The effect of fertiliser treatment on the development of rangelands in Argentina

E.F. Latorre and M.B. Sacido
The Faculty of Agronomy. Azul National University of the Centre of the Buenos Aires Province. Argentine. CP: 7300. Commission of Investigation Scientific, Buenos Aires Province. Argentine. Email: msacido@faa.unicen.edu.ar

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Introduction In Argentina grazing of rangelands may result in a decrease in winter gramineous species with an increase in summer weeds such as *Cynodon dactylon*. *Lolium multiflorum* is an important forage resource for grazing in the autumn, winter and spring. A delay in its emergence may occur because of summer weeds, which reduces the germination rate. The proportion of the seed bank as ryegrass allows the recovery of natural grassland and facilitates an increase in the productivity of livestock. The objective of this study was the evaluation of the impact of application of fertiliser in the short term on the relationship with botanical composition at different herbage availabilities.

Materials and methods The experimental site was a typical natural pasture in the Flooding Pampas, with three level of availability of herbage mass (high, >5000 kg dry matter (DM)/ha; medium, between 5000 and 3000 kg DM/ha; and low <3000 kg DM/ha). The treatments were with and without fertilization. On the fertilized treatment the technique of promotion of rangeland ("promoción de pasturas") involved the annual application of ammonium phosphate (80 kg/ha) and glyphospate (5 l/ha). Measurements were made at 45 and 75 days after fertiliser application of floristic composition, herbage availability and species abundance. Correlation (software STADISTIC 5.0) and similarity coefficients by the Czekanowski, Dice, Sørensen Index were determined.

Results The floristic composition, at the three different availabilities of herbage, in both treatments (-F without fertilized and F fertilized) is shown in Figure 1. It shows the variation in floristic composition, especially for *Lolium multiflorium* Lam, between the fertiliser and no fertiliser treatments (P<0.01). Within a fertiliser treatment there were no significant differences in floristic composition between the three levels of availability. In relation to differences between fertiliser treatments in floristic composition, these were significant (P<0.05) using a Dependent Samples test.

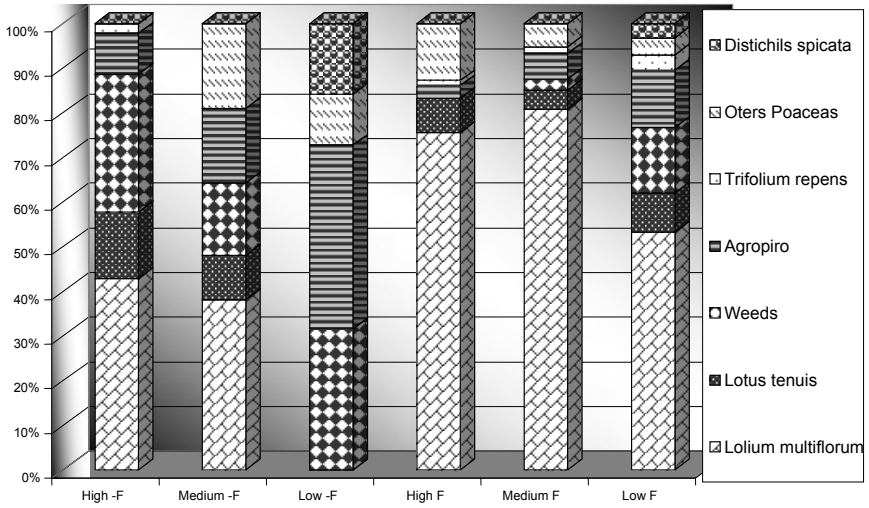

Figure 1 The floristic composition of the pastures as affected by three levels of availability of herbage and fertilizer treatment (-F, without fertilizer; and F, fertilised)

Conclusion The composition in the forage offered differed according to the fertiliser application regime. The high fertilizer treatment increased the composition of forage species, especially *Lolium multiflorum,* and decreased the proportion of weeds.