

Trial 4. Evaluation of fungicide seed treatments for controlling seedling diseases in Dickinson, ND - 2025

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

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The soybean variety PFS2003E was planted on May 12, 2025, in Dickinson, North Dakota, at a rate of 120,000 seed/a in bedded single rows spaced 7 inches apart and a planting depth of 1.5 inches. Experiment plots were 4 feet wide by 25 feet long. Treatment evaluations were replicated four times and designed in a randomized complete block, and blocks were separated by 7-foot alleys. Standard practices were used to manage weeds and nutrition. Stand counts and root rot evaluations were taken on June 24, 2025. Yield was collected on Oct. 8, 2025. The weather over the course of the growing season was conducive to disease development. This trial received a total of 17.41 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 center three rows (43.75 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 backs 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 level of disease that developed in this trial, with the highest reported root rot percentage in a single plot being 40.7%. Statistical analysis indicated significant differences among treatments for both stand counts ($P=0.0512$) and root rot % ($P=0.0457$); however, there were no significant differences among treatments for yield. A treatment of Allegiance at 1.5 fl oz/cwt resulted in significantly higher stand counts than if no seed treatment were used. Additionally, the same treatment of Allegiance had significantly lower root rot % than if no seed treatment were used. A combination treatment of C-3023FI at 1.136 fl oz/cwt and Lumiderm at 1.14 fl oz/cwt also had significantly lower root rot % than if no seed treatment were used. Interestingly, although there were significant differences for stand counts and root rot % there were no significant differences for yield. Only two seed treatments resulted in higher mean yields than if no seed treatment were used. Those treatments were a sole application of Cruiser Maxx APX at 3.9 fl oz/cwt which resulted in a mean yield of 43.3 bu/a (3.3 bu/a higher than the non-treated control) and a combination application of Vibrance Trio at 1.44 fl oz/cwt and Cruiser 5FS at 1.28 fl oz/cwt, which resulted in a mean yield of 41.9 bu/a (1.9 bu/a higher than the non-treated control).

Table 4. 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	-	103,499 bc ^e	28.5 ac	40.0
Allegiance	1.5 fl oz/cwt	118,832 a	21.3 d	38.4
Relenia	0.8 fl oz/cwt	90,605 c	32.2 a	37.3
Allegiance	1.5 fl oz/cwt			
Relenia	0.8 fl oz/cwt	108,378 ab	31.7 ab	38.6
Vibrance Trio	1.44 fl oz/cwt	91,999 c	29.7 ac	37.8
Cruiser Maxx APX	3.9 fl oz/cwt	112,908 ab	24.8 bd	43.3
C-3023FI	1.136 fl oz/cwt			
Lumiderm	1.14 fl oz/cwt	106,287 ab	20.5 d	39.6
Allegiance	1.5 fl oz/cwt			
Acceleron D281	0.32 fl oz/cwt	101,060 bc	22.7 cd	39.2
Vibrance Trio	1.44 fl oz/cwt			
Cruiser 5FS	1.28 fl oz/cwt	102,454 bc	30.2 ab	41.9
Allegiance	1.5 fl oz/cwt			
Acceleron D281	0.32 fl oz/cwt			
Cruiser 5FS	1.28 fl oz/cwt	106,984 ab	30.3 ab	37.7
P-Value		0.0512	0.0457	0.3890

^aTreatments were applied as standard seed treatments in conjunction with colorant.

^bStand counts were taken on June 24, 2025. This trial was planted at 120,000 seeds per acre.

^cRoot rot severity (%) was calculated based on root rot severity evaluations taken on June 24, 2025.

^dYield was adjusted to 13% moisture and calculated in bushels per acre (bu/a) and collected on Oct. 8, 2025.

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