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Socio-economic profile of dairy farmers and knowledge gain through MTCs in the Vidarbha region of Maharashtra

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Abstract
The main objective of this research was to study the socio-economic and knowledge gained by dairy farmers. Three Micro Training centres namely Nagpur, Wardha and Amravati districts in Vidarbha region of Maharashtra. 80 dairy farmers were selected randomly from each MTCs included making 240 respondents. The findings revealed that the majority of the respondents were from the middle age group (63.75%), with education up to secondary school (50.83%), were males (95.83%) from the OBC category (56.25%), with medium family size (60.83%), having joint families (75.00%), were married (86.70%), with medium land holding (56.25%), had large herd size (87.50%), with high medium milk production (43.33%), milk sale (46.25%) and medium annual income group (62.5%). MTC, Wardha dairy farmers showed the maximum knowledge gain with a mean score of 40.72% followed by MTC, Nagpur 38.78% and MTC, Amaravati 38.26%.

Keywords: Dairy farmers, knowledge gain, micro training centers

Introduction
Dairy sector is the one of the fastest-growing parts of India's agricultural economy. It accounts for almost 4.2 per cent of GDP and provides nearly 28.63 per cent of the total value of agriculture GDP. The overall growth of the dairy sector is approximately 8.24 per cent. India is the world's leading producer of milk, with production increasing from 17 million tonnes in 1950-51 to 198.4 million tonnes in 2019-20. Per capita, milk availability has also increased from 112 grams per day in 1968-69 to 407 grams in 2019-20. According to provisional figures from the 20th livestock census, the overall cow and buffalo population in the country is 192.4 million and 109.85 million respectively. Out of 192.4 million cattle, there are 145.11 million female cattle and the milch population is 74.17 million, with only 43.9 million animals in milking stage. In case of buffaloes, the total female population is 100 million, with 51.16 million being milch animals and only 38.16 million are in milking stage (20th Livestock Census, 2019) [1].

More than 65 per cent of Indians live in villages, rely on agriculture and related industries for their living. Dairy farming is now playing the most significant role in creating opportunities for marginal and female farmers to generate money. The majority of the milk in our nation is produced by marginal farmers and laborers who lack access to land for animal husbandry. In rural areas, the majority of landless laborers, marginal farmers, and small farmers practice small-scale dairy farming with less than 10 cows, fighting to make ends meet for their families. The main characteristic of the Indian dairy business is that it is still mostly disorganized and only 18–20 per cent of the country's total milk production goes through the organized sector.

Conducting training for dairy farmers on the newest dairy farming procedures will certainly improve their knowledge of scientific dairy practices. Animal productivity will be improved by understanding and adopting scientific procedures. Scientific dairy farming training programs have been reported to have a positive impact on dairy farmers' adoption of technology and knowledge levels (Murai and Singh, 2011) [16]. There is still a significant gap between research technology and its application, notably in animal rearing. As a result, dairy owners are slow to adopt dairy management practices. Farmers who are interested to know about dairy practices can apply and get benefits from the training given by the Veterinary Institutes.

Training Centre such as Micro Training Centre (MTC). The main objective of this research is to evaluate the knowledge gained and the socioeconomic status of dairy farmers who have undergone such training at MTC.

Materials and Methods

The study was conducted in three districts of the Vidarbha region of Maharashtra namely Nagpur, Wardha and Amravati. Data was collected from these districts' three Micro Training Centres (MTCs). These districts were purposively selected because in these districts this three Micro Training Centre are located and also in these district livestock population is high as per livestock census of year 2019. Thus, it was assumed that the number of dairy farmers involved in dairy farming will also be sufficiently available from these districts. From each Micro Training Centre (MTC) 80 Dairy farmers were randomly selected (3 X 80 = 240). Thus, a total of 240 farmers were randomly selected for the final study with the help of a structured interview schedule with personal dialogue methods and observations.

For the present study, a dairy farmer who has more milk production and sells the milk in large amounts to Mother Dairy was considered as a respondent. A list of such dairy farmers was prepared by the Mother Dairy with the help a of supervisor. From each selected Micro Training Centre place, a sample of 80 dairy farmers who were engaged in dairy farming was selected. Preparation and personal interview with farmers, was done, from the selected training center of these districts for socioeconomic status of dairy farmers.

The study was done on the basis of pre and post-training knowledge gained of dairy farmers. The test items consisted of selected objective questions on various aspects of the training curriculum. The scores were converted into percentages and average scores were worked out as per Ravi Kumar *et al.* (2016) [12]. The knowledge test was administered to the respondents of the present study. Scoring was done according to the correctness of the response of the respondents against each item. Knowledge scores of the individuals in different aspects such as breeding, feeding, healthcare and management were obtained by summing up scores of each item under different aspects. Then the respondents were categorized into low, medium and high categories of knowledge gained. After completion of the survey, the data obtained were tabulated and analysed using appropriate statistical methods. Statistical tools like arithmetic mean standard deviation, standard error, frequency and percentage were used.

Table 1: Socio economic characteristics of dairy farmers

Characteristics	Category	Frequency	Percentage
1. Age	Young age (18-30 yrs.)	26	10.83
	Middle age (31-50 yrs.)	153	63.75
	Old age (51 and above)	61	25.42
2. Education	Illiterate	13	5.42
	Primary	86	35.83
	Secondary	122	50.83
	Higher	19	7.92
3. Marital Status	Married	214	89.17
	Unmarried	26	10.83
	Divorced	0	0.00
	Widow	0	0.00
4. Gender	Female	10	4.17
	Male	230	95.83
5. Category	Unreserved	49	20.42
	SC	33	13.75
	ST	9	3.75
	OBC	135	56.25
	VJNT	9	3.75
	SBC	3	1.25
	Other	2	0.83
6. Family Size	Small (2-4 Members)	79	32.92
	Medium (5-9 Members)	146	60.83
	Large (10-20 Members)	15	6.25
7. Family Type	Nuclear	60	25.00
	Joint	180	75.00
8. Experience in dairy farming	Low (0-3 yrs)	89	37.08
	Medium (3.01-6 yrs)	110	45.83
	High (Above 6.01 yrs)	41	17.08
9. Land Holding	Landless (0 ha.)	20	8.33
	Marginal (Up to 1 ha.)	0	0.00
	Small (1.01-2 ha.)	7	2.92
	Semi-medium (2.01-4 ha.)	75	31.25
	Medium (4.01-10 ha.)	135	56.25
	Large (Above 11 ha.)	3	1.25
10. Herd size	Low herd size (Up to 2 animal)	0	0.00
	Lower medium herd size (3 to 5 animal)	2	0.83
	Upper medium herd size (6 to 10 animal)	28	11.67
	Large (Above 11 animal)	210	87.50

11. Daily Milk Production	Low milk production (Up to 20 litres)	8	3.33
	Low medium milk production (21-40 litres)	52	21.67
	High medium milk production (41-60 litres)	104	43.33
	High milk production (61 and above litres)	76	31.67
12. Daily Milk Sale	Low milk sale (Up to 20 litres)	10	4.17
	Low medium milk sale (21-40 litres)	50	20.83
	High medium milk sale (41-60 litres)	111	46.25
	High milk sale (61 and above litres)	69	28.75
13. Annual Income	Low income (Up to Rs. 1,50,000)	81	33.75
	Medium income (Rs. 1,500,01 to Rs. 3,00,000)	150	62.5
	High income (Above Rs. 3,00,001)	9	3.75
14. Training Attended	Yes	240	100
	No	0	0
15. Extension Contact			

LDO	12	5	161	67.08	67	27.92
Animal Husbandry	224	93.33	16	6.67	0	0.00
Subject Matter Specialist	0	0.00	240	100	0	0.00
Dairy Expert	190	79.17	50	20.83	0	0.00
Television	8	3.33	67	27.92	165	68.75
Radio	94	39.17	65	27.08	81	33.75
Newspaper	81	33.75	126	52.50	33	13.75
Social Media	44	18.33	41	17.08	155	64.58

16. Social Participation	Low social participation	114	47.50
	Medium social participation	40	16.67
	High social participation	86	35.83

Age

The majority of dairy farmers (63.75%) were in the medium age group, followed by 25.42 percent in the old age group whereas, remaining 10.83 percent were in the young age group. This could imply that dairy farming is a primary or secondary occupation for middle-aged people. This data is consistent with Kumar (2020) [11] and Kalaivani *et al.* (2017) [6] observed that the majority of dairy farmers (63%) are in their forties.

Education

The results clearly showed that 50.83% of dairy farmers had completed secondary school, followed by 35.83% were primary education, 7.92% were higher secondary while, lowest was observed in illiteracy i.e 5.42%. Similar observation was found by Koli *et al.* (2019) [9] reported that the majority of dairy farmers (50%) were educated up to secondary school, whereas Rai *et al.* (2017) [18] reported that 32.50 percent of dairy farmers were educated up to primary school.

Marital Status

Most of the dairy farmers were married (89.17%), 10.83% were single, and none were divorced or widowed. Findings were in consistent with Girei *et al.* (2014) [4] and Mumba *et al.* (2012) [15], who found that more than half of the respondents were married.

Gender

Table 1 clearly shows that the bulk of responders (95.83%) were male, with only 4.17 percent being female. It is worth noting that, despite the fact that women perform the majority of animal husbandry work, female dairy farmers account for only 4.17 percent of the total. According to the survey, men continue to make the majority of decisions in rural areas on the sale or acquisition of a new animal in the herd. The dominance of men in business can be attributed to tradition, culture, taboos, and beliefs that hinder women from participating in marketing activities held in areas far from their homes. Dairy animal marketing has also been documented by Maurya *et al.* (2021) [14] and Rai *et al.* (2017) [18].

Category

Majority of respondents (56.25%) belonged to the Other Backward Classes (OBC), followed by the Unreserved (20.42%), Schedule Caste (13.75%), Schedule Tribes (3.75%), VJNT (3.75%), SBC (1.25%), and a few others (0.83%). This finding is consistent with the findings of Kumar *et al.* (2020) [11] and Atreya *et al.* (2018) [2].

Family Size

60.83% of dairy farmers belonged to medium-sized families followed by tiny (32.92%) and least in large-sized families (6.25%), respectively. This could be linked to the proclivity to live in nuclear families, as well as the impact of increased awareness of family planning programs in rural areas. This finding is consistent with the findings of Atreya *et al.* (2018) [2], Gour *et al.* (2015) [5], and Singh *et al.* (2021) [22].

Family Type

Dairy farmers living in the appropriate family type indicated that three-quarters of the respondents were from joint families and the remaining one-fourth were from nuclear families. The findings of this study are consistent with those of Dwivedi *et al.* (2014) [3] and Rathod *et al.* (2011) [20].

Experience in dairy farming

According to the data in Table 1, the majority of respondents (45.83%) had medium experience in dairy farming, 37.08 percent had low experience, and the remaining 17.08 percent had high experience in dairy farming. According to the above data, farmers in the medium group have basic knowledge of dairy farming but desire to get scientific information to

maximize their profit. The findings of this study agree with those of Vekariya *et al.* (2016) [23] and Kalaivani *et al.* (2017) [6].

Land Holding

The majority of respondents (56.25%) had medium landholding, followed by semi-medium (31.25%), landless (8.33%), minor landholding (2.92%), and very few (1.25%) have huge landholding. The land is regarded as an important socioeconomic indicator in agriculture and rural development. Farm size largely determines farm production processes and livestock enterprise volume. The conclusions of this study are consistent with the findings of Roy *et al.* (2013) [19], who discovered that 66.66% of respondents had modest landholding.

Herd Size

It is obvious that the majority of respondents (87.50%) had a large herd size, followed by an upper medium herd size (11.67%), while a few dairy producers had smaller herd sizes (0.83%). The data presented above contradict those reported by Kalaivani *et al.* (2017) [6] and Lohakare *et al.* (2015) [13], who discovered that the majority of farmers had small or medium herd sizes. The likely cause of the wide range is the increasing number of animals on a daily basis, as well as farmers' adoption of scientific management practices to maximize the economic benefit by producing big numbers of cows and buffalo.

Daily Milk Production

The average amount of milk produced by the farmer in litres per day is referred to as daily milk production. Dairy producers reported high-medium milk output (43.33%), followed by high milk production (31.67%), low medium milk production (21.67%), and low milk production (3.33%). additional milk output recorded by these dairy farmers might be attributed to additional milking animals, a higher remunerative price for the milk, and proper payment from Mother Dairy's milk collection facilities, where these farmers are pourers. This finding is consistent with Kalaivani *et al.* (2017) [6] and Rai Kumar *et al.* (2017) [18].

Daily Milk Sale

The majority of dairy farmers (46.25%) reported high medium milk sales, followed by high milk sales (28.75%), low medium milk sales (20.83%), while a few respondents (4.17%) reported poor milk sales. Thus, the majority of the population (46.22%) consumed high-medium milk sold by dairy farmers. High milk sales could be ascribed to the availability of high milk production breeds, such as crossbred HF and Jersey dairy cows, a fair milk price, and timely payment by Mother Dairy. This study follows the findings of Kalaivani *et al.* (2017) [6].

Annual Income

Dairy farmer producers were clearly in the medium-income group (62.5%), followed by the low-income group (33.75%), and the remaining were in the high-income group (3.75%). Because the majority of the farmers had medium landholdings, their income was likely to be in the middle range. They are starting a dairy farm as a side venture to supplement their income. This report agrees with Shahjar *et al.* (2018) [21] and Kalaivani *et al.* (2017) [6], who indicated that income levels of up to Rs. 1-2.5 lakh are acceptable. The current findings contradict the findings of Atreya *et al.* (2018) [2] and Kumar *et al.* (2020) [11], who found that the majority of farmers had a low annual income.

Training Attended

According to the results in the table above, 100% of dairy farmers had attended at least one training on animal husbandry-related subjects, either from Mother Dairy's field staff or from another organization. The findings of this study agree with those of Kumar *et al.* (2020) [11] and Karthik *et al.* (2021) [7].

Extension Contact

A set of parameters in the form of a structured interview schedule was utilized based on the agricultural techniques to rate each parameter on a three-point scale ranging from no contact to occasional contact to regular interaction. It was found that the majority of dairy farmers (68.75%) used television regularly for information seeking, followed by social media (64.58%), with the subject matter specialist group having the least contact. The greatest number of persons (67.08%) were in contact with Livestock Development Officers within the stated range of occasional contact.

Social Participation

According to the data, the majority of dairy farmers (47.50%) had low social engagement, followed by 35.83% who had high social participation, and the remaining 16.67% who had medium social participation. The majority of respondents had low levels of social participation, which may be attributed to a lack of awareness and a lack of time available for active social participation due to the dairy farmers' heavy jobs. These results are consistent with those of Vekariya *et al.* (2016) [23] and Maurya *et al.* (2021) [14].

Knowledge gain

Dairy farmers trained at MTC Wardha gained the most knowledge, with a mean score of 40.72 percent, followed by 38.78 percent and 38.26 percent for farmers trained at MTC Nagpur and MTC Amravati, respectively. The findings of who discovered that the overall knowledge level of women dairy producers was moderate (48.33%), followed by good (27.34%), and bad (24.33%), and very comparable results were also reported by Kobba *et al.* (2020) [8] and Kumar *et al.* (2016) [12].

Conclusion

Based on the observations made there was low female participation when compared to male farmers in dairy farming training areas. Despite the fact that female farmers are actively involved in animal rearing practises. Dairy owners are usually concerned about the health and production of their cattle, so they choose to seek the assistance of professionals to get their questions answered and to obtain training to gain information about many important elements of their farming.

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