NORTHEAST TEXAS WHEAT GRAIN VARIETY TRIALS - 1989

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SUMMARY

Wheat grain variety tests were planted at two sites in Northeast Texas (Cooper and Mt. Pleasant). 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 late freeze in 1989 (February) reduced yields on some varieties. In addition to grain yields, other variety characteristics such as, maturity dates (heading date) plant height, and disease resistance are of importance.

INTRODUCTION

These trials were conducted to determine yield potential of wheat varieties in Northeast Texas (Cooper and Mt. Pleasant) soils. Varieties were also rated for disease resistance and agronomic potential. Moreover, to test newly released and/or experimental lines to determine their potential under the often drastic (heavy rain, hail, sleet and snow) environmental conditions in this region.

PROCEDURES

Wheat variety tests were sown in a well drained, tight gumbo soil in mid-October as noted on the following tables. The seedbeds were in relatively good condition with little surface residue. Fertility rates, dates, as well as planting and harvesting information is provided on the tables. The wheat tests at both sites were planted in plots of seven rows spaced 6 inches apart and 12 feet in length. The seeding rates of the wheat was 82 lbs/ac. A combination of Glean (0.1 oz ai/ac) and Hoelon (1/2 lb ai/ac) was applied at both sites to each test in 1989.

During the growing season, plots were trimmed to 10 feet in length with a roundup applicator. The entire plot was harvested with a Hege plot combine to determine grain yield. At the Northeast Texas sites, two separate variety tests are presented. The Cooper wheat variety test is located on the L. D. Malone farm, and the Mt. Pleasant test is located at the Carl Snyder farm. Each test consisted of commercial, recommended and/or newly released soft and hard red winter wheats. Both tests had four replications and were arranged in a randomized complete block design. An overall 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 (0.05).

RESULTS

The growing season of 1988-89 was unusual in several ways. Fall and early winter temperatures were above normal which promoted excessive plant growth and early heading those varieties which required little vernalization. Moreover, a hard freeze in mid-February caused severe freeze and winterkill damage in many varieties. Several heavy rains in April and May resulted in late season leaf disease buildup (*Septoria nodorum*). Delayed harvested and sprouting of seed was also common. These growing conditions favored late maturing varieties with high vernalization requirements. The soft red winter wheat yields were essentially low, but were higher than many hard wheats at Cooper (Table 1). The highest yielding experimental line was TX-82-118, followed by Bradford and Pioneer 2172 varieties. Previously mentioned climatic conditions prohibited the recording of heading dates, powdery mildew or leaf rust ratings at Cooper. Freeze damage was not as severe at this site, possibly due to excessive rainfall giving insulation to the selected varieties. The heavy rainfall in May did cause excessive lodging. The site at the Snyder Farm at Mt. Pleasant (Table 2) produced below average, but higher yields for many soft than hard wheat. Freeze damage apparently did not cause lower yields altogether, heavy rains did have a significant effect. Lodging was quite severe at this site. Powdery mildew and leaf rust were present and were severe in certain varieties.

TABLE 1. COOPER WHEAT VARIETY TEST ON L. D. MALONE FARM, 1988-89

Variety	Yield bu/ac	Test wt. lbs/bu	% Freeze Damage	% Lodging
TX-82-118	50.8[1/]	49	10	40
Bradford	48.3	53	10	60
Pioneer 2172	46.6	53	5	60
TX-80-31-3	45.9	52	15	60
TX-75-213-1	45.6	53	5	40
Coker 916	45.4	54	5	40
Siouxland	45.1	57	0	60
Collin	45.0	53	5	60
TX-82-185	42.6	44	0	70
TX-76-40-2	42.6	51	5	40
Fla. 302	42.4	51	0	60
TX-75-213	40.7	50	10	60
TX-76-40-1	40.7	49	5	50
Hunter	40.1	46	5	40
Pioneer 2157	39.7	49	5	60
TX73025	39.4	50	5	30
TAM 107	38.8	50	10	60
TAM 201	38.5	50	5	70
TX-85-242	38.3	54	5	50
Traveler	38.1	45	20	60
TX-85-264	35.9	49	20	30
Coker 983	35.6	45	10	40
TX-85-237	34.1	50	10	60
TX-80-32	33.5	48	5	50
Waco	32.3	50	0	90

TABLE 1. COOPER WHEAT VARIETY TEST ON L. D. MALONE FARM, 1988-89 (CONTINUED)

Variety	Yield bu/ac	Test wt. lbs/bu	% Freeze Damage	% Lodging
TAM 200	30.7	52	10	80
TAM 108	24.7	53	15	80
DK-85W	16.4	51	20	60
Mean	39.2			
CV	12.0			
LSD (0.05)	6.6			

Planted on Oct. 12, 1988. Harvested June 21, 1989.
Fertilizer application rate: Preplant 300 lbs/ac of n, P_2O_5 and K_2O as 10-20-20.
Topdressed with 60 lbs/ac actual N as ammonium nitrate on March 16, 1989.
[1]Mean yield differences greater than the LSD value are considered significantly different 95 times out of 100.

TABLE 2. MT. PLEASANT WHEAT VARIETY TEST ON CARL SYNDER FARM, 1988-89

Variety	Yield bu/ac	Test Wt. lbs/bu	Heading Date	% Lodging	% Powdery Mildew	% Leaf Rust	Septoria Glume Blotch
TX-76-40-2	41.2[1]	48	4-27	35	0[2]	0[2]	0[3]
Fla. 302	38.3	51	4-19	48	0	0	7
Bradford	37.2	53	4-19	55	0	3	7
TX-85-242	36.2	46	4-26	60	0	2	5
Pioneer 2172	36.1	51	4-11	75	40	0	6
Hunter	35.8	49	4-22	45	0	0	4
TAM 107	33.2	52	4-10	60	0	20	6
Mesa	31.5	54	4-13	65	0	20	8
Siouxland	31.1	51	4-11	55	30	10	7
Pioneer 2157	30.7	54	4-11	55	30	10	7
Collin	30.6	50	4-11	55	0	0	6
Traveler	30.2	48	4-11	55	0	5	7
TX-82-118	29.8	55	4-26	35	0	0	7
TX-75-213-1	28.0	49	4-14	18	0	0	5
TX-73025	26.6	47	4-27	40	0	0	5
TAM 108	23.1	44	4-14	50	0	10	7
TAM 201	22.2	48	4-13	60	0	5	7
TX 85-264	20.9	46	4-21	50	0	0	5
Coker 983	20.9	51	4-12	35	0	0	7
TX-75-213	17.3	42	4-28	28	0	0	6
Coker 916	17.2	52	4-10	60	0	20	7
TX-82-185	15.1	46	4-11	40	0	0	3
Waco	14.9	55	4-9	55	0	0	2
TX-80-31-3	13.9	45	4-10	45	0	1	5
TX-76-40-1	13.7	46	4-26	30	0	0	4

TABLE 2. MT. PLEASANT WHEAT VARIETY TEST ON CARL SNYDER FARM, 1988-89 (CONTINUED)

Variety	Yield bu/ac	Test Wt. lbs/bu	Heading Date	% Lodging	% Powdery Mildew	% Leaf Rust	Septoria Glume Blotch
TX-80-32	11.1	38	4-27	55	0	0	5
TAM 200	9.8	48	4-13	75	0	1	7
TX-85-237	4.8	32	--	45	0	0	4
Mean	25.1						
CV	49.1						
LSD (0.05)	17.4[1]						

Planted on October 12, 1988. Harvested June 21, 1989.
Fertilizer application rate: Preplant 170 lbs/ac of N, P_2O_5 and K_2O plus a ton of lime.
Topdressed with 60 lbs/ac actual N as ammonium nitrate on March 16, 1989.

[1]Mean yield differences greater than the LSD value are considered significantly different 95 times out of 100.
[2]Powdery mildew and leaf rust are a % of leaf area covered by the disease.
[3]Septoria ratings were on a scale of 0-9, where 0 = no disease and 9 = dead plants.