

BERMUDAGRASS VARIETY TEST AT OVERTON - 1994

G. W. Evers, D. S. Doctorian, and A. D. Davidson

Summary

Nine varieties and three experimental lines of bermudagrass (*Cynodon dactylon* [L.] Pers.) were established at the Texas A&M University Agricultural Research and Extension Center at Overton in 1991 in a small plot study. In 1994, 3 years after establishment, there was no significant difference in yield (14,000 lbs/acre) among 'Brazos', 'Coastal', 'Tifton 78', 'Tifton 44', 'Tifton 85', 'Jiggs', and experimental lines Overton and 74X12-6. 'World Feeder' bermudagrass produced 2000 to 3000 lbs/acre less and 'Grazor' and line 16-12 4000 to 5000 lbs/acre less. Other attributes such as rate of establishment, cold and drought tolerance, and forage quality are discussed.

Introduction

Bermudagrass is one of the most widespread and valuable forage species grown in the southeastern United States. Its area of adaptation is south of a line from Virginia to southern Kansas (Burton and Hanna, 1985), and it can be grown in the southwest under irrigation. 'Coastal', the first hybrid bermudagrass, was released in 1943 and is grown on more acres than any other variety. Adaptability to sandy, low pH soils, good drought tolerance because of a deep root system, and tolerance to close, frequent grazing are several of the reasons for its widespread use. During recent years, new hybrids and ecotypes have become available with more cold tolerance, improved digestibility, faster establishment, or better adaptability to loam and clay soils (Eichhorn, 1984; Holt et al., 1978). Eight commercially available varieties and three experimental selections were planted at Overton in 1991 and compared to Coastal. Performance from 1991 to 1993 has been reported earlier (Evers et al., 1995). This paper will report the forage production in 1994.

Keywords: bermudagrass / *Cynodon dactylon* (L.) pers. / adaptability

Procedures

Establishment and management practices from 1991 to 1993 have been reported previously (Evers et al., 1995). Soil analysis of the test site in March 1994 showed a pH of 6.1, very low in N (1 ppm), high in P (46 ppm), and low in K (70 ppm). Fertilization was 100 lbs/acre of N, P₂O₅ and K₂O on 8 Apr 1994. An additional 75 lbs/acre of N and K₂O were applied after each harvest for a season total of 400, 100 and 400 lbs/acre of N, P₂O₅ and K₂O, respectively. Broadleaf weeds were controlled by applying 2 lbs a.i./acre of 2,4-D on 23 March 1994. Beginning on May 13, the study was harvested monthly for a total of six harvests. A subsample of the harvested forage was dried for 48 hr at 140°F to determine dry matter percentage. Mean separation was determined by Waller-Duncan Multiple Range Test at .05 level.

Results and Discussion

Brazos, Coastal, Tifton 78, Tifton 44, and experimental line 74X12-6 had the best early forage production (Table 1). During the remaining five harvests, no entry was consistently the highest or lowest forage producer. There was no significant difference in total yield for Brazos, Coastal, Tifton 78, Tifton 44, Tifton 85, Jiggs, and selections Overton and 74X12-6, with yields of about 7 tons/acre. World Feeder produced about 6 tons and Grazor and line 16-12 about 5 tons/acre.

Performance of the bermudagrass entries over the 4 year period is reported in Table 2. 'NK-37' is a giant bermudagrass established from seed. It had a fair rate of establishment but did not persist after the first winter. Jiggs, Brazos, and Tifton 85 covered well in 1991 and were among the top-yielding entries during the study. Grazor covered well but was low-yielding because of its prostrate growth habit which limits forage production under a hay type harvesting system. Coastal and entry 74X12-6 were slow to cover which resulted in very low yields in 1992 but were equal to the top producing entries by 1994. World Feeder was also slow to cover and was less productive than most other varieties because of a shorter growth habit.

Tifton 44 and Grazor are not as drought tolerant as the other varieties. Tifton 44 will turn brown and go dormant during hot, dry summers on deep sandy soils in East Texas. However, Tifton 44 is more cold tolerant than the other varieties. Tifton 78 and Tifton 85 are reported to be less cold tolerant than Coastal. We have not observed cold damage on any entries in this

study, but winters have been average or mild. High rates of K fertilizer (240 to 400 lb/acre) were used in this study which has been shown to improve winter survival because of better rhizome production. Winter survival of these two varieties can be improved by leaving 4 to 6 in. of growth in the autumn before the first frost. From the forage quality standpoint, Tifton 78 and 85 are higher than Coastal.

Coastal is the most widely planted hybrid bermudagrass in the United States. Some of the other varieties may be better than Coastal in a particular attribute, such as rate of establishment or forage quality, but lower than Coastal in other attributes. The best variety for your particular operation will depend on climate, soil type and what class of livestock will utilize the forage.

Literature Cited

Burton, G. W., and W. W. Hanna. 1985. Bermudagrass. p. 247-254. M. E. Heath, R. F. Barnes, and D. S. Metcalfe (ed.). Forages - The Science of Grassland Agriculture. Fourth Edition, Iowa State University Press, Ames, IA.

Eichhorn, M. M., Jr. 1984. Summary of varietal trials with warm-season perennial grasses in Louisiana, 1970-82. Louisiana Agric. Exp. Stn. Bull. 763.

Evers, G. W., J. L. Gabrysch, and J. M. Moran. 1995. Performance of bermudagrass varieties in northeast Texas. p. 37-44. Forage Research in Texas, 1994. Texas Agric. Exp. Stn. CPR-5252.

Holt, E. C., B. E. Conrad, W. C. Ellis, R. M. Jones, D. A. Lovelace, and M. J. Norris. 1978. Bermudagrass research in central and north Texas. Texas Agric. Exp. Stn. PR-3482.

Martin, G. C., J. S. Shank, and F. E. Barton. 1989. Near infrared reflectance spectroscopy (NIRS): Analysis of forage quality: Agric. Handbook No. 643. USDA-ARS, U.S. Print Office, Washington, D.C.

Shenk, J. S., S. L. Fales, and M. O. Westerhaus. 1993. Using near infrared reflectance product library files to improve prediction accuracy and reduce calibration costs. Crop Sci. 33:578-581.

Table 1. Forage production of bermudagrass entries at Overton, 1994.

| Entries | May 13 | June 8 | July 11 | Aug 10 | Sept 12 | Nov 1 | Total |
|--------------|------------------------------|-----------|----------|---------|-----------|----------|---------|
| | -----Dry matter lb/acre----- | | | | | | |
| Overton | 1324 bc† | 2700 abc | 2167 ab | 2353 ab | 4025 abc | 2037 a | 14606 a |
| Brazos | 2217 a | 2988 a | 1871 abc | 2742 a | 3608 abcd | 1116 cd | 14542 a |
| Coastal | 2015 a | 2865 ab | 2425 a | 2301 ab | 3539 bcd | 1140 cd | 14284 a |
| Tifton 78 | 1794 ab | 2786 abc | 2047 abc | 2284 ab | 4183 ab | 1154 bcd | 14248 a |
| 74x12-6 | 2153 a | 2165 cd | 1771 bc | 2582 a | 3385 cd | 2108 a | 14164 a |
| Tifton 44 | 1801 ab | 2680 abc | 2295 ab | 2313 ab | 3844 abcd | 776 d | 13709 a |
| Tifton 85 | 863 cde | 2599 abc | 2420 a | 2205 ab | 4275 a | 1317 bc | 13679 a |
| Jiggs | 1131 cd | 2508 abcd | 1762 bc | 2454 ab | 3911 abcd | 1586 b | 13351 a |
| World Feeder | 1375 bc | 2673 abc | 1054 d | 1668 ab | 3457 cd | 1115 cd | 11341 b |
| 16-12 | 589 de | 1885 d | 1529 cd | 2495 a | 2225 e | 1002 cd | 9726 c |
| Grazor | 468 e | 2271 bcd | 1046 d | 1257 b | 3287 d | 1006 cd | 9335 c |

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

Table 2. Performance of bermudagrass entries from 1991 to 1994 at Overton.

| Entry | 1991 | 1992 | 1993 | 1994 |
|--------------|----------------------------|-------------------------------|-----------|----------|
| | establishment ¹ | -----dry matter lbs/acre----- | | |
| Jiggs | 4.50 | 13,839 a ² | 12,184 ab | 13,351 a |
| Brazos | 3.25 | 11,469 b | 10,827 cd | 14,542 a |
| Grazor | 3.00 | 8,566 d | 6,689 g | 9,335 c |
| NK-37 | 2.75 | -- | -- | -- |
| Tifton 85 | 2.25 | 11,602 b | 12,620 a | 13,679 a |
| 16-12 | 2.25 | 7,447 d | 8,345 f | 9,726 c |
| Tifton 44 | 2.00 | 8,532 d | 10,496 d | 13,709 a |
| Tifton 78 | 2.00 | 7,521 d | 10,163 d | 14,248 a |
| Overton | 2.00 | 10,013 c | 10,019 de | 14,606 a |
| 74X12-6 | 1.75 | 5,688 e | 9,314 e | 14,164 a |
| Coastal | 1.50 | 5,825 e | 11,415 bc | 14,284 a |
| World Feeder | 1.00 | 6,003 e | 8,421 f | 11,341 b |
| CV (%) | | 11 | 6 | 9 |

¹Rating on coverage on 1 Oct 1991 (0 = no cover, 5 = 100% cover).

²Yields within a column followed by the same letter are not significantly different at .05 level, Waller-Duncan.