

Quick Details: The effects of the following on-seed inoculant products on soybean yields were compared: Optimize, Primo CL, and BioSinc with a third party replicated trial.

Planting Rate: 125,000

Design: Replicated strip plots, 3 per treatment

Researcher(s): Data compiled and submitted by **The Farm Research Center, LLC, Garden City, MO**

OBJECTIVE

The current study was conducted to determine the effects of BioSinc treated soybean seeds on final grain yield compared to competitor seed applied inoculant products.

MATERIALS AND METHODS

BioSinc was applied at 3 oz/cwt on soybean seed. These treatments were compared to Optimize and Primo CL on-seed inoculants at manufacturer's recommended rates. The field was not irrigated and received 95 lb/ac P₂O₅ and 120 lb/ac K₂O as broadcast pre-plant fertilizer.

Timac Agro agronomists met at the Farm Research Center on August 1, 2017 for biological product and field scouting training.



Table 1. Treatments, grain yield, and gross revenue.

Treatment	Yield (bu/ac)	Gross Revenue/ac at \$9.90
BioSinc	62.0 _a	\$613.80
Optimize	58.8 _{ab}	\$582.12
Primo CL	58.0 _b	\$574.20

*Means followed by the same letter do not significantly differ (p < 0.1).

RESULTS

Results are shown in Table 1. Soybeans that were treated with BioSinc showed the highest average yield compared to soybeans treated with the competitive inoculant products. The next highest yields were from the Optimize treatment at 3.2 bu/ac below BioSinc and Primo CL at 4 bu/ac below.

The researcher noted that the research farm's whole farm average for 5.0 maturity soybeans that were not inoculated was 52.2 bu/ac. All three inoculant treatments outperformed these yields by at least an economically important 5.8 bu/ac. This piece of information suggests that the rhizobia provided from the inoculants could have been critical for securing optimum nodulation and nitrogen fixation in this year's soybeans.

The weather data showed that soybeans were planted into relatively good conditions with adequate rain supplied throughout the germination and early vegetative periods. Temperatures were warm during this period ranging from 55 to 92 F. The researcher also noted that lodging was an issue but did not effect yield performance.

In 2016, BioSinc outperformed Optimize by 1 bu/ac in replicated trials at the same research farm (see trial ID 73-L). Both 2016 and 2017 soybeans germinated under high heat stress. The antistress molecule found in the GZA molecule of BioSinc, called glycine betaine, may have helped the crop with UV and oxygen stress during these periods. These initial two years of results suggest that BioSinc is a solid return on investment for soybean growers whenever stress is a factor.