

Trial 2. Evaluation of fungicide seed treatments for controlling seedling diseases in Oakes, ND - 2025

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

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

The soybean variety PFS2003E was planted on May 7, 2025, in Oakes, North Dakota, at a rate of 140,000 seed/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, 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 $\alpha=0.1$.

Stand counts were recorded by counting the number of emerged soybeans in the first 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 low level of root rot diseases that developed in this trial, with the highest reported root rot % for a single plot was 33.3% in a nontreated control plot. There were no statistical differences detected among treatments for root rot %. There were statistically significant differences detected among treatments for stand counts. Only one seed treatment differed from the non-treated control significantly, which was a combination treatment of Vibrance Trio and Cruiser 5FS, which resulted in a significantly higher stand than the non-treated control. There were no significant differences in mean treatment yields. However, trends in the data suggest that the seed treatments evaluated in this experiment generally had higher mean yield than if no seed treatment were used. The mean yield for the non-treated control was 56.9 bu/a, whereas seed treatments ranged from 59.4 to 62.5 bu/a, which is 2.5 to 5.6 bu/a higher than if no seed treatment was used. The treatment with the highest mean yield was a combination of C-3023FI and Lumiderm, with treatments of Vibrance Trio and a combination of Allegiance at 1.5 fl oz/a and Relenya at 0.32 fl oz/a having similar mean yield results. The results from this experiment provide evidence that using seed treatments in environments with low pressure from seedling diseases may generally result in higher yields than if no seed treatment were to be used.

Table 2. Effect of 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	-	98,555 bc ^e	17.7	56.9
Allegiance	1.5 fl oz/cwt	98,664 bc	17.0	59.4
Relenya	0.8 fl oz/cwt	100,733 ab	20.0	61.4
Allegiance	1.5 fl oz/cwt			
Relenya	0.8 fl oz/cwt	93,654 c	22.0	60.4
Vibrance Trio	1.44 fl oz/cwt	103,673 ab	17.7	62.1
Cruiser Maxx APX	3.9 fl oz/cwt	102,475 ab	18.2	60.4
C-3023FI	1.136 fl oz/cwt			
Lumiderm	1.14 fl oz/cwt	99,644 b	26.5	62.5
Allegiance	1.5 fl oz/cwt			
Acceleron D281	0.32 fl oz/cwt	102,366 ab	11.2	62.1
Vibrance Trio	1.44 fl oz/cwt			
Cruiser 5FS	1.28 fl oz/cwt	106,287 a	15.3	59.5
Allegiance	1.5 fl oz/cwt			
Acceleron D281	0.32 fl oz/cwt			
Cruiser 5FS	1.28 fl oz/cwt	101,604 ab	15.2	61.4
P-Value		0.0532	0.2984	0.3470

^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 severity (%) 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.

^e Treatments with different letter groupings differ significantly ($\alpha = 0.1$).