

**USE OF SUPPLEMENTS FOR MAINTENANCE OF NELORE BULLOCKS
IN *Brachiaria decumbens*, DURING THE DRY SEASON IN ACRE, BRAZILIAN
AMAZON¹**

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Abstract

This study had the objective of evaluating animal performance and net economic returns of Nelore bullocks receiving: 1) mineral mixture (MM), 2) mineral mixture + urea (MMU), and 3) multiple supplement (MS), during the dry season of 1999 in Acre, Brazilian Amazon. The animals were maintained in pastures of *Brachiaria decumbens*, and liveweight gains, forage availability and chemical composition were assessed during the experimental period. Liveweight gains of 0.58, 0.65 and 0.60 kg/day, respectively, for MM, MMU and MS, were not different ($P>0.05$). The use of MMU provided additional net economic return of 10.8% in comparison with the treatment with MM.

Keywords: Chemical composition, forage yield, liveweight gain, and urea.

Introduction

Cattle ranching in Acre experienced considerable changes in the last 20 years, characterized by the fast expansion of the pasture areas and a sharp increase of the herd, allied with a continuous search for technologies to improve productivity and profitability. The main limitations to the productivity and sustainability of the animal production systems in Acre includes the seasonal variation in forage quality and availability, the lack of adaptation and persistence of the introduced grass species (Valentim, 1989).

The development of technologies that increase animal productivity can contribute to improve efficiency, profitability and environmental sustainability of these systems in Acre. Among the alternatives considered to achieve these goals, the use of supplements in the dry season can contribute for the improvement of the quality of the animal diet, mainly by supplying substrates for the rumen microorganisms.

Prado et al. (1999) verified that Nelore bullocks maintained in pastures of *B. decumbens*, receiving multiple supplement in the dry season, presented liveweight gains of 0.52 kg/day, while those that received mineral salt won 0.22 kg/day. The same behavior was verified by Alves et al. (1999), with the animals presenting liveweight gains of 0.12 and 0.29 kg/day, respectively without and with multiple supplement.

This study had the objective of evaluating animal performance and net economic returns of Nelore bullocks, maintained in pastures of *B. decumbens*, in the environmental conditions of Acre, receiving different mineral supplements during the dry season.

Material and Methods

The research was developed at Fazenda Guaxupe, located in the Transacrea Highway, Rio Branco, Acre, during the dry season. The soil of this area is a Red and Yellow Latosol

(Oxisol). The annual mean temperature is 24.9 °C. The annual rainfall is 1989 mm, with rains concentrated between October and March.

The animals used in the experiment consisted of 30 yearling Nelore bullocks, initial mean liveweight of 272,0 kg. The animals received parasite control treatment, were identified and randomly distributed in three groups (10 animals/treatment).

The experimental design was a completely randomized, with 10 repetitions, and the treatments consisted of 1) mineral mixture (MM); 2) mineral mixture + urea (MMU) and 3) multiple supplement (MS). The chemical composition (g/kg) of the supplements was as follows: 1) MM (Ca=110 g, P=50 g, S=30 g, Zn=5 g, Cu=1.35 g, Co=0.06 g, Mn=0.78 g, I=0.078 g, Se=0.009 g, and Na=133 g); 2) MMU (Ca=64 g, S=41 g, Mg=5 g, S=12 g, Zn=3.85 g, Cu=1.63 g, Co=0.2 g, Mn=1.56 g, I=0.2 g, Se=0.015 g, and gross protein (GP)=731 g; and, 3) MS (Ca=25 g, P=15 g, Mg=10 g, S=10 g, Zn=1.26 g, Cu=0.33 g, Co=0.043 g, I=0.028 g, Na=57 g, and GP=380 g.

The MM and the MMU were supplied *ad libitum*, and MS was provided at a rate of 333 g/animal/day. Three pastures of *B. decumbens* with 4.3 ha each, were used under continuous grazing, with weekly rotation of the animals to remove pasture effect. The animals were weighted at 28-day intervals, after remaining without access to food for 16 hours. Forage availability (dry matter - DM) and chemical composition were determined at the beginning, half and final of the experimental period. Analysis of variance was carried out to determine treatment differences and the Duncan's test was used for comparison of the treatment means.

Results and Discussion

Liveweight gains of the animals receiving mineral mixture (MM), mineral mixture + urea (MMU), and multiple supplement (MS) were 0.58, 0.65 and 0.60 kg/day, respectively, and didn't

differ statistically ($P>0,05$) (Table 1). Average consumption was 0.093, 0.104 and 0.333 kg/day, respectively, for the treatments MM, MMU and MS. The MMU treatment provided daily ingestion of 27 g of urea or 76.05 g of protein to the animals, while the MS provided 126 g of protein.

These results can be explained by the good forage availability, 12 kg of DM/100 kg of liveweight/day, and by the good content of protein, 10% in the leaves or 7.0% in the entire plant, during the experimental period. These pasture conditions, good nutritive value and forage availability, are a result of the above normal rainfall (262 mm) between July and September, probably a consequence of the “El Niño” climatic event, which provided good moisture conditions for the grass growth.

Liveweight gains of the animals that received MS in this study were higher than those observed by Guimaraes et al. (1999) and Alves et al. (1999), which reported liveweight gains of 0.26 and 0.24 kg/day, during the dry season, respectively, in pastures with lower protein content than those observed in this study.

Prado et al. (1999) observed higher liveweight gains in animals that received MS (0.52 kg/day) when compared to animals that received only MM (0.22 kg/day). However, these authors did not mention the availability of forage, one of the main factors responsible for animal response when offered MS during the dry season (Manzano et al. 1994). Andrade and Alcader (1995) agree with this and suggest that to obtain satisfactory results with the use of MS it is necessary to have forage availability of at least 3% of DM/animal/day.

The use of MMU provided higher net economic return than any of the other treatments (Table 2). The net income of R\$ 51.53, obtained in this treatment during the dry season, provided an economic advantage of 10.8% when compared to the control treatment (MM). The use of MS resulted in negative return when compared with the mineral mixture.

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Table 1 - Average consumption of different supplements and average liveweight gains of Nelore bullocks in pastures of *B. decumbens* during the dry season (from 9 July to 2 october, 1999). Rio Branco, Acre.

Treatments	Consumption (kg/day)	Initial weight (kg)	Final weight (kg)	Liveweight gain (kg/day)
Mineral Mixture	0.093	280.4	330.1	0.58 a*
Mineral Mixture + Urea	0.104	268.6	324.5	0.65 a
Multiple Supplement	0.333	263.3	315.0	0.60 a

*Means in the same column, followed by the same letter are not significantly different ($P>0,05$), according the Duncan's Test.

Table 2 - Cost and return of supplying Nelore bullocks with different supplements during the dry season (from 9 July to 2 October, 1999). Rio Branco, Acre.

Parameters	Treatments		
	Mineral Mixture	Mineral Mixture + Urea	Multiple Supplement
Cost (R\$ 1,00/kg of the product)	0.41	0.48	0.28
Consumption (kg of product/animal)	8.0	8.9	28.4
Expenses (R\$ 1,00/animal)	3.28	4.27	7.95
Liveweight daily gain (kg/animal)	49.9	55.9	51.6
Carcass weight gain (@) ¹	1.66	1.86	1.72
Gross income (R\$ 1,00) ²	49.8	55.8	51.6
Net income (R\$ 1,00) ³	46.52	51.53	43.65
Economic advantage (R\$ 1,00) ³	-	5.01	- 2.87
Economic advantage (%) ³	-	10,8	- 6.6

¹Carcass yield of 50% and calculated in **arroba** (@ =15 kg of meat).

²Carcass value of R\$ 30,00/15 kg of meat (@)

³Cost of the supplement consumed during the dry season.