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THREE YEAR RYEGRASS FORAGE YIELDS AT OVERTON AND ANGLETON

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SUMMARY

Annual 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 rescuegrass lines and a bromegrass line is also presented. Data are reported from 3 years at Overton and from 1 year at Angleton. Results over a 3 year period indicate the Marshall ryegrass was the highest yielding variety at Overton. However, Gulf produced total seasonal yields nearly equal to Marshall. Average total season forage production over a 3 year period was 5577, 5467, 5248, and 4453 lbs dry matter per acre for Marshall, Gulf, Fla 80, and Common, respectively. Marshall was more winterhardy than the other varieties tested, however it was one of the most susceptible to crown rust.

OBJECTIVES

This progress report will present forage yields obtained in ryegrass variety tests conducted by Texas Agricultural Experiment Station personnel at Angleton and Overton over a 3 year period. 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 cultivars were evaluated for adaptation, forage production, and crown rust resistance in 1982-83, 1983-84, and 1984-85 at Overton, and Angleton for crown rust all 3 years, and for forage yields in 1982-83, only. All tests were planted in a prepared seedbed. Planting dates at Overton were September 10, 12, and 17 in 1982, 1983, and 1984, respectively. Planting date at Angleton was September 17, 1982. Seeding rates were

30 lbs/ac at Overton and 25 lbs/ac at Angleton. At Overton, plot size was 4 x 10 ft with seed broadcast and covered by a cultipactor. At Angleton, plots consisted of six 15 ft rows, spaced 10 inches apart.

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. Ryegrass plots were topdressed with ammonium nitrate at the rate of 80 lbs N/ac on October 25 and February 18 in 1982-83. In 1983-84, 100 lbs N/ac and 60 lbs N/ac (as urea) were applied on September 26 and February 26, respectively. In 1984-85, 96 lbs, 50 lbs and 65 lbs N/ac (as urea) were applied on October 11, December 14, and February 20, respectively. The preplant fertilization rate at Angleton was 50-60-40 lbs/ac of N-P₂O₅ - K₂O, respectively. Nitrogen was topdressed as ammonium nitrate at rates of 40, 80, and 50 lbs/ac on December 22, January 31 and March 7, respectively.

Forage plots were harvested with a flail type harvester at Angleton and the first 2 years at Overton. In year 3 at Overton, the plots were harvested with a Hege 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. Experimental design was a randomized block with four replications.

RESULTS

Overton

Weather: In the fall of 1982, dry conditions during emergence reduced stands and limited yields of the entire test. Winter freeze injury was not a problem. In 1983-84, dry fall conditions again reduced stands. In addition, severe winter freeze damage occurred in December and also reduced yields. During the 1984-85 growing season, good stands were obtained. Winter freeze damage did occur, which resulted in reduction in forage yields on some varieties (Table 1). The highest total yield of 9353 lbs/ac was produced by a rescuegrass (Bromus catharticus) experimental line, ISI-79-1. The highest ryegrass yield was produced by the Florida experimental FLX 1984LR, closely followed by Marshall and Tx-R-84-1, an experimental TAES line from Overton, Texas. Bellegarde (Bromus catharticus) bromegrass is an

experimental from France. The seasonal yield of Gulf was lower than the above varieties, and this was thought to be caused by winter freeze damage. The seasonal yields of the last six varieties were significantly reduced. These varieties were experimental ryegrass lines which were developed in Northern Europe.

When comparing varieties for yield, several years data should be used if available. Table 2 presents forage yields of six ryegrass varieties over three growing seasons. Marshall produced the highest seasonal yield of 5577 lbs/ac, however Gulf produced only about 110 lbs/A less. Marshall, a more winterhardy variety, produced slightly higher yields during November - December and May - June, than did Gulf. Gulf yields during January - February and March - April were higher than Marshall for these periods. Marshall will normally produce higher yields in years when winterkilling occurs and Gulf will produce higher yields in warm years when winterkilling does not occur. Common ryegrass produced over 1100 lbs/ac less than did Marshall.

Ryegrass varieties were tested for forage yield potential at Angleton in only one year, 1982-83 (Table 3). The four TAES experimentals produced the higher yields and were closely followed by Florida 80, Gulf, and Marshall. No winter freeze damage occurred and a fairly uniform seasonal distribution of forage yields resulted. Crown rust rating indicated a severe rust epidemic occurred at Angleton in 1983. Gulf ryegrass remained moderately resistant, however, Marshall, common and several other varieties were susceptible. Crown rust can be an important disease along the Texas Gulf Coast and resistance in varieties will improve forage yields during some years in this area of the state.

TABLE 1. RYEGRASS, RESCUEGRASS, AND BROMEGRASS FORAGE CLIPPING TEST AT OVERTON, TEXAS, 1984-85

Variety	Harvest Date						Total yield	% winterfreeze damage
	Nov. 15	Jan. 8	Mar. 14	Apr. 24	May 22	June 14		
ISI-79-1 1/	779	984	1017	4659	1244	669	9353	20
FLX 1984LR	1044	693	1255	4652	1447	0	9092	5
Marshall	1022	673	960	4348	1530	0	8533	3
Tx-R-84-1	455	696	1367	4555	1050	0	8124	15
Bellegarde (Bromegrass)	0	723	673	2356	3445	810	8007	5
-----pounds oven dried forage per acre-----								
Gulf	863	843	1234	4142	864	0	7947	50
ISI-78-1- 1/	569	810	739	2885	2218	725	7946	80
Fla 80	1986	1134	1613	3020	720	0	7572	40
Common	909	924	852	2549	1665	0	6898	25
BCSV 02060	555	501	836	2121	1426	0	5439	10
Cebeco LMW 2	564	529	989	2245	749	0	5075	30
EIR 4	992	616	741	1479	1188	0	5015	10
BCSV 02065	760	732	650	1322	1188	0	4651	5
BCSV 02062	551	432	463	1170	1199	0	3815	5
Cebeco LM 12	410	331	650	1132	799	0	3321	10
Mean	704	708	936	2842	1382	147	6719	
LSD (10%) level	246	290	187	453	471	132	1295	
CV	29.5	34.5	23.7	18.9	28.7	76	16.2	

Planted on September 17, 1984

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

1/ rescuegrass

Table 2. FORAGE YIELD OF RYEGRASS VARIETIES AVERAGED OVER 3 YEARS AT OVERTON, TEXAS

Variety	Harvest period				Total
	<u>Nov. & Dec.</u>	<u>Jan. & Feb.</u>	<u>Mar. & Apr.</u>	<u>May & June</u>	
Marshall	1575	807	2172	1199	5577
Gulf	1345	945	2720	726	5467
Florida 80	1511	1001	2634	654	5248
Common	950	807	2172	1190	4453
TX-R-80-4 Exp.*	1469	894	1686	588	3895
Shannon*	1685	613	1379	460	3601

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

*Tested for first 2 years only.

TABLE 3. RYEGRASS VARIETY TEST AT ANGLETON 1982-83

Variety	Dec. 9	Jan. 26	Mar. 2	May 2	Total	% Crown ¹ / rust
	-----lb/A-----					
TX-r-80-4	100 a-c*	1464 ab	1680 a-c	3138 a	7282 a	3
TX-R-80-T	1052 ab	1318 ab	1673 a-c	3179 a	7221 a	5
TX-R-81-T	1132 a	1309 ab	1633 bc	3056 a	7131 ab	10
TX-R-81-1	748 cd	1260 ab	1698 a-c	3097 a	6803 a-c	1
Florida 80	789 bc	1346 ab	1892 a	2751 ab	6778 a-c	3
Gulf	740 cd	1287 ab	1617 bc	2955 ab	6599 a-d	20
Marshall	1089 a	1287 ab	1488 c	2527 bc	6390 b-d	60
Georgia Re.	1002 a-c	1337 ab	1770 ab	2201 cd	6309 c-e	25
Common	511 d	1118 b	1792 ab	2527 bc	5948 d-f	35
Shannon	874 a-c	1356 ab	1562 bc	1814 de	5606 ef	40
Ninak	1072 a	1569 a	1689 a-c	1141 f	5471 f	70
Urbana	799 bc	1414 ab	1605 b-c	1467 ef	5288 f	55

*Duncan's Multiple Range Test, .05 level.

¹Crown rust is mean of 4 replications.