

Effect of grazing height on Marandu pasture production and performance of soybean grain-supplemented Nellore bulls

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Keywords: Pasture management, pasture grazing height, pasture yields, liveweight gains, plant composition, grazing intensity.

Introduction

The Brazilian beef cattle industry is primarily based on the use of pastures. Grasses belonging to the genus *Brachiaria* are extremely important, regardless of whether the production system used is intensive or extensive.

Appropriate management of the system is vital for obtaining a high efficiency of resource usage. Adjustment of stocking rate to maintain optimum forage allowance and feeding of supplements are strategies for achieving these aims. Feeding of concentrates on pasture can result in increased carrying capacity and higher weight gains over unsupplemented systems.

The purpose of this study was to evaluate the effects of 3 different grazing heights on pasture production and performance of young Nellore bulls grazing *Brachiaria brizantha* cv. Marandu. To enable increased pasture carrying capacity and support additional liveweight gains, the bulls were supplemented with soybean grain as an unconventional lipid source.

Materials and Methods

The experiment was conducted at Animal Science Department, Sao Paulo State University, Jaboticabal, São Paulo, Brazil (21°15'22" S, 48°18'58" W; 595 m asl). The trial was conducted on an area of *Brachiaria brizantha* cv. Marandu pastures established in 2001 on a red latosol. Fertiliser was applied at the rate of 90 kg N/ha in the rainy season. According to the Köppen classification, the climate of Jaboticabal is characterised as Awa, or subtropical with dry winters and rainy summers. The experimental period was from January to April 2012 during the rainy season. Experimental paddocks (6.0 ha) were continuously stocked with young Nellore bulls, at variable stocking rates (put-and-take system) to give 3 pasture heights (15, 25 and 35 cm). Animals received 0.5 g/kg body weight (BW) of concentrate supplement with soybean grain during the experimental period.

Forage quantitative and structural components were measured monthly using samples collected from the sites at medium height and separated into leaf blade, stem and leaf sheath, and dead matter. All forage included within the perimeter of the rising plate (0.25 m²) was collected at soil level. Individual animal performance was measured by

Table 1. Total herbage dry mass and proportion of the components in *Brachiaria brizantha* cv. Marandu pastures managed at 3 forage heights under a continuous stocking system during the rainy season. Means followed by the same lower-case letters within rows and upper-case letters within columns for each analysed factor were not significantly different according to Tukey's test at 10% probability.

Variable	Height (cm)	27 Jan 2012	25 Feb 2012	23 Mar 2012	21 Apr 2012
Forage mass (kg/ha)	15	6444 Ba	3303 Cb	2628 Cb	1952 Cc
	25	13251 Aa	8280 Bb	7378 Bc	6476 Ac
	35	12853 Aa	10774 Ab	8841 Ac	6907 Ad
Leaf mass (%)	15	43.8 Aa	39.5 Ab	29.4 Ac	19.2 Ad
	25	26.3 Cb	32.3 Ba	25.7 Ab	19.2 Ac
	35	35.5 Ba	32.7 Bb	25.4 Ac	18.2 Ad
Stem mass (%)	15	27.3 Ab	30.1 Aa	27.4 Bb	24.8 Cc
	25	30.3 Ab	32.2 Aa	30.3 Ab	28.4 Bc
	35	33.3 Aa	32.7 Aa	32.5 Aa	31.2 Aa
Dead mass (%)	15	28.9 Bc	30.4 Bc	43.2 Ab	55.9 Aa
	25	43.4 Ab	35.5 Ac	43.9 Ab	52.3 Ba
	35	31.2 Bc	33.5 Ac	42.0 Ab	50.5 Ba

weighing at the start and end of the experiment, after a 12-hour period of complete fasting.

Data were analysed as a complete randomised design with 3 grazing heights (15, 25 and 35 cm) and 2 replications (paddocks) with 6 animals per paddock, and harvest date in repeated measures over time. Data were analysed using the GLM procedure of SAS.

Results and Discussion

Total herbage mass and leaf proportion decreased, and proportion of dead material increased as the study progressed, as a result of intense flowering at the end of summer and increased senescence (Table 1). Herbage mass and stem proportion increased in response to grazing height, while other structural characteristics showed no uniform response.

Animal average daily gain (ADG) increased in response to increase in grazing height from 15 to 25 cm

Table 2. Initial and final weights and performance of young Nellore bulls grazing *Brachiaria brizantha* cv. Marandu pastures managed at 3 different heights during the rainy season. Means followed by the same lower-case letters within columns for each analysed factor were not significantly different according to Tukey's test at 10% probability.

Height (cm)	Variable			
	IW (kg)	FW (kg)	ADG (kg/d)	AG (kg/ha/d)
15	248.0 a	317.5 b	0.6 b	5.1 a
25	242.5 a	347.6 a	0.9 a	5.4 a
35	243.0 a	340.0 a	0.8 a	3.7 b

(Table 2), but there was no further increase to 35 cm. As a result of differences in stocking rates on the different pastures, higher gains per unit area (AG) occurred at 15 and 25 cm grazing height.

According to Poppi and MacLennan (2007), ADG on

tropical pastures during the wet season ranges from 0.5 to 0.7 kg/d depending on herbage allowance. The gains we recorded are generally above this range, possibly as a result of the soybean supplement fed to the bulls.

Conclusion

It appears that grazing Marandu pastures to 25 cm while feeding supplements will provide optimal gains per unit area, as well as supporting maximum gains per animal and producing well finished animals.

Acknowledgments

We acknowledge the financial support from Sao Paulo Research Foundation.

References

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