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SEVEN-YEAR BEMUDAGRASS PRODUCTION AT PECOS, TEXAS UNDER IRRIGATION

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Background. Bermudagrass variety evaluations including Tifton 85 were conducted at Pecos, Texas to determine stand survival and annual DM production. Eight bermudagrass varieties were established in April-May, 1994, and were harvested during a 7-year period from 1996 through 2002. In September 1996, NK-37 bermudagrass and Jose Tall Wheatgrass were planted and harvested at the same time as other bermudagrasses for a 5-year period from 1998 through 2002. Forages were harvested to a 2-inch stubble at 28-day intervals 4 to 5 times each year. Soils at TAES-Pecos are alkaline, high in P and K, and slightly saline, and irrigation water contains nitrates. Fertilizer schedules were as follows: 1994–1995 (none); 1996-1997 (124-0-0142 S in early season and after each harvest); 1998 (none); and 1999-2002 (50-0-0 early season and after each harvest). During this test period, annual precipitation was less than 7-inches per year. The irrigation schedules were as follows: 1) 4.0 inches during February of each year; 2) 4.8 inches beginning early April and 4.8 inches every 21 days until first harvest; 3) 2.4 inches after each harvest and 2.4 inches 14-days later (4.8" per 28-day interval). Thus, the total amount of water added per year was about 50 inches. The stubble height during the winter was about 4 inches.

Research Findings. During the 7-year measurement period, Coastal bermudagrass produced more forage ($P < .05$) than the other 7 varieties (Table 1). The approximate hay – equivalent production was more than 7.5 tons per acre. Tifton 85 bermudagrass was mid-level in DM yield at 11555 lbs/ac. Most of the reduced DM potential of Tifton 85 occurred during the first harvest in which it ranked lowest among the eight varieties, which included 1000 lbs/ac less than Coastal bermudagrass. The moderately slow initiation of DM production was also noted previously in bermudagrass comparisons by Evers at TAES-Overton. Evaluations during the last 5 years of the study, 1998-2002, included both NK-37 bermudagrass and Jose Tall Wheatgrass. During this period, NK-37 DM production was not different ($P > .05$) from Coastal which had the highest yields, nor was NK-37 DM different ($P > 0.5$) from that of Brazos, Tifton 44, or Alicia. During the 7-year period of this evaluation, all bermudagrasses and including Tifton 85, were sustainable. Production was variable with year as expected, however, yields in 1998 with no added N were higher than expected (Table 3). The annual fertilization schedules included moderately high rates of N and S during the first two years of the study, and then were decreased to moderate rates during the last four years of the evaluation (Table 3).

Application. Bermudagrasses were sustainable and had variable levels of production during the 7-year evaluation. Irrigation requirements of about 50 inches produced about 6.5 to 7 tons/ac DM or about 7.5 tons/ac as hay of the highest producing varieties. With fertilizer and irrigation costs, hay production would have to be merchandized to specialty markets such as horses, etc., in order to have opportunities for positive cash flow.

Table 1. Seven-year average of annual dry matter (DM) production of bermudagrass varieties.

Bermudagrass Variety	7-Year Avg. DM Yield (lbs/ac)
Coastal	13649 a ¹
Brazos	13021 b
Tifton 44	12530 bc
Alicia	12432 c
Tifton 85	11555 d
Jiggs	11321 de
World Feeder	10959 ef
Grazer	10596 f

¹DM yields followed by a different letter are different (P<.05)

Table 2. Five-year average of annual dry matter production of bermudagrasses and tall wheatgrass.

Variety	5-Year Avg. DM Yield
Coastal	14009 a ¹
NK-37	13341 ab
Brazos	13237 b
Tifton 44	13083 b
Alicia	12821 b
Jiggs	11622 c
Tifton 85	11337 cd
World Feeder	11270 cd
Grazer	10756 d
Jose Tall Wheatgrass	8565 e

¹DM yields followed by a different letter are different (P<.05)

Table 3. Yearly variation in dry matter (DM) production during the seven year period.

Year	Total DM Yield (lbs/ac)	Annual Fertilizer (lbs/ac)
2002	13731 a ¹	250-0-0
1998	12131 b	None
1996	12114 bc	496-0-0-568 S
1999	12064 bc	200-0-0
2001	11800 bc	200-0-0
2000	11609 c	200-0-0
1997	10607 d	620-0-0-710 S

¹DM yields followed by a different letter are different (P<.05)