



## RESEARCH PAPER

# Role of antecedent characteristics of co-operative dairy farmers in clean milk production

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**Abstract :** The antecedent characteristics of the dairy farmers is highest on those aspects or materials which already possessed by them information about these characters was very useful for measuring its considerable impact influence on knowledge, adoption and communication behaviour and milk quality. These characters variables are critically analyzed. This study was conducted with this objective in western Uttar Pradesh where 120 dairy farmers (60 CMP and 60 N-CMP) from four district milk unions were selected. The results of the study revealed that the large majority of dairy farmers were belonging to middle age group (33-58 years), education status of dairy farmers were 13.33 and 20 per cent illiterate followed by 23.33 and 26.67 per cent under metric in CMP and N-CMP villages, respectively. More than half of the respondents belonged to medium category regarding their family education status in CMP and N-CMP villages, respectively. A large number of dairy farmers 75 and 65 per cent were found belonging to medium category for their experience in dairying *i.e.* 18 to 38 years. Majority of dairy farmers 68.33 and 60 per cent were having medium family size *i.e.* 5 to 9 members and social participation 53.33 and 65 per cent in CMP and N-CMP villages, respectively. 46.67 and 33.33 per cent dairy farmers were having medium land holding (2-4 hectare) and milk production per day per household was 66.67 and 70 per cent while, milk consumption was 53.33 and 80 per cent was in medium category in CMP and N-CMP villages, respectively.

**Key Words :** Socio-economic, Dairy co-operative society, CMP, Socio-personal, N-CMP

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## INTRODUCTION

Animal husbandry makes a significant contribution in the national economy and socio-economic development of the country. In rural India, the livestock is the main source of livelihood to the farmers, where over 15-20 per cent families are landless and about 80 per cent of the land holders belong to the category of small to marginal farmers (Hegde, 2006). Improved productivity of milch

animals and higher returns of dairy farmers crucially depend on the quality of extension services. The focus of extension is on improving the capacity of the people. This capacitating calls for providing access to information, innovation and appropriate technologies, skill and knowledge building which requires integrated, need-based and timely delivery of services as close to the people as possible (Vidya *et al.*, 2009). One of the major

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factors for low export of our dairy products has been the quality and safety aspects of the raw milk. Consumers all over the world have become quality conscious and prefer high quality products. In India fast deterioration in milk quality has been observed by the time it reaches from producer to dairy processing plant. This needs to be taken into consideration by introducing concept of clean milk production (CMP) at the village level. The CMP involves thorough cleanliness at all phases of handling and stringent quality control and hygienic measures have to be adopted at farm level (Gupta, 2003). Indian dairy sector needs to build its competitiveness on the basis of quality, productivity and efficiency to continue its march towards success in national and international market (Kurien, 2004). CMP at producers' level includes hygienic norms, improved animal husbandry practices and regulatory requirements for milk production (Sohrab, 2004). The efforts were initiated by the National Dairy Development Board (NDDB) in collaboration with different dairy federations of various states, (which are having dairy value chain system) to introduce the practices of CMP at the village level. Due to the above facts and its essentiality for India as World Trade Organization's (WTO) signatory, raw milk quality should be analyzed and improved by using good animal husbandry practices from producer to processor (Singh and Gupta, 2014). Considering these facts the present study was conducted to know the antecedent characteristics of dairy farmers of western Uttar Pradesh. The present paper was the pioneer attempt in India, where socio-economic factors of dairy farmers was analyzed. The study provides an insight into various factors influencing the practicing of CMP which in turn helps in improving raw milk quality value chain.

## MATERIAL AND METHODS

The study was conducted to know the role of dairy co-operative farmers in clean milk production at producer level in Uttar Pradesh state. So it was utmost important to select only those milk unions, which were having sufficient number of co-operative societies under CMP programme. The representation of four milk unions namely, Meerut, Moradabad, Bulandshahr and Jyotiba Phule Nagar were selected purposively for the study. After selection of four milk unions, in each union four villages dairy co-operative societies under CMP and N-CMP, in which two societies under CMP (clean milk production) and two societies under N-CMP (Not

covered under Clean Milk Production) were selected purposively. The totals of 120 farmers (60 CMP and 60 N-CMP) were selected. CMP villages means those societies who are working under district co-operative societies and many facilities were providing by government. While, N-CMP villages was also working under district co-operative societies but they have not availed above facilities. The reference period was 2008-09. The interview schedule was prepared by incorporating all the inevitable information required for the study. The various statistical tools used, were frequency, percentage for preliminary analysis of variables. The antecedent characteristics were selected for the present study on the basis of available literature, expert's opinion and personal experience of researcher about the study area. These antecedent characteristics are discussed below mentioned heads with their results.

## RESULTS AND DISCUSSION

The results obtained from the present investigation as well as relevant discussion have been summarized under following heads :

### Socio-personal characters of co-operative dairy farmers :

#### Age:

The age of respondents is an important factor, which determines the maturity of an individual and has a bearing on thinking, experience, decision making and exposure of a person. The results in Table 1 revealed that majority of the farmers 55.00 and 51.67 per cent were in middle age category under CMP and N-CMP village, respectively *i.e.* 33 to 58 years of age; followed by 21.66 and 31.67 per cent in old age category under CMP and N-CMP village, respectively. On the other hand, 23.33 and 16.66 per cent dairy farmers under CMP and N-CMP villages, respectively were in young age category *i.e.* upto 33 years. The present study was conducted under co-operative dairy societies where the members of DCS are always head of their family, which in general having middle age that is 33 to 58 years. The co-operative dairy farmer's age was selected as an independent variable for analyzing its impact on milk quality. It is a general perception that young persons are always more conscious about quality rather than old ones. Almost similar findings were also observed by Saha *et al.* (2010); Raval and Chandawat (2011); Gupta and Tripathi (2006); Rajput *et al.* (2012) and Sabapara *et al.* (2014) who found that

majority of the dairy farmers were in the middle aged group.

#### Education :

The study revealed that about dairy farmers 13.33 and 20 per cent under CMP and N-CMP village, respectively, were illiterate. It is important to know that only 12 (08 CMP and 04 N-CMP) farmers (13.33% and 6.67%) were found in the category of graduation and above level of education. The Table 1 suggests that 23.33 and 26.67 per cent of the dairy farmers under CMP and N-CMP villages, respectively were in the category of metric level of education followed by 16.67 and 25 per cent in middle and 30 and 16.67 per cent in intermediate education under CMP and N-CMP villages, respectively. The education is an integral part of any extension programme. A general attitude about education is that person who having more education are always more conscious about quality of milk. Sabapara *et al.* (2014) observed that the per cent level of illiterate upto primary, secondary and above secondary upto college level were 37, 29.67, 28.33 and 5, respectively in dairy husbandry

practices in Surat district of Gujarat.

#### Family education status :

The results in Table 1 show that 68.33 and 65 per cent dairy farmers under CMP and N-CMP village, respectively came under medium category regarding family education status. Again 20 and 16.67 per cent of the respondents under CMP and N-CMP villages, respectively were in high family education status category which is a good indication for launching new programmes on milk quality improvement. On the other hand only 11.67 and 18.33 per cent dairy farmers under CMP and N-CMP village, respectively were low in family education status category. The clean milk production is not in the hands of a person who is rearing the animal or a person who is pouring the milk at dairy co-operative societies. It is a combined responsibility of all the family members because it plays a vital role in maintaining the milk quality at pail as well as dairy co-operative societies level. Singh (2006) and Raval and Chandawat (2011) observed the same result in their studies regarding family education status.

Sr. No.	Characters	Category	Range	Frequency	
				CMP	N-CMP
1.	Age (in years)	Young	Upto 33	14 (23.33)	10 (16.66)
		Middle	33 to 58	33 (55.00)	31(51.67)
		Old	Above 58	13 (21.66)	19 (31.67)
2.	Education	Illiterate	0	08 (13.33)	12 (20.00)
		Primary	1	02 (3.33)	03 (5.00)
		Middle	2	10 (16.67)	15 (25.00)
		Metric	3	14 (23.33)	16 (26.67)
		Senior Secondary	4	18 (30.00)	10 (16.67)
		Graduation and above	5	08 (13.33)	04 (6.67)
3.	Family education status	Low	<1.20	07 (11.67)	11 (18.33)
		Medium	1.20 to 3.06	41 (68.33)	39 (65.00)
		High	>3.06	12 (20.00)	10 (16.67)
4.	Experience in dairying (in years)	Low	<18	05 (8.33)	14 (23.33)
		Medium	18 to 38	45 (75.00)	39 (65.00)
		High	>38	10 (16.67)	07 (11.67)
5.	Family size (Members)	Small	Upto 5	08 (13.33)	16 (26.67)
		Medium	5 to 9	41 (68.33)	36 (60.00)
		Large	>9	11 (18.33)	08 (13.33)
6.	Social participation	Low	<4.25	07 (11.67)	18 (30.00)
		Medium	4.25 to 9.77	32 (53.33)	39 (65.00)
		High	>9.77	21 (35.00)	03 (5.00)

(Figures in parenthesis indicate percentage)

*Experience in dairying :*

The Table 1 shows that majority of the dairy farmers, 75 and 65 per cent under CMP and N-CMP village, respectively had medium level of experience in dairying *i.e.* 18 to 42 years, while only 16.67 and 11.67 per cent farmers under CMP and N-CMP village, respectively were in more experience category followed by 8.33 and 23.33 per cent in low category under CMP and N-CMP village, respectively. The numbers of years of experience were more because Uttar Pradesh is agricultural state where livelihood of rural area is basically based on dairying. The experience of dairy farmers is an accumulation of time period which is spent by an individual to do something for a group of activities. Clean milk production is a process which starts from mouth of an animal to mouth of a consumer. So, experience in dairying is an important element which plays major role in maintaining the milk quality.

*Family size :*

Family size influences various activities in term of family labour availability, annual income of family etc. Family size was selected as an independent variable because, it is general perception of programme planners that if the family size is small then they can persuade the members for adopting and maintaining the milk quality easily. The Table 1 revealed that majority of dairy farmers, 68.33 and 60 per cent under CMP and N-CMP village, respectively had medium family size ranging from 5 to 9 members, followed by 18.33 and 13.33 per cent in large and 13.33 and 26.67 per cent in small family size category under CMP and N-CMP village, respectively. The results of the present study are similar to the findings of Meena *et al.* (2012). This implies that the respondents were aware of the advantages of family planning.

*Social participation :*

The Table 1 shows that majority of the dairy farmers 53.33 and 65 per cent were having medium level of social participation under CMP and N-CMP village, respectively while 11.67 and 30 per cent were in low level under CMP and N-CMP village, respectively followed by 35 and 5 per cent as high level of social participation under CMP and N-CMP village, respectively. All the respondents were members of dairy co-operative societies where participation of a member was so high because in co-operative system all decisions are in the hands of member farmers. It was observed that all the

farmers participated in dairy co-operative societies, agricultural co-operative society and religious as well as community organizations. Similar findings were also observed by Saha *et al.* (2010) in their study who found that about 70 per cent of the farmers were not linked with any institution. Only 17.92 per cent farmers were office bearer. It was also revealed that about 12 per cent farmers were associated with one or more organizations. Again the results of the present study contradicted to those of Rathod *et al.* (2012) who found that 68 per cent were members of one organization followed by 30.33 per cent farmers having membership in more than one organization while, 1 per cent did not participate in any social activities.

**Socio-economic characters of co-operative dairy farmers :***Land holding :*

Land is an important and crucial scarce factor of production. Operational land holding indicates the economic well-being of rural household. It was observed from Table 2 that most of the farmers, 46.67 and 33.33 per cent had medium level of land holding under CMP and N-CMP village, respectively *i.e.* 2 to 4 hectares followed by 16.67 and 28.33 per cent dairy farmers had small hard size under CMP and N-CMP village, respectively whereas, 26.67 and 16.67 per cent dairy farmers had large hard size under CMP and N-CMP village, respectively while 8.33 and 15 per cent dairy farmers had marginal hard size under CMP and N-CMP village, respectively. Only 1.67 and 6.67 per cent farmers were in landless category under CMP and N-CMP village, respectively. The large land holders were having more than four hectares land, which is three times more than national average land holding. These findings are in contradiction to those reported by Rathod *et al.* (2012) who revealed that 76.67 per cent respondents were medium land holder followed by small (12.67 %) and larger land holding (10.66 %) farmers.

*Herd size :*

It is evident from Table 2 that 61.67 and 70 per cent were large number of farmers under CMP and N-CMP village, respectively in medium category *i.e.* 3 to 6 animals for possessing herd size, which is in extensive range but these findings seems to be logical too, because dairying is the main occupation of dairy co-operative society members and majority of them were keeping good

number of animals. On the other hand 31.67 and 10 per cent farmers had large herd size under CMP and N-CMP village, respectively *i.e.* more than 6 animals followed by 6.67 and 20 per cent in small herd size under CMP and N-CMP village, respectively. The other researcher (Vidya *et al.*, 2009) found that a high majority (88.33 %) possessed small herd and the rest (11.67 %) had large herd.

#### Annual income :

Income is a crucial variable, which influences the farmers' investment in farming activities. The major source of income was from selling of milk at dairy co-operative societies. The results in Table 2 show that 28.33 and 13.33 per cent of respondents were in the category of Rs.100001 to 150000 per annum under CMP and N-CMP village, respectively which is very good amount in farming community. While, 46.67 and 61.67 per cent of the farmers were in the category under which their annual income was Rs. 50000 to 100000 under CMP and N-CMP village, respectively followed by 6.67 and 15 per cent as less than Rs. 50000 annual earners under

CMP and N-CMP village, respectively. whereas, 18.33 and 10 per cent of farmers were found to earn more than Rs. 150000 annually from dairying under CMP and N-CMP village, respectively. It is good information for programme planners because money is not only the matter in this economic socialism, money is the meaning of life. If we increase the rate of dairy products on the basis of quality of raw material then we assure that quality will be good because no one wants to face loss. It is very important to know that the Meerut, Moradabad and Bulandshahr milk unions were started incentives for CMP but it was only for bulk milk cooler occupied societies where, dairy co-operative society secretary was the client for award. These results are similar to those of (Dechow, 2011) and (Lahoti *et al.*, 2012).

#### Milk production :

Improved productivity of milch animals of dairy farmers crucially depends on the quality of extension services. The present study evident from the Table 2 that the majority of dairy farmers, 66.67 and 70 per cent were in medium category of milk production *i.e.* 8.51 to

Sr. No	Characters	Category	Criteria	Frequency	
				CMP	N-CMP
1.	Land holding (in hectare)	Land less	0	01 (1.67)	04 (6.67)
		Marginal	<1	05 (8.33)	09 (15.00)
		Small	1-2	10 (16.67)	17 (28.33)
		Medium	2-4	28 (46.67)	20 (33.33)
		Large	>4	16 (26.67)	10 (16.67)
2.	Herd size	Small	<3	04 (6.67)	12 (20.00)
		Medium	3 to 6	37 (61.67)	42 (70.00)
		Large	>6	19 (31.67)	06 (10.00)
3.	Annual income (in rupees)	<50,000	1	04 (6.67)	09 (15.00)
		50,000 to 1,00,000	2	28 (46.67)	37 (61.67)
		1,00,000 to 1,50,000	3	17 (28.33)	08 (13.33)
		>1,50,000	4	11 (18.33)	06 (10.00)
4.	Milk production (litre/day/ household)	Low	<8.51	02 (3.33)	07 (11.67)
		Medium	8.51to18.99	40 (66.67)	42 (70.00)
		High	>18.99	18 (30.00)	11 (18.33)
5.	Milk consumption (litre/day/household)	Low	<1.39	16 (26.67)	04 (6.67)
		Medium	1.39 to 3.41	32 (53.33)	48 (80.00)
		High	>3.41	12 (20.00)	08 (13.33)
6.	Milk sale (litre/day/household)	Low	<6.51	04 (6.67)	16 (26.67)
		Medium	6.51to16.21	35 (58.33)	33 (55.00)
		High	>16.21	21 (35.00)	11 (18.33)

(Figures in parenthesis indicate percentage)

18.99 litres/day/household under CMP and N-CMP villages, respectively followed by 3.33 and 11.67 per cent in low while, 30 and 18.33 per cent in high category for milk production *i.e.* more than 18.99 litres milk per day under CMP and N-CMP villages, respectively. The results were showing higher average milk production, the reason was large herd size of milk producing animals. Vidya *et al.* (2009) found in their study that the daily milk production in majority (71.67 %) ranged between 3.66 and 11.2 litres, and 18.88 per cent attained over 11.2 litres per day while, one-tenth had low milk production.

#### *Milk consumption :*

The consumption of milk was not only for the dietary purpose, it was also used for preparing milk products which were sold in market for getting more money. For this reason average milk consumption was so high. The Table 2 revealed that the large numbers of farmers, 53.33 and 80 per cent were in medium category for milk consumption *i.e.* 1.39 to 3.41 litres/ day/ household under CMP and N-CMP villages, respectively. In this region average milk consumption was high in both categories.

#### *Milk sale :*

Table 2 revealed that the respondents belonging to high category (35 and 18.33%) were selling more than 16 litres milk per day under CMP and N-CMP villages, respectively. The majority of them 58.33 and 55 per cent were in medium category *i.e.* 6.51 to 16.21 litres milk selling per day whereas, only 6.67 and 26.67 per cent were in low category *i.e.*, less than 6.51 litres of milk sale under CMP and N-CMP villages, respectively. (Shinde, 2011) found in his study that the share of milk sold was high among commercial farmers mainly due to their large production base and market oriented production objectives.

#### **Conclusion :**

It is concluded that majority of the respondents were middle aged and literate up-to secondary standard of education with medium family size. Majority of the respondents possessed land with small and medium herd size. A large number of dairy farmers were found belonging to medium category for their experience in dairying while, majority of dairy farmers were having medium family size and social participation in CMP and N-CMP villages, respectively. Dairy farmers were having medium land holding (2-4 hectare) and milk production

per day per household was more than 65 per cent in both categories. Milk consumption was more than 50 per cent in medium category in CMP and N-CMP villages, respectively. These antecedent characteristics will be useful for providing need gap and available resources which support to planning and execution at field level to produce clean milk production.

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