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Fungicide and Insecticide Study on Soybean

Nathan R. Bestor
Iowa State University, bestor@iastate.edu

Rebecca Ritson
Iowa State University

Daren S. Mueller
Iowa State University, dsmuelle@iastate.edu

Alison E. Robertson
Iowa State University, alisonr@iastate.edu

Matthew E. O'Neal
Iowa State University, oneal@iastate.edu

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Abstract
The study was designed to optimize insecticide and fungicide usage on soybean by comparing different products applied at different timings. To explain yield responses, foliar disease severity and aphid populations were assessed throughout the season.

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RFR-A9106

Nathan Bestor, research associate
Rebecca Ritson, graduate assistant
Daren Mueller, extension specialist
Alison Robertson, assistant professor
Matt O'Neal, assistant professor
Department of Agronomy

Introduction

The study was designed to optimize insecticide and fungicide usage on soybean by comparing different products applied at different timings. To explain yield responses, foliar disease severity and aphid populations were assessed throughout the season.

Materials and Methods

Plot size was four 30-in. rows by 45 ft long. The field was arranged in a randomized block design with 6 replications.

Fungicides and insecticides were sprayed either alone or in combination at growth stage R1 or growth stage R3. Two controls were included, one was a non-treated control and the other was an IPM-based control that used the 250-aphid threshold to trigger an insecticide application (Table 1). The R1 sprays were on July 17, 2009 and the R3 sprays were on July 30, 2009.

Data was collected for foliar disease three times during the summer. The upper and lower canopies were assessed for percent coverage of foliar disease caused by fungal pathogens. Because of low disease pressure, only the last assessment was reported in Table 1. Aphids were assessed on selected treatments regularly throughout the summer and are reported as Cumulative Aphid Days (CAD). Finally, grain yield (adjusted to 13% moisture) and moisture were recorded.

Results and Discussion

Virtually all treatments have statistically similar yields no matter the timing or class of pesticide treatment. Low foliar disease levels and low aphid pressure are the main reasons thought to contribute to this.

Aphid populations at the ISU Southeast Research Farm never reached economic threshold before growth stage R5 so the IPM treatment was not sprayed.

Foliar disease pressure was very low throughout the growing season and resulted in a low yield response from fungicides applied at anytime compared with the non-treated control.

Statistically there were no differences between the R1 and R3 fungicide applications. Factors thought to contribute to this are low disease pressure throughout the growing season and the small time gap between the R1 and R3 sprays this season.

The field was also hit with substantial Sudden Death Syndrome (SDS) across all treatments. The SDS in this case is believed to have an "equalizing effect" across treatments.

This project is a three-year study and 2009 was the second year of the study. Data from 2008 and 2010 will be used to continue to look for interactions between insecticides and fungicides and the yield and disease responses at application timings of R1 and R3.

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Table 1. Fungicides and insecticides applied to soybeans growth stages R1 and R3 and resultant disease and insect pressure and yield response.

Treatment	Rate (oz/ac)	Timing	Class	Brown spot (%)	CAD*	Moisture (%)	Yield (bu/ac)
Stratego Pro	4	R1	Fung	1.02	-	12.93	58.65
Stratego Pro	4	R3	Fung	2.10	-	15.53	59.63
Domark	4	R1	Fung	1.13	-	14.38	56.64
Domark	4	R3	Fung	0.92	-	12.82	58.13
Picoxystrobin	6	R1	Fung	1.65	-	13.24	57.69
Picoxystrobin	6	R3	Fung	1.25	-	12.14	56.63
LEM-17	16	R1	Fung	1.05	-	13.03	59.37
LEM-17	16	R3	Fung	1.88	-	18.37	55.87
Headline	6	R1	Fung	1.07	-	12.69	57.37
Headline	6	R3	Fung	0.98	-	12.97	58.46
Leverage	3.76	R1	Ins	2.82	-	16.08	56.46
Leverage	3.76	R3	Ins	1.67	-	13.08	58.05
Belay	3	R1	Ins	3.45	-	18.25	59.37
Belay	3	R3	Ins	2.28	-	13.30	58.76
Asana	9.6	R1	Ins	2.77	-	15.94	53.50
Asana	9.6	R3	Ins	1.48	-	15.79	59.42
Stratego Pro + Leverage	4/3.6	R1	Mix	0.78	-	15.80	59.30
Stratego Pro + Leverage	4/3.6	R3	Mix	1.47	-	13.32	58.53
Domark + Belay	4, 3	R1	Mix	2.15	-	15.47	56.42
Domark + Belay	4, 3	R3	Mix	3.18	-	13.00	57.10
Picoxystrobin + Asana	6, 9.6	R1	Mix	1.48	-	15.34	56.76
Picoxystrobin + Asana	6, 9.6	R3	Mix	1.38	-	13.35	56.63
LEM-17 + Asana	16, 9.6	R1	Mix	2.12	-	14.00	58.60
LEM-17 + Asana	16, 9.6	R3	Mix	1.60	-	13.30	59.53
Headline + Asana	6, 9.6	R3	Mix	1.57	586	13.12	58.87
Headline (R3) + Asana (IPM**)	6, 9.6	R3 + IPM	R3 + IPM	1.22	707	13.12	59.27
Asana**	9.6	IPM	IPM	2.90	1166	13.04	53.91
Non-treated control	-	-	-	2.28	1166	13.60	58.11

*CAD = Cumulative Aphid Days.

**Threshold of 250 aphids/plant; Asana was assigned as the IPM insecticide. These plots did not reach threshold.