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RESEARCH PAPER

Dairy Farming - A Tool for Rural Women Empowerment

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ABSTRACT

A survey-based study was carried out in ten villages to assess the role of women in dairy farming in Nahan Development Block of District Sirmaur, Himachal Pradesh. Total number of 55 dairy farmers were selected to study quantity of milk production marketable surplus, gross returns and the problems faced by them. The results showed that around 76 per cent of women were literate and their participation was highest in tending animals and other related activities. The average milk production per farm was found to be 14.52 litres, out of which the marketable surplus was 51.93 per cent and per capita milk consumption was arrived at 1.26 litres. The major problem faced by dairy farmers was lack of knowledge about modern dairy practices and the drudgery borne by women while performing the important activities. Therefore, there is a need to educate farm women about new technologies and methods for increasing milk production and simultaneously to develop technologies to reduce their drudgery.

HIGHLIGHTS

- Women's labour in multiple dairy activities exceeds that of men in time input.
- Marketable surplus constitutes about half of milk produced per farm.
- Literacy among women is about 76%, yet adoption of modern technologies is low.
- Key constraints include feed/fodder quality, veterinary support, and shed hygiene.

Keywords: Rural women, Dairy farming, Milk production, Marketable surplus, Livestock management

Dairy farming is one of the most reliable socio-economic factors to supplement the employment and income for rural women in their own household. It is supporting approximately two third livelihood of the rural population. India as a leader in milk production by contributing 198.4 million tonnes per annum in 2019-20 and accounting for approximate 22 per cent in world milk production. It has been globally recognized that dairy farming is less vulnerable as compared to agriculture because of less uncertainty and minimum impact of climate change on livestock (Chakravarty, 2018). Therefore, its contribution is noticeable in the economy. This signifies that dairy farming is a vital component for millions of rural women. The rural women plays a key role in dairy farming and are involved in milking, feeding, dung collection, cleaning and health care activities. Women spend most of their time in care and management of the dairy animals. Many researchers have studied that dairy farming responsibilities are shouldered by women. There are number of studies that have confirmed the significant participation of women in dairy activities.

LITERATURE REVIEW

Singh and Vaidya (2010) examined that because of low availability of per capita arable land, substantial availability of common property grazing lands, poor crop productivity, and lack of other income-generating activities have made the rearing of

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dairy animals an economic compulsion in the western Himalayan region, especially in Himachal Pradesh, in India. Ganesan (2013) observed that dairy farming has been an aid for dairy farmers to the landless workers and women which act as source of income for rural women. Besides this, animal husbandry contributes in between 10 and 32 per cent of total household income in the different agro-climatic zones in the region. Jadav *et al.* (2013) found that dairy farming in India is a female dominated enterprise, the women spent more time than men in dairy production activities. Kaur (2015) Qureshi (2016) Mishra (2017) and Dudi *et al.* (2019) are observed that day-to-day activities performed by women are crucial inputs for economic returns that a household earns through livestock production either directly through sale of livestock and livestock products. Rural women also carried out hard household chores and also undertake the taxing job of cattle rearing. Their role in dairy activities ranges from grazing, collecting and cleaning animal sheds to processing of milk and livestock products that enable vulnerable and landless families particularly farm women to earn income using common properties. Same line of work undertaken by Yasmin and Ikemoto (2015) reported that participation of women in small scale farming created an opportunity for women to earn money and also helped women to improve their socio-economic condition and improve their quality of life.

Although women play an important role in livestock sector, but their contribution in dairy farming has not been given due place and their share in income from this activity is considered to be lacking in the study area. To fill this gap, present study was conducted to know the women participation in dairy activities in Nahan block district Sirmour Himachal Pradesh.

OBJECTIVES

1. To study the socio-economic characteristics of sample farmers.
2. To examine the milk utilization pattern and participation of women in dairy activities

METHODOLOGY

The study was conducted in Nahan development block district Sirmour Himachal Pradesh. Two stages random sampling technique was used to select a sample of 10 villages and 55 dairy farmers. The entire sample was divided into two categories viz; small (40) and large (15) dairy farmers using square root cumulative frequency method based on number of milch animals. The study was based on primary data collected from the selected households by using well-designed and pre tested schedules through a personal interview method.

MAJOR FINDINGS

The results of social-economic profile of sample farmers are presented in Table 1. It can be seen from the table that out of total sample of 55 farmers, 72.73 per cent belonged to small category and rest 27.27 per cent to large category. With respect to age category, majority (54.55%) of the sample farmers fell in the age group of 41-60 years followed by (36.36 %) middle aged and 9.09 percent old aged. Similar pattern seen in the case of small farmers, majority (57.50%) belonged to the age group of 41 to 60 years followed by nearly one-third of up to 40 years. In case of large farmers, equal proportion (46.67%) of farmers each fell in up to 40 and 41 to 60 years age group. In the age category of above 60 years, only 10 per cent of farmers were from small and around 7 per cent of large category. This showed that old aged were less involved in dairy farm activities. It was also observed that the proportion of joint families (50.91%) was slightly higher than nuclear (49.09%). Proportion of joint families belonged to small farm size was 45 per cent and in case of large size it was around 67 per cent. However, in case of nuclear families, the proportion in small category was 55 per cent in comparison to 33.33 per cent in large category. Thus, it showed that joint family system was prevalent among the sample farmers in the study area.

Education also plays an important role in the adoption and decision making activities of dairying at commercial level. The increase in the level of education makes especially women more capable to understand new and scientific technologies in dairy farming. If women are educated, they can learn new technologies more quickly and resultantly may drive benefits efficiency from new initiatives taken by the state agencies. It is evident from the table that the percentage of illiterates at overall level was around 22 per cent. Among literates,

majority (36.36 %) of farmers possessed primary level of education followed by matriculation (16.36%), senior secondary (12.73 %) and graduate and above (12.73 %). Among farm size category, proportion of illiterates in small group was 20 per cent in comparison to 26.67 per cent in large category. In case of small category, 40 per cent of farmers had primary level of education followed by matriculation and graduate, i.e., 15 per cent each. Only 10 per cent of small farmers and one fifth of large possessed senior secondary level of education.

The results about the major occupation have also been shown in Table 1. It is evident from the table that majority (60.00 %) of households were engaged in dairy enterprises followed by agriculture (30.91%) and service in public or private sector (9.09 %). The table further shows that among the small category, percentage of sample farmers whose major occupation was dairy farming was found to be 80 per cent whereas the percentage of farmers employed in agriculture was around 18 per cent and about 3 per cent of sample farmers were engaged in service.

Land is a basic input for agriculture and it occupies an important position among all the resources. It can examined from the table that average size of total land holding was 1.25 which increased with the size of holding from 0.71 ha on small and to 2.68 ha on large category of the total holdings.

With regard to investment on livestock, it can be seen from the table that investment on milking animals at overall level was ₹ 99472 while in small and large category this amount was ₹ 82025 & ₹ 146001, respectively.

The present study throws light on farm wise production and disposal pattern of milk per day. The total production of milk per day in case of small, large and overall farm size was 11.82 litre, 21.73 litre and 14.52 litre, respectively. The table shows that the marketed surplus in small category was 50.76 per cent and 53.70 per cent in large category

Table 1: Socio-economic profile of sample dairy farms (Number)

Sl. No.	Particulars		Farm size (No.)			%share		
	Small		Large	Total	Small	Large	Total	
1	Age interval (years)	Upto 40	13	7	20	32.5	46.67	36.36
		41-60	23	7	30	57.5	46.67	54.55
		Above 60	4	1	5	10.00	6.67	9.09
		Total	40	15	55	100.00	100.00	100.00
2	Family type	Joint	18	10	28	45	66.67	50.91
		Nuclear	22	5	27	55	33.33	49.09
		Total	40	15	55	100	100	100
3	Education	Illiterate	8	4	12	20.00	26.67	21.82
		Primary	16	4	20	40.00	26.67	36.36
		Matric	6	3	9	15.00	20.00	16.36
		Senior Secondary	4	3	7	10.00	20.00	12.73
		Graduate and above	6	1	7	15.00	6.67	12.73
		Total	40	15	55	100.00	100.00	100.00
4	Occupation	Dairy	32	1	33	80	6.67	60
		Agriculture	7	10	17	17.5	66.67	30.91
		Service	1	4	5	2.5	26.67	9.09
		Others	0	0	0	0.00	0.00	0.00
		Total	40	15	55	100.00	100.00	100.00
5.	Member of cooperative society	Yes	4	6	10	10	40.00	18.18
		No	36	9	45	90	60.00	81.82
		Total	40	15	55	100	100	100
6	Land holding (ha)		0.71	2.68	1.25			
7	Investment on dairy (cow & buffaloes in ₹/hh)		82025	146001	99472			

Note: *Authors' own calculations.*

and 51.93 per cent at overall level. The marketed surplus is that quantity of the milk produce, which the dairy farmer actually sells in the locality village and market.

The table also shows that percentage of fluid milk consumed at home consumption was 31.13 per cent in small, 24.85 per cent in large category and 28.58 per cent at overall level. Percentage of milk for utilization and sale as curd was 19.49 at overall level whereas it was 18.11 per cent in small and 21.45 per cent in large category. Per capita consumption of milk (lt /day) was 1.13 litre in small, 1.53 litre in large and 1.26 litre at the overall level. It can be concluded that there existed positive relationship between farm size and milk production. The marketed surplus of milk was assessed to be one-half or more of the total production of 11.82 to 21.73 litre per farm. More than one-fourth of total production was consumed as fluid milk. Similarly, nearly 20 per cent was converted into milk products consumed at home and sold in the market.

Table 3 depicts the picture of participation of rural women in dairy farming. Results revealed that most of the work such as milking, watering, feeding, collection of dung, cleaning of animals shed, chopping of straw etc tending by women. It

Table 2: Farm wise production and disposal pattern of milk per day (Lt/farm)

Sl. No.	Particulars	Farm size		
		Small	Large	Average
1	Marketed surplus	6.00 (50.76)	11.67 (53.70)	7.54 (51.93)
2	Home consumption as fluid milk	3.68 (31.13)	5.4 (24.85)	4.15 (28.58)
3	Utilization and sale as curd	2.14 (18.11)	4.66 (21.45)	2.83 (19.49)
4	Total production	11.82 (100.00)	21.73 (100.00)	14.52 (100.00)
5	Per capita consumption (litre)	1.13	1.53	1.26

Note: *Figures in parentheses are percentages of total.*

Table 3: Labour utilization pattern on dairying (Hrs/day)

Sl. No.	Particulars	Gender	Small	Large	Average
1	Milking	Male	0.06 (2.20)	0.19 (3.47)	0.10 (2.70)
		Female	0.15 (5.24)	0.19 (3.38)	0.15 (4.20)
2	Watering the animals	Male	0.06 (2.10)	0.19 (3.41)	0.10 (2.78)
		Female	0.12 (4.02)	0.18 (3.19)	0.13 (3.64)
3	Dung collection	Male	0.03 (1.05)	0.11 (2.05)	0.05 (1.40)
		Female	0.20 (6.82)	0.31 (5.70)	0.23 (6.30)
4	Feeding the green grass	Male	0.09 (3.30)	0.29 (5.25)	0.15 (4.13)
		Female	0.18 (6.29)	0.28 (5.06)	0.21 (5.81)
5	Chopping of straw	Male	0.09 (3.16)	0.26 (4.74)	0.14 (3.92)
		Female	0.16 (5.42)	0.25 (4.56)	0.18 (5.04)
6	Preparing animal food mixture	Male	0.03 (0.99)	0.11 (2.05)	0.05 (1.47)
		Female	0.11 (3.85)	0.13 (2.33)	0.12 (3.29)
7	Storage of green grass & straw	Male	0.18 (6.21)	0.53 (9.67)	0.27 (7.56)
		Female	0.15 (5.33	0.19 (3.38)	0.16 (4.41)
8	Cleaning of utensils	Male	0.02 (0.70)	0.11 (1.96)	0.04 (1.12)
		Female	0.20 (6.99)	0.18 (3.33)	0.20 (5.46)
9	Cleaning and disposal of dung from shed	Male	0.09 (3.15)	0.28 (5.02)	0.14 (3.85)
		Female	0.25 (8.74)	0.35 (6.30)	0.28 (7.77)
10	Care of sick animals	Male	0.17 (5.94)	0.48 (8.77)	0.26 (7.21)
		Female	0.13 (4.47)	0.16 (2.92)	0.14 (3.78)
11	Groom & bathing of animals	Male	0.16 (5.42)	0.41 (7.48)	0.22 (6.16)
		Female	0.23 (7.95)	0.30 (5.38)	0.25 (7.07)
12	All activities	Male	0.98 (34.27)	2.96 (54.01)	1.52 (42.58)
		Female	1.88 (65.73)	2.52 (45.99)	2.05 (57.42)
Total			2.86 (100.00)	5.48 (100.00)	3.57 (100.00)

is evident from the Table 3 that over all the time taken by male and female in milking activity was 0.10 hours and 0.15 hours per day, respectively. The time spent for watering the livestock by male and female was 0.10 hours and 0.13 hours per day.

This is in consonance with the findings of Gupta *et al.* (1986) and Ragnekar *et al.* (1992). The average time taken for dung collection by male was 0.05 hours per day whereas female spent 0.23 hours for dung collection per day respectively. Less time was taken by male in feeding the green grass (0.15 hours per day) while female spent 0.21 hours per day in feeding the green grass. The time taken for chopping of straw by male was 0.14 hours per day whereas female spent 0.18 hours per day. The total time spent by male for cleaning the utensils was 0.04 hours per day which was very less as compared to female who spent on an average 0.20 hours per day. The time taken for cleaning of animal sheds was 0.14 hours and 0.28 hours per day by male and female while the time taken for caring of sick animals by male was 0.26 hours and by female was 0.14 hours per day. The average time spent on cleaning and bathing of animals by male and female was 0.22 hours and 0.25 hours per day respectively. However, the average time taken in all dairying activities by male was 1.52 hours per day and by female was 2.05 hours per day.

Among small farm size category, male spent more time in storage of green grass and straw (0.18 hours per day) followed by care of sick animals (0.17 hours per day), cleaning and bathing of animals (0.16 hours per day) whereas female spent more time in cleaning of animal sheds (0.25 hours per day) followed by cleaning and bathing of animals (0.23 hours per day), dung collection and cleaning of utensils (0.20 hours each per day) and feeding of green grass (0.18 hours per day). It can be seen from the table that female spent more time (1.88 hours per day) than male (0.98 hours per day) in all dairying activities among small farm size dairy farmers.

Among large farm size dairy farmers, the table shows that male spent more time on storage of green grass and straw, i.e., 0.53 hours per day followed by caring of sick animals (0.48 hours per day), cleaning and bathing of animals (0.41 hours per day) feeding the green grass (0.29 hours per day), cleaning of animal sheds (0.28 hours per day) and chopping of straw (0.26 hours per day). On the contrary, the time taken by female was highest on cleaning of animal sheds (0.35 hours per day) followed by dung collection (0.31 hours per day), cleaning and bathing of animals (0.30 hours per day), feeding the green grass (0.28 hours per day), chopping of straw (0.25 hours per day) and milking (0.19 hours per day). On all activities, the time spent by male was higher (2.96 hours) than female (2.52 hours) respectively. The total time utilized by small dairy farmers in different activities was less (2.86 hours) than large farmers (5.48 hours). Overall, the total time utilized in dairying activities was 3.57 hours per day.

In Table 4 problems and constraints faced by dairy farmers have been presented. It is evident from the table that in the study area as a whole lack of knowledge about modern technologies was major problem faced by most (81.81%) of the dairy farmers followed by non-availability of quality feed & fodder (72.72 %), unhygienic conditions of animal sheds (70.90 %), non- availability of veterinary /hospitality/dispensary (49.09 %), lack of good market for purchase of grain for feed mixture (36.36 %) and non-remunerative price for milk production (27.27%). Similarly, on small dairy

Table 4: Problems and constraints faced by dairy farmers (Number)

Sl. No.	Particulars	Farm Size		
		Small	Large	Overall
1	Lack of knowledge about modern technologies	35 (87.0)	10 (66.66)	45 (81.81)
2	Non-availability of quality feed & fodder	30 (75.00)	10 (66.00)	40 (72.72)
3	Unhygienic conditions of animal sheds	30 (75.00)	9 (60.00)	39 (70.90)
4	Non-availability of Veterinary institutions	20 (50.00)	7 (46.66)	27 (49.09)
5	Lack of good market for purchase of grain for feed mixture	15 (37.50)	5 (33.33)	20 (36.36)
6	Non-remunerative price for milk	15 (30.00)	5 (20.00)	20 (27.27)

Note: *Figures in parentheses are percentage of total same in each category.*

farms, the major problem reported was lack of knowledge about modern technologies was (87.50%) followed by non-availability of quality feed & fodder (75.00 %), Unhygienic conditions of animal sheds (75.00 %), non-availability of veterinary/ hospitality/dispensary (50.00%), lack of good market for purchase of grain for feed mixture (37.50 %), non-remunerative price for milk (30.00%). Among large dairy farms, the major problem was lack of knowledge about modern technologies (66.66%) followed by same non- availability of quality feed & fodder (66.00 %), unhygienic conditions of animal sheds (60.00%), non-availability of veterinary, hospital and dispensary (46.66%), lack of good market for purchase of grain for feed mixture (33.33 %), non-remunerative price for milk (20.00 %). It is thus, concluded from the table that major problem faced by dairy farmers was lack of knowledge about modern dairy technologies followed by non-availability of quality feed & fodder. Unhygienic conditions of animal sheds and non- availability of veterinary/ hospitality/dispensary were the other problems noticed in the study area.

CONCLUSION

The dairy farming undertaken in Nahan block district Sirmour Himachal Pradesh as a sustainable employment is a highly profitable venture that provides a primary source of income to the rural population especially the rural women. The contribution of women in performing various activities was higher than men in the study area.

SUGGESTIONS

Since, the respondents in all villages of study area were not aware of modern technologies. Therefore, there is need to educate the farmers about modern technologies. There is also need to provide good quality feed and fodder for milch animals as it will help dairy farmers to increase the milk productivity per unit of dairy farmers. Moreover, there is need to educate farmers on hygienic conditions of animal sheds and availability of veterinary hospital and dispensaries nearby villages need to be ensured.

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