

# EFFECT OF FUNGICIDES AND VARIETAL RESISTANCE ON HEAD SCAB IN 2010

Nicki Mundell<sup>1</sup>, Brenda Kennedy<sup>2</sup>, Don Hershman<sup>2</sup>, Anthony Clark<sup>1</sup> and Dave Van Sanford<sup>1\*</sup>

<sup>1</sup>Department of Plant and Soil Sciences, University of Kentucky, Lexington, KY 40546-0312 and

<sup>2</sup>Department of Plant Pathology, University of Kentucky, Princeton, KY 42445

\*Corresponding author, PH: (859) 257-5020 Ext. 80770, Email: [dvs@uky.edu](mailto:dvs@uky.edu)

In contrast to 2009, conditions in 2010 did not favor extensive head scab development in the Kentucky wheat crop. There was abundant moisture, but its timing was such that other diseases such as leaf rust probably had a bigger impact on the crop yield.

For the third year in a row, variety x fungicide tests were conducted in the Princeton, KY scab nursery. Entries in the 2010 test were grown in 6-row plots, 10 ft. long planted with conventional tillage after corn. Each entry was replicated twice and subjected to 2 treatments: fungicide-treated and control. The trial consisted of 30 varieties and breeding lines, many of which were also entered in the state wheat variety trial. The test was inoculated with scabby corn, and sprayed with a spore suspension during flowering. Fungicide-treated plots were sprayed at flowering with Prosaro (6.5 fl. oz./A) and Induce (0.125% w/v). Plots were rated for field symptoms at 21 days after flowering using a 0-9 scale. After combine-harvesting, yield, test weight, and *Fusarium* damaged kernels (FDK) were measured. FDK is the

percentage of scabby seed or tombstones in a representative grain sample. Because scab symptoms were relatively low this year, we did not send the grain samples for DON (vomitoxin) testing.

Although varieties and lines varied in their response to fungicide (Tables 2, 3), overall disease (as indicated by rating and FDK) was significantly reduced while yield and test weight were significantly increased (Table 1). Application of Prosaro resulted in significantly lower rating and FDK values, when compared with the untreated plots (Table 1), but it is likely that suppression of leaf rust and other diseases contributed to the yield and test weight increases that were observed.

Although head scab had less of an impact on the Kentucky wheat crop than in 2009, the lessons of the 2009 epidemic are still applicable: use the best management practices by planting scab resistant varieties and apply fungicides when weather is favorable for disease development. In a moderate epidemic, these practices may be enough to avoid a discount for low test weight or high toxin levels at the elevator.

**Table 1. Effect of Fungicide Application Averaged Over 30 Wheat Varieties and Lines, Princeton, KY 2010**

	Yield (bu/a)	Test Wt (lb/bu)	Rating (0-9)	FDK (%)
Fungicide Treated	81.4 a	56.9 a	3.1 a	3.8 a
Control	61.6 b	54.5 b	4.9 b	5.9 b

Rating = 0-9 ratings of scab symptoms, FDK= *Fusarium* damaged kernels. Means followed by different letters are significantly different from one another.

**Table 2. Individual Wheat Variety x Fungicide Yield, Test Weight, Scab rating and *Fusarium* damaged kernels (FDK), Princeton, KY 2010**

Entry	Fungicide Treated				Control			
	Yield (bu/a)	Test Wt (lb/bu)	Rating (0-9)	FDK (%)	Yield (bu/a)	Test Wt (lb/bu)	Rating (0-9)	FDK (%)
BECK 113	86.5	56.6	4.5	5.1	68.3	53.8	6.5	5.9
BECK 122	82.5	56.8	3.5	3.3	55.5	54.0	6.5	5.6
Bess	77.9	58.5	2.5	3.0	48.6	54.7	5.5	6.4
Cumberland	79.7	55.6	3.0	3.7	48.4	52.4	5.5	7.7
Delta Grow 5200	80.4	58.2	3.0	2.8	70.3	57.8	5.5	5.3
Dyna-Gro 9922	96.2	57.3	2.5	4.0	76.0	55.1	4.5	4.6
EXCEL 234	73.6	57.7	2.5	3.9	58.4	55.8	5.5	4.9
Exsegen Dinah	87.3	58.4	2.0	3.9	68.7	56.2	6.0	4.9
KAS 5058	81.0	58.1	2.0	3.5	71.3	55.9	4.0	4.5
KY00C-2567-01	79.3	56.3	4.5	4.9	58.9	54.6	5.5	6.0
KY01C-1070-10	86.1	57.0	4.5	2.7	71.1	56.3	5.0	3.7
KY01C-1318-10	73.3	54.2	5.5	6.0	62.5	52.9	5.0	6.3
KY01C-1318-11	75.7	56.5	3.5	4.6	46.5	52.1	7.0	7.2
KY01C-1319-14	71.5	56.5	6.0	3.7	51.2	52.3	5.5	8.8
KY01C-1531-13	78.7	56.5	4.5	3.9	62.3	54.7	7.0	5.3
KY02C-3004-02	86.9	60.0	1.0	3.3	69.5	58.1	2.5	4.7
KY02C-3004-07	82.2	57.2	3.0	4.1	74.5	55.6	3.5	4.8
KY02C-3005-25	83.8	58.6	1.5	3.1	72.0	57.4	3.0	4.1
KY97C-0508-01-01A-1	84.6	56.3	3.5	5.0	56.6	54.8	3.5	4.3
Pembroke	82.2	56.7	3.5	3.1	65.5	55.2	3.0	4.6
Pioneer variety 26R15	84.3	55.0	3.5	4.8	79.7	54.5	5.0	6.2
Pioneer variety 26R20	73.9	56.3	3.0	4.1	61.0	54.9	5.0	7.3
Pioneer variety 26R22	83.1	54.0	4.0	3.8	54.6	52.5	6.5	5.7
SS 8302	98.4	57.5	2.5	4.0	71.3	54.5	5.5	5.5
SS 8309	79.8	56.9	1.5	3.3	59.1	52.4	4.0	9.5
SYNGENTA BRANSON	77.7	54.5	4.0	4.1	40.5	51.3	4.5	10.3
SYNGENTA OAKES	82.8	58.7	3.5	2.9	64.3	57.3	5.0	4.3
SYNGENTA W1377	71.9	57.3	2.5	2.9	47.4	54.9	5.5	5.3
Truman	79.6	57.3	1.0	3.9	56.2	51.7	1.0	10.3
USG 3350	81.6	56.9	3.0	3.3	59.2	54.3	5.5	4.9
<b>Average</b>	<b>81.4</b>	<b>56.9</b>	<b>3.2</b>	<b>3.8</b>	<b>61.6</b>	<b>54.6</b>	<b>4.9</b>	<b>6.0</b>

**Table 3. Response to Fungicide Treatment in 30 Wheat Varieties and Lines - Princeton, KY 2010**

Entry	Percent Change with Fungicide Treatment			
	Yield (bu/a)	Test Wt (lb/bu)	Rating (0-9)	FDK (%)
BECK 113	26.6	5.1	-30.8	-14.1
BECK 122	48.6	5.2	-46.2	-41.1
Bess	60.3	6.9	-54.5	-53.0
Cumberland	64.7	6.1	-45.5	-52.3
Delta Grow 5200	14.4	0.7	-45.5	-47.7
Dyna-Gro 9922	26.5	4.0	-44.4	-11.9
EXCEL 234	25.9	3.4	-54.5	-19.6
Exsegen Dinah	27.1	3.9	-66.7	-21.1
KAS 5058	13.7	4.0	-50.0	-22.4
KY00C-2567-01	34.7	3.1	-18.2	-18.0
KY01C-1070-10	21.2	1.3	-10.0	-25.2
KY01C-1318-10	17.2	2.6	10.0	-4.2
KY01C-1318-11	62.7	8.4	-50.0	-36.2
KY01C-1319-14	39.7	8.0	9.1	-58.2
KY01C-1531-13	26.4	3.2	-35.7	-27.2
KY02C-3004-02	24.9	3.3	-60.0	-30.7
KY02C-3004-07	10.3	2.9	-14.3	-14.1
KY02C-3005-25	16.4	2.0	-50.0	-24.3
KY97C-0508-01-01A-1	49.5	2.6	0.0	16.5
Pembroke	25.6	2.7	16.7	-33.3
Pioneer variety 26R15	5.8	0.9	-30.0	-21.4
Pioneer variety 26R20	21.1	2.6	-40.0	-43.3
Pioneer variety 26R22	52.2	2.8	-38.5	-32.9
SS 8302	38.1	5.6	-54.5	-27.6
SS 8309	34.9	8.6	-62.5	-65.3
SYNGENTA BRANSON	91.8	6.2	-11.1	-60.4
SYNGENTA OAKES	28.8	2.4	-30.0	-31.6
SYNGENTA W1377	51.7	4.5	-54.5	-44.8
Truman	41.6	10.8	0.0	-62.7
USG 3350	37.8	4.8	-45.5	-32.8
<b>Average</b>	<b>34.7</b>	<b>4.3</b>	<b>-33.6</b>	<b>-32.0</b>