Nitrogen and Phosphorus Leaching as Affected by Gypsum Amendment and Exchangeable Calcium and Magnesium in a Silt Loam Soil. (S06-favaretto091830-Poster)

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Abstract:

A column experiment was carried out with the objective of evaluate the effect of gypsum amendment and different levels of exchangeable Ca and Mg on transport of P, NH4-N, and NO3-N in infiltrated water and soil. The treatments were: control; gypsum applied at the surface; gypsum mixed at 2.5cm depth; and five different soil exchangeable Ca/Mg ratios. A clear plexiglas cylinder was filled with 15-cm layer soil, and N, P, and K were applied at the soil surface. Deionized water at a flow of 0.5 ml per minute was applied and eight leachate fractions, totaling 5 pore volumes, were collected. Gypsum (5000 kg/ha) applied at the surface or mixed at 2.5-cm depth significantly decreased total P and increased NH4-N, but did not affect NO3-N total recovery in leaching. Exchangeable Ca/Mg ratio treatments did not affect recovery of soluble nutrients; however, particulate P was significantly lesser in the Ca-treated soil than the Mg-treated soil as a result of a decrease in clay dispersion. Electrolyte concentration (gypsum) was more efficient than exchangeable Ca on controlling clay dispersion. Soil P and NH4-N mobility was decreased and increased, respectively, by gypsum amendment.

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