Trial 27. Evaluation of foliar biological fungicides for controlling white mold of soybean in Fargo, ND - 2025

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The soybean variety PFS 2414E was planted on May 9, 2025, in Oakes, North Dakota, at a rate of 160,000 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 5-foot alleys. The previous crop was edible beans, and the soil type was Embden fine sandy loam. Standard practices were used to manage weeds and nutrition. Fungicides were applied at 20 gal/A at 40 psi using four XR TeeJet 8002VS flat-fan nozzles spaced at 20 inches apart. Mixing compatibility issues and phytotoxicity were not observed during the trial. White mold incidence and severity ratings were taken on Aug. 22, 2025, and Sept. 3, 2025. Yield was collected from the first two rows on Oct. 4, 2025. The weather over the course of the growing season was conducive to disease development. This trial was irrigated receiving 7.5 inches of irrigation, and it received a total of 17.2 inches of rainfall for a total of 24.2 inches of water input 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 data. Means separations followed Fisher's Protected LSD at α=0.05.

White mold disease index percentage (WM DIX%) is calculated using disease incidence, which is recorded as a percentage of diseased soybeans in a plot, and disease severity, which is rated on a scale that considers the number of diseased soybeans and severity of disease on each soybean. There was a moderate level of disease that developed, with the highest level of disease in a single treatment being 13.5 WM DIX% on Sept. 3. There were significant differences among treatments for WM DIX% on both Aug. 22, and Sept. 3, with P=0.0153 and P=0.0049, respectively. The Endura treatment resulted in significantly lower WM DIX% than all treatments except for the non-treated control on Aug. 22. Similarly, the Endura treatment resulted in significantly lower WM DIX% than all treatments, excluding the non-treated and double nickel 55 on Sept. 3. There were no statistical differences in yield among treatments. Interestingly, a treatment of Botrystop resulted in a WM DIX% of 10.6, which is on the higher end of disease development of the treatments evaluated; however, it also resulted in the highest mean yield of all treatments evaluated at 67.4 bu/a, which was 4.3 bu/a higher than the non-treated control.

Table 27. Effect of foliar biological fungicides on white mold disease values and yield.

Treatment[a]	Rate	Growth Stage	WM DIX1 (%)[b]	WM DIX2 (%)[c]	Yield (bu/a)[d]
Non-Treated	-	-	3.5 bc[e]	6.4 bc	63.1
Botrystop	2 lb/a	R2	5.5 ab	10.6 ab	67.4
Double Nickel 55	1 lb/a	R2	4.2 ab	6.7 bc	65.0
Endura	8 oz/a	R2	0.6 c	2.1 c	65.6
Howler EVO	2.5 lb/a	R2	7.1 ab	13.5 a	62.5
RootShield	16 oz/a	R2	5.1 ab	10.9 ab	62.4
P-Value			0.0153	0.0049	0.8696

[a] Treatments were applied on July 14, 2025.
[b] WM DIX1 (%) = white mold disease index percentage at the first date of disease evaluation (Aug. 22, 2025).
[c] WM DIX2 (%) = white mold disease index percentage at the second date of disease evaluation (Sept. 3, 2025).
[d] Yield was adjusted to 13% moisture and represented in bushels an acre (bu/a) and collected on Oct. 4, 2025.
[e] Treatments with different letter groupings differ significantly (α = 0.05).