Trial 9. Evaluation of fungicide seed treatments with cereal rye cover crops for controlling seedling diseases in Dickinson, ND - 2025

SOYBEAN (*Glycine max 'PFS 2003E'*)

H. R. Becton, G. Dusek, and R. W. Webster

Cereal rye was planted over half of the space, in Dickinson, North Dakota, used for this trial on Sept. 18, 2024. A burndown application was made on May 9, 2025, using glyphosate. 'PFS 2003E' soybean was planted May 12, 2025, at a rate of 120,000 seeds/a and depth of 1.5 inches in bedded single rows spaced 7.5 inches apart at the Dickinson Research and Education Center. Plots were seven rows by 25 feet long. Treatments included seed treatments and the incorporation of a cover crop. Each treatment combination was replicated four times and organized in a randomized complete block design with a split-plot arrangement. Blocks were separated by 7-foot alleys. The field was rainfed, and standard practices were used to manage weeds and fertility. Root rot ratings were taken on July 1, 2025. Yield was collected from the center rows on Oct. 8, 2025. Rainfall during the period totaled approximately 17.4 inches, and weather conditions were moderately conducive to disease development. 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.

There were no significant differences among root rot severity ratings collected among cover crop, seed treatment or their interaction between cover and seed treatment. There were significant differences (P=0.09) among seed treatments and their effects on yield. The seed treatment with Allegiance + Relenya + Acceleron D-281 preserved significantly more yield compared to the non-treated. This trend was significant across plots where cereal rye was planted as a cover crop and those with no cover crop. Though plots where seeds were treated with Allegiance alone and Allegiance + Relenya + Acceleron D-281 + Cruiser 5FS resulted in similar yields.

Table 9. Effect of integrating seed treatments in a cereal rye cover crop system on stand counts, root rot severity and yield.

Treatment	Rate	Cover Crop	Stand Counts (plants/a)[a]	Root Rot Severity (%)[b]	Yield (bu/a)[c]
Non-Treated	-	Cereal Rye	63,224 b[d]	34.7	29.5 a
Allegiance	1.5 fl oz/cwt	Cereal Rye	71,936 ab	29.8	30.9 a
Allegiance Relenya	1.5 fl oz/cwt 0.8 fl oz/cwt	Cereal Rye	65,464 ab	28.7	29.5 a
Allegiance Relenya Acceleron D-281	1.5 fl oz/cwt 0.8 fl oz/cwt 0.3 fl oz/cwt	Cereal Rye	76,666 a	32.2	32.9 a
Allegiance Relenya Acceleron D-281 Cruiser 5FS	1.5 fl oz/cwt 0.8 fl oz/cwt 0.3 fl oz/cwt 9.0 fl oz/cwt	Cereal Rye	77,412 a	33.8	32.3 a
Non-Treated	-	No Cover	74,674 ab	27.8	29.2 c
Allegiance	1.5 fl oz/cwt	No Cover	66,709 b	29.2	32.9 ab
Allegiance Relenya	1.5 fl oz/cwt 0.8 fl oz/cwt	No Cover	79,901 a	30.7	31.4 bc
Allegiance Relenya Acceleron D-281	1.5 fl oz/cwt 0.8 fl oz/cwt 0.3 fl oz/cwt	No Cover	70,194 ab	32.5	32.8 a
Allegiance Relenya Acceleron D-281 Cruiser 5FS	1.5 fl oz/cwt 0.8 fl oz/cwt 0.3 fl oz/cwt 9.0 fl oz/cwt	No Cover	66,709 b	30.0	31.6 ab
P-Value		Cover*Treatment	0.06	0.63	0.74
		Treatment	0.86	0.84	0.09
		Cover	0.83	0.36	0.50

[a] Stand counts were recorded at VC growth stage.
[b] Weighted calculation based using severity scale ratings based on root rot ratings collected at the V3 growth stage.
[c] Yield was adjusted to 13% moisture and calculated in bushels per acre (bu/a) and collected on Oct. 8, 2025.
[d] Means followed by different letters are significantly different following Fisher's Protected LSD at α=0.05.