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# Evaluation of Foliar Fungicides and Insecticides on Soybean in 2012

## **Abstract**

There are many fungicides and insecticides labeled for use in Iowa soybean. With partial funding from industry and soybean checkoff funds from the Iowa Soybean Association, we evaluated common foliar fungicides and insecticides at seven locations across Iowa in 2012 to determine yield response to an R3 (beginning pod set) application timing.

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## Evaluation of Foliar Fungicides and Insecticides on Soybean in 2012

By Daren Mueller and Stith Wiggs, Department of Plant Pathology and Microbiology

There are many fungicides and insecticides labeled for use in Iowa soybean. With partial funding from industry and soybean checkoff funds from the Iowa Soybean Association, we evaluated common foliar fungicides and insecticides at seven locations across Iowa in 2012 to determine yield response to an R3 (beginning pod set) application timing (Fig. 1).

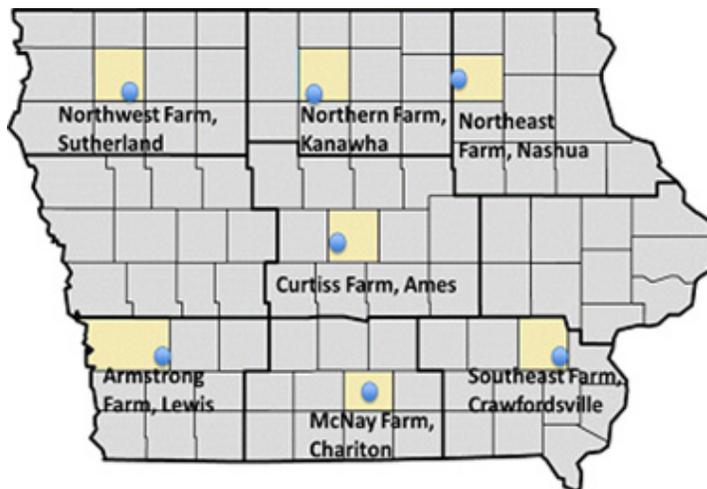


Figure 1. Map of field locations for the 2012 fungicide and insecticide study

### Materials and Methods

The experimental design was a randomized complete block with four replications at each location. Details on variety and planting, application and harvest date are listed in Table 1. Treatments (Table 2) consisted of an untreated control, fungicides alone, insecticides alone, fungicides and insecticides in combination and pesticide application based on aphid scouting (IPM). In applicable treatments, fungicides and insecticides were applied at growth stage R3 (beginning pod) at all seven locations. Disease was assessed when soybeans were at the R6 growth stage (full seed set). Soybean aphid populations were observed between R3 and R6, but soybean aphid populations did not reach threshold at any of the seven locations. Total seed weight and moisture was measured, seed weight was adjusted to 13 percent and yield was calculated.

Table 1. Cultivar, planting date, application date, harvest date for seven fungicide and insecticide trials in Iowa in 2012.

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

\*R6 growth stage

## Results

*Yield* varied across locations ranging from 33.9 to 64.6 bu/ac in the untreated control (Table 2). Differences were observed between pesticide treatments and the untreated control at the Ames and Armstrong locations (Table 2).

*Foliar disease* did not differ between fungicide and insecticide treatments and the untreated control at the Armstrong, Southeast, Northeast, Northwest and McNay locations. There were foliar disease differences between the fungicide treatments and the untreated control at the Curtiss and Northern location. The most predominate disease found was Septoria brown spot. Septoria brown spot did not move into the upper canopy before R6 at any of the seven locations, so it likely had minimal impact on yield. The average severity in the untreated control in the lower canopy was less than 3 percent. At some locations, fungicides reduced brown spot severity in the lower canopy, but again, disease probably had minimal impact on yield.

*Soybean aphids* did not reach the threshold at any location. IPM treatments became an additional untreated control.

*Seed moisture* ranged from 7.8 – 12.1 across locations, but did not differ more than a few tenths of a percentage amongst treatments within any location.

**Table 2. Yield response for foliar fungicides and insecticides treatments in 2012.**

Treatment	Ames	Armstrong	Crawfordsville	Kanawha	McNay	Nashua	Sutherland
Untreated control <sup>d</sup>	64.6	51.3	48.5	33.9	43.5	56.8	55.8
Evito	69.1	52.2	47.8	30.6	38.6	60.4	58.3
Stratego YLD	61.1	52.8	49.9	34.85	40.1	56.5	56.6
Approach	65.2	55.9	49.2	34.9	44.4	54.6	58.5
Topguard	65.5	49.4	48.8	39.9	42.3	53.8	59.0
Domark	67.3	56.5	48.6	32.5	42.5	60.8	56.2
Domark <sup>b</sup>	63.5	51.2	48.7	34.7	43.2	62.6	55.7
Headline	66.5	59.3	47.4	38.9	44.9	62.8	56.8
Quadris	71.6	48.4	47.2	29.4	37.0	62.4	56.9
Belay <sup>b</sup>	67.3	50.5	48.6	38.0	47.1	55.6	57.0
Leverage <sup>a</sup>	66.9	48.5	51.1	38.3	39.7	59.7	57.4
Fastac <sup>b</sup>	66.4	48.4	48.4	32.1	52.4	58.5	58.9
Stratego YLD + Leverage <sup>a</sup>	61.7	57.1	50.2	35.3	46.1	52.1	57.8
Stratego YLD + Asana <sup>b</sup>	64.7	41.3	48.6	35.5	45.9	57.3	57.1
Approach + Asana <sup>b</sup>	68.4	53.5	51.9	36.1	50.4	60.5	57.8
Topguard + Declare	66.0	54.4	48.0	35.1	44.5	58.2	54.6
Headline + Fastac <sup>b</sup>	66.1	62.6 <sup>o</sup>	47.7	32.6	43.2	57.5	57.0
Priaxor + Fastac <sup>b</sup>	66.4	51.7	47.3	33.7	43.8	54.2	56.6
Quilt Xcel + Warrior T <sup>b</sup>	72.7*	49.5	50.9	40.8	48.8	62.4	57.0
Overall LSD <sup>e</sup> (0.05)	7.5	12.3	NS	NS	NS	NS	NS
CV (%)	8.1	16.8	6.3	20.2	17.2	10.9	4.6

a Applied with COC 1% v/v

b Applied with Non Ionic Surfactant (NIS) 0.25% v/v

d Soybean aphid threshold was never reached so the IPM treatment became an additional untreated control

e Least significant difference comparing all treatments

\* Significantly different from untreated control

o Significantly different from insecticide alone equivalent

NS – not statistically significant

## Summary

This is the first year we were able to evaluate fungicides under drier weather conditions. While individual products affected yields at certain locations, in general, all products had minimal significant effects on yield. There were very few diseases (and insects) at all seven locations, so benefits from pest management were not part of the equation. Fungicides are effective for management of diseases. However, in years with very little pest pressure – most likely from lack of moisture in 2012 – positive yield responses to fungicides are not consistent.

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