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Constraints in Dairy Production in Haryana

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ABSTRACT

The study was carried out in two districts Karnal and Hisar in Haryana state during 2019-22 in Department of Sociology, CCS Haryana Agricultural University, Hisar (Haryana), India with the objective to understand the constraints in dairy farming. About 180 respondents were selected for the study and questions were asked from a well framed questionnaire. The results revealed that the major constraints among the dairy farming respondents were high cost of quality concentrates feeds, inadequacy of green fodder, non-availability of land for fodder production, shortage of dry fodder, inability of cross checking the income due to illiteracy, high charges of emergency veterinary services, lack of technical guidance, distantly located artificial insemination centre, low price of milk and non-availability of improved breeds. These constrains can be overcome by improving the educational status at village level, improvising the animal husbandry hospitals, reducing the time for providing timely veterinary services. It was found that quality concentrates monthly expenditure of Rs. 11895, dry fodder Rs. 1800 and green fodder of Rs. 2000 with total cost amounting to Rs. 15695. The buffalo milk production 300 kg at the rate of Rs. of 70 per kg resulting in an income of Rs. 21000. The net profit was about Rs. 5305 without involving the labour cost.

Key words: Artificial insemination, breeding, constraints, dairy farming, economics, feeding

INTRODUCTION

Total human population was about 8 billion during 2022 and milk is one of the most required liquid to provide a complete diet for humans. In India, the availability of milk is about 427 g per day per capita (Anonymous, 2019). However, according to National Dairy Development Board, the availability of milk in India is 406 g per capita per day. As per Australian Dietary Guidelines, adults aged between 19-50 years are recommended to consume about 629 g per capita per day (Anonymous, 2021). There is a net gap of 223 g of milk per capita per day, which means to increase the availability of milk for the Indian population. Moreover, it is also necessary to find out the constraints in milk production which are directly related to dairy farming in India. The availability of milk was enhanced by Operation Flood. Operation Flood I, II and III covered about 1,20,500 village cooperatives and 1,30,15,000 farmers from 1970 to 1994 (Gamit *et al.,* 2021). Dairy farming in India is thought to be the source of livelihood for which it is widely adopted across the rural villages. As a matter of fact, this single entity comprising the livestock industry employs more than 20.5 million people worldwide, while in India about 70 million of rural Indians rely on livestock for supplementary income (Patel *et al.,* 2017). The present study was based on finding the constraints in dairy production primarily in Haryana state which along with Punjab is known by its food rich based on milk products like *lassi* and *desi* ghee and other milk products. Dairy farmers face a variety of challenges in infrastructure, technical, socio-psychological, economic and marketing operations, which are a major issue hindering its future development. In order to investigate dairy farmers' perceptions of constraints related to dairy management, the present study was conducted.

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MATERIALS AND METHODS

The present study was based on an analysis of primary data at the Karnal and Hisar districts of Haryana. There were six selected blocks for the present study. The study covered 12 villages (Table 1). About 360 respondents who were involved in the dairy farming were interviewed. Out the 360 respondents about 180 respondents were selected using the proportional allocation formula (Hakeem and Bhat, 2018) as :

$$n_1 = \frac{n}{N} N_i$$

Where, i = 1, 2, 3, 4....

n_1 = Number of farmers to be sampled in i^{th} district

N_i = Total number of dairy farmers in i^{th} district

N = Total number of dairy farmers in selected area

n = Total number of dairy farmers to be chosen in the selected area

Hence, number of samples in each district was calculated accordingly,

n_1 Sample for Karnal district

$$n_1 = \frac{n}{N} N_1 = \left(\frac{180}{360}\right) \times 90 = 45$$

n_2 Sample for Hisar district

$$n_2 = \frac{n}{N} N_2 = \left(\frac{180}{360}\right) \times 90 = 45$$

In this way, the samples drawn from two districts as per proportional allocation formula and finally, actual respondent dairy farmers in each district were selected randomly among the above determined recognized dairy farmers in each district (Table 1).

Primary data were collected from selected dairy farmers through personal interview method keeping in mind the literacy gap in the farmers with the help of pre-tested schedules for getting the information on constraints in the dairy farming. Farmers were asked to rank the problems faced by dairy farmers based on their experiences. Garrett's ranking technique was applied to study the preference, change of order of constraints and advantages into numerical scores. The prime advantage of this technique over simple frequency distribution was that the constraints were arranged based on their severity from point of view of respondents. Hence, the same number of respondents on two or more constraints may have given a different rank. The collected data were complied, tabulated and analyzed to accomplish the objectives of the present study. The ranks given by the farmers doing dairy farming were converted into percentage position with the help of formula given by Garrett's:

$$\text{Per cent position} = \frac{100\ (Rij - 0.5)}{N}$$

Where, Rij was the rank given to ith item by the jth individual and N is the number of item ranked by the jth individual. The per cent position of each rank obtained was converted

Table 1. Allocation of dairy farmers in Karnal and Hisar districts in Haryana

S. No.	Districts	No. of selected farmers for study	Total number	Block	No. of respondents	Village	No. of respondents	
							Male	Female
1.	Karnal	90	180	Karnal	15	Taprana	8	7
					15	KheriNaru	7	8
				Gharaunda	15	Raipur Jattan	8	7
					15	Gagsina	7	8
				Nilokheri	15	Shamgarh	8	7
					15	Sandheer	7	8
2.	Hisar	90	180	Hisar-I	15	Dabra	8	7
					15	Kaimri	7	8
				Hisar-II	15	Aryanagar	8	7
					15	Muklan	7	8
				Barwala	15	Balak	8	7
					15	Khedar	7	8
	Total	180	360		180		90	90

into score using Garrett's table. Then for each reason, the scores of individual respondents were added and divided by total number of respondents. Thus, the mean score of each constraint was ranked by arranging in a descending order.

RESULTS AND DISCUSSION

Among the financial matter associated with the dairy farming, high cost of quality concentrates feeds, high cost of labour and high cost of green fodder were analyzed for *Garret value* and rank analysis (Table 4). It was found that most of the respondents gave first rank for 'high cost of quality concentrates feeds' as the major constraint with an average score of 60 followed by 'high cost of labours' (50) and lowest scores for 'high cost of green fodder' (30). Brady *et al.* (2022) reported that by feeding the dairy cows with feed to yield treatments comprising 1.76 kg dry matter + 0.44 kg dry matter of concentrates/kg of milk resulted in higher milk and higher fat plus protein yield and increased body condition score over control diet. Since concentrate mixtures made up of protein supplements such as oil cakes, energy sources such as cereal grains (maize, jowar), tapioca chips and laxative feeds such brans (rice bran, wheat bran, gram husk) are generally used. Some of the ingredients are expensive and hence increasing the costs of the quality concentrates. In India, total average milk per animal per day was 2.61 kg, while it was higher in Haryana 6.26 kg/day resulting in an average requirement of 2 kg quality concentrate per day. The average prices for cotton seed khal are Rs. 1950 per 49 kg packing. On general basis, the consumption of cotton seed khal per month are 6.1 packing of 49 kg (Table 5). A total of Rs. 11895 were spent on concentrate cotton khal which were on higher side.

The dairy farming respondents had given first rank to 'inadequacy of green fodder around the year' with average score of 69 followed by 'non-availability of feed on credit basis' (50) and 'non-availasbility of feed on subsidy basis' (30) as presented in Table 4. As per the data available in Table 5, 1 kanal area of green fodder was available only for two months and the respondents in the dairy farming declared that the green fodder was not available round the year. As evident from Fig. 1, that most of the dairy farming respondents belonged to small (46.11%) and marginal farms (41.11%) having lands up to 2.51 to 5.00 acre and up to 2.5 acres, respectively. This clearly shows that dairy farming respondents felt pressure to sow the field crops rather than allocating area under green fodder.

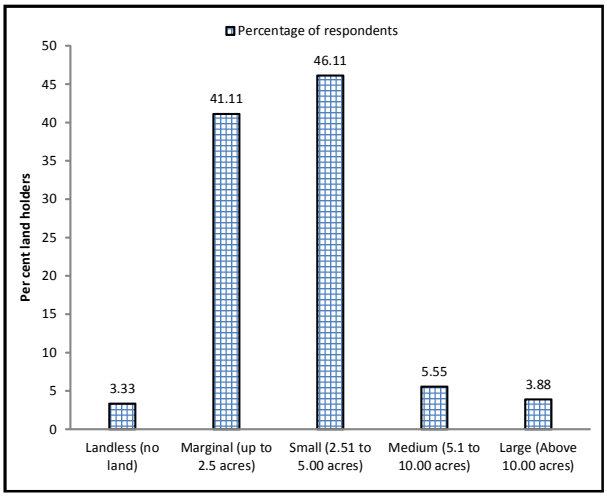

Fig. 1. Landholding of dairy farming respondents in Haryana.

The dairy farming respondents were of the view that 'Non availability of land for fodder production' was the major constraint (average score 69) followed by 'Non- availability of fodder seeds at proper time' (average score 50) and lack of technical guidance for fodder production (average score 30) as presented in Table 4. Most of the respondents who were engaged in dairy farming were marginal and small having lands up to 2.5 acre and 2.51 to 5.00 acres, respectively (Fig. 1). Lesser land resulted in more area to be allocated to the field crops. Hence, lesser land resulted into lesser fodder production being the main constraints in dairy farming.

Among the situational constraints, the dairy farming respondents gave the first rank for 'Shortage of dry fodder' with a mean Garret value 69 followed by 'Non-availability of labour' with a mean Garret value 50 and 'Lack of machinery' with a mean Garret value of 30. Shortage of dry fodder was found to be the main reason because of lesser allocation of land to the fodder production. Even the crops sown during *rabi* season like wheat can only provide dry fodder for a limited time. It is evident from the Table 2 that dry fodder during *rabi* season was only available from the wheat crop, while in *kharif* crop from bajra crop. The marginal

Table 2. Area under fodder production (N=180)

Class of dairy farming respondents	*Rabi*			*Kharif*		
	Wheat	Mustard	Berseem	Bajra	Jowar	Paddy
Landless (no land)*	1.0	0.0	0.0	0.0	0.0	1.0
Marginal (up to 2.5 acres)	1.0	1.3	0.2	0.2	0.3	2.0
Small (2.51 to 5.00 acres)	2.0	2.5	0.5	0.5	0.5	4.0
Medium (5.1 to 10.00 acres)	6.0	3.5	0.5	2.0	1.0	7.0
Large (Above 10.00 acres)	9.0	3.2	0.8	3.0	2.0	8.0

*Leased land.

and small farmers only allocated lesser area i.e. 1.0 to 2.0 acre under wheat, while 0.2 to 0.5 acre during *kharif* season.

The educational constraints comprised 'Inability of cross checking the income due to illiteracy', 'Lack of knowledge about government subsidy for purchasing', 'Lack of knowledge about government subsidy facilities' and 'Lack of timely guidance regarding feeding and care of animal'. The dairy farming respondents found the main educational constraint as 'inability of cross checking the income due to illiteracy with the highest mean Garret value 73 and rank I. It is clear from Table 3, where the educational status of the dairy farming respondents was provided and depicts that most of the respondents belonged to illiterate (37.22%) and primary school (32.22%) showing the low level of educational status. Hence, felt hindrance in cross checking the income from dairy farming.

Table 3. Educational status of the dairy farming respondents (N=180)

Particulars	Male	Female	Total
Illiterate	37 (41.11)	30 (33.33)	67 (37.22)
Primary school	23 (25.56)	35 (38.89)	58 (32.22)
Middle school	7 (7.78)	8 (8.89)	15 (8.33)
Secondary	10 (11.11)	10 (11.11)	20 (11.11)
High school	8 (8.89)	4 (4.44)	12 (6.67)
Graduate and above	5 (5.56)	3 (3.33)	8 (4.44)

There were five major constraints related to animal health care as presented in Table 4. The dairy farming respondents had given the Rank I to 'High charges of emergency veterinary services' with mean Garret value 75 followed by 'Absenteeism among veterinary staff' (60), 'Inability to buy balanced feed on cash basis' (50), 'Distant location of AI centre' (39) and 'Improperly trained staff working at AI centre' (24). One of the expensive veterinary services was due to lesser services available at the government veterinary hospitals as compared to private veterinary practices. Mukherjee *et al.* (2019) reported that diseases like FMD, Rinderpest, IBR, Tuberculosis, Paratuberculosis, Brucellosis and Haemorrhagic Septicaemia, Dermatitis, Theiloeriosis, Babesiosis and Anaplasma are the common in dairy animals and lack of these diseases and their control methods might increase the cost of management of health of the milch animals among the dairy farming respondents.

The dairy farming respondents had given the Rank I to 'Lack of technical guidance' and Rank II to 'Lack of scientific knowledge about dairy farming practice'. This was due to lesser educational status of the dairy farming respondents as evident from Table 3.

The data pertaining to breeding constraints are presented in Table 4 which clearly reveal that dairy farming respondents had given rank I to 'Distantly located artificial insemination centre' and rank II to 'Unavailability of artificial insemination service at proper time'. The reason might be due to the fact that the expensive veterinary services available and the large farmers can afford to bear the expenses. In addition to this, the remoteness of the villages from the district animal husbandry service centre. Singh and Balhara (2016) and Prakash Kumar *et al.* (2017) were of the view that artificial insemination resulted in reduction of cost of breeding by reduction in keeping the male animals.

Most of the dairy farming respondents had given Rank I to 'Low price of milk', Rank II to 'Irregular payment of procuring agency' and Rank III to 'Lack of transport facilities' (Table 4). The low price of milk was one of the basic problems for selling as there was no cold storage system at the rural villages. In addition to this, milk collection centre provided the prices to the dairy farming respondents based on 'fat' content which sometimes found faulty and they

Table 4. Constraints analysis with Garret score and rank for dairy farming in Haryana

Description	Rank					100(Rij-0.5)/Nj	Calculated value	Garret value	Ranks given by the constraints					Total	Average	Rank
	1	2	3	4	5				1	2	3	4	5			
A. Financial matter																
1. High cost of quality concentrates feeds	75	77	13	10	5	100(1-0.5)/3	16.67	69	5175	5313	897	690	345	12420	69	I
2. High cost of labour	82	70	15	5	8	100(2-0.5)/3	50.00	50	4100	3500	750	250	400	9000	50	II
3. High cost of green fodder	52	47	33	23	25	100(3-0.5)/3	83.33	30	1560	1410	990	690	750	5400	30	III
B. Feeding practices constraints																
1. Inadequacy of green fodder	109	23	20	14	14	100(1-0.5)/3	16.67	69	7521	1587	1380	966	966	12420	69	I
2. Feed on credit basis	28	36	38	40	38	100(2-0.5)/3	50.00	50	1400	1800	1900	2000	1900	9000	50	II
3. Feed on subsided basis	51	50	36	31	12	100(3-0.5)/3	83.33	30	1530	1500	1080	930	360	5400	30	III
C. Fodder production constraints																
1. Non-availability of land for fodder production	109	23	20	14	14	100(1-0.5)/3	16.67	69	3864	4071	3795	276	345	12351	69	1
2. Non-availability of fodder seeds at proper time	28	36	38	40	38	100(2-0.5)/3	50.00	50	950	3450	3600	500	500	9000	50	I
3. Lack of technical guidance for fodder production	51	50	36	31	12	100(3-0.5)/3	83.33	30	1590	1800	1650	150	210	5400	30	II
D.Situational constraints																
1. Shortage of dry fodder	16	75	69	8	12	100(1-0.5)/3	16.67	69	1104	5175	4761	552	828	12420	69	I
2. Non-availability of labour	18	72	83	6	1	100(2-0.5)/3	50.00	50	900	3600	4150	300	50	9000	50	II
3. Lack of machinery	25	59	73	18	25	100(3-0.5)/3	83.33	30	750	1770	2190	540	750	6000	33	III
E. Educational constraints																
1. Inability of cross checking the income due to illiteracy	48	51	61	16	4	100(1-0.5)/4	12.50	73	3504	3723	4453	1168	292	13140	73	I
2. Lack of knowledge about government subsidy for purchasing	41	59	47	13	20	100(2-0.5)/4	37.50	56	2296	3304	2632	728	1120	10080	56	II
3. Lack of knowledge about government subsidy facilities	41	44	44	40	11	100(3-0.5)/4	62.50	43	1763	1892	1892	1720	473	7740	43	III
4. Lack of timely guidance regarding feeding and care of animal	35	66	72	6	1	100(4-0.5)/4	87.50	27	945	1782	1944	162	27	4860	27	IV
F. Animal Health Care																
1. High charges of emergency vety. Services	53	40	76	8	3	100(1-0.5)/5	10.00	75	3975	3000	5700	600	225	13500	75	I
2. Absenteeism among veterinary staff	13	76	82	5	4	100(2-0.5)/5	30.00	60	780	4560	4920	300	240	10800	60	II
3. Inability to buy balanced feed on cash basis	31	55	45	4	4	100(3-0.5)/5	50.00	50	1860	3300	2700	240	240	8340	46	III
4. Distant location of AI centre	1	72	80	17	10	100(4-0.5)/5	70.00	39	39	2808	3120	663	390	7020	39	IV
5. Improperly trained staff working at AI centre	1	72	80	17	1	100(5-0.5)/5	90.00	24	24	1728	1920	408	24	4104	23	V
G. Technical constraints																
1. Lack of scientific knowledge about dairy farming practice	18	60	59	12	6	100(1-0.5)/2	25.00	63	450	1500	1475	300	150	3875	22	II
2. Lack of technical guidance	10	78	79	4	9	100(2-0.5)/2	75.00	36	750	5850	5925	300	675	13500	75	I
H. Breeding constraints																
1. Unavailability of artificial insemination service at proper time	44	67	58	4	7	100(1-0.5)/2	25.00	63	1100	1675	1450	100	175	4500	25	II
2. Distantly located artificial insemination centre	51	56	58	6	9	100(2-0.5)/2	75.00	36	3825	4200	4350	450	675	13500	75	I
I. Selling milk constraints																
1. Low price milk	45	59	70	5	1	100(1-0.5)/3	16.67	69	3174	4071	4830	345	69	12489	69	I
2. Irregular payment of procuring agency	4	36	30	51	59	100(2-0.5)/3	50.00	50	200	1800	1500	2550	2950	9000	50	II
3. Lack of transport facilities	30	76	67	3	4	100(3-0.5)/3	83.33	30	900	2280	2010	90	120	5400	30	III
J. Other constraints																
1. Non-availability of improved breeds	66	76	33	3	2	100(1-0.5)/8	6.25	79	5214	6004	2607	237	158	14220	79	I
2. Lack of training centre to villages	59	30	57	1	33	100(2-0.5)/8	18.75	67	3953	2010	3819	67	2211	12060	67	II
3. Lack of market in area	14	78	78	6	4	100(3-0.5)/8	31.25	59	826	4602	4602	354	236	10620	59	III
4. High cost needed for purchasing crossbreed animal	40	65	55	9	11	100(4-0.5)/8	43.75	53	2120	3445	2915	477	583	9540	53	IV
5. Non-availability of credit facilities	39	44	34	24	34	100(5-0.5)/8	56.25	46	1794	2024	1564	1104	1564	8050	45	V
6. Non-availibity of space for proper housing	19	78	10	3	80	100(6-0.5)/8	68.75	40	760	3120	400	120	3200	7600	42	VI
7. Wastage of milk due to non-availability of cold storage facilities	36	39	36	32	37	100(7-0.5)/8	81.25	32	1152	1404	1296	1152	1332	6336	35	VII
8. No proper knowledge about enrichment of poor quality roughages	118	76	75	5	6	100(1-0.5)/8	93.75	20	2360	1520	1500	100	120	5600	31	VIII

earned margins. Yadav *et al.* (2021) reported that lack of infrastructure facility at the lay man dairy farmers resulted in loss of profit and difficulty in selling the milk.

Most of the dairy farming respondents had given the Rank I to 'Non-availability of improved breeds', Rank II to 'Lack of training centre to villages', Rank III to 'Lack of market in area', Rank IV to 'High cost needed for purchasing crossbreed animal', Rank V to 'Non availability of credit facilities', Rank VI to 'Non-availability of space for proper housing', Rank VII to 'Wastage of milk due to non-availability of cold storage facilities' and Rank VIII to 'No proper knowledge about enrichment of poor quality roughages' (Table 4). Non-availability of improved breeds directly related to the pedigree records of the animals under milk production which was not available, the lower status of education of the dairy farmers and the practice to have inbreeding with the male animals available at villages. Chandran *et al.* (2019) reported that due to unavailability or less of indigenous/exotic bulls of high genetic merit, there was less production capacity of the indigenous animals as compared to that of cross breeds or exotic animals.

In Table 5, dairy farming economics was estimated based on the responses given by the dairy farming respondents under study. It was found that quality concentrates resulted in a monthly expenditure of Rs. 11895, dry fodder Rs. 1800 and green fodder of Rs. 2000 with total cost amounting Rs. 15695. The buffalo milk production was taken in consideration with total production of 10 kg of milk per day and 300 kg of milk at Rs. of 70 per kg resulting in an income of Rs. 21000. The net profit was about Rs. 5305 without involving the labour cost which was thought to be performed by the dairy farming respondents.

CONCLUSION

In view of the above, it can be concluded that the major constraints among the dairy farming respondents are high cost of quality concentrates feeds, inadequacy of green fodder, non-availability of land for fodder production, shortage of dry fodder, inability of cross checking the income due to illiteracy, high charges of emergency veterinary services, 'lack of technical guidance, 'distantly located artificial insemination centre, low price of milk and non-availability of improved breeds. These constrains can be overcome by improving the educational status at village level, improvising the animal husbandry hospitals and reducing the time for providing timely veterinary services.

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Table 5. Economics of milk production in Haryana (N=180)

S. No.	Particulars			Total	Per month
1.	Per day consumption	Morning	Evening		
	of concentrate	4 kg	4 kg	8 kg	8 kg × 30 = 240 kg
	Size of the concentrate				49 kg
	Per month consumption of concentrate (Number of packing)				6.1 bags of 49 kg
	Rate of concentrate (49 kg)				1950
	Total expenditure on concentrates				6.1 × 1950 = Rs. 11895
2.	Tudi/Dry matter	3 kg	3 kg	6 kg	30 × 6 kg = 180 kg
	Prices of tudi per q				1000
	Per kg rates of tudi				10
	Total expenditure on tudi				180 kg × 10 = 1800
3.	Green fodder	1 kanal for two months		4000	Rs. 2000
	Total expenditure				11895 + 1800 + 2000 = 15695

	Milch animal	Per day average milk production	Prices of milk per kg	Per day sale (Rs.)	Per month
1.	Buffalo	10 kg	Rs. 70	700	30 × 700 = 21000
2.	Cost incurred in concentrates, *tudi* and green fodder				15695
	Net profit				5305

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