al*., 2013). Due to highest cattle and buffalo population, there is a significant enhancement in milk production in India. Knowledge of best use of scarce resources is essential for increasing in income and milk production (Jaiswal *et al*., 2017). The breeding practice followed in Chhattisgarh is selective breeding, upgrading and crossbreeding (Anonymous, 2008). Reproductive efficiency is a complex phenomenon controlled by both genetic and non-genetic factors like climate, nutrition and level of management (Crowe *et al*., 2018). Precise recognizing symptoms of estrus and identifying all possible periods of estrus in heifers and cows are pivotal challenges exist for detecting estrus (Rao *et al*., 2013). Timely heat detection and insemination and pregnancy diagnosis in cattle and buffalos enhance the overall productivity and profitability from the dairying (Prajapati *et al*., 2015). The mixed crop livestock enterprise is required to small holders for sustainable income of tribal farmers (Chand *et al*., 2018) and livestock sector provides livelihood to majority of the population of India (Pundir *et al*., 2014). Cattle and buffalo population of Chhattisgarh is 99,839,54 and 11,74,722 respectively (Anonymous, 2019). Therefore, present survey was undertaken in Surajpur district of Chhattisgarh state with aims to find out what type of feeding and milking management practice adopted by

farmers along with to identify breeding management practice carried out by dairy owners of Surajpur district of Chhattisgarh state.

Materials and Methods

A desk study was conducted from 10.01.2020 to 15.03.2020 to collate information on the dairy breeding and feeding system followed in Surajpur district of Chhattisgarh. The location chosen were 10 villages namely Gjadharpur, Dwarikanagar, Kasalgiri, Maheshpur, Gangapur, Judwani, kashkela, Shyamnagar, and Veerpur of a block and district Surajpur of Chhattisgarh state during January 2020 to mid-march 2020. The Surajpur district located at 220 9 N latitude and 8301 longitudes in the Chhattisgarh state and having 6 blocks namely Prattappur, Surajpur, Odagi, Bhaiyathan, Ramanujnagar and Premnagar. The district is spread over an area of 2787 km^2 area. The cattle and buffalo population of Surajpur district is 3,78,668 and 73,695 respectively. Total 200 respondents 20 farmers from each village were selected. Data obtained from predesigned questionnaire was organized, tabulated and analysed as per standard statistical tools (Snedecor and Cochran 1994) to identify types of feeding and breeding management practice adopted by dairy owners of Surajpur district of Chhattisgarh state.

Results and Discussion

Dairy animal holders should have been aware of the fact that improved animal feeding practices will lead to increased milk production. The table 1 showed that 32.5 per cent farmers followed stall feeding and 67.5 % were using stall feeding along with grazing. These findings are similar with the results of (Patel *et al*., 2005), and (Manohar *et al*., 2014). The majority of animal owner 82.5 % followed individual feeding system, while only 17.5% of the farmers followed Group feeding method of feeding. These findings are similar with the results of (Chowdhary *et al*., 2006), (Rathore *et al*., 2010) and (Sabapara *et al*., 2015). 71 %

of the respondents fed twice a day while 29 % fed thrice in a day to their animals. All dairy owner provided water ad libitum to their animals. 20 % farmer practiced watering twice, 50 % practiced thrice and 30% offering water more than 3 times in a day. In earlier reports reveals 24.00 per cent of the respondents provided water as per need of animals and 37.33 % and 23% of the respondents provided water twice and thrice to their animals (Kochewad *et al*., 2013) and (Sabapara *et al*., 2015). Present investigation reveals that 65% of the respondents fed to their dairy animal concentrate feed (either home produced ingredients broken wheat, rice, chuni, husk etc. or purchased compound cattle feed ingredients) and 35 % farmer offer concentrate ration occasionally as per availability (home grown and made broken wheat, rice chuni, husk etc.). 100 % respondents offer concentrate ration to their animals by mixing it with dry fodder and water. About 30% farmer used to feed green fodder to their animals in all season while 70 fed occasionally as per availability of green fodder. Most of the farmers 50 % collected green fodder from fields and 33.3 % farmer grow fodder in their own field and 16.7 % farmer used to purchase green fodder to their animals. Similar finding reported by (Kishore *et al*., 2013). About 55% of the respondents fed chaffed green fodders while only 45.00 % of the respondents fed as such fodders to their animals. These findings are in agreement with the results of (Kishore *et al*., 2013) and (Manohar *et al*., 2014). Paddy straw 67.5 % and wheat straw 32.5% were the main dry fodder in studied area. Majority of animal owner 31 % were nod feeding salt and only 27.5 % respondents adopted mineral mixture feeding to their animals. None of the farmers was found to prepare hay and silage in survey. These results reported about salt, mineral mixture and preparation of hay and silage are show similarity with the results of (Dixit *et al*., 2010) and (Manohar *et al*., 2014).

The data regarding breeding managemental exercises carried out by dairy owners of Surajpur district were presented in Table 2. Majority of farmers 68% followed age and 32% followed body weight as criteria for first time service/mating. It was observed that heat

detection on the basis of symptoms was adopted by 100% dairy owner while no one use teaser bull for heat detection. These findings show similarity with the study of (Rathore *et al*., 2010) and (Sabapara *et al*., 2016) they reported that 100% of animal owner detect heat by using symptoms. In was found that 72.5 % dairy farmer considered bellowing and mucus discharge (both) as symptom of heat detection followed by mucus discharge 27.5%. Similar findings were reported by (Tanwar *et al*., 2012), (Kumar *et al*., 2014a) and (Patel *et al*., 2014). 79.5 % of animal owner used scientific method of artificial insemination as method of breeding for cattle and buffalo and 87.5% artificial insemination performed by assistant veterinary field officers and paravets. Higher proportion to use of artificial insemination (A.I.) indicates availability of good technical worker and infrastructure facilities for A. I. in villages. Same finding reported by Present results are similar to the results of (Chowdhary *et al*., 2006), (Modi and Patel, 2010) and (Prajapati *et al*., 2015).

It was observed that about 64.5% of respondents were inseminated their animals between 8-14 hours after onset of heat symptoms, where as 18.5% of the farmers inseminated after 14-20 hours and 17 % used to inseminate their animal in early heat (1-8 hour) condition. Similar findings were reported by Patel *et al*., 2014 and Prajapati *et al*., 2015. Only 4.5% respondents carried out pregnancy diagnosis practice and rest 95.5 % discover pregnant or non-pregnant animals on basis of own experience either animals not return to estrus or return to estrus. No one respondents followed estrus synchronization in the herd. Only 5 % of animal owner are keeping the breeding records and rest 95% are not maintaining any records. Similar findings reported by (Kumar *et al*., 2011a), (Kumar *et al*., 2014b) and (Patel *et al*., 2014).

Table 3 represents milking management practice adopted by dairy farmers of Surajpur district. All the respondents using calf as source of let-down of milk, they allow their calves to suckle cows before and after milking. For milking and storage purpose about 72.5%, 2.5%

and 25% of dairy farmers used stainless steel, iron and plastic bucket, respectively. All the farmers adopted practice of milking twice in a day. Among methods of milking about 30%, 60% and 10% farmers adopted full hand milking, knuckling and stripping, respectively. These data show similarity with the result finding with (Kishore et. al. 2013). The majority of the respondents did not wash the animals before milking (Kishore et. al. 2013, Verma and Sastri, 1994). About 86.5% and 33% cattle owner adopted practice of washing of udder before and after milking respectively. The practice of not washing the udder after milking might have been due to allowing the calf to suckle after milking, when the calf consumes all the leftover milk.

Conclusion

Majority of the farmers adopted grazing with individual stall-feeding practice. 2/3rd Farmers used to feed concentrate ration with mixing with dry fodder and water. Above half of the respondents offer green fodder after chopping in small pieces. Majority of the respondent is breeding of dairy cows through artificial insemination. Feeding and breeding practices can be improved by use of urea treated paddy straw, feeding of urea molasses mineral block, preservation of fodders as hay/silage and regular maintaining of breeding stocks. All the farmers adopted practice of milking twice in a day and they adopted full hand milking, knuckling and stripping methods for milking.

References

Anonymous, 2019. Department of animal husbandry dairying and fishery, Government of India, New Delhi.

Anonymous, 2008. Department of animal husbandry and dairying and fishery, Government of Chhattisgarh.

Chand, P., Sirohi, S., Saxena, R., Mishra, A., 2018. How profitable is dairying in tribal Chhattisgarh. The Indian journal of animal sciences. 88(6), 749-754.

Chowdhary, N.R., Patel, J.B., Bhakat, M., 2006. An overview of feeding, breeding and housing practices of dairy animals under milk co- operative system in Banaskantha district of North Gujarat region. Dairy Planner. 5, 8-10.

Crowe, M.A., Hostess, M. and Opsomer, G., 2018.Reproductive management in dairy cows - the future. Irish Veterinary Journal. 71(1), 1-13. https://doi.org/10.1186/s13620-017-0112-y

Dixit, V.B., Bharadwaj, A., Sharma, R.K. and Sethi, R.K. (2010). Impact of technological interventions on buffalo based farming systems. Indian journal of animal Science,80(1): 63-66.

Duncan AJ, Teufel N, Mekonnen K, Singh VK, Bitew A, Gebremedhin B., 2013. Diary

Intensification in developing countries: effects of market quality on farm-level feeding and breeding practices. Animal. 7(12), 2054-2062

Jaiswal, P., Ghule, A.K., Singh, S.P., Gururaj, B., 2017. Study on Milk Production Function and Resource use Efficiency in Raipur district of Chhattisgarh. Multilogic in science. 6(21), 121-124.

Kishore, K., Mahender, M. and Harikrishna, C., 2013. A study on buffalo management practices in khammam district of Andhra Pradesh. Buffalo Bulletin. 32(2), 97-119.

Kumar S., Bhatt, B.P., Dey, A., Shivani., Kumar, U., Idris, MD., Mishra, J.S. and Kumar, S.2018. Integrated farming system in India: Current status, scope and future prospects in changing agricultural scenario. Indian Journal of Agricultural Sciences. 88(11), 1661–75.

Kumar, N., Bishnoi, P., Bishnoi, D.K., Kumar, J., 2014a. Constraint's analysis in adoption of improved dairy farming practices in Haryana India. Asian Journal of Dairy and food research. 33(2), 136-140.

Kumar, S., Jain, A. and Gupta, A.K., 2014b. Studies on breeding, health care and milking management practices adopted by the dairy owners in Shahdol district of MP, India. International Research Journal Biological Science. 3(10), 32-36.

Kumar, S., Mishra, B.K., Yadav, J.S., Kumar, A., 2011 a. Existing breeding and health management practices followed by dairy farmers in mid hills of Uttarakhand. Indian Journal of Animal Production Management. 27(1-2), 34-37.

Manohar, D.S., Goswami, S.C. and Bais, B., 2014. study on feeding management practices of buffaloes in relationship with selected traits of respondents in jaipur district of rajasthan, india. Journal of Animal Reasearch. 48 (2), 150-154.

Modi, R.J., Patel, N.B., 2010. Breeding practices in dairy animals of rural area under milk shed of north Gujarat. Indian Journal of Field Veterinarian. 5(4), 5-6.

Patel, J.B., Patel, N.B., Prajapati, K.B. and Brahmxatri, K.G. 2005. Animal husbandry practices for dairy animals in semiarid region of Patan district. National seminar on "Recent advances in conservation of biodiversity and augmentation of reproduction and production in farm animals" SDAU, Sardar krushi nagar, 5-7 march, 2005.

Patel, N.B., Kavad, S.D. and Rao, T.K.S., 2014. Eco friendly livestock management practices followed by tribal households of Narmada valley region of India. Journal of Applied Natural Science. 6(2), 512-518.

Prajapati V.S., Singh R.R., Kharadi V.B. and 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 Advance. 5(11), 1514- 1521.

Pundir, R.K., Singh, P.K., Neelkant, Sharma, D., Kumar, S., Tiwari, R., Singh, C.V. and Prakash, B. (2014). Characterization and evaluation of hill cattle of Garhwal region of Uttrakhand, India. Indian Journal of Animal Research. 48 (4), 322-328

Rao, P.P. and Hall, A.J., 2003. Importance of Crop Residues in Crop-Livestock Systems in India and Farmers' Perceptions of Fodder Quality in Coarse Cereals. Fields crops research. 84(1-2), 189-198.

Rao, T. K. S., Kumar, N., Kumar, P., Chaurasia, S. and Patel, N.B. (2013). Heat detection techniques in cattle and buffalo. Veterinary World. 6(6): 363-369.

Rathore, R.S., Singh, R., Kachwaha, R.N. and Kumar, R., 2010.Existing management practices followed by the cattle keepers in Churu district of Rajasthan. Indian Journal of Animal Sciences. 80(8), 798-805.

Sabapara, G.P., Fulsoundar, A.B., Kharadi, V.B., 2016. Profile of Dairy Farmers and Relationship with Adoption of Improved Dairy Husbandry Practices in Southern Gujarat, India. Livestock Research International. 4(1), 36-40.

Sabapara, G.P., Fulsoundar, A.B., Kharidi, V.B., 2015. Milking and health care management practices followed by dairy animal owners in rural areas of Surat district. Scholars Journal of Agriculture and Veterinary Sciences. (2A), 112-117.

Snedecor, G.W. and Cochran, W.G. 1994. Statistical Methods. Eighth edition, Iowa State University Press, Iowa, USA.

Tanwar, P.S., Kumar, Y., Sankhala, G., 2012. Study on Breeding and Feeding Management Practices Followed by Members and Non-members of Dairy Co-operatives in Jaipur District of Rajasthan. Indian Journal of Dairy Science. 65(6), 508-513.

Verma, A.K. and N.S.R. Sastri. 1994. Comparison of Buffalo housing practices prevalent in rural Haryana with organized farm, p. 21- 23. In Proceedings of National Symposium on Livestock Production and Management Held at Anand, Gujarat, India.

Table 1: Feeding management practices adopted by farmers of Surajpur district

SN	Parameters	Number of Farmers	%
1.	Feeding of animal		
	a. Stall feeding	65	32.5
	b. Grazing with stall feeding	135	67.5
2.	Method of feeding	35	17.5
	a. Group	165	82.5
	b. Individual		
3.	Frequency of feeding		
	a. Twice	142	71
	b. Thrice	58	29
4.	Frequency of Watering		
	a. Twice	60	20
	b. Thrice	100	50
	c. More than thrice	40	30
5.	Feeding concentrate ration		
	a. Yes	130	65
	b. No	70	35
6.	Method of feeding concentrate		
	a. Mixed with dry fodder and water	200	100
	b. Separately	0	0
7.	Feeding green fodder in all season		
	a. Yes	60	30
	b. Occasionally	140	70
8.	Source of fodder		
	a. Home grown	20	33.3
	b. Purchased	10	16.7
	c. Collected from the fields	30	50
9.	Chopping of green fodder (In available season)		
	a. Chopping in small pieces	110	55
	b. Given as such	90	45
10.	Dry fodder mostly fed		
	a. Wheat straw	65	32.5
	b. Paddy straw	135	67.5
11.	Feeding Common salt		
	a. Yes	62	31

	b. No	138	69
12.	Feeding mineral mixture		
	a. Yes	55	27.5
	b. No	145	72.5
13.	Feeding hay and silage		
	a. Yes	0	0
	b. No	200	100

Table 2: Breeding management practices adopted by farmer s of Surajpur district

S.N.	Parameters	Number of Farmers	%
1.	Criteria considered for first time service/mating		
	a. Age	136	68
	b. Body weight	64	32
2.	Method of heat detection		
	a. Basis of symptoms	200	100
	b. By treasure bull	0	0
3.	Symptom of heat detection		72.5
	a. Bellowing and mucus discharge	145	27.5
	b. Mucus discharge	55	
4.	Method of breeding		
	a. Natural service	41	20.5
	b. Artificial Insemination	149	79.5
5.	Artificial Insemination is done by		
	a. Veterinary Assistant Surgeon	25	12.5
	b. Assistant Veterinary Field Officers	175	87.5
6.	Time of insemination after heat		
	a. Early heat (1-8 hour)	34	17
	b. Mid heat (8-14 hour)	129	64.5
	c. Late heat (14-20 hour)	37	18.5
7.	Pregnancy diagnosis is performed		
	a. Vets and paravets	50	75
	b. Own judgment	150	25
9.	Kept breeding records		
	a. Yes	41	20.5
	b. No	159	79.5

10.	Drying off dairy animals		
	a. Yes	53	26.5
	b. No	147	73.5
11.	Maintenance of breeding bull		
	a. Yes	10	5
	b. No	190	95

Table 3: Milking management practices followed by the dairy farmers

S.N.	Parameters	Number of Farmers	%
1.	Let down of milk		
	a. By use of calf	200	100
	b. By use of oxytocin	0	00
2.	Number of milking		
	a. Once in a day	00	00
	b. Twice in a day	200	100
3.	Utensils used for milking		
	a. Stainless Steel bucket	145	72.5
	b. Iron bucket	5	2.5
	c. Plastic bucket	50	25
4.	Method of Milking		
	a. Full hand milking	60	30
	b. Knuckling	120	60
	c. Stripping	20	10
5.	Washing of udder before milking		
	a. Yes	137	86.5
	b. No	73	36.5
6.	Washing of udder after milking		
	a. Yes	66	33
	b. No	124	62
7.	Washing of animals before milking		
	a. Yes	0	0
	b. No	200	100