

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 5,577, 5,467, 5,248, and 4,453 lb 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.

Introduction

Use of winter annuals for winter pasture continues to be a commonly used practice in Texas. Most popular winter annuals are wheat, oats, rye, and ryegrass. This progress report will present forage yields obtained in ryegrass variety tests 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, this data should help growers determine whether higher prices of some varieties are worth the cost.

Annual ryegrass is an important and useful small seeded annual. It has the advantage over the small grains in that it can more easily be overseeded onto existing sods. It can also be seeded into prepared seedbeds just as small grains normally are planted. When planted in existing sods or permanent pastures, the recommended planting date is normally between October 15 and November 15. By this time the permanent pasture has approached dormancy, because of cooler fall weather. This is important because the germinating ryegrass can compete with the summer grass during this period of the year. As soon as moisture is available after seeding, ryegrass seed will germinate and begin to grow. Ryegrass does not grow well during very cold weather; however some forage will be produced during warm periods in December and January. The major portion of the forage will normally be produced in March, April, and May when warm temperatures occur.

The major disadvantages of ryegrass are possibility of winter freeze during extremely cold weather, and relatively low forage production during December and January compared to rye and wheat. The major advantages are that ryegrass can easily be overseeded and the very low cost of overseeding compared to planting into a

prepared seedbed. Also, high forage production will normally result in March and April and very high quality forage will be produced. Ryegrass is high in protein and a highly digestible forage.

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.

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 lb/A at Overton and 25 lb/A at Angleton. At Overton, plot size was 4 × 10 feet with seed broadcast and covered by a cultipactor. At Angleton, plots consisted of six 15-foot rows, spaced 10 inches apart.

Fertilizer application rates varied each year. Preplant application at Overton was 60-60-60 lb/A (N-P₂O₅-K₂O) in 1982 and 24-96-96 lb/A in 1983 and 1984. Ryegrass plots were topdressed with ammonium nitrate at the rate of 80 lb N/A on October 25 and February 18 in 1982-83. In 1983-84, 100 lb N/A and 60 lb N/A (as urea) were applied on September 26 and February 26, respectively. In 1984-85, 96 lb, 50 lb, and 65 lb N/A (as urea) were applied on October 11, December 14, and February 20, respectively. The preplant fertilization rate at Angleton was 50-60-40 lb/A of N-P₂O₅-K₂O, respectively. Nitrogen was topdressed as ammonium nitrate at rates of 40, 80, and 50 lb/A 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 and Discussion

Overton

Weather: In fall 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 yields of 9,353 lb/A was produced by a rescuegrass (*Bromus catharticus*) experimental line, ISI-79-1. The highest ryegrass yield

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was produced by the Florida experimental FLX 1984LR, closely followed by Marshall and Tx-R-84-1, an experimental TAES line from Overton. 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 have been caused by winter freeze damage. The seasonal yield 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 5,577

lb/A; however Gulf produced only about 110 lb/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 1,100 lb/A 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.

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

Variety	Harvest Date						Total Yield	% winter freeze damage
	Nov. 15	Jan. 8	Mar. 14	Apr. 24	May 22	June 14		
	Pounds oven dried forage per acre							
ISI-79-1 ¹	779	984	1,017	4,659	1,244	669	9,353	20
FLX 1984LR	1,044	693	1,255	4,652	1,447	0	9,092	5
Marshall	1,022	673	960	4,348	1,530	0	8,533	3
Tx-R-84-1	455	696	1,367	4,555	1,050	0	8,124	15
Bellegarde (Bromegrass)	0	723	673	2,356	3,445	810	8,007	5
Gulf	863	843	1,234	4,142	864	0	7,947	50
ISI-78-1 ¹	569	810	739	2,885	2,218	725	7,946	80
Fla 80	1,986	1,134	1,613	3,020	720	0	7,572	40
Common	909	924	852	2,549	1,665	0	6,898	25
BCSV 02060	555	501	836	2,121	1,426	0	5,439	10
Cebeco LMW 2	564	529	989	2,245	749	0	5,075	30
EIR 4	992	616	741	1,479	1,188	0	5,015	10
BCSV 02065	760	732	650	1,322	1,188	0	4,651	5
BCSV 02062	551	432	463	1,170	1,199	0	3,815	5
Cebeco LM 12	410	331	650	1,132	799	0	3,321	10
Mean	704	708	936	2,842	1,382	147	6,719	
LSD (10%) level	246	290	187	453	471	132	1,295	
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.

¹Rescuegrass.

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

Variety	Harvest period				Total Yield
	Nov. & Dec.	Jan. & Feb.	Mar. & Apr.	May & June	
	Pounds oven dried forage per acre				
Marshall	1,575	807	2,172	1,199	5,577
Gulf	1,345	945	2,720	726	5,467
Florida 80	1,511	1,001	2,634	654	5,248
Common	950	807	2,172	1,190	4,453
TX-R-80-4 Exp.*	1,469	894	1,686	588	3,895
Shannon*	1,685	613	1,379	460	3,601

*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
	Pounds per Acre					
TX-R-80-4	1,000 a-c*	1,464 ab	1,680 a-c	3,138 a	7,282 a	3
TX-R-80-T	1,052 ab	1,318 ab	1,673 a-c	3,179 a	7,221 a	5
TX-R-81-T	1,132 a	1,309 ab	1,633 bc	3,056 a	7,131 ab	10
TX-R-81-1	748 cd	1,260 ab	1,698 a-c	3,097 a	6,803 a-c	1
Florida 80	789 bc	1,346 ab	1,892 a	2,751 ab	6,778 a-c	3
Gulf	740 cd	1,287 ab	1,617 bc	2,955 ab	6,599 a-d	20
Marshall	1,089 a	1,287 ab	1,488 c	2,527 bc	6,390 b-d	60
Georgia Res.	1,002 a-c	1,337 ab	1,770 ab	2,201 cd	6,309 c-e	25
Common	511 d	1,118 b	1,792 ab	2,527 bc	5,948 d-f	35
Shannon	874 a-c	1,356 ab	1,562 bc	1,814 de	5,606 ef	40
Ninak	1,072 a	1,569 a	1,689 a-c	1,141 f	5,471 f	70
Urbana	799 bc	1,414 ab	1,605 b-c	1,467 ef	5,288 f	55

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

¹Crown rust is mean of four replications.

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.