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WHEAT AND OAT GRAIN VARIETY TESTS FOR 1987 AND 3 YEAR AVERAGES

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SUMMARY

Wheat and oat grain variety tests were conducted at the Texas A&M University Agricultural Research and Extension Center at Overton. Since climatic conditions often favor one variety more than another in certain years, variety recommendations should not be made from one year's data, however these results are useful for making at least partial judgement of varieties. A three year average for grain yields is presented which provides a more reliable estimate of yield potential of varieties. It is important to study not only the grain yields, but other variety characteristics such as maturity dates (heading date), especially if doublecropping with soybeans is being considered.

INTRODUCTION

These trials were conducted to determine which varieties are best adapted to East Texas for disease resistance and grain yield production. A second objective was to test newly released or experimental lines to determine their potential under East Texas environmental conditions.

PROCEDURE

Wheat and oat variety tests were sown in a well drained, deep loamy sand in mid-October as noted on the tables. The seedbed was in good condition with little surface residue. A broadcast, preplant incorporated fertilizer application of 24-96-96 lbs/ac ($N-P_2O_5-K_2O$) was applied in late August. Both wheat and oats were planted in plots of six rows spaced 8 inches apart and 12 feet in length. Seeding rates were 82 lbs and 78 lbs/ac for wheat and oats, respectively. Good stands were obtained and a high amount of tillering was apparent on both crops. The herbicide, Glean, was applied preemergence at 1/3 oz active ingredient (ai)/ac to the oat experiment. A combination of Glean (0.1 oz ai/ac) and Hoelon (1/2 lb ai/ac) was applied to all wheat tests in 1987.

October planted wheat and oat tests were topdressed with 25 lbs N/ac as ammonium nitrate on Dec. 19 and an additional 40 lbs N/ac on February 19.

Prior to harvest, plots were trimmed to 10 feet in length. The entire plot was harvested with a Hege plot combine to determine grain yield. At Overton, four separate variety tests were conducted. The Uniform Southern Soft Red Winter Wheat Test (USSRWW) had a large number of experimental and newly released varieties (from other states). The Elite Soft Red Wheat Test was recommended varieties, experimental and newly released soft red winter wheats. Uniform Hard Red Winter Elite Test was experimental and newly released hard red winter wheat varieties. The oat variety test included recommended, newly released, and experimental oat lines. All tests had four replications and were arranged in a randomized complete block design. An LSD value is presented and yield differences between varieties, greater than the LSD value are judged to be significantly different 95 times out of 100.

RESULTS

Climatic conditions affected the results of the small grain variety tests to a great extent in 1986-87. Moisture levels in inches by month were Sept., 4.88; Oct., 5.41; Nov. 4.97; Dec., 6.47; Jan., 0.93; Feb., 6.38; Mar., 2.88; Apr., 0.63; and May, 5.83 inches. Temperatures were near normal except for a hard freeze (27°F) on April 3, 1987. This freeze was abnormally late and resulted in severe winterfreeze injury due to the fact that about one-half of the wheat varieties had headed out and many lines were past the anthesis stage. Our results indicated that with wheat, varieties which had headed in March were severely injured and those heading after April 10 had no injury. Therefore, early wheat varieties were severely penalized in yield in 1987. Injury was from blank (seedless) heads, injured nodes and internodes and leaf damage.

Results from the Elite soft red winter wheat test (Table 1) indicated good yields were produced by a number of wheat varieties. Florida 302, and a hybrid HW3015, were the highest yielding varieties closely followed by a large number of other lines. The 3 year average provides a good indication of the consistency of these varieties for

yield. All test weights were quite low in 1987. This may have been caused by the freeze injury, dry weather in April, or by the fungus disease *Septoria nodorum* blotch which was quite severe in 1987.

Hard Red Winter Wheat (HRWW) yields (Table 2) in 1987 were generally less than the soft wheats at Overton. Winter freeze damage was recorded and results indicated high levels of damage for those lines headed in March or early April. Powdery mildew was severe on many of the HRWW lines. Leaf rust and *Septoria nodorum* were also quite severe and undoubtedly reduced grain yields on the more susceptible lines.

The Uniform Southern soft red winter wheat test (Table 3) included a large number of experimental lines. Results were similar to the Elite soft wheat test. Florida 302 again topped the test for grain yield.

High grain yields were obtained in the oat grain test (Table 4) in 1987. Oats were not injured as severely as wheat by the early April freeze. Blizzard produced a yield of 125 bu/ac followed by Coker 84-18 (121 bu/ac) and Coker 234 (120 bu/ac). Because the 1985-86 oat test was discarded due to flooding at Overton, averages for 2 years instead of 3 years are presented. No diseases were noted on oats at Overton in 1986-87.

TABLE 1. ELITE SOFT RED WINTER WHEAT GRAIN YIELD TEST AT OVERTON, 1986-87.

Variety	Yield bu/ac	3-Yr Average bu/ac	Test wt. lbs.	Heading date	Plant height inches	1000 kernal wt (g)	Powdery mildew 0-9	Leaf rust 0-9	Septoria nodorum 0-9
FL. 302	58.0	61	55	Apr. 6	36	39.9	0 $\frac{1}{1}$	0 $\frac{1}{1}$	6 $\frac{1}{1}$
HW-3015	55.0	61	54	Apr. 6	39	32.8	0	0	5
Coker brand 9766	51.4	- $\frac{3}{3}$	54	Apr. 7	34	29.8	0	0	6
TAM-200 $\frac{2}{2}$	49.3	41	57	Apr. 10	32	28.4	0	0	6
Twain	49.0	-	56	Apr. 10	39	36.6	0	3	5
Caldwell	48.2	-	55	Apr. 11	33	26.9	0	0	6
TX-75-213	48.0	-	51	Apr. 16	36	26.9	0	1	5
Compton	47.2	-	56	Apr. 12	31	35.3	0	3	5
McNair 1003	47.0	52	54	Apr. 8	36	37.6	0	5	5
TX-82-118	46.4	50	50	Apr. 11	33	30.3	0	0	6
TX-79-30	46.0	49	54	Mar. 30	33	33.7	0	0	6
Filmore	45.9	-	53	Apr. 21	35	25.0	0	0	4
Coker brand 983	45.5	54	58	Mar. 30	31	32.3	0	0	6
Bradford $\frac{2}{2}$	44.0	49	55	Apr. 10	40	33.1	0	0	7
Siouxland $\frac{2}{2}$	43.0	43	56	Apr. 11	38	31.5	0	3	5
Noble Foundation 126	42.9	-	56	Apr. 10	35	28.5	0	0	5
SC 810779	41.2	-	56	Mar. 30	38	37.5	0	0	5
Coker brand 916	41.0	55	55	Mar. 30	32	37.3	0	3	7
Adder	40.3	-	53	Apr. 8	31	26.7	0	3	6
EH-8504	39.2	-	56	Mar. 30	33	33.0	0	0	8
NASW 76-59	39.0	52	54	Apr. 10	33	35.2	0	0	5
Auburn	38.7	-	54	Apr. 20	33	22.2	0	3	4
Magnum	36.4	-	56	Apr. 7	35	32.7	0	3	6
Milburn	35.5	-	55	Apr. 9	36	37.1	0	0	5
Pioneer 2157 $\frac{2}{2}$	35.4	-	56	Apr. 17	33	28.1	6	0	7
TX-78-7303	35.0	47	54	Mar. 30	37	31.2	0	0	6
Collin	31.0	39	40	Mar. 30	31	29.2	3	1	8
Coker brand 9733	30.9	-	57	Mar. 30	40	35.6	0	0	6

Continued

FL. 7927-G29	29.1	-	56	Mar. 16	36	37.9	0	0	9
FL. 7927-G21	25.0	-	56	Mar. 12	37	37.1	0	0	7
FL. 7927-G26	22.0	-	54	Mar. 12	35	32.2	0	0	9
TX-80-32	15.0	30	--	Mar. 23	35	36.6	0	0	5
Mean	40.6								
LSD (0.05)	7.2								
CV	12.5								

Planting Date - Oct. 10, 1986. Harvested on May 27, 1987.

Fertilizer application rate Preplant 24-96-96 lbs/ac of N-P₂O₅-K₂O, respectively.
 Topdressed 25 lbs/ac N (ammonium nitrate on Dec. 19, 1986).
 Topdressed 40 lbs/ac N (ammonium nitrate on Feb. 19, 1987).
 Applied 0.1 oz ai Glean and 1/2 lb ai Hoelon per acre.

^{1/} Disease ratings are on a scale from 0-9 where 0=no disease symptoms and 9=severely diseased.

Winterkill on heads resulted from temperatures of 28° and 27°F on Apr. 3 and 4th after some varieties had headed out. Wheat varieties which had headed in Mar. were most severely injured and yields were greatly reduced for those lines.

² Hard red winter wheat variety.

³ Variety was not tested during the past 3 years.

TABLE 2. UNIFORM HARD RED WINTER WHEAT ELITE TEST AT OVERTON, TEXAS 1986-87.

Variety	Yield bu/ac	3 Yr Average bu/ac	Test wt. lbs	Heading date	Ht. inches	Winterfreeze damage %	Powdery mildew 0-9	Leaf rust 0-9	Septoria nodorum 0-9
TAM-107	49	41	55	Apr. 3	30	5	3	3	3
Tx-78V2430-36	47	35	56	Apr. 16	30	0	7	5	4
TAM-200	47	40	56	Apr. 3	31	5	0	3	4
TAM-108	45	34	53	Apr. 16	30	0	0	6	3
Tx-GH10989	45	- 3/	54	Apr. 12	32	0	0	5	3
Hawk	43	35	55	Apr. 14	31	0	5	5	4
Tx-81V 6582-2	42	-	56	Mar. 30	29	20	0	3	3
TAM-105	42	30	53	Apr. 15	32	0	6	5	3
Tx-GH10563B	41	-	55	Mar. 31	30	50	5	5	4
Tx-81V6607-2	41	-	57	Apr. 1	30	10	0	3	3
Siouxland	41	42	55	Apr. 10	39	0	0	6	3
OK 83396	40	-	54	Apr. 14	31	0	0	1	4
Tx-84V1317	40	-	55	Apr. 10	28	5	8	0	4
Bradford	39	-	54	Apr. 10	38	40	0	3	3
Tx-GH13622	39	-	56	Apr. 8	30	20	0	6	3
Scout	38	-	55	Apr. 18	38	0	6	5	3
Tx-78A3345-V34	38	42	55	Apr. 7	30	20	7	3	4
Century	37	-	54	Apr. 12	29	0	5	5	4
Vona	36	29	54	Apr. 11	29	10	0	5	4
Norkan	36	-	55	Apr. 10	32	0	7	6	3
Chisholm	34	30	53	Apr. 2	31	10	8	6	4
Collin	33	-	55	Mar. 31	30	15	5	3	4
Tx-84V1227	32	-	56	Apr. 18	32	0	9	5	4
Tx-84V1336	31	-	55	Apr. 8	29	5	8	0	4
Pioneer 2157	30	-	55	Apr. 7	33	15	8	0	4

Continued

TAM-W-101	30	33	54	Apr. 16	29	0	7	5	4
NK PRO 812	29	-	54	Mar. 29	31	70	6	5	4
Tx-80A5901-1	29	-	56	Apr. 18	28	10	8	5	4
Mustang	28	-	58	Apr. 11	28	15	8	5	3
Dodge	.27	-	56	Apr. 14	30	0	8	6	4
Tx-84A7608	27	-	56	Mar. 27	34	50	6	5	4
TAM 201	20	35	54	Mar. 29	28	80	8	5	4
Mit	11	-	--	Mar. 22	33	85	7	1	4
Mean	36								
CV	15								
LSD	8.7								

Planting Date - Oct. 16, 1986. Harvested on May 29, 1987.

Fertilizer application rate Preplant 24-96-96 lbs/ac of N-P₂O₅ - K₂O, respectively.
 Topdressed 25 lbs/ac N (ammonium nitrate on Dec. 19, 1986).
 Topdressed 40 lbs/ac N (ammonium nitrate on Feb. 19, 1987).
 Applied 1/3 oz Glean per acre preemergence for ryegrass control.

1/ Disease ratings are on a scale from 0-9 where 0=no disease symptoms and 9=severely diseased.

2/ Winterkill on some heads was the result of freeze damage resulting from temperatures of 28° and 27°F on Apr. 3 and 4th after some wheat had headed out. Wheat lines headed in Mar. were most severely injured and yields were greatly reduced for those lines.

3/ Variety not tested over the last 3 years.

TABLE 3. UNIFORM SOUTHERN SOFT RED WINTER WHEAT, 1986-87.

Variety	Yield bu/ac	Test wt. lbs.	Heading date	Plant height inches	1000 kernal wt (g)	Powdery mildew		Leaf rust		Septoria nodorum	
						0-9	1/	0-9	1/	0-9	1/
FL 302	55.0	55	Apr. 2 ^{3/}	37	40.3	0	1/	0	1/	2	1/
CL 840101	51.3	56	Apr. 11	36	30.4	0		0		3	
VA 8252-64	51.2	57	Apr. 11	32	31.4	0		5		4	
MD 73019-28	49.2	57	Apr. 17	31	23.5	0		3		5	
AL 840169	48.2	52	Apr. 12	31	23.2	0		0		5	

Tyler	47.1	57	Apr. 13	37	29.7	0		3		3	
GA 781176	45.0	49	Apr. 10	29	23.6	0		0		4	
NA-SW84-160	44.9	57	Apr. 14	34	36.4	0		0		5	
NA-SW77-42-25	44.8	56	Apr. 10	32	36.8	0		0		5	
MD-73025-51	44.5	52	Apr. 1	30	37.9	0		0		6	

MD-73065-03	44.4	51	Apr. 18	33	31.0	0		3		4	
NA-SW84-313	42.3	53	Apr. 11	33	28.7	0		0		4	
AR 116-6	41.4	54	Apr. 9	34	31.6	5		0		5	
NA SW 76-59	41.3	54	Apr. 10	35	35.9	0		3		3	
PIO. EXP. XW546	41.0	50	Apr. 12	28	30.7	0		0		4	

GA 781197	40.0	52	Mar. 31	33	24.5	0		0		3	
AR 322-21-3	39.0	53	Apr. 7	32	35.5	5		0		5	
MD 75191-80	38.4	52	Apr. 9	33	25.2	0		3		4	
Coker 86-17	36.0	50	Apr. 9	28	20.2	0		3		6	
TX-79-30	35.5	53	Apr. 1	29	30.4	0		0		3	

FL. 7924D13-414	35.2	55	Mar. 23	34	39.6	0		0		4	
SC 810779	35.0	51	Mar. 30	35	35.7	0		0		4	
SC 820886	33.4	54	Mar. 30	33	29.0	0		0		5	
Coker brand 9733	33.0	52	Mar. 28	39	35.6	0		3		4	
FL. 72185A101-5-9	32.3	56	Mar. 27	34	35.8	0		0		5	

AT. 83WHR6208	32.0	52	Apr. 11	30	25.6	0		0		5	
TX-78-7303	30.2	50	Mar. 30	32	24.1	0		0		7	
GA 781159	29.2	56	Mar. 30	28	28.0	0		0		5	
TX-79-19-1	25.3	52	Mar. 27	29	25.0	0		0		6	
FL. 7927-G21	21.0	56	Mar. 19	37	38.5	0		0		3	

Continued

UNIFORM SOUTHERN SOFT RED WINTER WHEAT, 1986-87.

Coker 86-31	20.0	--	2/	Mar. 18	37	31.1	0	0	4
Coker 86-29	14.3	--		Mar. 29	32	31.3	0	3	6
Coker 86-26	13.0	--		Mar. 29	31	29.9	0	1	6
SC 820556	12.0	--		Mar. 11	28	28.2	0	0	7

Mean 36.61
 LSD (0.05) 9.0
 CV 16.7

Planting Date - Oct. 16, 1985. Harvested on May 28, 1987
 Fertilizer application rate Preplant 24-96-96 lbs/ac of N-P₂O₅ - K₂O, respectively.
 Topdressed 25 lbs/ac N (ammonium nitrate on Dec. 19, 1986).
 Topdressed 40 lbs/ac N (ammonium nitrate on Feb. 19, 1987).
 Applied 0.1 oz ai Glean and 1/2 lb ai Hoelon per acre preemergence.

- 1/ Disease ratings are on a scale from 0-9 where 0=no disease symptoms and 9=severely diseased.
- 2/ Not sufficient seed to run a test weight.
- 3/ Winterfreeze damage to heads resulted from a freeze on Apr. 3 and 4 when temperatures reached 28° and 27°F, respectively. Varieties which had headed out in Mar. were severely injured and yields were greatly reduced for those lines.

TABLE 4. OAT GRAIN TEST AT OVERTON, TEXAS 1986-87.

Variety	Yield bu/ac	3 Yr. $\frac{1}{2}$ / Average bu/ac	Test wt. lbs.	Lodging %	Heading Date	Plant ht. inches
Blizzard	125.3	- $\frac{2}{1}$	34	0	Apr. 20	36
Coker 84-18	121.0	112	32	10	Apr. 15	40
Coker 234	120.0	113	31	10	Apr. 15	43
Citation	115.5	114	34	5	Apr. 15	44
Coker 227	113.0	65	33	25	Apr. 16	42

Tx-83-Ab2930	107.2	-	32	5	Apr. 15	42
Mesquite	106.6	109	30	0	Apr. 21	38
Coker 86-13	105.4	-	33	5	Apr. 13	39
Coker 84-16	103.1	110	32	0	Apr. 16	39
H-833	102.5	103	32	10	Apr. 18	40

Tx-81C3612	97.75	-	30	0	Apr. 22	39
Tx-83Ab2923	97.00	-	32	10	Apr. 15	44
Fla. 501	93.12	-	36	30	Mar. 31	39
Nora	92.45	-	33	0	Apr. 16	43
Coker 84-15	91.82	103	33	0	Apr. 11	37

Coker 85-13	87.97	-	31	0	Apr. 16	40
Coker 86-8	87.05	-	32	0	Apr. 18	34
NF-20	86.22	-	35	10	Apr. 10	46
Tx-81C 3643	84.13	-	26	0	Apr. 20	39
Big Mac	83.07	97	34	5	Apr. 16	42

H-422	82.60	-	33	20	Apr. 16	41
Coronado	82.12	-	32	5	Apr. 16	39
NF-63	81.50	-	30	15	Apr. 21	44
Tx-82 M4350	81.20	-	30	0	Apr. 18	37
Coker 84-27	80.57	-	31	50	Apr. 18	44

Tx-83Ab 3149	79.62	-	32	0	Apr. 23	37
NF-170	79.40	-	33	70	Apr. 16	53
TAMO 386	76.05	97	30	5	Apr. 18	40
NF-188	73.30	-	33	20	Apr. 18	48
Tx-82M4437	72.95	-	28	0	Apr. 20	36

Tx-82M4964	69.50	-	31	0	Mar. 23	40
Tx-82M4340	64.85	-	26	0	Apr. 19	37
Coker 86-10	64.77	-	30	5	Apr. 20	41

Continued

Tx-86BVL336	62.65	-	28	0	Mar. 23	34
Bob	62.15	85	39	5	Apr. 13	39
Tx-81C676	55.85	-	28	0	Apr. 15	41
Tx-82M5061	50.60	-	34	0	Apr. 14	39
Vital	31.48	-	26	5	Apr. 23	39
Mean	86.09					
CV	28.7					
LSD	34.4					

Planting Date - Oct. 17, 1986. Harvested on June 3, 1987.

Fertilizer application rate Preplant 24-96-96 lbs/ac of N-P₂O₅ - K₂O, respectively.
 Topdressed 25 lbs/ac N (ammonium nitrate on Jan. 22, 1987).
 Topdressed 40 lbs/ac N (ammonium nitrate on Feb. 19, 1987).
 Applied 1/3 oz Glean per acre preemergence for ryegrass control.

1/ Two year average is for 1986-87 and 1984-85 growing seasons.

2/ Variety not tested in 1984-85.