Trial 17. Evaluation of fungicide seed treatments for control of Pythium and Rhizoctonia seedling disease in Fargo, ND - 2025

SOYBEAN (*Glycine max*)

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Soybeans were planted on May 6, 2025, in Fargo, North Dakota, at a rate of 140,000 seeds/a in bedded single rows spaced 30 inches apart and a planting depth of 1.5 inches. Experiment plots were four rows (10 feet) wide by 20 feet long. Treatment evaluations were replicated four times and designed in a randomized complete block, and blocks were separated by 7-foot alleys. The previous crop was wheat, and the soil type was silty clay. Standard practices were used to manage weeds and nutrition. There were five treatments in this study, including an inoculated non-treated control and a non-inoculated non-treated control. For treatments that were inoculated, each plot received 70g of *Pythium ultimum*-infested, sterilized grain millet and 30g of *Rhizoctonia solani*-infested, sterilized grain millet, applied in-furrow at planting in conjunction with soybean seeds. Stand counts were taken on June 3, 2025 (SC1), and June 18, 2025 (SC2). Yield was collected from the center two rows on Oct. 3, 2025. The weather over the course of the growing season was conducive to disease development, particularly at the beginning of the season. This trial received a total of 16.24 inches of rainfall over the course of the growing season. Analysis was conducted using SAS 9.4 PROC GLIMMIX to determine the effects of treatments on disease and yield. Means separations followed Fisher's Protected LSD at α=0.1 for the first date of stand counts and α=0.05 for the second date of stand counts and yield data.

Stand counts were recorded by counting the number of emerged soybeans in the center two rows (100 sq feet), then converting to plants per acre. From this analysis, there were significant differences among treatments detected for SC1 (P=0.055) and SC2 (P=0.0035). For SC1, CruiserMaxx APX had the highest stand count at 100,624 plants/a, which was significantly higher than all other treatments except for Zeltera Suite Soybeans. For SC2, all treatments that included a chemical seed treatment had higher stand counts than the non-treated controls, regardless of inoculation. However, not all chemical seed treatments' stand counts were significantly higher statistically than the non-treated controls. The treatment CruiserMaxx APX had significantly higher stand counts statistically than both non-treated controls. Interestingly, the non-treated control that received inoculation had significantly higher stand counts statistically than the non-treated control that did not receive inoculation. This was an unexpected result that is difficult to explain but is possibly due to field and environmental variation within the trial. There were no statistical differences among treatments for yield. Interestingly, the non-treated control that received inoculation had the highest reported mean yield. Similar to the V2 stand counts, this was unexpected and difficult to explain, but again, it is possibly due to field and environmental variation. The results from this trial provide evidence that planting soybeans with a chemical seed treatment that was included in this experiment will result in higher stand counts when compared to soybeans that do not have a chemical seed treatment.

Table 17. Effect of seed treatments on stand counts and yield when inoculated with *Pythium ultimum* and *Rhizoctonia solani.*

Treatment[a]	Rate	Inoculated[b]	Stand Count VC (plants/a)[c]	Stand Count V2 (plants/a)[d]	Yield (bu/a)[e]
Non-Treated	-	No	87,665 b[f]	95,832 c[g]	64.5
Non-Treated	-	Yes	90,932 b	104,980 b	67.0
Zeltera Suite Soybeans	3.5 FL OZ/Cwt	Yes	94,090 ab	109,336 ab	62.9
CruiserMaxx APX	4.18 FL OZ/Cwt	Yes	100,624 a	112,385 a	65.2
Evergol Energy Allegiance FL Gaucho 600FS	1 FL OZ/Cwt .533 FL OZ/Cwt 2 FL OZ/Cwt	Yes	93,437 b	106,940 ab	65.4
P-Value			0.0553	0.0035	0.7649

[a] Treatments were applied as standard seed treatments in conjunction with colorant.
[b] Treatments followed by an N in inoculated column were not inoculated while treatments followed by a Y were inoculated with 70g of *Pythium ultimum* and 30g of *Rhizoctonia solani*.
[c] VC stand counts were taken on June 3, 2025. This trial was planted at 140,000 seeds per acre.
[d] V2 stand counts were taken on June 18, 2025.
[e] Yield was adjusted to 13% moisture and calculated in bushels per acre (bu/a) and collected on Oct. 3, 2025.
[f] Treatments with different letter groupings within SC1 analysis differ significantly ($\alpha = 0.1$).
[g] Treatments with different letter groupings within SC2 analysis differ significantly ($\alpha = 0.05$).