



# Huma® Fertilizer Products Increase Cucumber Yields at ROI of 113%

Research Report

Conducted by: Southeast Ag Research, Inc.  
Huma® Products: Breakout®, Max Pak®, Vitol®, and Zap®

## Objective

The purpose of this research project was to evaluate how Huma® liquid fertilizer products with Micro Carbon Technology® affect cucumber yield when compared with a control program of grower's standard fertilizer.

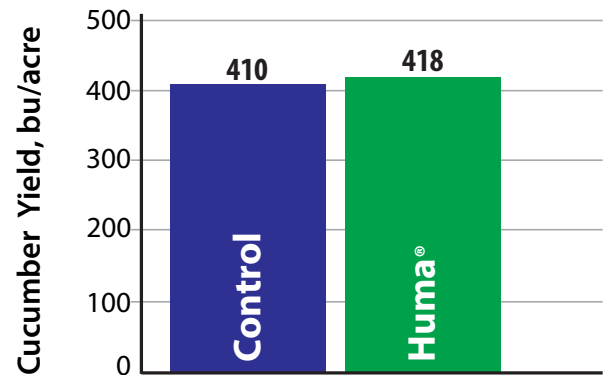
## Materials & Methods

This study was conducted at the Southeast Ag Research facilities in Chula, Ga. The experiment was conducted with four replicates. Each replication consisted of a 30-foot-long plot.

The Control plot used only an application of the grower's standard fertilizer program. The Huma® plots also used the grower's standard fertilizer program; in addition, the 4 Huma® liquid products were applied. The Huma® products included **Zap®** (soil health and fertility enhancer, applied as a soil drench at transplant), **Breakout®** and **Vitol®** (plant growth optimizers, foliarly applied 3 times during the season), and **Max Pak®** (micronutrients, foliarly applied with the plant growth optimizers 3 times during the growing season). Table 1 describes application details:

**Table 1.** Cucumber Fertilizer Treatments, Check and Huma®

Treat-ment	Product	Amt.	Method	Timing
<b>Control</b>	Grower's Standard	Grower's Standard	Grower's Standard	Grower's Standard
<b>Huma®</b>	Grower's Standard	Grower's Standard	Grower's Standard	Grower's Standard
	Zap®	2 qt/ac	Drench	At Transplant
	Breakout® + Vitol® + Max Pak®	16 oz/ac, each	Foliar	Application 1
	Breakout® + Vitol® + Max Pak®	16 oz/ac, each	Foliar	Application 2
	Breakout® + Vitol® + Max Pak®	16 oz/ac, each	Foliar	Application 3



**Figure 1.** Cucumber Fertilizer Treatments, Huma® and Control

## Results

The Huma® fertilizer treatment increased cucumber yield by 8 bushels per acre when compared with the Control treatment (Figure 1). The Control yielded 410 bu/acre, while the Huma® treatment yielded 418 bu/acre.

## Conclusions

The Huma® fertilizer treatment increased the yield by 2% (8 bushels per acre) over the Control, with a return on investment (ROI) of 113%. The Huma® program can help cucumber farmers be more profitable while increasing yield.

## Product Summary

**Breakout®**— feeds the natural metabolic process within the plant for enhanced bud initiation, flowering, and fruit set.

**Max Pak®**—a balanced, highly stable source of many important micronutrients.

**Vitol®**—increases plant nutrient uptake and smoothly transitions the plant through its growth stages.

**Zap®**—improves soil health by feeding the native microbiome for a strong, vigorous, balanced soil biology.

All products listed are powered by **Micro Carbon Technology®**, a proprietary blend of very small organic molecules that allow for more effective absorption of nutrients by plants.

