

Wheat and Barley Performance Tests in Tennessee

2003

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Acknowledgments

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

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

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General Information

Experiment Station Tests: The variety performance tests were conducted on 48 soft, red winter wheat varieties in each of the physiographic regions of the state. Tests were conducted at the Ames Plantation (Grand Junction) and at the Highland Rim (Springfield), Knox (Knoxville), Middle TN (Spring Hill), Milan (Milan), and West TN (Jackson) Agricultural Experiment Stations.

All varieties were seeded at rates from 25 - 32 seed per square foot (Table 1). Plots were seeded with drills using 7 -10 inch row spacings. The plot size was seven or ten rows, 25 or 30 feet in length. Plots were replicated three times at each location. Seed of all varieties were treated with a fungicide.

County Standard Tests: The Standard Wheat Test was conducted on 20 soft, red winter wheat varieties in seven counties in West Tennessee (Dyer, Gibson, Henry, Lake, Lauderdale (two tests), Obion and Weakley. 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.

Growing Season: Due to an abundance of rainfall during October 2002, plantings of wheat and barley tests were delayed until late October through mid-November (Table 1). Above average rainfall continued throughout the growing season and the higher moisture conditions contributed to fairly heavy infestations of glume blotch (*Leptosphaeria nodorum*) from heading through maturity. The glume blotch caused less plump grain, thus lower test weights. There were no clear distinctions among varieties for resistance versus susceptibility to glume blotch.

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 bu/a = LSD of 8) and Variety A (63 - 50 = 13 bu/a > 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 2003, 48 wheat varieties were evaluated in six experiment station tests, and 20 varieties were evaluated in eight county standard tests. Sixteen of the varieties were common to both the experiment station and the county tests. Nine companies and six universities entered varieties into the tests this year. Thirty-two of the 48 varieties have been evaluated for two years (2002-2003) and 18 of the 48 have been evaluated for three years (2001-2003).

The average yield of the 48 varieties in the experiment station tests was 57 bu/a (range from 48 to 67 bu/a, Table 2). The varieties ranged in maturity from 207 to 215 days after planting (DAP) with most of the varieties clustering between 210 – 212. The test weight scores ranged from the low- to mid-fifties with the range being 51.9 to 58.4 lbs/bu (Table 3).

The average yield of the 20 varieties in the county tests was 67 bu/a with individual varieties ranging from 62 to 72 bu/a. The test weight values ranged from 55.7 to 60.1 lbs/bu (Table 4).

As evidenced by the two years of data presented in Table 6, excellent choices are available of wheat varieties developed by companies as well as universities.

Insecticide Seed Treatments: In order to evaluate the effects of seed that had been treated with a systemic insecticide such as Gaucho or Cruiser versus seed that had not been treated, we evaluated six varieties in 2003 (AgriPro Savage, Delta King 9121 and 9410, FFR 556, and Pioneer 25R78) with and without the systemic insecticide seed treatment.

In 2002, we evaluated AgriPro Patton and AgriPro Natchez with and without Gaucho seed treatment at the six experiment station locations and three Delta King varieties, DK 9410 (4 locations), DK 1551w (6 locations), and DK 9121 (2 locations), with and without Cruiser seed treatment.

Table 1. Location information from experiment stations where the wheat variety tests were conducted in 2003.

Experiment Station	Location	Planting Date	Harvest Date	Seeding Rate	Soil Type
Ames Plantation	Grand Junction	10/22/2002	6/10/2003	25/ft ²	Lexington Silt Loam
Highland Rim	Springfield	11/20/2002	6/24/2003	28/ft ²	Dickson Silt Loam
Knoxville	Knoxville	11/3/2002	6/11/2003	28/ft ²	Sequoia Silty Clay Loam
Milan	Milan	11/2/2002	6/23/2003	32/ft ²	Grenada Silt Loam
Middle Tennessee	Spring Hill	11/14/2002	6/25/2003	26/ft ²	Maury Silt Loam
West Tennessee	Jackson	11/1/2002	6/23/2003	28/ft ²	Lexington Silt Loam

Table 2. Mean yields† of 48 soft red winter wheat varieties evaluated at six experiment station locations in Tennessee during 2003.

Brand	Variety	Avg. Yield ± Std Err. (n=6)	Spring					
			Knoxville	Springfield	Hill	Jackson	Milan	Ames
			bu/a					
Pioneer	25R47	67 ± 1	80	65	40	79	67	73
Pioneer	2552	66 ± 1	64	69	47	76	70	70
NK Brand	Coker 9152	64 ± 1	63	64	49	71	68	71
Pioneer	25R37	62 ± 1	69	64	50	70	62	59
AR	Pat	61 ± 1	65	67	39	72	58	68
Royster Clark (Vigoro)	Tribute	61 ± 1	70	65	43	61	64	65
Cache River Valley Seed	Dixie 933	61 ± 1	67	73	35	63	59	71
Cache River Valley Seed	Dixie 900	61 ± 1	51	65	31	68	71	78
VA	McCormick	60 ± 1	67	67	39	61	60	68
USG	3350	59 ± 1	53	59	36	67	66	73
FFR	510	59 ± 1‡	57	67	40	63	.	66
Progeny	166	58 ± 1	55	63	32	63	66	71
Pioneer	26R58	58 ± 1	57	61	36	70	65	61
Pioneer	25R78	58 ± 1	57	58	28	71	65	70
GA Exp.	93-1241 E16	58 ± 1	62	55	41	60	66	64
Progeny	145	58 ± 1	50	59	32	64	70	74
KY	Verne	58 ± 1	61	60	37	61	61	66
Royster Clark (Vigoro)	V9212	57 ± 1	56	63	43	62	65	56
NK Brand	B960457	57 ± 1	57	61	44	60	56	67
Cache River Valley Seed	Dixie 922	57 ± 1	48	60	24	67	74	70
NK Brand	Coker 9663	57 ± 1	58	57	44	64	55	65
USG	3209	57 ± 1	61	52	39	65	62	64
Delta King	DK 7900	57 ± 1	48	60	30	69	66	69
OH	Bravo	57 ± 1	55	59	49	58	61	57
Delta King	DK 9410	56 ± 1	55	52	27	66	68	66
VA	Roane	56 ± 1	63	54	39	58	53	67
NC Foundation Seed	NC 96-13156	55 ± 1	56	65	42	58	54	57
AgriPro	Savage	55 ± 1‡	59	60	34	61	.	58
Delta King	DK 7777	55 ± 1	56	54	35	60	62	64
AgriPro	M98-1661	55 ± 1	57	60	39	60	60	52
FFR	522	54 ± 1‡	56	64	37	58	.	53
USG	3709	54 ± 1	59	50	26	60	63	67
Pioneer	26R24	54 ± 1	53	58	29	64	64	56
FFR	556	54 ± 1	60	55	27	55	58	69
NK Brand	Coker 9184	54 ± 1	63	55	41	60	54	50
VA Exp.	98W-706	53 ± 1	61	47	32	57	56	66
VA	Jackson	53 ± 1	49	63	30	55	62	58
VA	Sisson	53 ± 1	48	60	39	52	60	57
Progeny	156	53 ± 1	47	49	33	63	60	63
USG	3430	52 ± 1	44	59	20	58	63	67
Delta King	DK 9121	51 ± 1	56	56	31	60	58	49
AR	Sabbe	51 ± 1	47	55	34	53	57	60
FFR	521	51 ± 1	50	54	44	51	52	56
Delta King	DK 9027	51 ± 1	50	45	27	59	61	62
Delta King	DK 1551w	50 ± 2	52	54	13	61	60	58
OH	Daisy	49 ± 1	48	47	31	60	61	49
AgriPro	D99-5261	48 ± 1	54	41	26	60	52	54
FFR	551	48 ± 1	38	49	30	51	60	59
Average (bu/a)		57	57	59	36	63	62	64
L.S.D._{.05} (bu/a)		3	7	9	9	7	8	9
C.V. (%)		8.4	7.3	9.0	13.8	6.6	7.3	8.5

† All yields are adjusted to 13.5% moisture.

‡ Mean of five locations.

(.) Indicates missing plots due to deer damage.

Table 3. Mean yields† and agronomic characteristics of 48 soft red winter wheat varieties evaluated at six experiment station locations in Tennessee during 2003.

Brand	Variety	Avg. Yield	Moisture	Test		Height	Lodging	
		± Std Err. (n=6)		Weight§ (n=5)	Heading (n=2)			Maturity (n=5)
		bu/a	%	lbs/bu	DAP	DAP	in.	Score
Pioneer	25R47	67 ± 1	12.8	54.8	179	212	33	1.8
Pioneer	2552	66 ± 1	12.7	55.9	180	212	35	1.3
NK Brand	Coker 9152	64 ± 1	12.5	54.3	177	208	38	3.8
Pioneer	25R37	62 ± 1	13.0	56.0	180	212	33	1.8
AR	Pat	61 ± 1	12.6	56.2	181	214	37	1.3
Royster Clark (Vigoro)	Tribute	61 ± 1	13.3	58.4	178	214	34	1.6
Cache River Valley Seed	Dixie 933	61 ± 1	12.7	57.0	181	211	39	1.9
Cache River Valley Seed	Dixie 900	61 ± 1	12.6	54.1	180	210	39	1.7
VA	McCormick	60 ± 1	13.0	57.2	180	212	33	1.8
USG	3350	59 ± 1	12.7	54.3	180	211	39	1.5
FFR	510	59 ± 1‡	12.4	54.3	174	208	35	1.8
Progeny	166	58 ± 1	12.7	54.3	180	210	39	1.7
Pioneer	26R58	58 ± 1	12.2	53.0	179	209	34	1.6
Pioneer	25R78	58 ± 1	12.4	54.7	178	208	34	1.2
GA Exp.	93-1241 E16	58 ± 1	12.6	55.7	179	211	37	2.1
Progeny	145	58 ± 1	12.5	54.0	178	210	39	1.5
KY	Verne	58 ± 1	12.6	54.5	181	211	40	1.8
Royster Clark (Vigoro)	V9212	57 ± 1	12.6	53.6	177	211	38	1.8
NK Brand	B960457	57 ± 1	12.2	53.2	178	210	38	1.6
Cache River Valley Seed	Dixie 922	57 ± 1	12.6	53.6	179	210	40	1.8
NK Brand	Coker 9663	57 ± 1	13.0	56.3	179	215	41	3.0
USG	3209	57 ± 1	12.6	54.2	177	210	32	2.4
Delta King	DK 7900	57 ± 1	12.4	53.1	180	210	39	1.8
OH	Bravo	57 ± 1	12.8	54.8	179	211	39	2.1
Delta King	DK 9410	56 ± 1	12.6	54.1	180	211	39	1.6
VA	Roane	56 ± 1	12.8	56.7	180	211	33	1.3
NC Foundation Seed	NC 96-13156	55 ± 1	13.1	57.2	181	212	34	1.0
AgriPro	Savage	55 ± 1‡	13.0	55.7	177	207	34	1.8
Delta King	DK 7777	55 ± 1	12.8	55.3	180	212	38	1.3
AgriPro	M98-1661	55 ± 1	12.5	53.2	181	211	35	1.7
FFR	522	54 ± 1‡	12.8	56.3	179	212	36	2.0
USG	3709	54 ± 1	12.3	53.0	178	209	37	2.6
Pioneer	26R24	54 ± 1	12.1	53.4	178	210	36	2.3
FFR	556	54 ± 1	12.3	53.4	180	210	32	3.6
NK Brand	Coker 9184	54 ± 1	13.3	57.5	180	214	33	1.3
VA Exp.	98W-706	53 ± 1	12.6	55.1	176	209	32	1.9
VA	Jackson	53 ± 1	12.2	53.9	181	207	36	3.6
VA	Sisson	53 ± 1	12.6	54.2	177	210	32	2.3
Progeny	156	53 ± 1	12.4	53.1	180	211	38	1.7
USG	3430	52 ± 1	12.4	53.5	178	210	39	1.8
Delta King	DK 9121	51 ± 1	12.4	54.6	180	212	34	1.6
AR	Sabbe	51 ± 1	12.1	52.8	181	212	37	2.4
FFR	521	51 ± 1	12.4	52.1	176	211	33	1.8
Delta King	DK 9027	51 ± 1	12.2	53.6	181	211	36	1.9
Delta King	DK 1551w	50 ± 2	12.3	52.8	180	210	34	1.6
OH	Daisy	49 ± 1	12.2	52.3	180	208	36	1.8
AgriPro	D99-5261	48 ± 1	12.3	51.9	181	210	33	1.9
FFR	551	48 ± 1	12.2	53.6	179	211	33	1.7

† All yields are adjusted to 13.5% moisture.

‡ Mean of five locations.

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

Heading & 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°.

COUNTY STANDARD TESTS

Bob Williams, Coordinator

Table 4. Yields† of 20 soft red winter wheat varieties evaluated in eight County Standard Tests in Tennessee during 2003.

MS	Brand/Variety	Avg. Yield bu/a	Moisture %	Test				Lauderdale		Obion	Weakley	
				Weight§ lbs/bu	Dyer	Gibson	Henry Lake	(Peyton/Mathis)	(Reviere)			
A	Pioneer 2552	71.5	13.8	58.8	65.1	75.6	72.5	52.9	61.6	78.3	80.5	85.2
A	*Pioneer 25R49	70.9	14.1	57.5	67.6	72.5	62.4	62.1	64.1	79.6	79.0	80.0
A	USG 3430	70.9	13.9	57.5	70.9	74.3	73.6	52.2	68.5	84.5	71.3	71.8
AB	Pioneer 25R23	70.3	13.9	59.2	71.4	66.6	73.9	63.4	62.2	82.0	72.8	70.4
ABC	FFR 510	68.9	13.8	55.7	70.3	78.3	72.6	49.5	59.0	74.2	74.3	73.2
ABC	Vigoro "Tribute"	68.9	14.3	59.1	64.9	75.7	66.9	48.0	66.1	82.2	71.6	75.5
ABC	*FFR 556	68.7	13.5	56.7	63.5	70.5	67.6	56.8	78.4	70.2	74.0	68.7
ABCD	USG 3209	68.1	14.0	58.2	69.6	78.9	67.4	44.6	64.3	72.0	72.2	75.6
ABCDE	Pioneer 25R37	67.8	14.0	58.1	56.7	85.2	74.8	39.7	63.9	67.7	77.5	76.7
ABCDEF	USG 3709	67.0	13.1	56.5	68.5	77.5	64.2	43.4	69.5	76.6	63.6	72.5
ABCDEF	*Pioneer 25R78	66.6	13.6	57.3	72.2	63.0	66.8	49.4	64.6	71.5	70.7	74.6
BCDEF	AgriPro "Savage"	65.4	13.9	57.6	61.9	65.5	65.4	46.2	63.8	80.3	70.8	69.0
BCDEF	Delta King 9216	65.1	14.0	57.7	64.4	65.0	63.7	50.8	63.1	78.9	67.7	66.9
CDEF	VA "Roane"	65.0	14.0	60.1	65.1	74.3	57.4	56.5	75.3	64.2	63.3	63.8
CDEF	Delta King 7777	65.0	14.0	58.8	64.4	73.6	65.3	56.7	59.8	65.3	67.7	67.0
CDEF	Vigoro 9212	64.0	13.4	56.3	64.4	74.2	67.4	32.9	60.0	66.1	75.6	71.3
DEF	Delta King 7900	63.1	13.7	57.3	66.8	69.0	56.0	41.0	59.2	79.1	67.6	66.3
EF	Hornbeck 3030	62.6	13.6	56.3	60.9	62.1	67.7	44.5	62.0	70.6	65.2	67.7
F	Delta King 1551W	62.3	13.3	57.4	66.2	55.9	69.0	42.8	65.1	71.6	63.9	64.1
F	FFR 551	62.1	13.5	57.6	55.2	60.3	63.9	48.1	63.1	64.7	69.3	72.0
Average		66.7	13.8	57.7	65.5	70.9	66.9	49.1	64.7	74.0	70.9	71.6

† 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.

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 (*) were in the top performing group for two years.

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

Table 5. Yields[†], moistures, and test weights of 16 soft red winter wheat varieties evaluated in both the County Standard Tests (n=8) and Experiment Station Tests (n=6) in Tennessee during 2003.

Brand	Variety	County Standard Tests			Experiment Station Tests		
		Avg. Yield	Moisture	Test Weight [§]	Avg. Yield	Moisture	Test Weight
		bu/a	%	lbs/bu	bu/a	%	lbs/bu
Pioneer	2552	72	13.8	58.8	66	12.7	55.9
USG	3430	71	13.9	57.5	52	12.4	53.5
FFR	510	69	13.8	55.7	59 ‡	12.4	54.3
Royster Clark (Vigoro)	Tribute	69	14.3	59.1	61	13.3	58.4
FFR	556	69	13.5	56.7	54	12.3	53.4
USG	3209	68	14.0	58.2	57	12.6	54.2
Pioneer	25R37	68	14.0	58.1	62	13.0	56.0
USG	3709	67	13.1	56.5	54	12.3	53.0
Pioneer	25R78	67	13.6	57.3	58	12.4	54.7
AgriPro	Savage	65	13.9	57.6	55 ‡	13.0	55.7
VA	Roane	65	14.0	60.1	56	12.8	56.7
Delta King	DK 7777	65	14.0	58.8	55	12.8	55.3
Royster Clark (Vigoro)	V9212	64	13.4	56.3	57	12.6	53.6
Delta King	DK 7900	63	13.7	57.3	57	12.4	53.1
Delta King	DK 1551w	62	13.3	57.4	50	12.3	52.8
FFR	551	62	13.5	57.6	48	12.2	53.6
Average		67	13.7	57.7	56	12.6	54.6

[†] All yields are adjusted to 13.5% moisture.

[‡] Mean of five locations.

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

TWO YEARS DATA

Table 6. Mean yields† of 32 soft red winter wheat varieties evaluated at six locations (n=12) in Tennessee for two years 2002 - 2003.

Brand	Variety	Avg. Yield	Knoxville	Springfield	Spring Hill	Jackson	Milan	Ames
		± Std Err. (n=12)						
			-----bu/a-----					
Pioneer	2552	61 ± 1	53	64	46	71	69	62
Pioneer	25R78	61 ± 1	53	59	37	77	69	69
Cache River Valley Seed	Dixie 900	60 ± 1	48	62	37	70	74	71
AgriPro	Savage	60 ± 1	60	63	39	68	68	61
Pioneer	25R37	59 ± 1	57	59	47	70	67	57
AR	Pat	59 ± 1	53	62	40	73	65	60
Royster Clark (Vigoro)	Tribute	58 ± 1	66	57	42	65	60	60
NK Brand	Coker 9663	58 ± 1	52	59	47	67	59	66
VA	McCormick	58 ± 1	58	61	42	64	60	63
Delta King	DK 7900	57 ± 1	47	58	37	69	68	65
NK Brand	Coker 9152	57 ± 1	44	58	48	70	60	63
FFR	556	57 ± 1	54	54	37	64	65	67
OH	Bravo	56 ± 1	55	54	48	60	66	54
Delta King	DK 7777	56 ± 1	49	59	38	63	63	64
USG	3209	56 ± 1	54	54	41	63	59	64
FFR	510	55 ± 1	54	63	41	59	55	59
VA	Roane	55 ± 1	58	55	39	64	56	59
Delta King	DK 9027	55 ± 1	46	53	38	63	66	62
USG	3709	54 ± 1	57	48	35	63	60	62
Pioneer	26R24	54 ± 1	51	56	36	63	60	58
NK Brand	Coker 9184	54 ± 1	55	54	43	61	58	51
VA	Sisson	53 ± 1	47	55	44	58	58	56
Progeny	156	53 ± 1	46	47	41	65	60	60
VA	Jackson	51 ± 1	46	56	38	54	57	58
FFR	551	51 ± 1	42	50	38	57	62	59
AR	Sabbe	51 ± 1	41	50	38	60	58	61
FFR	521	50 ± 1	44	46	45	57	51	55
Delta King	DK 1551w	49 ± 1	43	48	30	62	59	54
Delta King	DK 9121	.	.	.	.	61	.	48
Delta King	DK 9410	.	47	53	35	.	68	.
Average (bu/a)		56	51	56	41	64	62	60
L.S.D._{.05} (bu/a)		3	9	8	6	6	8	8
C.V. (%)		9.3	12.1	9.7	10.5	6.9	8.6	8.7

† All yields are adjusted to 13.5% moisture.

(.) Indicates that the variety was not tested in that location over the two year period.

Table 7. Mean yields† and agronomic characteristics of 32 soft red winter wheat varieties evaluated at six locations (n=12) in Tennessee for two years 2002 - 2003.

Brand	Variety	Avg. Yield	Moisture	Test				
		± Std Err. (n=12)		(n=12)	Weight§ (n=11)	Heading (n=4)	Maturity (n=10)	Height (n=12)	Lodging (n=3)
		bu/a	%	lbs/bu	DAP	DAP	in.	Score
Pioneer	2552	61 ± 1	13.1	56.6	181	216	33	1.2
Pioneer	25R78	61 ± 1	12.9	56.1	178	213	32	1.1
Cache River Valley Seed	Dixie 900	60 ± 1	13.1	55.3	180	215	37	1.4
AgriPro	Savage	60 ± 1	13.3	56.2	177	212	32	1.5
Pioneer	25R37	59 ± 1	13.4	56.9	180	216	32	1.6
AR	Pat	59 ± 1	13.2	56.6	182	218	36	1.2
Royster Clark (Vigoro)	Tribute	58 ± 1	13.8	58.7	177	217	31	1.4
NK Brand	Coker 9663	58 ± 1	13.6	56.7	178	218	37	2.6
VA	McCormick	58 ± 1	13.8	57.5	180	216	30	1.6
Delta King	DK 7900	57 ± 1	13.0	54.6	179	215	37	1.5
NK Brand	Coker 9152	57 ± 1	13.0	55.1	178	214	35	2.8
FFR	556	57 ± 1	12.8	54.8	179	215	31	2.7
OH	Bravo	56 ± 1	13.3	56.2	178	215	36	1.7
Delta King	DK 7777	56 ± 1	13.5	56.2	180	216	36	1.2
USG	3209	56 ± 1	13.0	54.8	177	215	30	2.1
FFR	510	55 ± 1	13.1	54.8	175	213	33	1.6
VA	Roane	55 ± 1	13.5	57.4	182	216	31	1.2
Delta King	DK 9027	55 ± 1	12.9	54.9	180	215	35	1.7
USG	3709	54 ± 1	12.7	54.1	178	214	35	2.1
Pioneer	26R24	54 ± 1	12.7	54.8	177	214	34	2.0
NK Brand	Coker 9184	54 ± 1	13.7	57.9	181	217	32	1.2
VA	Sisson	53 ± 1	13.1	55.3	177	214	31	1.9
Progeny	156	53 ± 1	12.8	54.4	179	215	36	1.4
VA	Jackson	51 ± 1	13.0	55.0	180	213	34	2.7
FFR	551	51 ± 1	12.8	54.9	179	215	31	1.4
AR	Sabbe	51 ± 1	12.7	53.9	180	216	35	1.9
FFR	521	50 ± 1	12.6	53.3	176	215	31	1.5
Delta King	DK 1551w	49 ± 1	12.6	53.6	180	215	32	1.4
Delta King	DK 9121	.	12.7	54.9	176	213	34	1.4
Delta King	DK 9410	.	12.9	55.2	184	216	36	1.6

† All yields are adjusted to 13.5% moisture.

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

(.) Indicates that the variety was not tested in all locations over the two year period.

Heading & 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°.

THREE YEARS DATA

Table 8. Mean yields† of 18 soft red winter wheat varieties evaluated at five locations (n=15) in Tennessee for three years 2001 - 2003.

Brand	Variety	Avg. Yield ± Std Err. (n=15)	Spring				
			Knoxville	Springfield	Hill	Jackson	Milan
Pioneer	2552	63 ± 1	62	60	57	69	67
Royster Clark (Vigoro)	Tribute	60 ± 1	70	53	55	64	59
Pioneer	25R37	60 ± 1	60	52	57	68	61
OH	Bravo	58 ± 1	61	51	56	59	65
Delta King	DK 7900	58 ± 1	51	53	52	65	69
NK Brand	Coker 9663	57 ± 1	55	51	58	64	59
NK Brand	Coker 9152	57 ± 1	51	51	56	67	58
VA	Roane	57 ± 1	64	51	52	61	56
Delta King	DK 7777	56 ± 1	53	54	50	61	63
Pioneer	26R24	56 ± 1	57	51	53	61	59
USG	3209	56 ± 1	59	49	54	59	58
USG	3709	56 ± 1	59	48	49	62	61
Delta King	DK 9027	55 ± 1	51	49	50	59	65
VA	Jackson	53 ± 1	52	52	51	53	58
VA	Sisson	53 ± 1	52	49	53	55	54
Delta King	DK 1551w	53 ± 1	50	46	45	61	61
Delta King	DK 9121	.	.	.	.	61	.
Delta King	DK 9410	.	52	48	50	.	69
Average (bu/a)		57	56	51	54	61	61
L.S.D._{.05} (bu/a)		3	8	7	6	6	7
C.V. (%)		8.9	10.3	9.7	8.3	7.7	8.6

† All yields are adjusted to 13.5% moisture.

(.) Indicates that the variety was not tested in that location over the three year period.

Table 9. Mean yields† and agronomic characteristics of 18 soft red winter wheat varieties evaluated at five locations (n=15) in Tennessee for three years 2001 - 2003.

Brand	Variety	Avg. Yield	Moisture (n=15)	Test	Heading (n=7)	Maturity (n=15)	Height (n=15)	Lodging (n=6)
		± Std Err. (n=15)		Weight§ (n=12)				
		bu/a	%	Lbs/bu	DAP	DAP	in.	Score
Pioneer	2552	63 ± 1	13.5	56.9	188	219	31	1.1
Royster Clark (Vigoro)	Tribute	60 ± 1	14.1	59.0	186	219	30	1.2
Pioneer	25R37	60 ± 1	13.2	56.6	188	219	31	1.5
OH	Bravo	58 ± 1	13.5	57.0	186	218	35	1.4
Delta King	DK 7900	58 ± 1	13.2	55.0	186	218	35	1.4
NK Brand	Coker 9663	57 ± 1	13.8	56.9	188	220	35	1.7
NK Brand	Coker 9152	57 ± 1	13.1	56.0	186	217	34	1.8
VA	Roane	57 ± 1	13.7	57.9	187	218	30	1.3
Delta King	DK 7777	56 ± 1	13.8	56.4	188	219	35	1.1
Pioneer	26R24	56 ± 1	13.2	55.6	187	218	32	1.5
USG	3209	56 ± 1	13.2	54.9	187	218	29	1.5
USG	3709	56 ± 1	12.7	54.8	187	217	33	1.5
Delta King	DK 9027	55 ± 1	13.0	55.0	187	218	33	1.4
VA	Jackson	53 ± 1	13.1	55.3	188	216	32	2.0
VA	Sisson	53 ± 1	13.1	55.6	185	217	28	1.4
Delta King	DK 1551w	53 ± 1	12.9	54.0	189	218	30	1.2
Delta King	DK 9121	.	13.0	55.8	185	218	32	1.2
Delta King	DK 9410	.	13.2	56.1	187	219	34	1.2

† All yields are adjusted to 13.5% moisture.

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

(.) Indicates that the variety was not tested in all locations over the three year period.

Heading & 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°.

INSECTICIDE SEED TREATMENTS

Seed Treated with Systemic Insecticides: In 2003 we evaluated six varieties (AgriPro Savage, Delta King 9121 and 9410, FFR 556, and Pioneer 25R78) with and without Gaucho or Cruiser insecticide seed treatment. The 2003 results are presented in Tables 10 and 12. The average difference in yield between seed treated versus untreated over six locations was 3 bu/a in favor of treated seed (Table 10). The range was from -3 (FFR 556) to +6 bu/a (Pioneer 25R78) for seed treated with Gaucho. The most variable results occurred with USG 3209 and FFR 556. The range for Cruiser treated seed was +4 and +5 bu/a for Delta King 9410 and 9121, respectively. The largest differences in yield occurred at Ames Plantation (average difference + 8 bu/a, Table 10). The overall average yield and the agronomic data are shown in Table 12.

In 2002, we evaluated AgriPro Patton and AgriPro Natchez with and without Gaucho seed treatment at the six experiment station locations. We also evaluated three Delta King varieties, DK 9410 (4 locations), DK 1551w (6 locations), and DK 9121 (2 locations), with and without Cruiser seed treatment. There was a 10.6 bu/A increase in the Patton yields when using the Gaucho treated seed versus untreated seed when averaged over six locations (Table 11). For the variety Natchez, there was a 7.2 bu/A increase in yield for Gaucho treated seed versus untreated seed. For the three Delta King varieties, the yield advantage for the Cruiser treated seed versus untreated seed ranged from 3.0 bu/A to 7.0 bu/A (Table 11). The overall average across the five varieties and six locations reveals a 7.3 bu/A yield advantage to seed treated with a systemic insecticide versus untreated seed. At each of the locations the average difference between yields from treated and untreated seed ranged from -0.3 bu/A at Spring Hill to 18.8 bu/A at Knoxville. With the exception of Spring Hill, all the other five locations showed positive yield enhancement from the systemic insecticide treated seed (Table 11). The overall average yields and the agronomic data for 2002 are shown in Table 13.

Table 10. 2003 Yield† comparisons of six soft red winter wheat varieties between untreated seed and seed treated with a systemic insecticide, evaluated at six locations in Tennessee. ‡

Brand	Variety	Avg. Yield ± Std Err. (n=6)	Spring					Avg. Yield Difference	
			Knoxville	Springfield	Hill	Jackson	Milan		Ames
Pioneer	25R78 (Gaucho)	64 ± 1	59	67	28	75	71	84	+6
Pioneer	25R78 (non-Gaucho)	58 ± 1	57	58	28	71	65	70	
Delta King	DK 9410 (Cruiser)	60 ± 1	50	65	28	69	72	78	+4
Delta King	DK 9410 (non-Cruiser)	56 ± 1	55	52	27	66	68	66	
USG	3209 (Gaucho)	58 ± 1	62	61	31	60	65	67	+1
USG	3209 (non-Gaucho)	57 ± 1	61	52	39	65	62	64	
AgriPro	Savage (Gaucho)	57 ± 1	59	54	39	70	53	67	+2
AgriPro	Savage (non-Gaucho)	55 ± 1	59	60	34	61	60	58	
Delta King	DK 9121 (Cruiser)	56 ± 1	56	59	40	63	62	58	+5
Delta King	DK 9121 (non-Cruiser)	51 ± 1	56	56	31	60	58	49	
FFR	556 (Gaucho)	51 ± 2	61	49	21	50	52	74	-3
FFR	556 (non-Gaucho)	54 ± 1	60	55	27	55	58	69	
Average -- Treated Seed (bu/a)		58	58	59	31	65	63	71	+3
Average -- Untreated Seed (bu/a)		55	58	56	31	63	62	63	
L.S.D._{.05} (bu/a)		3	7	9	9	7	8	9	
C.V. (%)		8.4	7.3	9.0	13.8	6.6	7.3	8.5	

† All yields are adjusted to 13.5% moisture.

‡ All seed were treated with fungicide.

Table 11. 2002 Yield† comparisons of five soft red winter wheat varieties between untreated seed and seed treated with a systemic insecticide, evaluated at six locations in Tennessee.

Brand	Variety	Avg. Yield ± Std Err. (n=6)	Spring						Avg. Yield Difference
			Knoxville	Springfield	Hill	Jackson	Milan	Ames	
AgriPro	Patton (Gaucho)	62	57	61	43	67	79	63	+11
AgriPro	Patton (non-Gaucho)	51	40	44	42	68	64	49	
AgriPro	Natchez (Gaucho)	61	51	69	44	75	67	57	+8
AgriPro	Natchez (non-Gaucho)	53	32	56	48	68	62	54	
Delta King	DK 9410 (Cruiser)	56 ‡	61	57	44	71	63	61	+5
Delta King	DK 9410 (non-Cruiser)	51 ‡	39	54	43	.	68	.	
Delta King	DK 1551w (Cruiser)	56	51	51	48	66	63	57	+7
Delta King	DK 1551w (non-Cruiser)	49	35	42	47	63	57	50	
Delta King	DK 9121 (Cruiser)	57 ‡	47	43	45	64	56	50	+3
Delta King	DK 9121 (non-Cruiser)	54 ‡	.	.	.	61	.	47	
Average -- Treated Seed (bu/a)		59	55	59	45	68	68	57	+8
Average -- Untreated Seed (bu/a)		51	36	49	45	65	63	50	
L.S.D._{.05} (bu/a)		8.8	12.1	8.9	6.0	7.5	9.6	8.1	
C.V. (%)		10.1	16.6	10.4	8.3	7.1	9.5	8.8	

† All yields are adjusted to 13.5% moisture.

‡ Mean based only on data from locations where both treated and untreated plots of the variety were present.

Table 12. 2003 Comparisons of overall mean yield[†] and agronomic characteristics of six soft red winter wheat varieties between untreated seed and seed treated with a systemic insecticide, evaluated at six locations in Tennessee. ‡

Brand	Variety	Avg. Yield	Moisture	Test				
		± Std Err. (n=6)		Weight§ (n=5)	Heading (n=2)	Maturity (n=5)	Height (n=6)	Lodging (n=2)
		bu/a	%	lbs/bu	DAP	DAP	in.	Score
Pioneer	25R78 (Gaucho)	64 ± 1	12.3	54.5	178	209	34	1.3
Pioneer	25R78 (non-Gaucho)	58 ± 1	12.4	54.7	178	208	34	1.2
Delta King	DK 9410 (Cruiser)	60 ± 1	12.5	54.1	179	211	39	1.6
Delta King	DK 9410 (non-Cruiser)	56 ± 1	12.6	54.1	180	211	39	1.6
USG	3209 (Gaucho)	58 ± 1	12.6	54.3	177	210	33	2.5
USG	3209 (non-Gaucho)	57 ± 1	12.6	54.2	177	210	32	2.4
AgriPro	Savage (Gaucho)	57 ± 1	12.8	55.4	178	208	35	1.8
AgriPro	Savage (non-Gaucho)	55 ± 1	13.0	55.7	177	207	34	1.8
Delta King	DK 9121 (Cruiser)	56 ± 1	12.3	54.4	180	213	35	1.6
Delta King	DK 9121 (non-Cruiser)	51 ± 1	12.4	54.6	180	212	34	1.6
FFR	556 (Gaucho)	51 ± 2	12.1	53.4	180	210	33	3.8
FFR	556 (non-Gaucho)	54 ± 1	12.3	53.4	180	210	32	3.6

[†] All yields are adjusted to 13.5% moisture.

[‡] All varieties were treated with fungicide.

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

Heading & 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 13. 2002 Comparisons of overall mean yield[†] and agronomic characteristics of five soft red winter wheat varieties between untreated seed and seed treated with a systemic insecticide, evaluated at six locations in Tennessee.

Brand	Variety	Avg. Yield	Test Weight§	Heading	Maturity	Height	Lodging
		± Std Err. (n=6)						(n=6)	(n=2)	(n=5)	(n=6)	(n=3)
		bu/a	lbs/bu	DAP	DAP	in.	Score
AgriPro	Patton (Gaucho)	62	55.8	177	219	33	1.5
AgriPro	Patton (non-Gaucho)	51	55.1	177	219	32	1.5
AgriPro	Natchez (Gaucho)	61	56.5	180	220	33	1.0
AgriPro	Natchez (non-Gaucho)	53	56.2	180	221	32	1.5
Delta King	DK 9410 (Cruiser)	56 ‡	56.1	190	231	35	1.0
Delta King	DK 9410 (non-Cruiser)	51 ‡	56.5	191	231	32	1.0
Delta King	DK 1551w (Cruiser)	56	55.0	179	218	30	1.0
Delta King	DK 1551w (non-Cruiser)	49	54.3	180	220	29	1.0
Delta King	DK 9121 (Cruiser)	57 ‡	55.9	168	213	32	1.0
Delta King	DK 9121 (non-Cruiser)	54 ‡	55.5	168	213	32	1.0

[†] All yields are adjusted to 13.5% moisture.

[‡] Mean based only on data from locations where both treated and untreated plots of the variety were present.

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

Heading & 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°.

----- BARLEY -----

Three released varieties and two experimental lines of barley were tested during 2003 at six experiment stations representing the different physiographic regions of Tennessee. The three released varieties (Callao, Nomini, and Price) have been evaluated for three years. Due to severe lodging at the Middle TN Experiment Station, the barley test was not harvested at that location. All of the varieties/experimental lines evaluated in these tests were developed in the Barley Breeding Program at Virginia Tech. One of the experimental lines, VA00H-137, is a hull-less type.

The average yield of the five entries across the five locations was 71 bu/a, with a range from 59 to 85 bu/a. The highest yields were obtained at Ames Plantation where the location mean of the five entries was 107 bu/a and the highest variety yield was 126 bu/a (Price). The maturity of the barley entries ranged from 203 to 209 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 42.2 to 50.9 lbs/bu. The official test weight for barley is 48 lbs/bu compared to 58 lbs/bu for wheat.

Table 14. Location information from experiment stations where the barley variety tests were conducted in 2003.

Experiment Station	Location	Planting Date	Harvest Date	Seeding Rate	Soil Type
Ames Plantation	Grand Junction	10/22/2002	6/10/2003	25/ft ²	Lexington Silt Loam
Highland Rim	Springfield	11/20/2002	6/24/2003	28/ft ²	Dickson Silt Loam
Knoxville	Knoxville	11/3/2002	6/5/2003	28/ft ²	Sequoia Silty Clay Loam
Milan	Milan	11/2/2002	6/20/2003	32/ft ²	Grenada Silt Loam
Middle Tennessee	Spring Hill	11/14/2002	--- †	26/ft ²	Maury Silt Loam
West Tennessee	Jackson	11/1/2002	6/23/2003	28/ft ²	Lexington Silt Loam

† Not harvested due to severe lodging.

Table 15. Mean yields† of five six-rowed barley varieties evaluated at five locations in Tennessee during 2003.

Brand	Variety	Avg. Yield ± Std Err.					Ames
		(n=5)	Knoxville	Springfield	Jackson	Milan	
-----bu/a-----							
Va	VA97B-388	85 ± 3	76	77	98	56	117
Va	Price	77 ± 3	62	75	66	59	126
Va	Nomini	70 ± 3	90	63	66	38	95
Va	Callao	68 ± 3	57	73	62	40	110
Va	VA00H-137 (hull-less)	59 ± 3	56	43	33	39	124
Average (bu/a)		71	70	68	66	48	107
L.S.D._{.05} (bu/a)		8	14	14	23	10	36
C.V. (%)		14.0	10.6	11.7	16.7	11.1	15.5

† All yields are adjusted to 13.5% moisture.

Table 16. Mean yields† and agronomic characteristics of five six-rowed barley varieties evaluated at five locations in Tennessee during 2003.

Brand	Variety	Avg. Yield	Moisture	Test	Heading	Maturity	Height	Lodging
		± Std Err.		Weight§				
		(n=5)	(n=5)	(n=5)	(n=2)	(n=5)	(n=6)	(n=4)
		bu/a	%	lbs/bu	DAP	DAP	in.	Score
Va	VA97B-388	85 ± 3	11.5	44.5	168	206	34	2.8
Va	Price	77 ± 3	11.4	43.5	169	203	32	3.3
Va	Nomini	70 ± 3	11.2	42.2	166	208	38	3.2
Va	Callao	68 ± 3	11.4	44.2	169	207	31	4.5
Va	VA00H-137 (hull-less)	59 ± 3	12.9	50.9	173	209	33	3.5

† All yields are adjusted to 13.5% moisture.

§ Official test weight of No. 2 wheat = 48 lbs/bu.

Heading & 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°.

TWO YEARS DATA

Table 17. Mean yields† of three six-rowed barley varieties evaluated at four locations (n=8) in Tennessee for two years, 2002 - 2003.

Brand	Variety	Avg. Yield	Knoxville	Springfield	Milan	Ames
		± Std Err.				
		(n=8)	bu/a			
Va	Price	77 ± 2	64	88	67	90
Va	Callao	73 ± 2	62	83	61	87
Va	Nomini	69 ± 2	77	74	53	73
Average (bu/a)		73	68	82	60	83
L.S.D._{.05} (bu/a)		7	10	18	9	22
C.V. (%)		13.1	9.3	14.4	10.5	15.5

† All yields are adjusted to 13.5% moisture.

Table 18. Mean yields† and agronomic characteristics of three six-rowed barley varieties evaluated at four locations (n=8) in Tennessee for two years, 2002 - 2003.

Brand	Variety	Avg. Yield	Moisture	Test	Heading	Maturity	Height	Lodging
		± Std Err.		Weight§				
		(n=8)	(n=8)	(n=8)	(n=4)	(n=6)	(n=8)	(n=3)
		bu/a	%	lbs/bu	DAP	DAP	in.	Score
Va	Price	77 ± 2	11.7	43.3	171	210	30	2.9
Va	Callao	73 ± 2	11.7	43.7	171	211	28	4.5
Va	Nomini	69 ± 2	11.9	43.0	169	213	36	2.4

† All yields are adjusted to 13.5% moisture.

§ Official test weight of No. 2 barley = 48 lbs/bu.

Heading & 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°.

THREE YEARS DATA

Table 19. Mean yields† and agronomic characteristics of three six-rowed barley varieties evaluated at two locations (n=6) in Tennessee for three years, 2001 - 2003.

Brand	Variety	Avg. Yield ± Std Err.			Test					
		(n=6)	Knoxville	Springfield	Moisture (n=6)	Weight§ (n=6)	Heading (n=4)	Maturity (n=6)	Height (n=6)	Lodging (n=2)
		-----bu/a-----			%	lbs/bu	DAP	DAP	in.	Score
Va	Nomini	78 ± 3	88	67	12.2	43.3	176	216	33	2.8
Va	Price	77 ± 3	79	75	11.9	43.7	179	212	28	3.4
Va	Callao	73 ± 3	74	72	11.8	43.9	178	212	27	4.5
Average (bu/a)		76	80	71						
L.S.D._{.05} (bu/a)		14	13	21						
C.V. (%)		12.3	8.5	15.6						

† All yields are adjusted to 13.5% moisture.

§ Official test weight of No. 2 barley = 48 lbs/bu.

Heading & 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°.