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Original Research

An Empirical Assessment of Constraints in Dairy Farming

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Abstract

The present study was conducted to know the constraints faced by farmers in dairy activities. Dairy farming is a family enterprise that involves both genders. Thirteen independent constraints were taken for the study based on personal interview techniques using a schedule. Later, they were categorized into six broad constraints viz., Marketing, Financial, Technical, Physical, Institutional, and Personal constraints. Friedman rank test was performed to validate whether sample dairy farmers differ in their opinion about six broad constraints in dairy farming. The test was found statistically significant with a chi-square statistic of 186.57 at a five percent level of significance and five degrees of freedom. The significance indicates that sample farmers do differ in their opinion about constraints. Marketing constraints appeared as the most severe with the highest Mean Rank Value Score of 5.21 while Personal constraints were the least severe with a score of 1.79. Further identified 13 constraints were ranked considering the means score assigned by sample dairy farmers. Non-availability of quality semen ranked first and was considered as most severe. The effectiveness of artificial insemination depends on the quality of semen used. The success of dairy farming depends on regularity in parturition. The low price of milk appeared as the second major constraint due to the failure of milk price to keep the pace of the rise in input prices having a negative bearing on production costs. Delay in payment of price incentives appeared as the third major constraint due to the institutional rigidities, and deficit budget. The study concluded that timely availability of quality semen should be made available in the veterinary hospitals located in the vicinity. Incentive prices paid by the government should cover rising input prices to retain the status quo position of farmers.

Keywords: Artificial Insemination, Constraints, Dairy Farming, Government.

Introduction

Dairy farming is practiced as a subsidiary occupation in India to stabilize and sustain income and livelihood of farmers. India ranked first in the world with total milk production of 198.40 million tonnes in 2019-20 (NDDB 2019-20). Dairy cooperatives have revolutionized milk production in India and the credit for the same goes to Sri Varghese Kurien (Father of the White Revolution). The result of the milk revolution could be witnessed in the retention of the first position in global milk production. On cooperative lines, the highest milk production was observed in Gujarat followed by Karnataka. Karnataka accounts for 7,901 tonnes of milk production (Statista). AMUL has been instrumental in sustaining the lead position of the state in India. Next only to Gujarat, Karnataka possessed the largest cooperative in India entitled Karnataka Milk Federation (KMF). KMF has 14 milk unions covering all the districts of the State. Its dual functioning i.e., procuring milk from dairy farmers cut across the state through Primary Dairy Cooperatives Societies (DCS) assures a market for milk for dairy farmers, and through its distribution network, it caters to the needs of customers positioned across the state. SHIMUL is one among the 14 milk unions covering districts viz., Shivamogga, Davangere, and Chitradurga of Karnataka (Santosha *et al.,* 2020). None of the production activity in the economy is free from constraints and dairy farming specifically is not an exception to this. It may be confronted with constraints related to marketing, credit availability, and accessibility, technical problems associated with milk production, and governmental interventions in the form of policies and programs (Kavitha *et al.,* 2020). In this connection, it becomes imperative to probe into constraints faced by dairy farmers and to identify the most severe constraints. This study enables policymakers to tailor suitable policies and programs to tackle severe constraints relieving farmers from predicaments and enabling them to sustain profits.

Material and Methods

A multistage simple random sampling technique was employed to select the sample dairy farm families. Considering the highest number of functioning dairy cooperative societies and milk collection, Shivamogga district was selected from SHIMUL. Considering the same analogy, two taluks viz., Shikaripura and Bhadravathi were selected from Shivamogga district. From each taluk, 40 dairy farm families registered with SHIMUL having a minimum herd size of four milch animals from the past five years were selected. Thus, the total sample size constituted 80 farm families. "Ex-post facto research design" was employed to ascertain the major constraints faced by dairy farmers. The response of farmers on constraints in dairy farming was elicited using a pretested well-structured interview schedule. Around 13 specific constraints were considered in the interview schedule. The response of farm families on constraints was recorded on a 3-point continuum (most severe, severe, and least severe) with weightage of 3, 2, and 1 respectively (Lal S.P *et al.,* 2016). On receiving the response from the sample farmers, the specific constraints were later categorized into six broad groups' *viz.,* Marketing, Financial, Technical, Physical, Institutional, and Personal constraints. Friedman rank test, a non-parametric test was performed (Tripathi, 2014) to validate whether or not sample dairy farmers differ in their opinion about six broad constraints in dairy farming. The Friedman statistic was computed using the formula mentioned below,

$$\chi_r^2 = \frac{12}{Nk(k+1)} \times \sum_{j=1}^{k} Rj^2 - 3N(k+1) \text{ at df} = k-1$$

N = Respondents (Subjects) = 80
k = Number of broad constraints (Treatments) = 6
$\sum Rj^2$ = Sum of squares of row ranks in each column

If the computed statistic was found to be significant then, broad constraints will be ranked based on the magnitude of the Freidman mean rank score. Further, specific constraints were ranked based on severity considering the magnitude of the mean score obtained from the response recorded on a 3-point scale.

Results and Discussion

The broad constraints and specific constraints encountered by dairy farm families in Shivamogga district of Karnataka state is presented in Table 2 along with the Freidman mean rank score and mean score recorded on 3 point scale considering the actual response of dairy farmers. The Friedman test was performed to test the null hypothesis that sample dairy farmers are in common consensus about their opinion on constraints in dairy farming. The Friedman test was found statistically significant with a chi-square statistic of 186.57 at a five percent level of significance and five degrees of freedom indicating that farmers differed in their response about constraints in dairy

farming (Table 2). The result was obvious since constraints encountered by all the dairy farmers could not be akin. It may vary from farm to farm, financial status of the farmer, location of a dairy farm, education status of the farmer, etc.

Table 1: Status of District Cooperative Societies (DCS) in Shivamogga district

Sl. No.	Taluk	Functioning DCS
1	Shivamogga	121
2	**Bhadravathi**	**125**
3	Thirthalli	29
4	Sagara	40
5	**Shikaripura**	**114**
6	Soraba	79
7	Hosanagara	18
	Total	**526**

Table 2: Constraints faced by sample farm families in dairy farming (n=80)

Constraints	Response of dairy farmers				
	Most Severe	Severe	Least Severe	(Ẍ) Mean Score	Overall Rank
Marketing (Mean Rank Value score = 5.21)					
Expensive dry fodder and concentrates	22(27.50)	43(53.75)	15(18.75)	2.07	V
Low price of milk	56(70.00)	24(30.00)	0(0.00)	2.69	II
Financial (Mean Rank Value score = 2.65)					
Non-availability of financial assistance at right time	4(5.00)	34(42.50)	42(52.50)	1.52	IX
Technical (Mean Rank Value score = 3.81)					
Complexities in preparation of feed mix	9(11.25)	42(52.50)	29(36.25)	1.74	VIII
Lack of improved dairy technologies	0(0.00)	32(40.00)	48(60.00)	1.41	X
Non-availability of quality semen in the vicinity	58(72.50)	22(27.50)	0(0.00)	2.73	I
Physical (Mean Rank Value score = 3.28)					
Non-availability of dry fodder	11(13.75)	41(51.25)	28(35.00)	1.78	VII
Milking is an onerous task for dairy women	9(11.25)	47(58.75)	24(30.00)	1.81	VI
Institutional (Mean Rank Value score = 4.27)					
Delay in payment of incentives from milk co-operatives	49(61.25)	31(38.75)	0(0.00)	2.59	III
Lack of veterinary extension facilities	28(35.00)	52(65.00)	0(0.00)	2.35	IV
Lack of training on dairy farming at village/block level	0(0.00)	26(32.50)	54(67.50)	1.35	XI
Personal (Mean Rank Value score = 1.79)					
Negligence among dairy farmers in caring and management of pregnant cows and new born calves	0(0.00)	19(23.75)	61(76.25)	1.23	XIII
Lack of knowledge regarding identification of diseases in milch cows	0(0.00)	18(22.50)	62(77.50)	1.23	XII

Among the six broad constraints, Freidman statistic enabled us to position constraints based on severity. Accordingly, Marketing constraints appeared as the most severe with the highest Mean Rank Value Score of 5.21 followed by Institutional (4.27), Technical (3.81), Physical (3.28), Financial (2.65), and Personal constraint (1.79). Marketing constraints appeared as most severe because the rise in prices of milk failed to keep the pace with rise in input prices having a negative bearing on production costs (Selvi, 2017). Institutional rigidities in the form of delayed payment of incentives, lack of dairy extension facilities, and need-based training at the village level constrained dairy farming (Thankachan and Joseph, 2019). Related to technical aspects like proper detection of heat in dairy animals and time of insemination, unawareness of new technologies, etc. were seen. The repeat breeding problem was the most severe constraint followed by a poor conception rate of Artificial Insemination and a lack of

good breeding stock (Sarker and Ghosh, 2010) (Minhaj *et al.,* 2019). Followed by Physical constraints related to milking and non-availability of dry fodder round the year (Kant et al., 2015). Financial constraints regarding high-interest rates on loans and the high cost of cross-breed dairy animals (Kavitha *et al.,* 2020). Personal constraints were rated as least severe as the majority of farmers had awareness about major diseases of milch cows and the vitality of caring for milch cows at the time of pregnancy and after calving.

Among the specific constraints, the non-availability of quality semen appeared as the most crucial constraint among dairy farmers. The effectiveness of artificial insemination depends on the quality of semen used and the success of dairy farming depends on regularity in parturition among milch cows. Poor quality of semen ends up in non-profitable dairy farming (Mailk M. H *et al.,* 2017) Low price of milk was the second major specific constraint due to lapses on the part of cooperatives to offer remunerative prices at the time of surplus production (Sabapara, 2016). Delay in payment of price incentives appeared as the third major constraint due to the institutional rigidities and deficit budget of the state government (Harisha et al., 2019). The fourth major constraint was the lack of veterinary extension facilities in the vicinity. For successful dairy farming, maintenance of extension facilities is quintessential. It can be possible through veterinary extension facilities in the locality. Dairy farmers expressed that enough veterinary extension facilities were missing in the locality (Shubeena *et al.,* 2019). Expensive dry fodder and concentrates were found to be the fourth major constraint due to the reduction in area under staple food crops like paddy due to the transition exhibited by farmers to commercial crops like areca nut in the study area (Anonymous, 2015) It has posed fodder insecurity. Fodder has not only become physically scarce but evinced economic scarcity and resulted in a price rise. A hike in prices of ingredients such as maize, soybean, etc. may be the reason for the rise in prices of concentrates (Dei, 2011). In terms of severity, Milking by dairy women occupied sixth position indicating the extent of drudgery involved in it. It is a time-bound activity that needs to be performed with hygiene and care. Hence, to economize milk production, rationing of feed should be done in such a way that it should ensure the least cost. Further non-availability of financial assistance at the proper time and lack of improved technologies indicates that farmers in the presence of appropriate security could avail of dairy loans without any hindrances from institutional sources/non-institutional sources. Unawareness regarding the identification of diseases and Negligence in caring and management of pregnant cows and newborn calves were found to be the least severe constraints in dairy farming indicating that farmers had awareness about major diseases of milch cows, the vitality of caring for milch cows at the time of pregnancy and after calving.

Conclusion

The study aimed to investigate of major constraints faced by dairy farmers in the Shivamogga district. Friedman test was used to identify the most severe constraints in dairy farming. Marketing constraints appeared as the most severe and personal constraints as the least severe from the test. 'Non-availability of quality semen' appeared as the most crucial specific constraint among dairy farmers followed by 'Low price of milk'. The study implied incentive prices to be paid by the government to the dairy farmers should cover rising input prices to retain their status quo position. The quality semen should be made available timely in the veterinary hospitals located in the vicinity.

Contribution by Authors

Equal contribution. All authors declared that 'written informed' consent was obtained from the approved parties for the publication of this article and accompanying images.

Conflict of Interests

There is no conflict of interest.

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