Performance of Nelore cattle on *Panicum maximum* pastures in the Brazilian Cerrado

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Introduction

With the increased demand for meat products, associated with environmental concerns due to global climatic and land use changes, the need to efficiently use pasture and forage resources will increase (Boval and Dixon 2012). Efforts to breed and release new forage cultivars must incorporate these concerns, ensuring that introduced material is of high quality, especially under grazing (Euclides et al. 2008). In this study, we aimed to evaluate the average daily weight gain and stocking rate of Nelore beef cattle grazing new genotypes of *Panicum maximum* during the rainy season in the Brazilian Cerrado.

Methods

The study was conducted at the Embrapa Cerrados Research Center (15°35' S, 47°42' W; 1007 m asl) from November 10, 2011 to April 14, 2012. The average annual rainfall for the region is 1,230 mm, concentrated in the period from October to March. The soil of the experimental area is classified as an Oxisol. The *Panicum maximum* genotypes PM32 and PM45 were evaluated using cv. Massai as the control treatment. The experiment followed a completely randomized block design with 4 replications of 1.3 ha each, totaling about 16 ha. Nelore steers (*Bos indicus*) with an average age of 20 months and initial weight of 280 kg were used to assess weight gains. Each paddock contained 3 tester animals and regulator animals varying in number to maintain a forage allowance of 9% (kg DM/100 kg BW/d). The paddocks were divided in half and grazed on a rotation of 28 days grazing and 28 days rest. All paddocks received 100 kg N/ha/yr applied equally in November and January. Tester animals were weighed every 28 days, after a 16-h fast. To estimate herbage mass, 12 samples were collected pre-grazing using squares of 1 m² in each half of the paddock. The rate of dry matter accumulation was estimated by the difference between herbage mass after and before grazing. The results were analyzed using PROC GLM (SAS Institute 1996) and comparison of means was performed by the Tukey test (P<0.05).

Results and Discussion

Average daily gain (ADG) ranged from 0.83 to 1.00 kg/hd/d and was affected by genotype (P<0.05), with highest values observed for PM32 and lowest for cv. Massai (Table 1). PM45 and Massai supported higher stocking rates than PM32, owing to the higher rate of herbage accumulation (44, 52 and 63 kg DM/ha/d, respectively, for genotypes PM32, PM45 and Massai). Gain per hectare reflected the stocking rate, but there was no significant difference between genotypes (P>0.05). Pre-grazing herbage mass was not affected by genotype (P>0.05), while leaf bulk density was highest for PM45 and lowest for PM32 (P<0.05). The high leaf bulk density of PM45 was not reflected in higher ADGs.

In a study with Marandu grass pastures (*Brachiaria brizantha* cv. Marandu) managed rotationally with an offering of 10%, ADG was 0.63 kg/hd/d and gain per hectare was 612 kg live weight/ha in 140 days (Herling et al. 2011). In pastures of cv. Massai managed rotationally, the maximum ADG during the rainy season ranged from 0.60 to 0.70 kg/hd/d (Euclides et al. 2008). In our study, the observed ADGs were higher than values presented in the literature for tropical grasses, which is surprising considering that the forage allowance at the end of the trial period, including the rate of herbage accumu-

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lation, was only about 6%, i.e., below the target of 9% initially desired. The ADG for genotype PM32 was similar to that obtained by Sollenberger and Jones (1989) evaluating dwarf elephant grass (cv. Mott) with an average herbage allowance of 4.9% during the summer (0.97 kg/hd/d).

Table 1. Average daily gain, productivity, stocking rate, leaf bulk density and herbage mass for grazed *Panicum maximum* genotypes during the rainy season in Planaltina, DF, Brazil.

Genotype	ADG (kg LW/hd/d)	Productivity (kg LW/ha)	Stocking rate (AU/ha)[2]	Leaf bulk density (kg/ha/cm)	Pre-grazing herbage mass (kg DM/ha)
PM32	1.00 a[1]	423.9 ns	3.88 b	44.5 b	4602 ns
PM45	0.90 ab	501.0 ns	5.03 a	65.1 a	4336 ns
cv. Massai	0.83 b	458.7 ns	4.88 ab	49.3 ab	5618 ns
CV%	9.38	20.17	14.36	16.8	18.94

[1]Means followed by the same letter within columns do not differ by the Tukey test (P>0.05). [2]Animal Unit = 450 kg live weight (LW).

Conclusion

While the new accessions PM32 and PM45 supported higher ADGs than cv. Massai, this was not reflected in higher productivity in the case of PM32. Further studies are needed to determine how these new genotypes can be used as alternatives to Massai for increasing the productivity of cattle in the region.

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