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WHEAT AND OAT GRAIN VARIETY TESTS

1982-83

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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. A wheat variety test was also conducted at Clarksville, in Northeast Texas. 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. It is important to study not only the grain yields, but all variety characteristics such as maturity dates (heading date), especially if double cropping with soybeans is being considered.

OBJECTIVES

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 deep loam soil with poor drainage in late September or mid-October at Overton and a blackland soil at Clarksville. The seedbed was in good condition with little residue since the soil had been tilled several times after early August. A broadcast, preplant fertilizer application of 60-60-60 (N-P_2O_5-K_2O) was applied in late August at Overton. 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 wheat and oats. The preplant fertilizer rate at Clarksville was 60-80-60 lbs/ac, respectively.

Wheat and oat tests were topdressed with 60 lbs N in February. We also applied 2,4-D for weed control to wheat and oat tests in February.

Prior to harvest, plots were trimmed to 8 feet in length. The entire plot was combined with a Hege plot combine to determine grain yield. At Overton, two separate wheat 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 wheat test and the Clarksville variety tests had some experimental plant breeding materials, but they were primarily made up of varieties with the best yield potential for East Texas.

RESULTS

The varieties entered in Table 1 were primarily new varieties and experimental entries from both commercial companies and from state experiment stations. Therefore, many of these selections are not currently available. Yields in 1982-83 in this test were below average because of waterlogged soil conditions for much of the growing season. Agronomic data are presented for yield, test weight, and heading date. No powdery mildew was observed in this study, however leaf rust and Septoria glume blotch ratings are presented.

Varieties entered in the Elite test were primarily newly released varieties and some experimental soft wheat selections from Overton. As with the above test, yields were reduced by poor drainage in the test site, however several yields over forty bu/ac were obtained (Table 2). The top yield was produced by H-W-3007 which is a hybrid wheat developed by Rohm and Haas. Its yield was not significantly higher than several other varieties.

Wheat varieties in the Clarksville variety test were primarily newly released or experimental selections that demonstrate good yield potential for East Texas. Very high yields were obtained in this test (Table 3). Trace or slight disease severity was recorded for leaf rust and stripe rust with the exception of the Delta Queen wheat variety which had severe stripe rust. Stripe rust is very uncommon in Texas, however during the 1982-83 growing season economic losses from stripe rust occurred in many farmers fields. It is unlikely that

stripe rust will be a problem in 1983-84.

Poor drainage also reduced oat yields at Overton in 1982-83 (Table 4). No disease problems were observed on oats. Some lodging did occur as noted in Table 4.

Table 1. Wheat Grain Variety Test at Overton, TX, 1982-83

Variety	Yield bu/a[1]	Test wt. lb/bu	Heading date	Plant ht. in.	Leaf Rust reaction[2]	Glume blotch[3]
Coker-762	48.5 a	54	4-15	37	0 R	5
RH-776310	46.7 a-b	59	4-21	41	5 MR	2
Coker 82-28	44.0 a-c	57	4-18	37	3 R	1
Ark-155-18-5	43.6 a-d	61	4-17	38	0 R	2
NK-78W-708	42.7 a-d	58	4-18	38	5 R	2
VA-79-54-254	42.3 a-d	60	4-23	37	3 R	1
Tx-0-73-93	41.9 a-e	58	4-21	42	5 R	1
FL-72185A-A1	41.7 a-e	57	4-18	40	30 S	2
Coker-81-12	41.3 a-e	60	4-14	36	5 R	3
McNair 1003	40.0 a-f	55	4-14	38	5 MS	3
Ark-48-7-4	39.8 a-f	58	4-15	41	3 R	2
Coker-68-15	39.0 a-g	59	4-20	39	1 R	1
VA-79-52-6	38.4 a-g	58	4-24	41	30 MS	1
T-70-309	38.2 a-g	57	4-25	51	20 MS	1
T-71-306	37.8 a-g	56	4-29	46	0 R	1
Southern Belle	37.7 b-g	54	4-12	39	5 R	4
Callahan-513	37.0 b-h	56	4-15	43	30 S	4
FL-74265-10-A2-B-2	36.6 b-h	57	4-18	35	1 R	3
Coker-916	36.4 b-h	60	4-18	33	0 R	2
T-70-302	36.3 b-h	57	4-28	48	10 MR	1
MD-55-183-08	36.2 b-h	57	4-12	40	0 R	4
NK-812D701	34.9 c-i	57	4-15	32	15 MR	2
Tyler	34.6 c-i	57	4-26	43	40 S	2
Coker-80-12	34.4 c-i	59	4-15	38	3 R	4
FL-737-G-3-12-2-12	34.1 c-i	58	4-14	42	10 MR	2
SC-780934	34.1 c-i	57	4-25	37	5 MR	3
NC-77-12	33.9 d-i	53	4-15	38	50 S	3
SC-780084	33.8 d-i	58	4-12	40	50 S	3
Coker-80-13	32.4 e-i	59	4-14	39	5 R	3
SC-770-164	29.3 f-i	58	4-18	41	50 S	2
Pioneer-W-6040-A	29.0 f-i	58	4-07	36	50 S	5
Hunter	28.9 g-i	61	4-07	32	3 R	5
NK-79W-810	26.5 h-i	60	4-11	35	3 R	4
FL-301	26.3 h-i	58	4-05	35	0 R	5
M-D-55-286-21	24.4 i	50	5-02	42	50 S	1
NAPB-316A-78	23.9 i	58	4-22	34	3 R	2
Mean	36.2					
CV	17.3					

[1]Means followed by the same letter are not significantly different as judged by Duncan's Test at the 5% level of probability.

[2]Leaf rust ratings are % leaf covered by rust and disease reaction where R = resistant, S = susceptible.

[3]Septoria nodorum or glume blotch ratings were from 1 to 9 when 1 = healthy plants.

Planted on October 15, 1982, harvested on June 9, 1983.

Preplant fertilizer application of 500 lbs/a of 12-12-12, topdressed with 60 lbs. N/a on February 18, 1983.

Table 2. Elite wheat variety test at Overton, TX, 1982-83

Variety	Yield bu/a[1]	Test wt. lb/bu	Date headed	Height inches	Leaf rust[2]	Glume blotch rating[3]
H-W-3007	47.6 a	55	4-28	42	10	1
Coker-762	47.3 a	57	4-12	37	0	2
Bradford	40.5 ab	58	4-21	45	0	1
Terral-81-92	40.3 ab	60	4-14	36	0	2
Coker-916	40.2 ab	60	4-15	39	0	2
McNair 1003	40.1 ab	56	4-14	40	0	1
H-W-3006	40.0 ab	59	4-22	41	5	1
Coker-68-15	39.4 abc	61	4-18	42	0	1
Florida-74265-10-A-2	38.7 abc	57	4-22	32	0	4
Double Crop	37.8 abc	59	4-14	39	1	3
Terral-81-17	37.6 abc	58	4-18	39	0	2
Nelson	36.8 abc	58	4-18	34	5	3
Tx-82-118	35.6 bc	59	4-23	34	2	3
Tx-75-213	34.9 bc	56	4-27	42	0	1
TAM-106	33.2 bcd	59	4-26	37	1	2
Southern Belle	33.2 bcd	57	4-12	39	0	3
Rosen	32.9 bcd	57	4-12	34	15	5
Tx-73-009	32.5 bcd	60	4-22	40	0	1
Terral-800-22	32.1 bcd	60	4-18	39	0	1
Vona	31.6 bcd	59	4-25	36	10	2
Delta Queen	30.1 cd	58	4-12	37	0	4
Hunter	29.2 cd	60	4-07	32	-	7
Tx-82-113	28.5 cd	56	4-29	37	0	1
Tx-82-114	28.2 cd	56	4-29	35	0	1
Rosen	28.0 cd	57	4-12	34	15	5
MIT	22.6 d	58	4-10	35	-	3
Mean	35.3					
CV	18					

Planted on October 15, 1982, harvested on June 7, 1983.

Preplant fertilizer application of 60 lbs each of N, P_2O_5 and K_2O. Topdressed with 60 lbs of N/a on February 18, 1983.

[1]Means followed by the same letter are not significantly different at the .05 level of probability as judged by Duncan's Range Test.

[2]Leaf rust ratings are % of leaf area covered by the disease.

[3]Glume blotch ratings on Septoria nodorum were from 1 to 9 where 1 = healthy plants.

Table 3. Wheat variety test, Clarksville, TX, 1982-83

Variety	Yield bu/a[1]	Test wt. lbs.	Plant ht. (in)	% Leaf rust[2]	% Stripe rust[2]
McNair 10-03	87.7 a	59	41	5	0
Bradford	79.3 ab	60	43	1	0
Rosen	79.0 ab	59	38	3	3
Hunter	78.3 ab	62	33	0	0
Coker 68-15	78.3 ab	62	41	2	1
Coker-916	76.7 ab	60	39	0	3
Tx-73-009	75.0 a-c	59	43	0	0
Tx-75-213	74.7 a-c	56	40	0	0
Nelson	72.0 a-d	61	42	0	0
Tx-82-118	70.0 b-d	62	38	3	3
Delta Queen	62.0 c-e	58	35	0	50
Northrup King 812	61.7 c-e	60	33	0	5
Double Crop	59.7 d-e	61	42	2	3
Coker-762	59.3 d-e	57	40	0	0
Vona	59.0 d-e	60	35	5	0
Southern Belle	56.0 e	59	39	0	5
TAM-106	54.7 e	59	32	5	0
Tx-82-113	31.0 f	58	30	0	0
Tx-82-114	25.7 f	57	28	0	0
Mean	65.3				
CV	11.9				

Planted on October 20, 1982, harvested on June 21, 1983.

Preplant fertilization = 40-60-40 (total lbs/ac), topdressed with 105 lbs N on January 17, 1983.

All plots were sprayed once for greenbug with methyl parathion.

[1]Means followed by the same letter are not significantly different at the 0.05 level as judged by Duncan's Test.

[2]Leaf rust and stripe rust scores are a percentage of leaf area covered by the disease.

Table 4. Oat variety test at Overton, TX, 1982-83

Variety	Yield bu/a[1]	Test wt. lb/bu	Date headed	Height/ inches	% Lodging
Norris 79-23	86.8 a	35	4-30	36	0
Norris 81-29	83.5 ab	34	4-24	40	0
Coker 81-29	74.5 abc	34	4-25	37	0
Mesquite	68.0 abcd	32	4-28	35	0
Coker 79-23	66.3 bcd	33	4-30	35	0
Coker 234	65.5 bcd	31	4-24	38	10
Coker-80-20	63.5 bcd	33	4-18	38	0
BOB	63.3 bcd	34	4-24	38	30
Fla-501	62.0 cd	33	4-18	39	40
Coker 227	62.0 cd	32	4-24	39	20
Big Mac	61.5 cd	34	4-28	38	0
Coker 80-33	59.8 cd	32	4-26	37	0
Nora	55.8 cd	30	4-26	39	0
Fla-7611G8	53.0 d	30	4-11	38	5
Coker-422	49.5 d	32	4-24	34	0
TAM-0-312	47.0 d	29	4-26	37	0
Mean	63.9				
CV	19				

Planted on October 15, 1982, harvested June 9, 1983.

Fertilizer application: Preplant 60 lbs/a each of N, P_2O_5 and K_2O
Topdressed with 70 lbs N/a on February 18, 1983.

[1]Means followed by the same letter are not significantly different at the 0.05 level as judged by Duncan's Test.