

2006 Ohio Soybean Fungicide Seed Treatment Study

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Soybean diseases in Ohio have increased in number and severity over the past 10 years so that today, the loss of productivity from disease averages over \$150,000,000 per year. The loss due to disease is greater than from any other factor except weather. The increase in soybean disease is due primarily to short crop rotations or no crop rotation. It is estimated that Ohio soybean producers lose an average of five to eight bushels per acre per year to disease. In most years, several diseases are present but some are not recognized due to low levels of infection. It is noteworthy that by the time symptoms of a particular disease appear, the yield loss has already reached seven to ten percent. In many fields there is significant yield loss to disease even though no symptoms are evident.

In the past, we have relied on varieties' disease resistance and tolerance to provide some measure of control. Many of the Phytophthora control genes are no longer effective because the pathogens have evolved and can overcome the genes' defense mechanism. During the past ten years, we have relied more and more on fungicide seed treatments to improve soybean stands and increase the general health of soybean root systems following planting.

In 2006 we continued to evaluate soybean seed treatment fungicides. The evaluation was conducted in a randomized complete block design at six test sites with eight replications of each treatment. The six test sites were located as follows:

- N1 Henry Co., four miles south west of Holgate, Oh.
- N2 Huron Co., two miles east of Monroeville, Oh.
- C1 Mercer Co., two miles north of Celina, Oh.
- C2 Delaware Co., three miles south of Waldow, Oh.
- S1 Preble Co., west of Eaton, Oh. and 1 mile from Indiana
- S2 Clinton Co., two miles north of Sabina, Oh.

Plots were 5 feet wide and 40 feet long and included four rows spaced 12 inches apart. Pioneer 93M12 was used for this test. All locations were sprayed in August with insecticide to control bean leaf beetle, Japanese beetle, grasshopper and soybean aphid. The loss of leaf area had reached approximately 7 percent by the time of application. The other cultural practices for the study are described in Table 1 and rainfall, recorded in the field, is reported by month in table 2.

Table 1. 2006 Production Background Information:

<u>Tillage</u>	N1	N2	C1	C2	S1	S2
Fall	None	None	Chisel	None	None	None
Spring	None	Fld. Cult./Dsk.	None	None	None	None

Soil and Crop Background

Soil Type	Hoytville	Kibbie	Mercer	Blount	Crosby	Westland
Soil pH	6.4	6.0	6.8	6.0	6.5	6.0
Soil Test P(ppm)	34	50	21	31	40	41
Soil Test K(ppm)	200	213	158	182	289	212
Fertilizer	0-0-0	0-0-0	0-0-0	0-0-0	0-0-0	0-0-0
Previous Crop	Corn	Corn	Corn	Corn	Corn	Corn
Plant Date	5/24	5/23	5/31	5/30	6/06	5/9
Harvest Date	10/26	10/18	10/25	10/10	10/25	10/17

Normal Variety Weed Control

Preemergence:	Canopy XL/Dual II/Roundup UltraMax
Postemergence:	Basagran / Flexstar / Select

Roundup Ready Variety Weed Control

Preemergence:	Canopy XL/Dual II/Roundup UltraMax
Postemergence:	Roundup UltraMax

Table 2. 2006 Rainfall Data:

	N1	N2	C1	C2	S1	S2
	2006 (Normal)					
May	5.6 (3.3)	4.3 (3.6)	4.7 (4.1)	3.7 (3.8)	4.8 (3.8)	1.5 (4.7)
June	7.9 (3.5)	7.0 (3.9)	4.8 (3.8)	4.3 (3.8)	3.8 (3.9)	2.9 (3.6)
July	3.9 (4.0)	4.2 (4.2)	5.0 (4.4)	4.1 (3.8)	5.5 (3.4)	4.7 (3.9)
August	1.4 (3.1)	1.2 (3.5)	3.2 (3.6)	2.4 (3.1)	4.4 (3.1)	5.4 (3.5)
September	1.4 (2.8)	2.3 (3.2)	2.2 (3.3)	2.1 (2.9)	3.5 (2.7)	5.3 (3.0)
TOTAL	20.2 (16.7)	18.9 (12.6)	20.0 (19.2)	16.5 (17.4)	21.9 (16.9)	19.3 (18.7)

Table 3. Treatment descriptions:

Treat No.	Company	Treatment Description
1)	Agrilience	Warden RTA
2)	Agrilience	Warden RTA + Cruiser
3)	Agrilience	Warden RFC
4)	Agrilience	Warden RFC + Cruiser
5)	Syngenta	ApronMaxx RFC + Apron XL + Cruiser
6)	Bayer Crop Science	Trilex AL + Allegiance
7)	Bayer Crop Science	Trilex AL + Allegiance + Gaucho
8)	OSU	UTC

Table 4. Yield data in Bushels per Acre:

Treat.	Test Site						MEAN
	N1	N2	C1	C2	S1	S2	
1	59.2	46.8	48.4	46.7	56.9	69.0	54.5
2	58.0	51.3	51.2	50.8	58.8	75.8	57.6
3	58.1	52.7	51.4	48.4	58.4	73.7	57.1
4	58.8	55.0	50.5	47.0	57.4	74.3	57.1
5	58.3	49.7	51.2	46.2	58.4	72.2	56.1
6	55.3	48.0	51.3	47.6	56.4	76.8	55.9
7	55.3	49.4	51.6	45.8	57.6	73.4	55.5
8	53.8	46.3	50.7	47.1	58.1	71.0	54.5
Max	59.2	55.0	51.6	50.8	58.8	75.8	57.6
Mean	57.1	49.9	50.8	47.4	57.8	73.3	56.1
Min	53.8	46.8	48.4	46.2	56.4	69.0	54.5
LSD 0.05	3.9	4.0	2.5	2.9	2.5	4.2	1.30
LSD 0.3	2.0	2.0	1.3	1.5	1.3	2.1	0.65
CV	6.8	8.1	5.0	6.1	4.4	5.8	6.70

Summary:

All six-test sites experienced a significant rainfall event soon after planting. Although all the test sites had a low potential for the development of root rot disease, there were yield increases when the seed was treated with fungicide. The average yield increase over the untreated check was 1.75 Bu/ac which is a value of about \$12.00 per acre and 300% greater than the cost of seed treatment. Because most soybean fields in Ohio have a high potential for disease, and the potential for large yield losses, the routine use of seed treatment fungicides on soybeans is warranted.

Company Web Sites:

Agrilience	www.agrilience.com
Syngenta	www.syngenta.com
Bayer Crop Science	www.bayercropscience.com