

Humic Products Increase Soybean Yield In Iowa

Field Study

Mojtaba Zaifnejad, PhD, Sr. Director of Field Research and Technical Services, Huma, Inc.

Background

Scientific research shows humic and fulvic acids can have a biostimulant effect on plant root growth and mass, nutrient availability and uptake, and crop yield and quality.

Objective

The objective of this study was to compare and contrast the immediate effects that three types of humic products from Huma®, Inc., have on soybean yield. Those products are:

- **Huma Pro® 16**—a 16%* liquid humic/fulvic acid
- **OM 1-3 mm**—an organic granular 70%* humic/fulvic acid
- **K Hume® OM**—an organic granular 70%* humic/fulvic acid activated with potassium, making it highly soluble.

Materials & Methods

The plots were established at a farm in Boone, Iowa. The experiment design was a randomized complete block with three replications. The soybeans (Miller AE2510E3: 150,000 seeds/acre) were planted in a field that did not have any humic/fulvic products applied before this study. The Huma® products were applied in spring prior to planting. Each plot had 5 rows, each being 12.5 ft. wide and 200 ft. long. Water was provided by rain only.

The grower standard fertilizer (GS) program included 80 lb P/acre and 120 lb K/acre immediately before planting on June 2. The 0, 80, 120 NPK fertilizer amounts were based on Iowa State University Extension Office recommendations for the region in a soybean-corn rotation. Table 1 describes the application timing and method of humic/fulvic products.

Table 1. Huma® products application to soybean.

Treatment	Description	Amount/acre	Method	Timing
1	Grower Standard Fertilizer (GS)	GS	GS	GS
2	GS + Huma Pro® 16	7 gal/a	Soil sprayed and incorporated	Pre-plant
3	GS+ K Hume® OM	150 lb/a	Soil broadcast and incorporated	Pre-plant
4	OM 1-3 mm	150 lb/a	Soil broadcast and incorporated	Pre-plant

*Analysis of humic/fulvic acid using the Colorimetric Test Method

Results

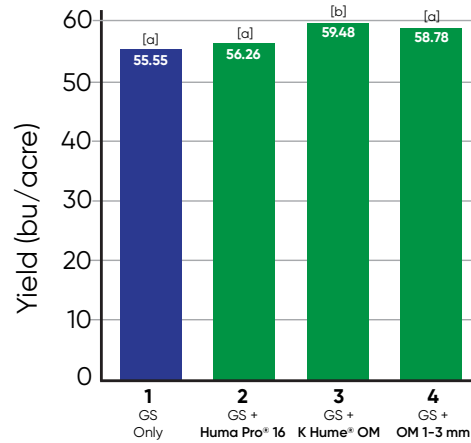


Figure 1. Soybean Yield Response to Huma® Treatments

At harvest (November 1), all three of the Huma® treatments brought about higher soybean yields than did the control (Figure 1). Soybean plants grown under **K-Hume® OM** (Treatment 3) produced higher statistically significant ($P > 0.05$ levels) yield results than those that only received the grower standard fertilizer program. The Huma® products resulted in a soybean yield increase of 1%–7% (Table 2).

Table 2. Yield differences between the grower standard fertilizer program and each of the Huma® products.

Treatment Description	Yield Differentiation	% Yield Differentiation
Grower Standard Fertilizers (GS)	—	—
GS + Huma Pro® 16	0.71 bu/a	1%
GS + K Hume® OM	3.93 bu/a	7%
GS + OM 1-3 mm	3.23 bu/a	6%

Conclusions

Applying and incorporating **K Hume® OM** to the soil before planting significantly benefited soybean yield.

The liquid product (**Huma Pro® 16**), is easier to apply and is expected to have an immediate effect, but it has a lower concentration of humic/fulvic acid. The raw granular product (**OM 1-3 mm**) has a higher level of humic/fulvic acid than **Huma Pro® 16**, and its effect is expected to spread out over a longer time period (several crop seasons). The granular **K Hume® OM** product has both a higher level of humic/fulvic acid and is highly soluble, allowing it to have a greater immediate effect than the other humic products.