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FORAGE VARIETY TESTS FOR OAT, RYE, TRITICALE AND WHEAT AT OVERTON IN 1993-94

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Summary

This report presents forage data for the 1993-94 winter growing season for oats (*Avena sativa*), rye (*Secale cereale*), triticale, and wheat (*Triticum aestivum*) at the Texas A&M University Agricultural Research and Extension Center at Overton. Forage yields were near normal because of good growing conditions and no winterkill during the growing season. Oats produced higher total seasonal forage yields than did the other small grains. The mean yields across all varieties for oats, triticale, rye, and wheat were 6468, 5542, 5170, and 4410 lb dry matter/acre, respectively.

Introduction

These studies were conducted to compare forage production of small grain varieties as well as several experimental lines under northeast Texas growing conditions. Seasonal forage distribution, disease resistance, and winterhardiness were also assessed. Primary use of small grains in East Texas is for grazing, however, wheat is also harvested for grain on some farms.

Procedure

Available varieties and experimental lines of wheat, oats, triticale, and rye were planted on a Darco loamy fine sand soil in four separate experiments at the Texas A&M University Agricultural Research and Extension Center at Overton on 15 or 16 September 1993. There were 21 wheat, 8 rye, 9 triticale, and 16 oat entries in their respective experiments. All tests were planted at 120 lb/acre into a prepared seedbed which had been fertilized with 50 lb of N, 100 lb of P and K/acre. Seed was drilled into seven row plots, 12 feet in length with 7-inch row spacing. Experimental design was a randomized complete block with four replications. Wheat was top-dressed with 52 lb N and K, and 48 lbs of sulfur/acre on 6 December. The K and S was applied to try to improve forage yields and overcome some stunting in areas of the wheat experiment. All four experiments were top-dressed with ammonium nitrate at 50 lb N/acre on 15 November 1993 and on 11 March of 1994. Forage was harvested with a Hege sickle bar forage harvester at a 2-in cutting height. Percent dry matter (oven dried forage) was determined from a subsample dried at 150°F for 48 h. A 10% least significant difference 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 all four experiments. Soil moisture remained good throughout the growing season. Rainfall amounts by months were: September 2.0 in.; October, 3.4 in.; November, 4.4 in.; December, 1.9 in.; January, 2.2 in.; February, 7.1 in.; March, 3.4 in.; April, 0.9 in.; and May, 8.1 in. The lowest temperature recorded during the growing season was 16°F on 8 January 1994. No significant freeze damage or winterkill was detected.

Wheat forage yields are presented in Table 1. The first harvest was on 22 November when the forage was about 10 in. tall. The higher yielding entries were 'FLA 302', 'Hickory', 'Mallard', and experimental TX85-119. Low yields were produced by most entries at the second harvest. The highest yield was again produced by FLA 302. In the third harvest, yields were similar to the second harvest with FLA 302 and TX84-26-2-3 producing in excess of 1000 lb dry matter/acre. Few differences were noted between entries. In the fourth harvest, the better yielding entries were TX82-50-1 and 'Pioneer 2548'. In the fifth harvest, only one variety, 'Caldwell' produced a yield over 1000 lbs. In the last harvest, several entries produced good forage yields. For the total season forage yield, the highest yielding variety was 'Coker 9134' closely followed by FLA 302, Pioneer 2548, and '2180'. Rye forage yields (Table 2) were slightly higher than wheat yields. In the 22 November harvest, the higher producing entries were 'Bonel' and 'Wintergrazer 70'. There were few differences between entries in the second and third harvests with the exception of experimental NF 73, which produced an above average yield on the 5 January harvest. In the 7 March harvest, 'Oklon' produced the best yield, however, all yields were quite high. In the 25 March harvest, all yields were similar and quite low. In the last harvest, most of the biomass was made up of stems and heads with the highest yielding variety being Maton. The mixture of Elbon/TAM 90 also produced a good yield indicating that the ryegrass was contributing more forage late in the growing season. Total season yield of the mixture was not significantly greater than Elbon alone. This may have resulted from ryegrass competition reducing spring rye yields and also an April drought reducing ryegrass yields. For the total season yield, Bonel and Oklon produced the highest yields, however, Wintergrazer 70 and Maton produced nearly equal yields.

The oats produced higher yields (Table 3) than the rye, triticale, or wheat. We would expect oats to do very well in warm winters, when no freeze-damage occurs. At the first harvest

on 22 November, highest forage yields were produced by experimental TX92M1044, TX92M1596, and 'Bob'. At the second harvest the top yields were produced by experimental lines. In the 10 March harvest very high forage yields were produced. The better yielding entries were experimentals TA88Ab1491, TAMO-386R, variety 'H-833', closely followed by several entries. In the 31 March harvest, 'Ozark' was the most productive, however, several varieties produced nearly equal yields. In the last clipping on 12 May, entries producing in excess of 2000 lb/acre were TX92M1090, 'Buckshot H.G. 7630', TAMO 386R, TX92M1508, 'TAMO 386', and TAMO 385ERB. For the total season, the highest yielding variety was Buckshot H.G. 7630. Highest yielding experimentals were TX92M1090 and TX92M1044. The oat forage yields reported in the 1993-94 test are above average for Overton because of warm temperatures and favorable distribution of rainfall resulted in good growing conditions.

Triticale is a rye-wheat hybrid. The triticale forage data (Table 4) indicate very low forage yields for the November and January harvests. On the third harvest on 25 February, good forage yields were produced. Best yields were produced by TX92D7787 and TX91D6442. The yield on the fourth harvest was again quite low while yields were good at the last harvest. For the total season TX91D6442 and TX92D7787 produced yields over 6100 lb dry matter per acre.

Results of these studies should be used with caution. Data from more than one year is desirable when variety recommendations are made because of variability in growing conditions from year to year. This is especially true of these data since the 1993-94 growing season was mild with no freeze damage.

Table 1. Wheat forage variety test at Overton for 1993-94

Variety	Harvest Dates						Total Yield
	22 Nov	15 Dec	7 Feb	10 Mar	25 Mar	22 Apr	
-----pounds of dry matter per acre-----							
Coker 9134	694	562	678	1375	421	1514	5244
FLA 302	1499	846	1159	764	160	597	5025
TX82-50-1*	702	395	489	1808	376	1176	4946
TX84-132-2*	989	622	595	837	738	1124	4905
Pioneer 2548	1001	476	539	1451	440	862	4769
TX86-51-2*	627	461	645	1435	329	1218	4715
TX82-11*	864	512	499	1058	402	1378	4713
TX86-50*	961	532	529	1127	362	1082	4593
Sawyer	632	405	416	1273	729	1095	4550
TX85-119*	1080	466	317	817	740	1060	4480
2180	876	542	649	1227	225	885	4404
Hickory	1158	487	582	1115	154	854	4352
TX85-185*	627	395	520	1151	313	1308	4314
TX84-26-2-3*	640	441	1143	957	227	836	4244
TX87-10*	262	217	434	1512	650	1139	4214
TX84-26-2-6*	727	613	918	1009	174	726	4167
Caldwell	498	284	389	836	1123	852	3982
TAM 109	435	248	570	1852	205	567	3877
Mallard	1018	319	374	1002	473	647	3833
TAM 300	606	365	417	1149	407	853	3797
TX82-46(5131-8)*	321	395	732	1055	187	187	3497
Mean	772	456	600	1181	421	980	4410
LSD (0.10)	400	164	231	382	176	290	788

Planted September 15, 1993. Fertilization: Preplant 50 lbs N, 100 lbs P₂O₅ and 100 lbs of K₂O/acre. This test was topdressed again on December 6, 1993 with 52 lbs of N, P₂O₅ and 48 lbs of sulfur/acre. Topdressed with 50 lbs N on November 15 and March 11 applied as ammonium nitrate. Herbicide: Glean applied postemergence at the two leaf stage at a rate of 0.3 oz/acre.

*Experimental line, seed is not presently available.

Table 2. Rye forage variety test at Overton for 1993-94

Variety	Harvest Dates						Total Yield
	22 Nov	5 Jan	7 Feb	7 Mar	15 Mar	22 Apr	
-----pounds of dry matter per acre-----							
Bonel	1091	769	454	1940	483	984	5719
Oklon	989	674	634	2055	403	937	5692
Maton	857	780	323	1668	766	1115	5509
Wintergrazer 70	1103	780	607	1612	338	870	5310
NF 73*	623	1150	493	1364	341	883	4854

Elbon/TAM 90 Mixture ¹	1081	732	284	971	558	1170	4796
Bates*	624	597	453	1641	573	890	4778
Elbon	773	627	597	1393	508	802	4700
Mean	892	764	480	1581	496	957	5170
LSD (0.10)	389	306	232	598	160	272	842

Planted September 16, 1993. Fertilization: Preplant 50 lb N, 100 lb P₂O₅ and 100 lb of K₂O/acre. Topdressed with 50 lbs/acre of actual N on November 15, December 15 and March 11, applied as ammonium nitrate. Herbicide: Glean was applied postemergence at the two leaf stage at a rate of 0.3 oz/acre.

¹Mixture seeding rate = 120 lbs rye plus 30 lbs ryegrass seed per acre.

*Experimental line, seed is not presently available.

Table 3. Oat forage variety test, Overton, Texas 1993-94

Variety	Harvest Dates					Total Yield
	22 Nov	14 Jan	10 Mar	31 Mar	11 May	
-----pounds of dry matter per acre-----						
TX92M1090*	889	952	1786	2496	2401	8524
TX92M1044*	1403	740	1890	2580	1666	8279
Buckshot H.G.7630	795	642	1906	2662	2149	8154
TAMO 386R*	445	437	2166	2699	2340	8087
TX92M1596*	1249	910	1864	2081	1915	8019
TX92M1508*	800	759	2171	2101	2090	7920
TA88Ab1491*	744	909	2368	1899	1991	7911
TAMO 386	838	573	1790	2244	2207	7652
H-833	453	483	2280	2636	1783	7635
NF 188*	761	575	1913	2356	1833	7438
TAMO 386ERB*	676	881	1953	1902	2012	7423
Bob	1009	771	1817	1882	1877	7356
TAMO 393*	685	465	1822	2509	1567	7048
TX89B1980*	782	948	2170	1526	1485	6911
Ozark	381	314	1728	2875	1581	6879
TX92M1505*	919	998	1610	1262	1679	6468
Mean	802	710	1952	2232	1911	7606
LSD (0.10)	473	308	565	476	573	983

Planted September 16, 1993. Fertilization: Preplant 50 lb N, 100 lb P₂O₅ and 100 lb of K₂O/acre. Topdressed with 50 lbs/acre of actual N on November 15, December 15 and March 11, applied as ammonium nitrate. Herbicide: Glean was applied postemergence at the two leaf stage at a rate of 0.3 oz/acre.

*Experimental line, seed is not presently available.

Table 4. Triticale forage variety test at Overton for 1993-94

Variety	Harvest Dates					Total Yield
	22 Nov	5 Jan	25 Feb	17 Mar	22 Apr	
-----pounds of dry matter per acre-----						
TX91D6442	178	612	2210	656	2859	6515
TX92D7787	223	753	2298	466	2457	6197
TX92D7792	144	300	1487	1012	3013	5956
TX92D7785	155	511	1948	557	2702	5873
TX92D7793	280	551	1767	930	2250	5778
TX92D7788	314	133	1013	1038	2529	5027
TX92D7802	159	694	1635	790	1658	4936
TX89D9325	80	234	1390	944	2285	4933
Morrison	50	77	1413	944	2185	4669
Mean	176	429	1685	815	2437	5542
LSD (0.10)	172	217	424	324	556	897

Planted September 16, 1993. Fertilization: Preplant 50 lb N, 100 lb P₂O₅ and 100 lb of K₂O/acre. Topdressed with 50 lb N/acre on November 15, December 15, and March 11, applied as ammonium nitrate. Herbicide: Glean was applied postemergence at the two leaf stage at a rate of 0.3 oz/acre.