

Economic Analysis of Methochelated Mineral Vitamin Supplementation in Murrah Buffalo

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ABSTRACT

The present study was aimed to document economic analysis of methochelated mineral vitamin supplementation over improved and conventional management practices in Murrah buffalo at farmer's field. Field Level Demonstration (FLD) was conducted in two villages of Morena district, Madhya Pradesh during two successive years viz, 2009-10 and 2010-11 by feeding methochelated mineral vitamin mixture, Bestmin Gold @ 40g per day to 15 graded Murrah buffaloes for exhibiting its effect on milk production and 15 graded Murrah were maintained each under improved management conditions and prevailing management conditions at farmers' field as control. The economic characteristics were recorded and analysed to assess the economic efficiency of the FLDs. The yield enhancement (litres/animal) due to technological intervention was to the tune of 17.56% and 13.75% over better managed animals and 97.33 and 93.62% over farmer's practice in successive years respectively for the years 2010 and 2011. The costs of production was increased merely by Rs. 345 over improved management practices, but the effective gain was Rs. 4935 and Rs. 3615 by improvement in B:C ratio by 18.6 and 14.74% over the year 2009-10 and 2010-11, respectively. However, tremendous gain of Rs. 12230-14350 and Rs. 8615-9415 was observed by increase in cost of production of Rs. 3170-3610 and Rs. 2825-3265, respectively during the year 2009-10 and 2010-11. The benefit cost ratio for demonstrated and control animals were 2.82, 2.30 and 2.38, 2.01 during 2009-10 to 2010-11, respectively. Fortification of diet with methochelated mineral vitamin supplementation in Murrah buffaloes has good potential to improve profitability at farmer's field even over improved management practices.

Keywords: Mineral and vitamin mixture; Cost of production; Gross return; Benefit cost ratio;

The health and degree of productivity of dairy cows and buffaloes are dependent on balanced and adequate quantities of all necessary nutrients to meet their requirement for a given physiological stage (Pankaj *et al.*, 2013, Mudgal *et al.*, 2014). Minerals and vitamins are the most important nutrients of lactating animals, which are required in very minute quantity but have a great role in metabolism, milk production, reproduction and even for microbial fermentation in the rumen (Tanwar and Rathore, 2015). Traditional feeding usually results in over or underfeeding, thereby it paves way for the importance of balanced ration for improving milk production of animals (Kumawat and Yadav, 2012). The present study was undertaken to document economic analysis of methochelated mineral vitamin supplementation in Murrah buffalo over improved management practices and conventional

management practices at farmer's field.

METHODOLOGY

FLD has been conducted on fifteen graded Murrah buffaloes in mid-lactation phase (100-150 d) by offering 40 gms of methochelated mineral and vitamin mixture (Bestmin Gold), fifteen similar Murrah buffaloes have been reared under improved management conditions and other fifteen were reared under farmer's practice between 2009-10 and 2010-11 at one block namely Joura, Morena district, M.P. to demonstrate the superiority of the treatment. Before conducting FLDs, a list of farmers was prepared from group meeting and specific skill training was imparted to the selected farmers regarding different aspect of dairy farming. The necessary step for selection of site and farmers, layout of demonstration, etc. were followed (Choudhary, 1999).

Farmers selected for demonstration were trained to adopt the standard managerial practices during the study period (2009-10 and 2010-11). Data on daily milk yield were collected from local check animal (Farmer's practice) and demonstrated animals with and without supplementation.

The following characteristics were used for economic assessment of the FLD.

$$\% \text{ Change in Yield} = \frac{(YTA - YCA)}{YCA} \times 100$$

$$\text{Net Return} = (GR - CP)$$

$$\text{B:C Ratio} = \frac{(\text{Gross Return})}{(\text{Cost of production})}$$

$$\text{Increased cost} = (CPT - CPC)$$

$$\text{Increased return} = (GRT - GRC)$$

$$\text{Effective gain} = (NRT - NRC)$$

Where,

YTA=Yield in treated animals YCA=Yield in control animals
 GR=Gross Return, CP= Cost of production
 CPT= Cost of production of treated CPC=Cost of production of control
 GRT= Gross return of treated GRC=Gross return of control
 NRT= Net return from treated NRC=Net return from control

RESULTS AND DISCUSSION

The data revealed that milk yield in supplemented animals and rearing under improved management practices was higher than the animals reared under farmers practicing conditions during both the years 2009-10 and 2010-11 (Table 1). The present results are comparable with earlier studies under field conditions (*Ghosh and Chatterjee, 2001, Singh and Singh, 2006, Singh and Pachauri, 2011*) and in different seasons at farmer's field conditions (*Singh et al., 2014*).

The milk yield for 3 months (Litres/animal) under FLD was recorded as 888 and 819; 756 and 720 under improved management practices during 2009-10 and 2010-11, respectively. The corresponding values (Litres/animal) were 450 and 423, which is 97.33 per cent and 93.62 per cent lower than what was obtained with improved management conditions and supplementation of methochelated minerals and vitamins. The yield enhancement due to technological intervention was in the tune of 17.56 per cent and 13.75% over improved managed animals.

The data clearly revealed that, the net return from

Table 1. Milk Yield performance of FLD of feeding methochelated mineral and vitamin mixture to buffaloes

Year	Milk yield (liters/animal for 3 months)			% change in Yield	
	T ₂	T ₁	Control	Over T ₁	Over C
2009-10	888	756	450	17.56	97.33
2010-11	819	720	423	13.75	93.62

Where, T₁=supplemented animals, T₂=improved managed animals and C=Farmer's practice

supplemented animals and recommended practices were higher than the local check animal during both the years of demonstration (Table 2). The cost of production for supplemented animals (Rs./animal for 3 months) was observed to be 9290 and 9970 for the year 2009-10 and 2010-11, respectively. The corresponding values were 8945, 9625 and 6120, 6360 for the animals kept under improved management conditions and farmers' practice, respectively for the year 2009-10 and 2010-11. The cost of feeding in all groups for two years varied 70.59-74.81 per cent of the total cost of production. The net return from the buffaloes under field conditions was found to be Rs. 11880 and 10560 for the year 2009-10 and 2010-11. The net return from the animals were tremendously enhanced by methochelated mineral-vitamin supplementation (120.79% and 115.81%) and improved management practices (79.25% and 81.58%), respectively for the year 2009-10 and 2010-11, respectively over farmer's practice.

Similarly, B:C ratios were 1.94 and 1.66, respectively for the year 2009-10 and 2010-11, which suggests the profitability of livestock under farming situations. This was improved by 19.88-22.68 per cent by adopting improved management practices and 37.95-45.36 per cent by supplementing the animals with methochelated minerals and vitamins. Hence, favorable benefit cost ratio proved the economic viability of the intervention made under demonstration and convinced the farmers on the utility of intervention. The variation in cost benefit ratio during different years may possibly be due to yield performance and input output cost in that particular year.

Effective change in production cost, return and gain will be of interest while convincing the farmers about the superiority of the technology. Thus, an increase in the production cost of Rs. 345 per animal for 3 month towards supplementation of methochelated minerals and

Table 2. Economic indicators of FLD of feeding methochelated mineral and vitamin mixture to buffaloes for 3 months in 2009-2011

Particulars for 3 months (Rs./ani.)	Year 2009-2010			Year 2010-2011		
	T ₂	T ₁	C	T ₂	T ₁	C
Depreciation cost on animals	1000	1000	1000	1000	1000	1000
Depreciation cost of housing	375	375	100	375	375	100
Cost of feeding	6570	6570	4320	7200	7200	4500
Cost of supplementation	345	0	0	345	0	0
Veterinary expenses	1000	1000	700	1050	1050	760
Total cost of production	9290	8945	6120	9970	9625	6360
Gross return	35520	30240	18000	32760	28800	16920
Net return	26230	21295	11880	22790	19175	10560
B:C ratio	2.82	2.38	1.94	2.29	1.99	1.66

Where, T₁=supplemented animals, T₂=improved managed animals and C=Farmer's practice

vitamins had increased return of Rs. 5280 and 3960 and an effective gain of Rs. 4935 and 3615 for year 2009-10 and 2010-11, respectively with an improvement in B:C ratio to the tune of 14.7-18.6 per cent (Table 4). However, such benefits were tremendous when compared with farmer's practice where by increasing in the cost of Rs. 3170 and 2825 per animal for 3 months resulted into an increased return of Rs. 17520 and 12240 with an effective gain of Rs. 14350 and 9415, respectively for supplemented and improved management groups with an improvement of 22.6-45.5 per cent in the B:C ratio. Such benefits were observed

in subsequent year 2010-11 also.

CONCLUSION

The results of FLDs convincingly brought out that the milk yield of buffaloes could be increased by 17.57 per cent with the intervention of feeding methochelated mineral and vitamin mixture @ 40 gram/animal/day coupled with scientific and improved managerial practices in Chambal region of M.P. Favorable cost benefit ratio is self explanatory of economic viability of the demonstration and convinced the farmer for adoption of intervention imparted.

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