Effects of Huma® Products on N & P Stabilization in Sandy Soil

Research Report

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Huma Products: Fertil Humus®, Fertil Soil®. X-Tend®, and Zap®

Objective

To demonstrate the effects of Huma® products **X-Tend®**, **Fertil Humus®**, **Fertil Soil®**, and **Zap®** on the reduction of nitrogen and phosphorus leaching in Immokalee sandy soils.

Background

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 with Micro Carbon Technology® (MCT) from Huma® 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:

- **Fertil Humus®**—Feeds beneficial soil microbes and increases carbon and nutrient availability in the root zone.
- **Fertil Soil®**—Feeds beneficial soil microbes, improves soil structure, and increases nutrient avilability.
- **Zap®**—Creates a balanced soil environment by feeding a strong, vigorous soil biology.
- **X-Tend®**—An enhanced efficiency fertilizer (EEF) with concentrated Micro Carbon Technology® and high levels of organic acids that is formulated to improve the efficiency, release, and uptake of fertilizers.

Materials & Methods

Plastic tubes were constructed to accommodate a 36" column of soil. In simulated irrigations, the equivalent of 160 lbs of nitrate-nitrogen per acre and 180 lbs of P_2O_5 phosphorus per acre were applied, with the leachate being drained away. In three treatments (see Table 1), **X-Tend®** (at 2 qt/ton dry fertilizers and 2 qt/40 gal for liquid fertilizers) was mixed with the fertilizers to make "complexed" fertilizer. In four treatments, the combinations of **Fertil Humus®** (1 qt/acre), **Fertil Soil®** (1 qt/acre), and **Zap®** (1 gal/acre) were applied directly to the soil.

Sixty days after the application of the fertilizers and a total of 15.75 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.

Results

In the 36" soil profiles, the combinations of fertilizer plus the Huma® amendments lost only 15.6% of the nitrogen and 15.0% of the phosphate through leaching (Figure 1). The control lost 40.6% of the nitrogen and 35.6% of the phosphate through leaching. In the top 18" of soil, the fertilizer plus the Huma® treatments had an increase in nitrogen levels of 17% to 76% and increased phosphate levels of 23% to 38% when compared with the control (Table 1). The combination of fertilizer, **X-Tend®**, **Fertil Humus®**, and **Fertil Soil®** (Treatment 5) resulted in an increased nitrogen level of 76% and an increased phosphate level of 31%, compared with the control.

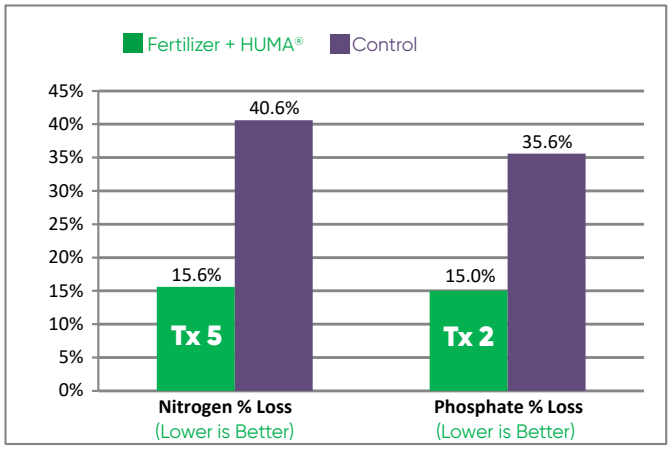

Figure 1. Percentage Loss of N & P in 36" Soil Profiles

Table 1. N & P Increase in Top 18" of Soil Compared With Control, by Treatments

No.	Treatment (Tx)	N % Increase	P % Increase
1.	Control: N&P Fertilizer Only	–	–
2.	N&P Fertilizer + X-Tend®	17	38
3.	Zap® + (N&P Fertilizer + X-Tend®)	38	31
4.	Zap® + N&P Fertilizer	63	36
5.	Fertil Humus® + Fertil Soil® + (N&P Fertilizer + X-Tend®)	76	31
6.	Fertil Humus® + Fertil Soil® + N&P Fertilizer	71	23

Conclusions

By complexing the fertilizer with **X-Tend®** and through the addition of the Huma® soil amendments (**Fertil Humus®**, **Fertil Soil®**, and **Zap®**), leaching was reduced and more nitrogen and phosphate remained in the top 18" of soil. Reducing leaching keeps more N&P available to the crops and reduces groundwater contamination.

Micro Carbon Technology®

Micro Carbon Technology® *is a proprietary blend of extremely small (nano-sized) organic carbon- and oxygen-rich molecules that act as a source of carbon and provide an ultra-efficient vehicle to move nutrients and other molecules into the plant through the soil and/or the leaves.*

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