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RYEGRASS FORAGE YIELDS AT OVERTON FOR 1994-95 AND 3-YEAR MEANS

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Summary

This report presents forage data for the 1994-95 growing season and 3-year means for annual ryegrass (*Lolium multiflorum*) at Overton and Beaumont, Texas. Growing conditions were exceptionally good at Beaumont with yields ranging from 15,400 to 13,500 lbs/acre. Conditions at Overton were less favorable, resulting in below average yields ranging from 5800 to 4900 lbs/acre. Crown rust severity levels were recorded and are presented for both locations.

Introduction

Annual ryegrass is an important forage crop in East Texas. Varieties vary in total forage yield and distribution, and for disease resistance. This study is conducted each year at the TAMU Agricultural Research and Extension Centers at Overton and Beaumont to compare varieties for East Texas soils and climatic conditions.

Procedure

Available commercial varieties and experimental lines of annual ryegrass were planted at Overton and Beaumont on 23 and 30 September 1994, respectively. Each test was planted into a prepared seedbed. The test site at Overton was a Darco fine loamy sand and was fertilized with 50 lbs of N and 100 lbs P_2O_5 and K_2O/acre at planting. In addition, the Overton site was top-dressed with 40 lbs of N on 3 November, 50 lbs N on 19 January, and 60 lbs N on 17 March, applied as ammonium nitrate. The total N applied at Overton was 200 lbs/acre. The test site at Beaumont was on a Bernard-Morey silt loam and was fertilized with 50 lbs N and P_2O_5, and 100 lbs of K_2O/acre at planting. The experiment was top-dressed with 25 lbs N/acre after each harvest on 6 December, 20 December, 17 January, 3 February, 21 February, 12 March, and 24 March, and 20 April for a total N application of 250 lbs/acre. Seeding rates were 30 lbs/acre for both locations. Seed were drilled into seven row plots at Overton and six row plots at

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Key words: crown rust / *Lolium multiflorum*

Beaumont, 12 feet in length with 7-in. row spacing. Experimental design was a randomized complete 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 sub-sample of the harvested forage was dried at 150°F for 48 hr to determine percent dry matter. A 10% least significant difference (LSD) 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

Stands were good at Beaumont but poor at Overton in the autumn of 1994. A dry period after planting in September caused the reduced stands at Overton. The growing season had above normal temperatures and above normal rainfall. Forage yields were below normal at Overton, but far above normal at Beaumont. The test site at Beaumont was also grazed off inadvertently on 15 January, which eliminated one harvest. We have no specific explanation why yields were so high at Beaumont. However, we have observed yields similar to this at Overton in past years. Exceptional yields probably result when excellent stands are obtained and then a combination of above normal sunshine, ample moisture, and good fertility all continue to occur during the entire growing season.

At Overton, the ryegrass was harvested on five dates (Table 1). The January and February yields were very low for all entries, and contributed little to the total seasonal yield. The March, April, and May harvests were fairly good. The highest yielding varieties were 'Marshall', 'Magnum', 'Surrey', 'Jackson', and 'Gulf'. Yield of TAM 90 was down in 1995 due to a low harvest weight on the April harvest. Three year mean yields are also presented in table 1. Note that the three top yielding lines are TAM 90, followed by Jackson and Marshall; however, these yields' differences are not significant.

Forage yields at Beaumont (Table 2) were in the 13,000 to 15,000 range for most entries. The ryegrass test was harvested eight times, with the first harvest on 30 November, and the last harvest on 24 April. Yields on all harvests were quite high with the best yielding harvest in March. The highest seasonal yielding varieties were Gulf, Magnum, 'Rustmaster', 'Max', 'Comet', and Jackson. The fact that Gulf was selected at Beaumont, and that historically it has

been yielding quite well there, would indicate that is very well adapted to the region. Gulf does lack the winter hardiness of TAM 90, and Marshall, and in severe cold weather could suffer freeze injury or death. The 3-year means indicate that Gulf, Jackson, Rio and TAM 90 are all high-yielding varieties in the Beaumont region.

Crown rust data were collected for both locations in 1995. Crown rust severity levels are on a 0 to 9 scale, where 0 = no disease, and 9 = death of the plant. At Overton, disease ratings of 2 or less, indicate good resistance to crown rust. At Beaumont, crown rust ratings less than 1.0 indicate good disease resistance. Varieties which are quite susceptible to crown rust and should not be grown within 100 miles of the Gulf Coast are Marshall, 'Grazer', 'Comet', 'Max', and 'Andrea'.

Data from the yield tables should be used with some caution. Note the least significant differences at the bottom on each table. Yield differences between varieties of less than the least significant difference, should not be considered real and may be due to experimental error. Data over years is considered to be more reliable.

Table 1. Ryegrass forage variety test at Overton, TX 1994-95.

Entry	Har 1 20 Jan	Har 2 27 Feb	Har 3 31 Mar	Har 4 26 Apr	Har 5 18 May	Total	3 Yr. Mean	Crown rust rating[a]
	pounds of dry matter per acre							
Marshall	733	442	1839	1594	1184	5792	6183	5.0
Wax NME94*	601	568	1794	1517	1202	5682	--[b]	3.0
Magnum tetraploid	908	699	1484	1307	1195	5593	--	1.5
DSVHS94-3 2N*	371	748	1726	1267	1457	5569	--	1.0
FL/OR 1994LR*	285	493	1842	1516	1412	5548	--	1.0
SS33DK*	405	636	1806	1380	1265	5492	--	1.5
Surrey	635	648	1714	1135	1348	5480	5546	2.0
WVPB-AR-93-A-9*	445	654	1619	1282	1463	5463	--	2.0
Jackson	544	640	1618	1258	1353	5413	6045	1.5
Gulf	1051	757	1427	896	1153	5284	5852	1.5
AR 90-1*	487	514	1574	1241	1439	5255	--	1.5
WVPB-AR-93-101*	110	443	1874	1177	1585	5189	--	2.0
WVPB-AR-90-300*	125	421	1836	1310	1421	5113	--	2.5
FLA 80	605	885	1574	900	1131	5095	5621	1.0
Rustmaster	274	533	1893	1055	1324	5079	--	1.5
Rio	329	526	1506	1359	1358	5078	5549	1.0
WVPB-AR-R-3*	329	618	1620	1063	1389	5019	--	2.5
Southern Star	189	519	1694	1150	1463	5015	--	2.0
TXR91-TA5EF*	163	516	1734	1245	1229	4887	5055	3.0
TAM 90	645	684	1477	830	1149	4785	6322	1.0
Tetrablend 444	214	410	1515	1383	1258	4780	--	4.0
Dargle	889	679	1145	948	1067	4728	--	0.5
TXR93-Turf*	46	361	1723	1238	1314	4682	--	4.0
WVPB-AR-ETCO-8-88*	281	337	1256	1408	1356	4638	--	3.0
BL3*	333	518	1416	1070	1293	4630	--	1.5
DSVHS 94-2 2N*	584	607	1200	831	1226	4447	--	2.5
Grazer	101	925	1503	1057	859	4445	--	5.0
Columbus	353	542	1175	897	1471	4438	--	2.0
Max	331	373	1056	1390	1214	4364	--	3.0
Andrea	498	410	1210	1100	1081	4299	--	5.5
NCSU 91*	87	319	1469	1192	1046	4113	5376	5.5
Comet	537	462	1016	949	1087	4051	--	5.5
DSVHS 94-1 4N*	248	372	1097	1130	1089	3936	--	5.5
Mean	366	574	1548	1167	1269	4897		
LSD (0.10)	245	173	293	187	258	734		

Planted September 23, 1994. Fertilization: Preplant 50 lbs N, 100 lb P_2O_5 and 100 lbs of K_2O/ac. Top-dressed with 40 lbs N/ac on November 3, 50 lbs N/ac on January 19, and 60 lbs N/ac on March 17 applied as ammonium nitrate. Herbicide: Buctril was applied postemergence to control broadleaf weeds at a rate of 1.5 oz/ac on February 1, 1995.

*Experimental line, seed not available.

[a]Crown rust rating was on a 0-9 scale where 9 = dead plants. Rating taken on May 18, 1995.

[b]Variety not tested over last 3 years.

Table 2. Annual ryegrass forage variety test at Beaumont, Texas 1994-95.

	Harvest dates (day-month)								Total yield	3 Yr. Average	Crown rust rating[a]
Entry	30 Nov	19 Dec	2 Feb	20 Feb	10 Mar	23 Mar	13 Apr	24 Apr			12 Apr
	pounds dry matter per acre										
SS33DK*	2274	1663	1389	2031	2552	2017	2171	1281	15377	--[b]	0.3
WVPB-AR-93-A-9*	2260	1449	1389	1949	2116	2293	2348	1121	14924	--	0.2
Gulf	1879	1420	1540	1961	2438	2149	2149	1330	14866	10948	0.0
Magnum (tetra)	2260	1362	1202	1610	1929	2293	2590	1466	14712	--	0.0
Rustmaster	1688	1352	1295	1832	2490	2458	2083	1306	14504	--	0.0
FL/OR 1994LR*	1470	1391	1190	1610	2251	2315	2337	1737	14301	--	0.0
WVPB-AR-R-3*	1879	1371	1190	1739	2116	2061	2392	1429	14177	--	0.6
Max	1729	1391	1179	1645	2189	2315	2226	1441	14115	--	2.0
Comet	1797	1468	1505	1645	2095	2392	2017	1183	14103	--	2.8
Wax ME94*	1770	1148	910	1879	2365	2006	2524	1417	14018	--	1.1
Jackson	2001	1196	1120	1645	2427	1775	2381	1392	13938	10777	0.0
Tetrablend 444	1579	1362	1237	1739	2189	2105	2149	1429	13789	--	2.5
DSVHS94-1 4N*	1702	1284	1377	1937	2376	1918	2061	1121	13775	--	1.5
Andrea diploid	1716	1293	1132	1774	1950	2149	2315	1318	13647	--	4.8
Rio	1566	1293	992	1657	2355	1896	2226	1601	13587	10306	0.0
BL3*	1525	1206	1085	1716	2282	2116	2182	1392	13504	--	0.1
WVPB-AR-93-101*	1321	1362	1214	1996	2178	2116	1951	1367	13504	--	0.1
Dargle	1579	1362	1377	1716	2033	1907	2006	1503	13482	--	0.0
DSVHS94-2 2N*	1348	1264	1354	1797	2272	2028	1918	1404	13385	--	0.5
Southern Star	1457	1148	1155	1821	2168	2094	1995	1466	13303	--	0.1
WVPB-AR-90-300*	1430	1186	899	1657	2054	2050	2601	1380	13257	--	0.5
WVPB-AR*	1634	1245	1015	1704	2147	2116	1973	1392	13226	--	2.0
ETCO8-88*	1280	1206	934	1739	2189	2248	2138	1429	13163	--	0.1
TAM 90	1593	1245	864	1645	2012	2006	2458	1330	13154	10115	0.1
Surrey	1593	1118	992	1645	2137	2116	2083	1417	13102	9752	0.3
TXR91-TA5EF*	1362	1313	969	1680	2334	2017	2083	1281	13039	--	0.4
AR-90-1*	1321	1089	665	1739	2075	2182	2204	1663	12938	--	0.8
FLA 80	1416	1167	1144	1926	2241	2083	1675	1207	12859	9855	0
TXR93-Turf*	749	1050	899	1937	2147	2116	2403	1491	12792	--	0.6
DSVHS94-3 2N*	1185	1138	829	1762	1950	1962	2348	1552	12725	--	0
Marshall	1920	1089	724	1762	1981	1797	2193	1195	12661	9892.3	4.5
Columbus	1239	1264	1050	1669	1950	1984	1962	1281	12400	--	0.6
Grazer	1362	1060	1260	1867	2220	1918	1620	1084	12391	--	0.8
NCSU 91*	912	1002	619	1400	1919	2160	2083	1392	11487	9666	3.7
Mean (lb/ac)	1521	1262	1136	1777	2196	2098	2163	1357	13512		
LSD (0.1)	566	287	481	341	501	406	421	236	1735		
CV (%)	31.8	19.4	36.1	16.4	19.5	16.5	16.6	14.9	11		

Planted on September 30, 1994. Fertilization: Preplant with 50 lbs N and P_2O_5 and 100 lbs of K_2O lbs/ac at planting. Top-dressed with 25 lbs N/ac after each harvest on December 6, December 20, January 17, February 3, February 21, March 12, March 24, and April 20 for a total N application of 250 lbs/ac.

*Experimental line, seed not available.

[a]Crown rust rating on a 0 to 9 scale where 9 = dead plants.

[b]Variety not tested over last 3 years.