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FORAGE VARIETY TESTS FOR SMALL GRAINS AT OVERTON IN 1994-95 AND 3-YEAR MEANS

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Summary

This report presents forage data for the 1994-95 winter growing season for oats, rye, and wheat at Overton, Texas. Forage yields were below normal for wheat, rye, and oats. The growing season had above normal temperatures and above normal rainfall. No winterkilling occurred. Crown rust on oats was observed and data are presented. The mean forage yield for wheat, rye, and oats, across all varieties was 2890, 3824, and 4606 lbs dry matter/acre, respectively.

Introduction

These experiments were conducted to determine the forage yield potential of small grain varieties, as well as several experimental lines under East Texas growing conditions. Seasonal forage distribution, disease resistance, and winter hardiness were also determined. The primary use of small grains in East Texas is for grazing; however, grain production can be profitable on some farms.

Procedure

Available commercial varieties and experimental lines of wheat, oats, and rye (including one triticale variety) were planted on a Darco loamy fine sand soil in three separate experiments at Overton, Texas on 9 September 1994. There were 26 wheat, 7 rye and one triticale, and 18 oat entries in their respective experiments. All tests were planted into a prepared seedbed which had been fertilized with 50 lbs of N, 100 lbs of P_2O_5 and K_2O /acre. Seed was drilled into seven row plots, 12 feet in length with 7-inch row spacing at 120 lbs/acre. Experimental design was a randomized complete block with four replications. All tests were top-dressed with 40 lbs N/acre on 3 November, 50 lbs N/acre on 19 January, and 60 lbs N/acre on 17 March applied as ammonium nitrate. Glean was applied post-emergence at the two leaf stage at a rate of 0.3

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oz/acre on 4 October, 1994. Forage was harvested with a Hege sickle bar forage harvester at a 2-in. stubble height. Percent dry matter (oven dried forage) was determined from a sub-sample dried at 150°F for 48 hr. A 10% least significant difference (LSD) was computed for each harvest. This value can be used to make comparisons between varieties. Differences greater than this value are real 9 times out of 10 and may be considered significant.

Results and Discussion

Soil moisture was adequate to obtain good stands in each of the three experiments. Soil moisture was limited in late September, and thereafter remained good throughout the growing season. Rainfall amounts in inches by months were September, 1.9, October, 13.8, November, 2.4, December, 7.7, January, 6.9, February, 2.4, March, 5.3, April, 6.6, and May, 4.3 in. The lowest temperature recorded during the growing season was 25°F, but no winterkilling or freeze damage was observed.

Wheat forage yields are presented in Table 1. Most of the entries were experimental lines; however, 'FLA 302' and 'FLA 304' are included. The first harvest was on 13 December when the forage was about 10 in. tall. The second harvest was on 24 February and overall yields were quite low. FLA 302 and FLA 304 produced the higher yields. The third harvest was on 30 March when most of the experimental lines produced high forage yields, FLA 302 and 304 had lower yields. The fourth harvest was on 25 April and all entries produced fairly low yields indicating the wheat growth had diminished and plants were producing seed heads. For the total season forage yield, the highest yielding variety was FLA 302 with a yield of 3181 lbs/acre. The highest yielding experimentals were TX86-68, TX85-51-2, and TX85-185. The three year mean forage yields indicate that in 1994-95 yields were below normal.

Rye forage yields (Table 2) were slightly higher than the wheat yields in 1994-95. 'FLA 401' produced the highest yield in the 18 November harvest, indicating it is more of a spring type than a winter rye. 'FLA Sunland' triticale also produced a high first harvest yield. In the 12 January harvest, 'Bonel' produced the highest forage yield. In the 24 February harvest Bonel, 'Bates', and 'Oklon' were higher yielding. In the 29 March harvest, several varieties were nearly equal in yield. In the last harvest on 25 April, Bonel and 'Maton' were closely followed by several other varieties. The highest total seasonal yield was produced by Bonel. However, several other varieties had similar forage production. FLA Sunland Triticale produced a lower

forage yield than all of the rye forage lines. Leaf rust was observed in this test and data are presented. Normally leaf rust is not a significant problem on rye.

Oat forage yields (Table 3) were higher than both wheat and rye in 1994-95. This was due to higher forage production in March and April because of its later maturity. In the 23 November harvest, yields were low across all entries. In the 24 January harvest, as expected yields were low. In the 29 March harvest, yields were very high for most varieties. Top yielding varieties were 'Harrison' and 'Bob'. In the last harvest on 25 April, yields were high, with the greatest yields produced by experimentals TX92M1048 and TX92M1044. For the total seasonal yield, Harrison and Bob had higher yields, indicating that the third harvest was most important in the total season contribution.

Three-year averages are presented for those entries tested for the past three years. Crown rust ratings are presented (Table 3). Crown rust can be important in Texas and very susceptible varieties should not be grown for either forage or grain production. Freeze damage or winterkill was not observed in 1995. Winter freeze damage on oats can be a serious problem in Texas. Varieties such as 'TAMO 386' should not be planted in North Texas, due to the high probability of winter freeze damage.

The results of these studies should be used with caution. Data from more than one year is desirable when variety recommendations are made because of interaction with weather conditions. Since the growing season of 1994-95 was unusually warm with no winter-freeze damage, this is especially true regarding this study.

Table 1. Wheat forage variety test at Overton, TX, 1994-95.

Entry	Har 1 13 Dec	Har 2 24 Feb	Har 3 30 Mar	Har 4 25 Apr	Total	3 Year Average
-----pounds of dry matter per acre -----						
TX86-68	799	482	1299	758	3338	-- ^a
TX85-51-2	787	492	1497	529	3305	--
TX85-185	918	329	1380	573	3200	--
FLA 302	763	1127	538	753	3181	4076
TX87-57	970	319	1331	537	3157	--
TX85-376-1	854	478	1102	713	3147	--
TX84-29-2	983	328	1050	768	3129	--
TX84-32-2-H1	732	724	1035	625	3116	--
TX85-376-2	664	285	1456	698	3103	--
TX85-121-2	725	486	1198	664	3073	--
TX84-19-2-H	678	374	1173	749	2974	--
TX84V344-2	689	218	1123	912	2942	--
TX84U4094-7	760	721	583	869	2933	--
18 NT	665	366	1372	516	2919	--
TX88-70	675	404	1139	679	2897	--
TX82-11	644	293	1412	481	2830	3968
TX84-126-2	535	385	1330	552	2802	--
FLA 304	735	1019	663	305	2722	--
TX86-33-1-4	656	385	1075	592	2708	--
TX88-102-1	726	772	810	394	2702	--
TX88-124	556	886	550	624	2616	--
TX85-119	414	175	1509	482	2578	3503
TX87-78-1	610	251	1366	349	2576	--
TX86-6	417	463	1286	366	2532	--
TX82-58-1-2	663	591	911	330	2495	--
TX85-232-1	495	282	968	412	2157	--
Mean	697	486	1121	586	2890	
LSD (0.10)	293	234	279	237	505	

Planted September 9, 1994. *Fertilization:* Preplant 50 lbs N, 100 lbs P₂O₅ and 100 lbs of K₂O/acre. Topdressed with 40 lbs N/acre on November 3, 50 lbs N/acre on January 19, and 60 lbs N/acre on March 17 applied as ammonium nitrate. *Herbicide:* Glean was applied postemergence at the two leaf stage at a rate of 0.3 oz/acre on October 4, 1994. *Insecticide:* Lorsban 4E applied at a rate of 0.5 pt/acre on October 4, 1994 to control greenbugs. HM = Helminthosporium ratings were recorded on April 20. Ratings were on a 0-9 scale where 0 = no disease.

^aNot tested in all years.

Table 2. Rye forage variety test at Overton, TX, 1994-95.

Entry	Har 1 18 Nov	Har 2 12 Jan	Har 3 24 Feb	Har 4 29 Mar	Har 5 25 Apr	Total	3 Year Average	Leaf Rust ^a 0-9
	-----pounds of dry matter per acre -----							
Bonel ^b	522	491	822	1576	1031	4442	5101	4
NF 73	408	385	864	1466	999	4121	4781	4
Bates	449	255	711	1488	955	3858	4415 ^c	4
FLA 401	1832	240	485	533	750	3840	--	2
Oklon	543	356	869	1141	836	3745	--	5
Maton	364	205	495	1473	1160	3697	4756	4
Elbon	327	305	699	1374	899	3604	4304	4
FLA Sunland Triticale	1119	728	316	303	823	3289	--	0
Mean	695	371	658	1169	931	3824	--	3.5
LSD (0.10)	402	107	206	446	304	773	--	-

Planted September 9, 1994. *Fertilization*: Preplant 50 lbs N, 100 lbs P₂O₅, and 100 lbs of K₂O/acre. Topdressed with 40 lbs N/acre on November 3, 50 lbs N/acre on January 19, and 60 lbs N/acre on March 17 applied as ammonium nitrate. *Herbicide*: Glean was applied postemergence at the two leaf stage at a rate of 0.3 oz/acre on October 4, 1994. *Insecticide*: Lorsband 4E was applied at a rate of 0.5 pt/acre on October 4, 1994 to control greenbugs.

^aLeaf rust rating was on a 0 - 9 scale where 0 = no disease.

^bExperimental line; seed is not available.

^cNot tested in all years.

Table 3. Oat forage variety test at Overton, TX, 1994-95.

Entry	Har 1 11-23	Har 2 1-24	Har 3 3-29	Har 4 4-25	Total	3 Year Average	Crown Rust 0-9 ^a
	----- pounds of dry matter per acre -----						
Harrison	409	498	2800	1681	5388	^b --	2
Bob	660	523	2798	1386	5367	6549	5
FL874-51-G3 ^c	616	578	2314	1760	5268	--	0
TX92M1048 ^c	597	469	1795	2126	4987	--	4
FL874-E55 ^c	496	381	2351	1632	4860	--	1
811	503	530	2463	1337	4833	--	6
TX92M1596 ^c	787	526	2098	1414	4825	--	3
TX92M1090 ^c	525	418	1899	1849	4691	--	4
TAM0 386ERB ^c	613	485	2076	1509	4683	6550	0
TX92M1044 ^c	627	428	1443	2176	4674	--	5
H-833	428	420	1785	1896	4529	--	2
Buckshot H.G. 7630	488	325	2122	1515	4450	6615	6
FLA 502	487	515	2346	1059	4409	--	1
TAMO 386R ^c	496	445	1341	1886	4168	6483	1
AR FOB 30 ^c	577	499	2094	986	4156	--	6
TAMO 386	408	396	1409	1764	3977	--	4
Ozark	303	473	1648	1526	3950	5378	6
TAMO 393	574	445	986	1696	3701	--	0
Mean	533	464	1987	1622	4606		3
LSD (0.10)	185	83	535	360	715		-

Planted September 9, 1994. Fertilization: Preplant 50 lbs N, 100 lbs P₂O₅ and 100 lbs of K₂O/acre. Topdressed with 40 lbs N/acre on November 3, 50 lbs N/acre on January 19, and 60 lbs N/acre on March 17 applied as ammonium nitrate. Herbicide: Glean was applied postemergence at the two leaf stage at a rate of 0.3 oz/acre on October 4, 1994. Insecticide: Lorsban 4E was applied at a rate of 0.5 pt/acre on October 4, 1994 to control greenbugs.

^aCrown rust ratings were on a 0 to 9 scale where 0 = no disease.

^bNot tested in all years.

^cExperimental line; seed is not available.