SHORT COMMUNICATION

Effect of Dietary Supplementation of Mineral Mixture on Milk Yield in Crossbred Dairy Cows

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Abstract

The present front line demonstration (FLD) was laid to assess the impact of supplementing mineral mixture in livestock ration on milk production and subsequent monetary gains. A sample size of 23 dairy cows with average daily yield of 10.75 litres was selected for laying the demonstration. The mineral mixture supplementation over a period of 120 days increased milk production on an average by 1.45 (13.48%) liters per day, fetching an additional income of 1092 Indian rupees per month per animal to the farmer. The results indicate that dietary supplementation of mineral mixture enhance the milk production of dairy animals and help in improving the socio-economic condition of the farmers to some extent.

Key words: Dairy cattle, Front line demonstration, Milk production.

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Introduction

Balanced ration plays a pivotal role in attaining the maximum genetic potential of an animal. Feeding proper quantum of all the essential nutrients not only helps an animal to maintain its vital functions at their best, but also helps them to produce and reproduce in a proper physiological manner. The micro-nutrients, especially minerals play an indispensable role in maintaining normal metabolic and physiological functions of body. The minerals serve a wide variety of body functions ranging from structural components of tissues to essential components of many enzymes. Over and under feeding of minerals can predispose the animals to a number of metabolic and physiological derangements, resulting in increased incidence of diseases and reduction in its overall productive and reproductive efficiency. The quantity of minerals in commonly available feed stuffs is variable and in most of them may not be sufficient to meet the requirement of animals at different stages of production (Bhanderi *et al.*, 2016). Naikoo *et al.* (2021) studied plasma trace minerals profile and fertility without and with estrus synchronization therapy at day 90 postpartum in suckled Kankrej cows and reported that different estrus synchronization protocols, *viz.* CIDR, Cosynch and $PGF_2\alpha$ did not influence the plasma trace minerals (Zn, Fe, Cu, Co, and Mn) profile in farm animals maintained under the optimum nutritional regime. The present demonstration on mineral mixture supplementation was laid to assess its impact on milk production and monetary gains that can be reaped by the farmers.

Materials and Methods

The present front line demonstration was laid in Jangalnar, Bajnari, Banderpora and Renzipora villages of district Pulwama (J&K, India) to assess the impact of mineral mixture inclusion on milk yield in dairy cattle. A total of 23 crossbred cows with average body weight of 325 kg, with almost same lactation and parity (multiparous cows) were selected to lay this demonstration during the year 2020-21. The selected farmers were given full package of practices regarding the dietary supplementation of mineral mixture (Agrmin Forte, Virbec, India) and were made aware regarding data recording of parameters under study. The selected animals were regularly monitored and observed physically for productive and reproductive parameters.

The milk yield of the animals was recorded for 30 days pre-supplementation and 120 days post-supplementation (50 g/day per oral) of mineral mixture mixed with concentrate

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Table 1: Effect of feeding mineral mixture on milk production

Average daily milk yield (Ltr)			Economic returns before MM supplementation (Rs./unit)				Economic returns after MM supplementation (Rs./unit)			
Before feeding MM*	After feeding MM*	% Increase	Gross Cost **	Gross Return **	Net Return	BCR*	Gross Cost **	Gross Return **	Net Return	BCR*
10.75	12.20	13.48	5500	10320	4820	1.87:1	5800	11712	5912	2.01:1

*BCR- Benefit Cost Ratio, MM- Mineral Mixture.

** Gross cost before feeding of MM includes cost of feed fodder & labour. Gross cost after MM supplementation includes cost of feed fodder, labour & mineral mixture @ 50g /animal /day.

feed. The daily milk yield was recorded by the farmers and was conveyed through telecommunication. At the end of the trial, benefit cost ratio was calculated to assess the impact of the demonstration.

Results and Discussion

The average production per day per animal before and during dietary supplementation of mineral mixture with benefit cost ratio is presented in Table 1.

Gross return before or after feeding of MM includes returns from sale of milk produced /animal/month.

The results clearly indicate that dietary supplementation of mineral mixture in dairy cattle positively impacts the milk production. The mineral mixture supplementation over a period of 120 days increased milk production on an average by 1.45 (13.48%) liters per animal per day (43.5 litres /animal/ month). The gross returns generated through sale of milk (@ Rs. 32/liter) was 1392 Indian rupees (INR) per animal per month including cost of mineral mixture (Rs. 300). Benefit cost ratio before and after supplementation signify that farmers can obtain additional benefits from the same animal to the tune of about 1092 INR per month. Sahoo *et al.* (2021) reported that supplementing ration with mineral mixture increases nutrient utilization, mineral bioavailability and milk production performance in dairy cows fed fodder based diet and enhanced income of farm families by 30%. Bhuvaneswari *et al.* (2019) reported an increase of 0.5 liters of milk per day per animal post-supplementation with area specific mineral mixture. Vinothraj *et al.* (2021) reported an increase of 1.06 liters of milk per day per animal, milk fat by 1.73% and SNF by 0.77%, with an economic gain of 788 INR per animal per day following dietary supplementation of dairy animals with TANUVAS mineral mixture. Dietary inclusion of mineral mixture is reported to enhance milk composition, production and fertility in animals (Al-Noor *et al.,* 2004). The benefit cost ratio indicates that dietary supplementation of mineral mixture in dairy animal is profitable. Its inclusion can improve the overall productivity of animals and at the same time farmers can get additional gains from the same animal.

From the present study, it is concluded that the dietary supplementation of mineral mixture can improve the overall productivity of dairy animals and enable farmers to earn additional income from the same animals. The programme needs to be carried out on large scale for improving the overall performance of the dairy animals.

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