

RYEGRASS FORAGE TESTS FOR 1988-89 AND 3 YEAR AVERAGES

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SUMMARY

Annual Italian ryegrass is an important forage crop in East Texas. This report presents data on forage yields, winterhardiness and crown rust resistance of commercial and experimental ryegrass varieties. Information on two experimental festulolium lines and a bromegrass line is also presented. Mean forage yield data are reported for 3 years at Overton and for crown rust severity levels and yield in 1989 from Angleton. Tetragold produced the highest yield over three years of 8,486 lbs of forage/ac, however, Marshall and Surrey produced nearly equal yields of 7,891 and 7,838 lbs/ac, respectively. Gulf remained fairly resistant to crown rust, while Marshall was susceptible.

INTRODUCTION

This report presents forage yields obtained in ryegrass variety tests conducted by Texas Agricultural Experiment Station personnel at Overton for 1988-89 and for a 3 year period from 1986-1989. These results are useful to growers in selecting the ryegrass variety which has the most potential in their area. Since there is a large difference in the price of seed of ryegrass varieties, these data should help growers determine whether higher prices of some varieties are worth the cost.

PROCEDURES

Available commercial and experimental ryegrass varieties were evaluated for adaptation and forage production in 1986-87, 1987-88 and 1988-89 at Overton, and for yield and crown rust resistance at Angleton in 1988-89. All tests were planted in a prepared seedbed. Planting dates at Overton were mid-September each year and on September 27, 1988 at Angleton. Seeding rates were 30 lbs/ac at both sites. At Overton, plot size was 4 x 10 ft with seed broadcast and covered by a cultipactor. At Angleton, seed was drilled into six ten-inch rows, with plots being 5 x 15 ft. Preplant fertilizer application rates at Angleton were 40-60-0 of N, P₂O₅, and K₂O, respectively. At Angleton, three N applications of 50 lbs each, were applied on December 15, February 17 and April 4. At Overton, fertility rates were 90-90-90-84 lbs/ac of N, P₂O₅, K₂O and sulfur. Nitrogen was applied at 50, 50 and 40 lbs/ac on November 14, January 30 and April 5, respectively. The entire plot

was harvested with a Hege plot harvester at a height of 2 inches during five harvest dates. At Angleton a 2.7 x 15 ft. strip was cut from the center of each plot at a 2-inch height with a flail mower. Experimental design was a randomized complete block with four replications at both locations.

RESULTS

Weather conditions in 1988-89 were not conducive to high forage yields. Data at Overton (Table 1) indicate low fall and winter forage production. This was the result of very warm growing conditions that may have reduced tillering of plants, and promoted early heading of some varieties. Freeze damage also resulted from a hard freeze in February. This freeze was more damaging than normal due to above average temperatures followed by the very cold temperatures. Marshall demonstrated above average freeze damage resistance, while Gulf was more susceptible than average. Three year mean yields (Table 2) are more useful in determining the true yield potential of the varieties. Tetragold, Marshall, Surry, Fla 80 and TX-R-85-2 demonstrated higher yield potential than other varieties.

Forage yields at Angleton (Table 3) were also below normal for 1988-89. A dry fall reduced early forage production. Mid-season (February 15) yields were good, and freeze damage reduced spring yields. Crown rust disease levels were high in 1989. Significant differences in crown rust resistance are demonstrated in the Angleton data for 1989 (Table 3). Note that Gulf remained a fairly resistant variety, while Marshall was susceptible.

TABLE 1. RYEGRASS AND FESCUE FORAGE VARIETY TEST AT OVERTON, TX 1988-89

Variety	Harvest Dates					Total Yield	Freeze ² Damage Rating
	Dec. 14	Mar. 8	Mar. 30	Apr. 21	May 19		
-----pounds of oven dried forage per acre-----							
Marshall	334	778	2033	1841	1742	6728	1
Jackson	191	849	1583	1823	1606	6052	2
Surrey	483	965	1421	1630	1525	6024	4
Tetraploid 1	550	741	1305	1862	1561	6019	3
LM AR 22	381	670	1224	1591	2075	5941	4
Comet	774	672	1195	1522	1741	5904	4
LM-AR-2	320	844	1342	1668	1673	5847	3
Noble Foundation-149	673	891	1317	1587	1375	5843	3
Bulldog	415	837	1397	1591	1489	5729	3
LM-AR-42	556	967	1154	1472	1573	5722	5
Gulf	627	1063	1357	1567	1039	5653	6
LM-AR-F44	338	481	1203	1534	2048	5604	4
TX-R-85-2	711	837	1232	1670	1148	5598	4
TX-R-85-1	464	962	1362	1643	1166	5597	4
TX-R-88-1	232	841	1501	1708	1261	5543	4
TX-R-87 Bulk	536	898	1319	1664	1111	5528	4
LMK-1	301	765	1407	1515	1535	5523	4
WVPB-88-AR-601	814	453	1086	1488	1663	5504	4
LM-B-7T	344	675	1144	1665	1610	5438	4
FPR-F41	395	604	1047	1458	1882	5386	4

TABLE 1. RYEGRASS AND FESCUE FORAGE VARIETY TEST AT OVERTON, TX 1988-89 (CONTINUED)

Variety	Harvest Dates					Total Yield	Freeze ² Damage Rating
	Dec. 14	Mar. 8	Mar. 30	Apr. 21	May 19		
-----pounds of oven dried forage per acre-----							
ETCO-9-88	406	615	1228	1824	1277	5350	4
TX-R-86-2-L	547	823	1239	1552	1160	5321	4
TX-R-86-1	355	839	1321	1588	1075	5178	4
TX-R-84-1	484	809	1302	1464	1032	5091	4
Aubade	799	559	951	1307	1446	5062	3
Fla. 80	403	748	1403	1266	1228	5048	3
Noble Foundation-2	519	770	1184	1452	1053	4978	3
Magnolia	448	712	1045	1480	1166	4851	6
Penploid	476	623	1094	1637	1021	4851	4
Alamo	513	456	1142	1530	1144	4785	5
Max	393	476	990	1194	1690	4743	4
Penngrazer (tall fescue)	138	137	617	1237	1879	4008	1
Mean	466	730	1255	1563	1437	5451	
LSD (10% level)	NS ¹	287 ²	308 ²	231 ²	298 ²	975 ²	
CV	72	33	21	13	18	15	

Planted on September 20, 1988. Seeding rate: 30 lbs/ac.

Fertilizer application: Preplant 700 lbs/ac of 13-13-13-12 (N, P₂O₅, K₂O, S).
 50 lbs/ac of actual N on November 14, 1988.
 50 lbs/ac of actual N on January 30, 1989.
 40 lbs/ac actual N on April 5, 1989.

¹NS indicates no significant differences in yield between varieties for the first harvest.

²Freeze damage ratings were recorded on 1 to 9 scale, where 1 = little damage and 9 = complete freeze back of tissue.

All varieties recovered from the injury.

³Differences in mean yields greater than the LSD value indicate significant difference 90 times out of 100.

TABLE 2. FORAGE YIELDS OF RYEGRASS AVERAGED OVER 3 YEARS 1986-87, 1987-88 AND 1988-89 AT OVERTON, TX

Variety	Harvest Period			Average Total Yield
	Nov-Dec	Jan-Feb	Mar-May	
-----pounds of oven dried forage per acre-----				
Gulf	530	1365	4952	6847
Marshall	610	966	6314	7891
Tetragold	796	1453	6236	8486
Fla. 80	612	1472	5631	7716
TX-R-86-1*	676	1462	5464	7603
Surrey	621	1215	5995	7838
TX-R-85-1*	441	1336	5089	6895
TX-R-85-2*	778	1170	5785	7733
TX-R-84-1*	510	1110	4962	6582

*Experimental lines.

TABLE 3. DRY MATTER PRODUCTION AND RUST RATINGS OF ANNUAL RYEGRASS VARIETIES AT ANGLETON 1988-89

Variety	15 Feb	3 Apr	11 May	Total	2 May
	-----Dry matter lb/ac-----				% Rust
LM-K-1	2046	1847	1881	5774	20.0
LM-AR-2	2031	1774	1895	5700	12.5
Penploid	2383	1708	1567	5658	15.0
TXR-86-1	2161	1821	1634	5616	20.0
TXR-85-2	2102	1761	1733	5596	22.5
Gulf	2457	1564	1561	5582	17.5
Tetraploid 1	2302	1686	1589	5577	22.5
LM-AR-42	2057	1717	1787	5561	17.5
TKR-88-1	2020	1778	1722	5520	22.5
ETCO-9-88	2361	1568	1584	5513	17.5
TXR-87-Bulk	1991	1679	1835	5505	30.0
Alamo	2235	1641	1613	5489	17.5
Florida-86-LR	2079	1724	1644	5467	17.5
TXR-86-2-L	1995	1712	1739	5446	27.5
Florida 80	2113	1677	1557	5347	15.0
TXR-85-1	2039	1627	1666	5332	25.0
MSR-86-1	2083	1564	1675	5322	10.0
LM-AR-22	2005	1611	1628	5244	32.5
TXR-84-1	1950	1554	1630	5134	27.5
Magnolia	2035	1569	1510	5114	15.0
FPR-F41	2054	1490	1538	5082	52.5
LM-AR-F44	1876	1577	1592	5045	30.0
Bulldog	1872	1417	1518	4807	40.0
NF-2	1717	1378	1555	4650	47.5
Marshall	1421	1501	1500	4422	80.0
WVPB-88-AR-601	1713	1308	1350	4371	72.5
Penngrazer fescue	1210	1360	1797	4367	22.5
NF-149	1461	1313	1504	4278	50.0
Max	1702	1382	981	4065	87.5
LM-B-7T	1410	1290	1298	3998	65.0
Aubade	1443	1132	920	3495	72.5
Comet	1084	988	716	2788	87.5
LSD .05	328 ^u	248 ^u	219 ^u	504 ^u	8.0 ^u

^uDifferences in mean values between varieties greater than the LSD value indicate significant yield difference 95 times out of 100.