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Performance of Bermudagrass Cultivars (1982)

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Summary

Fifteen bermudagrass hybrids not previously tested at College Station along with nine other previously tested hybrids and cultivars were evaluated for yield and low temperature survival. Yields ranged from 5 tons/A to 10.6 tons/A in 1983 and 5.4 to 12.2 tons/A in 1984. At least three Georgia hybrids and all of the Oklahoma origin hybrids including those with a previous Pybas designation showed excellent field survival at 14° C temperature. Three Oklahoma hybrids and one Georgia hybrid numerically exceeded Coastal in dry matter yield in 1983 while Brazos, two Oklahoma hybrids, one Georgia hybrid, and four Pybas sources numerically exceeded Coastal in 1984. Tifton 78 (tested as Tifton 78-22) produced about 0.6 tons less forage than Coastal in 1983 and was equal to Coastal in low temperature field survival but performed poorly in 1984. Brazos appears to be equal to the best hybrids in this test and superior to most in yields and winter hardiness.

Introduction

Bermudagrass is the most important tame pasture grass in the humid areas of Texas. Numerous hybrids have been developed and some of these are in production. Coastal is by far the most extensively used bermudagrass hybrid. Both research and producer experience have indicated several important problems in bermudagrass production and utilization including forage quality, cold hardiness, stand density, tolerance to grazing, disease resistance, and yield. The order of

these problems will depend on the geographic area and specific use and management of the crop. Cold hardiness is more important in North Texas while disease resistance may be more important wherever bermudagrass is grown.

Experimental Procedure

Fifteen bermudagrass hybrids not tested at College Station prior to 1982, six hybrids from previous tests, and three standard cultivars (Coastal, Tifton 44, Brazos) were planted in 1982. Sources with the prefix Tifton (Table 1) were supplied by Dr. G. W. Burton, Tifton, Georgia. Entries 6 and 7 are the same as B-1 and B-2, respectively, in the 1980 test (see report titled "Performance of Bermudagrass Hybrids and Cultivars in the Brazos River Bottom, 1981-83). All sources with the prefix 74 (Table 1, entries 13-19) were supplied by Dr. C. M. Taliaferro, Oklahoma State University. The sources with the prefix Pybas are the same as in the report listed above and came from the J. Pybas Ranch near Gainesville, Texas where they had survived two severe winters. Entry 25 (Summons Deagen) was added in 1984. Plots, 6 x 20 feet with four replications were planted using four rooted sprigs per plot in July 1982. Rate of spread was slow because of intermittent moisture stress, and slow spreading hybrids did not produce a ground cover prior to frost. The test site was fertilized with 100 lb/A nitrogen (N) per acre each on April 29 and June 27, 1983. Harvests were made on May 27, June 23, July 26, August 24, and September 29, 1983.

TABLE 1. PERFORMANCE OF BERMUDAGRASS CULTIVARS AND HYBRIDS, 1984

Cultivar	Pounds of dry forage per acre					Total	
	4-23	5-24	6-25	9-14	11-13		
20 Brazos	1,906	2,618	7,724	8,737	3,315	24,300	A ¹
14 74 x 12-12	2,529	2,326	7,095	7,846	3,379	23,175	A
22 Pybas-2	3,606	2,627	6,015	7,047	3,335	22,630	A
21 Pybas-1	3,498	2,831	5,740	6,616	3,694	22,379	A-B
24 Pybas-5	3,440	2,635	5,634	6,866	3,713	22,288	A-B
19 74 x 11-2	4,365	2,593	6,112	5,707	3,202	21,979	A-B
11 Tifton 80-10	825	1,961	5,319	7,172	4,571	19,848	B-C
23 Bybas-4	2,861	2,272	6,089	6,183	2,282	19,637	B-D
1 Coastal	1,957	2,672	5,919	5,215	3,352	19,115	C-E
17 74 x 9-1	1,056	2,216	5,747	6,612	3,320	18,951	C-E
16 17 x 17-8	1,982	1,326	4,949	6,272	3,988	18,517	C-E
18 74 x 19-1	564	1,722	5,673	7,481	2,850	18,290	C-E
5 Tifton 79-9	434	1,941	5,586	7,158	2,873	17,992	C-E
2 Tifton 44	1,245	1,615	5,447	6,643	2,468	17,418	C-E
7 Tifton 79-16	219	1,017	2,970	8,904	4,269	17,379	C-E
8 Tifton 79-17	855	2,685	3,237	6,931	3,369	17,077	C-E
6 Tifton 79-13	481	1,572	3,198	8,057	3,496	16,804	D-F
15 74 x 8-1	1,245	1,193	5,850	6,355	2,134	16,777	D-F
10 Tifton 80-5	593	1,323	2,566	7,371	4,424	16,277	E-F
12 Tifton 80-12	502	1,085	920	5,483	4,638	12,628	F-G
13 74 x 12-12	350	429	4,511	5,429	884	11,603	G-H
4 Tifton 79-6	471	601	1,483	5,401	3,521	11,477	G-H
3 Tifton 78	1,126	1,128	2,313	3,668	2,555	10,790	H
9 Tifton 80-2	0	-	1,398	4,606	5,150	11,154	H
25 Summons Deagen	0	-	629	5,210	4,865	10,704	H

¹Total yields followed by a common letter are not significantly different (0.05 level), Duncan's Multiple Range Test.

KEYWORDS: Bermudagrass hybrids/forage.

Sprigs were removed from the plots in February 1984 following extended low temperatures in December and January (low temperatures of approximately -14°C and more than 3 days in which temperature was continuously below 0°C, planted in the greenhouse and percentage of live sprigs determined. Also, sprigs were dug, washed, placed in polyethylene bags, and exposed to -4°C temperature in a freezer for 24 hours, then planted in the greenhouse to evaluate survival.

Results and Discussion

Yields of approximately 10 tons or more were produced by light cultivars or hybrids in 1984 (Table 1). Brazos was the highest yielding cultivar followed closely by several hybrids. Spring growth (Table 1) was closely related to winter damage in the 1983-84 winter (Table 2). Total yields in 1984 also were influenced by the degree of winter damage and the rapidity of recovery from the winter damage. Tifton 80-10 showed 50 percent winter kill in the field and only 825 lb of dry matter in April, yet recovered and produced almost 10 tons of forage. Tifton 78 produced only 0.6 tons less forage than Coastal in 1983, showed very little if any stand damage in the winter of 1983-84, yet performed poorly in 1984. We have no explanation for this pattern.

Hybrid 74x8-1 followed somewhat the same pattern as Tifton 78 but did not show as drastic a decline in yield as Tifton 78.

While recovery from forage damage may occur in some hybrids with total yield being acceptable, the damage introduces the possibility of weed invasion and invasion of common bermudagrass before a complete ground cover is redeveloped. Thus, winter damage involves more than loss of spring production and is a major consideration in bermudagrass evaluation programs.

Several of the Oklahoma hybrids (entries with a 74 prefix) and the Pybas sources performed satisfactorily in all of the measurements recorded to date. However, none exceeded Brazos in cold tolerance or 1984 yield. Some did become established more rapidly in 1982 and showed better early production than Brazos. Forage quality evaluations, which are not complete, will determine to a large extent whether any of these materials have promise over Brazos.

TABLE 2. SUMMARY OF YIELD AND LOW TEMPERATURE DAMAGE OF BERMUDAGRASS CULTIVARS AND HYBRIDS, 1983-84

Cultivar or hybrid	Pounds of dry forage per acre		Field winter kill	Low temp. freezer damage
	1983	1984	1983-84 (%)	1983-84 (%)
20 Brazos	16,007 G-K ¹	24,300 A	0	10
14 74 × 12-12	21,028 A-C	23,175 A	0	10
22 Pybas-2	17,024 F-I	22,630 A	0	3
21 Pybas-1	15,386 I-L	22,379 A-B	0	25
24 Pybas-5	16,735 G-J	22,288 A-B	0	3
19 74 × 11-2	19,114 C-F	21,979 A-B	0	0
11 Tifton 80-10	23,299 A	19,848 B-C	50	60
23 Pybas-4	15,999 G-K	19,637 B-D	3	3
1 Coastal	20,117 B-E	19,115 C-E	3	28
17 74 × 9-1	17,057 F-I	18,951 C-E	0	10
16 74 × 17-8	22,114 A-B	18,517 C-E	0	23
18 74 × 19-1	17,782 E-I	18,290 C-E	0	13
5 Tifton 79-9	18,550 C-H	17,992 C-E	0	47
2 Tifton 44	17,690 E-I	17,418 C-E	3	21
7 Tifton 79-16	18,019 D-H	17,379 C-E	67	30
8 Tifton 79-17	18,770 C-G	17,077 C-E	0	20
6 Tifton 79-13	17,664 E-I	16,804 D-F	63	91
15 74 × 8-1	20,858 A-D	16,777 D-F	0	7
10 Tifton 80-5	15,572 H-K	16,277 E-F	40	56
12 Tifton 80-12	10,137 N	12,628 F-G	53	0
13 74 × 12-12	12,683 M	11,603 G-H	0	13
4 Tifton 79-6	13,020 L-M	11,477 G-H	33	45
9 Tifton 80-2	14,538 J-M	11,154 H	60	42
3 Tifton 78	18,998 C-F	10,790 H	C	47
25 Summons				
Deagen		10,704 H		

¹Yields followed by a common letter are not significantly different (0.05 level), Duncan's Multiple Range Test.