Harvesting Nature's Science

Effects of **X-TEND®**, **FERTIL HUMUS®**, **FERTIL SOIL®** and **ZAP®** on N & P Stabilization in Fine Sand

Research Report

Purpose: To demonstrate the effect of HUMA GRO® X-TEND®, FERTIL HUMUS®, FERTIL SOIL®, and ZAP® and the reduction of nitrogen and phosphorus leaching in Immokalee fine sand soils.

Location: Immokalee fine sand soil, Florida

Cooperators: Charles Vavrina, PhD, University of Florida, vegetable horticulturist; Arvel H. Hunter, PhD, Agro Services Int., soil analysis; Esa Ontermaa, Chemist, UAP, materials and supervision

Abstract

The leaching of nitrogen and phosphate fertilizers presents an ongoing problem in Florida soils. Agricultural amendments that reduce leaching when applied to soils or when mixed with nitrogen and phosphate fertilizers present a potential solution to this problem. Retaining a greater amount of nutrient in the crop root zone also presents an economic benefit to the grower. Four such amendments from HUMA GRO® were applied to the soil or were mixed with potassium nitrate and phosphoric acid to evaluate their respective effect on nutrient leaching and increasing nutrient levels in crop root zones.

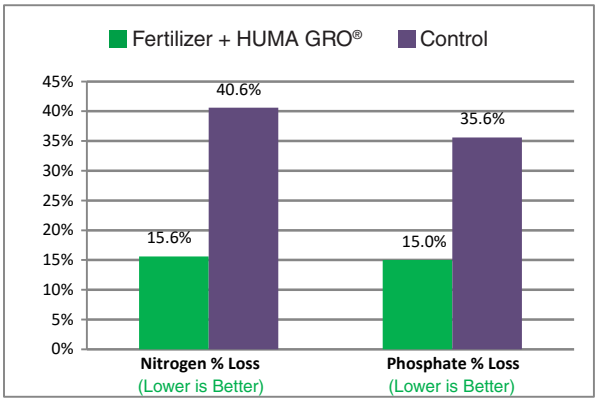
Experiment

Plastic soil tubes were constructed to accommodate a 36" column of soil. In simulated irrigations, the equivalent of 160 lbs of nitrate-nitrogen per acre and 130 lbs of P_2O_5 phosphorus per acre were applied, with the leachate being drained away. In three treatments, X-TEND® was mixed with the fertilizers to make "complexed" fertilizer. The combinations of FERTIL HUMUS®, FERTIL SOIL®, and ZAP® were applied directly to the soil.

Sixty days after the application of the fertilizers and a total of 15.5 inches of applied water, the soil columns were separated into 6" sections and analyzed for nitrate nitrogen and phosphate. Three replications of five combinations and one control were evaluated. In the 36" profiles, the combinations of fertilizer plus the HUMA GRO® amendments lost only 15.6% of the nitrogen and 15.0% of the phosphate. The control lost 40.6% of the nitrogen and 35.6% of the phosphate. In the top 18" of soil, the fertilizer plus the HUMA GRO® treatments had an increase in nitrogen levels of 17.9% to 76.1% and increased phosphate levels of 23.2% to 38.7% when compared with the control. The combination of fertilizer, X-TEND™, FERTIL HUMUS®, FERTIL SOIL®, and ZAP® resulted in an increased nitrogen level of 76.1% and an increased phosphate level of 31.2%, compared with the control.

Results

Percent Loss of N & P in 36" Soil Profiles



By complexing the fertilizer and through the addition of the HUMA GRO® amendments to the soil, leaching was significantly reduced and more nitrogen and phosphate remained in the top 18" of soil.

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