



Phosphorus
in Soils
and Plants
Symposium

*Towards a sustainable
phosphorus utilization in
agroecosystems*



abstracts



**Theme 1 - Phosphorus forms,
availability and cycling in soils
Poster Session**



Effect of fertilization history on p fixation

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Phosphorus is a relatively immobile nutrient, subject to fixation processes by the soil. P fixation affects the P requirement factor (PRF), i.e. the P rate required to raise agronomic soil test P by 1 mg/kg. Several factors inherent to the soil type affect P fixation. However, a given soil may show changes in its P fixation, as the soil accumulates P additions. These changes in P fixation should be taken into account so that fertilizer recommendations do not overestimate optimum P rates. Two important soil-forming materials for agricultural and livestock production in Uruguay are the precambrian shield and Quaternary sediments. A general research objective is to improve the soil-specific recommendations for P fertilization. The specific objective is to study the effect of previous P fertilization on P fixation according to soil type. We used a set of stored soil samples from previous experimental P fertilization trials, which belong to the two above-mentioned materials. No P fertilizer had been applied previous to establishment of trials. Samples of contrasting treatments were selected according to the P rates applied for 3 years. Soil P fixation will be determined using P retention indices, which represent a more practical and simple method than traditional adsorption isotherms. Basically, the soil is placed in a solution with known initial P concentration. After a certain agitation time the final P concentration in the solution is determined in order to obtain by subtraction the amount of P retained by the soil. It is expected to find evidence supporting that PRF estimation should take into account P fertilization history. This would lead to better adjusting recommended fertilizer P rates, reducing costs and the risk of P losses to runoff.

