

2012

Evaluation of Foliar Fungicides and Insecticides on Soybean

Alison E. Robertson

Iowa State University, alisonr@iastate.edu

Daren S. Mueller

Iowa State University, dsmuelle@iastate.edu

Stith N. Wiggs

Iowa State University, stithw@iastate.edu

Matthew E. O'Neal

Iowa State University, oneal@iastate.edu

Erin W. Hodgson

Iowa State University, ewh@iastate.edu

Follow this and additional works at: http://lib.dr.iastate.edu/farms_reports



Part of the [Agricultural Science Commons](#), [Agriculture Commons](#), [Entomology Commons](#), and the [Plant Pathology Commons](#)

Recommended Citation

Robertson, Alison E.; Mueller, Daren S.; Wiggs, Stith N.; O'Neal, Matthew E.; and Hodgson, Erin W., "Evaluation of Foliar Fungicides and Insecticides on Soybean" (2012). *Iowa State Research Farm Progress Reports*. 112.

http://lib.dr.iastate.edu/farms_reports/112

This report is brought to you for free and open access by Iowa State University Digital Repository. It has been accepted for inclusion in Iowa State Research Farm Progress Reports by an authorized administrator of Iowa State University Digital Repository. For more information, please contact digirep@iastate.edu.

Evaluation of Foliar Fungicides and Insecticides on Soybean

Abstract

Use of foliar fungicides and insecticides are an effective strategy for managing foliar diseases on soybean. There are many different fungicides and insecticides available for use currently in Iowa. Iowa State University personnel assessed the success of fungicides and insecticides across Iowa. This study was conducted at six locations: Sutherland (NW), Kanawha (NC), Nashua (NE), Ames (central), Crawfordsville (SE), and Lewis (SW) research farms (Figure 1).

Keywords

RFR A1170, Plant Pathology and Microbiology, Entomology

Disciplines

Agricultural Science | Agriculture | Entomology | Plant Pathology

Evaluation of Foliar Fungicides and Insecticides on Soybean

RFR-A1170

Alison Robertson, associate professor
Daren Mueller, extension specialist
Stith Wiggs, research associate
Department of Plant Pathology and
Microbiology
Matt O'Neal, associate professor
Erin Hodgson, assistant professor
Department of Entomology

Introduction

Use of foliar fungicides and insecticides are an effective strategy for managing foliar diseases on soybean. There are many different fungicides and insecticides available for use currently in Iowa. Iowa State University personnel assessed the success of fungicides and insecticides across Iowa. This study was conducted at six locations: Sutherland (NW), Kanawha (NC), Nashua (NE), Ames (central), Crawfordsville (SE), and Lewis (SW) research farms (Figure 1).

Materials and Methods

The experimental design at each location was a randomized complete block with at least four replications. Details on variety and planting, application, and harvest dates are listed in Table 1. Fungicides and insecticides were applied at growth stage R3 (beginning pod) at all six locations. Disease was assessed when soybeans were at the R6 growth stage. Diseases found included *Septoria brown spot*, *frogeye leaf spot*, *Cercospora leaf blight*, and *downy mildew*. Only diseases that had more than 1 percent severity were analyzed. Soybean aphid populations were observed between R3 to R6 in order to time an IPM spray. Total seed weight per plot and moisture was measured, seed weight was adjusted to 13 percent, and yield was calculated.

Results and Discussion

There was no difference in the amount of foliar disease between fungicide and insecticide treatments and the untreated control at the Armstrong, Crawfordsville, Kanawha, and Nashua locations. There were foliar disease differences between the fungicide treatments and the untreated control at the Ames location and insecticide treatments and the untreated control at the Sutherland location. The two most predominant diseases found were *Septoria brown spot* and *frogeye leaf spot*.

Septoria brown spot did not move into the upper canopy before R6 at any of the six locations, thus it likely had minimal impact on yield. The average severity in the untreated control in the lower canopy was less than 3.5 percent at all locations except Nashua (7.5%) and Ames (6.6%). At both of these locations, fungicides reduced brown spot severity in the lower canopy, but again, disease probably had minimal impact on yield.

Frogeye leaf spot was found in a few locations, but was greater than 1 percent severity in the untreated control at only the Ames location (4.9%). All fungicides significantly reduced frogeye severity (averaged 1.1%). As expected, insecticides alone did not have any effect on frogeye leaf spot severity (averaged 5.2% severity). There were no significant differences in disease control between fungicide products.

Soybean aphids averaged 320 aphids/plant at the Sutherland location, which exceeded the economic threshold of 250/plant. Aphids did not reach the threshold at any other location. At Sutherland, the IPM insecticide and

insecticide + fungicide treatments were applied at the R4 growth stage on August 3, which was 13 days after the R3 application. The IPM treatments were not applied at the other five locations.

Seed moisture ranged from 8 to 11 percent depending on the location, but did not differ more than a few tenths of a percentage among treatments within any location.

Yield varied across locations ranging from 39.4 to 75.9 bushels/acre in the untreated control (Southeast Research Farm data can be seen in Table 2).

The results of this experiment illustrate the benefits of foliar fungicide and insecticide applications for the management of foliar diseases and insects. There were very small amounts of foliar disease across the state of Iowa in 2011 due to high heat and low rainfall amounts in July and August. Also, this was a moderate soybean aphid year across much of the state. At the four locations with very low insect populations and disease severity, there

were no significant yield responses to either insecticides or fungicides. However, at the Ames location, fungicides reduced frogeye leaf spot in the upper canopy and the largest yield responses to fungicides were at this location. Also, only one of the six locations (Sutherland) reached the threshold level to spray aphids and this was the only location where all insecticides had significant responses to insecticides.

Using foliar fungicides and insecticides is an effective way to prevent yield losses to foliar diseases and insect pests. Also, only applying pesticides when needed can reduce overall production costs and preserve product efficacy for when severe outbreaks do occur.

Acknowledgements

We thank the ISU Research Farm personnel, especially Kevin Van Dee, for planting, spraying all the treatments, and harvesting the experiment. Funded by the Iowa Soybean Association and Soybean Checkoff.

Table 1. Variety, planting date, application date, and harvest date for six fungicide and insecticide trials.

	Variety	Planting date	Application date	Disease assessment date	Harvest date
Sutherland	Pioneer 92M32	May 17	July 21	August 23	October 10
Kanawha	Legend 2279	May 10	July 25	August 25	September 29
Nashua	Pioneer 92Y51	May 18	August 4	August 24	October 6
Ames	Asgrow 2531	May 19	August 1	August 30	October 7
Crawfordsville	Pioneer 93Y40	May 12	August 1	August 23	October 6
Lewis	Pioneer 93M11	May 17	August 1	August 23	October 5

Table 2. Treatments and rates of products evaluated for management of foliar disease and yield response in Crawfordsville, IA.

Treatment	Rate (oz/ac)	Septoria brown spot severity (%) ^b	Moisture (%)	Yield (bu/A)
Untreated control ^c	---	3.4	6.7	63.0
Stratego YLD	4	3.3	6.8	62.5
Priaxor	4	3.6	6.7	67.8
Domark	5	3.7	6.7	65.2
Leverage ^a	3.67	4.0	6.7	66.6
Fastac	3.2	3.2	6.8	65.6
Belay	4	3.0	6.8	64.7
Stratego YLD + Leverage ^a	4 + 3.67	2.9	6.7	66.9
Priaxor + Fastac	4 + 3.2	2.4	7.0	71.0
Domark + Belay	5 + 4	4.1	6.8	65.0
LSD (0.05)	---	NS	NS	NS
CV (%)	---	43.2	3.1	6.1

^aApplied with COC 1 percent v/v.

^bSeptoria brown spot severity was estimated from ten leaves in the lower canopy.

^cAphid threshold never met, IPM treatments acted as controls.

NS = not statistically significant.

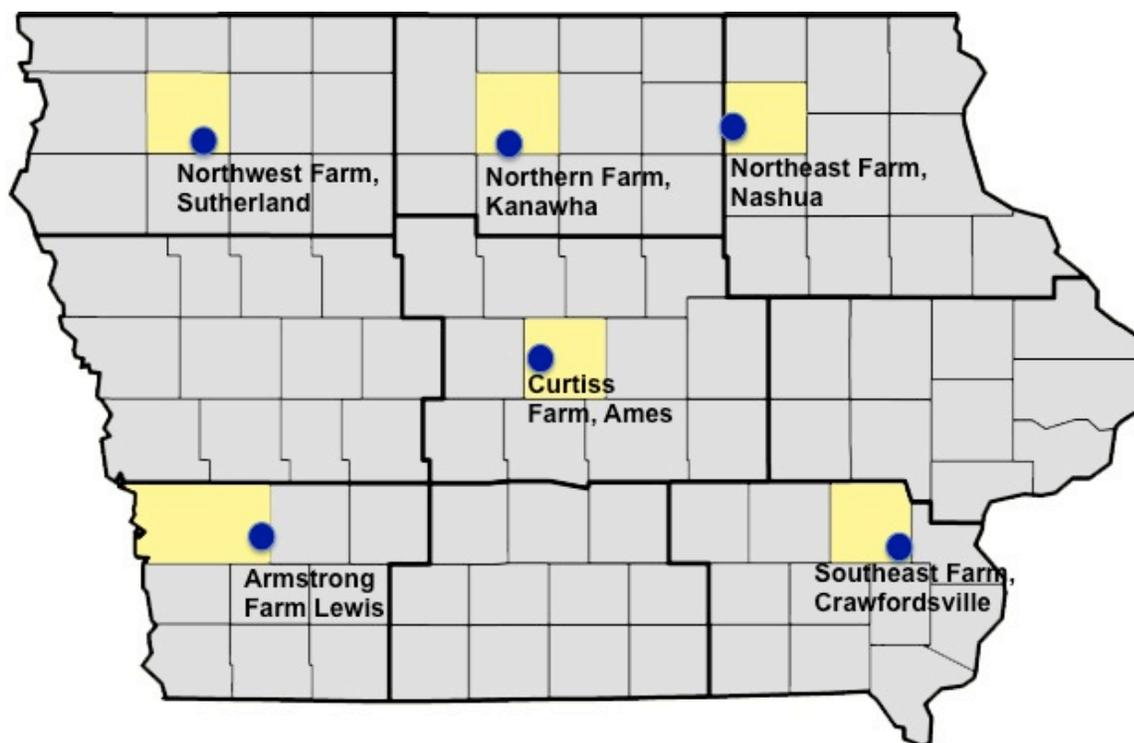


Figure 1. Iowa field locations for the 2011 soybean fungicide and insecticide study.