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Research Article

A Study On The Problems Faced By Dairy Milk Farmers Of Kerala State

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ABSTRACT

The study, titled ``Problems faced by dairy farmers in Kerala in dairy farming", examines the problems faced by dairy farmers in the areas of feed, breeding, medical and veterinary services, as well as their mental limitations in managing their livestock. The purpose is to investigate researched by dairy farmers to explore milk marketing constraints faced by dairy farmers. To achieve the above objective, a sample of 150 households was randomly selected in the state of Kerala. This study adopted random sampling method. A questionnaire survey was used to collect primary data from dairy farmers. Questions were asked regarding breed types, feeding methods, animal husbandry, water availability, milk sales, land available for growing feed crops and veterinary services. The sample size for the study was 150 dairy farmers with two or more dairy cows. The respondents were randomly selected from the state of Kerala.

Key words: Feed and Fodder, marketing of milk,households, livestock management, Questionnaire survey, Veterinary service, feeding, breeding

INTRODUCTION

India is an agrarian economy and the majority of the country's working population remains directly or indirectly engaged in agriculture and related activities. In India, 54.6 per cent of the population is engaged in agriculture and related activities, Ministry of Agriculture (Cooperation and Farmers Welfare, 2021). The government has allocated Rs 2.83 billion for agriculture and allied activities in 2020-21, as well as an irrigation reserve budget (Economic Research Report 2019-2020). Livestock are an important source of livelihood for the world's poor and are the population's main source of animal protein. The global dairy industry contributes to sustaining the livelihoods of people and their communities by providing products that provide essential nutritional components and creating jobs in both rural and urban communities. Today, the dairy industry serves more than 7 billion consumers and provides vital livelihoods to approximately 1 billion people involved in the dairy industry. The most successful factor in dairy farming is the price the farmer receives from the dairy. Milk price volatility has been found to be very high in recent years, resulting in fluctuating incomes for farmers around the world (IBIS World Industry Report 2019).

Animal husbandry in Kerala is one of the fastest growing industries. Farmers rely on agricultural by-products such as all types of grains, grain residues, and oil cakes made from coconuts and groundnuts to meet the feed requirements of their cattle. There is a close relationship between the development of the country's dairy industry and the overall development of the country's agriculture.The development of dairy products laid a solid foundation for the Green Revolution.Therefore, all dairy farm development programs are very popular among the poverty alleviation programs launched by the Government of India. The share of agriculture and allied sectors in gross value added in Kerala was 9.5% with a growth rate of 1.7% in 2017-2018, but subsequently declined by -0.5% in 2018-2019 due to changes in employment. . The agricultural sector provides the sixth largest employment. (In 2018, the share of employment in the agricultural sector was 16.7 percent).

Milk is the largest product by value from India's agriculture and allied sectors at Rs 6.5 million. It accounts for approximately 26% of the total agricultural gross domestic product (GDP). India's milk production was 187.7 million tonnes in 2018-19, registering a year-on-year growth rate of 6.5%. Per capita milk availability reached a level of 394 grams per day in 2018-19 (Economic Survey Report 2019-2020). Animal husbandry in

Kerala took off only after the introduction of the Major Village Scheme, which was later integrated with the Intensive Cattle Development Project.

NEED AND SIGNIFICANCE OF THE STUDY

Urbanization, rising per capital income and population growth are also increasing the demand for milk and dairy products. To take advantage of this opportunity, dairy operators and farmers must adopt improved milk management practices to improve milk production, resulting in significant increases in animal performance and milk production. Most farmers practice traditional milk production methods. Therefore, the quality of dairy products is poor. Good Dairy Farming Practices (GDPP) has been adopted around the world. This will enable farmers to produce safe quality milk that meets milk and dairy quality standards and sell it to the food industry and consumers. The main motto of using GDPP was to produce safe and hygienic milk from healthy animals on the dairy farm itself.

STATEMENT OF THE PROBLEM

In this study, after calculating and analyzing all factors and feed analysis, it was found that local animals had negative profits in all categories and the cost of milk production was very high. They keep these animals for migratory power and other secondary purposes, rather than earning income from the animals.

OBJECTIVES OF THE STUDY

1. To study the feeding, breeding, health care and Veterinary services constraints faced by dairy farmer.
2. To study the livestock manage mental constraints faced by dairy farmer.
3. To study the marketing of milk constraints faced by dairy farmer.

RESEARCH METHODOLOGY

Research Design and Data Collection

Descriptive research design was used for this study. Questionnaire survey was used to collect primary data from the dairy farmer. The questions asked regarding the type of breed, feeding practices, housing, water availability, marketing of milk, land available for cultivation of fodder crops and veterinary services etc.

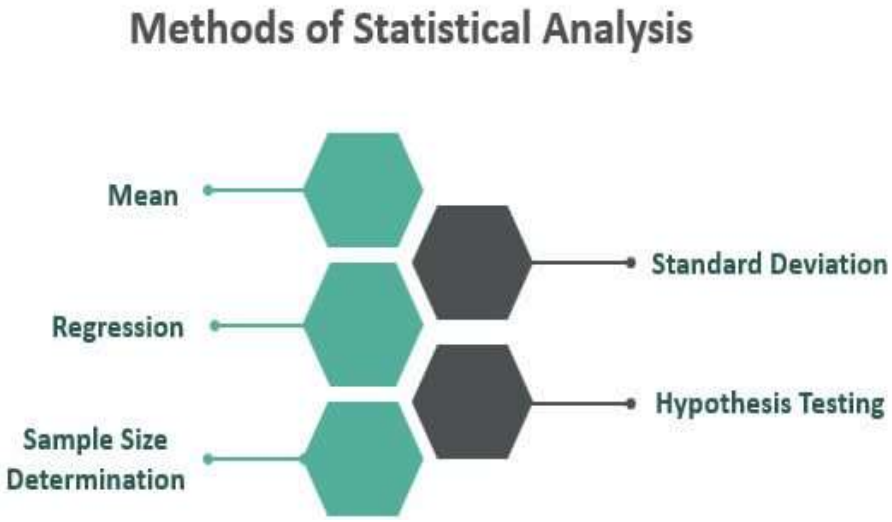
Sample of Respondents

The target sample size for this study was 150 dairy farmers with two or more dairy cows. The respondents were randomly selected from the state of Kerala. Land ownership was not considered as the main criterion, but livestock ownership was considered as the main criterion for selecting respondents. A target population of 150 was calculated using a sample size formula with a confidence level of 95% and a margin of error of 4%.

Sampling Design and Tools used for analysis

Random sampling techniques was used for this study.

❖ **Percentage analysis**



❖ **Chi-square test**

$$x_c^2 = \frac{\Sigma\ (O_i\ -\ E_i)^2}{E_i}$$

Where c = Degrees of freedom, O = Observed Value, E = Expected Value. The degrees of freedom in a statistical calculation represent the number of variables that can vary in a calculation. The degrees of freedom can be calculated to ensure that chi-square tests are statistically valid. These tests are frequently used to compare observed data with data that would be expected to be obtained if a particular hypothesis were true. The Observed values are those you gather yourselves. The expected values are the frequencies expected, based on the null hypothesis.

Null Hypothesis (Ho) - The Null Hypothesis is the assumption that the event will not occur. A null hypothesis has no bearing on the study's outcome unless it is rejected.
Ho is the symbol for it, and it is pronounced H-naught.

Alternate Hypothesis(H1 or Ha) - The Alternate Hypothesis is the logical opposite of the null hypothesis. The acceptance of the alternative hypothesis follows the rejection of the null hypothesis. H1 is the symbol for it.

Hypothesis
In view of the proposed objectives, the researcher has formulated the following hypothesis (for the study

Null Hypothesis (Ho) and Alternative Hypothesis(H1): There is no functional relationship between value and 'Feeding constraints among farmers' 'Breeding constraints among farmers,'Veterinary services and Health care constraints among farmers, Management practices constraints among farmers,'Constraints related to marketing of milk among farmers.
The formula is as follows:

$$\text{Index} \quad \frac{: \Sigma_I=1\Sigma j=1Sij}{\Sigma MaxSj}$$

i = Respondents
j = Problems/constrain
= Score of j^{th} factor
= Total score of j^{th} factor of the i^{th} respondent
= Maximum score for the j^{th} factor

Table .1. Based on the index obtained, the results were compared to a standard derived

Scores obtained	Problems/Constrains category
0-33.3	High
33.3-66.6	Moderate
66-6-100	Nil

RESULTS AND DISCUSSION

Milk Production
Milk production is an important factor in dairy farming. The profitability of dairy farming is decided based on milk production. Table 2 specifies the problems faced by the farmers in milk production. The climatic issues were the major problems in milk production. The climatic variation was the major factor behind the milk production problems. Because the highest temperature in always marked in the Kerala state.

Table .2. Problems related to milk production

Problems	Index	Opinion
The climatic variation highly affected the quantity of milk production.	100	High
The cattle diseases highly affected milk production.	49	Moderate
The lack of nutrition leads to a decrease in the level of milk production	33	Nil
The irregular milking frequency negatively affected milk production.	33	Nil
Genetic problems are the main reason for reducing milk production.	33	Nil

Milk Procurement

Milk procurement is an important function of the dairy co-operative societies. The Table 3 specifies the problems that are faced by dairy farmers in milk procurement. But none of the dairy farmers were facing difficulties in milk procurement. All of them were satisfied with the procurement facilities and arrangements.

Table 2. Problems related to milk procurement

Problems	Index	Opinion
The dairy farmers faced a Lack of hygienic and sanitization measures in the dairy co-operatives.	33	Nil
The milk procurement was reduced due to a lack of transportation facility	33	Nil
The staff are not properly recording the milk supply details	33	Nil
The DCS doesn't have any milk storage facilities	33	Nil
The societies don't have a proper milk testing mechanism	33	Nil

Other Problems

The Table 4 lays down the other basic problems faced by the dairy farmers. This includes non availability of labour, delayed payments from DCS, low productivity of cattle, lack of crossbreed animals, lack of sufficient veterinary services. Out of these, low accessibility to veterinary services and lack of sufficient labour were the main problems faced by the selected dairy farmers. All payments for dairy-related dealings were up to date and, they had not faced difficulties in the availability of crossbreed cattle. So, it was a benefit for the dairy farmer to manage the financial and farm requirements.

Table 4. Other problems

Problems	Index	Opinion
The non-availability of labour is the major problem faced by dairy farmers.	69	High
The delayed payments from dairy co-operatives affect the investments in dairying.	33	Nil
The non-availability of crossbreed animals affects the productivity of dairying.	33	Nil
The Lack of sufficient veterinary services affected the health of cattle.	75	High

FEEDING CONSTRAINTS

In the present study, poor knowledge of feed preservation techniques was the main barrier, with feed restriction identified in 94.99%, followed by feed loss due to non-use of collection equipment at 85.13%. Other constraints were high cost and low availability of concentrated feed throughout the year and low feed availability, 53.18% and 51.11%, respectively. Reduced availability of dry fodder and unavailability of land for fodder production were rejected by respondents

Table 5. Chi-square test of Null hypothesis: 'Feeding constraints among farmers is not different'

Sample	Value	df	Asymp. Sig. (2- sided)
Pearson Chi-Square	1368.49 (a)	4	.000
Likelihood Ratio	1239.679	4	.048
Linear-by-Linear Association	128	1	.122
N of Valid Cases	150	-	-

At 4 df and 5% significance level, the p-value of the chi-square test is 0.000 and the calculated value of the chi-square test is 1368.49. Therefore, the p-value of the chi-square test is less than the alpha value, so the null hypothesis is rejected, and the null hypothesis is rejected. The null hypothesis that ``Farmers' dietary restrictions remain the same'' is rejected, and the alternative hypothesis that ``Farmers' dietary restrictions are different'' is accepted.

BREEDING RESTRICTIONS

In this study, elite buffalo bulls for nature service were tested, and unavailability of purebreds improved breeding bulls and AI reduced % conception rate. Compared to natural services, the main limitations were

identified, while there is a lack of knowledge regarding estrus detection, occurrence of reproductive failure, unavailability of A.I. According to the respondents' information, the time limit for the opportunity was not a restriction.

Table 6. Chi-square test of Null hypothesis: 'Breeding constraints among farmers is not different

Sample	Value	df	Asymp. Sig. (2- sided)
Pearson Chi-Square	1049.65 (a)	220	.000
Likelihood Ratio	687.835	220	.124
Linear-by-Linear Association	1.384	1	.138
N of Valid Cases	150	-	-

At 4 df and 5% significance level, the p-value for the chi-square test is 0.000 and the calculated value for the chi-square test is 1049.65. Therefore, the p-value of the chi-square test is less than the alpha value, so the null hypothesis is rejected. The null hypothesis that ``breeding restrictions among farmers do not differ'' is rejected, and the alternative hypothesis that ``breeding restrictions differ between farmers'' is accepted.

VETERINARY SERVICES AND MEDICAL LIMITATIONS

The main limitations in veterinary services and medicine are lack of knowledge about metabolic diseases, lack of knowledge about comprehensive parasite control, inadequate veterinary pharmacy/clinic facilities, and high incidence of mastitis. In addition, the main obstacles are the cost of treatment and the difficulty in securing doctors in a timely manner. The vaccine had other limitations.

Table 7. Chi-square test of Null hypothesis: 'Veterinary services and Health care constraints among farmers is not different

Sample	Value	df	Asymp. Sig. (2- sided)
Pearson Chi-Square	2074.58 (a)	4	.000
Likelihood Ratio	1320.389	4	.105
Linear-by-Linear Association	3.401	1	.063
N of Valid Cases	150	-	-

At 4 df and 5% significance level, the p-value of the chi-square test is 0.000 and the calculated value of the chi-square test is 2074.58. Therefore, the p-value of the chi-square test is less than the alpha value, so the null hypothesis is rejected. The null hypothesis that ``There are no differences in veterinary services and medical constraints between farmers'' is rejected, and the alternative hypothesis that``veterinary services and medical constraints differ between farmers'' is accepted.

LIMITATIONS ON MANAGEMENT PRACTICES

The main obstacles were lack of use of milking machines due to lack of knowledge and lack of knowledge about the use of disinfectants and disinfectants. Other barriers identified include lack of labor, lack of knowledge about constructing dairy sheds, and lack of knowledge about record keeping. The farmers in Kerala did not provide enough space for housing, which the farmers refused.

Table 8. Chi-square test of Null hypothesis 'Management practices constraints among farmers is not different

Sample	Value	df	Asymp. Sig. (2- sided)
Pearson Chi-Square	1180.82 (a)	4	.000
Likelihood Ratio	128.300	4	.105
Linear-by-Linear Association	.104	1	.428
N of Valid Cases	150	-	-

At 4 df and a significance level of 5%, the p-value of the chi-square test is 0.000 and the calculated value of the chi-square test is 1180.82. Therefore, the p-value of the chi-square test is less than the alpha value, so the null hypothesis is rejected. The null hypothesis that ``constraints on farmers' management practices do not change'' is rejected, and the alternative hypothesis that ``constraints on farmers' management practices differ'' is accepted.

MARKETING MILK-RELATED RESTRICTIONS

The pressure to continuously produce high-quality milk while the government was unavailable, irregular and delayed milk payments were major constraints. / Unavailability of cooperative unions, milk storage facilities and insufficient knowledge about producing clean milk were minor obstacles in milk marketing. Reduced availability of transportation throughout the season was rejected as a limitation to milk marketing.

Table 9. Chi-square test of Null hypothesis: 'Constraints related to marketing of milk among farmers is not different

Sample	Value	df	Asymp. Sig. (2- sided)
Pearson Chi-Square	963.48 (a)	4	.000
Likelihood Ratio	462.56, 427.300	4	.103
Linear-by-Linear Association	.105	1	.416
N of Valid Cases	150	-	-

At 4 df and 5% significance level, the p-value of the chi-square test is 0.000 and the calculated value of the chi-square test is 963.48. Therefore, the p-value of the chi-square test is less than the alpha value, so the null hypothesis is rejected. The null hypothesis ``Milk sales restrictions do not differ between farmers'' is rejected, and the alternative hypothesis ``Milk sales restrictions differ between farmers'' is accepted.
Farid et al. (2018) investigated common management practices, breeding and feed restrictions, health-related restrictions, and restrictions on milk marketing activities in Dera Ghazi Khan district, Pakistan. Cases of constraints faced by dairy farmers in general management practices (47.86%) include lack of availability of financing (42.14%) with an average of 2.13, lack of extension services (66.43%), and an average of 2.52. High labor costs accounted for 23.57% with a mean score of 1.77, while lack of training opportunities (50.71%) and mean score of 2.22. In terms of breeding constraints, the unavailability of AI services was severely affected, with an average of (61.43%) and an average of 2.39, followed by the unavailability of high-quality crossbred bulls and inadequate estrus detection, with an average of (61.43%) and an average of 2.39 (50%) (35.71%) and 2.27. 2.06 and 2.06 respectively. Among feed constraints, feed cutting and cultivation are the main constraints, followed by lack of feed throughout the year, use of mineral mixtures, and high cost of concentrates at 50.71%, 42.86%, and 47.14%, respectively, with an average value of They were 2.08, 2.05, and 2.05. 2.01. Barriers to healthcare include lack of knowledge about veterinary services, lack of veterinary services in hospitals, lack of availability and high cost of medicines, followed by absence of veterinarians in emergencies and lack of timeliness of vaccinations. , inappropriate deworming practices, etc. Other disabilities were 26.43%. They were 47.14%, 52.14%, 51.43%, and 35%, respectively. Sales constraints included low milk prices, lack of transportation, payment problems, and market competition, which accounted for 30%, 50%, 46.43%, and 38.57% (mean 1.88, 1.99 , 1.95).
Rathod et.al, (2017) Provision of livestock services through dairy cooperatives in developing countries like India has gained attention in the last decade. However, due to market competition, these cooperatives can only process about 17 percent of the surplus milk on the market. Therefore, there is an urgent need to investigate the factors that impede the availability and effectiveness of livestock services. Against this backdrop, serious efforts have been made to investigate the limitations perceived by farmers and cooperative staff in providing livestock services to dairy cooperatives in western Maharashtra.

To get some suggestions in this regard, this study has also summarized the strengths, weaknesses, opportunities and threats (SWOT) of Gokul Dairy Cooperative. Using a pretested interview schedule, data were collected from 150 milk producers and 35 cooperative employees, including veterinarians, veterinary assistants, and village-level cooperative secretaries. . The investigation revealed that Gokul Dairy Society was providing livestock services for 46 cattle under his 7 cattle. Animal health, breeding, production and management, feed and feed production, consulting, marketing and other services. Dairy farmers and cooperative staff believed that the provision of livestock services included human, financial, political, and administrative constraints. Among other limitations, the high cost of concentrates, unprofitable milk prices, complex insurance and subsidy procedures, and high costs of drugs and treatments were the main limitations in service provision. The SWOT analysis revealed that the cooperative has strong and weak aspects regarding the provision of livestock services. Therefore, in order to scale up proven initiatives and strengthen best practices, we need to improve the quality of services and reduce the cost of services provided, in order to increase farmers' satisfaction with the services of dairy cooperatives. is needed.

Singh et.al. (2017) conducted a research study in two districts of Raebareli and Varanasi to investigate what constraints dairy farmers face in adopting good dairy practices in Uttar Pradesh. A survey was conducted among 160 respondents. This study was conducted in six main groups. H.

Animal health care, hygienic milking practices, feeding and animal welfare, environmental and socio-economic management practices. In veterinary medicine, lack of timely treatment facilities and lack of

knowledge about common infectious diseases and prevention and control measures averaged 72 and 71, respectively, followed by inadequate vaccination schedules and lack of availability of medicines at veterinary hospitals. followed. 63.66 and 47 respectively. Limitations to good hygienic milking practices include lack of knowledge about hygienic milk production, ignorance about cleaning milking areas and washing animals, unavailability of appropriate equipment needed for high-quality milk production, and equipment. Inadequate knowledge about proper cleaning includes: 72,70,68,average 65 and 58. While animal welfare practices limit animal welfare, a lack of research and milking facilities was a major hurdle in Mean Sole 72. Lack of ability to recognize the animal's needs and take appropriate action was rated at least 30 points. Limitations to good environmental practices were lack of knowledge about waste disposal practices, irregular disposal of fertilizers and animal waste, and unavailability of animal waste recycling facilities (67, 66, 65). Found by farmers. Limitations related to socio-economic management practices include lack of knowledge about record-keeping, lack of resources to provide housing for universities, low availability and access to profitable markets, and unprofitability. milk prices, and labor shortages with median scores of 70, 69, 68, 65, and 62 years.

RECOMMENDATIONS

❖ Field-level demonstrations to make farmers aware of the importance and use of chipper machines and subsidies for chipper machines should be increased.

❖ Providing purebred buffaloes and bulls for natural breeding at village level to improve milk yield.

❖ Technical training and awareness programs on metabolic diseases, integrated parasite control and mastitis should be conducted for para-veterinary staff and farmers.

❖ Providing the latest technology, facilities, human resources, and vaccines in the field of veterinary medicine pharmacy.

❖ Training and demonstrations on how to use the milking machine, how to use disinfectants, etc. Dairy farm disinfectant.

❖ Training and demonstration on vermicompost production should also be increased to overcome lack of automation of work processes in dairy farms. ❖ Provide easy to use mobile (Android) software for maintaining records of individual dairy cows.

❖ Payment for milk on bazaar day (weekly payment) should be mandatory through milk collection points.

❖ Provide milk storage facility at block level.

FINDINGS

To study the feed constraints in dairy farming faced by farmers in Kerala, eight constraints were considered and developed according to this questionnaire. Based on the statistical analysis of the survey data, we analyzed that out of the eight restrictions, four feeding restrictions were accepted and four feeding restrictions were rejected. Lack of knowledge about feed preservation techniques is an important factor in feeding and unavailability of land for feed production is strongly discouraged. They also object to feeding restrictions reducing the availability of dry food.

To study the reproductive constraints in dairy farming faced by farmers in Kerala, five constraints were considered and developed according to this questionnaire. Based on the statistical analysis of the survey data, we analyzed that out of the five restrictions, three husbandry restrictions were accepted and three husbandry restrictions were rejected. Unavailability of purebred/improved breeding bulls is also considered to be a major breeding barrier for dairy farmers in Kerala.

To consider the constraints on veterinary services and medical care, nine constraints are considered. Based on the statistical analysis of the survey data, it was analyzed that seven of the nine constraints on veterinary services and medical care are accepted and only two constraints on veterinary services and medical care are rejected. Lack of knowledge on metabolic diseases is a significant factor, and lack of knowledge on the symptoms of various diseases is strictly rejected. Lack of knowledge on comprehensive parasitization and inadequate facilities in veterinary hospitals/pharmacies are also considered to be major constraints on veterinary services and medical care. They also reject lack of knowledge on deformity constraints. The remaining four constraints, namely high incidence of H. mastitis, high treatment costs, timely availability of veterinarians, and unavailability of vaccines in a timely manner, are considered to be strongly accepted constraints. Investigate livestock management constraints faced by dairy farmers.

In order to study the husbandry constraints in dairy farming faced by farmers in Kerala, he considered and prepared eight constraints according to this questionnaire. Based on the statistical analysis of the survey data, it is analyzed that out of the eight constraints, seven management practice constraints are accepted and only one management practice constraint is rejected. The lack of use of milking machines due to lack of

knowledge is a major obstacle, and the lack of adequate accommodation space is also strongly opposed. Lack of knowledge regarding the use of disinfectants and disinfectants, as well as a shortage of labor, are also considered to be major limitations to management practices. Investigate milk sales restrictions faced by dairy farmers. To study the constraints of milk marketing in the dairy industry faced by farmers in Kerala, eight constraints are considered. Based on the statistical analysis of the survey data, we analyzed that out of the eight restrictions, five milk sales restrictions were accepted and three milk sales restrictions were rejected.

CONCLUSION

The pressure to continuously produce high-quality milk and pay for the milk is volatile and causes delays, while strongly opposed to reduced availability of transportation in all weather conditions. It has been. Unavailability of government and cooperatives, unavailability of milk storage facilities and disinfectants, and insufficient knowledge about clean milk production are also major constraints to milk marketing faced by dairy farmers in Kerala. The demand for milk varies depending on the season. Restrictions are rejected, but milk grading is done using a flawed system and fraud by milk collection centers is marginally rejected.

REFERENCES

1. Arulnathan, N., Murugan, M. and Balakrishnan. Proximate Principles, Fibre Fraction and Mineral Content of Black Gram Husk (Vigna mungo). International Journal of Livestock Research, 3(3): 2013.
2. Arvinda Kumar M.K. and Vasantha Kumar A.S. (2003). Constraints faced by small and marginal farmers in dairy farming as a subsidiary occupation. Rural India, 66(6-7):118- 119.
3. Ashraf, Y., Gillani, A.H. and Nagra, S.A. (1995). Effect of harvesting interval and varieties on the chemical composition of indigenous fodder. I: Proximate composition. Journal of Agricultural Research, 33: 31-43.
4. Atiya Azim, Shakira Ghazanfar, Asma Latif and Mukhtar A.N., (2011). Nutritonal Evaluation of some top fodder tree leaves and shrubs of District 115 Chakwal, Pakistan in Relation to Ruminants Requirement. Pakistan Journal of Nutrition, 10(1):54-59.
5. Bairathi ,R .(1993). A study of constraints in milk production at different levels of milk producers cooperative union Ltd, Jaipur, Rajasthan. M.Sc Thesis, NDRI, Karnal,Haryana.
6. Balakrishna, B., (1997). Evaluation of dairy production practices in selected farming system of Karnataka state. Ph.D Thesis, NDRI, Karnal, Haryana. Duguma Belay.
7. Yisehak Kechero and G.P.J. Janssens (2011). Analysis of Constraints Facing Urban Dairy Farmers and Gender Responsibility in Animal Management in Jimma Town. African Journal of Basic & Applied Sciences, 3(6):313-318.
8. Durgga R. V. and Subhadra M.R., (2008). Constraints faced by dairy farm women in relation to farm operations. Gujrat Journal of Ext. Edu. XVIII-XIX, 110- 112.
9. Farid M.F., Siddiqui B.N. , Mustaffa M.A.Ul., Khwaja M.d., Farooq M.U. (2018). constraints faced by dairy farmers in dairy production management in District Dera Gazhi khan of Pakistan. International J. of Multidisciplinary Approach and Studies, 5(4): 118-
10. Kumarvel (2006). Economic analysis of livestock production systems in tribal areas of Tamilnadu. PhD Thesis, NDRI Karnal, Haryana.
11. Kumbhare, S. L., Sharma, K.N.S. and Patel, R. K. (1983). Standardization of Bovine Units. Indian Journal of Animal Health, 93(2): 457-550.
12. Mahajan, S. (2010). Economic analysis of rural and periurban dairy farms in Ludhiana district of Punjab. M.V.Sc Thesis, NDRI, Karnal.
13. Mahendra, Singh, Anil Chauhan(2006). Constraints faced by dairy owners in adoption of scientific dairy farming practices. Indian Journal Dairy Science. 59(1):49-51.
14. Department of Agriculture, Co-operation & Farmer's Welfare. (2021) GOI [Government of India].
15. Economic Survey Report 2019-2020. GOI [Government of India]. 2020

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