Trial 13. Evaluation of biological seed treatments for control of seedling diseases in Mohall, ND - 2025

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The soybean variety PFS24XF01 was planted on May 30, 2025, in Mohall, 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 19 feet long. Treatment evaluations were replicated four times and designed in a randomized complete block, and blocks were separated by 6-foot alleys. The previous crop was wheat, and the soil type was Hamlet-Souris loams. Standard practices were used to manage weeds and nutrition. Stand counts were taken on July 1, 2025. Root rot evaluations were conducted on July 1, 2025. Yield was collected from the center two rows on Oct. 9, 2025. The weather over the course of the growing season was conducive to disease development. This trial received a total of 9.18 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. This trial had moderate-very high levels of root rot %, with moderate being the most common, and only a few cases of very high disease pressure. The highest reported root rot % in a single plot was 70%. There were no statistically significant differences detected among treatments for stand counts, root rot % or yield. A treatment of Cruiser Maxx APX at 3.9 fl oz/cwt resulted in the lowest mean root rot % at 14.7%. A treatment of RootShield at 5 oz/cwt resulted in the highest mean yield at 39.7 bu/a, which is 1.4 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 39.4 bu/a, which was 1.1 bu/a higher than if no seed treatment was used.

Table 13. 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	-	117,956	41.0	38.3
Avodigen	1.2 fl oz/cwt	109,703	38.5	37.1
F4034-5	0.64 fl oz/cwt	117,269	27.3	38.4
Rhizotrop	300 ml/100,000 seeds	107,869	31.7	39.4
RootShield	5 oz/cwt	109,244	24.2	39.7
Howler	5 lb/cwt	116,810	41.2	36.5
Heads Up	8 fl oz/cwt	117,956	32.8	38.3
Cruiser Maxx APX	3.9 fl oz/cwt	115,893	14.7	36.5
P-Value		0.423	0.2337	0.8221

[a] Treatments were applied as standard seed treatments in conjunction with colorant.
[b] Stand counts were taken on July 1, 2025. This trial was planted at 140,000 seeds per acre.
[c] Root rot % was calculated based on root rot severity evaluations taken on July 1, 2025.
[d] Yield was adjusted to 13% moisture and calculated in bushels per acre (bu/a) and collected on Oct. 9, 2025.