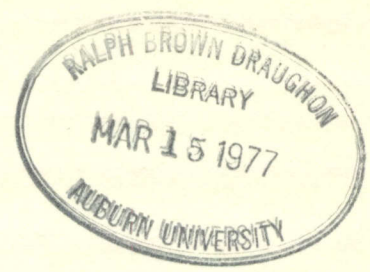
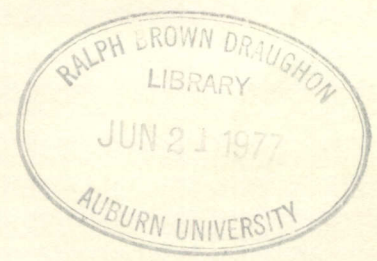


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NEW  
BERMUDAGRASS  
VARIETIES  
A  
preliminary  
report



DEPARTMENT OF AGRONOMY & SOILS  
AGRICULTURAL EXPERIMENT STATION  
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## NEW BERMUDAGRASS VARIETIES, A PRELIMINARY REPORT

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Common bermudagrass, widespread over Alabama, is susceptible to *Helminthosporium* leaf spot which causes leaves to turn brown in late summer. Coastal bermuda, grown on over 350,000 acres in the State, is more disease-resistant than common and much higher yielding when adequately fertilized. However, dry matter digestibility of Coastal bermuda is relatively low and weight gains of growing steers rarely exceed 1.0 lb. per day for the season. Coastcross-1, a more digestible bermuda variety, is not cold hardy and may be winterkilled even in southern Alabama. Cold-hardy bermudagrass varieties with higher digestibility are needed.

Several new bermudagrass varieties and potential varieties were planted the spring of 1976 at eight locations in the State to evaluate their yield potential and persistence.

Bermudagrass entries in these tests were as follows:

- (1) Coastal - Georgia Coastal Plain Experiment Station, Tifton, Georgia hybrid between Tift bermuda and a tall-growing introduction from South Africa.  
Dr. G. W. Burton.
- (2) Tifton 44 - Georgia Coastal Plain Experiment Station hybrid between a high-quality selection from Kenya, East Africa and a cold-hardy plant from Berlin, Germany. Dr. G. W. Burton.
- (3) Tifton 68 - Georgia Coastal Plain Experiment Station hybrid of high-quality giant or stargrass introductions from Kenya, Dr. G. W. Buton.
- (4) Callie - Mississippi State University selection of giant or stargrass introductions from northeastern Africa. Dr. V. H. Watson.
- (5) Alicia - South Texas selection of an introduction from southern Africa.  
C. Greer.

Sprigs of each variety were planted during April, 1976 in 4 x 20 foot plots,

NON CIRCULATING

replicated 4 times, with 4 feet between each plot to prevent mixing of the varieties. Mineral fertilizers were applied according to soil test and 50 lb. per acre nitrogen was applied at planting followed by 50 lb. per acre 1 month later and 100 lb. per acre after each harvest. Plots were harvested with a flail harvester at 4- to 8-week intervals, depending on growth.

In addition to the five bermudagrass entries planted at eight locations in 1976, another test at the Plant Breeding Unit, Tallassee established in 1975 was harvested in 1976. Winter survival was determined at this one test location after a relatively wild winter.

In-vitro dry matter digestibility (IVDMD) of hand-harvested forage from each plot at each harvest was determined throughout the season at the Plant Breeding Unit. Determinations were made by Dr. W. G. Monson, USDA-ARS, Georgia Coastal Plain Experiment Station, Tifton, Georgia.

## RESULTS

### Forage Yield

Good stands of all entries were obtained at all locations except the Black Belt Substation where a severe drought resulted in such stand losses that the test had to be abandoned. Forage yields at the other locations were generally good, Tables 1-7. In northern Alabama, two cuts were obtained while at other locations three to four cuts were harvested. Highest yields were obtained at the Lower Coastal Plain and Wiregrass Substations where over six tons per acre of dry forage was harvested on the highest yielding entries, Callie and Tifton 68.

Both Callie and Tifton 68 spread rapidly by stolons (above-ground stems parallel to the ground) and generally outgrew other entries except at the Tennessee Valley Substation where Alicia made more rapid early growth. Tifton 44 formed a complete ground cover more slowly than other entries in the tests.

Second-year forage yields were obtained from a test planted at the Plant

Breeding Unit in April, 1975, Table 8. Winter survival was good on all entries except Callie where only 16% ground cover remained in late April, 1976. This resulted in much lower production of Callie than Alicia or Coastal at the June harvest. Rapid growth of Callie restored the stand and yields at subsequent harvests were similar to that for Alicia or Coastal. However, total yield for the season was highest for Alicia. Pensacola bahia yield was much lower than any of the bermuda entries.

#### Forage Quality

Digestibility of forage varied greatly among bermudagrass entries in the 1976 trial at the Plant Breeding Unit, Table 9. Tifton 68 was highest, averaging 65.7% for the season. Callie was second highest, followed by Tifton 44 and Coastal. Alicia was lower than all other entries throughout the season, averaging 54.4%.

#### SUMMARY

Results of these trials are preliminary as they are mainly based on 1 year's results. The high first-year forage yields of Callie and Tifton 68, together with digestibility values higher than for Coastal, suggest that animal production should be better. However, the cold susceptibility of Callie, and probably Tifton 68, indicate that winter killing may be a problem. The low digestibility of Alicia forage indicates that Coastal is a better choice for hay in Alabama. Recommendations on Callie await further evaluation for cold hardiness. Neither Tifton 44 or Tifton 68 are released and planting material is not yet available.

#### ACKNOWLEDGMENT

The following persons were responsible for conducting trials at outlying experimental substations:

J. K. Boseck and W. B. Webster at Tennessee Valley

J. T. Eason and M. L. Ruf at Sand Mountain

W. A. Griffey and H. E. Burgess at Piedmont

L. A. Smith and H. W. Grimes, Jr. at Black Belt

J. A. Little and J. T. Owen III at Lower Coastal Plain

J. G. Starling at Wiregrass

J. E. Barrett, Jr. and F. B. Selman at Gulf Coast

Table 1. Forage yield of bermudagrass varieties at Tennessee Valley Substation, 1976.

Entry	Pounds oven dry forage per acre		
	July 26	Sept 10	Total
Alicia	4610 a*	4139 ab	8749 a
Callie	2008 b	4795 a	6803 b
Tifton 44	2411 b	3565 b	5976 bc
Tifton 68	1812 b	4143 ab	5955 bc
Coastal	998 b	3363 b	4361 c
C.V.%	38	13	18

\*Any two yield values within a column marked with the same letter are not significantly different at 5% level.

Table 2. Forage yield of bermudagrass varieties at Sand Mountain Substation, Crossville, 1976.

Entry	Pounds oven dry forage per acre		
	July 29	Sept 15	Total
Callie	3404 a*	4601 ab	8005 a
Tifton 68	3300 a	3915 b	7215 a
Coastal	1943 b	4958 a	6901 a
Alicia	2188 b	4490 ab	6678 a
Tifton 44	1934 b	4543 ab	6477 a
C.V.%	24	13	13

\*Any two yield values within a column marked with the same letter are not significantly different at 5% level.

Table 3. Forage yield of bermudagrass varieties at Piedmont Substation, Camp Hill, Ala., 1976.

Entry	Pounds oven dry forage per acre		
	Aug 6	Sept 20	Total
Tifton 68	1896 a*	2806 a	4702 a
Callie	1376 b	2366 ab	3742 b
Alicia	885 c	2257 ab	3142 bc
Coastal	790 c	2080 b	2870 c
Tifton 44	717 c	2028 b	2745 c
C.V.%	24	15	15

\*Any two yield values within a column marked with the same letter are not significantly different at 5% level.

Table 4. Forage yield of bermudagrass varieties at Plant Breeding Unit, Tallassee, 1976.

Entry	Pounds of oven dry forage per acre				Total
	July 16	Aug 17	Sept 9	Oct 15	
Callie	4606 a*	3282 a	1926 a	1728 a	11542 a
Tifton 68	4795 a	2347 b	1570 ab	1836 a	10548 a
Coastal	2107 b	1982 bc	1848 a	2030 a	7967 b
Alicia	1796 b	1849 c	1665 ab	1802 a	7112 bc
Tifton 44	2075 b	1632 c	1333 b	984 b	6024 c
C.V.%	14	11	13	18	10

\*Any two yield values within a column marked with the same letter are not significantly different at 5% level.

Table 5. Forage yield of bermudagrass varieties at Lower Coastal Plain Substation, Camden, Ala., 1976.

Entry	Pounds oven dry forage per acre			Total
	July 19	Aug 31	Oct 21	
Callie	3978 a*	5606 a	3977 a	13561 a
Tifton 68	2701 ab	4956 ab	3808 a	11465 ab
Tifton 44	1864 bc	4355 bc	2844 b	9663 bc
Alicia	527 c	4192 c	4147 a	8866 bc
Coastal	956 c	4018 c	3337 ab	8311 c
C.V.%	51	10	14	16

\*Any two yield values within a column marked with the same letter are not significantly different at 5% level.

Table 6. Forage yield of bermudagrass varieties at Wiregrass Substation, 1976.

Entry	Pounds of oven dry forage per acre			Total
	Aug 3	Sept 1	Oct 5	
Callie	3668 b*	5273 a	5006 a	13947 a
Tifton 68	4724 a	3565 b	4344 b	12633 a
Coastal	3565 b	3275 b	3362 c	10202 b
Alicia	2958 b	2735 b	3357 c	9050 b
Tifton 44	2641 b	1400 c	2123 d	6164 c
C.V.%	18	26	11	13

\*Any two yield values within a column marked with the same letter are not significantly different at 5% level.



Table 7. Forage yield of bermudagrass varieties at Gulf Coast Substation, Fairhope, 1976.

Entry	Pounds of oven dry forage per acre			
	July 13	Aug 11	Sept 10	Total
Callie	1940 a*	1066 a	4642 ab	7648 a
Coastal	864 a	941 a	5210 a	7015 a
Tifton 44	885 a	1085 a	4494 ab	6464 a
Tifton 68	970 a	823 a	4014 ab	5807 a
Alicia	801 a	778 a	3602 b	5181 a
C.V.%	66	28	20	24

\*Any two yields within a column not marked with the same letter are not significantly different at 5% level of probability.

Table 8. Ground cover and forage yield of bermudagrass varieties at Plant Breeding Unit, Tallassee, Ala., 1976, (test planted 1975).

Entry	Percent ground cover, April 27, 1976	Pounds of oven dry forage per acre					Total
		June 15	July 16	Aug 17	Sept 9	Oct 15	
Alicia bermuda	88	5012 a*	3944 a	2596 ab	2046 a	1780 a	15,380 a
Coastal bermuda	75	3331 b	3930 a	1681 b	2044 a	1702 a	12,688 b
Callie bermuda	16	1794 c	3462 a	2726 a	1786 a	1782 a	11,550 b
Pensacola bahia	90	888 c	2044 b	2153 ab	1383 b	955 b	7,425 c
C.V.%		31	16	26	13	11	12

\*Any two yield values within a column marked with the same letter are not significantly different at 5% level.

Table 9. In-vitro dry matter digestibility (IVDMD) of bermudagrass entries at Plant Breeding Unit, Tallassee during 1976.

Entry	Percentage IVDMD of forage				
	July 16	Aug 17	Sept 9	Oct 15	Average
Tifton 68	56.8	70.8	69.3	65.9	65.7
Callie	59.0	61.7	64.1	60.8	61.4
Tifton 44	57.0	56.6	60.4	59.9	58.5
Coastal	53.9	56.6	59.8	56.8	56.8
Alicia	52.6	53.4	55.7	55.7	54.4





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