

FORAGE AND LIVESTOCK RESEARCH - 1986

RESEARCH CENTER TECHNICAL REPORT 86-1

Texas A&M University Agricultural Research
and Extension Center at Overton

Texas Agricultural Experiment Station
Texas Agricultural Extension Service

Overton, Texas

April 24, 1986

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SMALL GRAIN FORAGE YIELDS AT OVERTON
1983-1985

L. R. Nelson, Steve Ward and Jim Crowder

SUMMARY

This report presents forage yield data for oats, wheat, and rye clipping tests at Overton, Texas. Data are presented for a 3 year period, and for the 1984-85 growing season. Data on winterkilling of oats and wheat is presented for the 1984-85 season. Oats had 100% winterkill on all varieties in 1983-84 and differential kill on varieties in 1984-85. The major portion of oat forage was produced in the fall and spring during warmer periods. Forage production for rye was quite uniform even during the January - February growing period, and no winterkill was noted. Wheat was intermediate between oats and rye for seasonal forage production, but produced less total forage than did oats or rye.

OBJECTIVE

These studies were conducted to determine the forage yielding potential of numerous experimental and newly released varieties of wheat, oats, and rye in East Texas, to determine the seasonal distribution of the winter small grains. Finally, to test the varieties for winterhardiness and disease resistance or susceptibility.

PROCEDURES

Available commercial and experimental wheat, oat and rye cultivars were evaluated for adaptation, forage production, and rust resistance in 1982-83, 1983-84, and 1984-85 at Overton, TX.

All tests were planted in a prepared seedbed. Planting dates at Overton were early September in all three years. Seeding rates were 120 lbs/ac for all three small grains. Seed was planted with a drill into six row plots 12 ft in length and with 8 inch row spacing. Each forage species was planted into a separate experiment. Each experiment was replicated four times.

Fertilizer application rates varied each year. Preplant application at Overton was 60-60-60 lbs/ac (N-P₂O₅ - K₂O) in 1982 and

24-96-96 lbs/ac in 1983 and 1984. Plots were topdressed with ammonium nitrate nitrogen at the rate of 80 lbs on October 25 and February 18, 1982-83. In 1983-84, 100 lbs and 60 lbs N/ac (as urea) were applied on September 26 and February 26, respectively. In 1984-85, 96, 50 and 65 lbs N/ac (as urea) were applied on October 11, December 14, and February 20, respectively.

Forage plots were harvested with a flail type harvester the first two years. The third year, plots were harvested with a Hege 211 B forage harvester which has a sickle bar. All tests were cut at a 2 inch height. Percent dry matter (oven dried forage) was determined in order to obtain total dry matter.

RESULTS AND DISCUSSION

Dry conditions during emergence and early fall 1982 limited yields of all forages. Freeze injury was not a problem. In 1983-84, dry fall conditions again limited yields. In addition, severe freeze damage occurred in December and also reduced yields. During the 1984-85 growing season, good stands were obtained. Freeze damage did occur, which resulted in reduced forage yields on some varieties.

Forage yields are presented for three growing periods, November-December, January-February, and March-April (Table 1). Variety means are an average for three years with the exception of those noted in the tables, where only 2 years data were available. When winterkilling occurred, particularly with oats, a zero was averaged in for the late harvests and reduced 3 year mean yields for those periods as well as the total mean yield. Therefore, varieties with best winterhardiness are shown producing higher yields over a 3 year average. On a yearly basis this is also true; however, yield data were more erratic. The November-December forage yields for oats were high and freeze damage did not occur on any variety. The January-February harvest yield data were very low, while the March-April yields were much improved. They remained low compared to normal yields (when there is no winterkill). Oat forage yields for 1984-85 (Table 2) indicated true potential yields for a single growing season. The highest yielding variety was Mesquite which produced a total seasonal yield of 9506 lbs/acre. The percent winterkilling was

noted (Table 2) and variation ranged from 0 to 99%. Those varieties with less winterkilling continued to produce forage in the spring and had higher total yields.

The three year mean rye yields (Table 1) indicated good fall and winter forage production. There was no significant winterkill with rye, and forage was produced by all varieties throughout the growing season. Total season yields were similar to oat yields. The 1984-85 rye variety test (Table 3) indicated most of the forage had been produced by the end of March. The highest yielding variety was Bonel in 1984-85.

Wheat forage yields averaged over 3 years (Table 1) indicated a slightly lower yield than oats in the fall, and had higher mean yields in January-February. Yields in the spring were very similar to oats. Grazer II triticale which was the only triticale line tested (tested in 1982-83 and 1983-84 only), produced higher yields than any of the wheat varieties. On the average for total seasonal yield, wheat produced less forage than did oats or rye. Yields for 1984-85 (Table 4) indicated that severe winterkill occurred on many lines during that season. Those lines with best winterhardiness produced higher yields. The Bounty wheats are hybrid wheats and have good winterhardiness for East Texas growing conditions. In this particular year (1984-85), winterhardiness was an advantage and resulted in superior yields. During years when winterkilling is not a problem, other varieties would probably surpass the more winterhardy lines. For this reason, the 3 year averages have importance in selecting a variety best suited to East Texas.

TABLE 1. FORAGE YIELDS OF OATS, RYE, AND WHEAT AVERAGED OVER 3 YEARS (1982-83, 1983-84, 1984-85) AT OVERTON, TEXAS

VARIETY	-----Harvest period-----			
	NOV.-DEC.	JAN.-FEB.	MAR-APRIL-MAY	AV. TOTAL
	3 YR. MEAN	3 YR. MEAN	3 YR. MEAN	YIELDS
OATS	-----pounds of oven dried forage per acre-----			
Big Mac	1921	329	2841	5091
Mesquite	1885	295	3457	5637
Walken	1647	268	3623	5338
Coker 227	1711*	---+	1826*	3536*
Coker 234	1899	316	2401	4616
Bob	1647	221	2473	4341
RYE				
Vitagrazer	1481*	907*	1711*	4099*
Maton	1345	1093	2495	4933
Bonel	1439	1085	2777	5301
Elbon	950	901	1846	3697
Noble Found. - 91	1379*	996*	2300*	4675*
Noble Found. - 214	1941*	1022*	2264*	5227*
Noble Found. - 142	1583	1138	2508	5229
Curley Grazer 2000	1557	1027	2107	4691
Wintergrazer 70	1194	908	2550	4654
Grazerblend II	1709*	478	2776*	4964*
WHEAT				
Grazer II (Triticale)	1392*	294*	2771*	4457*
Coker 762	1060*	447*	2107*	3614*
Tx-75-213	1301	500	1494	3295
Southern Belle	1162*	422*	1915*	3499*
Delta Queen	1073*	434*	1762*	3269*
Mit	1237	541	1450	3228
Coker 68-15	1338	463	1697	3498
Northrup King pro 812	1257	544	1592	3393
TAM-106	1237	465	2050	3752
Coker-916	1109	942	1790	3841
McNair-1003	1227	533	1730	3490
Tx-73-009	1111*	383*	1444*	2938*
Florida 302	1770*	809*	1346*	3925*
Bradford	1201	445	1773	3419

*This variety was tested in only two years rather than three years.

+Due to freeze damage, no yields were recorded for Coker 227 during January - February.

TABLE 2. OAT VARIETY FORAGE TEST AT OVERTON, TX 1984-85

Variety	Harvest Dates					Total Yield	Winter injury %
	Nov. 15	Jan. 8	Mar. 11	Apr. 24	May 22		
Mesquite	2081	886	507	5659	374	9506	10
Walken	1572	804	659	4890	1413	9339	0
Four-twenty-two	1706	835	394	4734	795	8462	0
Harpool 833	2191	764	400	4124	511	7989	10
Big Mac	2238	988	316	3838	436	7815	5
Citation	2113	886	127	3704	934	7765	40
Tx-82C-6023	1730	896	77	2720	1402	6825	60
Coker 234	2045	947	42	2545	990	6569	70
Bob	1954	662	235	3115	570	6535	20
Tx-81C-707	1775	825	70	2185	951	5805	
Tx-82C-6035	1650	743	125	1867	923	5309	80
Tx-82M-5018	2358	499	0	622	920	4398	80
Tx-81C-3102	1944	896	32	1016	495	4384	80
Tx-81C-705	1672	896	10	713	981	4272	85
Tx-82M-4744	1928	743	74	849	655	4248	
Tx-82C-6317	1696	916	29	1037	294	3972	95
Tx-82C-6217	2551	540	32	313	384	3820	99
Tx-82C-6014	2400	305	0	307	282	3294	-
Mean	1978	779	174	2458	739	6128	-
LSD (10% level)	288	159	146	264	568	1181	-
CV	12.3	17.3	70.8	9.1	65.1	16.3	-

-----pounds oven dried forage per acre-----

Planted on September 17, 1985. Seeding rate = 120 lbs/acre.

Fertilizer application: Preplant 400 lbs of 6-24-24/acre (N, P₂O₅ and K₂O)
 Topdressed 96 lbs N/acre (urea) on October 11, 1984
 50 lbs N/acre (urea) on December 14, 1984
 65 lbs N/acre (urea) on February 20, 1985

TABLE 3. RYE FORAGE VARIETY TEST AT OVERTON, TX. 1984-85

Variety	Harvest Dates					Total Yield
	Nov. 14	Jan. 8	Mar. 11	Mar. 29	Apr. 24	
-----lbs oven dried forage per acre-----						
Bonel	1484	1211	1512	1148	897	6251
Noble Foundation 142	1711	1423	1148	978	854	6114
Gurley GI 85	1547	1494	1267	791	803	5902
Maton	1430	1211	1425	1058	587	5712
Gurley AFC 20-2	1440	1505	1034	898	734	5610
Gurl Graze 2000	1632	1294	1236	786	621	5569
Grazerblend 2	1323	470	560	1531	1625	5510
Wintergrazer 70	1357	1140	1433	950	568	5447
Elbon	1652	1376	1230	644	497	5399
Fredrick	1287	870	1032	894	1115	5199
Mean	1487	1200	1188	968	830	5672
LSD (10% level)	203	345	240	341	310	645
CR	11.3	23.9	16.8	29.3	31.1	9.5

Planted on September 17, 1984

Fertilizer application: Preplant 400 lbs of 6-24-24/acre (N, P₂O₅ and K₂O)
 Topdressed 96 lbs N/acre (urea) on October 11, 1984
 50 lbs N/acre (urea) on December 14, 1984
 65 lbs N/acre (urea) on February 20, 1985

TABLE 4. WHEAT FORAGE VARIETY TEST AT OVERTON, TX. 1984-85

Variety or Hybrid	Harvest Dates					Total	Winterkill %
	Nov. 14	Jan. 4	Mar. 11	Mar. 29	Apr. 25		
-----pounds of oven dried forage per acre-----							
Bounty 100	1205	898	1095	975	556	4729	10
Ark. 48-7-4	1399	784	755	893	821	4652	10
TAM-106	1309	578	554	1323	775	4539	0
Bounty 205	1211	702	856	824	545	4462	5
Bounty 301	1246	629	794	940	568	4176	10
Bounty 201	1179	815	734	1030	350	4108	5
Bounty 310	1283	691	742	824	551	4092	5
HW-3015	1342	815	824	753	179	3913	20
Fla. 302	1215	1083	277	360	924	3859	70
Tx-0-76-40-2	1284	764	358	792	657	3854	60
Rosen	1256	578	951	710	343	3837	5
Tx-0-82-185	1345	588	446	792	632	3803	25
Harpool 78 DW 14	1362	826	340	660	576	3763	30
Bradford	1175	722	486	956	352	3720	40
Tx-0-73025	1337	712	578	630	458	3715	30
Coker 68-15	1152	826	319	846	503	3646	10
Bounty 202	1118	661	680	988	199	3645	10
McNair 1003	1127	681	847	690	284	3628	50
Hunter	1289	1001	452	418	431	3590	90
HW-3021	1290	877	477	653	291	3588	80
Coker 916	1135	578	592	930	323	3577	5
NK Probrand 812	1058	815	447	713	398	3430	30
Mit	1336	960	213	470	371	3349	40
Tx-0-75-213	1323	836	104	297	634	3193	90
Mean	1249	767	580	784	488	3869	
LSD 10%	299	187	200	279	280	718	
CV	10.4	20.6	29.2	30.2	48.5	15.7	

Planted on September 17, 1984. Seeding rate = 120 lbs/acre.

Fertilizer application: Preplant 400 lbs of 6-24-24/acre (N, P₂O₅ and K₂O)

Topdressed

96 lbs N/acre (urea) on October 11, 1984

50 lbs N/acre (urea) on December 14, 1984

65 lbs N/acre (urea) on February 20, 1985