THE UNIVERSITY OF GEORGIA
COOPERATIVE EXTENSION
Colleges of Agricultural and Environmental Sciences & Family and Consumer Sciences

Warm Season Perennial Grass Variety Trial 2005-2008

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Introduction to Bermudagrass

Adaptation:	Grown in all areas of GA except in mountains. Varieties differ in cold hardiness. Best adapted on sandy soils but will do well on clay soils. Hybrids are higher yielding, deeper rooted, and more drought tolerant than common bermudagrass. Tolerant of close grazing. Not tolerant of poor drainage.
Establishment:	Seeded types planted at 5 to 10 lb/A in spring. Hybrids are planted in Feb-March (dormant sprigging) or May-June (conventional sprigging) with sprigs at 10 bu/A in rows.
Recommended Varieties:	Sprigged: Tifton 85 (P, C), Russell (S), Coastal (S), Tifton 44 (M, P) Seeded*: Cheyenne II (S), Ranchero Frio (S), Sungrazer (M, P), CD 90160 (M, P), KF194 (M, P) * Only if sprigged varieties are unavailable/impractical

Bermudagrass (*Cynodon dactylon*)

Bermudagrass is a high-yielding, sod-forming grass that is well-suited for grazing or hay production. It grows best on well-drained, fertile soils where ample moisture is available. Bermudagrass does not persist on poorly-drained Flatwoods soils but can be successfully grown on deep sandy soils because of its deep root system.

Several varieties of bermudagrass are grown in Georgia. Improved hybrid bermudagrasses that are recommended for Georgia will consistently provide higher yields and superior quality relative to other varieties. Hybrid bermudagrasses respond to high N levels (200 – 400 lbs/acre) in a hay production program. These grasses produce well over 4 - 6 tons of hay per acre when moisture is not limiting. Under hay production, hybrid bermudagrasses can be cut four to five times per year. When used for grazing, these grasses provide high yields of good quality forage when the stocking rate is managed to keep the grass closely grazed (2 – 6 inches) to maintain good forage quality.

Establishing hybrid bermudagrasses is an expensive undertaking. Consequently, there has been much interest in improved seeded bermudagrasses on smaller acreages. Seeded bermudagrass varieties should be chosen very carefully. Some varieties are persistent, while others suffer stand loss very quickly. Some varieties are persistent, while others suffer stand loss very quickly. Furthermore, some relatively inexpensive seeded varieties may merely be unimproved common varieties from other regions.

Improved seeded bermudagrasses are becoming more popular, particularly in North Georgia. However, seeded varieties generally are not as highly digestible (as compared to Tifton 44 or Tifton 85) and they have a relatively low yield potential (generally only 50 – 60% as much hay per acre as compared to Tifton 85 or Russell). Consequently, seeded bermudagrasses are generally less desirable. Nonetheless, recommended seeded varieties can be effectively used in forage programs to provide summer grazing.

Introduction to Bahiagrass

Adaptation:	South and Central GA. Best adapted on sandy soils. Tolerant of drought, poor drainage, acid soils, low fertility, and close grazing. Very aggressive and forms a dense sod.
Establishment:	12 to 15 lb/A in March or April (if planting a Pensacola-type or for conservation purposes, use a seeding rate of 18-20 lbs/A)
Recommended Varieties:	TifQuik, UF-Riata, or Tifton 9

Bahiagrass (*Paspalum notatum*)

Bahiagrass is a warm season perennial grass that is adapted to a wide range of soils in the Coastal Plain region. It spreads by short, stout stolons and is a prolific seed producing plant. Bahiagrass will grow on soils too poorly-drained for bermudagrass, is more shade tolerant than bermudagrass, and can be used in woodland pastures (silvopasture). Though it responds to proper fertility, it does not respond as well to high fertility as improved bermudagrasses and will persist in pastures with a low level of management.

Bahiagrass forage is slightly lower in quality than Coastal bermudagrass. Good grazing management is necessary to obtain good utilization. Bahiagrass can become a pest in hybrid bermudagrass hay fields. Keep this in mind when rotating cattle, because seed will germinate after passing through cattle. Bahiagrass introduced to a field (through seed in the droppings of cattle) can crowd out established bermudagrass.

Description of the Variety Trials

Most bermudagrass and bahiagrass varieties are developed as part of the Forage Breeding programs at USDA and Land-Grant Universities in the Southeast. This variety trial was one that is periodically performed by USDA researchers at the Coastal Plain Experiment Station (CPES) in Tifton, GA. This test was planted on the CPES in the summer of 2005, and the plots were maintained by experienced research technicians and other CPES staff. The varieties were established and managed using standard practices as recommended by UGA Specialists. Plots were not irrigated. Soil fertility was maintained in accordance with UGA soil test recommendations.

Harvests were made at recommended intervals, and all plots in the variety trial were harvested on the same day. Statistical analyses were performed on all data to determine if the numerical differences were truly the result of varietal differences or just random differences. To determine if two varieties are truly different, compare the difference between them and the LSD (Least Significant Difference) at the bottom of the column.

The warm season perennial grass variety trials in Tifton (left) and the flail-type plot harvester used to measure forage yield.

If the difference is equal to or greater than the LSD, the varieties are truly different when grown under the conditions at the given locations. The comparison is aided by the fact that the value for the best variety within a column is bolded. In addition, values sharing the same letter are not different. NS indicates no differences were observed. The Coefficient of Variation (CV) is a measure of the variability of the data and is included for each column of means when differences exist. Low variability is desirable (generally, a CV less than 15%).

Warm Season Perennial Grass Yield Trial Summary

Table 1. Forage yield of warm season perennial grass varieties averaged over the 2006 – 2008 growing seasons in at the CPES in Tifton, GA.[†]

Variety	Forage Type	Abbrev.	3-yr Average 2006-08 Tifton
			(dry lbs/acre)
Tifton 85	Hybrid Bermudagrass	HBG	24630 a[‡]
Coastcross II[§]	Hybrid Bermudagrass	HBG	23583 a
Russell	Hybrid Bermudagrass	HBG	19592 b
P2[§]	Seeded Bermudagrass	SBG	18840 bc
Coastcross I	Hybrid Bermudagrass	HBG	18045 c
UF-Riata	Bahiagrass	BAH	18013 c
TifQuik	Bahiagrass	BAH	16318 d
Tifton 9	Bahiagrass	BAH	15439 de
Coastal	Hybrid Bermudagrass	HBG	14343 e
Pensacola	Bahiagrass	BAH	12539 f
Tifton 44	Hybrid Bermudagrass	HBG	12150 f
Cheyenne	Seeded Bermudagrass	SBG	11707 fg
Laredo	Seeded Bermudagrass	SBG	10806 g
Wrangler	Seeded Bermudagrass	SBG	5002 h
		CV %	10
		$LSD_{\alpha=0.05}$	1253

[†] Planted: August 2, 2005. Establishment year yields are not included in this analysis. BAH = bahiagrass; HBG = hybrid bermudagrass; and SBG = seeded bermudagrass.

[‡] Values within a column that are labeled with the same letter were not significantly different (α=0.05) from one another. Yields that are in **bold** font are not significantly different from the highest yielding variety.

[§] Experimental variety (not available).

Yield by Harvest Date – Tifton

Table 2a. Forage yield of warm season perennial forage grass varieties at Tifton, GA. 2005- 2008.[†]

			Dry Matter Yield					
			---------- dry lbs/acre----------					
Year	Variety	Forage Type	Harvest Date					
2005							Oct. 25	2005 Total
	Coastcross II[§]	HBG					3714 a[‡]	3714 a
	Tifton 85	HBG					3340 ab	3340 ab
	P2[§]	SBG					2754 bc	2754 bc
	Coastcross I	HBG					2272 cd	2272 cd
	Cheyenne	SBG					1997 de	1997 de
	UF-Riata	BAH					1861 def	1861 def
	Laredo	SBG					1689 def	1689 def
	Russell	HBG					1493 ef	1493 ef
	TifQuik	BAH					1224 fg	1224 fg
	Tifton 9	BAH					779 gh	779 gh
	Tifton 44	HBG					575 gh	575 gh
	Wrangler	SBG					482 h	482 h
	Coastal	HBG					380 h	380 h
	Pensacola	BAH					287 h	287 h
	CV %						28	28
	LSD						651	651
2006			May 17	June 19	July 24	Aug. 29	Oct. 2	2006 Total
	Tifton 85	HBG	6364 abc	3479 cde	4522 a	6690 a	5174 a	26228 a
	Coastcross II[§]	HBG	6878 a	3959 bcd	3700 bcd	5274 b	5412 a	25223 ab
	UF-Riata	BAH	6426 ab	4998 a	3859 abc	5185 b	3091 cd	23559 abc
	P2[§]	SBG	6378 abc	3234 cde	3796 abcd	5243 b	3366 c	22017 bcd
	Russell	HBG	4398 d	3434 cde	3909 ab	5212 b	3407 c	20359 cd
	TifQuik	BAH	5147 bcd	4721 ab	3706 bcd	3397 cd	2996 cd	19967 d
	Coastcross I	HBG	4305 de	2539 efg	3233 bcde	5351 b	4414 b	19842 d
	Tifton 9	BAH	4296 de	4357 abc	3819 abcd	3673 cd	2880 cde	19024 d
	Pensacola	BAH	2600 f	3853 bcd	3082 de	2932 de	2341 efg	14806 e
	Cheyenne	SBG	5360 abcd	1870 fg	2106 f	3246 de	2169 fg	14751 e
	Coastal	HBG	1988 fg	2533 efg	3142 cde	4193 c	2713 def	14569 e
	Tifton 44	HBG	2830 ef	2749 ef	2967 e	3188 de	1915 g	13650 e
	Laredo	SBG	4864 cd	1611 gh	1817 f	3189 de	2003 g	13484 e
	Wrangler	SBG	814 g	828 h	1606 f	2412 e	1093 h	6752 f
	CV %		24	22	16	15	12	13
	LSD		1525	972	738	917	545	3248

[†] Planted: August 2, 2005. BAH = bahiagrass; HBG = hybrid bermudagrass; and SBG = seeded bermudagrass.

[‡] Values within a column that are labeled with the same letter were not significantly different (α=0.05) from one another. Values that are in **bold** font are not significantly different from the best variety at that time.

[§] Experimental variety (not available).

Table 2b. Forage yield of warm season perennial forage grass varieties at Tifton, GA. 2005- 2008.[†]

Year	Variety	Forage Type	Dry Matter Yield (dry lbs/acre) Harvest Date					
2007			May 17	June 21	July 26	Aug. 29	Oct. 9	2007 Total
	Tifton 85	HBG	2872 b[‡]	4977 a	5672 a	5441 a	5006 a	23967 a
	Coastcross II[§]	HBG	3625 a	5646 a	5399 ab	4546 b	4427 ab	23643 a
	Russell	HBG	4212 a	3482 b	4478 cd	4284 b	3795 b	20252 b
	Coastcross I	HBG	1327 d	3272 b	4333 cd	4180 b	3990 b	17101 c
	UF-Riata	BAH	2348 bc	3519 b	4827 abc	3287 cd	2518 cde	16500 c
	P2[§]	SBG	2492 b	3270 b	3640 de	3426 c	3000 c	15827 cd
	TifQuik	BAH	1715 cd	3045 bc	4378 cd	3098 cde	2761 cd	14997 cd
	Tifton 9	BAH	1583 d	2818 bcd	4754 bc	3058 cde	2521 cde	14734 cde
	Coastal	HBG	1223 d	2855 bc	3814 de	3244 cd	2018 ef	13153 def
	Pensacola	BAH	1136 d	2015 de	4463 cd	2530 ef	1977 ef	12121 efg
	Tifton 44	HBG	1081 d	2277 cde	3221 e	2748 de	1704 f	11030 fg
	Cheyenne	SBG	1449 d	1866 e	2301 f	1965 f	2083 def	9663 g
	Laredo	SBG	1494 d	1716 e	2147 f	1993 f	2159 def	9510 g
	Wrangler	SBG	165 e	398 f	990 g	959 g	749 g	3261 h
	CV %		27	19	16	13	17	13
	LSD		735	818	906	597	679	2800
2008			May 15	June 18	July 21	Aug. 28	Sept. 30	2008 Total
	Tifton 85	HBG	5534 a	4668 a	5595 a	5346 a	2552 a	23695 a
	Coastcross II[§]	HBG	5389 a	4386 ab	5077 ab	4360 b	2672 a	21883 a
	Russell	HBG	5241 a	3439 cd	4190 cdef	3937 bcd	1360 bcd	18166 b
	P2[§]	SBG	4965 a	3788 bc	4551 bcd	3790 bcd	1583 bc	18676 b
	Coastcross I	HBG	3130 b	3609 bc	4783 bc	4109 bc	1562 bc	17192 bc
	Coastal	HBG	2671 bc	3533 c	4366 cde	3743 bcd	993 de	15305 cd
	TifQuik	BAH	2128 cde	2662 de	3544 fg	3845 bcd	1811 b	13989 de
	UF-Riata	BAH	2531 bcd	2370 ef	4063 defg	3278 de	1738 bc	13979 de
	Tifton 9	BAH	1857 de	2041 ef	3493 g	3606 cd	1564 bc	12561 ef
	Tifton 44	HBG	1520 e	2322 ef	3719 efg	3394 de	816 ef	11771 f
	Cheyenne	SBG	2456 bcd	1949 ef	2769 h	2733 e	798 ef	10705 fg
	Pensacola	BAH	1584 e	1654 fg	2569 h	3609 cd	1275 cde	10690 fg
	Laredo	SBG	2878 b	1906 ef	2126 hi	2007 f	508 f	9426 g
	Wrangler	SBG	437 f	1045 g	1773 i	1376 f	364 f	4994 h
	CV %		17	20	12	13	24	10
	LSD		718	810	667	664	482	2167

[†] Planted: August 2, 2005. BAH = bahiagrass; HBG = hybrid bermudagrass; and SBG = seeded bermudagrass.

[‡] Values within a column that are labeled with the same letter were not significantly different (α=0.05) from one another. Values that are in **bold** font are not significantly different from the best variety at that time.

[§] Experimental variety (not available).

Weather Data during Trials:

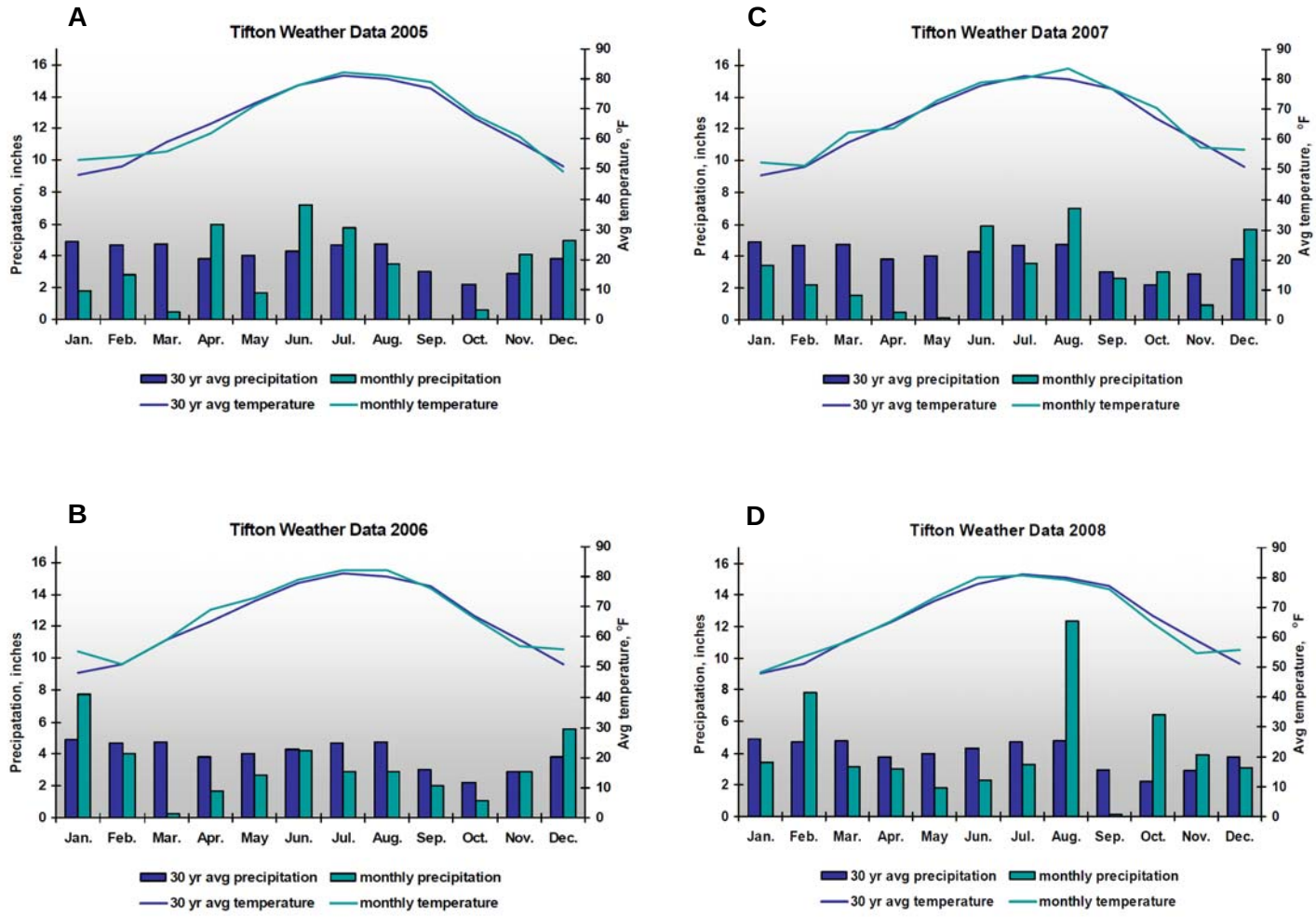

Figure 1. Weather data during the 2005 (A), 2006 (B), 2007(C) and 2008 (D) growing seasons in Tifton, GA.

CSS-F017 **March 2010**

Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, The University of Georgia College of Agricultural and Environmental Sciences and the U.S. Department of Agriculture cooperating.

J. Scott Angle, Dean and Director