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Research Article

ECONOMIC ANALYSIS OF *MORINGA OLEIFERA* LEAF MEAL FOR MURRAH BUFFALO CALF REARING

Bhavna Aharwal,* Biswajit Roy, Aayush Yadav and Kiran Pal Saini

Department of Livestock Production and Management, College of Veterinary Science and Animal Husbandry, NDVSU, Jabalpur, M.P., India

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ABSTRACT

The study was conducted to assess the economics of Murrah buffalo calf rearing at Livestock farm, Adhartal, College of Veterinary Science and Animal Husbandry, N.D.V.S.U., Jabalpur (M.P.). A total of 18 Murrah buffalo calves with six calves in each group having similar body weight of either sex at 5th day were randomly distributed into three different groups (Control, M5 and M15). Calf starter was replaced by *Moringa oleifera* leaf meal @5% and 15% for M5 and M15 groups, respectively. Economic analysis indicated that the recurring cost of rearing Murrah buffalo calves was reduced in M5 and M15 groups in comparison to the control group. Recurring expenditure of body weight gain (₹/kg) were 322.27, 269.35 and 262.15 in control, M5 and M15, respectively. Reduction of recurring expenditure body weight gain (₹/kg) in comparison to control group was 52.93 and 60.13 for the M5 and M15, respectively. Per cent decrease of total recurring expenditure in comparison to control group/kg BW gain were 16.42 and 18.66 in M5 and M15 groups, respectively. It can be concluded that *Moringa* leaf meal can replace upto 15 per cent of calf starter to attain better body weight gain and improve economic efficiency in Murrah buffalo calf rearing.

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INTRODUCTION

Murrah buffalo is famous for its milk productivity and better adaptability, It is mostly used for up gradation of non-descript breeds of buffaloes in India and many parts of the world (Abbas, 2013). Now a days, farmers feel burden to raise calves as it is considered uneconomical, largely due to economic compulsion to sell milk for human consumption and higher feed cost. Thus, it results in underfeeding or starvation with consequence of stunted growth, heavy mortality, economics losses in livestock production. The need to introduce cheap and readily available and alternative feedstuffs to support livestock development has become imperative (Oduroet al., 2008).

Moringa (Moringa oleifera/ Munga or Sahjan) leaves have a very high biological value and considerable potential for adoption as feed for ruminants (Pradhan, 2016). It is rich in protein, amino acids, fatty acids, minerals, vitamins, calcium, potassium, various phenolic and oxycaroteniod that are the basic building blocks of animal body (Deshmukh, 2014). These

nutrients are used for osmotic adjustment, activation of enzymes, growth hormones and other organic molecules that enhance growth, function and maintenance of life process (Anjorin et al., 2010). Looking to the potentiality, nutritional values and availability of *Moringa* leaves use can be explored. *Moringa* leaves are inexpensive, easily available and unconventional source of energy which is readily available in and around Madhya Pradesh.

MATERIALS AND METHODS

The experiment was conducted at Livestock farm, Adhartal, College of Veterinary Science & A.H., Nanaji Deshmukh Veterinary Science University, Jabalpur (M.P.). A total 18 Murrah buffalo calves of either sex from 5 days were selected for experiment and experimental design was designed as shown in table no.1. All the calves were permanently separated from dam just after birth. Colostrum and milk were offered as per standard protocol upto 90 days of age.

*Corresponding author: **Bhavna Aharwal**

Department of Livestock Production and Management, College of Veterinary Science and Animal Husbandry, NDVSU, Jabalpur, M.P., India

Table 1 Experimental design and their diet

S. No	Groups	No. of calves	Treatment
1	Control	6	Calf starter/concentrate mixture
2	M5	6	5% calf starter/concentrate mixture replaced by dry Moringa leaves
3	M15	6	15% calf starter/concentrate mixture replaced by dry Moringa leaves

Table 2 Summary of feed intake of Murrah buffalo calves during the experiment

Items	C	M5	M15
Milk (₹44/kg)	256.43	251.42	258.07
Calf starter upto 3 months(₹24/kg)	247.03	257.64	228.59
Concentrate mixture (>3to6 months) (₹23/kg)	1859.01	1635.51	1535.71
Green fodder (₹2/kg)	623.70	663.88	652.68
Wheat straw (₹4/kg)	118.91	117.79	123.95

RESULTS

The data of economics of rearing of Murrah buffalo calves are presented in table no 2. Expenditure on calf starter is 247.03, 257.64 and 228.53 in control, M5 and M15 groups, respectively. Expenditure on concentrate mixture was 1859.01, 1635.51 and 1535.71 in control, M5 and M15 groups, respectively. The expenditure (₹/calf) incurred for green fodder were 623.70, 663.88 and 652.68 in control, M5 and M15 groups, respectively. The expenditure (₹/calf) incurred for wheat straw were 118.91, 117.79 and 123.95 in control, M5 and M15 groups, respectively.

The data of various economic expenditure are presented in table no.3. The total expenditure (₹/calf) on milk, feed and fodder were 14,160.87, 13,765.28 and 13,920.63 in control, M5 and M15 groups, respectively. Expenditure on labour /calf for 6 months during experimental period (@1 labour/24 calves and wage ₹7500/month) was 1,875.00 and same for all the groups. Reduction of total recurring expenditure (₹/kg) in comparison to control groups were 395.76 and 239.44 in M5 and M15 groups, respectively. Per cent decrease of total recurring expenditure in comparison to control group was 2.52 and 1.51 in M5 and M15 groups, respectively. Average initial weight of calf (kg) was 32.28, 33.18, and 32.68 in control, M5 and M15 groups, respectively. Average final weight of calf (kg) was 82.83, 91.59 and 93.29 in control, M5 and M15 groups, respectively. Average weight gain of calf (kg) was 50.05, 58.42 and 60.62 in control, M5 and M15 groups, respectively. Reduction of recurring expenditure (₹/kg) per kg body weight gain in comparison to control group was 52.93 and 60.13 in M5 and M15 groups, respectively. Per cent decrease of recurring expenditure per kg body weight gain in comparison to control group was 16.42 and 18.66 in M5 and M15 groups, respectively.

Table 3 Effect of Moringa leaf meal on economics of rearing of Murrah buffalo calves

Sl. No.	Particulars	Control	M5	M15
1	Expenditure on milk (@₹44/kg)	11,283.07	11,062.33	11,354.93
2	Expenditure on calf starter (C-₹4.88/kg, M5-₹24.24/kg and M15-₹22.95/kg)	247.03	257.64	228.59
3	Expenditure on concentrate mixture (C-₹ 23.00/kg, M5-₹22.45/kg and M15-₹21.35/kg)	1859.01	1635.51	1535.71
4	Expenditure on green fodder (@₹2/kg)	623.70	663.88	652.68

5	Expenditure on wheat straw (₹4/kg)	118.91	117.79	123.95
6	Total expenditure (₹/kg) on milk, feed and fodder	14,179.59	13,783.83	13,940.15
7	Expenditure (₹/kg) on labour /calf for 6 months (@ 1 labour/24 calves and wage ₹7500/ month)	1,875.00	1,875.00	1,875.00
8	Miscellaneous expenditure (₹/kg) (medicines, deworming, tagging etc.) (@₹75/ calf)	75.00	75.00	75.00
9	Total recurring expenditure (₹/kg) during the 6 months experimental period (6+7+8)	16,129.59	15,733.83	15,890.15
10	Reduction of total recurring expenditure (₹/kg) in comparison to control group	-	395.76	239.44
11	Average weight gain of calf (kg)	50.05	58.42	60.62
12	Recurring expenditure (₹/kg) per kg body weight gain (no.9/ no. 12)	322.27	269.35	262.15
13	Reduction of recurring expenditure (₹/kg) per kg body weight gain in comparison to control group	-	52.93	60.13
14	Per cent decrease of recurring expenditure per kg body weight gain in comparison to control group	-	16.42	18.66

DISCUSSION

Buffalo is the backbone of the dairy industry in India. Rearing of buffalo calves has immense importance to maintain replacement stock. Buffalo calves of very young age are sold and subsequently slaughtered indiscriminately (Shakya et al., 2017). Concentrate mixture provide a convenient way to feed pre-ruminant calves for the development of its rumen. Provided the concentrate mixture is formulated correctly from good quality ingredients and fed according to the instructions of preparation.

Moringa leaves with concentrate mixture is successfully used in buffalo calves (Ahmad et al., 2017). Moringa leaves have a very high biological value and considerable potential for adoption as feed for ruminant fodder resource (Pradhan, 2016).

CONCLUSION

Moringa leaves are inexpensive, easily available and unconventional source of energy and readily available in Madhya Pradesh. On the basis of present findings, it is revealed that upto 15 per cent concentrate mixture replacement can be done with *Moringa oleifera* leaf meal to improve the body weight gain. The results clearly indicated that Moringa leaf meal addition to the diet of calves not only improves the growth rate but also improves the economic efficiency of rearing of Murrah buffalo calves.

References

1. Abbas, T.E. (2013). The use of *Moringa oleifera* in poultry diets. *Turkish Journal of Veterinary and Animal Sciences*, 37: 492-496.
2. Ahmad, A.E., Ibrahim, A.A.S., Ebtehag, I.M.A.E., Mohamed, S.A. and Hassan, M.S. (2017). Effect of feeding dry *Moringa oleifera* leaves on the performance of suckling buffalo calves. *Asian Journal of Animal Science*, 11: 32-39.
3. Anjorin, T.S., Ikokoh, P. and Okolo, S. (2010). Mineral composition of *Moringa oleifera* leaves, pods and seeds from two regions in Abuja, Nigeria. *International Journal Agriculture and Biology*, 12: 431-434.

4. Deshmukh, P. (2014). Antibacterial and immunomodulatory activity of *Moringa oleifera* in albino rats. M.V.Sc. thesis (Department of Veterinary Pharmacology and Toxicology), Nanaji Deshmukh Veterinary Science University, Jabalpur, (M.P.) India.
5. El-Badawi, A.Y., H.A.A. Omer, A.A. Abedo and M.H.M. Yacout, (2014). Response of growing New Zealand white rabbits to rations supplemented with different levels of *Moringa oleifera* dry leaves. *Global Veterinaria*, 12: 573-582.
6. Oduro, I., Ellis, W.G and Osusu, D. (2008). Nutritional potential of two leafy vegetable: *Moringa oleifera* and *Ipomea batata* leaves, *Scientific Research and Essays*, 3:57-60.
7. Pradhan, B.C. (2016). Valuation of haematological and biochemical parameters of goats of central Odisha environment fed on natural grazing land of Odisha. *The Pharma Innovation Journal*, 5(5): 83-90.
8. Sarwatt, S.V., Milangha, M.S., Lekule, F.P., and Madalla, N. (2004). *Moringa oleifera* and cottonseed cake as supplements for smallholder dairy cows fed Napier grass. *Livestock Research for Rural Development*, 16(6): 12-13.
9. Shakya, A., Roy, B. and Baghel, R.P.S. (2017). Effect of soymilk as partial milk replacer on feed intake and growth performance on Murrah buffalo calves. *Buffalo Bulletin*, 36(3): 537-546.

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