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A review on milking management practices of dairy animal in India

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Abstract

India has emerged as the largest producer of milk with 21.24 percent share in total milk production in the world. But the quality of milk produced in India does not match the international standards in terms of its constituents, shelf life and nutritive values. In terms of export of milk and milk products, India stands at 36th position which is due to low quality. Milk production increases 6.5 percent compared to previous year. Milk harvesting is an art and science in dairy farm. Majority of the states draws milk twice in a day. Majority of the respondents uses clean utensils during milking. Few respondents followed teat dipping after milking. The main aim is to produce high quality milk with consistency by a well defined milking technique along with maintaining clean environment for all milch animals. Majority of the dairy farmers dry off their animal before to month calving. The study indicates milking management practice in majority of the dairy farmers is satisfactory but there is a scope for further improvement in milk production practices by creating awareness.

Keywords: Milking management, milking methods, dairy farmer

Introduction

Dairying is an integral part of the farming system in India. It plays an important role in generating income, employment and improving household nutrition. Cattle and buffalo have a complementary, supplementary and sustainable relationship with crops in a mixed farming system. As per the figures of 20th livestock census, India has about 193.46 million cattle and 109.85 million buffaloes. India is the highest milk producer country in the world with an estimated quantity of 187.75 million tones in the year 2017-18 (Anonymous, 2019) [2], and milk per capita availability is 394 g/day (Anonymous, Basic animal husbandry statistics, 2019) [3]. Production potential of livestock depends mostly on the management practices under which they are reared and these practices vary significantly across various agro-ecological regions due to many factors. Understanding of livestock management practices followed by farmers in a region is necessary to identify the strengths and weaknesses of the rearing systems and to formulate suitable intervention policies (Gupta *et al.*, 2008) [7]. Each component of management practices interacts either independently or in combination to affect the productivity of the livestock. Feeding is one of the most important practices in animal husbandry. Balanced and proper feeding results in better utilization of nutrients and optimum milk production. It is generally agreed that an animal fails to prove its genetic potential for higher production when fed at low levels. Underfeeding of young stock leads to poor growth, delay in maturity and lower productivity than the potential after attaining the breeding age. The dairy animal keepers must have a thorough understanding of the facts that milk production can be increased by adoption of improved animal feeding practices. Therefore, it is very important to ascertain the scientific feeding practices of dairy animals followed by dairy animal keepers under village conditions so that need based extension programme may be launched to make them aware, to increase their knowledge and the adoption of scientific feeding practices for dairy animals in study areas

Feeding constitutes play a vital role in cost of milk production. Indigenous cattle in arid zone are generally maintained on grazing/browsing and supplementary feeding of locally available crop residues, tree base fodder and agro industrial by-products at house hold level (Bohra, 2012) [5]. Most components have multiple purpose for example crop and tree residues have a role of animals feed while indigenous bulls are important sources of drought power. It is therefore, important that feed costs are to be kept at lowest possible level in order to make milk

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production profitable. Producing more milk by timely feeding of good quality ration in required quantity is ultimately profitable than feeding otherwise. Selection of proper feeding standards using right combination of feeding the adequate quantity with other related practices are some of the ways which will enable the farmer to feed his cows and buffaloes

more economically, increase their efficiency and make the dairy more paying. Nutrition is one of the important aspects, which influence livestock production. Hence, tremendous research work has been done at different part of the country on the various aspects of animal nutrition (Yatoo *et al.*, 2013)^[18].

Table 1: Milking management practices

State	Milking management practices	Author
Gujarat	<ul style="list-style-type: none"> The present study revealed that all the farmers milked their animal twice, splashing of water on udder and teats before milking and washing hands before milking. Only 7.5 percent respondents did dry hand milking and majority (62.5%) of the respondents followed knuckling method for milking. Majority (95%) respondents practiced straining of milk and 77.5 percent of the respondents followed stripping at the end of milking. Majority (70%) of the respondents allowed calves for suckling before milking. Only 2.5 per cent respondents were milking at separate and dry place. Seventy percent respondents adopted practice of drying off their dairy animals for more than two months. Only 25 percent of the respondents followed teat dipping in antiseptic solution after milking 35 percent followed test for mastitis detection. 	A.L. Rathva, <i>et al.</i> , (2019) ^[1]
Rajasthan	<ul style="list-style-type: none"> It was found that level of adoption among majority of the respondents was medium and low. People are still depended on traditional feeding and milking management practices. In case of milking management, majority of farmers (88.80%) used knuckling method of milking. 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; moreover, farmers were not maintaining cleanliness in their house and milking premises. About 69.50 per cent of the farmers never washed or cleaned their cattle. 	Sunil Kumar, <i>et al.</i> , (2017) ^[14]
Haryana	<ul style="list-style-type: none"> The standard method of milking is full hand method of milking followed by stripping at the end of the milking process. In comparison between adopted and non-adopted villages, 56.67 per cent respondents were following knuckling method of milking instead of following full hand method in non-adopted villages, whereas in adopted villages, 86.67 per cent of respondents were following standard method of milking. 	Surjya Kanta Roy, <i>et al.</i> , (2020) ^[17]
Madhya Pradesh	<ul style="list-style-type: none"> milking twice in a day All respondents (100%) followed two times milking, Using of clean utensils for milking 	Sandip Kumar, <i>et al.</i> , (2014) ^[13]
Maharashtra	<ul style="list-style-type: none"> milking management majority (60%) of the respondents dried their pregnant animals two months prior to calving (57.50%) farmers practiced knuckling method of milking. Majority (98.33%) of the respondents followed the practice of removing first two streams of milk from each teat. Dipping fingers into milk and softening of teats before milking was carried out by 100% all the dairy farmers. 	Shivkumar R. Yankam, <i>et al.</i> , (2018) ^[15]
Uttarakhand	<ul style="list-style-type: none"> Majority of the farmers 90.50 per cent practiced twice milking in their animals. The results showed that majority of farmers around 84.00 per cent followed knuckling method while only 7.00 per cent of the farmers were adopting full hand milking method. Wet hand milking was found to be a common practice adopted by majority of farmers 85.50 per cent. About 60.00 per cent farmers used incomplete milking as a method for drying their animals 	Himani Tewari, <i>et al.</i> , (2018) ^[8]
Jammu	<ul style="list-style-type: none"> The results of the study revealed that all 100 percent of dairy farmers practiced hand method of milking and none of the dairy farmers practiced machine milking. Majority 55 per cent and 70 percent of respondents' practiced full hand milking and wet hand milking habits respectively. Majority of respondents practiced suckling of a calf to induce milk letdown. None of the respondents practiced concentrate feeding along with massage of udder, and use of oxytocin injection for milk ejection in case of death of calf milk let down practices. Around 82.50% of farmers milking the animals at the same place of tethering in the byre. Most (67.50%) of the respondents milking the animal at dirty milking environment. All respondents (100%) followed two times milking, a majority (67.5%) of them completed milking in 5-7 minutes. Majority of respondents did not practice straining of milk. The majority (77.5%) of respondents dried the animal by complete cessation of milking followed by intermittent milking. None of the respondents followed teat dipping after milking 	Rayees Ahmed Bafanda, <i>et al.</i> , (2018) ^[12]
Karnataka	<ul style="list-style-type: none"> Cleaning of udder with clean water & antiseptic solution before milking 'as it prevented harmful germs to contaminate the milk. practiced adoption of 'Full hand method of milking' as it was perceived and recommended as the right method milking 	Kalyan Mandi, <i>et al.</i> , (2019) ^[9]

	<ul style="list-style-type: none"> Using of clean utensils for milking 	
Kerala	<ul style="list-style-type: none"> Majority (73.33%) of dairy farmers were following full hand method, 18.33 per cent and 8.33 per cent were following knuckling and machine milking respectively as method of milking. All the dairy farmers were practicing two times milking a day none of the dairy farmers was following three times milking schedule. About 68.33% of dairy farmers were practicing udder massaging and feeding concentrate and 31.66 percent were practicing calf suckle reflex for letdown of the milk. Only 11.67% of the dairy farmers milking their animals in separate and dry places all farmers were regularly cleaning milk utensils and washing udder before milking as clean milk production practice. The study indicates milking management practice in majority of the dairy farmers is satisfactory but there is a scope for further improvement in milk production practices by creating awareness. Milking management practices in majority of farmers were satisfactory but still there is some gap in adoption of scientific management practices. Still some farmers were using knuckling method of milking which is wrong and can make the animal prone to mastitis. Majority of the dairy farmers were found to be following scientific milking practice and take care of cleanliness as reflected by full hand milking practices and using clean milk utensils, etc. Dairy farmers should be educated regarding significance of complete milking and milking at separate place. There is need for strong extension activities to increase awareness among the farmers regarding recommended scientific milking management practices. 	Bimal P. Bashir, <i>et al.</i> , (2013) ^[6]
Andhra Pradesh	<ul style="list-style-type: none"> The study revealed that majority of farmers practiced wet hand milking and none of the farmers practiced machine method of milking. Maximum number of respondents adopted knuckling method at the starting of milking operations followed by stripping at the end of milking. None of the respondents practiced dipping of teats in antiseptic solution and straining of milk with muslin cloth. Cleaning of milk utensils was done with disinfectant by majority of the respondents Before milking, majority of respondents washed their hands only with water about 90.00% of the farmers only cleaned udder. Majority of farmers (96.67%) practiced wet hand milking and none of the farmer practiced machine milking. Maximum number of respondents adopted knuckling method of milking at starting of milking operations followed by stripping at the end of milking. None of the respondents practiced dipping of teats in antiseptic solution and straining of milk with muslin cloth. Cleaning of milk utensils was done with disinfectant by majority of the milk producers. Before milking of animals, washing of hands with only water was practiced by majority of milk producers Most of the farmers were cleaning only udder of the animal. 	Y. Swathi, <i>et al.</i> , (2017) ^[19] .
Jharkhand	<ul style="list-style-type: none"> That majority of the respondents washed/cleaned their animals once a week (53.33%) followed by alternate days (18.89%), daily (17.78%) and never (10.00%). Cleaning of udder before milking was done by 93.89 per cent of the respondents and that too only with water Majority of the respondents milking The animal (93.33%) never trimmed their nails before milking; 82.22 per cent washed their hands with water before milking; Only 26.67 per cent were aware of not spitting near the milking place; 45.56 per cent sometimes avoided smoking or of tobacco chewing near milking place or while milking. The results showed that 94.44 per cent respondents kept the animal standing after milking for at least 15 minutes. Milking was done in clean animal shed by 71.67 per cent respondents; 27.78 per cent used oil for softening of teats before milking; 01.11 per cent respondents dipped their fingers in milk for softening of teats and majority did not follow any of these practices for softening of teats before milking. Majority (72.78%) of the respondents followed stripping and only 27.22 per cent followed full hand milking method 	Minu Singh, <i>et al.</i> , (2015) ^[10]
West Bengal	<ul style="list-style-type: none"> More than 60% follow stripping technique but practice complete milking of udder. None of the respondents followed the dry cow therapy and checked for abnormality in first strip of milk. A major proportion of the respondents (88%) do not have knowledge on milk borne zoonosis 	Seru Lakshmi Vineesha, <i>et al.</i> , (2019) ^[16]
Punjab	<ul style="list-style-type: none"> Overall majority (88.00%) farmers under study were using full palm method of milking that decreases the chances of mastitis (Table 1). This indicates that majority of the farmers were aware of correct method of milking. Clean milk production practices and about 38 percent were aware about full palm method of milking as accurate method of milking. 	Anant Simran Singh, <i>et al.</i> , (2019) ^[4]
Uttar Pradesh	<ul style="list-style-type: none"> Majority (59.25%) of the cattle owners were using knuckling method of milking Most of the farmers were cleaning only udder of the animal. 	Puspendra Kumar Singh, <i>et al.</i> , (2019) ^[11]

Conclusion

It is important to enhance Milking management practices of indigenous cattle through trainings and awareness programmes that ultimately increase the socio-economic status of Dairy animal farmers, Specific training and firsthand knowledge of scientific dairy farming practices can enhance the animal productivity, dairy animal owners followed, Milking management practices rightly to certain extent and there is much scope to improve them among animal owners through organizing awareness camps, demonstration and exposer to extension services

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