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Original Article**Identification and prioritization of constraints in livestock farming: A rank based quotient (rbq) analysis in shirol village****V.S.Pande¹, S.R.Avhad^{2*}, N.V.Khode³, G.M.Gadegaonkar⁴, G.R.Channa⁵, R.C.Kulkarni⁶, P.V.Jadhav⁷ A.M.Chilme⁸ and S.S.Narwade⁹**^{1,8 & 9}M.V.Sc. Scholars, Veterinary & Animal Husbandry Extension Education, College of Veterinary and Animal Sciences, Udgir (MH)^{2*}Assistant Professor, College of Veterinary and Animal Sciences, Udgir (MH)³Professor & Head, Veterinary & Animal Husbandry Extension Education, College of Veterinary and Animal Sciences, Udgir (MH)⁴Professor & Head, Animal Nutrition, College of Veterinary and Animal Sciences, Udgir (MH)⁵Professor & Head, Livestock Production Management, College of Veterinary and Animal Sciences, Udgir (MH)⁶Assistant Professor & Head, Poultry Science, College of Veterinary and Animal Sciences, Udgir⁷Assistant Professor, Animal Genetics and Breeding, College of Veterinary and Animal Sciences, Udgir (MH)^{*}Corresponding Author: sharadavhad@mafsu.ac.in

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ABSTRACT

The present study aimed to identify and prioritize the major problems faced by livestock farmers was conducted in Shirol village of Latur district in Maharashtra. Employing a Participatory Rural Appraisal (PRA) approach, data was collected from a purposefully selected sample of 25 farmers, who were identified with consultation of key informants. The perceived constraints were analyzed and ranked using the Rank Based Quotient (RBQ) method. The results revealed that the high cost of concentrate feed (RBQ=63.38) was the most severe constraint, followed by labour shortage (RBQ=60.92) and non-remunerative milk prices (RBQ=57.54). Other significant challenges included low productivity, high animal treatment costs and shrinking grazing lands due to recent irrigation developments. The study concludes that the primary constraints are economic and input related. Addressing these issues through subsidized feed, enhanced veterinary support and assured marketing channels is essential for improving the sustainability of dairy farming in the region.

Keywords: Livestock Farming, Participatory Rural Appraisal (PRA), Policy Interventions, Rank Based Quotient (RBQ) and Socio-economic Constraints

INTRODUCTION

Livestock farming plays a critical role in supporting the livelihood and economic stability of rural households. Despite its potential for generating regular income and employment, the sector is burdened by various socio-economic, environmental and institutional constraints. In areas like Shirol village, farmers encounter a multitude of operational roadblocks, ranging from escalating input costs to resource scarcity, that negatively impact dairy animal productivity and overall farm profitability. To design effective interventions and policies, it is imperative to deeply understand the specific challenges faced by farmers at the grassroots level. Therefore, this study was undertaken to systematically identify and prioritize the problems experienced by livestock farmers in these villages, providing valuable insights for policymakers, extension agencies, and local development planners.

MATERIALS AND METHODS

The problems faced by livestock farmers in Shirol village were identified through PRA approach and prioritized using the Rank Based Quotient (RBQ) method. The RBQ method converts the qualitative rankings given by respondents into quantitative scores, thereby enabling the identification of the most critical problems affecting livestock farming. Similar approach and methodology was adopted Sabarathnam (1988), Sabarathnam and Vennila (1996) and Rajendran *et al.* (2020). A sample of 25 farmers was identified with consultation of key informants to determine the problems faced by livestock farmers. Initially, the respondents were asked to identify the important existing problems in livestock farming through interaction among them. Then, each respondent was asked to rank the problems according to their perception about the severity of the problems in the order of significance, with 1 for most significant one. Each respondent had to independently rank problems without influence of others. A higher RBQ value indicates that a particular problem was perceived as more severe and frequently ranked higher by the respondents. All the responses were then tabulated and the Rank Based Quotient (RBQ) were calculated for each problem as per the formula,

$$RBQ = \sum f_i(n+1-i) \times 100 / N \times n,$$

where,

i = Concerned ranks,

n = Number of ranks,

N = Total number of farmers contacted for problem identification,

f_i = Frequency of i th rank (number of farmers reporting particular problem under i th rank).

Finally, ranking of the problems was done based on the RBQ scores.

RESULTS AND DISCUSSION

The results presented in the Table 1 reveal that the RBQ values range from 63.38 to 28.29, indicating varying degrees of severity among the problems in livestock farming. Among all the problems, high cost of concentrate feed emerged as the most severe with the highest RBQ value of 63.38, ranking first. This point to the fact that a majority of respondents perceived feed cost as the most pressing

issue affecting livestock production. Concentrate feed constitutes about 60 to 70 percent of livestock expenses.

Table 1. Ranking of the problems faced by livestock farmers in Shirol

Sr.No.	Problem	RBQ value (%)	Rank
1.	High cost of concentrate feed	63.38	I
2.	Labour shortage	60.92	II
3.	Non-remunerative milk prices	57.54	III
4.	Low productivity	55.69	IV
5.	High cost of animal treatment	53.54	V
6.	Lack of assured market and price	50.15	VI
7.	Repeat breeding and infertility	47.38	VII
8.	Shrinking grazing lands	44.62	VIII
9.	Disease outbreaks	42.77	IX
10.	Difficulty in obtaining credit	40.62	X
11.	Poor access to insurance services	36.31	XI
12.	Complex nature of technologies and their feasibility	32.30	XII
13.	High cost of other production inputs	28.29	XIII

Rising concentrate feed prices significantly decreases farmers' profit, thus, may compel them to reduce feed quantity or quality, which will ultimately affect animal health and milk yield.

The second key problem identified was labour shortage, with an RBQ value of 60.92. Livestock farming requires labour for activities like feeding, cleaning, milking and animal care, etc. The shortage of labour in the village may be due to migration of rural youth to urban areas and increasing preference for non-farm employment. Labour scarcity increases operational costs due to high wages demand and also places additional workload on family members. The third major problem identified was non-remunerative milk prices with an RBQ value of 57.54. Despite increase in the production costs, farmers often receive low prices for milk, especially in areas where market access is limited. This leads to reduction in profitability and farmers may get discouraged from expanding or modernizing their farms.

Low productivity of dairy animals was ranked fourth with an RBQ value of 55.69. Similar findings were found out by Meena (2001). It may be attributed to various factors such as poor genetic potential of animals, inadequate feeding, insufficient veterinary services and low adoption of improved management practices. This problem is closely linked with the high cost of feed and other inputs, which restrict farmers from providing balanced nutrition to their animals. The high cost of

animal treatment was ranked fifth (RBQ=53.54), indicating that veterinary services and medicines are perceived as expensive by livestock farmers. Thus, due to high costs farmers may delay or avoid treatment of their animals, which can worsen disease conditions and reduce productivity.

The lack of assured market and price (RBQ=50.15, Rank VI) highlights the marketing challenges faced by farmers. Inadequate marketing infrastructure, dependence on private milk vendors and absence of stable procurement systems may contribute to this problem. Repeat breeding and infertility related issues (RBQ=47.38, Rank VII) were also identified as significant problems by farmers. Poor conception rates and repeat breeding are massive problems, often tied to poor nutrition and unscientific management. Reproductive disorders reduce the productive life of animals and increase maintenance costs. These issues may arise due to poor nutrition, improper breeding management or limited access to quality artificial insemination services.

The problem of shrinking grazing lands was ranked eighth with an RBQ value of 44.62. The construction of a nearby lake during the past decade has facilitated the conversion of previously non-irrigated, arid and barren lands into irrigated agricultural areas, thereby reducing the extent of grazing land available for livestock. As a result, farmers depend more on purchased feed and fodder, which further increases production costs. Disease outbreaks (RBQ=42.77, Rank IX) were also identified as an important constraint. Similar finding was identified by Yadav *et al.* (2021). Livestock diseases not only reduce productivity but also lead to significant economic losses through mortality, treatment costs and reduced milk yield.

Problems related to institutional support like difficulty in obtaining credit (RBQ=40.62, Rank X) indicates that many farmers face challenges in accessing loan services for livestock farming investments. Issues like mortgage requirements, lengthy procedures and lack of awareness about various government credit schemes may discourage farmers from seeking formal financial assistance. Similarly, poor access to insurance services (RBQ=36.31, Rank XI) suggests that livestock farmers are inadequately protected against risks such as disease outbreaks, mortality or natural calamities. Low awareness, complicated procedures and delayed claim settlements may discourage farmers from adopting insurance schemes.

The complex nature of technologies and their feasibility was ranked twelfth with an RBQ value of 32.30. This suggests that farmers may perceive modern livestock farming related technologies as complex, difficult to understand and use, expensive or not suitable for small scale farming. Finally, the high cost of other production inputs was ranked thirteenth with an RBQ value of 28.29. Though important, farmers perceived this problem as relatively less severe compared to the others. However, increasing prices of inputs such as medicines, equipment, machinery, transportation and fodder seeds continue to influence the economic viability of livestock farming.

The analysis of the RBQ rankings reveals a strong interrelationship among several constraints. Economic factors such as high feed costs, labour shortage, and non-remunerative milk prices are closely linked with production related issues like low productivity and animal health problems. Similar constraints related with livestock farming were identified with RBQ analysis by Mathur (2000). For instance, high feed costs and shrinking grazing lands limit the availability of quality nutrition, which in turn contributes to low productivity and reproductive disorders. Similarly,

high treatment costs and disease outbreaks are interconnected with inadequate veterinary infrastructure and financial constraints. Furthermore, institutional issues such as limited credit access and poor insurance coverage restrict farmers from investing in improved technologies and better animal management practices. The perceived complexity of modern technologies further reduces their adoption, thereby sustaining the cycle of low productivity and economic vulnerability.

In conclusion, the RBQ analysis reveals that the major problems faced by dairy farmers in the Shirol village are primarily economic and input-related, followed by production, health and institutional constraints. The findings highlight that improving feed availability and affordability, strengthening veterinary and extension services, ensuring remunerative milk prices and enhancing access to credit and insurance could significantly improve the sustainability and profitability of livestock farming in the village. The prioritization of these problems could be beneficial to policymakers, extension agencies and development planners for designing interventions for the development of livestock farming in the village.

CONCLUSION

The Rank Based Quotient (RBQ) analysis demonstrated that livestock farmers in Shirol village are primarily constrained by economic and input related barriers, closely followed by production, health and institutional challenges. The high cost of concentrate feed, severe labor shortages and unremunerative milk prices are the most critical factors suppressing farm profitability. Furthermore, these primary economic constraints trigger a cycle of secondary issues, including poor animal nutrition, low productivity, and inadequate animal healthcare. To ensure the economic viability and sustainability of livestock farming in the village, targeted interventions are required. Development planners and policymakers must focus on improving feed affordability, strengthening accessible veterinary and extension services, establishing stable milk procurement systems with assured prices, and simplifying access to institutional credit and insurance frameworks.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

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