



E-ISSN: 2320-7078

P-ISSN: 2349-6800

www.entomoljournal.com

JEZS 2020; 8(2): 924-927

© 2020 JEZS

Received: 15-01-2020

Accepted: 17-02-2020

Tripti Kumari

Ph.D Scholar,

ICAR- National Dairy Research
Institute, Karnal, Haryana,
India**Champak Bhakat**

Principal Scientist,

ICAR- Eastern Regional Station,
National Dairy Research
Institute, Kalyani, West Bengal,
India**Amit Kumar Singh**

Ph.D Scholar,

ICAR- National Dairy Research
Institute, Karnal, Haryana,
India**Corresponding Author:****Tripti Kumari**

Ph.D Scholar,

ICAR- National Dairy Research
Institute, Karnal, Haryana,
India

Adoption of management practices by the farmers to control sub-clinical mastitis in dairy cattle

Tripti Kumari, Champak Bhakat and Amit Kumar Singh

Abstract

The study was conducted on 80 farmers and 150 cows at surrounding villages of Nadia district, West Bengal to investigate the level of management practices adopted by the farmers for maintaining their cattle as well as to detect the incidence of sub clinical mastitis on the basis of their adopted management practices. Survey on the basis of questionnaire was done with the farmers. Simultaneously milk samples from the animal were taken to detect the incidence of sub clinical mastitis. Farmers as well as cows were divided into three groups on the basis of their management practices as, Group I, Group II and Group III which includes poor, fair and good management practices respectively. Each group comprises 50 animals. Comparisons were made between the groups and it was found that farmers adopted about 10% poor (group I), 45% fair (group II), whereas 25 % good (group III) management practices. Further, when milk sample was tested to detect the incidence of sub clinical mastitis, it was found that in Group I, all 50 cows (100%), Group II, 46 (92%) out of 50 cows and Group III, 1 (2%) out of 50 cows (might be due to individual immunity level or differences in adaptability to local climate) were observed positive for sub clinical mastitis. Hence, the result revealed that the incidence of sub clinical mastitis was higher in the poor and fair than good management practices, which signifies that exploration of knowledge to the farmers about good management practices for maintaining their cattle is still needed. Thus, dissemination of knowledge based on the study will help in the production of high quality, good, clean and safe milk, which will provide a major financial support to the farmers.

Keywords: Management practices, sub clinical mastitis, cows

Introduction

India is an agro based country, in which animal husbandry plays an important part by maintaining the livestock under hetrologus climate. Livestock provides a major support to the small and landless farmers, as it is a source of income, employment, livelihood, food and social security ^[1]. Among different species of livestock, rearing of dairy cattle is highly appreciated by the rural farmers. India continues to be the largest milk producer country in the world consisting an increase of 102.6 million tonnes to 155.5 million tonnes having an annual growth rate of 6.27%. The average yield of milk per day per animal in milk at national level in crossbred cows and indigenous cows are 7.33 and 3.41 kg respectively which shares 26% and 12% of the total milk production respectively during 2015-16 ^[2]. As the production potential of the cattle are increased due to several measures from the past few decades, but disease resistance capability of these animals decreased, making them more susceptible to mastitis, which is one of the most common infectious diseases of dairy cattle. Mastitis, an important production diseases of dairy cattle worldwide, is frequently considered to be most costly and complex disease prevalent in India ^[3]. Mastitis could be categorized as clinical and subclinical ^[4]. Since there is hardly any discernible change in the udder or in the milk, the farmer usually remains unaware of the existence of sub clinical form in their animals, which if left medically unattended, could results into clinical and chronic forms ^[5].

The prevalence of subclinical mastitis has increased enormously in India in the recent years than bovine clinical mastitis ^[6]. Several studies have reported that the incidence of sub clinical mastitis ranged from 19.20 to 83% in cows and more than 90% cases were found in high yielder cross bred dairy cows ^[7], about 15-45 per cent reduction in daily milk yield occurs ^[8] and adversely affects milk quality ^[9]. Hence, sub clinical mastitis is a serious and very devastating disease in dairy cattle worldwide which causes huge economic loss to the farmers due to less milk production, altered milk composition and low milk quality ^[10]. About 70 % economic losses were reported due to sub clinical mastitis in India ^[11]. Income of the marginal dairy farmer is further dented if their animals are affected with any form of mastitis,

especially the sub-clinical form ^[15]. A population of 80.5 million in-milk animals i.e., cattle and buffalo ^[12] with its thin distribution poses significant challenges in implementation of a control programme in the field. Covering such a large population would be very difficult if one has to reach out to individual farmers directly. The control programme should be focused on management of mastitis as faulty management practices favour the pathogens to gain access to mammary gland and proliferate, potentially leading to mastitis ^[13]. However complete eradication of sub clinical mastitis at present is not feasible due to its complexity. So, it is essential to understand the important risk factors associated with management practices for incidence of sub clinical mastitis in dairy cattle ^[14]. Incidence of sub clinical mastitis is mostly due to several poor management factors. To reduce the disease it is necessary to assess the management issues regarding udder hygiene for the maintenance of dairy animals ^[15].

Therefore, present study was done to find the cases of sub clinical mastitis based on the management practices adopted by the farmers for maintaining their cattle.

Materials and Methods

The study was done at surrounding villages of Nadia district (West Bengal) by asking questionnaire from 80 farmers (consisted total 150 cows) based on the management practices, which were categorized under three groups i.e., group I (poor, n=50), group II (fair, n=50) and group III (good, n=50) and scored on the type of management practices followed by the farmers. Milk sample of the animals were taken to diagnose the cases of sub clinical mastitis. On the basis of data survey, the effect of management practices was estimated on the incidence of sub clinical mastitis. The data were compiled, tabulated and analyzed to get proper answer for objective of the study. The statistical measures such as percentage, mean score and standard deviation were used.

Results and Discussion

The adoption process is the mental process through which an individual passes from first knowledge of an innovation to forming an attitude towards the innovation, to a decision to final adoption. Thus, adoption is a decision to continue full use of an innovation. With a view to find out the level of adoption of management practices for maintaining dairy cattle, study was conducted. The score values in this regard are presented in Table 1.

It is clear from Table 2 that majority of the farmers adopted fair (56.25%) management practices followed by 31.25 and 12.5% of the farmers had good and poor levels of adoption regarding management of dairy cattle.

Type of management condition under which animals were reared in Group I (poor) consisted muddy floor, Kutcha or no wall, roof made of straws and covered with plastic sheets, sheds were cleaned occasionally and provided bath once a day and no grazing, no grooming, no exercising was allowed to the animal, which was adopted by 10 out of 80 farmers. Group II (fair) consisted brick floor, brick wall, roof made of wood covered with plastic sheets, cleaning of shed once a day daily, provided bath twice a day, grazing and exercising allowed daily and grooming was done occasionally to the

animal, which was adopted by 45 out of 80 farmers, whereas Group III (good) consisted pucca floor with bedding material, Cemented wall/white washed wall, Roof made of asbestos sheets and covered with straws, provided bath twice a day, daily grazing and exercising and grooming in a routine manner, which was adopted by 25 out of 80 farmers (Table 1 and 2).

It is clear from table 3 that highest cases of sub clinical mastitis (50 out of 50, i.e. 100%) was found by the farmers that adopted poor level of management practices, followed by 92% (46 out of 50) cases where there was fair level of adoption and lowest case (1 out of 50, i.e. 2%) was observed by the farmers adopted good level of management practices. In the group III, one animal found positive for sub clinical mastitis which might be due to its low immunity level of the body.

Similar finding was reported by the researcher ^[16], who mentioned that more than half (57.78%) of crossbred cattle farmers practiced disinfection of shed and premises. All (100%) the small and large farmers adopted cleaning of housing/shed regularly followed by 98% of medium farmers. In total, almost all (99.44%) the respondents practiced cleaning of housing/shed regularly, which was in accordance with the present findings, which revealed that majority of farmers adopted daily cleaning of animal shed ^[16].

Present finding are in agreement with the report of some research workers ^[17], who in their study reported that kutcha floor in animals shed was prominent maintained by 88.33% and 96.76%. However, higher percentage of member families had brick plus mud floor. Ventilation in animal shed was optimum in majority (79.71%) of member families, while 35 per cent non-members families had optimum ventilation. Majority (54.17%) of member families had one side open shed. While in case of non member majority (46.67%) of household had closed shed for their animals in Jaipur district of Rajasthan. Most of the farmers (91.60%) provided kutcha type of housing and only 27.90 per cent farmers had manure disposal pits in Chittoor district of Andhra Pradesh ^[18]. About 66.80% farmers housed their dairy in kutcha house, 10.40% in pucca and 22.80% in partially pucca house in Nadia district of West Bengal ^[19]. Some workers ^[20] in their study revealed that most of the cattle sheds (54.60%) were of the kutcha type, with a thatch roof and the most common material used for supporting the roof was wood with 83.30% of the farmers using it. It was found that, 76% of respondents were not applying disinfectants in animal sheds ^[21], whereas, nearly three fourth of respondents were not applying disinfectants in animal sheds ^[22]. Majority (75.56%) had sheds with kutcha floor and thatched roof, most of them had loose type shelter (95%), average sanitary conditions (72.78%) and poor drainage system (59.45%) and cleaned the animal shed daily (85.56%). Majority (71.11%) did not use any disinfection for the animal shed and follow recommended udder health care practices followed by tribal dairy farmers of Ranchi district of Jharkhand ^[22]. About 57% respondents followed grooming practices in cattle ^[23]. Similar result as of present finding was reported by some researchers ^[23] that the Kutcha type of floor and asbestos roof was observed in 79.38% and 26.25% of animal houses respectively. Poor drainage facility was observed in 41.50 % of animal sheds.

Table 1: Score value of different management factors practiced by farmers under field condition

Poor	Score (1)	Fair	Score (2)	Good	Score (3)
Muddy Floor	1.1	Brick floor	2.1	Pucca floor with bedding material	3.1
Kuttcha or no wall	1.2	Brick wall	2.2	Cemented wall/white washed wall	3.2
Roof made of straws and covered with plastic sheets	1.3	Roof made of wood and covered with plastic sheets	2.3	Roof made of asbestos sheets and covered with straws	3.3
Cleaning of shed occasionally	1.4	Daily cleaning of shed once a day	2.4	Daily cleaning of shed twice a day	3.4
Bath once a day. No grazing, no grooming, no exercising.	1.5	Bath twice a day. Grazing and exercising allowed and grooming occasionally.	2.5	Bath twice a day, daily grazing and exercising and routine manner of grooming	3.5

Table 2: Distribution of farmers according to extent of adoption of management practices for maintaining cattle (N = 80)

Group No.	Level of adoption	Number	Percent
I	Poor (1.1 to 1.5 score)	10	12.5
II	Fair (2.1 to 2.5 score)	45	56.25
III	Good (3.1 to 3.5 score)	25	31.25
	Total	80	100

Table 3: Cases of sub clinical mastitis according to the level of adoption of management practices in dairy cows (N=150)

Group No.	Adoption of management practices	Number of cows positive for sub clinical mastitis	Percentage of cases of sub clinical mastitis
I (n=50)	Poor	50	100
II (n=50)	Fair	46	92
III (n=50)	Good	1	2

Conclusion

From the above result it can be concluded that about 80% farmers had fair to good level of adoption regarding management practices. Incidence of sub clinical mastitis was found to be lowest in the animals maintained under good management practices by the farmers. Since adoption of good management practices was found to be less. Hence knowledge based on the study is still needed to explore to the farmers, so that they can maintain their animals in a good healthy condition, which ensures the production of clean and safe milk. This will help in providing financial support to the farmers by increasing their income.

Acknowledgement

Authors are thankful to the Head, ICAR- ERS, NDRI, Kalyani (W.B) for providing necessary support during the research work.

Conflict of Interest

The authors declare no conflict of interest.

References

- Bettencourt EMV, Tilman M, Narciso N, Carvalho MLS, Henriques DS. The role of livestock functions in the well-being and development of Timor-Leste rural communities. *Livestock Research for Rural Development*. 2014; 26(4). Available online <http://www.Irrd.org/Irrd26/4/bett26069htm>.
- Duguma A, Tolosa T, Yohannes A. Prevalence of clinical and subclinical mastitis on crossbred dairy cows at Holleta Agricultural Research Centre, Central Ethiopia. *Journal of Veterinary Medicine and Animal Health*. 2014; 6(1):13-17.
- Sharma N, Gautam A, Upadhyay SR, Hussain K, Soodan JS, Gupta SK. Role of antioxidants in udder health: A review. *Indian Journal of Field Veterinarian*. 2006; 2:73-76.
- Duguma A, Tolosa T, Yohannes A. Prevalence of clinical and subclinical mastitis on crossbred dairy cows at Holleta Agricultural Research Centre, Central Ethiopia. *Journal of Veterinary Medicine and Animal Health*. 2014; 6(1):13-17.
- Kumari T, Bhakat C, Singh AK, Sahu J, Mandal DK, Choudhary RK. Low Cost Management Practices to Detect and Control Sub-Clinical Mastitis in Dairy Cattle. *International Journal of Current Microbiology and Applied Science*. 2019; 8(050):1958-1964.
- NAAS. Mastitis management in dairy animals. National Academy of Agricultural Sciences, New Delhi, Policy Paper 61, 2013, 2.
- Sharma N. Epidemiological investigation on subclinical mastitis in dairy animals: Role of vitamin E and selenium supplementation on its control. M.V.Sc. Thesis, I.G.K.V.V., Raipur (C.G.) India, 2003.
- Halasa T, Huijps K, Osteras O, Hogeveen. Economic effects of bovine mastitis and mastitis management-A Review. *Veterinary Quarterly*. 2007; 29:18-31.
- Seegers H, Fourichon C, Beaudeau F. Production effects related to mastitis and mastitis economics in dairy cattle herds. *Veterinary Research*. 2003. 34:475-491.
- Iraguha B, Hamudikuwanda H, Mushonga B, Kandiwa E, Mpatsumugabo IP. Comparison of cow-side diagnostic tests for Sub-clinical mastitis of dairy cows in Musanze district, Rwanda. *Journal of the South African Veterinary Association*. 2017; 88(1). doi.org/41021jssava.v8810.464.
- Varshney JP, Naresh R. Evaluation of homeopathic complex in the clinical management of udder diseases of riverine buffaloes. *Homeopathy*. 2004; 93:17-20.
- 19th livestock census. All India Report. Ministry of Agriculture, Department of Animal Husbandry, Dairying and Fisheries, Krishi Bhawan, New Delhi, 2012.
- Mein GA, Reinemann DJ, Schuring N, Ohnstad I. Milking machines and mastitis risk: a storm in a teatcup. In *Proceedings of the 43rd Annual Meeting of the National Mastitis Council*, 2004.
- Kumari T, Bhakat C, Choudhary RK. A Review on Sub Clinical Mastitis in Dairy Cattle. *International Journal of*

- Pure and Applied Bioscience. 2018; 6(2):1291-1299.
15. Kumari T. Development of Management Practices towards Controlling of Sub Clinical Mastitis in Dairy Cows at Hot-Humid Region. Ph.D Thesis. ICAR-National Dairy Research Institute, Karnal, Haryana. 2019.
 16. Chakravorty JK. A Study on Adoption of Recommended Dairy Management Practices among Crossbred Cattle Farmers in Srikakulam District of Andhra Pradesh. M.V.Sc Thesis. Sri Venkateswara Veterinary University, Tirupati, Kerala, India, 2017.
 17. Tanwar PS, Kumar Y, Singh RP. Housing management practices adopted in different categories of members and non-members families of dairy cooperative in Jaipur district of Rajasthan. *The Journal of Rural and Agricultural Research*. 2010; 11(1):63-66.
 18. Varaprasad AR, Raghunandan T, Kumar MK, Prakash MG. Study on the management practices of the farmers rearing Jersey x Sahiwal cows in Chittoor district of Andhra Pradesh. *Scholarly Journal of Agricultural Science*. 2013; 3(3): 86-88.
 19. Tudu NK, Roy DC. Participation of Women in Decision Making in Goat Rearing in Nadia District of West Bengal. *International Journal of Social Sciences and Management*. 2015; 2(2):119-122.
 20. Patil VM, Rajeswari YB, Satyanarayana K, Jadhav NV, Ramesha KP, Balaji KH. Housing Management Practices of Deoni Cattle in Bidar District. *Frontier Journal of Veterinary Animal Science*. 2015b; 4(1):50-54.
 21. Singh R, Kumar P, Khandi SA, Bhadwal MS. Animal Welfare Practices followed by Dairy Farmers of Kathua District of Jammu and Kashmir State. *Journal of Animal Research*. 2016; 6(3):479-491.
 22. Minu Singh, Chakravarthy R, Bhanotra A, Kumar M. Dairying animal health and housing management practices followed by tribal dairy farmers of Ranchi, Jharkhand. *International Journal of Farm Sciences*. 2015a; 5(3):199-206.
 23. Thombre BM, Suradkar DD, Deshmukh M. Adoption of Cattle rearing practices by Red Kandhari cattle owners. *Indian Journal of Animal Research*. 2015; 49(5):731-735.
 24. Tewari H, Kumar S, Rath R, Tyagi K. Existing housing and breeding management practices adopted by dairy farmers in Terai region of Uttarakhand, India. *Indian Journal of Animal Research*. 2016a; 52(3):449-453.