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A study on present income earned and constraints faced in dairy enterprises in Pratapgarh district of Uttar Pradesh

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Abstract

To study the socio-economic characteristics and constraints faced in dairy enterprises. Primary data was collected from 100 farmers from the Sangipur block of Pratapgarh district in the year 2020. Five villages from Sangipur block were selected, so from every village, farmers were selected on the basis of the percentage of the working population. Quantitative statistical techniques Arithmetic Mean, Weighted Mean, Percentage and Constraints were used to estimate the socio-economic aspects and constraints faced in dairy enterprises. The study finds that the average population percentage of males 51.67% and females was 48.33%. Average landholding was found 1.14 ha in the study area. The average age of the marginal farmer group was found nearly 43.71 years for the small farmer group it was 43.22 years and for medium the m farmer group, it was 40.63 years. In the study, 91.00 percent were literate while only 9.00 percent were illiterate. Marginal households had 26.51% livestock on average while small and medium had 27.39 and 46.10%. The major constraints were found to be high in Inadequate facility of Artificial Insemination and Cattle Suffering from Mastitis with 81.00%. The Study finds that the socioeconomic condition was better in the study area and the constraints faced in dairy enterprises have to resolve to improve the income of farmers in the study area. Better utilization of resources along with use of scientific methods are the key for improving returns from dairy enterprise.

Keywords: Livestock, dairy, arithmetic mean, weighted average, percentage, constraints

Introduction

Diversification towards HVC offers a great scope to improve farmers' income. Average productivity of HVCs was estimated at ₹1,41,777 per hectare as compared to ₹41,169 per hectare for staple crops only (Chand, 2017) [2]. Scope also exist to raise farmers' income by diversifying towards other allied enterprises like forestry as India meets 40 percent of its non-fuel timber requirement from the import of wood and wood products.

Farmers earn income at current prices thus it is important to ensure that the prices received by farmers are in relation to the inflation and increase in real terms. Efforts should be made to ensure higher prices to the farmers and online platforms like e-NAM and ReMS have a great potential in bringing the desired reform in marketing structures.

When we talk about agriculture as a whole livestock comes in our mind because livestock production and agriculture are intrinsically linked. They both are dependent on the other, and both crucial for overall food security. For Indian economy the livestock sector is an important subsector of the agriculture. It acts as a supplementary and complementary enterprise. Livestock also serves as an insurance substitute, especially for poor rural households as it can easily be sold during time of distress.

Livestock constitutes 30 percent of total income from agriculture sector. This sector has experienced growth rate of 4.5 percent during 2000-01 to 2013-14. Maintaining the same growth rate in livestock sector in the coming years will raise total farm income by 10.8 percent in seven years and 16.6 percent in ten years period (Sirohi *et al.*, 2017). Livestock employed 8.8 percent of the agricultural work force though it varied widely from 3 percent in North-Eastern states to 40- 48 percent in Punjab and Haryana. (Dinani *et al.*, 2018).

Research methodology

The study was conducted in Pratapgarh district of Uttar Pradesh which is one of the 31 districts of Telangana. A list of all the 17 blocks in Pratapgarh district was arranged in

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ascending order according to the number of cattle reared in the region and one block namely Sangipur was purposively selected from the bottom A list of all the villages of the selected block was prepared and 5 villages out of them were selected randomly. A list of all the farmers involved in above mentioned enterprises of the selected villages was prepared. Further these farmers were arranged in ascending order on the basis of land holding and divided into three size groups viz., marginal farmers (below 1 ha), small farmers (1-2 ha) and medium (above 2 ha) during 2019-20. Samples of 20 respondents from each selected village were taken randomly, making a total sample of 100 farmers. The number of respondents in each size group of holding was in proportion to their number in the universe. Thus study was based on intensive inquiry of 100 farmers selected randomly from 5 villages of the Sangipur block of Pratapgarh district.

Data cover all the aspect viz., bovine population, milk production, milk marketing channel, different costs and returns of dairy enterprise.

Tabular Analysis

The tabular analysis was majorly used to meet various objectives of the study. The socio-economic characteristics of different category of farmers were studied using tabular analysis. Along with these cost and returns of milk production, break-even point etc. were also worked out using tabular analysis.

Arithmetic Mean

The arithmetic mean for variable ‘X’ is calculated by the formula-

$$AM = \frac{\sum X_i}{N}$$

Where

- AM = Arithmetic Mean
- $\sum X_i$ = Sum of Variables
- N = Total Number of Variables

Weighted Mean

$$WM = \frac{\sum W_i X_i}{\sum W_i}$$

Where

- WM = Weighted Mean
- W_i = Weight of X_i
- X_i = Variable

Percentage

Simple comparisons were made on the basis of percentage and inferences were drawn on that basis.

Result and Discussion

The study was conducted in Pratapgarh district of Uttar Pradesh. The necessary data were collected from the sample farmers spread over one block in the above-mentioned district. The present chapter is going to talk about the results and discussion for various objectives. The chapter is arranged in different sub-section according to objectives of the study.

- To determine the present income earned by farmers through dairy enterprise in Pratapgarh district of Uttar Pradesh.

- To study the constraints and make a strategic plan specifically concerned with doubling of farmers’ income through dairy enterprise in Pratapgarh district of Uttar Pradesh

Socio-Economic Features of Sample Households

Socio-economic structure considerably impacts various economic activities like decision making, size of business, pattern and utilization of resources, efficiency, production pattern, profitability of dairy enterprise etc. thus playing a crucial role. Heterogeneity is quite evident in socio-economic characteristics and a typical village of Uttar Pradesh is no exception. An effort has been made to analyse the important socio-economic characteristics of the respondent farmers.

Family Composition

The average size and composition of family of different household is given in table 1.

Table 1: Average Size and Composition of Family of Sample Households (Numbers)

Members	Farm Groups			All Farms
	Marginal	Small	Medium	
Male	2.55 (52.04)	2.73 (51.31)	2.75 (51.12)	2.63 (51.67)
Female	2.35 (47.96)	2.59 (48.69)	2.63 (48.88)	2.46 (48.33)
Total	4.90 (100)	5.32 (100)	5.38 (100)	5.09 (100)

Note: Figures in parentheses indicate percentage to total

The table shows marginal household comprised of 52.04 percent male and 47.96 percent female. In small house hold there were 51.31 percent males and 48.69 percent females. Medium household was composed of 51.12 percent male and 48.88 percent female. On average there were 51.67 percent male and 48.88 percent female in the study sample.

Land Holding

The respondents were categorized into three age groups, viz; Marginal, Small, Medium and table 2 gives average landholding of different households.

Table 2: Average Landholding of Sample Households (Hectare)

Farm Groups	Land Holding
Marginal	0.71 (33.19)
Small	1.53 (47.78)
Medium	2.81 (19.03)
All Farm	1.14

Note: Figures in parentheses indicate percentage to total

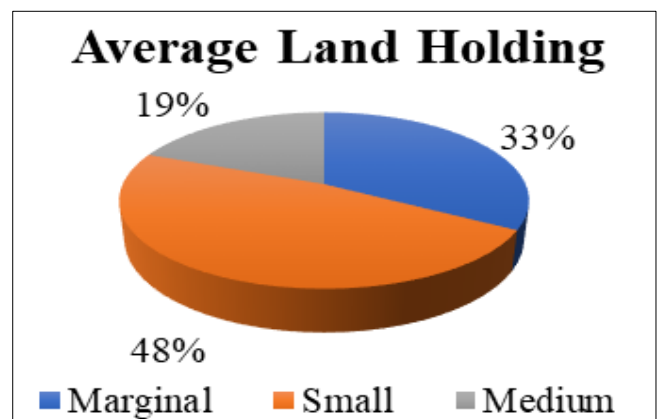


Fig 1: Average Land Holding

The table reveals that marginal farmers had an average land holding of 0.71 ha (33.19 percent), while small farmers had 1.53 ha (47.78 percent) on average. Medium farmers had 2.81 ha (19.03 percent) on an average.

Age

The respondents were categorized into three age groups, viz., young, middle and old aged. Table 3 gives distribution of the respondents on the basis of their age.

Table 3: Distributions of the Respondents According to the Age Groups (Years)

Age of the head of the family	Farm Groups			All farms
	Marginal	Small	Medium	
Young (Up to 30)	15 (27.27)	8 (21.62)	2 (25.00)	25 (25.00)
Middle (30 to 60)	29 (52.73)	21 (56.76)	4 (50.00)	54 (54.00)
Old (Above 60)	11 (20)	8 (21.62)	2 (25.00)	21 (21.00)
Total	55 (100)	37 (100)	8 (100)	100
Average Age	43.71	43.22	40.63	43.28

Note: Figures in parentheses indicate percentage to total

The age of the respondents ranged from 27 to 72 years in the study area. The table shows that the average age of the head of the milk producers was about 43.28 years. Maximum farmers *i.e.* 54 percent were in the middle aged group while 25 percent and 21 percent belonged to young and old aged group, respectively. Talking about particular households, the average age of marginal farmer was 43.71 years while for small and medium farmers it was 43.22 years and 40.63 years, respectively. Majority of marginal farmers 29 (52.73 percent) were in middle age category, in small household 21 farmers (56.76 percent) were in between 30 to 60 years and in large household 4 farmers (50.00 percent) were middle aged. The table reveals that numbers of young farmers were low in all three farm group *i.e.* 15 (27.27 percent) in marginal, 8 (21.62 percent) in small and 2 (25.00 percent) in medium household. There were 11 (20.00 percent), 8 (21.62 percent), 2 (25.00 percent) farmers above the age of 60 in marginal, small and medium household, respectively.

Table 5: Distribution of the Households According to Occupation (Numbers)

Particulars	Farm Groups			All Farms
	Marginal	Small	Medium	
Farming & Dairying	17 (30.91)	16 (43.24)	4 (50.00)	37 (37.00)
Dairying & Farming	8 (14.55)	7 (18.92)	3 (37.50)	18 (18.00)
Labor & Dairying and Farming	27 (49.09)	5 (13.51)	0 (0)	32 (32.00)
Service & Dairying and farming	3 (5.45)	9 (24.32)	1 (12.50)	13 (13.00)
Total	55	37	8	100

Note: Figures in parentheses indicate percentage to total

It can be concluded that on an average more than 37 percent of the respondents were having farming as main occupation along with dairying as subsidiary occupation. While dairy as the main occupation was observed in 32 percent of the respondents. It can also be noticed from the table that percentage of respondents depending on farming and dairying occupation increase with an increase in size of holding and it varied from 30.91 percent on marginal farms to 50 percent on medium farms. Majority of marginal farmers 27 (49.09 percent) worked as labours and had dairy as secondary occupation while only 5 (13.51 percent) of small farmers

Educational Status

Educational level of farmer is crucial for the adoption of new innovations in development of dairy farming. Therefore, education level of the sample household was studied and is shown in table 4.

Table 4: Distribution of Head of Households According to Literacy Status (Numbers)

Literacy Status	Farm Groups			All Farm
	Marginal	Small	Medium	
Illiterate	7 (12.73)	2 (5.41)	0 (0)	9 (9.00)
Primary	10 (18.18)	5 (13.51)	1 (12.50)	16 (16.00)
Secondary	13 (23.64)	7 (18.92)	2 (25.00)	22 (22.00)
Senior Secondary	16 (29.09)	12 (32.43)	2 (25.00)	30 (30.00)
Graduation & above	9 (16.36)	11 (29.73)	3 (37.50)	23 (23.00)
Total	55 (100)	37 (100)	8 (100)	100

Note: Figures in parentheses indicate percentage to total

It can be observed that percentage of literate respondents was 91 percent while illiterates were 9 percent. In marginal household 7(12.73 percent) were illiterate, 10 (18.18 percent) had primary education, 13 (23.64 percent) had secondary education, 16 (29.09 percent) had senior secondary education and 9 (16.36 percent) were graduate. The majority of small farmers 12 (32.43 percent) had senior secondary education, graduation was done by 11 (29.73 percent), 7 (18.92 percent) farmers had secondary education, 5 (13.51 percent) farmers had primary education and 2 (5.41 percent) farmers were illiterate. There were no illiterate medium farmers, primary educated holders were 1 (12.50 percent), 2 (25 percent) farmer had secondary education while 2 (25.00 percent) had senior secondary education. Graduation was done by 3 (37.50 percent) medium farmers.

Occupation

Occupation greatly influences the level of input use, storage capacity, risk bearing ability and capital investment *etc.* of dairy farmers. The details regarding distribution of respondents as per their occupations are presented in table 5.

worked as labours. The percentage of dairy as main occupation and farming as secondary occupation is very low *i.e.* 14.55 percent in marginal, 18.92 percent in small and 37.50 percent in medium farmers.

Livestock Composition

The details of different types of animals kept on different categories of households are given in Table 6. The number of milch animals in the household affects the economic position of milk producers.

Table: 6: Livestock Composition of the Sample Households (Numbers)

Category of Animal	Farm Groups			All Farms
	Marginal	Small	Medium	
Indigenous Cattle	45 (42.06)	60 (28.17)	14 (10.85)	119 (26.51)
Crossbred Cattle	9 (8.41)	48 (22.54)	66 (51.16)	123 (27.39)
Buffaloes	53 (49.53)	105 (49.29)	49 (37.98)	207 (46.10)
Total	107 (100)	213 (100)	129 (100)	449 (100)

Note: Figures in parentheses indicate percentage to total

There are 449 bovine animals in the study sample out of which 119 (26.51 percent) are indigenous cattle, 123 (27.39 percent) are crossbred cattle and 207 (46.10 percent) are buffaloes. Marginal farm household had 107 bovine animals which comprised of 45 (42.06 percent) indigenous cattle, 9

(8.41 percent) of crossbred cattle and 53 (49.53 percent) buffaloes. In small household indigenous cattle were 60 (28.17 percent), crossbred cattle were 48 (22.54 percent) and buffaloes were 105 (49.29 percent). Medium household had 14 (10.85 percent), 66 (51.16 percent) and 49 (37.98 percent) numbers of indigenous cattle, crossbred cattle and buffaloes, respectively.

Herd Composition of Indigenous Cattle, Crossbred Cattle and Buffaloes

The information about distribution of bovine in different types of household is given in table 7. The herd strength greatly affects the production and economic aspects of farm groups.

Table: 7: Herd Composition of the Sample Households (Numbers)

Particulars	Farm Groups			All farms
	Marginal	Small	Medium	
1. Households who had Indigenous Cattle				
Zero	21 (38.18)	14 (37.84)	1 (12.50)	36 (36.00)
One	23 (41.82)	3 (8.11)	3 (37.50)	29 (29.00)
Two	11 (20)	11 (29.73)	2 (25)	24 (24.00)
More than Two	0 (0)	9 (24.32)	2 (25)	11 (11.00)
No. of Household having Indigenous Cattle	34 (61.82)	23 (62.16)	7 (87.5)	64 (64.00)
Average Herd Size of Indigenous Cattle	1.32	2.61	2	1.86
2. Households who had Crossbred Cattle				
Zero	47 (85.45)	16 (43.24)	0 (0)	63 (63.00)
One	7 (12.73)	6 (16.23)	0 (0)	13 (13.00)
Two	1 (1.82)	9 (24.32)	0 (0)	10 (10.00)
More than two	0 (0)	6 (16.22)	8 (100)	14 (14.00)
No. of Household having Crossbred Cattle	8 (14.55)	21 (56.75)	8 (100)	37 (37.00)
Average Herd Size of Crossbred Cattle	1.13	2.29	8.25	3.32
3. Households who had Buffaloes				
Zero	17 (30.91)	0 (0)	0 (0)	17 (17.00)
One	24 (43.64)	4 (10.81)	0 (0)	28 (28.00)
Two	13 (23.64)	11 (29.73)	0 (0)	24 (24.00)
More than Two	1 (1.82)	22 (59.45)	8 (100)	31 (31.00)
No. of Household having Buffaloes	38 (69.09)	37 (100)	8 (100)	83 (83.00)
Average Herd size of Buffaloes	1.39	2.84	6.13	2.49

Note: Figures in parentheses indicate percentage to total

It is evident from the table that 21 (38.18 percent) marginal farmers, 14 (37.84 percent) small farmers and 1(12.50 percent) medium farmer did not have any indigenous cattle. One indigenous cow was possessed by 23 (41.82 percent) marginal farmers, 3 (8.11 percent) small farmers and 3 (37.50 percent) large farmers. 11 (20.00 percent) marginal, 11(29.73 percent) small and 2 (25.00 percent) medium farmers had two indigenous cattle. More than two indigenous cattle were in possession of no marginal household while 23 (62.16 percent) small households and 7 (87.5 percent) medium households had more than two indigenous cattle. Only 34 (61.82 percent) marginal, 23 (62.16 percent) small and 7 (87.50 percent) medium households had indigenous cattle. The average herd size of indigenous cattle was found to be 1.32 for marginal household, 2.61 for small household and 2 for medium household.

In case of crossbred cattle, 47 (85.45 percent) marginal farmers and 16 (43.24 percent) small farmers did not have any crossbred cattle. One crossbred cow was possessed by 7 (12.73 percent) marginal farmers and 6 (16.23 percent) small farmers. 1 (1.82 percent) marginal farmer and 9 (24.32 percent) small farmers had 2 crossbred cattle More than two crossbred cattle were in possession of all 8 medium farmers

while no marginal household and 6 (16.22 percent) small households had more than two crossbred cattle. In marginal households 8 (14.55 percent), small household 21 (56.75 percent) and all 8 medium households were in possession of crossbred cattle. The average herd size of crossbred cattle was found to be 1.13 for marginal household, 2.29 for small household and 8.25 for medium household.

There were 17 (30.91 percent) marginal farmers who did not have any buffalo. One buffalo was possessed by 24 (43.64 percent) marginal farmers and 4 (10.81 percent) small farmers. 13 (23.64 percent) marginal farmers and 11(29.73 percent) small farmers had two buffaloes. More than two buffaloes were in possession of 22 small and all 8 medium farmers while 1 (1.82 percent) marginal household had more than two buffaloes. All small and medium household had buffalo while only 38 (69.09 percent) marginal households had buffalo. The average herd size of buffalo was found to be 1.39 for marginal household, 2.84 for small household and 6.13 for medium household.

Constraints

Major constraints experienced by the respondents in dairy enterprise are given in table 8.

Table 8: Constraints Faced by Different Households (Numbers)

Constraints	Farm Groups			All Farm
	Marginal	Small	Medium	
Breeding Related				
Cattle missing heat period	49 (89.09)	11 (29.73)	6 (75.00)	66 (66.00)
Inadequate facility of AI insemination	52 (94.55)	25 (967.57)	4 (50.00)	81 (81.00)
No knowledge of genetic make-up of the cattle	41 (74.55)	26 (70.27)	5 (62.50)	72 (72.00)
Health Care Related				
Inadequate medical facilities available in the locality	44 (80.00)	24 (64.86)	6 (75.00)	74 (74.00)
No deworming of cattle	46 (83.64)	28 (75.68)	6 (75.00)	80 (80.00)
Cattle suffering from heat stress	51 (92.73)	30 (81.08)	3 (37.50)	84 (84.00)
Cattle suffering from Mastitis	50 (90.91)	27 (72.97)	4 (50.00)	81 (81.00)
Cattle suffering from Ticks & Fleas	37 (67.27)	25 (67.57)	3 (37.50)	65 (65.00)
Feeding Related				
Inadequate knowledge about balanced feeding	36 (65.45)	24 (64.86)	4 (50.00)	64 (64.00)
Lack of availability of green fodder round the year	38 (69.09)	27 (72.97)	3 (37.50)	68 (68.00)
Management Related				
No cattle insurance	43 (78.18)	27 (72.97)	6 (75.00)	76 (76.00)
Inadequate loan facilities	26 (47.27)	19 (51.35)	2 (25.00)	47 (47.00)
Short duration of peak lactation	39 (70.91)	23 (62.16)	1 (12.50)	63 (63.00)
Market Related				
Lower Milk Price	34 (61.82)	20 (54.05)	3 (37.50)	57 (57.00)
Faulty weighing and grading tools	18 (32.73)	14 (37.84)	1 (12.50)	33 (33.00)
Lack of options for cooperative society	26 (47.27)	19 (51.35)	2 (25.00)	47 (47.00)

Note: Figures in parentheses indicate percentage to total

There were 66 (66.00 percent) farmers who reported that their cattle often miss their heat period. In marginal household farmers it was reported by 49 (89.09 percent) farmers, in small household it was reported by 11 (29.730 percent) and in medium household it was reported by 6 (75 percent). Inadequate facilities of AI insemination was a major problem of 52 (94.55 percent) marginal, 25 (65.76 percent), small and 4(50 percent) medium famers. 41 (74.55 percent) marginal, 26(70.27 percent) small and 5 (62.50 percent) medium farmers had no knowledge of genetic makeup of the cattle at the time they were bought.

Inadequate availability of medical facilities was reported by 44 (80.00 percent) marginal, 24 (64.86 percent) small and 6 (75.00 percent) medium farmers. 80 (80.00 percent) respondents said that they do not deworm their cattle. 51 (92.73 percent) marginal, 30 (81.08 percent) small and 3 (37.50 percent) medium respondents said that their cattle suffered from heat stress. Mastitis was reported by 50 (90.91 percent) marginal, 27 (72.97 percent) small and 4 (50.00 percent) medium farmers as major health related constraint. Problem of ticks and fleas was reported by 37 (67.27 percent) marginal, 25 (67.57 percent) small and 3 (37.50 percent) medium farmers.

36 (65.45 percent) marginal, 24 (64.68 percent) small and 4 (50.00 percent) medium farmers did not have adequate knowledge about balanced feeding while lack of green fodder availability was major problem of 38 (69.09 percent) marginal, 27 (72.97 percent) small and 3 (37.50 percent) medium famers. 43 (78.18 percent) marginal, 27 (72.97 percent) small and 6 (75.00 percent) medium farmers did not have cattle insurance. Problem of inadequate loan facilities was reported by 26 (47.27 percent) marginal, 19 (51.35 percent) small and 2 (25.00 percent) medium farmers. Short duration of peak lactation was reported by 39 (70.91 percent) marginal, 23 (62.16 percent) small and 1 (12.50 percent) medium farmers. 34 (61.82 percent) marginal, 20 (54.05 percent) small and 3 (37.50 percent) medium farmers said they received low price for their milk. 33 (33.00 percent) respondents said that faulty weighing and grading tools were used by vendors and cooperative societies and 47 (47.00

percent) respondents said that there was lack of options for cooperative society.

The constraints identified in the study were found to greatly influence the economic returns from milch animal. Hence, keeping this fact in mind following are the recommended strategies which can be applied in order to minimize the effects of these constraints and enhance the economic returns which will ultimately result in doubling of the farmers' income through dairy enterprise:

Proper heat detection for achieving appropriate timing of insemination was also reported as the biggest restriction in attaining high conception rate by Rao *et al.*, (2013) and Minhaj *et al.*, (2019) they further suggested that efficiency of heat detection in animal can be increased by checking vaginal pH as pH falls from 7.0 to 6.45 immediately before ovulation. Also, visual observation is best method *i.e.* allowing animal to interact in small group (three to five) and doing two to three visual observations per day will increase chances of catching cycling animals.

Less to no AI insemination facilities are major bottleneck of AI programme. Current AI insemination coverage is around 30 per cent of the breed-able animals in India which is very low RCDFI, (2018). The study also found that almost 81 percent of the household had inadequate AI insemination facilities available to them. Similar findings were reported by Mandi *et al.*, (2018) and Harisha *et al.*, (2019)^[4]. There is a need for *Multi-Purpose AI Technicians in Rural India* (MAITRIs) who are well trained and certified/accredited along with increasing awareness through campaigning about advantages of AI to encourage farmers was also suggested by Chand, (2017)^[2], Chopde *et al.*, (2019) and Tekam *et al.*, (2019).

The study shows that genetic makeup of the cattle is the most neglected area (72 percent). This finding lined up with Sharan *et al.*, (2017) who found that repeated breeding greatly affects the ability of cattle to produce milk. While Kumar *et al.*, (2011) was of the opinion that lack of pedigree bull and performance data record are major constraint. Selection of bulls through pedigree selection and progeny testing (PT) were two main solution cited by RCDFI, (2018) and Kumar

and Kumar, (2018).

Unavailability of vaccine, medicine and poor quality of veterinary facilities poor knowledge of disease control and high cost of veterinary treatment are common constraints (74 percent). Similar observations were also reported by Kumar *et al.*, (2011) and Patel *et al.*, (2013). For ensuring quality healthcare services to dairy animal steps like awareness of disease control techniques, mass vaccination of animals followed with strengthening of infrastructure by privatization of veterinary hospitals were suggested by RCDFI, (2018) and Chand, (2017)^[2].

The study also found that 84 percent farmers reported that their cattle suffer from heat stress followed by mastitis (81 percent) and ticks and fleas (65 percent). These are few major diseases which have high significance related to economic aspect of dairy. For tackling the issue of ecto-parasites Narladkar, (2018) recommended the integrated pest management approach. For heat-stress Kumar *et al.*, (2018) suggested shelter management with microclimate alteration devices like fans, sprinklers, coolers. While Purwar *et al.*, (2018) found that feed supplements were economically beneficial for tackling summer stress. Kumari *et al.*, (2019) reported supplement of trisodium citrate was effective in case of sub clinical mastitis.

The study has found that 80 percent of the respondents paid no attention to deworming of their cattle. The gastrointestinal parasites negatively affect the economic returns from the animal. Chand rashekhar *et al.*, (2017)^[2] dubbed the same findings and suggested that through extension activities like meetings, discussions, mass media *etc.* farmers should be made aware of the importance of deworming.

Poor knowledge of balance feeding was one the main constraints observed in the study (64 percent). Farmers have low to no knowledge about ration balancing. Similar constraint was cited by Kumar *et al.*, (2011). Enhancement of productivity of cows and buffaloes through ration balancing along with encouragement of farmers to adopt scientific measure of food rationing for their cattle by the KVK or any development agencies working for dairy development were feasible solutions dubbed by Sirohi *et al.*, (2017) and Yadav *et al.*, (2014).

Higher cost and low availability of green fodder was also a prominent constraint identified in the study (68 percent). This is due to the fact that farmers focus majorly on cash crops rather than forage crops. This constraint was also discussed by Tailor *et al.*, (2012) and Varaprasad *et al.*, (2013). Sirohi *et al.*, (2017) pointed out that through ration balancing feed cost per FCM can be reduced up to 18- 19 percent. While Singh *et al.*, (2019) suggested a new balance concentrate feed to reduce cost of feed. Gupta *et al.* (2020) suggested the farmers should cultivate perennial fodder like bajra napier hybrid for bridging the huge gap of fodder demand and supply.

Cattle insurance would minimise management risk of farmers as it covers the losses due to death accident, illness and diseases of the animal. Khan *et al.*, (2013) mentioned the importance of cattle insurance in his study and pointed out that the frequency of insurance is directly related to the education level and rearing experience of the farmers. It is revealed from the study that very small number of respondents (24 percent) had cattle insurance. Chand *et al.*, (2016) also cited that livestock insurance coverage is extremely low and suggested that efforts should be made to create more awareness and to simplify the process for getting cattle insurance.

Dairy as an enterprise requires financial help time to time.

Since majority of the bovine population is maintained by marginal and small farmers availability of financial help was identified a common constraint in the study (47 percent). The finding was in line with the findings of Prakarskumar, (2011) and Balaganoormath *et al.*, (2017). To overcome this issue RCDFI, (2018) suggested that farmers should be made aware of the subsidies and special loan schemes provided by NABARD and other banks.

63 percent respondents of the study have reported that the duration of the peak lactation is really small. It is an important constraint as larger duration of peak lactation would mean higher milk yield and higher economic returns. Ajithakumar *et al.*, (2017) and RCDFI, (2018) suggests bypass fat and prilled fat diet *al.ong* with yeast supplements would significantly increase duration of peak milk yield.

Production of milk is to be matched with proper marketing facilities but the study shows that farmers are not satisfied with the current marketing facilities. Low prices of milk (57 percent), limited options for cooperative milk societies (47 percent) and faulty weighing tools (33 percent) were major cause of this dissatisfaction. Similar findings were cited by Singh and Singh, (2016) and Saxena *et al.*, (2017). Yadav *et al.*, (2014) suggested encouragement of village/ panchayat level dairy cooperative societies and conduction of short- or long-term skill-based training for making value added dairy product so that farmers could get more price of their milk.

Conclusion

The study were found to greatly influence the economic returns from milch animal. Hence, several strategies were recommended like proper heat detection for achieving appropriate timing of insemination, Multi-Purpose AI Technicians in Rural India (MAITRIs) who are well trained, selection of bulls through pedigree selection and progeny testing, strengthening of infrastructure by privatization of veterinary hospitals, shelter management with microclimate alteration devices, adoption of scientific measure of food rationing, cultivation of perennial fodder like bajra napier hybrid for bridging the huge gap of fodder demand and supply, bypass fat and prilled fat diet *al.ong* with yeast supplements and conduction of awareness and encouragement programmes.

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