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Ryegrass Forage Variety Tests at Overton and Beaumont in 1991-92

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Summary

This report presents forage data on the 1991-92 winter growing season for annual ryegrass (*Lolium multiflorum* Lam.) at Overton and Beaumont, Texas. Generally, growing conditions were good, little or no winterkill occurred, and forage yields were above normal. The mean yields across all varieties at Overton and Beaumont were 7,689 and 5,627 lb dry matter/A, respectively.

Introduction

These experiments were conducted to determine the forage yield potential of annual ryegrass varieties as well as several experimental lines under East Texas growing conditions. We also wanted to determine the seasonal distribution of forage for annual ryegrass varieties and to test their crown rust resistance and winterhardiness.

Keywords: *Lolium multiflorum* / cool-season forage.

Procedure

Available commercial and experimental annual ryegrass varieties were planted in separate experiments at both Overton and Beaumont on September 25, 1991. Each test was planted into a prepared seedbed. The test site at Overton (well-drained sand) and Beaumont (poorly drained, heavy clay) had been fertilized with 50 lb of nitrogen (N), 50 lb phosphate (P_2O_5), and 100 lb of potash (K_2O)/A. In addition, the Overton site was fertilized with 45 lb sulfur (S)/A. Seeding rates were 30 lb/A at both locations. Seed were drilled into seven row plots, 12 ft in length at 7-in. row spacing. Experimental design was a complete randomized block with four replications. The test at Overton was top-dressed with ammonium nitrate at rates of 40, 40, 30, and 30 lb N/A on January 7, February 21, March 21, and April 21, respectively. The test at Beaumont was top-dressed with ammonium nitrate at 50, 50, and 50 lb N/A on December 6, February 7, and March 29, respectively. Forage was harvested at Overton with a Hege sickle bar

forage harvester to 2-in. stubble height. Forage at Beaumont was harvested with a lawn mower, which deposited the forage into a basket. A subsample of the harvested forage was dried at 150 °F for 48 hours to determine dry matter percentage. A 10% least significant difference was computed for each harvest, which can be used to make comparisons between entries. 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 became very limited between late September and late October, which reduced fall forage production. After late October, moisture was not limiting until late spring. At Overton, soil moisture was limiting during April and resulted in reduced forage production in May, particularly for earlier maturing varieties. May

rains occurred, which resulted in the May 28 harvest at Overton. The last harvest at Beaumont was on April 9. The lowest temperature recorded during the growing season at Overton was 24 °F on January 16, 1992. No significant winter-freeze damage was detected at either location.

The first ryegrass clipping at Overton was on December 4 (Table 1), when the taller entries were about 10 in. high. Experimental line WVPB-AR-90-1 produced the top yield of 1,711 lb/A, closely followed by 'Rio', 'Rustmaster', and 'Marshall' as well as several other lines. Forage was not sufficient in January to harvest. The second harvest was on February 19. Thereafter, the test was harvested twice in March and then not until May 1. The last harvest was on May 28, and much of the forage harvested at this late date was stems and seed heads. The total forage yields of ryegrass varieties at Overton in 1991-92 were very high compared with other years. Ryegrass forage yields

Table 1. Annual ryegrass forage variety test at Overton, Texas 1991-92.[†]

Variety	Harvest dates (mo.-day)						Total
	12-4	2-19	3-11	3-31	5-1	5-28	
 Dry matter (lb/A)						
WVPB-AR-90-1	1711	798	998	1175	3871	1262	9815
Rio	1649	1060	1133	1122	2992	1307	9263
Rustmaster	1606	1063	1262	1144	2925	1079	9078
Marshall	1519	866	919	1094	3331	1087	8816
TXR-90-1	1289	1241	1298	1213	2731	984	8756
Noble Foundation 32	1299	1106	1198	981	2592	1358	8534
Surrey	1373	1185	1126	986	2829	928	8427
Jackson	1489	865	1028	1033	2907	894	8215
TXR90-SR3	743	983	1277	1187	2798	1044	8032
Lemnos	1163	1040	1078	894	2468	1155	7799
Noble Foundation 4	1024	840	1285	937	3136	572	7794
Noble Foundation 429	656	878	1218	829	3184	889	7654
TXR90-EN2	795	973	1096	1197	2900	625	7586
Liwega	1247	1138	1098	759	2022	1239	7503
TAM 90	1265	1122	1026	950	2516	580	7458
TXR90-TA3	772	628	1020	1054	2915	979	7368
NCSU-90	781	601	1009	918	2994	1027	7331
Merwester	1086	1152	1145	855	1951	1125	7313
Noble Foundation 149	729	870	1106	908	2635	929	7176
Fla. 80	539	1199	945	788	2716	847	7035
Gulf	388	1358	977	969	2498	674	6863
Limella	802	1118	916	605	2032	1110	6583
TXR86-2L	403	982	1316	1109	518	967	5295
Tetragold	188	226	628	919	2107	789	4857
Mean	981	973	1087	984	2649	977	7689
LSD (0.10)	721	264	333	152	474	341	1232

[†]Planted September 25, 1991.

Fertilization: Preplant 50 lb of N, P₂O₅, 100 lb of K₂O, and 45 lb of S/A.

Top-dressed: 40 lb N on January 7, 40 lb N on February 21, 30 lb N on March 21, and 30 lb N/A (as ammonium nitrate) on April 21.

were superior to oat, wheat, and rye in clipping trials, which were located adjacent to this experiment. Ryegrass forage yields would have been higher if the late April drought had not occurred, which caused the ryegrass plants to develop seed-heads prematurely because of moisture stress.

The forage data from Beaumont (Table 2) illustrate somewhat different results. The first harvest was not until January 7, which indicates low fall forage production, which again was due to moisture stress shortly after planting. Overall, the mean total forage yields at Beaumont were about 2,000 lb/A less than at Overton. The only variety in the top five at both locations was Rio. The yield response of the other varieties tended to be some-

what different at the two locations. The experimental line WVPB-AR-90-1 produced the highest yield at Beaumont, followed closely by 'Florida 80', Noble Foundation 4, and several other entries. No winterkill occurred at Beaumont.

Crown rust was present at both locations in 1992; however, disease severity levels were too low to make ratings. This is unusual at the Beaumont location because of its proximity to the Gulf Coast.

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. Because the growing season of 1991-92 was unusually warm with no winter-freeze damage, this is especially true.

Table 2. Annual ryegrass forage variety test at Beaumont, Texas, 1991-92.¹

Variety	Harvest dates (mo.-day)						Total
	1-7	2-7	2-21	3-9	3-27	4-9	
 Dry matter (lb/A)						
TXR-90-EN2	1195	599	746	1216	1402	1193	6351
Florida 80	1706	462	648	1210	1111	1140	6277
NF4	1842	425	523	1096	1318	1059	6263
Lemnos	2116	404	619	1047	1067	912	6165
Rio	1771	444	573	1079	1123	1048	6038
NF32	1403	460	597	1096	1352	1050	5958
TXR-90-TA3	1087	401	532	1187	1579	1130	5916
Jackson	1416	405	561	1063	1244	1180	5869
Rustmaster	1468	484	582	1003	1170	1121	5828
TXR-86-2L	1255	482	690	1027	1188	1145	5787
TXR-90-SR3	1096	440	619	1120	1265	1155	5695
Marshall	1307	395	479	1038	1276	1198	5693
Gulf	1469	509	661	996	1083	966	5684
WVPB-AR-90-1	1667	419	550	984	1032	1027	5679
TAM 90	1121	438	597	1063	1213	1094	5526
Surrey	1277	421	573	976	1256	1005	5508
NF429	1260	355	538	1058	1110	1115	5436
Merwester	1261	490	618	1070	948	1017	5404
TXR-90-1	1059	384	526	1038	1364	987	5358
Liwega	1400	467	637	966	841	861	5172
Tetragold	1114	310	466	1099	1166	976	5131
NF149	957	338	354	1006	1106	1038	4799
Limella	833	440	645	928	937	990	4773
NCSU-90	689	235	394	1067	1242	1135	4762
Mean	1323	425	572	1060	1183	1064	5628
LSD (0.10)	495	103	113	141	204	117	

¹ Planted September 27, 1991.

Fertilization: Preplant 50 lb of N P₂O₅, 100 lb of K₂O per A.

Top-dressed: 50 lb N (applied as ammonium nitrate) on December 6, February 10, and March 20.