WHEAT, RYE, AND OAT FORAGE YIELDS AT OVERTON FOR 2001-2002 AND 3-YEAR MEAN

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Summary and Application

This report provides forage yields for wheat, rye and oat variety trials for 2001-2002, and gives a 3-year mean yield for some commercial varieties. When comparing varieties, a 3-year mean should be much more useful because one year's data may be affected by environmental conditions. Freeze damage ratings are presented for each of the small grain variety trials.

Introduction

Small grains are often utilized for grazing by cattlemen during the cool season in Texas. The small grains which are usually used for grazing are wheat, rye, and oats. Each of these crops has advantages and disadvantages. For example, rye has good seedling vigor, is very winter hardy but is early maturing. Oats have less winter freeze resistance but have very high forage yield potential in the spring. Wheat is often utilized as a dual-purpose (forage and grain) crop wherever wheat is grown for grain. These crops may also have some negative traits. For example, rye matures in April and has little late spring forage production. Oats are fairly susceptible to freeze damage and may be susceptible to crown rust. Wheat generally has lower total season forage yields compared to the other two crops on sandy soils. There are significant differences between varieties and over years. Some varieties produce more forage in the fall while others produce higher yields in the winter or spring.

Methods and Materials

Wheat, rye and oat forage variety tests are conducted annually at the TAMU Agricultural Research and Extension Center at Overton. Commercial varieties and experimental lines were evaluated during the past 3 years. Fertilizer application rates and dates for the 2001-02 study are noted in the Tables 1, 2, and 3. Planting dates were early September normally; however, in 2001 the planting date was 12 September. Seed were drilled into a prepared seedbed at a one-inch depth at 110 lb/ac. Seed were drilled in 7 rows spaced 7 inches apart. Plot size was 4 x 12 ft. with four replications. The plots were harvested with a Hege plot harvester at a cutting height of 2 inches on the dates noted of each table for a specific small grain. Forage was harvested whenever forage was about 8 inches in height.

Results and Discussion

Environmental conditions greatly affect forage production of all small grain crops. Rainfall in inches by months was Sept., 5.3; Oct., 3.0: Nov., 3.1; Dec., 6.6; Jan., 2.5; Feb., 2.6; Mar., 5.4; Apr., 3.3; and May, 3.8.

In the rye experiment (Table 1), forage production was low in fall and early winter. The first harvest on 3 December resulted in a range of yields from 1166 to 1574 lb/ac. The second harvest on 30 January resulted in very low yields for this mid-winter period. In the third harvest on 28 March, the rye had demonstrated very good growth and most entries produced over 2000 lb/ac./yr. During mid-April of 2002 we had a very hot and dry period, which resulted in no regrowth after the late March harvest. Most of the forage was produced between the 2nd

and 3rd harvests. For the total season dry matter yields, 'Maton' and 'Wintergrazer 70' produced the two highest yields. For the five varieties tested over the past three years, there was not much difference for forage yield. The range in yield was from 4698 to 5130 lb/ac./yr. Likewise there was no difference detected for winter freeze damage, with a very low rating of 1 on a 0 to 9 scale, where 9 = death due to winterkill. Freeze damage ratings were taken on 7 March after a cold temperature of 16^0F on 4 March.

In the oat experiment (Table 2), good fall production occurred. The higher yielding varieties were 'Plantation 2001' and 'Chapman' which both yielded over a ton dry matter per acre in the 3 December harvest. In the second harvest on 30 January, yields were good, however, little difference were observed among entries. In the 27 March harvest, good forage production resulted. Better yielding varieties were 'Dallas', 'Harrison', 'Heavy Grazer 76-30', 'Secretariat 494' and 'Horizon 314'. The 4th and last harvest was on 24 April, where, as in earlier harvests, good yields were produced. The highest yielding commercial entry was produced by Dallas; however, it was closely followed by several other varieties. For the total season dry matter yield, little difference was apparent among the top five varieties. For the 3-year mean yields, Dallas had the highest yield; however, it was only about 300 lb/ac/yr above Heavy Grazer 76-30. There was freeze damage in this experiment as noted in Table 2. Most of this damage was freeze-back of upper leaves, but this was an indication of resistance to freeze damage. Dallas is a more winter hardy variety and exhibited the least freeze damage of all varieties in the test. Winterkill can be a serious problem with oats in Texas. TAMO 397 had the highest freeze damage rating in this trial and it is not recommended north of Waco as it has been winterkilled at Overton and at other North Texas sites.

In the wheat experiment (Table 3), fall and winter production was average. Moisture was limited in September and October, delaying fall growth. Rainfall in late October and November did allow for good forage production. The first harvest was on 26 November. Higher yielding varieties were 'Sisson' and 'Roane' closely followed by several other entries. In the 29 January harvest, forage yields were good. The higher yielding entries were 'Shelby' and Sisson. In the 28 March harvest, yields were very good with 'Pioneer P25R57' producing a yield of 3054 lb/ac. In the fourth and last harvest on 23 April, average yields were produced. As with the first harvest, Sisson and Roane produced higher yields. This is also true for total season dry matter production. For the four entries tested over the past two years, little difference was apparent; however, Sisson and Pioneer P25R57 produced slightly higher yields. Some winter freeze damage was noted and recorded in this study. The only significant freeze damage was observed on Shelby, which had a rating of 3.2.

Conclusion

Data presented from these trials should be useful in selecting small grain varieties for your ranch. Depending on variety availability, compare forage yields to determine which variety to plant. Rye will usually out-produce wheat on sandy soils, however, rye seed is often scarce and expensive. Therefore, wheat is an attractive alternative. Oats may produce high forage yields if no winterkill occurs; however, they are at higher risk than rye or wheat. Ryegrass forage yields are published elsewhere in Forage Research in Texas. Ryegrass can also be seeded in mixtures with wheat, oats, or rye. Total season forage production may be increased, as well as

production of high quality forage extended into late May.

Table 1. Rye forage commercial variety test at Overton, Texas for 2001-2002.

Variety	Harvest 1 Dec 3	Harvest 2 Jan 30	Harvest 3 Mar 28	Total year	3-Yr Mean Yield	Freeze Damage Rating 0-9*
	----------pounds of dry matter per acre----------					
Maton	1365	183	3198	4746	5130	1
Wintergrazer 70	1477	449	2813	4738	4698	1
Elbon	1166	230	3036	4431	4761	1
Wintermore	1574	304	2522	4399	[a]	1
Oklon	1485	410	2405	4299	5005	1
Bates	1339	506	2435	4280	4808	1
CV	25	38	13	14	[a]	[a]
LSD (0.10 level)	381	207	312	806	[a]	[a]

Planted September 12, 2001. Fertilization: Preplant 700 lb 13-13-13/ac. Topdressed (0.10 level) with 50 lb N/ac on October 31, 2001, 40 lb N/ac on December 19, 2001, and 30 lb N/ac on February 20, 2002.

*Freeze damage rating was on a scale of 0-9 where 0 = no damage.

[a] Not tested over last 3 years.

Table 2. Oat forage commercial variety test at Overton, Texas for 2001-2002.

Variety	Har 1 Dec 3	Har 2 Jan 30	Har 3 Mar 27	Har 4 Apr 24	Total year	3-Yr Mean	Freeze Damage 0-9* Mar 7
	----------pounds of dry matter per acre----------						
Dallas	1627	979	2217	2309	7133	5523	2.2
Harrison	1722	739	2478	2193	7132	B[a]	2.5
Plantation Exp. 201	2330	778	1781	2227	7115	[a]	2.7
Heavy Grazer 76-30	1601	1093	2248	2137	7079	5211	2.7
Secretariat 495	1365	1326	2084	2075	6850	[a]	3.5
Chapman	2052	610	1817	1943	6422	4848	3.5
811	1788	855	1714	1987	6343	[a]	3.5
Horizon 314	1593	749	2040	1806	6189	[a]	2.2
TAMO 397	1226	697	1863	1716	5502	4984	3.7
CV	24	28	14	16	11	[a]	16.9
LSD (0.10 level)	370	220	265	285	660	[a]	0.51

Planted September 12, 2001. Fertilization: Preplant 700 lb 13-13-13/ac. Topdressed with 50 lb N/ac on October 31, 2001, 40 lb N/ac on December 19, 2001, 30 lb N/ac on February 20, 2002, and 42 lb N/ac on April 4, 2002.

*Freeze damage rating was on a 0-9 scale, where 0 = no damage.

[a]Not tested over last 3 years.

Table 3. Wheat forage commercial variety test at Overton, Texas for 2001-2002.

Variety	Harvest 1 Nov 26	Harvest 2 Jan 29	Harvest 3 Mar 28	Harvest 4 Apr 23	Total year	2-Yr Mean	Freeze Damage 0-9* March 7
	----------pounds of dry matter per acre----------						
Sisson	1772	1312	2546	1607	7236	5759	1.2
Roane	1414	863	2699	1792	6768	5327	0.2
Roberts	1338	1111	2536	1310	6294	[a]	1.0
Shelby	1222	1525	1906	1515	6168	[a]	3.2
Pioneer P25R57	1254	870	3054	986	6164	5506	1.0
Sturdy 2K	1299	1011	2784	811	5906	[a]	1.0
Coker 9803	610	1024	2251	1190	5076	5025	1.0
TX96D1073	672	592	2716	885	4865	[a]	0.2
VA98W-593	794	663	2539	481	4477	[a]	1.5
CV	42	26	17	56	13	[a]	39.0
LSD	420	239	403	NS	710	[a]	0.46

Planted September 12, 2001. Fertilization: Preplant 700 lb 13-13-13/ac. Topdressed with 50 lb N/ac on October 31, 2001, 40 lb N/ac on December 19, 2001, 30 lb N/ac on February 20, 2002, and 42 lb N/ac on April 4, 2002.

*Freeze damage was rated on a 0-9 scale where 0 = no damage.

[a]Not tested over last 2 years.