Herbage intake and animal performance of cattle grazing *Brachiaria brizantha* cv. Marandu under continuous stocking

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Introduction Grazing management affects sward structure, which in turn influences plant and animal responses. With the objective of understanding causal relationship between sward structure and animal responses, the present experiment evaluated the daily herbage intake and live weight gain of growing cattle on *Brachiaria brizantha* cv. Marandu pasture during summer (Dec. 2001 to Mar. 2002).

Material and methods Four sward surface heights (10, 20, 30 and 40 cm) were maintained by continuous stocking and variable stocking rates for 12-months. Treatments were assigned to experimental units according to a complete randomised block design with four replications (1200 m^2 per plot). Grazing was performed initially by 280 kg LW Nelore and Canchim heifers from Dec.2001-Jun. 2002 and replaced by 230 kg heifers during Jul.-Dec.2002. Two testers per plot were used for estimates of intake and weight gain with variable stocking rates to control target sward condition. Spatial distribution of sward components was evaluated using an inclined point quadrat (Warren Wilson, 1960) and herbage mass and its morphological composition at the time of evaluations were determined from four 0.30x0.37 m quadrats/plot on a monthly basis. Cattle were weighed at four-weekly intervals. Daily herbage intake and its morphological composition were estimated using controlled release capsules of n-alkane (C_{32} and C_{36}) (Dove *et al*., 1988) in Jan./Feb. 2002. Animals (32) were dosed with alkanes on January 14th (day 0) and faecal samples collected on a daily basis from day 8 till day 12.

Results Herbage mass increased and herbage as well as leaf bulk density decreased with increasing sward height (Table 1). There was no difference in sward leaf-to-stem ratio. Daily herbage intake was higher on taller (30 and 40 cm) than on shorter (10 and 20 cm) swards (Table 2), with the lowest value recorded on 10 cm swards. Intake of leaf material, however, was not so clear-cut. Stocking rate decreased (8.3, 5.3, 4.1 and 2.9 stock units/ha for the 10, 20, 30 and 40 cm swards, respectively (1 stock unit = 450 kg LW) and live weight gain increased with increasing sward height, with the highest value recorded on the 40 cm swards.

Table 1 Herbage mass (HM – kg DM/ha), leaf-to-stem ratio (L-S), herbage (HBD) and leaf bulk (LBD) densities (mg/cm^3)

	Sward surface height (cm)			
	10	20	30	40
HM	4630^{d} (512)	8210^{c} (512)	11920^{b} (512)	14420^{a} (512)
L-S	0.72^{a} (0,080)	0.84^{a} (0,091)	0.78^{a} (0,080)	0.69^{a} (0,081)
HBD	4.7^{a} (0,31)	4.3^{a} (0,33)	4.1^{a} (0,31)	3.7^{a} (0,31)
LBD	1.5^{a} (0.10)	1.3^{ab} (0.11)	1.2^{b} (0.10)	0.9^{c} (0.10)

Means followed by the same lower case letters in lines are not significantly different (P>0.10). Values between parentheses correspond to the standard error of the mean.

Table 2 Daily herbage (HI) and leaf (LI) intake (kg DM/100 kg LW.day) and live weight gain (LWG) of beef cattle heifers (kg LW/animal per day)

	Sward surface height (cm)			
	10	20	30	40
HI	1.25^{b} (0.06)	1.57^{ab} (0.07)	1.63^{a} (0.08)	1.77^{a} (0.07)
LI	0.23^{b} (0.05)	0.44^{a} (0.05)	0.50^{a} (0.05)	0.40^{a} (0.04)
LWG	0.15^{c} (0.11)	0.48^{bc} (0.11)	0.58^{ab} (0.11)	1.00^{a} (0.11)

Means followed by the same lower case letters in lines are not significantly different (P>0.10). Values between parentheses correspond to the standard error of the mean.

Conclusions Herbage intake and animal performance responded to variations in sward structure, indicating that sward targets like height can be used to plan, control and monitor grazing management practices.

References

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