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Botanical Composition: A Tool to Evaluate Rangeland Condition Trends under Different Management Conditions

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Botanical composition a tool to evaluate rangeland condition trends under different management conditions

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Key word : Botanical composition, rangeland management, dry matter production

Introduction Subtropical humid rangelands in Argentina are composed mainly of tropical species. Botanical composition is varied; but C₄ grasses are predominant and produce most of the dry matter. Other botanical families are important depending of the soil type and management applied. Uncontrolled fire and overstocking affect the rangeland condition. There is some information related to changes in botanical composition. The objective of the research was to evaluate changes in the botanical composition of the rangeland under different burning frequencies and stocking rate.

Materials and methods The treatments applied were T0 : burning every 3 years no grazing; T1 : burning every 2 years no grazing; T2 : burning every 1 year no grazing and T3 : burning every 1 year and grazing of a stocking rate of 3 animals/ha. The botanical composition was evaluated on transects, 100 meters long, 5 transects in each treatment. Registers of range were made on areas 50×50 cm=0.25 m² and every 10 meters. Botanical Composition was evaluated with Dry Weight Rank Methods (DWRM) (Mannetje & Haydock; 1963) and analysed using software developed by INTA Corrientes Experimental Station. The botanical composition was analysed by ANOVA. The statistical design was completed at random design with five replications (transects) and the test of Duncan ($\alpha=0.05$) was applied. The changes, in botanical composition, produced by the treatments were described by cluster analysis.

Results The trial was conducted from September/1997 to March/2006, Figure 1 shows the similarity between the treatments and Table 1 the contribution of each family group.

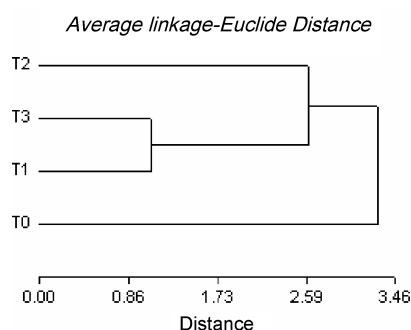


Figure 1 Relation between treatments of botanical families.

Cluster analysis was used as a tool, which proved to be useful, to describe changes produced in botanical composition by the treatments. T1 and T3 are closer and there is some difference between them and T2. But they are quite different to T0. The changes in botanical composition are similar under burning every 2 years no grazing and burning every 1 year plus grazing. The greater frequency of burning produced more changes than the changes produced by adding grazing.

Table 1 Contribution (%) of each family group.

Treatments	Grass	Legumes	Grass like plants	Other families
T0	68.4a	3.9ab	3.9a	26.9b
T1	72.0a	3.7ab	6.2bc	21.6a
T2	73.3a	4.9b	4.5ab	21.8a
T3	72.5a	3.3a	7.5c	20.6a

Conclusions Rangeland botanical composition was affected by treatments applied. T2 promoted the contribution of grass and legumes. T3 and T0 promoted the contribution of grass-like-plants and other families. Means with the same letter are not significantly different ($\alpha=0.05$).

Reference

Mannetje & Haydock (1963). The dry-weight-rank method for the botanical analysis of pasture, pp 268-275.