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Performance of Wheat, Oat, Rye, and Triticale Trials in Bryan, Texas, 1990-93

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Summary

Wheat, oat, rye, and triticale varieties were grown at Bryan, Texas, during three winters from 1990 to 1993. Plots were seeded in late September or early October and clipped two to four times between December and April. Annual total yields averaged between 6,092 and 7,014 lb/acre; 'Elbon' rye consistently produced the highest yield followed by oats. 'Trit II' triticale had the lowest yield. The oat varieties generally produced a greater proportion of their yield in the November to January period than did rye or wheat.

Introduction

Small grains are commonly used as winter pasture throughout much of central and eastern Texas. Rye is the most cold tolerant and yields well but is susceptible to ergot. Oats are not as winter hardy as rye but generally have greater productivity in the fall in central and south Texas. Many commercial varieties are available to producers. Field trials in Bryan, Texas, were carried out to determine the yield distribution and relative performance of several commercially available varieties.

Procedure

Wheat, oats, rye, and triticale varieties were evaluated for forage production at Bryan for 3 years (1990-91, 1991-92, 1992-93). Trials were in Brazos County on a Lufkin fine sandy loam soil having a pH of 6.8. Varieties varied somewhat from year to year such that 3 years of data are not available for all varieties.

Plots were seeded at a rate of 100 lb/acre in late September or October into a prepared seedbed that was previously fallowed. Plots were 5 by 20 ft with a 7-in. row spacing arranged in a randomized complete block design of two to four replicates. Fertilizer rates varied somewhat from year to year (Tables 1 to 3). Plots were clipped to a height of 4 in. two to four times between December and April. Dry matter yields were calculated from the fresh weight of a 3-ft by 17-ft strip. A subsample was dried at 140 °F for 48 hr to establish dry matter percentage. Analyses of variance were

carried out within years, and the LSD test at $P < 0.05$ was used to detect treatment differences.

Results and Discussion

Long-term average monthly precipitation at Bryan, Texas, for the October to April period ranges from 2.4 to 4.4 in. Precipitation during the trials was near normal except for January and December of 1991, when rainfall was 15 and 11 in., respectively. Minimum winter temperatures were 12 °F in December 1990 and 26 °F in November 1991 and 1992.

During 1990-91, forage production averaged 7,014 lb/acre (Table 1). Rye yielded the highest, but much of it came late in the season. The relatively poor yields of the oats compared with rye at the 26 February harvest may have been due to some winterkill in the oats from the harsh late December freeze. Rye produced 38% of its yield before 18 December, while the oat varieties produced more than 60% of their yield during this period. Because of the high variability in the data, significant differences ($P < 0.05$) among the oat varieties are not evident.

In the 1991-92 year, fall yields were low from all varieties because of lower than average precipitation in both October and November (Table 2). Total yields

Table 1. Wheat, oat, and rye forage variety yields at Bryan, Texas, from 1990-91.

Variety	Harvest date		Total
	18 Dec.	26 Feb.	
lb/acre oven-dried forage		
Elbon rye	3698	6148	9845
Bob oats	5022	2811	7833
Coronado oats	4943	2563	7507
Mesquite oats	4310	3104	7414
Mitt wheat	2422	3896	6318
Blizzard oats	3355	2659	6014
Ozark oats	3806	2182	5988
TAMO 386 oats	2569	2627	5196
Mean	3766	3249	7014
CV (%)	35	26	26
LSD (0.05)	2326	1499	3239

Seeded: 20 Oct. 1990.

Fertilizer: 72 lb/acre of N, P_2O_5 , K_2O on 27 Sept. 1990.

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Table 2. Wheat, oat, rye and triticale forage variety yields at Bryan, Texas, 1991-92.

Variety	Harvest date				Total
	9 Dec.	20 Feb.	20 Mar.	29 Apr.	
lb/acre oven-dried forage				
Elbon rye	767	2317	1309	2383	6830
Blizzard oats	580	2938	1511	1752	6779
Mesquite II oats	944	2710	1773	1341	5758
833 oats	336	2912	1339	2049	6636
TAMO 386 wheat	924	2007	1858	1749	6530
Mesquite oats	672	2671	1543	1382	6268
Mitt wheat	445	1984	1365	2068	5862
Ozark oats	392	2111	1305	1962	5771
Coronado oats	464	2053	1849	1266	5633
Trit II triticale	251	2358	1438	1464	5512
Mean	578	2411	1528	1741	6259
CV (%)	32	16	13	29	10
LSD (0.05)	314	668	350	861	1097

Seeded: 7 Oct. 1992.

Fertilizer: 60 lb/acre N, 30 lb/acre P₂O₅ and K₂O on 30 Sept. 1991; 75 lb/acre N on 27 Mar. 1992.

in 1991-92 averaged 6,259 lb/acre; rye produced the highest yield, largely because of its high yield at the April harvest. 'Mesquite', 'TAMO 386', and 'Mesquite II' oats had the highest yields at the 9 December harvest. Total yields among the oat varieties varied by about 20% with 'Coronado' oats, the only variety significantly different from the top-yielding 'Blizzard' oats (Table 2).

During 1992-93, total yields averaged 6,092 lb/acre; 'TAMO 386 ERB' and 'TAMO 386 R' oat produced the highest January yields (Table 3). The oat varieties produced 45% of their total yield at the 26 January harvest compared with 37% for rye and wheat. There was a 20% difference in total yield between the highest and lowest yielding oat varieties, but 'Ozark' was the only oat variety showing significantly ($P < 0.05$) lower yields than TAMO 386.

Of the entries included for 3 years, rye produced the highest yields and averaged 7,818 lb/acre. Mesquite and 'Blizzard' oats followed with 3-year average yields of 6,617 and 6,482 lb/acre, respectively. With some exceptions, differences in the yields of varieties within a species were minor, and such considerations as yield distribution, disease tolerance, adaptation to soil conditions, or seed costs may be more important in deciding which variety to grow.

Table 3. Wheat, oat, rye, and triticale forage variety yields at Bryan, Texas, 1992-93.

Variety	Harvest date			Total
	26 Jan.	18 Feb.	6 Apr.	
lb/acre oven-dried forage			
Elbon rye	2454	730	3494	6778
Tamo 386 ERB oats	3600	264	2809	6673
Blizzard oats	2662	718	3272	6653
TX83AB2923 oats	2819	703	3059	6581
Wintermaster wheat	2422	627	3421	6470
TAMO 386 R oats	3068	602	2553	6223
TAMO 386 oats	2805	638	2805	6248
Mesquite oats	2721	709	2740	6170
Mesquite II oats	2810	422	2765	5997
833 oats	2496	709	2686	5891
Bob oats	2439	624	2722	5785
Coronado oats	2459	496	2803	5764
Mitt wheat	2091	1025	2506	5623
Ozark oats	2337	745	2472	5554
Trit II triticale	559	743	3771	5073
Mean	2516	650	2925	6092
CV (%)	18	20	14	12
LSD (0.05)	641	183	592	1005

Seeded: 7 Oct. 1992.

Fertilizer: 75 lb/acre of N, P₂O₅, and K₂O on 29 Sept. 1990.