

## **Trial 6. Evaluation of fungicide seed treatments, seeding rates, and planting date for control of seedling diseases in Fargo, ND – 2025**

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

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The soybean variety PFS 2003E was planted in Fargo, North Dakota. Two planting dates were evaluated in this study, which were an early planting date of May 6, 2025, and a late planting date of May 31, 2025. Two seeding rates were also examined, including 130,000 (low) and 170,000 (high) seed/a. All seeds were planted at a depth of 1.5 inches in bedded single rows spaced 30 inches apart. Plots were four rows by 20 feet long. Integrated with the two planting dates and two seeding rates included five seed treatment programs. In total, there were 20 treatment combinations evaluated (seed treatment x seeding rate x planting date) with each 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 the previous crop was wheat. Soil type was silty clay. Standard practices were used to manage weeds and nutrition. Mixing compatibility issues and phytotoxicity were not observed during the trial. Root rot ratings were taken at the VC and V3 growth stages for each planting date. Yield was collected from the center two rows on Oct. 2, 2025. Rainfall during the period totaled 16.2 inches, and weather conditions were 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  $\alpha=0.05$ .

Significant differences were observed between individual treatments ( $P<0.001$ ) for root rot ratings at VC and V3 as well as yields. The Allegiance+Relenya+Acceleron+Cruiser 5FS treatment planted early at a rate of 170k had the lowest mean root rot rating and was significantly different than more than half the treatments. Further, all early-planted treatments (mean=16.9 %) had significantly lower ( $P<0.001$ ) root rot ratings compared to the late-planted treatments (mean=42.5 %). No differences were observed among individual seed treatments ( $P=0.88$ ) nor seeding rates ( $P=0.89$ ) for root rot ratings. Treatments that were planted early had significantly greater ( $P<0.001$ ) yields compared to those planted late, with means of 70.4 bu/ac and 59.7 bu/ac, respectively. Differences ( $P=0.046$ ) were also observed between planting rates; plots planted at the higher rate (170k) had greater yields compared to the lower rate (130k) seeded plots. Generally, the treatments where lower root rot and greater yields were observed were the ones planted early at 170k seed/a.

**Table 6.** Effect of integration of seed treatments, seeding rate and planting date on stand counts, root rot severity and yield.

Treatment	Rate	Seeding Rate (seeds/a)	Planting Date <sup>a</sup>	Stand Counts (plants/a) <sup>b</sup>	Root Rot Severity (%) <sup>c</sup>	Yield (bu/a) <sup>d</sup>
Non-treated	-	130,000	Early	68,171 ef <sup>e</sup>	20.3 cd	66.1 be
Allegiance	1.5 fl oz/cwt	130,000	Early	67,191 ef	17 ce	72.4 ac
Allegiance Relenya	1.5 fl oz/cwt 0.8 fl oz /cwt	130,000	Early	67,954 ef	18.3 ce	67.9 ae
Allegiance Relenya Acceleron D- 281	1.5 fl oz/cwt 0.8 fl oz/cwt 0.32 fl oz/cwt	130,000	Early	66,211 ef	11.5 de	63.5 cf
Allegiance Relenya Acceleron D- 281 Cruiser 5FS	1.5 fl oz/cwt 0.8 fl oz/cwt 0.32 fl oz/cwt 1.28 fl oz/cwt	130,000	Early	62,835 f	12..5 de	71.5 ad
Non-treated	-	170,000	Early	82,002 de	17.8 ce	72.9 ab
Allegiance	1.5 fl oz/cwt	170,000	Early	90,496 cd	26.8 bc	70.0 ad
Allegiance Relenya	1.5 fl oz/cwt 0.8 fl oz /cwt	170,000	Early	88,427 cd	22.2 cd	70.1 ad
Allegiance Relenya Acceleron D- 281	1.5 fl oz/cwt 0.8 fl oz/cwt 0.32 fl oz/cwt	170,000	Early	78,299 df	15.7 ce	75.7 a
Allegiance Relenya Acceleron D- 281 Cruiser 5FS	1.5 fl oz/cwt 0.8 fl oz/cwt 0.32 fl oz/cwt 1.28 fl oz/cwt	170,000	Early	87,447 cd	6.5 e	73.7 ab
Non-treated	-	130,000	Late	93,872 bd	39.8 a	55.6 f
Allegiance	1.5 fl oz/cwt	130,000	Late	91,585 cd	42.7 a	56.0 f
Allegiance Relenya	1.5 fl oz/cwt 0.8 fl oz /cwt	130,000	Late	92,347 cd	42.8 a	62.4 ef
Allegiance Relenya Acceleron D- 281	1.5 fl oz/cwt 0.8 fl oz/cwt 0.32 fl oz/cwt	130,000	Late	88,862 cd	42.8 a	56.2 f
Allegiance Relenya Acceleron D- 281 Cruiser 5FS	1.5 fl oz/cwt 0.8 fl oz/cwt 0.32 fl oz/cwt 1.28 fl oz/cwt	130,000	Late	96,703 bd	46.5 a	60.3 ef
Non-treated	-	170,000	Late	106,286 ac	38.7 ab	62.9 def

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Allegiance	1.5 fl oz/cwt	170,000	Late	117,612 a	43 a	59.0 ef
Allegiance	1.5 fl oz/cwt					
Relenya	0.8 fl oz /cwt	170,000	Late	121,424 a	42.3 a	62.8 df
Allegiance	1.5 fl oz/cwt					
Relenya	0.8 fl oz/cwt					
Acceleron D-281	0.32 fl oz/cwt	170,000	Late	112,167 ab	42.7 a	59.0 ef
Allegiance	1.5 fl oz/cwt					
Relenya	0.8 fl oz/cwt					
Acceleron D-281	0.32 fl oz/cwt					
Cruiser 5FS	1.28 fl oz/cwt	170,000	Late	119,790 a	43.7 a	63.1 df
<b>P-Value</b>				<0.001	<0.001	<0.001

<sup>a</sup> Early planting date was May 6, 2025, and the late planting date was May 31, 2025.

<sup>b</sup> Stand counts were recorded at VC growth stage.

<sup>c</sup> Weighted calculation based using severity scale ratings based on root rot ratings collected at the V3 growth stage.

<sup>d</sup> Yield was adjusted to 13% moisture and calculated in bushels per acre (bu/a) and collected on Oct. 2, 2025.

<sup>e</sup> Means followed with different letters are significantly different following Fisher's Protected LSD at  $\alpha=0.05$ .