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

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Introduction Subtropical humid rangelands in Argentina are composed mainly of tropical species . Botanical composition is varied ; but C_4 grasses are predominat 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 stoking 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 m^2 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 (α=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 .

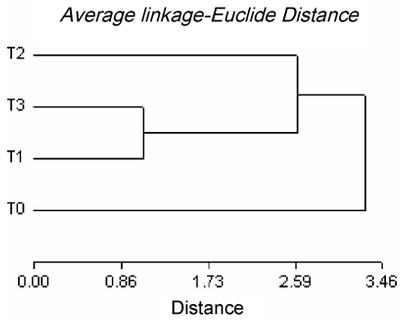

Figure 1 *Relation between treatments of botanical families .*

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 (α=0 .05) .

Reference

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