

Feeding choices by cattle and sheep grazing heterogeneous pastoral environments

Bremm, C.¹, Carvalho, P.C.F.¹, Perez, N.², Fonseca, L.¹, Elejalde, D.A.G.¹, Amaral, G.A.¹, Moojen, F.G.¹, Correia, L.H.S.¹

1. Grazing Ecology Research Group, Federal University of Rio Grande do Sul, Porto Alegre, Brazil. E-mail: carolina_bremm@via.com.br

2. Brazilian Agricultural Research Corporation (EMBRAPA), Brazil

Key words: diet selection, ingestive behavior, frequency of tussocks, grazing time, mosaic grassland

Introduction

In natural vegetation mosaics, spatial heterogeneity is generally high and preferred grazing species may be intermixed with less-preferred species. In these systems, the spatial interactions between the various processes associated with the presence of grazing animals are more complex (Oom et al., 2008), especially with cattle and sheep. Sheep have a slightly different foraging strategy than cattle, focusing on higher quality options at a finer grain, even at scales much greater than where mouth size and morphology are relevant (Gregorini et al., 2007). The aim of this study was to compare the feeding choices by cattle and sheep in a natural mosaic grassland in southern Brazil.

Materials & Methods

A total of four heifers, cross-bred, weighing 286.7 ± 1.2 kg and eight adult ewes, Suffolk, weighing 51.0 ± 0.72 kg were used. The heifers were evaluated between November 16th and December 4th of 2009, and evaluation of the ewes was started on December 10th. 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 vegetative phenological stage: 0; 25; 50; and 75% of *Eragrostis plana* Nees, considered as the non-preferred item of the diet. The inter-tussocks (IT) areas were predominantly composed of *Axonopus affinis*, *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 intra-tussocks (INT) vegetation was predominantly composed of *Desmodium incanum*. Records were taken at 1-minute intervals during grazing activity, whether the animals were grazing on tussock, IT or INT areas. In all analyses the paddock group of four animals was used as the experimental unit. Data were analyzed by regression using SAS Software.

Results & Discussion

The regression models (Figure 1) showed that for each 1% increase in tussocks frequency in IT areas, heifers reduced 0.6% of their grazing time, while the ewes reduced grazing by only 0.36%. Virtually all reduction in grazing IT areas by heifers was replaced by grazing the tussocks. However, the ewes were more selective. As the frequency of tussocks increased, ewes tried to find preferred food in the INT stratum. With each 1% increase in frequency of tussocks, the ewes increased their grazing on tussocks by only 0.26%, also increasing legumes selection inside the tussocks by 0.12%. When ewes were exposed to 70% of tussocks, they spent more than 10% of grazing time selecting forage in the INT stratum. Laca et al. (2010) also observed that sheep exhibited much higher partial selectivity compared with cattle at the path and feeding-station levels, indicating that sheep have a more acute ability, or drive, to discriminate at these scales, regardless of the landscape distribution of forages.

Conclusions

Irrespective of animal species, animals select diets with predominance of inter-tussock areas, even in areas with predominance of tussocks. Cattle would be expected to have a greater impact than sheep on *Eragrostis plana* tussocks.

References

- Gregorini, P., Gunter, S.A., Masino, C.A., Beck, P.A., 2007. Effects of ruminal fill on short-term herbage intake rate and grazing dynamics of beef heifers. *Grass and Forage Science*, 62, 346 – 354.
- Laca, E.A., Sokolow, S., Galli, J.R., Cangiano, C.A., 2010. Allometry and spatial scales of foraging in mammalian herbivores. *Ecology Letters* 13(3): 311-320.
- Oom, S.P., Sibbald, A.M., Hester, A.J., Miller, D.R. & Legg, C.J., 2008. Impacts of sheep grazing a complex vegetation mosaic: Relating behaviour to vegetation change. *Agriculture, Ecosystems and Environment*, 124, 219–228.