Trial 12. Evaluation of biological seed treatments for control of seedling diseases in Oakes, ND - 2025

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The soybean variety PFS2003E was planted on May 7, 2025, in Oakes, 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 5-foot alleys. The previous crop was soybean, and the soil type was Barnes-Svea loams. Standard practices were used to manage weeds and nutrition. Stand counts were taken on June 4, 2025. Root rot evaluations were conducted on June 12, 2025. Yield was collected from the first two rows on Oct. 1, 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 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.

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. Root rot evaluations were conducted by assessing the roots of 30 soybean plants per plot. Soybeans were pulled from the front and back of each plot. Assessments were conducted on a 0-5 scale where 0 represented no disease and 5 represented complete plant death due to seedling disease. These assessments were then used to calculate a root rot % ranging from 0-100. There was a moderate-high level of root rot % in this trial; the highest reported root rot % in a single plot was 58.7%. There were no significant differences detected among treatments for stand counts, root rot % or yield. The treatment with the highest yield was a treatment of RootShield at 5 oz/cwt, which resulted in 62.4 bu/a, which is 4.4 bu/a higher than if no seed treatment was used. The treatment with the second-highest mean yield was Rhizotrop at 300 ml/100,000 seeds, which resulted in a mean yield of 62.1 bu/a, which is 4.1 bu/a higher than if no seed treatment was used.

Table 12. Effect of biological seed treatments on stand counts, root rot severity and yield.

Treatment[a]	Rate	Stand Counts (plants/a)[b]	Root Rot Severity (%)[c]	Yield (bu/a)[d]
Non-Treated	-	99,862	32.5	58.0
Avodigen	1.2 fl oz/cwt	97,139	33.0	58.1
F4034-5	0.64 fl oz/cwt	92,674	35.5	60.3
Rhizotrop	300 ml/100,000 seeds	104,980	34.0	62.1
RootShield	5 oz/cwt	99,208	27.7	62.4
Howler	5 lb/cwt	97,030	36.3	60.9
Heads Up	8 fl oz/cwt	98,991	28.3	58.0
Cruiser Maxx APX	3.9 fl oz/cwt	98,991	24.7	57.6
P-Value		0.4276	0.5045	0.2631

[a] Treatments were applied as standard seed treatments in conjunction with colorant.
[b] Stand counts were taken on June 4, 2025. This trial was planted at 140,000 seeds per acre.
[c] Root rot % was calculated based on root rot severity evaluations taken on June 12, 2025.
[d] Yield was adjusted to 13% moisture and calculated in bushels per acre (bu/a) and collected on Oct. 1, 2025.