Evento: 7th Symposium on Phosphorus in Soil and Plants (PSP7)
Fechas: 3 al 6 de Octubre de 2022
Locación: Radisson Victoria Plaza, Montevideo, Uruguay

Evaluating plasticity of root P aquisition strategies in four plants species of grasslands of Uruguay

Rodriguez Rodriguez, Natalia[1]; Michelini, Diego[2]; Rodriguez-Blanco, Andrea[1]
[1]Departamento de Biología Vegetal, Facultad de Agronomía, Universidad de la República.;
[2]Estación Experimental de Facultad de Agronomía Salto, Facultad de Agronomía, Universidad de la República.

Natural grasslands are environmental and economically relevant ecosystems in Uruguay. They harbor a high diversity of plant species,including those belongs to *Fabaceae*, *Asteraceae*, *Poaceae* and *Cyperaceae*. This flora has developed different strategies to surmount the low availability of phosphorus of most of its soils. Strategies are based in tackling two P drawbacks: low solubility and poor mobilization.The objective of this work was to study strategies of different species of natural grasslands plants and evaluate its relationship withphosphorus availability.
A greenhouse assay was performed using four plant species (*Adesmia bicolor*, *Baccharis genistelloides*, *Cyperus aggregatus* and *Paspalumnotatum*) and four levels of phosphorus (added as KHPO 0, 20, 80 and 160 µgP/g) with 6 replicates each. Leaf dry weight, leaf nutrients(N, P, K, Zn and Mn) and root phosphoesterases activities (mono and diesterases) were quantified in harvested plants, four months after sowing. For all species, plants produced more biomass and showed more leaf P content with the addition of 80 µgP/g in comparison to no P added. Furthermore, the addition of 160 µgP/g produced the same or even a negative effect than 80 µgP/g. There were no difference within P added nor plant species in remain nutrients quantified. *A. bicolor* showed the highest phosphatases activity but without differences among levels of P. The other species were plastic regarding to P availability, *C. aggregatus* and *P. notatum* produced more phosphoesterases when no P was added than with 80 µgP/g, whereas *B. genistelloides* produced more phosphomonoesterase at 160 µgP/g than with less P added.Our results shows that phosphatase production depends not only on plant species identity, but also on P availability for growth. To complement this work, two more phosphorus-acquisition strategies will be quantified: root carboxylates exudation (by HPLC) and symbiosis with fungi (percentage of root colonization).

Palabras clave: Grasslands; Phosphoesterases; Plasticity