Trial 23. Evaluation of biological seed treatments for controlling sudden death syndrome in La Mars, ND - 2025

SOYBEAN (*Glycine max 'DSR-0920E'*)

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The soybean variety DSR-0920E was planted on May 11, 2025, in La Mars, 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 18 feet long. Treatment evaluations were replicated four times and designed in a randomized complete block, and blocks were separated by 7-foot alleys. The soil type was silt/sandy loam. Standard practices were used to manage weeds and nutrition. All biological seed treatments evaluated in this study were paired with a "Base" seed treatment that included Allegiance FL at 0.194 fl oz/cwt, Stamina at 0.575 fl oz/cwt, Systiva XS 0.237 fl oz/cwt, Poncho 600 at 1.736 fl oz/cwt and Flo Rite 1706 at 1 fl oz/cwt. This trial was planted in a field with a history of sudden death syndrome (SDS). Stand counts were taken on June 3, 2025, and June 30, 2025. Evaluations for SDS were conducted on Aug. 26, 2025. Yield was collected from the center two rows on Oct. 13, 2025. The weather over the course of the growing season was conducive to disease development. However, there was a hail/wind storm early in the season, which impacted plant growth during the vegetative stages. This trial received a total of 17.12 inches of rainfall over the course of the growing season. This trial also received a significant amount of hail early in the 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=0.05.

Stand counts were recorded by counting the number of emerged soybeans in the center two rows (100 sq feet) and converting to plants per acre. A foliar evaluation for SDS was conducted in two ways: first, by estimating the percentage of a plot that was symptomatic (disease incidence); and second, by estimating the severity of symptomatic soybeans (disease severity). The disease incidence and disease severity values were used to calculate an SDS disease index percentage (SDSDIX%) value. This trial had a very low level of foliar SDS symptoms that developed, with the highest disease index value for a single plot being 0.14%. There were no statistically significant differences among treatments for stand counts at either date of recording. Interestingly, mean stand counts decreased in every treatment from the first date of recording to the second date of recording. This is atypical but can likely be attributed to the severe hailstorm that this trial endured. There were no significant differences in SDSDIX% among treatments. There were significant differences detected among treatments for yield (P=0.0112). Four out of the six chemical seed treatments evaluated in this study resulted in a significantly higher mean than if no seed treatment was used. The treatment with the highest yield was a combination treatment of the Base treatment and Ilevo at 2.37 fl oz/cwt, which resulted in a mean yield of 48.2 bu/a, which is 9.1 bu/a higher than if no seed treatment was used. Results from this experiment provide support for findings that suggest that seed treatments can protect significant levels of yield when used where there has been a history of SDS.

Table 23. Effect of biological seed treatments on stand counts, sudden death syndrome disease index, and yield.

Treatment[a]	Rate	Stand Count VC (plants/a)[b]	Stand Count V2 (plants/a)[c]	SDS DIX (%)[d]	Yield (bu/a)[e]
Non-Treated	-	84,700	66,671	0.00	39.1 bc[f]
Base[g]		85,910	84,216	0.01	46.6 a
Base					
CeraMax	2.5 fl oz/cwt				
Germate Plus	0.1 fl oz/cwt	86,878	83,369	0.01	45.4 a
Base					
Avodigen	1.26 fl oz/cwt				
Adaplan	0.54 fl oz/cwt				
Ethos Elite	0.69 fl oz/cwt	85,184	69,575	0.03	38.2 c
Base					
Thiabendazole	0.65 fl oz/cwt				
HeadsUp	0.16 fl oz/cwt				
Biost 2nd Gen	3.04 fl oz/cwt	87,241	71,995	0.01	44.4 ab
Base		90,750	76,835	0.05	45.9 a
Base					
Ilevo	2.37 fl oz/cwt	85,547	67,397	0.01	48.2 a
P-Value		0.586	0.1121	0.2572	0.0112

[a] Treatments were applied as standard seed treatments in conjunction with colorant.
[b] VC stand counts were taken on June 3, 2025. This trial was planted at 140,000 seeds per acre.
[c] V2 stand counts were taken on June 30, 2025.
[d] SDS DIX (%) = sudden death syndrome disease index in percent.
[e] Yield was adjusted to 13% moisture and calculated in bushels per acre (bu/a) and collected on Oct. 13, 2025.
[f] Treatments with different letter groupings differ significantly ($\alpha = 0.05$).
[g] Treatments that included a "Base" treatment included Allegiance FL at 0.194 fl oz/cwt, Stamina at 0.575 fl oz/cwt, Systiva XS 0.237 fl oz/cwt, Poncho 600 at 1.736 fl oz/cwt and Flo Rite 1706 at 1 fl oz/cwt.