Performance of Ryegrass Varieties in Alabama 1993-1994

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Lowell T. Frobish, Director
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PERFORMANCE OF RYEGRASS VARIETIES IN ALABAMA, 1993-94

K.M. Glass and D.I. Bransby[1]

The Alabama Ryegrass Variety Evaluation is a continuing study of available varieties and breeding lines from private companies and state agricultural experiment stations. Experiments are planted annually in northern, central, and southern locations to evaluate the varieties and lines under the different environmental conditions of Alabama. Entries in each experiment are determined by the companies or institutes which control each variety, or line, not by experiment station personnel. The experiments are conducted by experiment station personnel and the results are presented in a fair and unbiased manner.

EXPERIMENTAL PROCEDURES AND DISCUSSION

Ryegrass entries were seeded at a 20-pound-per-acre rate in rows 7 inches apart, using plots 5 x 20 feet with four replications. Good stands were obtained at the following locations: Sand Mountain Substation, Crossville; E.V. Smith Research Center, Tallassee[2]; and Gulf Coast Substation, Fairhope.

The experiments were fertilized with phosphorus and potassium according to Auburn University soil test recommendations. At planting, nitrogen was applied at the rate of 50 pounds per acre, and an additional 50 pounds of N was applied per acre after

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[1]Research Assistant and Professor of Agronomy and Soils.

[2]Research conducted at the Plant Breeding Unit in Tallassee, which is a part of the E.V. Smith Research Center in Shorter.

each cutting. A 32- or 49-inch swath of each plot was harvested to a cutting height of 1 1/2 to 2 inches with a flail harvester each time the ryegrass reached 6-10 inches tall. A herbage sample of approximately 1 pound was taken from each plot at each harvest for determining forage dry matter percentage.

In 1993, the tests were planted October 5, October 8, and October 26 at Tallassee, Crossville, and Fairhope, respectively. Less than normal rainfall in November and December reduced fall growth at all locations.

In 1991, the tests were planted on September 20, October 1, and October 10, at Crossville, Tallassee, and Fairhope, respectively. Above average temperatures recorded at all locations in 1991-92 resulted in good fall and winter growth. There was a severe shortage of moisture in late April and all of May resulting in very low late spring production.

Strategies to meet seasonal forage needs are an important consideration for livestock producers. Tables 1-3 provide yield data by harvest for 1993-94 at a given location, while tables 4-6 show 1, 2, and 3-year total yields by location. Seasonal and total forage dry matter yields by locations are provided in tables 7-9. The three seasonal periods are: fall- forage produced through February; early spring-March and early April production; and late spring-production after April 20. A 3-year average provides a more dependable comparison of ryegrass varieties than do single-year results.

At Tallassee, table 2, the first harvest (2/28) is not included because of unexplained excess variation. Because of this, early producing varieties are not truly represented in season total yields.

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SOURCES OF RYEGRASS SEED

Arme	Smith Seed Service, Halsey, Oregon
Florida 80	University of Florida, Gainesville, Florida
FL/OR X 1993 LR	University of Florida, Gainesville, Florida
Gulf (Source A)	Piedmont Fertilizer, Auburn, Alabama
Gulf (Source B)	Silverhill Farmer's Ass'n., Robertsdale, Alabama
Gulf (Oregon State)	Oregon State University, Corvallis, Oregon
Jackson	The Wax Company, Inc., Amory, Mississippi
Marshall	The Wax Company, Inc., Amory, Mississippi
Passerel	Advanta Seeds West, Inc., Albany, Oregon
RIO	Olsen-Fennell Seeds, Inc., Salem, Oregon
Rustmaster	DLF Trifolium, Albany, Oregon
Southern Star (formerly WVPB-LM-AR-2)	Forbes Seed & Grain, Junction City, Oregon
Surrey	University of Florida, Gainesville, Florida
TAM 90	Texas A & M University, College Station, Texas
TXR91-A7	Texas A & M University, College Station, Texas
TXR91-A8	Texas A & M University, College Station, Texas
WVPB-AR-90-1	Willamette Valley Plant Breeders, Inc. Brownsville, Oregon
WVPB-AR-90-300	Willamette Valley Plant Breeders, Inc. Brownsville, Oregon
WVPB-AR-93-101	Willamette Valley Plant Breeders, Inc. Brownsville, Oregon

Table 1. Seasonal Dry Matter Yield of Ryegrass Varieties at Gulf Coast Substation, Fairhope, Alabama, 1994

Brand-variety	Acre Yield by Harvest Date					Season Total
	2/3	2/17	3/7	3/24	4/8	
	Lb.	Lb.	Lb.	Lb.	Lb.	Lb.
Rustmaster	1,230	1,428	1,496	1,327	4,001	9,482
Passerel	720	1,251	1,744	1,681	3,929	9,325
Florida 80	1,224	1,518	1,283	1,161	4,082	9,268
Gulf (Source B)	2,337	1,148	1,166	1,005	3,540	9,196
Gulf (Oregon State)	2,012	1,340	1,181	1,140	3,413	9,086
TXR 91-A8	999	1,455	1,412	1,409	3,800	9,075
Southern Star	928	1,256	1,541	1,310	3,888	8,923
Jackson	821	1,548	1,374	1,308	3,867	8,918
TAM 90	1,276	1,296	1,250	1,291	3,655	8,768
Marshall	337	1,249	1,656	1,411	4,059	8,712
Arme	1,606	1,055	1,114	1,267	3,551	8,593
Gulf (Source A)	1,406	1,283	1,206	1,333	3,266	8,494
RIO	634	1,579	1,407	1,181	3,598	8,399
TXR 91-A7	571	1,468	1,387	1,264	3,649	8,339
FL/OR X 1993 LR	467	1,282	1,381	1,274	3,736	8,140
Surrey	668	1,194	1,301	1,044	3,747	7,954
Test Mean	1,077	1,334	1,369	1,275	3,736	8,792
C.V. (%)	37	13	10	13	8	7
L.S.D. (.10)	475	206	162	192	346	698

Planted: October 26, 1993.
Soil: Malbis Fine Sandy Loam.

Table 2. Seasonal Dry Matter Yield of Ryegrass Varieties at Plant Breeding Unit, Tallassee, Alabama, 1994[1]

Brand-variety	Acre Yield by Harvest Date				Season Total
	3/21	4/8	4/25	5/18	
	Lb.	Lb.	Lb.	Lb.	Lb.
Passerel	1,356	1,153	1,502	1,258	5,269
Marshall	1,563	1,088	1,573	981	5,205
Jackson	1,605	1,173	1,428	992	5,198
RIO	1,535	1,079	1,393	1,190	5,197
WVPB-AR-93-101	1,486	1,177	1,335	1,180	5,178
Southern Star	1,371	1,087	1,407	1,270	5,135
Arme	1,297	1,097	1,380	1,200	4,974
WVPB-AR-90-1	1,390	1,058	1,370	1,057	4,875
TXR 91-A7	1,367	1,144	1,345	1,000	4,856
Surrey	1,560	975	1,381	901	4,817
FL/OR X 1993 LR	1,214	918	1,371	1,311	4,814
Gulf (Source A)	1,524	1,078	1,343	730	4,675
WVPB-AR-90-300	1,366	1,026	1,245	944	4,581
Rustmaster	1,460	914	1,333	832	4,539
TXR 91-A8	1,500	947	1,297	693	4,437
Florida 80	1,387	888	1,276	738	4,289
Gulf (Source B)	1,406	792	1,275	679	4,152
TAM 90	1,566	820	1,140	619	4,145
Gulf (Oregon State)	1,320	798	1,225	539	3,882
Test Mean	1,435	1,011	1,348	953	4,748
C.V. (%)	14	15	11	21	9
L.S.D. (.10)	239	179	171	242	500

Planted: October 5, 1993.
Soil: Cahaba Fine Sandy Loam.
[1]First harvest not included, see Experimental Procedures and Discussion.

Table 3. Seasonal Dry Matter Yield of Ryegrass Varieties at Sand Mountain Substation, Crossville, Alabama, 1994

Brand-variety	Acre Yield by Harvest Date					Season Total
	3/14	3/29	4/18	5/2	5/17	
	Lb.	Lb.	Lb.	Lb.	Lb.	Lb.
Marshall	330	1,147	1,510	745	803	4,535
Passerel	314	1,098	1,426	883	775	4,496
Jackson	516	1,141	1,241	674	613	4,185
FL/OR X 1993 LR	470	942	1,247	832	651	4,142
TAM 90	555	965	1,093	905	524	4,042
TXR 91-A7	401	1,027	1,098	807	691	4,024
Southern Star	533	1,038	1,039	828	550	3,988
TXR 91-A8	492	1,029	1,069	878	492	3,960
RIO	569	981	941	830	544	3,865
Surrey	469	900	1,080	847	562	3,858
Gulf (Source A)	485	836	1,053	822	581	3,777
Gulf (Oregon State)	705	842	891	874	448	3,760
Florida 80	748	611	1,123	665	606	3,753
Rustmaster	499	1,030	924	834	428	3,715
Gulf (Source B)	642	783	900	828	471	3,624
Arme	342	781	878	579	491	3,071
Test Mean	504	947	1,095	802	577	3,925
C.V. (%)	22	13	14	20	16	8
L.S.D. (.10)	130	145	177	188	110	361

Planted : October 8, 1993.
Soil: Hartsells Fine Sandy Loam.

Table 4. Total Dry Matter Yield of Ryegrass Varieties, 1994, and Two- and Three-Year Averages, Gulf Coast Substation, Fairhope, Alabama

Brand-variety	Dry Matter/Acre		
	1994	2-Yr. Av. (1993-1994)	3-Yr. Av. (1992-1994)
	Lb.	Lb.	Lb.
Rustmaster	9,482	9,881	10,597
Jackson	8,918	9,577	10,343
RIO	8,399	9,360	10,296
Florida 80	9,268	9,515	10,128
TAM 90	8,768	9,249	10,099
Surrey	7,954	9,162	9,982
Gulf (Source A)	8,494	9,191	9,874
Gulf (Oregon State)	9,086	9,261	9,786
Gulf (Source B)	9,196	9,333	9,666
Passerel	9,325	-	-
TXR 91-A8	9,075	-	-
Southern Star	8,923	-	-
Marshall	8,712	-	-
Arme	8,593	-	-
TXR 91-A7	8,339	-	-
FL/OR X 1993 LR	8,140	-	-

Table 5. Total Dry Matter Yield of Ryegrass Varieties, 1994, and Two- and Three-Year Averages, Plant Breeding Unit, Tallassee, Alabama

Brand-variety	Dry Matter/Acre		
	1994	2-Yr. Av. (1993-1994)	3-Yr. Av. (1992-1994)
	Lb.	Lb.	Lb.
Marshall	5,205	6,194	6,138
Gulf (Source A)	4,675	6,078	6,091
Rustmaster	4,539	6,244	6,072
Gulf (Source B)	4,152	6,065	5,974
Gulf (Oregon State)	3,882	5,781	5,815
Surrey	4,817	6,029	5,775
Florida 80	4,289	5,780	5,771
TAM 90	4,145	5,615	5,767
WVPB-AR-90-1	4,875	5,669	5,596
WVPB-AR-90-300	4,581	5,585	5,397
RIO	5,197	5,920	-
Passerel	5,269	-	-
Jackson	5,198	-	-
WVPB-AR-93-101	5,178	-	-
Southern Star	5,135	-	-
Arme	4,974	-	-
TXR 91-A7	4,856	-	-
FL/OR X 1993 LR	4,814	-	-
TXR 91-A8	4,437	-	-

Table 6. Total Dry Matter Yield of Ryegrass Varieties, 1994, and Two- and Three-Year Averages, Sand Mountain Substation, Crossville, Alabama

Brand-variety	Dry Matter/Acre		
	1994	2-Yr. Av. (1993-1994)	3-Yr. Av. (1992-1994)
	Lb.	Lb.	Lb.
Marshall	4,535	5,249	5,354
Surrey	3,858	4,807	4,902
Rustmaster	3,715	4,372	4,593
TAM 90	4,042	4,411	4,554
Gulf (Source A)	3,777	4,439	4,410
Florida 80	3,753	4,346	4,408
Gulf (Oregon State)	3,760	4,279	4,244
Gulf (Source B)	3,624	4,310	4,222
RIO	3,865	4,633	-
Passerel	4,496	-	-
Jackson	4,185	-	-
FL/OR X 1993 LR.	4,142	-	-
TXR 91-A7	4,024	-	-
Southern Star	3,988	-	-
TXR 91-A8	3,960	-	-
Arme	3,071	-	-

Table 7. Three-Year Average Seasonal Distribution of Ryegrass Variety Forage Production, Gulf Coast Substation, Fairhope, Alabama, 1992-1994

Brand-variety	Seasonal Forage Yield/Acre			Total
	Fall	Early Spring	Late Spring	
	Lb.	Lb.	Lb.	Lb.
Rustmaster	4,149	5,157	1,290	10,597
Jackson	4,117	4,896	1,331	10,343
RIO	4,007	4,848	1,441	10,296
Florida 80	4,012	4,870	1,246	10,128
TAM 90	4,084	4,783	1,233	10,099
Surrey	3,679	4,882	1,421	9,982
Gulf (Source A)	4,066	4,559	1,249	9,874
Gulf (Oregon State)	4,319	4,377	1,089	9,786
Gulf (Source B)	4,256	4,361	1,048	9,666

Table 8. Three-Year Average Seasonal Distribution of Ryegrass Variety Forage Production, Plant Breeding Unit, Tallassee, Alabama, 1992-1994

Brand-variety	Seasonal Forage Yield/Acre			Total
	Fall	Early Spring	Late Spring	
	Lb.	Lb.	Lb.	Lb.
Marshall	1,200	3,024	1,914	6,138
Gulf (Source A)	1,365	3,108	1,618	6,091
Rustmaster	1,060	3,176	1,836	6,072
Gulf (Source B)	1,294	2,883	1,797	5,974
Gulf (Oregon State)	1,288	2,864	1,664	5,815
Surrey	841	3,012	1,923	5,775
Florida 80	1,132	2,884	1,755	5,771
TAM 90	1,170	2,954	1,643	5,767
WVPB-AR-90-1	835	3,008	1,753	5,596
WVPB-AR-90-300	782	2,854	1,761	5,397

Table 9. Three-Year Average Seasonal Distribution of Ryegrass Variety Forage Production, Sand Mountain Substation, Crossville, Alabama, 1992-1994

Brand-variety	Seasonal Forage Yield/Acre			Total
	Fall	Early Spring	Late Spring	
	Lb.	Lb.	Lb.	Lb.
Marshall	739	2,926	1,689	5,354
Surrey	607	2,639	1,655	4,902
Rustmaster	691	2,510	1,392	4,593
TAM 90	689	2,466	1,399	4,554
Gulf (Source A)	783	2,176	1,450	4,410
Florida 80	726	2,198	1,484	4,408
Gulf (Oregon State)	777	2,156	1,311	4,244
Gulf (Source B)	760	2,167	1,296	4,222