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COMPARISON OF SEEDED AND VEGETATIVELY PROPAGATED BERMUDAGRASS

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Summary

For two years 'Tifton 85' bermudagrass has been the most productive entry. 'Texas Tough' bermudagrass has been the highest yielding seeded bermudagrass entry. Accurate yield comparisons have not been possible because weed problems the first year and drought and armyworms the second year have prevented some entries from reaching solid stands. The study will be continued for several years to record yield and determine if any of the seeded bermudagrass stands revert back to common.

Introduction

Bermudagrass is the most widely planted introduced warm-season perennial grass in the southeastern US. Adaptability to acid soils, good drought tolerance because of a deep root system, and tolerance to close, frequent grazing are its main attributes. If fertilized and managed correctly, it produces a high quality hay. Bermudagrass is also excellent for grazing when fertilized properly. Most hybrid bermudagrasses must be established vegetatively using either sprigs (rhizomes), or with some varieties, tops (6 to 8 week old topgrowth). Establishment costs including land preparation, sprigs or tops, planting, fertilizer, and weed control are about \$125 per acre.

There has been a great deal of interest in bermudagrass established from seed as opposed to sprigs. Besides being less expensive than sprigging, seeded varieties can be used on small acreages, steep slopes, and cut-over timberland where good seedbed preparation is not economical or feasible. New bermudagrass varieties that can be established from seed have come on the market in recent years. Trials conducted in Georgia show yields similar to 'Coastal' bermudagrass.

Some of these new varieties are selected bermudagrass lines and others are mixtures of giant (old NK 37) bermudagrass which is a diploid and common bermudagrass which is a tetraploid. 'Cheyenne' and KF-CD 194 bermudagrass are selected lines. 'Ranchero Frio' is a mixture of Cheyenne and giant bermudagrass. 'Tierra Verde' is 50% hulled and unhulled giant

bermudagrass and 50% hulled and unhulled common bermudagrass. Texas Tough is a mixture of 33% giant bermudagrass and 67% common bermudagrass. Present seed cost of these new seeded types is from \$4 to \$5 per lb which is twice the price of common bermudagrass seed. Recommended seeding rate is 5 to 10 lb/acre of hulled seed planted 0 to ½ in. deep.

A concern about the seeded hybrids and mixtures of common and giant is that they may revert back to common bermudagrass over time. Hybrid bermudagrasses such as Coastal and Tifton 85 produce very few seedheads and most of the seed are sterile and will not germinate. That is why these varieties must be established from sprigs. Common bermudagrass is a cross pollinated plant so that a common bermudagrass pasture is actually a mixture of many different ecotypes. Giant bermudagrass is taller than common but seed yields are lower. A study comparing some of the seeded bermudagrass varieties, Coastal and Tifton 85 bermudagrass and 'Pensacola' and 'Tifton 9' bahiagrass were planted at the TAMU Agricultural Research and Extension Center at Overton to compare growth and persistence in northeast Texas.

Procedure

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The trial was planted May 2, 1997 on a Redsprings fine sandy loam soil with a pH of 6.8 at the TAMU Agricultural Research and Extension Center at Overton. Six seeded bermudagrass varieties were planted at 10 lb/acre by broadcasting the seed on a prepared seedbed and then rolling the planted area. Coastal and Tifton 85 bermudagrass plots were established from plants started in the greenhouse in 4-in. pots. They were transplanted 2 ft apart within each of two rows 3 ft wide. Pensacola and Tifton 9 bahiagrass were planted at 20 lb seed/acre by broadcasting the seed on the soil surface and rolling. The area was fertilized with 65 lb/acre of nitrogen, phosphorus, and potassium on May 14, 1997. Grassy weeds were a major problem during the establishment year. The study was mowed off in mid-August and fertilized with 68 lb nitrogen and 60 lb potassium/acre. On November 7, the study was harvested and a subsample separated into grass and weeds to determine the percentage of each.

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Growth and spread of the grasses in 1998 were restricted because of the severe summer drought. Overton received only 5 in. of rain from April through July. Good rainfall occurred in August through October, but an extreme infestation of armyworms removed much of the fall production. Fertilization dates and rates were May 22, 75 lb/ac of nitrogen, phosphorus, and potassium; June 20, 75 lb/ac of nitrogen and potassium; and September 17, 70 lb/ac of nitrogen.

Only three harvests were taken on May 22, July 20, and September 18 because of drought and armyworms.

Results and Discussion

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Tifton 85 bermudagrass was the most productive grass in the establishment year producing 5000 lb dry matter per acre (Table 1). This was twice as much forage as bermudagrass varieties established from seed and more than three times greater than Coastal bermudagrass yields. The rapid establishment of Tifton 85 and slow establishment of Coastal bermudagrass is in agreement with earlier bermudagrass studies conducted at Overton. The advantage of a grass that can establish quickly is demonstrated by the fact that there were no weeds in the Tifton 85 plots but over 500 lb/acre of weeds in Coastal plots. Three of the bermudagrass varieties started from seed (CD 90160, Texas Tough, and Cheyenne) produced significantly more forage than Coastal during the establishment year. Bahiagrass varieties were also very slow to establish and were the only entries where weed yields were greater than the grass yield.

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Tifton 85 bermudagrass continued to be the most productive entry at 4 tons dry matter per acre (Table 2). Texas Tough and Tierra Verde were the highest yielding seeded varieties at 2.5 tons dry matter per acre. One reason for the lower yields of the other entries is that they did not have solid stands by the end of 1998. There was little yield difference between Coastal bermudagrass and the seeded bermudagrass entries except for Texas Tough. Plans are to reseed the bahiagrass varieties in spring of 1999 and add common and giant bermudagrass. The study will be continued for several more years so that better comparisons can be made when all entries have solid stands.

Additional information on bermudagrass can be found in Texas Agricultural Extension Bulletin B-6035 "Forage Bermudagrass: Selection, Establishment, and Management". It should be available from the local County Agricultural Extension Office.

Table 1. Yields of warm-season perennial grasses harvested November 7 of the establishment year at Overton 1997.

Variety	Grass	Weeds
	-----Dry matter (lb/acre)----- -----	
Tifton 85 bermuda	5044 a†	0 d
CD 90160 bermuda*	2737 b	141 cd
Texas Tough bermuda*	2480 bc	523 bc
Cheyenne bermuda*	2408 bc	268 bcd
Tierra Verde bermuda*	2085 cd	159 cd
Ranchero Frio bermuda*	1943 cd	291 bcd
KF-CD-194 bermuda*	1914 cd	298 bcd
Coastal bermuda	1611 d	583 b
Tifton 9 bahiagrass	767 e	1077 a
Pensacola bahiagrass	583 e	1218 a

*Bermudagrasses established from seed.

†Values within a column followed by the same letter are not significantly different at the 0.05 level, Waller-Duncan Multiple Range Test.

Table 2. Production of warm-season perennial grasses in 1998 at Overton.

Entry	May 22	July 20	Sept 18	Total
	-----Dry Matter (lb/acre)----- -----			
Tifton 85 bermuda	2432 a†	2490 a	3142 a	8064 a
Texas Tough bermuda*	2282 a	1373 b	1606 b	5262 b
Tierra Verde bermuda*	2185 ab	1257 bc	1443 bc	4885 bc
Coastal bermuda	1443 bc	980 bcd	1317 bcd	3739 cd
KF-CD-194 bermuda*	1062 c	1229 bc	1372 bcd	3664 cd
CD 90160 bermuda*	1410 bc	778 cd	1363 bcd	3550 d
Cheyenne bermuda*	1301 c	956 bcd	1174 b-e	3430 de
Ranchero Frio bermuda*	1204 c	682 d	1026 cde	2912 de
Tifton 9 bahiagrass	734 c	612 d	857 de	2203 e
Pensacola bahiagrass	767 c	712 d	689 e	2167 e

*Bermudagrass varieties established from seed.

†Yields within a column followed by the same letter are not significantly different at the 0.05 level, Waller-Duncan Multiple Range Test.