



8-2008

## **RR09-01-2008 Wheat, Barley & Oat Variety Performance Tests in Tennessee**

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# Wheat, Barley & Oat Variety Performance Tests in Tennessee **2008**

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<http://varietytrials.tennessee.edu> and [www.UTCrops.com](http://www.UTCrops.com).



## Acknowledgments

This research was funded by the Tennessee Agricultural Experiment Station and UT Extension with partial funding from participating companies.

We gratefully acknowledge the assistance of the following individuals in conducting these experiments:

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## Table of Contents

General Information.....	5
Interpretation of Data.....	5
Wheat Tests Results.....	6
Location information from Research & Education Centers Where the Wheat Variety Tests Were Conducted in 2008.....	7
Research and Education Center Wheat Performance Data 2008.....	8
County Standard Wheat Performance Data 2008.....	12
Two-year Research & Education Center Wheat Performance Data 2006 & 2008.....	14
Three-year Research & Education Center Wheat Performance Data 2005, 2006, 2008.....	16
Systemic Insecticide Treatment Comparison Tests 2008.....	18
Barley Tests Results.....	22
Location Information from Research & Education Centers Where the Barley Variety Tests Were Conducted in 2008.....	22
Research & Education Center Barley Performance Data 2008.....	23
Two-year Research & Education Center Barley Performance Data 2006 & 2008.....	24
Three-year Research & Education Center Barley Performance Data 2005, 2006, 2008.....	25
East Tennessee Research & Education Center Oat Performance Data 2008.....	26
Seed Company Contact Information.....	28

## **General Information**

**Research and Education Center Tests:** The 2008 variety performance tests were conducted on 58 soft, red winter wheat varieties in each of the physiographic regions of the state. Tests were conducted at East TN (Knoxville), Plateau (Crossville), Highland Rim (Springfield), Middle TN (Spring Hill), Milan (Milan), and West TN (Jackson) Research and Education Centers.

All varieties were seeded at rates from 26 - 32 seed per square foot (Table 1). Plots were seeded with drills using 7–7.5 inch row spacings. The plot size was six, seven or ten rows, 22 to 30 feet in length depending on location equipment. Plots were replicated three times at each location. Seed of all varieties were treated with a fungicide.

**County Standard Tests:** The County Standard Wheat Test was conducted on 19 soft red winter wheat varieties at 10 locations across nine counties in West Tennessee (Dyer, Franklin, Gibson, Haywood, Henry, Lake, Madison, Moore, and Weakley) and one county in western Kentucky (Ballard). Each variety was evaluated in a large strip-plot at each location, thus each county test was considered as one replication of the test in calculating the overall average yield and in conducting the statistical analysis to determine significant differences. At each location, plots were planted, sprayed, fertilized, and harvested with the equipment used by the cooperating producer in his farming operation. The width and length of strip-plots were different in each county; however, within a location in a county, the strips were trimmed on the ends so that the lengths were the same for each variety, or if the lengths were different then the harvested length was measured for each variety and appropriate harvested area adjustments were made to determine the yield per acre.

**Insecticide Seed Treatments:** In order to evaluate the effects of seed that had been treated with a systemic insecticide such as Cruiser versus seed that had not been treated, five varieties were evaluated in the Research and Education Center tests in 2008. Delta King DK9577, FFR 8302, Pioneer 26R22, USG 3350, and USG 3342 were planted at each location with and without the systemic insecticide 'Cruiser' seed treatment. All plot seed were treated with a fungicide.

**Growing Season:** The growing season began with fairly normal conditions during the fall planting season across much of the state. The winter temperatures were reasonably moderate with some freezing damage to the plants at some locations. According to the Tennessee Agricultural Statistics Service (TASS), the crop tolerated the winter in good shape with 80% of the crop rated good to excellent in the spring. Three quarters of the crop experienced some insect or disease damage during the season. Hot and dry conditions in late June aided in a harvest slightly ahead of normal. Tennessee producers planted approximately 620,000 acres of wheat in the fall of 2007. Approximately 490,000 acres were harvested for grain in 2008 which is nearly double the 2007 harvested acreage of 260,000. According to the Tennessee Agricultural Statistics Service, the predicted state average yield of 65 bu/a in 2008, if realized, will be the highest state average wheat yields since records began in 1866.

## **Interpretation of Data**

The tables on the following pages have been prepared with the entries listed in order of performance, the highest-yielding entry being listed first. All yields presented have been



adjusted to 13.5% moisture. At the bottom of the tables, **LSD** values stand for **Least Significant Difference**. The mean yields of any two varieties being compared must differ by at least the LSD amount shown to be considered different in yielding ability at the 5% level of probability of significance. For example, given that the LSD for a test is 8.0 bu/a and the mean yield of Variety A was 50 bu/a and the mean yield of Variety B was 55 bu/a, then the two varieties are not statistically different in yield because the difference of 5 bu/a is less than the minimum of 8 bu/a required for them to be significant. Similarly, if the average yield of Variety C was 63 bu/a then it is significantly higher yielding than both Variety B ( $63 - 55 = 8 \text{ bu/a} = \text{LSD of } 8$ ) and Variety A ( $63 - 50 = 13 \text{ bu/a} > \text{LSD of } 8$ ).

Also, the **coefficient of variation (C.V.)** values are shown at the bottom of each table. This value is a measure of the error variability found within each experiment. It is the percentage that the square root of error mean square is of the overall test mean yield at that location. For example, a C.V. of 10% indicates that the size of the error variation is about 10% of the size of the test mean. Similarly, a C.V. of 30% indicates that the size of the error variation is nearly one-third as large as the test mean. A goal in conducting each yield test is to keep the C.V. as low as possible, preferably below 20%.

## ----- Wheat -----

### Results

**Yield and Agronomic Traits:** During 2008, 58 wheat varieties were evaluated in six research and education center (REC) tests, and 19 varieties were evaluated in 10 county standard tests (CST). Nineteen of the varieties were common to both the REC and the county tests (Table 5). Ten companies and five universities entered varieties into the tests this year. The average yield of the 53 non-insecticide treated varieties in the 2008 REC tests was 62 bu/a (range from 52 to 71 bu/a, Table 2). The average yield of the five insecticide treated varieties in the REC tests was 69 bu/a with individual varieties ranging from 65 to 70 bu/a. The varieties ranged in maturity from 228 to 232 days after planting (DAP) with most of the varieties clustering around 230. The test weight values ranged from 54.3 to 58.7 lbs/bu (Table 3). The average yield of the 19 varieties in the county tests was 76.7 bu/a with individual varieties ranging from 72.5 to 82.3 bu/a. The test weight values ranged from 54.8 to 59.0 lbs/bu (Table 4).

A severe hail storm occurred at the East TN REC (Knoxville) location on May 9, 2008 and caused considerable head lodging in the wheat plots. Approximately 10% of the heads were bent but not broken off of the plants and very little shattering loss of seed occurred.

Due to the severe freeze that occurred in early April 2007 and the atypical yields that were obtained, the data from 2007 are not included in the 2- and 3-year summaries. Instead the 2006 and 2005 data are included for the 2- and 3-year summaries. Thirty-one of the 58 varieties have been evaluated over the two year period (2006 & 2008) and 21 of the 58 have been evaluated for the three year period (2005, 2006, & 2008).

**Cruiser Seed Treatments:** The Cruiser insecticide seed treatments resulted in fairly consistent yield increases among varieties and REC locations. There were statistically significant yield increases for three of the five varieties (Pioneer 26R22, USG 3342, and USG 3350) that had been treated with Cruiser as compared to the non-Cruiser treated seed across locations. The five varieties treated with Cruiser averaged a statistically significant 5 bu/a

increase across all locations as compared to the non-Cruiser treated seed. (Table 10). This differs from the rather inconsistent responses obtained in previous year's studies of systemic insecticide treated seed in this program. This may be due to increased insect and disease pressure noted by growers across the state and reported by the Tennessee Agricultural Statistics Service this season.

**Table 1. Location information from research and education centers where the wheat variety tests were conducted in 2008.**

<b>Research and Education Center</b>	<b>Location</b>	<b>Planting Date</b>	<b>Harvest Date</b>	<b>Seeding Rate</b>	<b>Soil Type</b>
Knoxville	Knoxville	10/29/2007	6/16/2008	28/ft <sup>2</sup>	Sequoia Silty Clay Loam
Plateau	Crossville	11/2/2007	6/27/2008	28/ft <sup>2</sup>	Lilly Silt Loam
Highland Rim	Springfield	11/9/2007	6/24/2008	28/ft <sup>2</sup>	Dickson Silt Loam
Middle Tennessee	Spring Hill	11/12/2007	6/19/2008	26/ft <sup>2</sup>	Maury Silt Loam
West Tennessee	Jackson	11/5/2007	6/18/2008	28/ft <sup>2</sup>	Lexington Silt Loam
Milan	Milan	11/5/2007	6/18/2008	32/ft <sup>2</sup>	Loring Silt Loam



Table 2. Mean yields† of 58 soft red winter wheat varieties evaluated at six locations in Tennessee during 2008.

Brand	Variety	Avg. Yield ± Std Err. (n=6)‡	Spring					
			Knoxville 10/29/07 §	Crossville 11/2/07	Springfield 11/9/07	Hill 11/12/07	Jackson 11/5/07	Milan 11/5/07
USG	3555	71 ± 2	67	82	42	73	76	87
MI	Red Ruby	69 ± 2	75	83	45	56	72	84
VA	Jamestown	69 ± 2	61	80	41	72	72	90
VA	VA03W-409	68 ± 2	56	90	47	55	73	88
MD	Chesapeake	67 ± 2	61	85	47	65	67	80
USG	3295	67 ± 2	62	78	36	60	81	85
Delta King	DK 9577	67 ± 2	62	72	39	73	74	81
USG	3665	66 ± 2	54	78	42	60	73	91
Cache River Valley Seed	Dixie X950	66 ± 2	62	75	38	64	72	85
FFR	8302	66 ± 2	67	70	40	67	74	78
Pioneer	26R15	66 ± 2	70	73	35	59	75	81
Vigoro	V9812	66 ± 2	57	78	26	77	74	83
TN Exp	TN 802	66 ± 2	48	76	34	73	78	85
MO	MO-011126	66 ± 2	68	71	37	54	75	89
Pioneer	26R87	66 ± 2	63	83	35	53	71	89
FFR	Exp 8868	65 ± 2	59	72	32	72	69	86
Pioneer	26R22	65 ± 2	69	61	35	54	85	85
Cache River Valley Seed	Dixie 989	65 ± 2	60	74	32	64	73	85
Warren Seed	Micah 100	65 ± 2	59	81	42	58	67	81
VA	McCormick	65 ± 2	68	76	36	53	69	85
Cache River Valley Seed	Dixie X427	64 ± 2	52	72	33	66	74	87
Vigoro	V9712	64 ± 2	67	80	34	52	66	82
Cache River Valley Seed	Dixie X454	64 ± 2	46	79	45	62	69	81
VA	Roane	64 ± 2	69	83	41	48	62	79
Delta Grow	1600	63 ± 2	58	77	39	56	69	81
Progeny	122	63 ± 2	54	80	32	65	64	83
USG	3209	63 ± 2	58	77	43	59	62	78
Progeny	117	62 ± 2	47	70	35	66	68	86
VA	VA01W-205	62 ± 2	54	79	33	59	62	86
VA	VA03W-434	62 ± 2	60	79	38	55	63	73
AgriPro Coker	W1377	61 ± 2	54	67	39	57	67	84
USG	3860	61 ± 2	54	70	40	49	73	79
AgriPro Coker	Branson	61 ± 2	54	66	31	65	60	89
USG	3342	60 ± 2	53	87	40	48	64	71
Progeny	185	60 ± 2	47	73	36	60	67	79
TN Exp	TN 801	60 ± 2	46	81	40	51	68	75
FFR	556	60 ± 2	45	82	31	57	73	72
Armor	9901	60 ± 2	37	78	34	49	75	85

bu/a

(continued)

**Table 2. Mean yields† of 58 soft red winter wheat varieties evaluated at six locations in Tennessee during 2008.**

Brand	Variety	Avg. Yield ± Std Err. (n=6)‡	Spring					
			Knoxville 10/29/07 §	Crossville 11/2/07	Springfield 11/9/07	Hill 11/12/07	Jackson 11/5/07	Milan 11/5/07
USG	3350	60 ± 2	44	67	39	56	71	81
MO	Bess	58 ± 2	45	73	30	53	71	78
Vigoro	V9710	58 ± 2	52	72	27	56	66	75
Cache River Valley Seed	Dixie 907	58 ± 2	50	59	32	58	67	80
Warren Seed	McKay 100	58 ± 2	44	65	30	60	70	77
Delta King	DK 9108	58 ± 2	42	75	37	48	70	72
TN Exp	TN 501	58 ± 2	45	67	39	48	75	70
AgriPro Coker	Coker 9511	57 ± 2	44	79	27	45	73	75
Progeny	166	57 ± 2	46	72	31	53	61	79
Delta Grow	5200	56 ± 2	50	59	34	46	73	76
Delta King	DK 7710	55 ± 2	47	63	31	49	61	78
Progeny	145	55 ± 2	41	64	41	49	60	74
MO	Truman	54 ± 2	44	73	37	46	57	69
USG	3633	53 ± 2	44	68	22	39	66	80
Progeny	127	52 ± 2	48	68	27	39	57	71
<b>Average (bu/a)</b>		<b>62</b>	<b>55</b>	<b>74</b>	<b>36</b>	<b>57</b>	<b>69</b>	<b>81</b>

  

Varieties* -- Seed Treated with Systemic Insecticide		bu/a	
Pioneer	26R22 (Cruiser)	70 ± 2	76
Delta King	DK 9577 (Cruiser)	70 ± 2	67
FFR	8302 (Cruiser)	70 ± 2	62
USG	3342 (Cruiser)	70 ± 2	70
USG	3350 (Cruiser)	65 ± 2	51
<b>Average (bu/a)</b>		<b>69</b>	<b>65</b>

  

<b>L.S.D.<sub>.05</sub> (bu/a)</b>	<b>5</b>	<b>13</b>	<b>10</b>	<b>13</b>	<b>14</b>	<b>9</b>	<b>12</b>
<b>C.V. (%)</b>	<b>11.8</b>	<b>14.9</b>	<b>8.2</b>	<b>21.3</b>	<b>15.2</b>	<b>7.9</b>	<b>8.8</b>

† All yields are adjusted to 13.5% moisture.

‡ n = number of environments

\* Tested in the same trial with untreated varieties

§ Planting date

**Table 3. Mean yield† and agronomic characteristics of 58 soft red winter wheat varieties evaluated at six locations in Tennessee during 2008.**

Brand	Variety	Avg. Yield		Test			Take All	
		± Std Err.	Moisture	Weight#	Maturity	Height	Lodging	Disease
		(n=6)‡	(n=6)	(n=2)	(n=3)	(n=6)	(n=2)	(n=1)
		bu/a	%	lbs/bu	DAP	in.	Score	Score
USG	3555	71 ± 2	13.9	56.5	229	30	1.5	1.3
MI	Red Ruby	69 ± 2	13.2	56.2	232	35	1.0	1.2
VA	Jamestown	69 ± 2	14.0	57.9	230	31	1.2	1.0
VA	VA03W-409	68 ± 2	13.4	54.3	230	31	1.0	1.5
MD	Chesapeake	67 ± 2	13.9	56.7	229	33	1.3	1.8
USG	3295	67 ± 2	13.7	57.3	231	31	1.0	1.5
Delta King	DK 9577	67 ± 2	13.7	56.3	229	34	1.3	1.3
USG	3665	66 ± 2	13.6	56.3	230	34	1.0	1.5
Cache River Valley Seed	Dixie X950	66 ± 2	13.8	57.4	229	34	1.0	1.3
FFR	8302	66 ± 2	13.6	56.9	231	34	1.0	1.2
Pioneer	26R15	66 ± 2	13.3	55.7	231	33	1.0	1.0
Vigoro	V9812	66 ± 2	13.3	56.0	231	33	1.2	1.7
TN Exp	TN 802	66 ± 2	13.9	55.9	230	36	1.6	1.2
MO	MO-011126	66 ± 2	13.5	57.0	230	35	1.2	1.5
Pioneer	26R87	66 ± 2	13.8	58.7	229	33	1.0	1.7
FFR	Exp 8868	65 ± 2	13.4	56.7	229	34	1.0	1.8
Pioneer	26R22	65 ± 2	13.6	55.7	230	35	1.5	1.0
Cache River Valley Seed	Dixie 989	65 ± 2	13.7	56.0	230	34	1.2	1.3
Warren Seed	Micah 100	65 ± 2	13.4	55.3	231	37	1.3	1.2
VA	McCormick	65 ± 2	14.3	58.2	231	31	1.0	1.5
Cache River Valley Seed	Dixie X427	64 ± 2	14.1	54.5	230	34	1.2	1.3
Vigoro	V9712	64 ± 2	13.5	56.3	230	33	1.2	1.5
Cache River Valley Seed	Dixie X454	64 ± 2	13.7	57.1	232	35	1.0	2.2
VA	Roane	64 ± 2	13.9	58.5	229	32	1.0	1.0
Delta Grow	1600	63 ± 2	13.5	56.0	230	34	1.0	1.5
Progeny	122	63 ± 2	13.8	55.5	230	36	1.3	1.2
USG	3209	63 ± 2	14.4	54.9	230	31	1.5	2.8
Progeny	117	62 ± 2	13.8	56.0	229	35	1.2	1.5
VA	VA01W-205	62 ± 2	13.8	56.1	230	29	1.2	1.8
VA	VA03W-434	62 ± 2	13.7	57.3	230	28	1.0	1.5
AgriPro Coker	W1377	61 ± 2	14.2	58.0	229	35	1.0	1.2
USG	3860	61 ± 2	13.3	55.0	230	32	1.0	1.3
AgriPro Coker	Branson	61 ± 2	13.8	54.7	229	33	1.3	2.2
USG	3342	60 ± 2	13.3	54.7	230	29	1.2	1.8
Progeny	185	60 ± 2	13.8	56.0	230	33	1.0	1.5
TN Exp	TN 801	60 ± 2	13.2	54.8	230	38	1.2	1.2
FFR	556	60 ± 2	13.3	55.3	231	32	1.2	2.3
Armor	9901	60 ± 2	13.8	56.8	231	32	1.2	2.5

(continued)

**Table 3. Mean yield† and agronomic characteristics of 58 soft red winter wheat varieties evaluated at six locations in Tennessee during 2008.**

Brand	Variety	Avg. Yield		Test			Take All		
		± Std Err. (n=6)‡	bu/a	Moisture (n=6)	Weight# (n=2)	Maturity (n=3)	Height (n=6)	Lodging (n=2)	Disease (n=1)
				%	lbs/bu	DAP	in.	Score	Score
USG	3350	60 ± 2		14.0	56.0	230	37	1.3	1.7
MO	Bess	58 ± 2		13.6	55.4	229	35	1.0	2.2
Vigoro	V9710	58 ± 2		13.6	55.1	228	30	1.2	2.5
Cache River Valley Seed	Dixie 907	58 ± 2		13.9	55.1	229	36	1.3	1.3
Warren Seed	McKay 100	58 ± 2		13.7	55.2	229	37	1.2	2.2
Delta King	DK 9108	58 ± 2		13.3	55.3	229	35	1.3	3.0
TN Exp	TN 501	58 ± 2		13.6	55.5	229	38	1.2	1.0
AgriPro Coker	Coker 9511	57 ± 2		14.1	57.7	230	35	1.3	1.3
Progeny	166	57 ± 2		14.0	55.2	228	37	1.2	1.7
Delta Grow	5200	56 ± 2		14.0	55.7	229	36	1.2	1.5
Delta King	DK 7710	55 ± 2		13.9	56.7	229	37	1.0	1.7
Progeny	145	55 ± 2		14.1	55.3	229	37	1.3	1.8
MO	Truman	54 ± 2		13.8	55.6	229	37	1.2	2.0
USG	3633	53 ± 2		13.3	55.9	229	34	1.0	1.8
Progeny	127	52 ± 2		13.4	54.9	230	35	1.3	1.5
	<b>Average</b>	<b>62</b>		<b>13.7</b>	<b>56.3</b>	<b>230</b>	<b>33</b>	<b>1.1</b>	<b>1.5</b>

  

Varieties* -- Seed Treated with Systemic Insecticide									
Pioneer	26R22 (Cruiser)	70 ± 2		13.3	55.9	230	35	1.0	1.0
Delta King	DK 9577 (Cruiser)	70 ± 2		13.5	56.5	230	34	1.3	1.7
FFR	8302 (Cruiser)	70 ± 2		13.8	57.5	230	34	1.0	1.2
USG	3342 (Cruiser)	70 ± 2		13.0	55.8	230	30	1.3	1.3
USG	3350 (Cruiser)	65 ± 2		14.1	56.2	229	38	1.5	1.2
	<b>Average</b>	<b>69</b>		<b>13.5</b>	<b>56.4</b>	<b>230</b>	<b>34</b>	<b>1.2</b>	<b>1.3</b>

† All yields are adjusted to 13.5% moisture.

‡ n = number of environments

# Official test weight of No. 2 wheat = 58 lbs/bu.

\* Tested in the same trial with untreated varieties

Maturity (DAP) = Days after planting

Lodging = 1 to 5 scale; where 1 = 95% of plants erect; 2.5 = ~50% of plants leaning at angle ≥ 45°; 5 = 95+% of plants leaning at an angle ≥ 45°.

Take All Disease - 1 to 5 scale; where 1 = 95% of plants non-infected;

2.5 = ~50% of plants infected; 5 = 95+% of plants infected.

Take All Disease ratings taken at the East Tennessee Research & Education Center, Knoxville, TN in 2008.

**Table 4. Yield† of 19 soft red winter wheat varieties evaluated in 10 County Standard Tests in Tennessee during 2008.**

MS	Brand/Variety	Avg.		Moisture	Weight‡	Test		Ballard	Dyer	Franklin	Gibson	Haywood	Henry	Lake	Moore	Weakley	Madison
		Yield	Yield			10/11§	11/2										
		bu/a	bu/a	%	lbs/bu	10/11§	11/2	11/4	11/2	11/4	11/2	11/5	10/12	11/1	10/30	11/1	11/4
A	***FFR 556	82.3	82.3	13.5	55.5	80.3	108.3	105.9	54.8	105.9	54.8	98.1	74.2	81.4	103.2	54.9	61.7
AB	**Delta King 9577	80.6	80.6	13.9	55.5	80.3	106.7	99.4	61.9	99.4	61.9	93.1	78.3	71.2	95.3	54.9	65.4
ABC	***FFR 8302	79.6	79.6	13.7	57.1	83.0	104.1	95.5	55.3	95.5	55.3	97.2	68.9	68.2	91.4	66.1	66.5
ABCD	Pioneer 26R22	79.0	79.0	13.6	56.6	78.9	105.7	114.1	55.8	114.1	55.8	96.9	68.3	64.4	92.8	52.9	60.0
ABCD	*AgriPro/Coker Branson	78.2	78.2	13.6	56.4	86.1	104.5	92.8	59.8	92.8	59.8	98.0	75.0	77.5	75.0	47.6	66.0
ABCDE	CRV/Dixie 989	77.7	77.7	13.7	55.0	78.2	102.2	101.2	53.9	101.2	53.9	103.0	74.7	60.4	92.8	51.9	58.6
ABCDE	Vigoro 9710	77.4	77.4	13.9	56.8	89.4	101.3	100.0	59.4	100.0	59.4	80.7	73.3	65.8	91.3	52.4	60.6
ABCDE	**Pioneer 26R15	77.1	77.1	13.4	57.1	71.1	103.1	105.9	56.9	105.9	56.9	85.9	73.1	61.8	93.3	56.4	63.5
BCDE	Warren Seed McKay 100	76.9	76.9	13.8	56.6	83.4	99.6	95.1	57.3	95.1	57.3	100.6	71.4	61.8	94.5	48.4	56.5
BCDE	CRV/Dixie 907	76.7	76.7	13.6	56.4	80.1	101.9	100.3	54.2	100.3	54.2	87.8	75.8	68.7	92.4	47.5	58.9
BCDE	***USG 3350	76.3	76.3	13.8	57.3	79.1	97.9	92.5	53.6	92.5	53.6	92.5	76.6	59.9	94.9	52.5	63.2
BCDE	Armor 9901	75.7	75.7	13.8	57.9	71.8	93.9	110.3	58.9	110.3	58.9	90.9	66.5	70.6	84.5	53.1	56.5
CDE	Progeny 166	75.2	75.2	13.9	55.8	78.9	100.0	99.9	53.7	99.9	53.7	92.2	68.5	63.0	87.8	47.9	60.5
CDE	AgriPro/Coker W1377	75.0	75.0	14.0	59.0	70.6	103.0	107.2	55.3	107.2	55.3	92.8	81.3	59.1	79.0	50.7	51.1
CDE	Progeny 185	75.0	75.0	13.5	54.8	80.1	101.4	92.0	51.6	92.0	51.6	104.6	58.9	62.2	87.8	59.0	52.3
DE	Delta King 9108	74.4	74.4	13.7	56.0	74.8	97.4	103.8	56.4	103.8	56.4	85.0	61.1	59.2	90.7	69.7	45.5
DE	Warren Seed Micah 100	74.2	74.2	13.7	56.3	75.1	95.5	103.9	58.1	103.9	58.1	84.6	81.9	56.5	89.4	45.0	52.5
DE	Vigoro 9712	74.2	74.2	13.7	56.8	88.1	99.9	94.0	56.8	94.0	56.8	98.5	66.5	60.6	77.9	48.5	51.5
E	USG 3342	72.5	72.5	13.4	57.6	73.5	97.7	101.8	58.4	101.8	58.4	65.7	60.9	63.5	95.6	48.1	59.8
	<b>Average</b>	<b>76.7</b>	<b>76.7</b>	<b>13.7</b>	<b>56.5</b>	<b>79.1</b>	<b>101.3</b>	<b>100.8</b>	<b>56.4</b>	<b>100.8</b>	<b>56.4</b>	<b>92.0</b>	<b>71.3</b>	<b>65.0</b>	<b>90.0</b>	<b>53.0</b>	<b>58.5</b>

† Yields have been adjusted to 13.5% moisture. Each variety was evaluated in a large strip-plot at each location, thus each county test was considered as one replication of the test in calculating the average yield and in conducting the statistical analysis to determine significant differences (MS).

‡ Official test weight of No. 2 wheat = 58 lbs/bu. - average of 8 locations

MS = Varieties that have any MS letter in common are not statistically different in yield at the 5% level of probability.

Varieties denoted with an asterisk (\*), (\*\*), (\*\*\*) or (\*\*\*\*) were in the top performing group in 2007, 2006, 2005 and/or 2004, respectively.

(Yields from freeze damaged 2007 crop not used to qualify for asterisk)

WTREC = West Tennessee Research and Education Center, Jackson, TN.

Data provided by Robert C. Williams, Ext. Area Specialist, Grain Crops, and extension agents in counties shown above.

§ Planting date

**Table 5. Yield†, moistures, and test weights of 19 soft red winter wheat varieties that were in common to both the County Standard Tests (n=10) and the Research and Education Center (REC) Tests (n=6) in Tennessee during 2008.**

Brand	Variety	County Standard Tests				REC Tests				
		Avg. Yield bu/a	Moisture %	Test Weight‡ lbs/bu	Avg. Yield bu/a	Moisture %	Test Weight lbs/bu	Avg. Yield bu/a	Moisture %	Test Weight lbs/bu
FFR	556	82	13.5	55.5	60	13.3	55.3			
Delta King	DK 9577	81	13.9	55.5	67	13.7	56.3			
FFR	8302	80	13.7	57.1	66	13.6	56.9			
Pioneer	26R22	79	13.6	56.6	65	13.6	55.7			
AgriPro Coker	Branson	78	13.6	56.4	61	13.8	54.7			
Cache River Valley Seed	Dixie 989	78	13.7	55.0	65	13.7	56.0			
Vigoro	V9710	77	13.9	56.8	58	13.6	55.1			
Pioneer	26R15	77	13.4	57.1	66	13.3	55.7			
Warren Seed	McKay 100	77	13.8	56.6	58	13.7	55.2			
Cache River Valley Seed	Dixie 907	77	13.6	56.4	58	13.9	55.1			
USG	3350	76	13.8	57.3	60	14.0	56.0			
Armor	9901	76	13.8	57.9	60	13.8	56.8			
Progeny	166	75	13.9	55.8	57	14.0	55.2			
AgriPro Coker	W1377	75	14.0	59.0	61	14.2	58.0			
Progeny	185	75	13.5	54.8	60	13.8	56.0			
Delta King	DK 9108	74	13.7	56.0	58	13.3	55.3			
Warren Seed	Micah 100	74	13.7	56.3	65	13.4	55.3			
Vigoro	V9712	74	13.7	56.8	64	13.5	56.3			
USG	3342	73	13.4	57.6	60	13.3	54.7			
<b>Average</b>		<b>77</b>	<b>13.7</b>	<b>56.5</b>	<b>62</b>	<b>13.7</b>	<b>55.8</b>			

† All yields are adjusted to 13.5% moisture.

‡ Official test weight of No. 2 wheat = 58 lbs/bu.

**Table 6. Mean yields† of 31 soft red winter wheat varieties evaluated at four locations (n=8) in Tennessee for two years, 2006 and 2008. (Due to freeze damage, 2007 data were not used)**

Brand	Variety	Avg. Yield ± Std Err. (n=8)‡	Spring			
			Knoxville	Hill	Jackson	Milan
Pioneer	26R22	78 ± 1	78	59	95	80
FFR	8302	75 ± 1	70	66	92	72
Delta King	DK 9577	74 ± 2	72	68	84	74
USG	3665	74 ± 1	69	62	86	77
Pioneer	26R15	73 ± 1	75	58	87	73
AgriPro Coker	Branson	73 ± 1	67	65	80	80
Cache River Valley Seed	Dixie 989	73 ± 1	72	59	88	72
Pioneer	26R87	73 ± 1	78	54	83	75
MD	Chesapeake	72 ± 1	73	64	80	72
Vigoro	V9712	71 ± 1	76	54	80	74
USG	3295	71 ± 2	66	61	85	72
USG	3350	71 ± 1	63	59	84	78
Delta Grow	1600	70 ± 1	71	59	82	69
VA	McCormick	70 ± 1	70	55	82	74
USG	3209	70 ± 2	63	59	82	75
Progeny	185	70 ± 2	61	62	79	75
USG	3342	69 ± 1	72	56	80	68
FFR	556	69 ± 2	62	56	86	71
TN Exp	TN 501	67 ± 1	61	56	87	66
MO	Bess	67 ± 1	57	57	83	70
AgriPro Coker	Coker 9511	66 ± 1	57	56	85	68
VA	Roane	66 ± 1	71	50	78	68
Delta Grow	5200	66 ± 1	61	51	81	72
Progeny	166	66 ± 2	63	56	73	72
Delta King	DK 7710	65 ± 1	60	51	78	71
Delta King	DK 9108	65 ± 1	57	57	79	66
Progeny	145	64 ± 1	61	48	76	71
MO	Truman	61 ± 1	53	51	76	66
<b>Average (bu/a)</b>		<b>70</b>	<b>66</b>	<b>57</b>	<b>83</b>	<b>72</b>
<b>Varieties* -- Seed Treated with Systemic Insecticide</b>						
Delta King	DK 9577 (Cruiser)	77 ± 2	77	65	89	76
FFR	8302 (Cruiser)	76 ± 1	68	65	89	81
USG	3350 (Cruiser)	72 ± 1	62	62	85	81
<b>Average (bu/a)</b>		<b>75</b>	<b>69</b>	<b>64</b>	<b>87</b>	<b>79</b>
<b>L.S.D.<sub>.05</sub> (bu/a)</b>		<b>5</b>	<b>12</b>	<b>12</b>	<b>10</b>	<b>8</b>
<b>C.V. (%)</b>		<b>9.9</b>	<b>11.6</b>	<b>13.3</b>	<b>8.2</b>	<b>7.6</b>

† All yields are adjusted to 13.5% moisture.

‡ n = number of environments

\* Tested in the same trial with untreated varieties



**Table 7. Mean yields† and agronomic characteristics of 31 soft red winter wheat varieties evaluated at four locations (n=8) in Tennessee for two years, 2006 and 2008. (Due to freeze damage, 2007 data were not used)**

Brand	Variety	Avg. Yield	Test				Take All	
		± Std Err. (n=8)‡	Moisture (n=8)	Weight§ (n=4)	Maturity (n=5)	Height (n=8)	Lodging (n=4)	Disease (n=1)
		bu/a	%	lbs/bu	DAP	in.	Score	Score
Pioneer	26R22	78 ± 1	13.0	56.3	225	35	1.3	1.0
FFR	8302	75 ± 1	13.0	57.3	225	34	1.0	1.2
Delta King	DK 9577	74 ± 2	12.8	57.3	224	34	1.2	1.3
USG	3665	74 ± 1	12.6	57.0	225	34	1.0	1.5
Pioneer	26R15	73 ± 1	12.6	56.2	225	34	1.0	1.0
AgriPro Coker	Branson	73 ± 1	13.0	55.8	223	33	1.2	2.2
Cache River Valley Seed	Dixie 989	73 ± 1	12.7	57.2	224	34	1.1	1.3
Pioneer	26R87	73 ± 1	13.0	59.6	223	33	1.0	1.7
MD	Chesapeake	72 ± 1	13.1	57.6	223	33	1.3	1.8
Vigoro	V9712	71 ± 1	12.8	57.6	224	33	1.1	1.5
USG	3295	71 ± 2	12.8	57.6	225	31	1.0	1.5
USG	3350	71 ± 1	13.0	56.4	225	38	1.2	1.7
Delta Grow	1600	70 ± 1	12.6	57.0	225	35	1.0	1.5
VA	McCormick	70 ± 1	13.5	58.4	225	31	1.0	1.5
USG	3209	70 ± 2	13.3	55.3	224	31	1.4	2.8
Progeny	185	70 ± 2	12.9	55.8	226	33	1.0	1.5
USG	3342	69 ± 1	12.4	56.3	223	29	1.1	1.8
FFR	556	69 ± 2	12.3	55.7	224	32	1.1	2.3
TN Exp	TN 501	67 ± 1	12.7	56.3	226	39	1.3	1.0
MO	Bess	67 ± 1	12.9	56.1	225	35	1.0	2.2
AgriPro Coker	Coker 9511	66 ± 1	13.3	57.6	224	36	1.3	1.3
VA	Roane	66 ± 1	13.2	58.1	226	32	1.0	1.0
Delta Grow	5200	66 ± 1	13.1	56.5	226	37	1.1	1.5
Progeny	166	66 ± 2	13.1	56.3	225	37	1.1	1.7
Delta King	DK 7710	65 ± 1	13.1	57.3	226	37	1.0	1.7
Delta King	DK 9108	65 ± 1	12.6	55.9	225	37	1.3	3.0
Progeny	145	64 ± 1	13.0	55.7	225	37	1.2	1.8
MO	Truman	61 ± 1	14.5	55.9	228	38	1.1	2.0
	<b>Average</b>	<b>70</b>	<b>13.0</b>	<b>56.8</b>	<b>225</b>	<b>34</b>	<b>1.1</b>	<b>1.7</b>

**Varieties\* -- Seed Treated with Systemic Insecticide**

Delta King	DK 9577 (Cruiser)	77 ± 2	12.6	57.2	223	34	1.2	1.7
FFR	8302 (Cruiser)	76 ± 1	13.0	57.6	225	35	1.0	1.2
USG	3350 (Cruiser)	72 ± 1	13.3	56.5	226	38	1.3	1.2
	<b>Average</b>	<b>75</b>	<b>13.0</b>	<b>57.1</b>	<b>225</b>	<b>35</b>	<b>1.1</b>	<b>1.3</b>

† All yields are adjusted to 13.5% moisture.

‡ n = number of environments

§ Official test weight of No. 2 wheat = 58 lbs/bu.

\* Tested in the same trial with untreated varieties

Maturity (DAP) = Days after planting

Lodging = 1 to 5 scale; where 1 = 95% of plants erect; 2.5 = ~50% of plants leaning at angle ≥ 45°; 5 = 95+% of plants leaning at an angle ≥ 45°.

Take All Disease - 1 to 5 scale; where 1 = 95% of plants non-infected;

2.5 = ~50% of plants infected; 5 = 95+% of plants infected.

Take All Disease ratings taken at the East Tennessee Research & Education Center, Knoxville, TN in 2008.

**Table 8. Mean yields† of 21 soft red winter wheat varieties evaluated at four locations (n=12) in Tennessee for three years, 2005 - 2006 and 2008. (Due to freeze damage, 2007 data were not used)**

Brand	Variety	Avg. Yield ± Std Err. (n=12)‡	Spring			
			Knoxville	Hill	Jackson	Milan
			-----bu/a-----			
Pioneer	26R22	77 ± 1	86	69	86	68
Pioneer	26R15	73 ± 1	84	67	80	63
FFR	8302	72 ± 1	79	69	80	62
USG	3350	72 ± 1	75	66	82	65
Delta King	DK 9577	72 ± 1	81	73	76	58
USG	3209	70 ± 1	77	63	77	62
Progeny	185	70 ± 1	74	66	75	63
MD	Chesapeake	69 ± 1	81	66	68	59
VA	McCormick	68 ± 1	79	61	73	61
VA	Roane	67 ± 1	78	56	74	58
Delta Grow	5200	66 ± 1	70	59	74	62
FFR	556	66 ± 1	74	59	73	58
AgriPro Coker	Coker 9511	66 ± 1	68	63	75	57
Delta King	DK 7710	65 ± 1	67	60	73	61
Progeny	145	65 ± 1	68	57	72	64
TN Exp	TN 501	65 ± 1	64	63	76	57
Progeny	166	65 ± 1	70	62	69	60
MO	Truman	60 ± 1	63	55	67	57
<b>Average (bu/a)</b>		<b>68</b>	<b>74</b>	<b>63</b>	<b>75</b>	<b>61</b>
<b>Varieties* -- Seed Treated with Systemic Insecticide</b>						
Delta King	DK 9577 (Cruiser)	75 ± 1	86	71	81	60
FFR	8302 (Cruiser)	73 ± 1	78	73	75	68
USG	3350 (Cruiser)	72 ± 1	75	69	77	68
<b>Average (bu/a)</b>		<b>73</b>	<b>80</b>	<b>71</b>	<b>78</b>	<b>65</b>
<b>L.S.D.<sub>.05</sub> (bu/a)</b>		<b>6</b>	<b>10</b>	<b>11</b>	<b>14</b>	<b>9</b>
<b>C.V. (%)</b>		<b>11.1</b>	<b>9.3</b>	<b>12.0</b>	<b>12.2</b>	<b>11.0</b>

† All yields are adjusted to 13.5% moisture.

‡ n = number of environments

\* Tested in the same trial with untreated varieties

**Table 9. Mean yields† and agronomic characteristics of 21 soft red winter wheat varieties evaluated at four locations (n=12) for three years, 2005 - 2006 and 2008. (Due to freeze damage, 2007 data were not used)**

Brand	Variety	Avg. Yield	Moisture	Test	Maturity	Height	Lodging	Take All
		± Std Err.		Weight§				Disease
		(n=12)‡	(n=14)	(n=6)	(n=8)	(n=12)	(n=5)	(n=1)
		bu/a	%	lbs/bu	DAP	in.	Score	Score
Pioneer	26R22	77 ± 1	13.6	56.7	223	35	1.3	1.0
Pioneer	26R15	73 ± 1	13.1	56.7	224	34	1.1	1.0
FFR	8302	72 ± 1	13.6	58.0	224	35	1.1	1.2
USG	3350	72 ± 1	13.6	57.1	223	38	1.2	1.7
Delta King	DK 9577	72 ± 1	13.4	57.7	222	34	1.2	1.3
USG	3209	70 ± 1	13.9	56.9	223	32	1.4	2.8
Progeny	185	70 ± 1	13.5	56.5	223	33	1.1	1.5
MD	Chesapeake	69 ± 1	13.8	58.0	222	33	1.2	1.8
VA	McCormick	68 ± 1	14.0	59.0	223	31	1.0	1.5
VA	Roane	67 ± 1	13.9	59.0	223	33	1.0	1.0
Delta Grow	5200	66 ± 1	13.8	57.3	223	37	1.1	1.5
FFR	556	66 ± 1	13.0	56.5	223	32	1.1	2.3
AgriPro Coker	Coker 9511	66 ± 1	13.8	58.4	222	36	1.4	1.3
Delta King	DK 7710	65 ± 1	13.7	57.7	223	37	1.1	1.7
Progeny	145	65 ± 1	13.6	56.6	222	38	1.2	1.8
TN Exp	TN 501	65 ± 1	13.4	57.2	224	39	1.6	1.0
Progeny	166	65 ± 1	13.7	56.9	223	38	1.2	1.7
MO	Truman	60 ± 1	14.8	57.1	226	38	1.1	2.0
<b>Average</b>		<b>68</b>	<b>13.7</b>	<b>57.4</b>	<b>223</b>	<b>35</b>	<b>1.2</b>	<b>1.6</b>

**Varieties\* -- Seed Treated with Systemic Insecticide**

Delta King	DK 9577 (Cruiser)	75 ± 1	13.2	57.5	222	34	2	1.7
FFR	8302 (Cruiser)	73 ± 1	13.8	58.3	223	35	1	1.2
USG	3350 (Cruiser)	72 ± 1	13.8	57.1	223	38	1.3	1.2
<b>Average</b>		<b>73</b>	<b>13.6</b>	<b>57.6</b>	<b>223</b>	<b>36</b>	<b>1.3</b>	<b>1.3</b>

† All yields are adjusted to 13.5% moisture.

‡ n = number of environments

§ Official test weight of No. 2 wheat = 58 lbs/bu.

\* Tested in the same trial with untreated varieties

Maturity (DAP) = Days after planting

Lodging = 1 to 5 scale; where 1 = 95% of plants erect; 2.5 = ~50% of plants leaning at angle ≥ 45°; 5 = 95+% of plants leaning at an angle ≥ 45°.

Take All Disease - 1 to 5 scale; where 1 = 95% of plants non-infected;

2.5 = ~50% of plants infected; 5 = 95+% of plants infected.

Take All Disease ratings taken at the East Tennessee Research & Education Center, Knoxville, TN in 2008.

**Table 10. Yield† comparisons of five soft red winter wheat varieties between seed treated versus untreated with a systemic insecticide evaluated at six locations in Tennessee during 2008. ‡**

Brand	Variety	Avg. Yield ± Std Err. (n=6)‡	Spring						Avg. Yield Difference
			Knoxville 10/29/07 §	Crossville 11/2/07	Springfield 11/9/07	Hill 11/12/07	Jackson 11/5/07	Milan 11/5/07	
Pioneer	26R22 (Cruiser)	70 ± 2	76	61	40	66	81	96	+5
Pioneer	26R22	65 ± 2	69	61	35	54	85	85	
Delta King	DK 9577 (Cruiser)	70 ± 2	67	76	43	74	73	84	+3
Delta King	DK 9577	67 ± 2	62	72	39	73	74	81	
FFR	8302 (Cruiser)	70 ± 2	62	75	38	71	82	90	+4
FFR	8302	66 ± 2	67	70	40	67	74	78	
USG	3342 (Cruiser)	70 ± 2	70	95	52	60	68	72	+10
USG	3342	60 ± 2	53	87	40	48	64	71	
USG	3350 (Cruiser)	65 ± 2	51	72	43	66	72	88	+5
USG	3350	60 ± 2	44	67	39	56	71	81	
<b>Average -- Treated Seed (bu/a)</b>		69	65	76	43	67	75	86	<b>+5</b>
<b>Average -- Untreated Seed (bu/a)</b>		64	59	71	39	59	74	79	
<b>L.S.D.<sub>.05</sub> (bu/a)</b>		<b>5</b>	<b>13</b>	<b>10</b>	<b>13</b>	<b>14</b>	<b>9</b>	<b>12</b>	
<b>C.V. (%)</b>		<b>11.8</b>	<b>14.9</b>	<b>8.2</b>	<b>21.3</b>	<b>15.2</b>	<b>7.9</b>	<b>8.8</b>	

† All yields are adjusted to 13.5% moisture.

‡ All varieties were treated with fungicide.

§ Planting date

**Table 11. Comparisons of overall mean yield† and agronomic characteristics of five soft red winter wheat varieties between seed treated versus untreated with a systemic insecticide evaluated at six locations in Tennessee during 2008. ‡**

Brand	Variety	Avg. Yield	Moisture	Test	Maturity	Height	Lodging	Take All
		± Std Err.		Weight§				Disease
		(n=6)	(n=6)	(n=2)	(n=3)	(n=6)	(n=2)	(n=1)
		bu/a	%	lbs/bu	DAP	in.	Score	Score
Pioneer	26R22 (Cruiser)	70 ± 2	13.3	55.9	230	35	1.0	1.0
Pioneer	26R22	65 ± 2	13.6	55.7	230	35	1.5	1.0
Delta King	DK 9577 (Cruiser)	70 ± 2	13.5	56.5	230	34	1.3	1.7
Delta King	DK 9577	67 ± 2	13.7	56.3	229	34	1.3	1.3
FFR	8302 (Cruiser)	70 ± 2	13.8	57.5	230	34	1.0	1.2
FFR	8302	66 ± 2	13.6	56.9	231	34	1.0	1.2
USG	3342 (Cruiser)	70 ± 2	13.0	55.8	230	30	1.3	1.3
USG	3342	60 ± 2	13.3	54.7	230	29	1.2	1.8
USG	3350 (Cruiser)	65 ± 2	14.1	56.2	229	38	1.5	1.2
USG	3350	60 ± 2	14.0	56.0	230	37	1.3	1.7

† All yields are adjusted to 13.5% moisture.

‡ All varieties were treated with fungicide.

§ Official test weight of No. 2 wheat = 58 lbs/bu.

Maturity (DAP) = Days after planting

Lodging = 1 to 5 scale; where 1 = 95% of plants erect; 2.5 = ~50% of plants leaning at angle ≥ 45°; 5 = 95+% of plants leaning at an angle ≥ 45°.

Take All Disease - 1 to 5 scale; where 1 = 95% of plants non-infected;

2.5 = ~50% of plants infected; 5 = 95+% of plants infected.

Take All Disease ratings taken at the East Tennessee Research & Education Center, Knoxville, TN in 2008.

**Table 12. Yield† comparisons of three soft red winter wheat varieties between seed treated versus untreated with a systemic insecticide evaluated at four locations in Tennessee for two years, 2006 and 2008. ‡ (Due to freeze damage, 2007 data were not used)**

Brand	Variety	Avg. Yield ± Std Err.				Avg. Yield Difference
		(n=8)‡	Knoxville	Spring Hill	Milan	
Delta King	DK 9577 (Cruiser)	77 ± 2	77	65	76	+2
Delta King	DK 9577	74 ± 2	72	68	74	
FFR	8302 (Cruiser)	76 ± 1	68	65	81	+1
FFR	8302	75 ± 1	70	66	72	
USG	3350 (Cruiser)	72 ± 1	62	62	81	+1
USG	3350	71 ± 1	63	59	78	
<b>Average -- Treated Seed (bu/a)</b>		75	69	64	79	<b>+2</b>
<b>Average -- Untreated Seed (bu/a)</b>		73	68	64	75	
<b>L.S.D.<sub>.05</sub> (bu/a)</b>		<b>5</b>	<b>12</b>	<b>12</b>	<b>10</b>	<b>8</b>
<b>C.V. (%)</b>		<b>9.9</b>	<b>11.6</b>	<b>13.3</b>	<b>8.2</b>	<b>7.6</b>

† All yields are adjusted to 13.5% moisture.

‡ All varieties were treated with fungicide.

§ Planting date

**Table 13. Comparisons of overall mean yield† and agronomic characteristics of three soft red winter wheat varieties between seed treated versus untreated with a systemic insecticide evaluated at four locations in Tennessee for two years, 2006 and 2008.‡ (Due to freeze damage, 2007 data were not used)**

Brand	Variety	Avg. Yield		Test				Take All	
		± Std Err.	(n=8)	Moisture (n=8)	Weights§ (n=4)	Maturity (n=5)	Height (n=8)	Lodging (n=4)	Disease (n=1)
		bu/a	%	lbs/bu	DAP	in.	Score	Score	
Delta King	DK 9577 (Cruiser)	77 ± 2	12.6	57.2	223	34	1.2	1.7	
Delta King	DK 9577	74 ± 2	12.8	57.3	224	34	1.2	1.3	
FFR	8302 (Cruiser)	76 ± 1	13.0	57.6	225	35	1.0	1.2	
FFR	8302	75 ± 1	13.0	57.3	225	34	1.0	1.2	
USG	3350 (Cruiser)	72 ± 1	13.3	56.5	226	38	1.3	1.2	
USG	3350	71 ± 1	13.0	56.4	225	38	1.2	1.7	

† All yields are adjusted to 13.5% moisture.

‡ All varieties were treated with fungicide.

§ Official test weight of No. 2 wheat = 58 lbs/bu.

Maturity (DAP) = Days after planting

Lodging = 1 to 5 scale; where 1 = 95% of plants erect; 2.5 = ~50% of plants leaning at angle ≥ 45°; 5 = 95+% of plants leaning at an angle ≥ 45°.

Take All Disease - 1 to 5 scale; where 1 = 95% of plants non-infected; 2.5 = ~50% of plants infected; 5 = 95+% of plants infected.

Take All Disease ratings taken at the East Tennessee Research & Education Center, Knoxville, TN in 2008.

**Table 14. Yield† comparisons of three soft red winter wheat varieties between seed treated versus untreated with a systemic insecticide evaluated at four locations in Tennessee for three years, 2005, 2006 and 2008. ‡ (Due to freeze damage, 2007 data were not used)**

Brand	Variety	Avg. Yield ± Std Err.				Avg. Yield Difference	
		(n=8)‡	Knoxville	Spring Hill	Milan		
Delta King	DK 9577 (Cruiser)	75 ± 1	86	71	81	60	+2
Delta King	DK 9577	72 ± 1	81	73	76	58	
FFR	8302 (Cruiser)	73 ± 1	78	73	75	68	+1
FFR	8302	72 ± 1	79	69	80	62	
USG	3350 (Cruiser)	72 ± 1	75	69	77	68	0
USG	3350	72 ± 1	75	66	82	65	
<b>Average -- Treated Seed (bu/a)</b>		73	80	71	78	65	<b>+1</b>
<b>Average -- Untreated Seed (bu/a)</b>		72	78	69	79	62	
<b>L.S.D.<sub>.05</sub> (bu/a)</b>		<b>6</b>	<b>10</b>	<b>11</b>	<b>14</b>	<b>9</b>	
<b>C.V. (%)</b>		<b>11.1</b>	<b>9.3</b>	<b>12.0</b>	<b>12.2</b>	<b>11.0</b>	

† All yields are adjusted to 13.5% moisture.

‡ All varieties were treated with fungicide.

§ Planting date

**Table 15. Comparisons of overall mean yield† and agronomic characteristics of three soft red winter wheat varieties between seed treated versus untreated with a systemic insecticide evaluated at four locations in Tennessee for three years, 2005, 2006 and 2008.‡ (Due to freeze damage, 2007 data were not used)**

Brand	Variety	Avg. Yield		Moisture		Weights§		Maturity		Height		Lodging		Disease	
		± Std Err.	(n=8)	(n=8)	(n=8)	(n=4)	lbs/bu	(n=5)	(n=8)	(n=8)	(n=4)	(n=1)	(n=1)		
Delta King	DK 9577 (Cruiser)	75 ± 1	13.2	57.5	222	34	1.5	1.7							
Delta King	DK 9577	72 ± 1	13.4	57.7	222	34	1.2	1.3							
FFR	8302 (Cruiser)	73 ± 1	13.8	58.3	223	35	1.2	1.2							
FFR	8302	72 ± 1	13.6	58.0	224	35	1.1	1.2							
USG	3350 (Cruiser)	72 ± 1	13.8	57.1	223	38	1.3	1.2							
USG	3350	72 ± 1	13.6	57.1	223	38	1.2	1.7							

† All yields are adjusted to 13.5% moisture.

‡ All varieties were treated with fungicide.

§ Official test weight of No. 2 wheat = 58 lbs/bu.

Maturity (DAP) = Days after planting

Lodging = 1 to 5 scale; where 1 = 95% of plants erect; 2.5 = ~50% of plants leaning at angle ≥ 45°; 5 = 95+% of plants leaning at an angle ≥ 45°.

Take All Disease - 1 to 5 scale; where 1 = 95% of plants non-infected; 2.5 = ~50% of plants infected; 5 = 95+% of plants infected.

Take All Disease ratings taken at the East Tennessee Research & Education Center, Knoxville, TN in 2008.



## Barley

### Results

Three released varieties of barley were tested during 2008 at six Research and Education Centers (REC) representing the different physiographic regions of Tennessee. All of the varieties evaluated in these tests were developed in the Barley Breeding Program at Virginia Tech. The variety Eve is a hull-less type and was duplicated in the test with the addition of the systemic insecticide seed treatment Cruiser. A severe hail storm occurred at the Knoxville location on May 9, 2008 and completely destroyed the barley plots.

The average yield of the four entries across the five 2008 harvested locations was 83 bu/a, with a range from 67 to 104 bu/a. The highest yields were obtained at Crossville where the location mean of the four entries was 110 bu/a and the highest variety yield was 138 bu/a (Thoroughbred). The maturity of the barley entries clustered around 228 DAP. The barley varieties adapted to Tennessee generally mature about a week to ten days earlier than adapted wheat varieties. The test weights of the barley entries ranged from 45.1 to 56.1 lbs/bu. Eve has higher test weights due to the hull-less nature of the grain. The official test weight for barley is 48 lbs/bu compared to 58 lbs/bu for wheat.

The Cruiser treated entry (Eve) yielded 7 bu/a more than the non-Cruiser treated entry. Although this yield increase was not statistically significant, it does follow the same trend observed in the wheat tests this season.

Due to the severe freeze that occurred in early April 2007 and the atypical yields that were obtained, the data from 2007 are not included in the 2- and 3-year summaries. Instead the 2006 and 2005 data are included for the 2- and 3-year summaries.

**Table 16. Location information from research and education centers where the barley variety tests were conducted in 2008.**

Research and Education Center	Location	Planting Date	Harvest Date	Seeding Rate	Soil Type
Knoxville	Knoxville	10/29/2007	--- †	28/ft <sup>2</sup>	Sequoia Silty Clay Loam
Plateau	Crossville	11/2/2007	6/27/2008	28/ft <sup>2</sup>	Lilly Silt Loam
Highland Rim	Springfield	11/9/2007	6/24/2008	28/ft <sup>2</sup>	Dickson Silt Loam
Middle Tennessee	Spring Hill	11/12/2007	6/19/2008	26/ft <sup>2</sup>	Maury Silt Loam
West Tennessee	Jackson	11/5/2007	6/18/2008	28/ft <sup>2</sup>	Lexington Silt Loam
Milan	Milan	11/5/2007	6/18/2008	32/ft <sup>2</sup>	Loring Silt Loam

† Knoxville location was not harvested due to severe shattering resulting from hail storm damage on 5/9/08.

**Table 17. Mean yields† of four six-rowed barley varieties evaluated at five locations in Tennessee during 2008.**

Brand	Variety	Avg. Yield	Crossville	Springfield	Spring	Jackson	Milan
		± Std Err. (n=5)‡	11/2/07	11/9/07	Hill 11/12/07	11/5/07	11/5/07
-----bu/a-----							
VA	Thoroughbred	104 ± 4	138	55	117	98	110
VA	Price	85 ± 4	116	41	104	73	91
VA	Eve (Hulless) Cruiser	74 ± 4	96	32	104	61	79
VA	Eve (Hulless)	67 ± 4	89	32	86	52	78
<b>Average (bu/a)</b>		<b>83</b>	<b>110</b>	<b>40</b>	<b>103</b>	<b>71</b>	<b>90</b>
<b>L.S.D.<sub>.05</sub> (bu/a)</b>		<b>12</b>	<b>40</b>	<b>7</b>	<b>37</b>	<b>17</b>	<b>42</b>
<b>C.V. (%)</b>		<b>19.3</b>	<b>18.1</b>	<b>8.8</b>	<b>18.2</b>	<b>11.7</b>	<b>23.5</b>

† All yields are adjusted to 13.5% moisture.

‡ n = number of environments

§ Planting date

**Table 18. Mean yields† and agronomic characteristics of four six-rowed barley varieties evaluated at five locations in Tennessee during 2008.**

Brand	Variety	Avg. Yield	Moisture	Test	Maturity	Height	Lodging
		± Std Err. (n=5)‡	(n=5)	Weight§ (n=1)	(n=3)	(n=5)	(n=2)
		bu/a	%	lbs/bu	DAP	in.	Score
VA	Thoroughbred	104 ± 4	11.9	45.1	228	30	2.2
VA	Price	85 ± 4	12.0	46.1	227	28	2.5
VA	Eve (Hulless) Cruiser	74 ± 4	13.5	56.1	229	31	2.0
VA	Eve (Hulless)	67 ± 4	13.4	55.5	229	31	2.2

† All yields are adjusted to 13.5% moisture.

‡ n = number of environments

§ Official test weight of No. 1 barley = 48 lbs/bu.

Maturity (DAP) = Days after planting

Lodging = 1 to 5 scale; where 1 = 95% of plants erect; 2.5 = ~50% of plants leaning at angle ≥ 45°; 5 = 95% of plants leaning at an angle ≥ 45°.

**Table 19. Mean yields† of three six-rowed barley varieties evaluated at four locations in Tennessee for two years, 2006 and 2008. (Due to freeze damage, 2007 data were not used)**

Brand	Variety	Avg. Yield	Spring			
		± Std Err. (n=8)‡	Springfield	Hill	Jackson	Milan
		-----bu/a-----				
VA	Thoroughbred	90 ± 3	75	105	92	91
VA	Price	76 ± 2	59	95	69	81
VA	Eve (Hulless)	70 ± 2	54	87	61	77
<b>Average (bu/a)</b>		<b>79</b>	<b>62</b>	<b>95</b>	<b>74</b>	<b>83</b>
<b>L.S.D.<sub>.05</sub> (bu/a)</b>		<b>8</b>	<b>6</b>	<b>21</b>	<b>15</b>	<b>27</b>
<b>C.V. (%)</b>		<b>15.2</b>	<b>6.6</b>	<b>15.0</b>	<b>13.3</b>	<b>19.9</b>

† All yields are adjusted to 13.5% moisture.

‡ n = number of environments

**Table 20. Mean yields† and agronomic characteristics of three six-rowed barley varieties evaluated and four locations in Tennessee for two years, 2006 and 2008. (Due to freeze damage, 2007 data were not used)**

Brand	Variety	Avg. Yield	Moisture (n=8)	Test			Lodging (n=4)
		± Std Err. (n=8)‡		Weight§ (n=3)	Maturity (n=6)	Height (n=8)	
		bu/a		lbs/bu		DAP	
		%		in.		Score	
VA	Thoroughbred	90 ± 3	11.0	45.7	223	29	2.3
VA	Price	76 ± 2	10.8	45.3	222	27	2.5
VA	Eve (Hulless)	70 ± 2	12.6	56.7	223	30	2.0

† All yields are adjusted to 13.5% moisture.

‡ n = number of environments

§ Official test weight of No. 1 barley = 48 lbs/bu.

Maturity (DAP) = Days after planting

Lodging = 1 to 5 scale; where 1 = 95% of plants erect; 2.5 = ~50% of plants leaning at angle ≥ 45°; 5 = 95+% of plants leaning at an angle ≥ 45°.

**Table 21. Mean yields† of two six-rowed barley varieties evaluated at four locations in Tennessee for three years, 2005, 2006 and 2008. (Due to freeze damage, 2007 data were not used)**

Brand	Variety	Avg. Yield	Spring			
		± Std Err.	Springfield	Hill	Jackson	Milan
		(n=12)‡	-----bu/a-----			
VA	Thoroughbred	80 ± 2	71	100	78	70
VA	Price	68 ± 2	57	92	60	64
<b>Average (bu/a)</b>		<b>74</b>	<b>64</b>	<b>96</b>	<b>69</b>	<b>67</b>
<b>L.S.D.<sub>.05</sub> (bu/a)</b>		<b>8</b>	<b>12</b>	<b>17</b>	<b>16</b>	<b>19</b>
<b>C.V. (%)</b>		<b>16.4</b>	<b>14.3</b>	<b>12.3</b>	<b>18.2</b>	<b>22.1</b>

† All yields are adjusted to 13.5% moisture.

‡ n = number of environments

**Table 22. Mean yields† and agronomic characteristics of two six-rowed barley varieties evaluated and four locations in Tennessee for three years, 2005, 2006 and 2008. (Due to freeze damage, 2007 data were not used)**

Brand	Variety	Avg. Yield	Moisture	Test			
		± Std Err.		Weight§	Maturity	Height	Lodging
		(n=12)‡	(n=12)	(n=5)	(n=9)	(n=12)	(n=5)
		bu/a	%	lbs/bu	DAP	in.	Score
VA	Thoroughbred	80 ± 2	11.3	46.1	222	31	2.2
VA	Price	68 ± 2	11.1	45.1	221	28	2.6

† All yields are adjusted to 13.5% moisture.

‡ n = number of environments

§ Official test weight of No. 1 barley = 48 lbs/bu.

Maturity (DAP) = Days after planting

Lodging = 1 to 5 scale; where 1 = 95% of plants erect; 2.5 = ~50% of plants leaning at angle ≥ 45°; 5 = 95+% of plants leaning at an angle ≥ 45°.

## ----- Oats -----

### **Results**

A fall seeded oat test was conducted at the East Tennessee Research and Education Center (Knoxville) during 2007-2008 on 25 winter oat varieties / breeding lines. The test was seeded on October 29, 2007. Other experimental details are given in the footnotes of Table 23.

The average yield of the 25 oat entries was 65.4 bu/a, ranging from 37.6 to 98 bu/a. Test weights ranged from 28.9 to 36.1 lbs/bu. The official test weight for oats is 36 lbs/bu. A substantial amount of cold damage occurred on two of the breeding lines from Florida and Louisiana (FL99084-J2 and LA9911SBSBSB-45-B-S-B-S2). A severe hail storm occurred at the Knoxville location on May 9, 2008, resulting in considerable head breakage in the oat plots. This damage was noted and appears in Table 23.

Table 23. Mean yields and agronomic characteristics of 25 fall seeded oat lines evaluated at Knoxville, TN in 2008.

Origin Line	Moisture				Test Weight § lb/bu	Winter Kill %	Vigor 1-5 score	Plant Height inches	Lodging 1-5 score	Head Breakage %
	Average Yield † bu/acre	at Harvest %	Weight § lb/bu	Kill %						
NC	NC02-8331	98.0	11.9	34.2	0	2.1	37	1.0	6	
NC	NC03-2421	87.1	13.2	35.3	0	1.5	40	1.0	5	
FL	Horizon 321	81.1	13.7	33.6	0	1.9	39	1.0	12	
NC	NC01-3497	78.2	13.8	34.4	0	2.3	39	1.0	4	
AR	Harrison	76.7	11.4	36.1	0	1.9	43	1.0	13	
TX	TX02U7490	74.0	12.9	31.9	2	2.5	39	1.0	3	
LA	LA02030-S-B-106-S1-B-S1	73.9	14.7	31.5	0	1.1	40	1.0	4	
TX	TX05CS542	72.6	14.6	31.1	0	1.0	43	1.0	6	
TX	TX02U7325	72.4	11.5	33.7	0	1.4	42	1.0	2	
NC	Rodgers	72.0	14.8	31.6	0	1.2	45	1.0	30	
TX	TX02U7682	68.3	13.4	34.3	0	1.5	40	1.0	6	
LA	LA03046SBS7-B-S1	67.9	12.3	34.7	0	1.6	37	1.0	7	
TX	TX05CS347-1	66.1	13.8	35.6	0	1.7	41	1.0	5	
LA	LA97006GSB-59-2-4-SBS1	64.3	12.8	35.3	0	1.6	38	1.0	7	
FL	FL99212-D6	64.2	13.5	33.2	7	3.3	39	1.0	4	
TX	TX02U7443	57.9	12.5	30.9	0	2.3	39	1.0	4	
LA	LA99017SBSBSB-275-C-B-S2	56.3	13.5	32.8	0	1.4	49	1.0	7	
LA	LA9911SBSBSB-45-B-S-B-S2	54.8	15.3	33.0	22	4.1	38	1.0	5	
LA	FL99153FBS-45-1-B-S-B-S1-B-S1	54.5	14.2	34.4	0	1.5	42	1.0	14	
NC	NC02-8057	54.4	14.6	35.5	0	1.8	40	1.0	5	
FL	FL0115-J2	51.7	14.5	30.6	0	2.6	40	1.0	24	
TX	TAM-O-397	51.3	11.6	32.0	0	1.6	41	1.0	4	
FL	FL0115-J4	49.1	12.4	33.0	0	1.6	45	1.0	52	
FL	FL99201-D29-E1	49.1	18.9	28.9	0	1.5	42	1.0	35	
FL	FL99084-J2	37.6	13.6	34.3	47	4.3	39	1.0	8	
<b>Average (bu/a)</b>		<b>65.4</b>	<b>13.6</b>	<b>33.3</b>	<b>3</b>	<b>2.0</b>	<b>40.6</b>	<b>1.0</b>	<b>10.8</b>	
<b>L.S.D.<sub>.05</sub> (bu/a)</b>		<b>14</b>								
<b>C.V. (%)</b>		<b>12.5</b>								

† All yields are adjusted to 14% moisture.

§ Official test weight of Oats = 36 lbs/bu.

Planted 10/29/08 Seeding rate of 22 seed per square foot used for seeding due to shortage of seed supplied

2.46 tons/ac Dolomitic lime applied 9/11/07 263 lbs/ac 10-10-10 applied on 10/3/07, 60 lbs N/ac (34-0-0) applied 3/3/08

Gramoxone @ 32 oz burndown Harmony Extra XP (0.4oz/ac) applied on 3/13/08

Winter kill notes taken on 2/28/08 Vigor notes taken on 3/13/08 (1=excellent vigor, 5=poor vigor)

Lodging = 1 to 5 scale; where 1 = 95% of plants erect; 2.5 = ~50% of plants leaning at angle ≥ 45°; 5 = 95+% of plants leaning at an angle ≥ 45°.

Hail damage occurred on 5/9/08 which resulted in some head lodging (bent over but not broken off)

Harvested 6/16/08

**Table 24. Contact information for wheat and barley seed companies evaluated in yield tests in Tennessee during 2007-8.**

Company	Contact	Phone	Email	Web site	Address
AgriPro COKER (Syngenta)	June Hancock	870-483-7691	<a href="mailto:june.hancock@syngenta.com">june.hancock@syngenta.com</a>	<a href="http://www.nk-us.com">www.nk-us.com</a>	778 CR 680, Bay, AR 72411
Armor, Delta King (Cullum Seeds)	Jeff Armstrong	870-328-7222	<a href="mailto:jefarmstrong@cullumseeds.com">jefarmstrong@cullumseeds.com</a>	<a href="http://www.armorbeans.com">www.armorbeans.com</a>	P. O. Box 178, Fisher, AR 72429
Dixie (Cache River Valley Seed)	Andy Morris Brent Griffin James Crawford	901-674-0768 870-897-9112 870-974-2310	<a href="mailto:crvseed@crvseed.com">crvseed@crvseed.com</a> <a href="mailto:cbgriffin@crvseed.com">cbgriffin@crvseed.com</a> <a href="mailto:jimbo@crvseed.com">jimbo@crvseed.com</a>	<a href="http://www.crvseed.com">www.crvseed.com</a>	300 Lost Acne Way, Arlington, TN 38002 P.O. Box 10, Cash, AR 72421 Highway 226 East, Cash, AR 72421
Delta Grow Seed	Lee Hughes	800-530-7933	<a href="mailto:leehughes19@hotmail.com">leehughes19@hotmail.com</a>	<a href="http://www.deltagrow.com">www.deltagrow.com</a>	P O Box 219, England, AR 72046
FFR Tennessee Farmers Coop	Jim Payne Chris Morris	901-652-0903 615-218-7963	<a href="mailto:jpayne@ourcoop.com">jpayne@ourcoop.com</a>	<a href="http://www.ourcoop.com">www.ourcoop.com</a>	West TN East & Middle TN
University of Maryland	Aaron Cooper	410-742-1178	<a href="mailto:acooper@umd.edu">acooper@umd.edu</a>		University of Maryland, LESREC 27664 Nanticoke Rd Salisbury, MD 21801
University of Michigan	C.J. Palmer	517-332-3546	<a href="mailto:palmerj@michcrop.com">palmerj@michcrop.com</a>		University of Michigan P.O. Box 21008 Lansing, MI 48909
University of Missouri	Mary Ann Quade Anne McKendry	573-884-7333 573-882-7707	<a href="mailto:quadem@missouri.edu">quadem@missouri.edu</a> <a href="mailto:mckendrya@missouri.edu">mckendrya@missouri.edu</a>		University of MO Foundation Seed 3600 New Haven Rd Columbia, MO 65201
Pioneer Hi-Bred Int.	Michael Hughes	800-331-2475	<a href="mailto:michael.hughes@pioneer.com">michael.hughes@pioneer.com</a>	<a href="http://www.pioneer.com">www.pioneer.com</a>	700 Boulevard South, Suite 302, Huntsville, AL 35802
Progeny	Corey Dildine	870-208-6032	<a href="mailto:corey@progenyag.com">corey@progenyag.com</a>	<a href="http://www.progenyag.com">www.progenyag.com</a>	1529 Hwy 193, Wynne, AR 72396
University of Tennessee	Dennis West	865-974-8826	<a href="mailto:dwest3@utk.edu">dwest3@utk.edu</a>		3421 Joe Johnson Dr, Knoxville, TN 37996-4561
Unisouth Genetics (USG)	Stacy Burwick	615-242-3397	<a href="mailto:sburwick@usgseed.com">sburwick@usgseed.com</a>	<a href="http://www.usgseed.com">www.usgseed.com</a>	2640-C Nolensville Rd., Nashville, TN 37211
Vigoro (Crop Production Services)	Steve Johnson	731-885-5121	<a href="mailto:sjohnson@agriumretail.com">sjohnson@agriumretail.com</a>	<a href="http://www.vigoroseeds.com">www.vigoroseeds.com</a>	530 N. Fifth Str/ P O Box 40, Union City, TN 38281
Virginia Tech (Wheat)	David Whitt	804-746-4884	<a href="mailto:dwhitt@vt.edu">dwhitt@vt.edu</a>	<a href="http://www.virginiacrop.org">www.virginiacrop.org</a>	Virginia Crop Improvement Assoc. 9142 Atlee Station Rd Mechanicsville, VA 23116
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09-0047 1.7M-8/08 E11-2815-001-005-09

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