Phosphorus Utilization from Phosphate Rock by Different Tropical Legumes. (S04-perez155849-Poster)

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Abstract:

Nodulated leguminous plants acquire most of their N from atmospheric N fixation and the reduced N form leads to excess cation uptake with a concomitant acidification of the rhizosphere and phosphate rock dissolution. Six tropical legumes: Vigna ungiculata (VU), Cajanus cajan (CC), Glycine max cv. Cristalina (GM), Stylosanthes guianensis (SG), Crotalaria juncea (CJ), and Indigosfera lespedeciode (IL) were compared for their abilities to use P from phosphate rock in a P-deficient Ultisol. Phosphorus treatments were: 0, 25, 50 and 75 mg/kg of P from Riecito phosphate rock (RPR) or triple superphosphate (TSP). There were significant differences ($p<0.05$) in P efficiency (shoot dry weight per unit soil Olsen-P), total nitrogen accumulation, Ca and P uptake, and shoot ash alkalinity among legumes, P treatments, and the interaction between legume and P treatments. Mean values for efficiency use of P increased in the following order: VU >IL >SG >GM >CJ >CC. Although, IL reached 89% maximum yield with just 25 mg/kg of P from RPR. Soil acidification and RPR dissolution were larger under forage legumes than under grain legumes, which corresponded to a relatively high Ca and P uptake, and excess cation uptake in forage legumes.

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