Trial 30. 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 corn, 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 center two rows on Oct. 4, 2025. The weather over the course of the growing season was conducive to disease development. This trial received a total of 17.2 inches of rainfall and 6.75 inches of irrigation for a total water input of 23.95 inches 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=0.05.

White mold disease index percentages (WM DIX%) are 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 very low level of white mold that developed in this trial throughout the year. There were no significant differences among treatments for either dates WM DIX% was collected. Similarly, there were no significant differences in mean yields among treatments. Considering the level of white mold that developed in this trial, these results are not surprising. Previous studies have suggested that yield loss above two bu/a occurs starting at 5% WM DIX%; in this trial, WM DIX% numbers were most commonly under 5%. While some treatments did have WM DIX% rise above 5%, there was still no observed yield loss. The level of disease pressure in this trial likely did not impact yield to cause any noticeable losses. Results from this research support suggestions that fungicide applications in very low disease environments will not suppress significant levels of white mold development or protect significant levels of yield.

Table 30. Effect of foliar biological fungicide and conventional fungicide on white mold disease values and yield.

Treatment[a]	Rate	Growth Stage	WM DIX1 (%)[b]	WM DIX2 (%)[c]	Yield (bu/a)[d]
Non-Treated	-	-	2.5	3.6	72.2
Polyversum	2 oz/a	R2	3.7	10.6	72.7
Polyversum	1.5 oz/a	R2			
Polyversum	1.5 oz/a	10 days after[e]	3.9	7.0	73.5
Endura	6 oz/a	R2	0.6	2.2	72.3
P-Value			0.4827	0.1242	0.9342

[a] Treatments were applied on July 14, 2025 (R2 growth stage), and July 24, 2025 (10 days after first application).
[b] WM DIX1 (%) = white mold disease index percentage collected on Aug. 22, 2025.
[c] WM DIX2 (%) = white mold disease index percentage collected on Sept. 3, 2025.
[d] Yield was adjusted to 13% moisture and calculated in bushels per acre (bu/a) and collected on Oct. 4, 2025.
[e] 10 days after = 10 days after first application that was made at the R2 growth stage