1-1-2015

On-Farm Soybean Fungicide Trials

Jim Fawcett
Iowa State University, fawcett@iastate.edu

Lance Miller
Iowa State University, lrm@iastate.edu

Lyle Rossiter
Iowa State University, ltross@iastate.edu

Wayne Roush
Iowa State University, wroush@iastate.edu

Josh Sievers
Iowa State University, sieversj@iastate.edu

See next page for additional authors

On-Farm Soybean Fungicide Trials

Abstract
Fungicide applications have become more popular among soybean farmers in recent years. The primary use of fungicides has been to control diseases such as Septoria brown spot, Cercospora leaf blight, and frogeye leaf spot. With lower grain prices, the chances of getting an economic benefit from fungicide applications have decreased.

Keywords
Agronomy

Disciplines
Agricultural Science | Agriculture | Agronomy and Crop Sciences | Fungi | Natural Resources and Conservation

Authors
Jim Fawcett, Lance Miller, Lyle Rossiter, Wayne Roush, Josh Sievers, Micah Smidt, and Matt Schnabel

On-Farm Soybean Fungicide Trials

RFR-A1409

Jim Fawcett, extension field agronomist (retired)
Lance Miller, Southeast Farm, ag specialist
Lyle Rossiter, Allee Farm, superintendent
Wayne Roush, Western Farm, superintendent
Josh Sievers, Northwest Farm, superintendent
Micah Smidt, Northern Farm, superintendent
Matt Schnabel, Northern Farm, ag specialist

Introduction

Fungicide applications have become more popular among soybean farmers in recent years. The primary use of fungicides has been to control diseases such as Septoria brown spot, Cercospora leaf blight, and frogeye leaf spot. With lower grain prices, the chances of getting an economic benefit from fungicide applications have decreased.

Materials and Methods

In 2014, nine trials (Table 1) examined the use of fungicides to control foliar disease and to increase soybean yield. All trials were conducted on-farm by farmer cooperators using the farmer's equipment. Fungicide treatments were applied by ground equipment and were arranged in a randomized complete block design with at least three replications per treatment. Strips varied from field to field depending on equipment size and the size of the field. All strips were machine harvested for grain yield.

In Trials 1, 2, 3, and 5, Priaxor™ Xemium® was applied at R2-R4 at 4 oz/acre (Table 2). In Trial 4, Stratego® was applied at R3 at 4 oz/acre. Aproach® at 6 oz/acre was applied in Trials 6 and 9 at V8-R2. In Trial 7, Fortix® was applied at V3 at 5 oz/acre, and in Trial 8 Tetraconozole + αβ PRO was applied at 4 + 1 oz/acre at R1. These treated strips were compared with an untreated control in each trial. Soybeans were evaluated for foliar diseases during September in Trial 4 and at the time of the fungicide application in Trial 2.

Results and Discussion

A statistically significant yield increase of 2 to 6 bushels/acre was seen in Trials 1, 3, 4, and 5 ($P = 0.05$), and a nearly significant yield increase of 4 bushels/acre was seen in Trial 2 ($P = 0.10$). There was no difference between the treated and untreated strips in the other four trials (Table 2).

There were very low levels of Septoria brown spot on all plots at the time of the fungicide application in Trial 2. Plant disease assessments made in Trial 4 indicated more disease lesions in the untreated control than the plots treated with Stratego® (primarily Septoria brown spot on the lower leaves). There was a higher yield of the soybeans with the fungicide application in this trial, but not likely enough of a yield increase to pay for the fungicide application. The average yield difference between the treated and untreated plots in all trials was 2 bushels/acre. It would likely require a yield response of about 3 bushels/acre to cover the cost of the fungicide, thus in only three of the nine trials would the fungicide application have been profitable. The fungicide in these three trials (2, 3, and 5) was Priaxor™ Xemium®.

Although plant disease evaluations were not made in most of the trials, it is likely there was disease present in the three trials where there was an economic response to the fungicide and little disease incidence in trials with little to no yield response to the fungicide. This indicates the importance of evaluating plant disease incidence and the likelihood of disease problems with current weather conditions in making decisions on the use of foliar fungicides in protecting soybean yield.

Table 1. Variety, row spacing, planting date, planting population, previous crop, and tillage practices in on-farm soybean fungicide trials in 2014.

Exp. No.	Trial	County	Variety	Row spacing (in.)	Planting date	Planting population (seed/A)	Previous crop	Tillage
140156	1	Sioux	NKS2251	30	5/15/14	150,000	Corn	No-till
140709	2	Washington	LG 3650	30	5/6/14	150,000	Corn	Conventional
140411	3	Franklin	NK S27-H6	30	5/22/14	140,000	Corn	Conventional
140313	4	Monona	LG Seeds LG2898LL	30	5/20/14	138,000	Corn	Fall disk, spring field cultivate
140111	5	Osceola	Kruger 1901	30	5/10/14	150,000	Corn	Conventional
140143	6	Lyon	Asgrow 2232	30	5/7/14	140,000	Corn	Strip till
140216	7	Buena Vista	Syngenta NK 25E5	30	5/19/14	138,500	Corn	Fall chisel, spring disk & field cultivate
140713	8	Henry	Pioneer 32T25R2	30	5/20/14	150,000	Corn	Fall chisel, spring field cultivate
140179	9	Lyon	Asgrow 2534	30	5/7/14	140,000	Corn	Strip till

Table 2. Yields from on-farm soybean fungicide trials in 2014.

					Yield (bushels/A)			
Exp. No.	Trial	Treatment	Rate (oz/A)	Application timing	Fungicide	Control	Response	P-value[1]
140156	1	Priaxor Xemium	4	R4	58	56	2	0.04
140709	2	Priaxor Xemium	4	R3	65	62	4	0.10
140411	3	Priaxor Xemium	4	R2	51	45	6	<0.01
140313	4	Stratego	4	R3	65	63	2	<0.01
140111	5	Priaxor Xemium	4	R3	59	55	4	0.02
140143	6	Aproach	6	V8	67	68	-1	0.29
140216	7	Fortix	5	V3	67	65	2	0.27
140713	8	Tetraconozole + αβ PRO	4 + 1	R1	59	59	0	0.87
140179	9	Aproach	6	R3	71	70	1	0.46

[1]P-Value = the calculated probability that the difference in yields can be attributed to the treatments and not other factors. For example, if a trial has a P-Value of 0.10, then we are 90 percent confident that the yield differences are in response to treatments. For P = 0.05, we would be 95 percent confident.