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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.

Keywords

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Disciplines

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Fungicide-Insecticide Study on Soybeans

RFR-A9114

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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 six 30-in. rows by 43 ft long. The field was arranged in a randomized block design with 6 replications. The two middle rows were harvested.

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 16, 2009 and the R3 sprays were on July 29, 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 (~ R5.5) was included in Table 1. Aphids were assessed on selected treatments regularly throughout the summer and are reported as Cumulative Aphid Days (CAD). Before harvest, stems from selected treatments were rated for anthracnose stem

blight. Finally, grain yield (adjusted to 13% moisture) and moisture were recorded.

Aphid populations at Nashua did reach threshold and IPM plots were sprayed August 22, 2009.

Results and Discussion

Yields were not different in the fungicide treatments when compared with the control ($P > 0.1$) (Table 1). This is likely due to foliar disease levels not being very high during the 2009 growing season.

Aphid pressure was high for the second year in a row at Northeast Research Farm. All insecticide treatments, including tank mixes, were effective in reducing aphid populations and in increasing yield when compared with the control. However, there were no differences when those treatments were compared with the IPM control (Table 1).

The application timings at R1 and R3 of the treatments were not much different from each other this past growing season. We suspect this has to do with the R1 and R3 growth stages being very close together in 2009.

This project is a three-year study and data from 2009 represents 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 at R1 and R3.

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Table 1. Fungicides and insecticides applied to soybeans at 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	0.78	20754	13.10	62.56
Stratego Pro	4	R3	Fung	1.60	17981	13.44	61.90
Domark	4	R1	Fung	2.77	24667	13.58	59.34
Domark	4	R3	Fung	3.70	25292	13.06	56.95
Picoxystrobin	6	R1	Fung	2.57	19283	13.68	57.67
Picoxystrobin	6	R3	Fung	5.10	5428	13.32	60.30
LEM-17	16	R1	Fung	1.78	23606	13.24	59.87
LEM-17	16	R3	Fung	4.30	19527	13.19	60.00
Headline	6	R1	Fung	1.82	22915	13.15	61.82
Headline	6	R3	Fung	2.43	22272	13.37	62.31
Leverage	3.76	R1	Ins	4.05	8494	13.44	66.87
Leverage	3.76	R3	Ins	4.87	4408	13.43	58.64
Belay	3	R1	Ins	3.47	42730	13.14	61.21
Belay	3	R3	Ins	5.05	20613	13.06	59.25
Asana	9.6	R1	Ins	4.48	20762	13.37	55.40
Asana	9.6	R3	Ins	4.88	20312	13.34	62.00
Stratego Pro + Leverage	4/3.6	R1	Mix	0.82	10682	13.16	60.20
Stratego Pro + Leverage	4/3.6	R3	Mix	2.20	3980	13.20	65.43
Domark + Belay	4, 3	R1	Mix	2.82	26724	13.29	54.02
Domark + Belay	4, 3	R3	Mix	3.27	18298	13.34	55.89
Picoxystrobin + Asana	6, 9.6	R1	Mix	4.25	10093	13.08	62.29
Picoxystrobin + Asana	6, 9.6	R3	Mix	3.37	5761	12.88	56.46
LEM-17 + Asana	16, 9.6	R1	Mix	1.53	6993	13.35	54.82
LEM-17 + Asana	16, 9.6	R3	Mix	3.37	2794	13.18	58.48
Headline + Asana	6, 9.6	R3	Mix	1.47	4626	13.22	56.08
Headline (R3) + Asana** (IPM)	6, 9.6	R3 + IPM	R3 + IPM	2.17	13828	13.39	60.73
Asana**	9.6	IPM	IPM	6.52	8683	13.41	59.12
Non-treated control	4	-	-	5.93	22577	12.99	58.61

*CAD = Cumulative aphid days.

**Threshold of 250 aphids/plant; Asana was assigned as the IPM insecticide.