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# Socio-economic Profile and Adoption of Recommended Milking Practices among Small Dairy Farmers of Meenangadi Gram Panchayat of Wayanad District of Kerala

P Asiya\* and Girigan Gopi†

## Abstract

The study was conducted in Meenangadi panchayat of Wayanad, Kerala. Agriculture was primary occupation for majority of the respondents (44 percent). 38 percentage of the respondents were utilising the facilities provided by the animal husbandry department of the state. According to the perception of 72 percent of the respondents, the most important constraint in dairy farming was the non-availability of fodder followed by responses that indicated the next deterrent to be the high cost of cattle feed (60 percent). A total of fourteen clean milking practices were analysed and adoption of milking practices were calculated by using adoption index. Majority of the respondents were found to be medium adopters.

**Keywords:** Clean Milking Practice, Adoption Index, Meenangadi panchayat

## 1. Introduction

India has emerged as the highest milk producing country in the world with an annual production of more than 81 million tones [1]. Milk production in India has come a long way over the years from

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\* Community Agrobiodiversity Centre (CAbC), MS Swaminathan Research Foundation(MSSRF), Wayanad, Kerala, India; [pasiya81@gmail.com](mailto:pasiya81@gmail.com)

† (CAbC), (MSSRF), Wayanad, Kerala, India; [girigangopi@gmail.com](mailto:girigangopi@gmail.com)

a low volume of 17 Million MT in 1951 to 163.7 million MT in 2016-17. Currently India is the world's largest producer and consumer of milk accounting for 19% of the world milk production. Dairy sector in India has demonstrated a significant growth in past 10 years with milk production increasing at the rate of 4.8% CAGR, reaching 163.7 million MT in 2016-17. In the same period, the per capita availability of milk in India has increased from 233 gms per day to 351 gms per day. India ranks first in milk production, accounting for 20 % of world production. The importance of dairying in a country like India hardly needs emphasising [2].

Kerala is in the second position in terms of the improvement in per-capita milk availability. Andhra Pradesh recorded the highest growth of about 36 percent, followed by Kerala (21 percent), Rajasthan (20 percent), Karnataka (19 percent) and Gujarat (17 percent). Milk production across India has grown at a significant rate of about 19 percent, with overall milk production crossing the 121-mt mark as of 2010-11. As per a recent study by the Associated Chambers of Commerce and Industry of India, Kerala stands in the third position among the states in terms of the growth in milk production. Andhra Pradesh tops the list, with 41 percent, followed by Rajasthan (28 percent), Kerala (24.8 percent), Karnataka (24 percent) and Gujarat (23.7 percent) [3].

Adoption of technology at the farm level has extremely been studied and the rate of technology in the evolution of the dairy sector has been described as critical since it has changed the way in which milk is produced by making growth and specialisation possible [4]. These technological advantages have contributed greatly towards the financial success of farmers through increased productivity and lower per unit costs [5]. In Kerala, around 70 percent of the livestock population is reared by smallholders. There are mainly four factors to be considered in Clean Milk Production (CMP) practices. Animal hygiene: The animals should be maintained in hygienic environment for production of quality milk. It should be healthy. It should be fed with nutritious and complete feed which consist of roughages and concentrate mixture and it may be in mash, pellet or in block form.

Milking hygiene: This covers the processes involved in the management of personal hygiene of the milker and milking process

[6]. Milking should be done using the full hand. It is best to milk rear quarters first as they contain the higher proportion of milk. Pressing the teats using the thumb is not a good practice [6]. It should be avoided otherwise the teats get damaged and mastitis may develop. The milking should be completed as quickly as possible in about 5-8 minutes [6]. Milking should be done completely and if milk is left in the udder it will become a source of infection and causes mastitis to develop [6]. The first milk should be tested for presence of mastitis every time prior to milking. If suspected for mastitis, the particular quarter should not be milked and treated.

**Equipment hygiene:** Milking vessels must have smooth milk contact surfaces with minimal joints and crevices. At regular intervals the rubber parts of the milking machines need to be removed. Water for dairy use must be clean. Detergents are needed for cleaning dairy equipments. Clean the milking equipment and cooler by rinsing in clean water, scrubbing in hot ( $\geq 45^{\circ}\text{C}$ ) detergent/disinfectant solution and finally rinsing in chlorinated (50 ppm) water [6]. All the milking and ancillary equipment should be drained in a clean place before storage. Direct-to-can milking is a very simple, low cost system of milking, cooling and cleaning specially devised for parlour milking. Milk is drawn directly from udder to milk can, eliminating milk lifting, carrying and tipping.

**Processing hygiene:** It includes management practices during collection and transportation of milk. The milk secreted into an uninfected cow's udder is sterile [6]. Invariably it becomes contaminated as it passes through ducts and from reservoirs of udder and from external contamination from milker, utensils or from environment and milk is an excellent medium for bacteria, yeasts and moulds that are the common contaminants [6]. Their rapid growth, particularly at high ambient temperatures can cause marked deterioration, spoiling the milk for liquid consumption or manufacture into dairy products [6]. This can be avoided by adopting the simple, basic rules of clean milk production.

**Feeding Practices:** Scientific feeding schedule that provides a higher plane of nutrition ensures better growth and an earlier attainment of puberty resulting in quicker economic returns.

India has been a predominantly an agrarian economy since time immemorial. Majority of the population is depending on agriculture & agriculture is the mainstay of national economy even today [7]. In India, farms are depending on animals for their farming activities and keeping milking animals is the part of the agriculture; additionally, it is a major source of income for the small and marginal farmers. Indians are the first to achieve the white revolution in the world. With that as a background, India ranks first in the world milk production [8]. Dairy industry plays a crucial role in Indian economy by exporting the dairy products to other countries. Along with this, it helps in augmenting food supply, generating employment and raising nutritional level. The major advantage of dairy farming is its minimum land dependency and resource flexibility. Even though, the country is first in the world's milk production, it is still facing problems in the world food market because of poor quality of milk and milk products. India has developed modern technologies to increase the quality of milk but it is lagging behind in adoption of these new technologies. They are number of factors that affect the clean, nutritive and quality milk production. Along with this effective and efficient adoption and use of new technologies, it is most important to compete with the world food markets [9]. The family profile of the respondents plays an important role in the adoption of any farm technologies [10]. Some of the scientific studies explained that first users of the innovative technologies are young farmers with large land holdings and higher annual income [11]. With this background, the researchers conducted the study with the objective to examine their socio-economic profile and the extent of adoption of recommended milking practices regarding clean milk production (CMP) practices as specified under field conditions of Meenangadi Panchayat.

## **2. Materials and Methods**

The study was conducted in Meenangadi Panchayath of Wayanad district as Part of a project implemented by MS Swaminathan Research Foundation Kalpetta, Wayand. A total of fifty farmers were selected by applying multistage random sampling. For the purpose of the study, a small dairy holding was operationally

defined as the one with less than eight milk animals belonging to the cross breed of Holstein fisher and reared by the respondents and his/her family. This is because majority of the small dairy farmers in the locality maintain cross bred cows for rearing as the cross bred cows are well adapted to the local climate and feed, need less care when compared to hybrid varieties and the cattle can give better yield than the local breed. The data were collected with the help of a well-structured pretested interview schedule incorporating all the items pertaining to the specific objectives of the study. The scientific milking management practices were selected as per the recommendations in Package of practices-2016 (Kerala veterinary University, Pookkode, Wayanad). Extent of adoption of management practices was measured by Adoption Index [12].

Adoption index of the respondents is taken as follows:

Adoption index = Respondent score x 100/Total score

For the present study a total of fourteen milking management practices and socio economic profile of the respondent were studied.

### 3. Results and Discussions

Study result reveals that among studied respondents, 46 percent were above 50 years of age, 60 percent had gone to upper primary school or more and the illiterate were negligible percentage (8%) which was in agreement with that of Hossain [13] who reported that majority of dairy farmers they studied were literate and in the category of Rs. 50000-100000 of annual income (42%). Average herd size among the sample population was two with average milk production per animal per day was 8.5 liters. Agriculture was the primary occupation for majority of the respondents (44 percent) The findings of Nija George *et al.*, Bardhan *et al.* Ahirwar *et al.* and Khode *et al.* [14, 15, 16, 17] were in agreement with the above findings. 38 percent of the respondents were utilising the facilities provided by the animal husbandry department of the statethese findings were in line with that of Mande and Thombre [18]. In this study, it was found that the most important constraints in dairy farming was the high cost of cattle feed (60 percent) followed by

the non-availability of fodder (72 percent). The results are shown in Table 1.

**Table 1:** Socio economic profile of the respondent

Sl.No	Particulars	Frequency	percentage
1	Age		
	Young > 35 years	5	10
	Middle aged 36 to 50	22	44
	old <50	23	46
2	Education		
	Illiterate	2	4
	Read and write	8	16
	Primary schools	10	20
	Up	20	40
	High schools	9	18
	Collegiate	1	2
3	Occupation		
	Agriculture	22	44
	cattle rearing	14	28
	Home maker	11	22
	Business and allied	2	4
4	Extension agency contact		
	yes	19	38
	No	31	62
5	Annual income		
	>Rs. 50000	10	20
	Rs .50001 to 100000	11	22
	Rs.100001 to 200000	16	32
	< 200000	13	26
6	Constraints		
	High cost of cattle feed	30	60
	Scarcity of green fodder during lean season	36	72

Table 2 reveals that 76 percent of farmers followed full hand method, 14 percent followed stripping (wrong method) and 10 percent followed machine milking respectively as the method of milking. These findings are encouraging than Malik *et al.* [19] and Kumar *et al.* [20]. Most of the farmers were aware about the adverse effect of stripping method of milking. It was found that none of the

respondents were practicing udder massaging for letdown of milk. Fifty percent were practicing calf suckle reflex for letdown of the milk by allowing calf suckle down before milking. These findings are encouraging as against the finding of Garg *et al.*, [21], Kumar *et al.*, [20] and Rathore *et al.*, [22]. Since most of the respondents were having cross-bred animals, this might have reduced the dependence of calf suckle reflex for milk letdown. This is in conformance with the findings of Akers [16]. It was discouraging to note that none of the respondents were milking their animals in separate and dry places. These reported numbers are lower than reports of Malik and Nagpaul [19], Kumar *et al.*, [20]. However all respondents were regularly washing udder before milking, and 84% were washing milking utensils using detergent regularly following the clean milk production practice. Similar findings were reported by Garg and Rathore [21, 22]. All the farmers were practicing milking two times a day; none of the respondents were following the milking schedule for three times. This is in line with the findings of Dubey and Kumar [23] and contrary to Sarkar and Pal [24]. Only a few were ensuring personal hygiene of the milker (54%). None of the respondents responded correctly for checking the first strip of milk for any abnormality. Eighty-two percent of them knew that the udder should be completely evacuated in each milking. Teat dip solutions like iodophores/Savlon were not known to any of the respondents. Nobody provided adequate portable drinking water for cattle. Only eight percent of the respondents were giving importance to proper feeding of animal and proper cleaning of shed. Quite contradictory findings were reported by Hassan [25] while studying the pattern of adoption of clean milking practices of dairy farmers of Nadathara panchayat in Thrissur district of Kerala state. Though a judicious combination of concentrates and green fodder/roughage is the approved practice, none of the respondents followed the same resulting in imbalance in nutrition. Since there is scarcity of green fodder during summer, the cattle were fed dry food. Since there is an acute scarcity of green fodder in this region, a high concentrate-low roughage ratio is fed to the cattle resulting in economic losses besides making animals prone to metabolic and nutritional problems. Time taken for milking varied from four minutes to fifteen minutes. Twenty-four percent of the respondents were taking below eight minutes for

milking which is recommended as a scientific practice. Forty-two percent of the respondents spent nine to ten minutes for milking. None of the respondents were following the dry hand milking. They either applied gingili oil or ghee in teat for milking.

**Table 2:** Milking management practices adopted by the respondent

Sl No	Practices followed	Frequency	Percentage
1	Method of milking		
	Full hand	38	76
	Stripping	7	14
	Machine	5	10
2	Letdown of milk		
	Udder massage	0	0
	Calf suckling	25	50
3	Place of milking		
	Cattle shed	50	100
	Separate place	0	0
4	Frequency of milking		
	Twice a day	50	100
	Thrice a day	0	0
5	Regular washing of udder before milking	50	100
6	Regular Cleaning of utensils using detergent	42	84
7	Washing of udder after milking	31	62
8	Teat dipping after milking	0	0
9	Ensuring personal hygiene	28	56
10	Dry milking	0	0
11	Proper cleaning of cattle shed	11	22
12	Complete evacuation of udder after milking	41	82
13	Proper feeding	4	8
14	Time taken to complete milking below 8 minutes	12	24

Regarding the extent of adoption of milking practices as given in Table 3, 54 percent of the respondents had medium adoption followed by 26 percent and 20 percent with low and high adoption respectively. Majority of respondents were found to be medium adopters. Inadequate knowledge and low motivation on account of



lack of any incentives for clean milk products could have led to this situation.

**Table 3:** Extent of adoption of the practice

SI No	Category	Frequency	Percentage
1	Low (<30)	13	26
2	Medium (30-60)	27	54
3	High >60	10	20

#### 4. Recommendations

To improve the adoption of milking practices the cattle rearing farmers, milkers have to be sensitised through training, advertisement or documentaries through electronic media, newspapers, posters with the help of the veterinary department, veterinary university and milk societies.

#### 5. Conclusion

The overall extent of adoption of milking practices was medium for majority of the respondents and the practices for prevention of mastitis like teat dipping were poorly adopted. A few farmers were following the stripping method of milking which causes bleeding of teats which could be seen as a cause for hindering the production performance and thereby causing huge economic loss to farmers. Majority of the dairy farmers were found to be following scientific milking practice and taking care of cleanliness as reflected by full hand milking practices and using clean milk utensils. Dairy farmers should be educated regarding significance of complete milking and milking at separate place. There is need for strong coordinated extension activities to increase awareness among the farmers and well-knit information delivery system is the demand of the hour to address the problem through recommended scientific milking management practices.

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