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## Sward structure and foraging behaviour of cattle grazing reproductive tropical pastures

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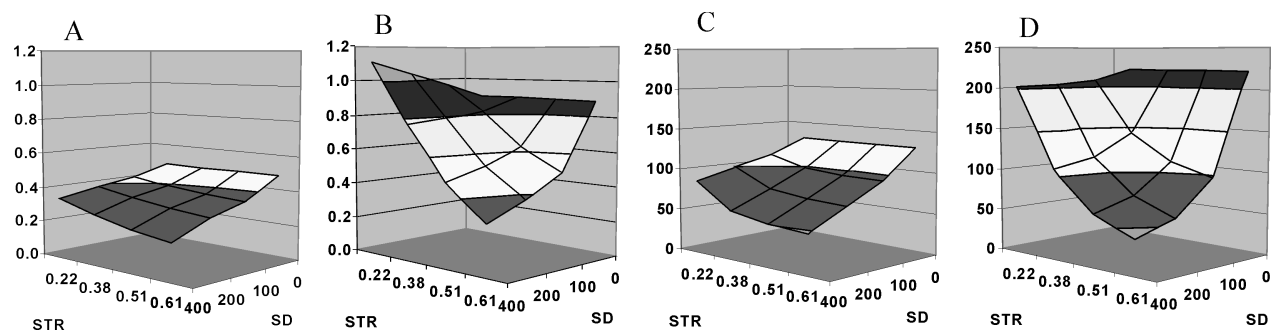
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**Key words :** sward structure, foraging behaviour, cattle, tropical pastures

**Introduction** The rate of nutrient intake (RNI) is an important determinant of animal performance for grazing animals that depends on diet quality and instantaneous intake rate (IIR). In turn, diet quality and IIR are the outcome of the interaction between animal size and structure of the sward. Stems can be a dominant component of reproductive tropical pastures. The aim of this study was to test the hypothesis that foraging behaviour of younger/smaller steers would be less affected by the increase in the physical strength and density of stems compared to older/larger cattle, which are less able to be selective while foraging.

**Materials and methods** Steers were offered artificial microswards (0.24 m<sup>2</sup>) consisting of leaves (20 cm long; 800 m<sup>-2</sup>) and stems (25 cm long) of *Panicum maximum*. The treatments consisted of a factorial combination of two cattle ages (1 and 3-year-old steers of 324 and 605 kg LW) and four levels of stem tensile resistance at 400 stems m<sup>-2</sup> in Experiment 1 or four densities of stems of high tensile resistance in Experiment 2 (0, 100, 200 and 400 stems m<sup>-2</sup>). The experiments had a randomized complete block design with three steers per age. The steers were allowed to take eight bites from the swards, and the proportion of stems in diet, bite mass, IIR, diet DM (dry matter) digestibility and digestible DM IIR were measured (Benvenuti *et al.*, 2007). Non-linear regression analysis was used to test the relationship between stem tensile resistance or stem density and the animal response variables.

**Results** There was a highly significant negative effect of both stem resistance and stem density on the proportion of stem in diet, bite mass, IIR and diet DM digestibility for both animal age groups ( $P < 0.001$ ); this negative effect was stronger in mature animals. All animals became more selective, avoiding the stems, as the tensile resistance and density of stems increased. This had a positive effect on diet quality for both animal age groups; however, it had a strong negative effect on bite mass, IIR and digestible DM IIR, particularly in mature animals (Figure 1).



**Figure 1** The effect of the stem tensile resistance (STR) (kN) and stem density (SD) (stems/m<sup>2</sup>) on bite mass (A, B) (g DM), and digestible DM IIR (C, D) (mg DM/kg live weight/min) of 1-year-old (A, C) and 3-year-old (B, D) steers grazing microswards of *Panicum maximum* comprised of leaves and stems.

**Conclusions** The foraging behaviour of older/larger steers was more strongly affected by increases in the physical strength and density of the stems in tropical swards than was that of younger/smaller animals. This indicates that younger animals would have a nutritional advantage over the older animals when grazing reproductive tropical pastures containing a high density of stems of high tensile resistance.

### Reference

Benvenuti, M.A., Gordon, I.J., Poppi D.P., Crowther R., Spinks W., (2007). Foraging mechanics and their outcomes for cattle grazing reproductive tropical swards. *Applied Animal Behaviour Science* (in press).