



2019 Soybean Fungicide Field Trials Summary

2019 Field Plot Summaries for Soybeans: Plant Disease and Fungicide Trials

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SUMMARY

This report is a brief of field research fungicide trials conducted in 2019. The purpose of these studies was to assess efficacies of fungicides for foliar disease management and nematicide seed treatment products for soybean cyst nematode management. The foliar studies were conducted in Brookings, Southeast research farm (SERF) near Beresford and Volga research farm and the nematicide seed treatment trial was performed at a growers' farm near Brookings.

Fungicide and nematicide products used in these trials were approved for use in the state of South Dakota although in some instances experimental products were used within the restricted use guidelines. Some of the protocols followed in these experiments involved altered rates and application timing for experimental purposes and, therefore, should not be taken as recommendations. Producers should always read and follow product label application protocols such as product use, application method, handling, pre-harvest, re-entry intervals and all other safety guidelines.

The 2019 growing season had minimal disease pressure to influence statistically significant differences among treatments. However, some treatments had numerically high yield which may not be attributed to treatments applied solely. Therefore interpretation of the results should not be extrapolated beyond what is explained by statistical analysis. For nematicide seed treatment trial, products did not significantly reduce SCN populations or increase yield, however, the susceptible variety had a high end of season SCN population relative to the resistant variety.

ACKNOWLEDGEMENT

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1.0 Foliar Fungicide Trial I

SERF & Volga

The efficacies of several commercially available fungicides and an experimental product were evaluated for soybean foliar fungal disease management at Southeast and Volga research farms. Disease pressure was low at both locations that any differences in yield were not attributable to disease control. As expected, disease severity was relatively highest in untreated plots ([Tables 1.1 & 1.2](#)).

2.0 Foliar Fungicide Trial II

Volga

The efficacies of a selected commercially available fungicides and an experimental product were evaluated at varying rates and application times for managing fungal diseases in soybean fields. The disease pressure was too low to attribute yield differences to disease effect at Volga ([Table 2.1](#)).

3.0 Foliar Fungicide Trial IV

Volga

Several experimental fungicides were evaluated for soybean foliar fungal disease management at Volga research farm. Results showed no statistically significant differences that would cause economic injury to yield ([Table 3.1](#)).

4.0 Soybean Cyst Nematode (SCN)

Brookings

The efficacies of two nematicides were evaluated for soybean cyst nematode management in two soybean cultivars, GH0674X and S06-Q9. The cultivars were treated with each of the products. GH0674X is susceptible against SCN (SCN-S) while S06Q9 is resistant to SCN (SCN-R). Nematicides did not show yield advantage across cultivars ([Table 5.1](#)). However, soil SCN populations increased from spring to fall in plots planted with the susceptible cultivar ([Table 4.1](#)).

SUMMARY TABLES

1.0 Foliar Fungicide Trial

SERF & Volga

Cultivars: AG14X7**Previous Crop:** Corn (SERF), Soybean (Volga)**Planted:** 6/13/2019 (SERF), 6/13/2019 (Volga)**Table 1.1** Foliar Fungicide Study I: Means for yield and foliar diseases severity following application of fungicides at R3 at SERF, SD for the 2019 season.

Product [†]	Rate	Unit	Yield		Test weight		Septoria		Frogeye	
			(bu/ac)		(lb/bu)		brown spot (%)		(%)	
Untreated			62.58	<i>a</i>	57.01	<i>a</i> ‡	2.65	<i>a</i>	7.50	<i>a</i>
Exp-A	8	fl oz/ac	62.59	<i>a</i>	56.55	<i>a</i>	1.65	<i>a</i>	1.75	<i>b</i>
Stratego YLD	4	fl oz/ac	67.85	<i>a</i>	56.94	<i>a</i>	1.50	<i>a</i>	1.45	<i>b</i>
Priaxor	8	fl oz/ac	68.46	<i>a</i>	57.10	<i>a</i>	0.95	<i>a</i>	1.35	<i>b</i>
Fortix	4	fl oz/ac	66.53	<i>a</i>	57.31	<i>a</i>	0.95	<i>a</i>	1.65	<i>b</i>
Sonata	1	qt/ac	61.85	<i>a</i>	56.97	<i>a</i>	2.00	<i>a</i>	2.30	<i>b</i>
Cuproxat	3.9	pt/ac	66.46	<i>a</i>	57.73	<i>a</i>	1.90	<i>a</i>	1.80	<i>b</i>
Domark 230ME	4	fl oz/ac	62.29	<i>a</i>	57.37	<i>a</i>	1.25	<i>a</i>	2.30	<i>b</i>
Trivapro	13.7	fl oz/ac	65.46	<i>a</i>	57.35	<i>a</i>	0.90	<i>a</i>	0.90	<i>b</i>
Zolera FX 3.34SC	5	fl oz/ac	66.48	<i>a</i>	57.48	<i>a</i>	0.95	<i>a</i>	0.80	<i>b</i>
Delaro	8	fl oz/ac	66.09	<i>a</i>	56.57	<i>a</i>	0.95	<i>a</i>	0.95	<i>b</i>

†Exp-A=Experimental product A

‡Means followed by the same letter are not significantly different, $p \leq 0.05$ **Table 1.2** Foliar Fungicide Study I: Means for yield and foliar diseases severity following application of fungicides at R3 at Volga, SD for the 2019 season.

Product [†]	Rate	Unit	Yield		Test weight		Septoria		Frogeye	
			(bu/ac)		(lb/bu)		Brown spot (%)		(%)	
Untreated			47.69	<i>a</i>	54.92	<i>a</i> ‡	1.85	<i>a</i>	2.85	<i>a</i>
Exp-A	8	fl oz/ac	52.85	<i>a</i>	54.20	<i>a</i>	0.70	<i>b</i>	1.00	<i>a</i>
Stratego YLD	4	fl oz/ac	63.60	<i>a</i>	55.23	<i>a</i>	0.28	<i>b</i>	1.90	<i>a</i>
Priaxor	8	fl oz/ac	64.92	<i>a</i>	54.79	<i>a</i>	0.33	<i>b</i>	1.48	<i>a</i>
Fortix	4	fl oz/ac	57.29	<i>a</i>	55.24	<i>a</i>	0.73	<i>b</i>	0.95	<i>a</i>
Sonata	1	QT/A	55.94	<i>a</i>	55.17	<i>a</i>	1.98	<i>a</i>	2.75	<i>a</i>
Cuproxat	3.9	PT/A	59.89	<i>a</i>	55.00	<i>a</i>	1.00	<i>ab</i>	2.05	<i>a</i>
Domark 230ME	4	fl oz/ac	53.30	<i>a</i>	54.75	<i>a</i>	0.68	<i>b</i>	1.05	<i>a</i>
Trivapro	13.7	fl oz/ac	68.35	<i>a</i>	54.41	<i>a</i>	0.60	<i>b</i>	1.60	<i>a</i>
Zolera FX 3.34SC	5	fl oz/ac	58.52	<i>a</i>	54.79	<i>a</i>	0.73	<i>b</i>	1.30	<i>a</i>
Delaro	8	fl oz/ac	59.49	<i>a</i>	54.58	<i>a</i>	0.55	<i>b</i>	1.43	<i>a</i>

†Exp-A=Experimental product A

‡Means followed by the same letter are not significantly different, $p \leq 0.05$

Cultivars: AG14X7**Previous Crop:** Soybean**Planted:** 6/13/2019**Table 2.1** Means for yield and foliar diseases severity following sequential application of fungicidal products at different growth stages at Volga, SD for the 2019 season.

Product [†]	Rate	Unit	Timing [‡]	Yield (bu/ac)	Test Weight (lb/bu)	Brownspot (%)	Frogeye (%)				
Check				57.42	<i>a</i>	56.68	<i>a</i> [¶]	1.68	<i>ab</i>	1.68	<i>a</i>
Propulse	6	fl oz/ac	R1	56.75	<i>a</i>	56.38	<i>a</i>	0.38	<i>c</i>	0.53	<i>a</i>
Propulse	6	fl oz/ac	R3								
Propulse	8	fl oz/ac	R1	60.22	<i>a</i>	56.34	<i>a</i>	0.43	<i>bc</i>	0.40	<i>a</i>
Propulse	8	fl oz/ac	R3								
Propulse	10.3	fl oz/ac	R1	61.51	<i>a</i>	56.78	<i>a</i>	1.10	<i>abc</i>	0.45	<i>a</i>
Propulse	10.3	fl oz/ac	R3								
Delaro	12	fl oz/ac	R1	62.59	<i>a</i>	56.18	<i>a</i>	0.88	<i>abc</i>	1.03	<i>a</i>
Propulse	8	fl oz/ac	R3								
Proline 480 SC	3	fl oz/ac	R1	56.80	<i>a</i>	56.25	<i>a</i>	1.78	<i>a</i>	1.33	<i>a</i>
Delaro	8	fl oz/ac	R1	61.79	<i>a</i>	56.50	<i>a</i>	0.50	<i>bc</i>	1.35	<i>a</i>
Exp-A	8	fl oz/ac	R1	57.09	<i>a</i>	56.58	<i>a</i>	0.33	<i>c</i>	0.63	<i>a</i>
Delaro	8	fl oz/ac	R1	62.56	<i>a</i>	56.19	<i>a</i>	0.70	<i>abc</i>	0.40	<i>a</i>
Delaro	8	fl oz/ac	R3								
Exp-A	8	fl oz/ac	R1	59.98	<i>a</i>	56.60	<i>a</i>	0.33	<i>c</i>	0.53	<i>a</i>
Exp-A	8	fl oz/ac	R3								

[†]Exp-A= Experimental product A.[‡]R1= beginning of flowering, R3=Begin podding.[¶]Means followed by the same letter are not significantly different, $p \leq 0.05$

Cultivars: AG14X7

Previous Crop: Soybean

Planted: 6/13/2019

Table 3.1 Means for yield and foliar diseases severity following sequential application of fungicidal products at different growth stages at Volga, SD for the 2019 season.

Product [†]	Rate	Unit	Timing [‡]	Yield (bu/ac)	Test weight (lb/A)	Brown spot (%)	Frogeye (%)
Untreated				54.36 <i>a</i>	56.68 <i>a</i> [¶]	11.63 <i>a</i>	4.38 <i>abc</i>
Exp-A	2	fl/oz/ac	In-Furrow	54.11 <i>a</i>	56.37 <i>a</i>	10.83 <i>a</i>	5.43 <i>ab</i>
Exp-B	5	fl/oz/ac	V3-V4	54.42 <i>a</i>	56.31 <i>a</i>	8.48 <i>a</i>	4.73 <i>abc</i>
Exp-B	6.9	fl/oz/ac	V3-V4	57.68 <i>a</i>	56.27 <i>a</i>	10.35 <i>a</i>	4.77 <i>abc</i>
Exp-C	6	fl/oz/ac	V3-V4	56.25 <i>a</i>	55.89 <i>a</i>	8.58 <i>a</i>	4.85 <i>abc</i>
Exp-D	13.7	fl/oz/ac	R1-R3	59.83 <i>a</i>	56.26 <i>a</i>	6.83 <i>a</i>	2.83 <i>bc</i>
Exp-E	4	fl/oz/ac	R1-R3	50.11 <i>a</i>	55.99 <i>a</i>	7.15 <i>a</i>	6.63 <i>a</i>
Exp-C	6	fl/oz/ac	R1-R3	49.19 <i>a</i>	55.85 <i>a</i>	6.00 <i>a</i>	2.77 <i>bc</i>
Exp-B	5	fl/oz/ac	R1-R3	51.94 <i>a</i>	56.17 <i>a</i>	5.50 <i>a</i>	2.25 <i>c</i>
Exp-F	5.5	fl/oz/ac	R1-R3	52.51 <i>a</i>	56.33 <i>a</i>	7.47 <i>a</i>	4.43 <i>abc</i>
Exp-G	2	fl/oz/ac	In-Furrow	52.66 <i>a</i>	56.38 <i>a</i>	8.33 <i>a</i>	4.72 <i>abc</i>
Exp-C	6	fl/oz/ac	R1-R3				
Exp-G	2	fl/oz/ac	In-Furrow	53.46 <i>a</i>	57.01 <i>a</i>	6.63 <i>a</i>	2.36 <i>bc</i>
Exp-B	5	fl/oz/ac	R1-R3				

[†]Exp-A, B, C, D, E, F, G = Experimental products A, A, B, C, D, E, F, G.

[‡]R1= beginning of flowering, R2=full flowering, R3=Begin podding, R4= full pod at every at upper nodes.

[¶]Means followed by the same letter are not significantly different, $p \leq 0.05$

Cultivars: GH0674X (SCN-Susceptible) and S06Q9 (SCN-Resistant)

Previous Crop: Soybean

Planted: 6/4/2019

Table 4.1. Soybean Cysts Nematode (SCN) Demonstration: Means for fall and spring SCN numbers, yield, spring and fall stand counts associated with various seed treatments at Brookings, SD for 2019.

Cultivar	Product	Yield (bu/ac)	Test weight (lb/bu)	Spring SCN population	Fall SCN population				
GH0674X (SCN-S)	Untreated	25.25	<i>a</i>	55.53	<i>a</i> †	317	<i>a</i>	8110	<i>a</i>
	Clariva Complete								
GH0674X (SCN-S)	Beans	22.74	<i>a</i>	56.64	<i>a</i>	292	<i>a</i>	9392	<i>a</i>
GH0674X (SCN-S)	ILeVo	25.50	<i>a</i>	56.34	<i>a</i>	275	<i>a</i>	11600	<i>a</i>
S06-Q9 (SCN-R)	Untreated	27.74	<i>a</i>	56.00	<i>a</i>	608	<i>a</i>	1233	<i>b</i>
	Clariva Complete								
S06-Q9 (SCN-R)	Beans	28.20	<i>a</i>	56.80	<i>a</i>	350	<i>a</i>	1817	<i>b</i>
S06-Q9 (SCN-R)	ILeVo	27.24	<i>a</i>	56.17	<i>a</i>	533	<i>a</i>	1075	<i>b</i>

†Means followed by the same letter are not significantly different, $p \leq 0.05$