Response of four indicative native grasses to long term NP fertilization under grazing in Uruguay Basaltic Region

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Introduction

Poa lanigera, Stipa neesiana and Paspalum plicatulum, Bothriochloa laguroides are perennial grasses which are considered indicative winter (C_3) and summer (C_4) species growing in Basaltic communities in the north region of Uruguay (Rosengurtt, 1979; Berretta, 2005). This experiment was established to understand the response of indicative species of natural grasslands to long term overcast NP fertilizer under different treatment applications under grazing.

Materials and methods

Four treatments with two replications have been imposed to an area of 18 ha in a mosaic of shallow and deep soil of basaltic at INIA Experimental Station Glencoe (S 32° 00' 54.2"; W 57° 0.9' 28.9") fifteen years ago. Treatments involved: Natural grassland (NG) (1), NG with fall and spring fertilization (2), NG with fall annual fertilization (3) and NG with fall fertilization during the first 7 years (4). Each overcast fertilization contains 46 kg N and 22 kg P_2O_5/ha. Whole plants tissues were collected from *Poa lanigera, Stipa neesiana, Paspalum plicatulum* and *Bothriochloa laguroides* and upper stratified soils (0 – 5 cm) were sampled from each plot during spring 2009 to analyze P (mg/g) in plant and P (citric acid) in soil.

Results and discussion

Winter and summer indicative species respond to soil P addition in this long term experiment. P responses are significantly different in winter species when compared to summer species (Fig.1). Nitrogen content on tissues into C3 and into C4 species do not differ significantly with N fertilization.

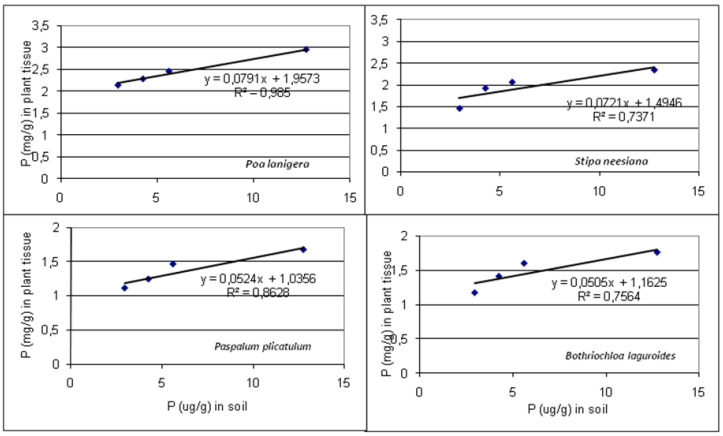

Figure 1. Phosphorus plant content for four indicative grasses: *P. lanigera, S. neesiana, P. plicatulum and B. laguroides* under four different fertilization treatment: NG (1), NG (4), NG (3), and NG (2) with 2.95, 4.25, 5.60 and 12.75 of P (ug/g) in soil, respectively.

Conclusions

Phosphorus content tissues of C3 indicative species, showed better response to P fertilization, when compared with coarse, summer grasses, C4, under grazing management.

References

Berretta, E.J. 2005. Producción y manejo de la defoliación en Campos Naturales de Basalto. In: Seminario de Actualización Técnica en Manejo de Campo Natural. INIA. Uruguay. ST. 151: 61-73.

Rosengurtt, B., 1979. Tablas de comportamiento de las especies de plantas de campos naturales en el Uruguay. Universidad de la Republica. Facultad de Agronomía. Montevideo. Uruguay. 86p.