

Grazing intensities on the vegetation diversity In the pampa biome grassland

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Keywords: Vegetal diversity, Herbage allowance, Shannon index, Pielou`s equitability index, long term.

Introduction

Brazilian Pampa Biome represents native forage species with almost 400 grasses and 150 legumes (Boldrini, 1997). The natural grasslands are characterized by a spatial and temporal variety of forage plant species, and this heterogeneity is essential to explain and understand the actual interactions between plants and animals (Laca & Ortega, 1995). In this context the efforts of research converge in the understanding of dynamic relationships involving heterogeneous environments such as the pastoral rangelands.

Materials and methods

This work evaluated the vegetation effectively grazed (low stratum) in different grazing intensities. The treatments consisted of levels of herbage allowance (HA, kg of dry matter for 100 kg live weigh⁻¹(LW). day⁻¹= % of HA), of 4.0, 8.0, 12.0 and 16.0%, throughout the year. This experimental protocol had been conducted since 1986. The experimental design was completely randomized blocks with two replicates. The grazing method was continuous with variable stocking rate with crossbred beef cattle heifers. We made a floristic monitoring during the spring 2009 using visual estimations of the frequency and coverage of five main species. We used 0.0625 m² squares in a systematic sampling, distributed in the experimental units in a grid of 20 m x 20 m. The data were subjected to multivariate analysis of principal components, Shannon`s diversity index and Pielou`s equitability index using software INFostat and PAST.

Results and discussion

The evaluation identified 106 species contributing in the stratum effectively grazed. Ten species contributed with over 80% of relative frequency at the treatment of 4.0% of HA. With 8.0% of HA, 15 species responded by 80% or more and at treatments of 12.0 and 16.0% of HA 20 species contributing more than 80% of relative frequency. Shannon`s diversity index showed values of 2.317, 3.361, 3.443 and 3.189 for HA 4.0, 8.0, 12.0 and 16.0%, respectively. The Pielou`s equitability index showed values of 0.689, 0.902, 0.856 and 0.784, for HA 4.0, 8.0, 12.0 and 16.0% of HA, respectively, these index showed the effect of grazing intensity on plant community in the Pampa Biome. Principal components analysis showed associations between prostrate species such as *Paspalum notatum* Alain ex Flügge, *Axonopus affinis* Chase, *Stylosanthes montevidensis* Vogel in the treatments with lower HA. Greatest diversity was found in the treatments with high HA: *Briza pomorpha* (J. Presl) Henrard, *B. subaristata* Lam., *Piptochaetium lasiantum* Griseb., *Desmodium adsensens* (Sw.) DC., *Piptochaetium montevidense* (Spreng.) Parodi and the presence of tussock species as *Andropogon lateralis* Nees, *Aristida laevis* (Nees) Kunth, *Schizachyrium microstachyum* (Desv. ex Ham.) Roseng., B.R. Arrill. & Izag.. The ordination of principal component analysis associated with herbage allowance showed 76.5% of total variation of the species correlated ($r \geq 0.7$) for both axes. These results agree with Nabinger et al. (2000), this authors claim that heavy grazing pressure tends to degrade these ecosystems, resulting in low soil cover and loss of forage species.

Conclusions

Moderate grazing intensities in the long term improved the diversity in the effective grazed stratum, adding greater stability to forage production, tolerance to climatic variability and diversity of the animals' diet.

References

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