Prehension patterns of beef heifers in a complex vegetation mosaic

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Key words: bite mass, *Eragrostis plana* Nees, frequency of tussocks, short-term intake rate

Introduction
Foraging decisions can be interpreted in terms of an overall objective of maximizing efficiency of feeding behavior, often equivalent to maximizing intake rate (Baumont et al., 2004). In heterogeneous environments, the intake rate, as a function of bite mass and time required to prehend the bite, results from the interactions between animals and the sward characteristics. The objective of this study was to evaluate the prehension patterns of beef heifers in mosaic natural grassland infested by *Eragrostis plana* Nees in southern Brazil.

Materials & Methods
The measurements were made between November 16th and December 4th, 2009, with four heifers, cross-bred, weighing 286.7 ± 1.2 kg. A complete randomized block design with time of day as the blocking factor and four replicates (two spatial and two in time) was used. The grazing paddocks contained different proportions of tussocks in a natural grassland: 0; 25; 50; and 75% of *Eragrostis plana*, considered as the non-preferred item of the diet. The inter-tussocks areas were predominantly composed of *Axonopus afinnis*, *Cynodon dactylon*, Paspalum *nicorae*, *Paspalum notatum*, *Desmodium incanum* and *Andropogon lateralis*. These areas were maintained on a non-limiting herbage allowance, both in sward height as in space. The short-term intake rate (STIR) was measured by the heifers' pre- and post-grazing weight, corrected for insensible weight losses. Grazing time and jaw movements were recorded using behavior recorders. Bite mass was calculated by the ratio between short-term intake rate and number of bites. In all analyses, the paddock group of four heifers was used as the experimental unit. Data were analyzed by regression using SAS Software.

Results & Discussion
The relations between STIR, bite mass, and frequency of tussocks are presented on Figure 1. The regression models showed a quadratic response for both variables. The maximization of the bite mass occurs in 30% of tussocks, while for STIR the highest value was observed when the frequency of tussocks reaches 33%. This value zone can be characterized as the more advantageous for grazing management. After these values, both STIR and bite mass started to decrease, which shows some forage restrictions to the animals. Tussocks may act as a vertical and/or horizontal barrier which interferes in the process of bite formation and affects bite mass and STIR, an effect already observed in stems by Benvenutti et al. (2008). When heifers selected the tussocks, probably the smaller forage density and greater leaf dispersion on the highest grazing horizon caused a reduction in bite mass and, consequently, in STIR. In these situations, animals are forced to ingest fewer leaves per bite, or even individual leaves, which reduces bite mass (Carvalho et al., 2007).

Conclusions
The intake rate and bite mass of beef heifers are substantially reduced when the frequency of tussocks is higher than 33%, suggesting that animal response can be constrained in natural grasslands with predominance of tussocks.

References
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