



Soybean yield response to applications of a biostimulant with and without foliar potassium at R1.

Trial ID - 2017-006-PA – Pennsylvania State University

Quick Details: Fertileader products were applied at 1.5 and 2.5 pint/ac at R1 to evaluate effects on yield in soybeans, with and without foliar potassium (Corona K). Variety, seeding rates, and base fertilizers were otherwise applied equally across all treatments.

Variety: P31T77RR, 140,000/ac, planted on 5/11/2017

Design: Replicated plots, 6 per treatment. Plots were 10 ft x 50 ft with a 10' perimeter aisle

Researcher(s): Data compiled and submitted by Alyssa Collins, PhD, Pennsylvania State University. Final write-up by Jordan Martin, CCA and John D. Bailey, PhD, Timac Agro USA.

OBJECTIVE

The following study was designed to evaluate the effect of 2 application rates of a biostimulant and a foliar potassium on soybean yield. The Fertileader range of products are liquid formulas that contain humic and fulvic acids, glycine betaine, isopentenyl adenosine (IPA), and amino-acid complexed nutrients. These patented formulas have been shown to improve crop response to water and heat stress, improve growth, chlorophyll content, photosynthetic rate, and enhance nutrient uptake. Corona K is a water-soluble fertilizer that is intended for foliar feeding of highly soluble potassium. Fertileader Gold has an analysis of 5.7% B + 0.35% Mo whereas Corona K has an analysis of 8-11-39 with 0.1% each of B, Cu, Fe, Mn, and Zn.

MATERIALS AND METHODS

This study tested the impact of 2 rates of a biostimulant from the Fertileader range of products, called Fertileader Gold. This study was conducted in a no-till field following a previous crop of corn on a Hagerstown silt loam. Pre-plant soil tests indicated optimum levels of potassium and phosphorous, and a soil pH of 6.8. Fertility and pest management recommendations were followed according to the Penn State Agronomy Guide 2017-2018. The experimental design was a randomized complete block with six replications. Plots were 10 ft wide by 50 ft long with a 10 ft perimeter aisle. The soybean variety was P31177RR planted at 140,000 seeds/ac on 11-May. **At R1 (19-July) the following foliar treatments were applied to soybean plots:**

1. Untreated Control
2. Fertileader Gold – 1.5 pint/ac
3. Fertileader Gold – 2.5 pint/ac
4. Fertileader Gold – 1.5 pint/ac + Corona K (2 lb/ac)

Plots were then allowed to mature and harvested on 10-Oct. Total weight of grain from the center 2 rows of each replicate was used to calculate moisture, test weight, and yield.

RESULTS

Untreated Controls showed lower yield ($P < 0.05$) compared to soybeans treated with 1.5 pt/ac of Fertileader Gold (Treatment 2). Increasing the rate of Fertileader Gold to 2.5 pt/ac (Treatment 3) or adding 2 lb/ac of a foliar potassium (Treatment 4) resulted in intermediate yields between Untreated Controls and Treatment 2.

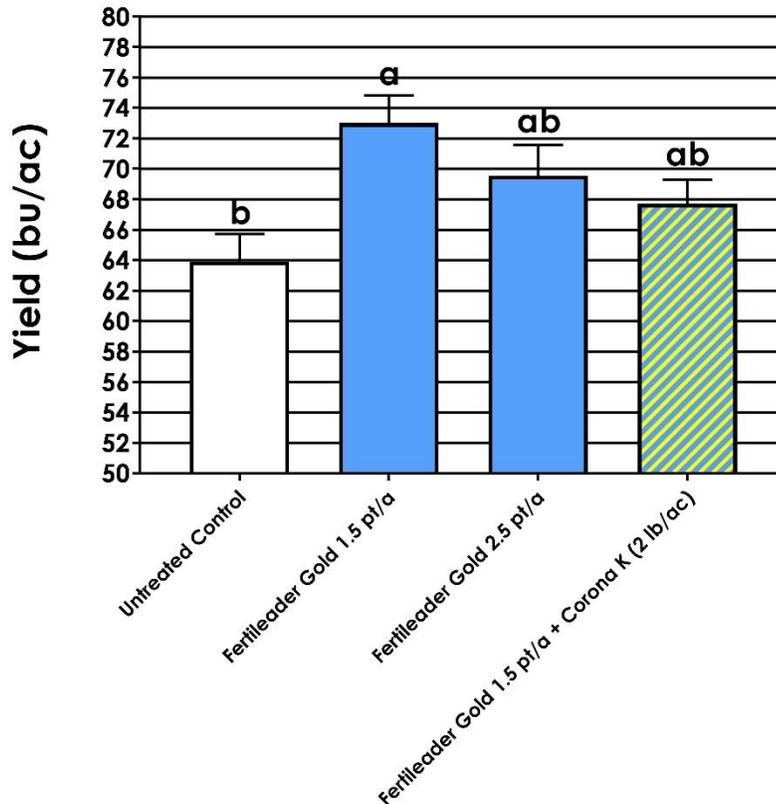
CONCLUSIONS

Overall, the use of Fertileader biostimulants improved yield in soybeans. Based upon these findings, 1.5 pt/ac of Fertileader Gold showed statistically significant increases to yield but the effect was not enhanced by increasing the application rate to 2.5 pt/ac nor by adding a foliar source of potassium (Corona K). The lack of a response to foliar potassium was most likely caused by the sufficient levels of potassium in the soil. **Taken together, 1.5 pt/ac of Fertileader Gold resulted in the best ROI in soybeans under these study conditions (see Table 1).**

Key Findings:

**+9 bu/ac Fertileader Gold
@ 1.5 pt/ac applied at R1**

Effect of biostimulant and foliar potassium application at R1 on soybean yield.
(Penn State U. - 2017)



*Means with different letters differ at $P < 0.05$ (n=6 reps).

Table 1. Return on investments

	Yield (bu/ac)	Gross Revenue @ \$9.50/bu	Change from Control	Rate of Fertileader (pt/ac)	Rate of Corona (lb/ac)	Add-on Costs	Net ROI
Untreated Control	63	\$598.50	-	0	0	\$0.00	-
Fertileader Gold 1.5 pts/a	72	\$684.00	\$85.50	1.5	0	\$9.05	\$76.46
Fertileader Gold 2.5 pts/a	70	\$665.00	\$66.50	2.5	0	\$15.08	\$51.43
Fertileader Gold 1.5 pts/a + Corona K 2 lbs per acre	68	\$646.00	\$47.50	1.5	2	\$16.55	\$30.96