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Oat, Rye, and Wheat Forage Variety Tests at Overton in 1991-92

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Summary

This report presents forage data on the 1991-92 winter growing season for oat, rye, and wheat at Overton, Texas. Forage yields were above normal because of good growing conditions and little or no winterkill. Mean first-harvest yields on December 4 were 1,904, 1,681, and 757 lb/A of oat, rye, and wheat, respectively. Oats produced higher total seasonal forage yields than did wheat or rye. The mean yields across all varieties of oats, rye, and wheat were 6,397, 5,736, and 3,956 lb dry matter/A, 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. We also wanted to determine the seasonal forage distribution and their disease resistance and winterhardiness. The primary use of small grains in East Texas is for forage; however, grain production can be profitable on some farms.

Procedure

Available commercial varieties and experimental lines of wheat (14 entries), oat (14 entries), and rye (8 entries) were planted in three separate experiments at Overton, Texas, on September 13, 1991. All tests were planted into a prepared seedbed, which had been fertilized with 50 lb of nitrogen (N) and phosphate (P_2O_5)/A, 100 lb of potash (K_2O)/A, and 45 lb sulfur (S)/A. Seeding rates were 120 lb/A for all three small grains. Seed were drilled into six row plots, 12 ft in length with 8-in. row spacing. Experimental design was a complete randomized block with four replications. Wheat and rye were top-dressed with ammonium nitrate at 40, 40, and 30 lb N/A on January 7, February 21, and March 21, respectively. Oats had an additional topdressing of 30 lb/A of N on April 21.

Forage was harvested with a Hege sickle bar forage harvester at a 2-in. stubble height. Dry matter percentage (oven-dried forage) was determined from a subsample dried at 150 °F for 48

hours. A 10% least significant difference (LSD) was computed, which can be used to make comparisons among 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 became very limited between late September and late October and reduced fall forage production. After late October, moisture was not limiting for wheat or rye. Soil moisture was limiting for oats during April and resulted in no oat forage production in May, as plants matured before May rains occurred. Rainfall amounts in inches by months were: September, 3.2; October, 3.4; November, 5.3; December, 8.5; January, 5.2; February, 4.7; March, 5.5; April, 1.3; and May, 3.0. The lowest temperature recorded during the growing season was 24 °F on January 16, 1992. No significant winter-freeze damage was detected.

Oat forage yields are presented in Table 1. The first clipping was taken on December 4 when the taller varieties were about 10 in. in height. 'Citation' produced the top yield of 2,636 lb/A, closely followed by experimental TX 82M4964 and several other lines. Forage was not sufficient from January to harvest. The second harvest was on February 18. Thereafter, the test was harvested about once a month. Yields were fairly uniform across harvests and across genotypes. Citation produced the highest total season forage yield of 7,510 lb/A. This yield is not significantly higher (LSD = 1,468 lb) than that of lines through TX 82M4964, which produced 6,132 lb/A. Most of the oat varieties produced similar forage yields because of the mild winter temperatures at Overton during the 1991-92 growing season.

The mean rye total season forage yield was 5,736 lb/A (Table 2), compared with 6,397 for oats and 3,956 lb/A for wheat. Significant differences occurred in forage yield (as judged by the 10% LSD) for each of the harvest dates. However, genotypes had no significant differences in total season forage yield. This indicates that in 1991-92, although an individual variety may have produced more forage early in the growing season, the other lines caught up sometime during the growing season.

Keywords: small-grain forage / *avena sativa* / *triticum aestivum* / *secale cereale*.

Differences between wheat varieties and harvest dates were much more apparent (Table 3) than varieties and harvest dates in the oat or rye tests. The two Florida lines, 'Fla. 302' and '303', and 'DK 80' produced the highest forage yields on the December 4 harvest. Fla. 302 continued to produce forage through the growing season, which resulted in its producing the highest total season forage yield of 5,038 lb/A. Fla. 303, however, produced low winter and spring yields and had the

lowest total season forage yield. No winterkill or diseases were observed in the wheat experiment.

Results of these studies should be used with caution. More than 1 year's data is desirable when variety recommendations are made because of interaction with weather conditions. Because the growing season of 1991-92 was unusually warm with no winter-freeze damage, this is especially true.

Table 1. Oat forage variety test at Overton, Texas, 1991-92.[†]

Variety	Harvest dates (mo.-day)					Total yield
	12-4	2-18	3-6	3-31	5-1	
 Dry matter (lb/A)					
Citation	2636	1743	1223	797	1111	7510
Noble Foundation 170	1494	895	1826	1508	1228	6951
TAM-O-386	2243	1747	1226	688	1020	6924
Nora	1894	1141	1460	1061	1305	6861
TX 87B9451	1871	2271	1068	454	1153	6817
Blizzard	1308	1658	1415	1070	1066	6517
Bob	2025	1730	1105	587	1020	6467
Noble Foundation 188	1366	1314	1609	695	1302	6286
TX 82M4964	2516	1501	712	518	885	6132
TX 89B1980	1856	1732	950	575	896	6009
Mesquite 2	2165	1531	988	376	891	5951
H-833	1216	1321	1441	696	1139	5813
TX 83AB2923	1592	1061	1199	955	960	5767
TX 87M1521	2469	1276	714	395	709	5563
Mean	1904	1494	1210	741	1049	6397
LSD (0.10)	851	595	255	161	235	1468

[†]Planted September 13, 1991.

Fertilization: Preplant 500 lb/A of 10-10-20-9 (N, P₂O₅, K₂O, and S).

Top-dressed: 40 lb/A N on January 7, 40 lb/A N on February 21, 30 lb N on March 21, and 30 lb N/A (applied as ammonium nitrate) on April 21.

Table 2. Rye forage variety test at Overton, Texas, 1991-92.[†]

Variety	Harvest dates (mo.-day)					Total yield
	12-4	2-7	3-2	3-23	5-1	
 Dry matter (lb/A)					
Noble Foundation 14	1772	1129	1048	900	1408	6257
Bonel	1834	1016	935	919	1223	5927
Noble Foundation 73	1747	1103	1005	723	1217	5795
Fla. 402	1173	1780	624	425	1726	5728
Elbon	1819	895	1041	851	1018	5624
Maton	1607	696	963	1185	1084	5535
Winter King	1807	1268	882	459	1117	5533
Noble Foundation 125	1692	1112	951	662	1069	5486
Mean	1681	1125	931	766	1233	5736
LSD (0.10)	550	325	164	145	401	1144

[†]Planted September 13, 1991.

Fertilization: Preplant 50 lb of N, P₂O₅, 100 lb of K₂O, and 45 lb of S/A.

Top-dressed: 40 lb/A N on January 7, 40 lb/A N on February 21, and 30 lb/A of N (applied as ammonium nitrate) on March 21.

Table 3. Wheat forage variety test at Overton, Texas, 1991-92.[†]

Variety	Harvest dates (mo.-day)					Total yield
	12-4	2-10	3-2	3-23	5-1	
 Dry matter (lb/A)					
Fla. 302	1223	1312	873	204	1426	5038
TX 83-50	892	1307	920	270	1378	4767
TX 85-121-2	752	293	765	1162	1586	4558
FL 8172-G98-L5	948	1457	876	158	834	4274
TX 85-264	703	1267	610	315	1373	4268
TX 83-4-2	723	251	743	1150	1214	4080
Noble Foundation 222	237	189	1107	1098	1231	3862
Noble Foundation 126	496	286	954	1026	1025	3787
DK 80	1597	880	340	224	716	3756
Coker 9766	351	751	915	202	1404	3624
Pioneer 2548	141	99	814	1252	1272	3578
TAM 109	616	158	943	767	998	3482
TX 82-50-1	564	217	799	758	1036	3374
Fla. 303	1360	515	345	78	654	2952
Mean	757	641	786	619	1153	3956
LSD (0.10)	395	189	179	174	349	744

[†]Planted September 13, 1991.

Fertilization: Preplant 50 lb/A of N, P₂O₅, 100 lb of K₂O, and 45 lb of S/A.

Top-dressed: 40 lb/A N on January 7, 40 lb/A N on February 21, and 30 lb/A of N on March 21, applied as ammonium nitrate.