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Soil-Plant System Response to Lime and Phosphorus Amendments in High P-Sorbing Andisols.

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Abstract Text:

Strong phosphorus sorption limits the agronomic productivity of many Andisols. We investigated the interactive effects of lime and P fertilizer amendments on P sorption and availability in a low pH, low soil test-P Andisol from the central Andean highlands of Ecuador. Nine treatments consisting of three rates (0, 90, or 180 kg/hectare) of P and three rates (0, 3, or 6 tons/hectare) of calcitic lime were mixed with equal volumes of soil and seeded with barley (*Hordeum vulgare*, L) in a greenhouse experiment. Mehlich3 and Olsen extractable P, Al, and Ca and soil pH were determined on soil samples taken before liming, 30 days later at the time of planting, and 7 and 50 days after planting (dap). Biomass yield and tissue P content were determined on whole barley plants harvested at 50 dap. Initial observations indicate a plant response to the treatments of lime, of phosphorus, and of lime with phosphorus. These findings could lead to the development of a field technique for phosphorus management to increase yields for subsistence farmers in the Ecuadorean Highlands.