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Ryegrass Forage Variety Tests at Overton and Beaumont in 1992-93

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Summary

This report presents forage data from the 1992-93 growing season for annual ryegrass (*Lolium multiflorum* Lam.) variety trials at Overton and Beaumont, Texas. Growing conditions were generally good, no winterkill occurred, and forage yields were above normal. The mean yields across all varieties for Overton and Beaumont were 6,793 and 7,140 lb dry matter/acre, respectively.

Introduction

These experiments were conducted to determine adaptability and forage yield potential of annual ryegrass varieties as well as several experimental lines for northeast and southeast Texas soils and growing conditions. Seasonal distribution of forage, crown rust resistance, and winter hardiness were also determined.

Procedure

Available commercial varieties and experimental lines of annual ryegrass were planted at Overton and Beaumont on 22 and 23 Sept. 1992, respectively. Each test was planted into a prepared seedbed. The test site at Overton was a Sacul fine sandy loam, which had been fertilized with 25 lb of nitrogen (N) and 100 lb of phosphorus (P)/acre and 100 lb potassium (K)/acre. In addition, the Overton site was top-dressed with 48 lb of N, 18 lb P, and 36 lb K/acre on 18 December, 61 lb N on 9 March, and 50 lb N/acre on 26 April. The test site at Beaumont was in a Lake Charles clay and was fertilized with 50 lb N, 50 lb P₂O₅, and 100 lb of K₂O lb/acre at planting. The experiment was top-dressed with 50 lb N/acre after each harvest on 11 December, 14 January, 28 January, 18 February, and 8 March, for a total N application of 300 lb/acre. Seeding rates were 30 lb/acre at both locations.

Seed were drilled into seven row plots at Overton and six row plots at Beaumont, 12 ft in length with a 7-inch row spacing. Experimental design was a complete randomized block with four replications. Forage was harvested at Overton with a Hege sickle bar

forage harvester to 2-in. stubble height. Forage at Beaumont was harvested with a rotary mower, which deposited the forage into a basket. A subsample of the harvested forage was dried at 150 °F for 48 hr to determine dry matter percentage. A 10% least significant difference was computed for each harvest on each experiment. This value can be used to make comparisons between varieties. Differences greater than this value are real 9 out of 10 times and may be considered significant.

Results and Discussion

Adequate soil moisture was available to obtain good stands in each experiment. Soil moisture was not limited at Overton, allowing good fall forage production. A cool, wet May at Overton resulted in above-average late spring forage production. The 23 May harvest was somewhat unusual at Overton, and the environmental conditions favored later maturing varieties. Fall moisture was limiting at Beaumont, which reduced fall forage production. The lowest temperature recorded during the growing season at Overton and Beaumont was 26 °F. No significant winter-freeze damage was detected, and no winterkill occurred at either location.

The first ryegrass clipping at Overton was taken on 8 December (Table 1), when the taller entries were about 10 in. high. 'Gulf' produced the top yield of 1,267 lb/acre, closely followed by 'Marshall', experimental WVPB-AR-90-1, and 'Jackson'. Most entries produced good yields at the second harvest on 25 January. The top yield of 2,622 lb/acre was produced by 'TAM 90', which was nearly twice the yield of the second highest yielding variety, Gulf. The third harvest was on 18 March, when higher forage yields were produced by entries TXR91-SR5EF, TXR91-A7EF, 'FLA 80', TXR86-2L91-12EI, and TXR91-A8EI. Thereafter, the test was harvested once in April and twice in May. The last harvest was on May 23, and much of the forage harvested at this late date was stems and seed heads. The cool, wet spring favored late maturing varieties such as Marshall, which continued to produce forage in late May. The total forage yields of ryegrass varieties at Overton in 1992-93 were good compared with other years. Ryegrass forage yields were superior to wheat and rye and similar to oats in other clipping trials that were adjacent to this experimental plot.

Keywords: *Lolium multiflorum* / forage yield.

Table 1. Ryegrass forage variety test at Overton, Texas, 1992-93.

Variety	Harvest dates (month-day)						Total yields
	12-8	1-25	3-18	4-13	5-7	5-23	
 Dry matter (lb/acre)						
Marshall	1210	1236	675	2000	1658	1354	8133
Jackson	1052	1359	1093	2265	1115	856	7740
TAM 90	637	2622	1142	1978	813	506	7698
TXR90EN2†	46	1498	1128	2283	1012	749	7216
Surrey	775	1227	1096	2111	1096	907	7212
WVPB-AR-90-1†	1092	1366	683	1756	1559	747	7203
TXR91-SR5EF†	161	1116	1771	2157	1087	908	7200
"600" tetraploid†	661	1473	1005	2051	1161	794	7145
TXR91-10EI†	306	1306	1172	2382	1011	922	7099
Rio	528	1246	1074	2042	1211	981	7084
FLA. 80	699	1528	1230	1954	803	751	6965
TXR86-2L91-12EI†	268	1221	1234	2215	1112	883	6933
TXR91-ENDO†	565	1199	1160	2101	1167	722	6914
NCSU-91	449	1070	694	2550	1233	902	6897
TAMU-86-2L†	404	1087	1164	2336	1136	770	6897
Gulf	1267	1637	1099	1736	676	486	6895
NF 149†	502	1416	922	1928	1052	982	6802
TXR91-9EF†	338	1460	1063	2237	871	747	6716
NF 429†	496	1380	971	1697	1240	926	6710
TXR91-A8EI†	245	1545	1224	2032	716	836	6598
TXR91-SR6EI†	262	1283	1057	2000	1168	666	6436
NF 4†	619	1116	974	1611	1215	781	6316
TXR91-A7EF†	111	1138	1396	1983	978	602	6208
NF 435†	389	1270	763	1794	1060	897	6171
TXR86-2L91-11EF†	126	920	1230	1902	1061	694	5933
TXR91-TA6EI†	171	988	789	1619	1259	1099	5923
WVPB-92-40(4N)†	310	1171	782	1521	1216	847	5847
TXR91-TA5EF†	359	468	798	1747	1064	876	5312
Mean	520	1298	1050	2000	1098	828	6793
LSD (0.10)	293	444	272	404	248	268	927

† Experimental lines; seed not available.

The forage data from Beaumont (Table 2) illustrate somewhat different results. The first harvest was 11 December; however, all yields were quite low in this harvest because of the dry autumn. With the low yields, differences in forage yield between entries were not significant. The second and third harvests on 14 and 28 January produced higher yields; however, little real differences were noted between entries. Very good forage yields were produced in each of the next four harvests, indicating excellent forage

production on most entries. In total season yield, two experimentals were closely followed by Gulf and several other entries. No winterkill occurred at Beaumont. We speculate that the warm winter favored varieties such as Gulf, which was selected at the Beaumont location nearly 30 years ago.

Crown rust was present at both locations in 1992; however, disease severity levels were too low to make ratings. This was the second consecutive year that crown rust was not severe at the Beaumont location.

Results of these studies should be used with caution. More than 1 year's data is desirable when variety recommendations are made because of interaction

with weather conditions. This is especially true because the growing season of 1992-93 was unusually warm, causing no winter-freeze damage.

Table 2. Annual ryegrass forage variety test at Beaumont, Texas, 1992-93.

Variety	Harvest dates (month-day)							Total yield
	12-11	1-14	1-28	2-18	3-8	3-26	4-12	
TXR91-A8E1†	456	962	568	1514	1137	1670	1323	7630
TXR91-SR6E1†	300	980	708	1368	1004	1707	1540	7610
Gulf	456	969	736	1368	1010	1745	1293	7580
TXR91-A7EF†	259	939	579	1439	1284	1619	1447	7570
TXR86-2L91-11EF†	400	953	458	1148	979	1858	1604	7400
"600" Tetraploid	460	1032	492	1199	998	1639	1549	7370
Rio	460	963	493	1223	878	1644	1690	7350
Jackson	449	870	468	1212	1022	1808	1515	7350
TXR90EN2†	347	958	536	1251	1004	1821	1416	7330
Surrey	374	1104	626	1212	905	1604	1455	7280
TXR91-ENDO†	320	953	615	1263	1050	1712	1367	7280
Marshall	480	1032	458	987	761	1527	1972	7220
TXR-10E1†	418	1098	607	1237	936	1537	1369	7200
TAM 90	283	1012	614	1120	1083	1741	1325	7180
Florida 80	447	992	468	1186	1150	1634	1284	7160
NF 435†	357	963	519	1208	810	1598	1698	7150
NF 429†	354	930	641	1198	973	1665	1371	7130
TXR86-2L91-12E1†	342	909	501	1246	895	1665	1560	7120
TXR91-SR5EF†	303	944	509	1133	960	1655	1582	7090
TXR91-TA6E1†	305	807	411	1170	1041	1598	1608	6940
NF 4†	222	1017	567	1191	865	1478	1581	6920
WVPB-AR-90-1†	485	991	445	1041	762	1538	1657	6920
TXR91-9EF†	327	846	493	1171	908	1725	1372	6840
TAMU-86-2L†	357	844	467	1186	928	1665	1301	6750
WVPB-92-40(4N)†	395	809	443	1070	955	1598	1441	6710
TXR91-TA5EF†	332	768	434	1293	1018	1665	1470	6630
NF 149	285	868	441	1144	919	1613	1360	6630
NCSU-91	336	820	472	1214	820	1466	1459	6590
Mean	368	942	527	1214	966	1650	1486	7140
LSD (0.10)	NS	NS	122	132	120	133	212	566

† Experimental lines; seed not available.