

Herbage accumulation and animal performance on xaraes palisade grass subjected to intensities of continuous stocking management

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Keywords: Herbage mass, live weight gain, grazing management.

Introduction

The large majority of species used in Brazil belong to the *Brachiaria* and *Panicum* genus, with marandu paladisadegrass (*Brachiaria brizantha* (Hochst. ex A. Rich) cv. Marandu) being the main cultivated forage grass species (Santos Filho 1996). *Brachiaria brizantha* cv. xaraés (xaraes palisade grass) was released as an option for diversifying forage species, and it had the advantages of fast regrowth and herbage yield, favouring larger stocking rates and animal productivity (Euclides *et al.* 2008; 2009).

The objective of this study was to evaluate herbage accumulation and animal performance of beef cattle steers grazing continuously stocked xaraes palisade grass managed at 15, 30 and 45 cm.

Methods

The experiment was carried out at Embrapa Gado de Corte, Campo Grande, MS, Brazil (Lat. 20°27' S, Long. 54°37' W, 530 m a.s.l.). According to Köppen classification (Kottek *et al.* 2006), the climate corresponds to a transition between Cfa and Aw humid tropical with dry winter. Average annual rainfall is 1560 mm, with a dry period from May to September (30% of annual rainfall). *Brachiaria brizantha* cv. Xaraés (xaraes palisade grass) was studied from December 2008 to December 2009. Treatments corresponded to three sward surface heights (SSH - 15, 30 and 45 cm) generated by continuous stocking and maintained on target using variable stocking rate. These were allocated to a complete randomised block design, with two replications. Herbage mass was sampled every 28 days using fifteen quadrats per paddock of 1.0 m² cuts ground level. All herbage within quadrats was harvested and separated into two sub samples. One was dried in a forced draught oven at 55°C during 72 hours and then weighed. The other hand separated into the morphological components leaf (leaf lamina), stem (stem + leaf sheath) and dead material. These were also dried in a forced draught oven,

similarly to the herbage mass samples, and dry weights used to calculate morphological composition as percentage of total herbage mass. Measurements of weight gain were made on three test animals per paddock, with extra steers used to adjust stocking rate according to the need to maintain treatments specifications.

Results

Plant responses

Herbage mass varied only with SSH ($P < 0.05$) and corresponded to 1410, 3610 and 5180 kg DM/ha \pm 66 on swards managed at 15, 30 and 45 cm, respectively, equivalent to herbage bulk density values of 89, 115 and 115 kg DM/ha/cm. In general, morphological composition of sward herbage mass (percentage of leaf, stem and dead material, and leaf:stem and leaf:non-leaf ratios) was affected by SSH, season of the year and SSH x season of the year interaction ($P < 0.05$). The percentage of leaf normally decreased with SSH, except during autumn, when there was no difference among treatments.

Animal responses

Variations in total weight gain per hectare in relation to treatments were similar to those of LWG, with values recorded on swards managed at 30 cm being 14 and 26% larger than those recorded on swards managed at 15 and 45 cm, respectively (Table 1). With the exception of swards managed at 30 cm, weight gain per hectare was the largest during summer and lowest during early spring, with large difference on those managed at 15 cm, consequence of a more severe decrease in weight gain per hectare under those circumstances. This can be explained by variations in changes in ingestive behaviour characteristics, particularly intake rate, since under continuous stocking with fixed sward targets, as used in this experiment, animals exploit the top third of sward canopy which is comprised almost exclusively of leaf lamina. In this context, variations in chemical composition are not large enough to explain differences in animal

Table 1. Daily weight gain per hectare (kg/ha/day) on continuously stocked xaraes palisade grass managed at 15, 30 and 45 cm from December 2008 to December 2009.

Season of the year	Sward surface height (cm)			Mean
	15	30	45	
Summer	4.90 Aa (0.44)	4.20 Aa (0.44)	4.80 Aa (0.44)	4.63 a (0.25)
Autumn	2.32 Aab (0.62)	3.63 Aa (0.62)	2.68 Aab (0.62)	2.88 bc (0.36)
Winter	2.81 Aab (0.44)	2.74 Aa (0.44)	2.17 Ab (0.44)	2.57 bc (0.25)
Early-spring	0.86 Ab (0.62)	2.59 Aa (0.62)	1.73 Ab (0.62)	1.73 c (0.36)
Late-spring	3.25 Aab (0.44)	4.56 Aa (0.44)	1.92 Ab (0.44)	3.24 b (0.25)
Mean	2.83 AB (0.23)	3.54 A (0.23)	2.66 B (0.23)	
Total for the experiment (kg/ha)	1026 B (15)	1173 A (15)	930 B (15)	

Means followed by the same upper case letters in rows and lower case letters in columns are not different ($P>0.05$). Numbers in parentheses correspond to standard error of the mean (SEM).

performance, indicating that differences are mainly due to variations in intake (Da Silva and Nascimento Jr 2007).

Conclusion

It is concluded that under continuous stocking management with growing steers, the optimum sward target was 30 cm.

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