



Effect of Supplementation Feeding Probiotics and Mineral Mixture in Crossbred Dairy Cows

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ABSTRACT

*The present study was conducted at Belara village of Mandasaur (M.P.) under Front Line Demonstration (FLD) during 2016-17. In the study, animals were fed mainly on straw of wheat and/or soybean constituted the basal dry roughage of the animals (Farmer's practice). Supplementary feeding yeast culture probiotics *Saccharomyces Cerevisiac* @ 30 gm/d/animal plus mineral mixture @ 30 gm / day/ animal was selected as improved technology. Results show that there was 12.06 percent increment in milk production through improved practice as compared to farmer practice i.e. roughages without minerals and probiotics (5.80 lit/day). It may be concluded in terms of gross return, net return and B:C ratio was found superior in improved practices were Rs 29000, Rs 17300 and 1.47 respectively. However, feed intake / day by animal increased with improved technology, because of increase percentage of palatability and digestibility. Hence, livestock keepers need to be advised for scientific feeding of their livestock for getting optimum productivity and benefits.*

Keywords: Probiotics, Mineral mixture, feeding techniques, Milk yield, Milk Components

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INTRODUCTION

India stands number one in milk production in the world. However, the total milk production of India is contributed by a huge cattle and buffalo population [1]. Significant pressure on resources will occur as the global population is expected to increase to 9 billion by 2050 and because of deforestation and non availability of grazing land it will be difficult to manage the grazing land and fodder production with such a huge human and animal population. Therefore improving the productivity of the animals is important. This can be attributed to poor nutritional management leading to several metabolic disorders such as mineral deficiency diseases. The dairy animals with macro- and micro mineral deficiencies were producing milk sub optimally and subsequently showed improved milk production levels post mineral supplementation [2 and 3]. Regular feeding of area specific mineral mixture supplements have reportedly improved milk yield in some parts of India [4]. It has been observed that dietary minerals supplementation enhanced milk production, milk composition and fertility in Nili-Ravi buffaloes. Yeast (*Saccharomyces cerevisiae*) addition in this condition was reported to increase nutritional value of poor quality forages and high grain diets [5]. Yeast addition improves the development of rumen lactate-consuming bacteria; prevent accumulation of lactate, and rumen pH drops. Yeast is also observed to stimulate cellulolytic bacteria in the rumen, increase fiber digestion and flow of microbial protein from the rumen [6]. There are reports of beneficial effect of supplementing the animal feed with probiotics on milk yield, milk fat and milk protein content. The addition of yeast culture in the diet of Holstein cows was beneficial in improving milk production and milk fat, and some biochemical parameters of blood. The yeast supplementation significantly improved the milk yield despite reducing the dry matter intake [7]. Moreover, yeast was reported by great number of studies to improve feed intake and milk yield in dairy cows. This is accomplished by feeding a nutritionally balanced ration at all times, allowing cows to consume as close to their actual energy requirements as possible and maintaining the physical or roughage characteristics, which we now refer to as feed particle size, required for proper rumen function. In addition, the ability to use feeds with various rates of breakdown is enhanced, often enabling even

better nutrient utilization. The present study was conducted to observe the impact of the supplementation feeding along with mineral mixture and probiotics to crossbred animals.

MATERIALS AND METHODS

Ten farmers with single animals each for treatment were selected randomly from belara village of Mandsaur district of (M.P.) under Front Line Demonstration (FLD) trial programme during 2016-17. All the animals selected were at a comparable stage of lactation i.e. within first month of lactation and were maintained under similar management conditions throughout the trial. (Farmer's practice) animals were fed mainly on straw of wheat and/or soybean constituted the basal dry roughage of the animals without any addition of mineral mixture. whereas animals from treatment group were fed supplementary feeding yeast culture probiotics *Saccharomyces Cerevisiac* @ 30 gm/d/animal plus mineral mixture @ 30 gm / animal / day for a period of 3 months. Milk yield of these animals was recorded by their owners and these values were averaged for 0-3 month's interval. Milk components such as milk fat and Milk yield and B: C ratio data were also evaluated) from milk samples collected at different intervals.

RESULTS AND DISCUSSION

The effect of feeding of probiotics *Saccharomyces Cerevisiac* @ 30 gm/d/animal plus mineral mixture on milk yield is presented in Table 1.

Table-1: Changes in milk yield and milk components in cattle (Mean \pm S.E.)

Particular	Farmer Practice (Control)	Improved Practice (Treatment)
Average of Milk Yield (litre/day)	5.80 \pm 0.34	6.50 \pm 0.38
Change in milk Production (%)	-	12.06
Milk Fat (%)	3.43 \pm 0.26	3.50 \pm 0.28
Milk SNF (%)	8.30 \pm 0.10	8.51 \pm 0.11
Gross Return (Rs) / 3 months	21540	29000
Net Return (Rs) / 3 months	11130	17300
Cost of ration (Rs) / 3 months	10410	11700
Benefit cost ratio	1.06	1.47

Animals classified in treatment group showed improvement in terms of milk yield was 12.06 percent increment in milk production. The scientific reason for improving the productivity of the animals could be explained by the findings of other researchers. Supplementation of early lactation dairy cows with probiotic altered the rumen fermentation patterns in favour of propionate, with potential benefits for energy balance and animal productivity [8]. Wohlt *et al.* [9] study reveals a significant improvement in milk production, induced by the incorporation of *Saccharomyces cerevisiae* in the diet. In Indian conditions, Tiwari *et al.* [4] has reported an increase in milk production as well as increased in total lactation length in cattle post area specific mineral mixture supplementation. It can be interpreted that minerals and probiotics (*Saccharomyces cerevisiae*) feeding may take certain amount of time to express its effects on milk production. Further it may be concluded that gross return, net return and B: C ratio in improved practices were Rs. 29000, Rs. 17300 and 1.47 respectively. However no significant difference was found in milk fat and solids in both the groups. Hence, the changes in milk components can be attributed to physiological changes in milk quality over the duration of lactation. In support of the findings of the present study, Wu *et al.*, Sharma *et al.*, Rabiee *et al.* and Singh *et al.* [10, 2, 11 and 12] reported no significant changes between supplemented and non-supplemented groups in milk components such as milk lactose, milk protein, milk fat and milk SNF.

CONCLUSION

Therefore by the findings of our study, revealed that supplementation of mineral mixture and probiotics yeast, *Saccharomyces cerevisiae*, in the diet of the cows improve milk production. It signifies that the productivity of the animal has improved and hence each animal earns more income. Our results also conclude that, though supplementation mineral mixture @30g/day/cow and probiotics yeast, *Saccharomyces cerevisiae* @30g/day/cow increased the milk yield and production.

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