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Oat, Rye, Wheat, and Triticale Forage Variety Tests at Overton in 1988-89

S. Ward, J. Crowder, and L. R. Nelson

Summary

This report presents forage data for the 1988-1989 winter growing season for oats, rye, triticale, and wheat at Overton, Texas. Unfavorable growing conditions, with winterkill and freeze damage resulted in low forage yields. Oats produced higher forage yields than wheat or rye. The mean yields across all varieties for oats, wheat, and rye were 5,200, 1,948, and 2,880 lbs dry matter/A, respectively.

Introduction

These experiments were conducted to determine the forage yield potential of small grain varieties and experimental lines in East Texas. Also, we wanted to determine the seasonal distribution of forage for the small grain varieties and to test their winterhardiness and disease resistance.

Procedure

Available commercial and experimental wheat, oats, rye, and three triticale varieties were planted in three separate experiments at Overton, Texas during early September in 1988. In the wheat test there were 30 entries which included hard and soft red winter wheat varieties and several experimental wheat lines. There were 17 rye genotypes, 3 triticale lines and 1 mixture of wheat, oats, and rye in the rye test, of which several were experimentals submitted by the Noble Foundation. There were 21 genotypes included in the oat test, which included several experimentals and one mixture of wheat, oats, and rye.

All tests were planted in a prepared seedbed which had been fertilized with 90-90-90-84 lbs/A of N, P_2O_5, K_2O, and S, respectively. Planting dates were September 6 for rye, September 7 for wheat, and September 14 for oats. Seeding rate was 120 lbs/A and seed were planted with a drill into six row plots 12 feet in length with 8-inch row spacing. Each experiment was replicated four times. All experiments were topdressed with ammonium nitrate at a rate of 50, 50, and 40 lbs N/A on November 14, January 30, and April 5, 1989, respectively.

Forage plots were harvested with a Hege sickle bar forage harvester and were cut at a 2-inch height. Percent dry matter (ovendried forage) was determined in order to obtain total dry matter. A 10 percent least significant difference was computed for each harvest on each test. 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

Unfavorable weather conditions resulted in low forage production for all small grain species in 1988-1989. Although temperatures were above normal, several cold periods caused severe freeze damage on oats, wheat, triticale, and ryegrass. This freeze damage was amplified by warm weather just prior to the cold temperatures. Therefore, plants did not have time to become hardened to the freezing temperatures. Freeze damage consisted of both above ground foliage freeze back (with recovery), and also some varieties had crown damage and complete death of the plants. A low temperature of 15°F on February 7 was the lowest reading of the growing season at Overton.

Moisture levels were quite dry in September (1.45 inches) which resulted in slow plant establishment; however, thereafter moisture levels were adequate or high. Monthly levels in inches were: October 3.7; November 5.5; December 4.0; January 3.7; February 4.3; March 10.3; and April 2.2.

Oat forage yields are presented in Table 1. Fall and winter yields are quite low, however spring yields were near normal. Overall, total seasonal yields are slightly below normal. Percent winterkill ratings are correlated to total yield as varieties with low winterkill produced high yields and varieties with high winterkill had lower yields. Highest yields were produced by Noble Foundation 170 (experimental), Harpool 833, two Arkansas experimentals, Citation, and Big Mac. The third ranked 'variety' is a mixture of 1/3 Maton rye, 1/3 McNair 1003 wheat, and 1/3 Harpool 833 oats. The advantage of a mixture is normally they will have less freeze damage (because of the rye component) and will also have better total seasonal distribution of forage. At least one component or specie should be productive during each growing period.

TAM-0-386, a newly released oat variety recommended for South and Central Texas, winterkilled during 1989. This is to be expected in Northeast Texas.

Wheat yields were very low in 1988-1989 (Table 2). We believe this was due to a combination of weather conditions. The warm temperatures caused the wheat to try to joint and produce seed heads very early and also may have limited tillering. The cold temperatures caused winterfreeze damage or winterkilling of some varieties.

As with the oats, varieties or experimental lines which had lower freeze damage, generally produced higher forage yields. Highest yields were produced by experiments, Tx-82-118, Tx 85-264, Tx-83-50, Tx-80-31-3, followed by Keiser.

Rye forage yields (Table 3) were also below normal. Freeze damage did occur, however, this was caused by warm weather reducing the normal winterhardiness of the rye specie. The forage 'mixture' in this test was 1/3 Elbon rye, 1/3 Bradford wheat, and 1/3 Mesquite oats. The triticale lines in this test tended to be fairly susceptible to winterfreeze damage and their yields were reduced. Maton rye produced the highest forage yield followed by N.F. 73, N.F. 14, and Bonel.

Results of these studies should be used with caution. More than one year's data is desirable when variety recommendations are made because of interaction with weather conditions. Since the growing season of 1988-89 was unusually warm with periods of severe cold, this is especially the situation.

TABLE 1. OAT FORAGE VARIETY TEST AT OVERTON, TEXAS 1988-89

Variety	Harvest Dates					Total Yield	% Winterkill Recorded Mar. 3
	Dec. 2	Jan. 6	Mar. 13	Apr. 5	May 10		
	pounds of ovendried forage per acre						
Noble Foundation 170	226	442	1222	1570	3366	6826	7
Harpool 833	214	550	1137	1211	3687	6799	12
Mixture*	702	758	1784	1538	1667	6449	1
Ar 102-5	171	474	1748	1763	2228	6384	3
Ar 125-4A	337	452	1117	1236	3040	6182	7
Citation	401	829	1022	1278	2389	5919	5
Big Mac	193	575	670	946	3489	5873	50
Bob	348	480	704	1232	2942	5706	31
Noble Foundation 63	57	192	1205	1378	2498	5330	3
Nora	172	377	964	1278	2376	5167	11
Blizzard	28	360	763	868	3142	5161	7
Fla.501	421	714	477	448	3075	5135	67
Mesquite II	203	578	698	745	2784	5008	53
Coker 86-13	187	663	332	308	3495	4985	68
Fla. 502	224	983	287	363	2856	4713	72
Noble Foundation 20	128	266	959	1225	2117	4695	7
Tx 82M 4964	78	342	290	481	3481	4672	68
TAM-0-386	668	1160	48	152	2327	4355	93
Tx 86 B1117	127	418	295	332	2758	3930	73
Tx 86 B1207	209	880	66	136	1683	2974	81
Tx 83 Ab 2923	439	1016	16	41	1430	2942	96
Mean	263	596	753	882	2706	5200	
LSD (10% level)	201	297	295	417	1020	1317	
CV	65	42	33	40	32	21	

*40 lbs of Maton rye, 40 lbs of McNair 10-03 wheat, and 40 lbs of Harpool 833 oats.
Planting on Sept. 14, 1988. Seeding rate: 120 lbs/A.
Fertilizer application: Preplant 700 lbs/A of 13-13-13-12 (N, P_2O_5, K_2O, and S)
Topdressed 50 lbs/A actual N on Nov. 14, 1988
50 lbs/A actual N on Jan. 30, 1989
40 lbs/A actual N on April 5, 1989.
Weed Control: Applied one third ounce Glean/A on Sept. 14, 1988.

TABLE 2. WHEAT FORAGE VARIETY TEST AT OVERTON, TEXAS 1988-89

Variety	Harvest Dates					Total Yield	% Winterkill Recorded Mar. 3
	Dec. 1	Jan. 4	Mar. 13	Apr. 4	May 2		
Tx 82-118	241	561	1228	1108	71	3209	3
Tx 85-264	479	737	1102	418	0	2736	51
Tx 83-50	379	693	803	742	0	2617	10
Tx 80-31-3	249	488	1008	681	85	2511	2
Keiser	302	711	474	664	212	2363	44
Tx 83-70	228	655	330	619	453	2285	49
TAM-107	97	214	980	962	0	2253	1
Bradford	170	475	838	590	113	2186	8
Tx 80-32	345	844	400	438	0	2027	32
Tx 85-242	259	597	577	561	0	1994	36
Tx 75-213	282	998	339	244	127	1990	75
Tx 85-237	161	624	163	433	509	1890	60
Fla. 7927-G29	681	1090	0	69	0	1840	98
Fla. 301	420	1077	147	175	0	1819	97
Mesa	128	316	739	622	0	1805	3
Fla. 301 H	401	1193	116	95	0	1805	98
Tx 76-40-2	228	670	384	523	0	1805	61
Fla. 302	329	720	330	423	0	1802	53
Tx 75-213-1	85	425	461	623	198	1792	34
TAM-200	181	463	495	638	0	1777	22
Traveler	295	975	109	264	127	1770	89
Fla. 303	384	1054	49	258	0	1745	98
Waco	310	655	326	444	0	1735	32
Tx 73025	226	717	361	354	70	1728	74
Tx 76-40-1	184	617	273	475	155	1704	59
Tx 82-185	302	653	314	411	0	1680	61
Noble Foundation 67	368	552	422	272	28	1642	63
TAM-201	96	271	642	480	0	1489	26
Hunter	233	720	95	241	0	1289	86
Collin	102	196	295	527	0	1120	59
Mean	272	665	460	479	72	1948	
LSD (10% level)	204	290	196	315	235	440	
CV	64	37	36	56	276	19	

Planted on Sept. 7, 1988. Seeding rate: 120 lbs/A.
Fertilizer application: Preplant 700 lbs/A of 13-13-13-12 (N, P_2O_5, K_2O, and S)
Topdressed 50 lbs/A actual N on Nov. 14, 1988
50 lbs/A actual N on Jan. 30, 1989
40 lbs/A actual N on Apr. 5, 1989.
Weed control: Applied one third ounce Glean/acre on Sept. 14, 1988.

TABLE 3. RYE AND TRITICALE FORAGE VARIETY TEST AT OVERTON, TEXAS 1988-89

Variety	Harvest Dates						Total Yield	% Winterkill Recorded Mar. 3
	Nov. 29	Dec. 21	Jan. 23	Mar. 9	Apr. 4	May 2		
Mixture*	204	263	650	806	1675	305	3903	25
Maton	406	290	312	809	1810	0	3627	0
Noble Foundation 73	479	433	585	604	1516	0	3617	1
Noble Foundation 14	434	398	464	614	1510	38	3458	1
Bonel	513	378	412	676	1300	0	3279	0
Underwood Exp. 428	472	378	435	256	1123	445	3109	11
Elbon	268	270	461	610	1477	13	3099	1
Noble Foundation 185 (Triticale)	394	392	1053	346	874	13	3072	39
Underwood Exp. 425	438	478	658	303	1134	13	3024	34
Ga. $WGBC_2$	480	552	788	209	837	140	3006	33
Underwood Exp. 528	274	418	580	359	1293	0	2924	12
Underwood Exp. 225	376	537	723	282	1005	0	2923	24
Underwood Exp. 308	221	342	497	309	1300	203	2872	14
Ga. $WAHRC_2$	527	399	536	293	1061	13	2829	39
Fla. 402	370	468	819	189	956	13	2815	53
Fla. 401	714	673	802	86	400	0	2675	89
Underwood Exp. 104	601	620	546	168	588	140	2663	70
Ga. WAC_2L	408	416	477	209	784	0	2294	45
Underwood Exp. 845	511	437	458	57	653	89	2205	51
Noble Foundation 21 (Triticale)	294	315	935	47	343	0	1934	87
Fla. 201 (Triticale)	450	221	281	0	200	0	1152	97
Mean	421	413	594	344	1040	68	2880	
LSD (10% level)	225	190	300	240	710	234	1044	
CV	45	39	43	59	58	292	31	

*40 lbs of Elbon rye, 40 lbs of Bradford wheat, and 40 lbs of Mesquite oats.
Planted on Sept. 6, 1988. Seeding rate: 120 lbs/A.
Fertilizer application: Preplant 700 lbs/A of 13-13-13-12 (N, P_2O_5, K_2O, and S)
Topdressed 50 lbs/A actual N on Nov. 14, 1988
50 lbs/A actual N on Jan. 30, 1989
40 lbs/A actual N on Apr. 5, 1989.
Weed Control: Applied one third ounce Glean/A on Sept. 14, 1988.