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Abstract

Iowa State University assessed foliar fungicides and insecticides on soybeans at seven ISU locations across Iowa including the Northwest Farm (Sutherland), Northern Farm (Kanawha), Northeast Farm (Nashua), Curtiss Farm (Ames), Armstrong Farm (Lewis), McNay Farm (Chariton), and Southeast Farm (Crawfordsville) (Figure 1).

Keywords

Plant Pathology and Microbiology

Disciplines

Agricultural Science | Agriculture | Microbiology | Plant Pathology

Evaluation of Foliar Fungicides and Insecticides on Soybeans in Northern Iowa

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Introduction

Iowa State University assessed foliar fungicides and insecticides on soybeans at seven ISU locations across Iowa including the Northwest Farm (Sutherland), Northern Farm (Kanawha), Northeast Farm (Nashua), Curtiss Farm (Ames), Armstrong Farm (Lewis), McNay Farm (Chariton), and Southeast Farm (Crawfordsville) (Figure 1).

Materials and Methods

The experimental design at each location was a randomized complete block with four replications. Details on variety and planting, applications, and harvest dates are listed in Table 1. Fungicides and insecticides were applied at growth stage R3 (beginning pod) at all seven locations. Disease was assessed when soybeans were at the R6 (full seed) growth stage. Diseases found included brown spot in the lower canopy and *Cercospora* leaf blight in the upper canopy. Only diseases that had more than 1 percent severity were analyzed and included in this report. Soybean aphid populations were observed between R3 and R6 and the IPM spray was timed according to soybean aphid count. None of the seven locations reached soybean aphid threshold. Total seed weight per plot and moisture was measured, seed weight was adjusted to 13 percent moisture, and yield was calculated.

Results and Discussion

This season will be remembered for the extremely dry weather conditions across Iowa that were similar to 1988. Although it was abnormally dry across all of Iowa, there were parts that did receive timely rains.

Because of the dry weather conditions, very little foliar disease developed at any location. The only two fungal diseases identified in the plots were *Septoria* brown spot and *Cercospora* leaf blight. Neither disease was severe enough to affect yield at any location. Soybean vein necrosis virus was also identified at several locations.

Both fungicides and insecticides had minimal or no effect on seed moisture. Yields averaged between 33.9–64.6 bushels/acre. Yield responses to fungicide, insecticides, and fungicides + insecticides were minimal at all locations. There were some positive responses to some treatments at some locations, but nothing consistent. The average yield response for all fungicides across all locations was 0.9 bushels/acre. The highest average yield response from all locations for fungicides alone was Headline (3.2 bu/ac). Insecticides alone averaged 1.3 bushels/acre with no difference between the three insecticides. We did not see an additive effect for fungicides + insecticides as they averaged 1.5 bushels/acre across all seven locations. See Table 2 for details on yield responses at this location. Results of the other locations are available in additional reports.

Acknowledgements

We thank the ISU Research Farm personnel who assisted with application of treatments. This project was partially funded by the Iowa Soybean Association and soybean checkoff.

Table 1. Cultivar, planting date, application date, and harvest date for seven fungicide and insecticide trials.

ISU Farm	Cultivar	Planting date	Application date	Disease assessment date*	Harvest date
Armstrong Farm	Pioneer 93M11	May 10	July 25	August 21	October 4
Curtiss Farm	AG2431	May 11	July 24	August 29	September 22
McNay Farm	Pioneer 93M11	May 10	July 30	August 21	September 26
Northeast Farm	AG2431	May 12	July 27	August 24	September 29
Northern Farm	Stine 19RA02	May 11	July 16	August 22	September 29
Northwest Farm	Kruger 1901	May 11	July 25	August 22	September 27
Southeast Farm	Pioneer 93Y22	May 18	July 26	August 23	October 29

*R6 growth stage

Table 2. Treatments and rates of products evaluated for management of foliar disease and yield response at the ISU Northern Farm in Kanawha, Iowa.

Treatment	Rate (oz/ac)	Foliar disease severity ^c	Yield (bu/A)
Untreated control ^d	---	1.7	33.9
Evito	2	1.1	30.6
Stratego YLD	4	0.8*	34.85
Aproach	6	1.1*	34.9
Topguard	7	1.2	39.9
Domark	4	0.8*	32.5
Domark ^b	5	1.5	34.7
Headline	6	0.8*	38.9
Quadris	6	0.6*	29.4
Belay ^b	4	0.8*	38.0
Leverage ^a	2.8	1.5	38.3
Fastac ^b	3.2	0.8*	32.1
Stratego YLD + Leverage ^a	4 + 2.8	0.6* ^o	35.3
Stratego YLD + Asana ^b	4 + 9.6	0.7*	35.5
Aproach + Asana ^b	6 + 9.6	1.2	36.1
Topguard + Declare	7 + 1	1.1*	35.1
Headline + Fastac ^b	6 + 3.2	0.7*	32.6
Priaxor + Fastac ^b	4 + 3.2	1.1*	33.7
Quilt Xcel + Warrior T ^b	10.5 + 1.5	1.3	40.8
Overall LSD ^c (0.05)	---	0.6	NS
CV (%)	---	38.1	20.2

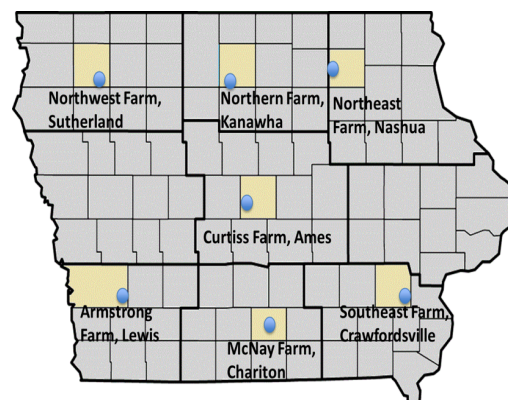
^aApplied with COC 1 percent v/v.^bApplied with Non Ionic Surfactant (NIS) 0.25 percent v/v.^cFoliar disease was predominately Septoria brown spot and was estimated from 20 leaves in the lower canopy.^dSoybean aphid threshold was never reached so the IPM treatment became an additional untreated control.^eLeast significant difference comparing all treatments.

*Significantly different from untreated control.

^oSignificantly different from insecticide alone equivalent.

NS – not statistically significant.

Note: moisture was not calculated for this trial. A moisture rating of 9.3 percent was taken to represent all treatments.

**Figure 1. Map of field locations for the 2012 fungicide and insecticide study.**