

Soybean response to foliar fungicides - 2018: NWROC, Crookston, MN

Nearest Town: Crookston, MN

Soil type: Wheatville very fine sandy loam and Gunclub silty clay

Row Width: 22 inches

Experimental Design: Randomized complete block design with 4 replications

Two soybean varieties

Three foliar fungicide treatments: Untreated control (UTC), Headline® (pyraclostrobin (2.09 lb/gal) at 6 oz/A) or Delaro™ (prothioconazole (1.49 lb/gal) + trifloxystrobin (1.27 lb/gal) at 8 oz/A)

Treatments were applied at 15 gal/A at first pod (R3)

Purpose of Study:

Northwest Minnesota has become a soybean powerhouse in terms of both total acreage and production. With different cropping systems, environmental conditions and soybean cultivars than the rest of Minnesota, it has not yet been established how disease pressures may differ or how often or under what conditions foliar fungicides may provide a positive return on investment. This experiment was designed to evaluate how different varieties and fungicide treatments would affect both disease incidence and yield.

Results:

Similar to what would occur in a typical farm field, this experiment relied on naturally occurring pathogen inoculum and weather conditions. Final disease incidence was observed at full seed (R6), including: symptoms of anthracnose (Anth), pod and stem blight (PSB) Cercospora leaf blight (CLB). Incidence of two-spotted spider mite (TSSM) injury was also observed. CLB severity was estimated and combined with incidence into a disease index that ranged from 0 to 100. Overall foliar and stem disease incidence and severity were very low and unlikely to impact yield.

Although the seed companies did not provide disease susceptibility ratings for the observed minor diseases, statistical differences were observed, with Anth and PSB incidence higher in variety 2 (Table 1). Fungicide treatment had a positive, albeit uneconomical, effect on incidence of spider mite injury, with more injury in the untreated control than fungicide plots (Table 1).

Dry weather during pod-fill led to low yields overall and there were no yield differences among varieties or fungicide treatments (Table 2). Varieties differed in their harvest moisture with greater moisture in the later maturing variety (Variety 2, MG: 0.05) than the earlier maturing variety (Variety 1, MG: 0.03) (Table 2).

Table 1. Summary of the effects of soybean variety and fungicide treatment on Cercospora blight (CB) disease index (DX), and incidence of Anthracnose (Anth), pod and stem blight (PSB) and two-spotted spider mite injury (TSSM)

	CB	Anth	PSB	TSSM
	DX	-----%-----		
Variety 1	0.9	0.0 b ^y	1.1 b	1.7
Variety 2	0.1	0.3 a	1.8 a	1.4
	Statistical significance			
<i>P>F</i>	0.07	<0.01	0.03	0.46
	DX	-----%-----		
UTC ^z	0.4	0.1	1.5	2.3 a
Headline®	0.6	0.2	1.5	1.5 ab
Delaro™	0.6	0.2	1.5	0.9 b
	Statistical significance			
<i>P>F</i>	0.82	0.71	0.99	0.04

^y Values followed by the same letter are statistically similar at $P \leq 0.05$.

^z Neither endorsement nor criticism is intended of any product mentioned or unmentioned.

Table 2. Summary of the effects of soybean variety and fungicide treatment on yield (13% moisture) and moisture

	Yield (bu/A)	Moisture (%)
Variety 1	31.7	12.7 b ^z
Variety 2	32.7	14.2 a
	Statistical significance	
<i>P>F</i>	0.51	<0.01
	-----%-----	
UTC ^z	31.8	13.4
Headline®	31.1	13.4
Delaro™	33.7	13.6
	Statistical significance	
<i>P>F</i>	0.30	0.47

^y Values followed by the same letter are statistically similar at $P \leq 0.05$.

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