

# 2003 Ohio Soybean Seed Fungicide 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. This loss 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, many diseases are not recognized due to low levels of infection. However, several diseases are active in each field most years. 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 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, fungicide seed treatments have been used effectively to improve soybean stands and increase the general health of soybean root systems following planting.

In 2003 we continued to evaluate soybean seed treatment fungicides. Eight fungicide seed treatments were applied to seed of the variety SC9737RR, marketed by Seed Consultants, within three weeks of planting at the labeled application rate. Eight replications of each treatment at five test sites in the soybean production region of Ohio were used. The results of that work are resented in Table 1. Agronomic practice, site characteristics and monthly rainfall for each test site are described in Tables 2 and 3.

The average yield increase due to fungicide seed treatment in 2003 was 1.54 bushels per acre. Yield increases due to specific treatments across test sites ranged from 0.4 to 4.1 bushels per acre, and the maximum yield increase due to treatment at a test site was 7 bushels per acre. Fungicide seed treatments almost always improve plant stand and plant health. Seventy five percent of the time their use increases grain yield by more than three times their cost. The take home message is that fungicide seed treatments are very effective tools for improving plant stands and root system health. Seed treatment fungicides should always be used on soybeans, regardless of variety, crop rotation, soil type, planting date, or tillage.

**Table 1: Effect of Fungicide Seed Treatment on Soybean Yield at Five Ohio Test Sites in 2003**

Company	Treatment	Yield (Bu/Ac)					
		N1	N2	C1	S1	S2	Mean
Agrisolutions	Warden RTA	51.1	51.9	48.9	53.0	55.3	52.0
Agrisolutions	Warden RTA + Cell Tech SCI	49.0	47.1	50.3	52.9	54.4	50.8
Gustafson	Yield Shield*	49.3	51.7	47.8	53.0	55.0	51.3
Gustafson	L1269-A1	49.9	46.8	47.3	54.2	55.7	50.8
ABM	ABM 127 + ApronMaxx® RTA	50.8	48.2	45.5	55.0	54.9	50.9
Syngenta	ApronMaxx®RTA® + Apron XL®	50.8	51.0	46.8	50.6	51.5	50.1
Syngenta	ApronMaxx® RFC® + Apron XL®	50.4	50.6	46.1	52.1	54.6	50.8
Syngenta	ApronMaxx® RFC® + Apron XL® + Cruiser®	50.0	56.4	49.7	53.8	59.1	53.8
Untreated	Check Treatment	49.1	51.4	45.5	50.7	52.1	49.7
LSD 0.3		1.4	3.2	1.7	1.8	1.3	1.0

\*Yield Shield is a biological; unplanted seed can be processed.

**Table 2. Production practices used and soil conditions for each test site in 2003.**

	<u>N1</u> <u>Henry Co.</u>	<u>N2</u> <u>Huron Co.</u>	<u>C1</u> <u>Mercer Co.</u>	<u>S1</u> <u>Preble Co.</u>	<u>S2</u> <u>Clinton Co.</u>
<b><u>Tillage</u></b>					
Fall	None	Plow	Chisel	None	Chisel
Spring	None	Field Cultivator	Disk	None	Field Cultivator
<b><u>Normal Variety Weed Control</u></b>					
Preemergence	Canopy XL/Dual II/Roundup UltraMax used at all test sites.				
Postemergence	Basagran/Flexstar/Select used at all test sites.				
<b><u>Roundup Ready Variety Weed Control</u></b>					
Pre/Postemergence	Roundup UltraMax used at all test sites.				
<b><u>Soil and Crop Background</u></b>					
Soil Type	Hoytville	Kibbie	Mercer	Crosby	Westland
Soil pH	5.96	6.32	6.11	6.82	5.86
Soil Test P(ppm)	98	15	33	7.5	40
Soil Test K(ppm)	299	75	185	275	197
Fertilizer	0-0-0	0-0-0	0-0-0	0-0-0	0-0-0
Previous Crop	Corn	Soybean	Corn	Corn	Corn
Plant Date	5/26	5/25	5/23	5/24	5/27
Harvest Date	10/19	10/18	10/20	10/21	10/22

**Table 3. Monthly and total rainfall for each test site in 2003.**

	<b>N1</b>		<b>N2</b>		<b>C1</b>		<b>S1</b>		<b>S2</b>	
	<b>Henry Co.</b>		<b>Huron Co.</b>		<b>Mercer Co.</b>		<b>Preble Co.</b>		<b>Clinton Co.</b>	
	----- 2003 (Normal) -----									
May	<b>1.9</b>	(3.3)	<b>5.9</b>	(3.6)	<b>7.0</b>	(4.1)	<b>3.9</b>	(3.8)	<b>5.0</b>	(4.7)
June	<b>2.3</b>	(3.5)	<b>5.0</b>	(3.9)	<b>6.4</b>	(3.8)	<b>7.9</b>	(3.9)	<b>6.2</b>	(3.6)
July	<b>4.7</b>	(4.0)	<b>5.7</b>	(4.2)	<b>14.2</b>	(4.4)	<b>11.8</b>	(3.4)	<b>4.6</b>	(3.9)
August	<b>4.4</b>	(3.1)	<b>2.8</b>	(3.5)	<b>8.5</b>	(3.6)	<b>5.2</b>	(3.1)	<b>4.2</b>	(3.5)
September	<b>5.0</b>	(2.8)	<b>6.3</b>	(3.2)	<b>6.1</b>	(3.3)	<b>7.2</b>	(2.7)	<b>5.1</b>	(3.0)
<b>TOTAL</b>	<b>18.3</b>	(16.7)	<b>25.7</b>	(18.4)	<b>42.2</b>	(19.2)	<b>36.0</b>	(16.9)	<b>25.1</b>	(18.7)