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*Mississippi*

# Warm-Season Forage Crop

# VARIETY TRIALS, 2016

MISSISSIPPI'S OFFICIAL VARIETY TRIALS

MISSISSIPPI STATE UNIVERSITY™
MS AGRICULTURAL AND
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This report contains data generated as part of the Mississippi Agricultural and Forestry Experiment Station. Trade names of commercial and public varieties tested in this report are included only for clarity and understanding.

# Mississippi Warm-Season Forage Crop Variety Trials, 2016


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Find variety trial information online at ***mafes.msstate.edu/variety-trials***.

# Mississippi Warm-Season Forage Crop Variety Trials, 2016

## INTRODUCTION

Varieties of forage crops are evaluated every year in MAFES small-plot trials. Seed is provided by seed companies and state universities and tested at one or more locations across Mississippi. All entries from privately owned companies are tested on a fee basis. Standard varieties may be added by MAFES as a reference for comparison purposes. In addition, varieties of interest may also be added when applicable.

This report contains data collected from 2013–16 for bahiagrass (*Paspalum notatum*) and data collected in 2016 for seeded bermudagrass (*Cynodon dactylon)*. Seeded bahiagrass trials were evaluated only in Starkville and Poplarville, but due to poor stand establishment the Starkville location was not used in data collection. Bahiagrass was planted at 20 pounds per acre and adjusted for pure live seed (PLS) according to each entry's germination and purity percentage.

Bermudagrass plots were established in spring 2016 in Poplarville and Starkville. Plots in Poplarville did establish, but yields were largely affected by annual-grass competition during the establishment year. As a result, yields from Poplarville were not used in this publication for the first year.

Bermudagrass plots in Starkville produced two harvests by the fall, and yields are included in Table 4. Rainfall amounts during the growing season of 2016 are in Table 1. Data presented in Tables 2–3 can be used to evaluate the performance of each forage variety within that test. Comparisons can be statistically evaluated by using the least significant difference (LSD). The LSD represents the amount of yield that must be observed between any two varieties to determine if the differences observed were due to variety variation alone.

**Table 1. Monthly rainfall totals for Poplarville and Starkville, 2016.**

| Location | Jan. | Feb. | March | April | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *in* | *in* | *in* | *in* | *in* | *in* | *in* | *in* | *in* | *in* | *in* | *in* |
| Poplarville | 3.54 | 6.57 | 11.82 | 6.71 | 3.47 | 3.46 | 7.75 | 7.51 | 5.17 | 0.06 | 0.66 | 2.04 |
| Starkville | 4.48 | 8.34 | 7.73 | 4.34 | 3.21 | 3.88 | 3.54 | 3.46 | 2.75 | 0.04 | 0.15 | 0.00 |
| MS 30-year avg. | 4.96 | 4.76 | 5.04 | 4.96 | 4.37 | 4.13 | 4.8 | 4.25 | 3.03 | 3.94 | 4.76 | 5.16 |

# BAHIAGRASS

## Background

Bahiagrass is very drought tolerant and can be planted throughout the state. Seeded bahiagrass should be planted between March and May at a seeding rate of 20 pounds per acre. Nitrogen and potassium fertilization are essential for high yields, especially for hay production. Ammonium nitrate (34-0-0) has been the fertilizer of choice for bahiagrass during summer months, but its availability has become limited due to regulations by the Department of Homeland Security. Urea-ammonium sulfate is the N fertilizer available to Mississippi's livestock producers for hay and pasture. The new 33-0-0 is a blend of urea and ammonium sulfate that should be just as effective as ammonium nitrate in most situations. These yield results can differ from location to location in the state. To maintain a balance between yields and forage quality in a hay production system, it is recommended to cut hay in 30- to 35-day intervals.

## Protocol

The experimental design was a randomized complete block with four replications. Plots were 6 feet × 10 feet in size with 5-foot alleys between plots and 10-foot alleys between blocks. The study was planted on May 29, 2013, and given a year to establish in Poplarville. The initial fertilizer application was 335 pounds of 15-5-10 at planting. Nitrogen was applied after each harvest at a rate of 50 pounds of N per acre using urea-ammonium sulfate (33-0-0S). Plots were harvested when more than 50% of the plots reached a forage height of 12–15 inches or every 4–5 weeks, depending on environmental conditions. Plots were harvested with a "Zero Turn" mower to a 3-inch stubble height and the center 52-inch swath. Yields were recorded, and subsamples were collected for dry matter analysis. Data were analyzed using the General Linear Model (PROC GLM) of SAS, and mean separation was conducted using the LSD at $\alpha = 0.05$.

**Table 2. Seeded bahiagrass dry matter yields at Poplarville, 2016.[1]**

| Variety | Harvest date | | | | | Total |
|---|---|---|---|---|---|---|
| | 5/5/16 | 5/27/16 | 6/29/16 | 8/2/16 | 9/30/16 | |
| | *lb/A* | *lb/A* | *lb/A* | *lb/A* | *lb/A* | *lb/A* |
| Argentine | 6216 | 2026 | 2170 | 3445 | 7793 | 21649 |
| Pensacola | 4688 | 1993 | 1822 | 3519 | 5404 | 17426 |
| TifQuik | 5686 | 1520 | 1527 | 3811 | 6633 | 19176 |
| Tifton9 | 4959 | 1741 | 2037 | 3663 | 7379 | 19780 |
| UASandMt | 6077 | 1852 | 1954 | 3272 | 6663 | 19817 |
| UFRiata | 5502 | 2268 | 2405 | 3679 | 7186 | 21040 |
| Mean | 5521 | 1900 | 1986 | 3565 | 6843 | 19815 |
| $LSD_{0.05}$ | NS | NS | NS | NS | 1066 | NS |
| CV% | 27 | 23 | 25 | 13 | 10 | 14 |

[1]NS = Not Significant Planted: May 29, 2013
Fertilizer: 335 lb/A of 15-5-10 at planting; 50 lb/A of N using (33-0-0S) after each harvest

**Table 3. Seeded bahiagrass 4-year totals and average dry matter yields at Poplarville, 2013–16.[1]**

| Variety | Harvest date | | | | 4-year avg. |
|---|---|---|---|---|---|
| | 2013 | 2014 | 2015 | 2016 | |
| | *lb/A* | *lb/A* | *lb/A* | *lb/A* | *lb/A* |
| Argentine | 2370 | 19324 | 18678 | 21649 | 13951 |
| Pensacola | 2403 | 15861 | 16238 | 17426 | 11810 |
| TifQuik | 2305 | 18089 | 16070 | 19176 | 12489 |
| Tifton9 | 2442 | 15632 | 16837 | 19780 | 12433 |
| UASandMt | 2199 | 16963 | 15901 | 19817 | 12200 |
| UFRiata | 1494 | 17432 | 16169 | 21040 | 12658 |
| Mean | 2202 | 17217 | 16649 | 19815 | 12590 |
| $LSD_{0.05}$ | NS | 2021 | NS | NS | NS |
| CV% | 20 | 7 | 11 | 14 | 7 |

[1]NS = Not Significant Planted: May 29, 2013
Fertilizer: 335 lb/A of 15-5-10 at planting; 50 lb/A of N using (33-0-0S) after each harvest

# SEEDED BERMUDAGRASS

## Background

Bermudagrass is very drought tolerant and can be planted throughout the state. Seeded bermudagrass should be planted between March and May at a seeding rate of 5–10 pounds per acre. Nitrogen and potassium fertilization are essential for high yields, especially for hay production. Ammonium nitrate (34-0-0) has been the fertilizer of choice for bermudagrass during summer months, but its availability has become limited due to regulations by the Department of Homeland Security. Urea-ammonium sulfate is the N fertilizer available to Mississippi's livestock producers for hay and pasture. The new 33-0-0 is a blend of urea and ammonium sulfate that should be just as effective as ammonium nitrate in most situations. These yield results can differ from location to location in the state. There are a great number of seeded blends available for planting. Most producers have the notion that these blends usually "revert back to common bermudagrass." This is not surprising, given the composition of the blends. In this situation, it is not a case of the variety suddenly, or even gradually, turning into common bermudagrass. Rather, it is the common bermudagrass already present in the blend gradually replacing the other varieties, due to its greater persistence. To maintain a balance between yields and forage quality in a hay production system, it is recommended to cut hay in 30- to 35-day interval.

## Protocol

The experimental design was a randomized complete block with four replications. Plots were 6 feet × 10 feet in size with 5-foot alleys between plots and 10-foot alleys between blocks. The study was planted on June 1, 2016, in Starkville and June 3, 2016, in Poplarville. Initial fertilizer application was 335 pounds of 15-5-10 at planting. Nitrogen was applied after each harvest at a rate of 50 pounds of N per acre using urea-ammonium sulfate (33-0-0S). Plots were harvested when more than 50% of the plots reached a forage height of 12–15 inches or every 4–5 weeks, depending on environmental conditions. Plots were harvested with a "Zero Turn" mower to a 3-inch stubble height and 52-inch swath. Yields were recorded, and subsamples were collected for dry matter analysis. Data were analyzed using the General Linear Model (PROC GLM) of SAS, and mean separation was conducted using the LSD at $\alpha = 0.05$. Table 4 presents 2016 dry matter yields of seeded bermudagrass varieties in Starkville. Before each harvest, stand evaluations were performed by estimating percent ground cover of each plot using the Canopeo app (Stillwater, Oklahoma). Results from this evaluation can be found in Table 5.

**Table 4. Seeded bermudagrass dry matter yields at Starkville, 2016.**

| Variety | Harvest date | | Total |
|---|---|---|---|
| | 9/1/16 | 10/13/16 | |
| | *lb/A* | *lb/A* | *lb/A* |
| BAR RUB 619 | 1240 | 804 | 2044 |
| Common | 1536 | 471 | 2007 |
| ETSCII325102H | 1273 | 561 | 1834 |
| ETSCITNS1115 | 2265 | 764 | 3029 |
| Laredo | 1838 | 637 | 2475 |
| MBS 416 | 1900 | 1048 | 2947 |
| Mowhawk | 1788 | 808 | 2595 |
| Penn 17 | 2217 | 554 | 2771 |
| Texas Tough+ | 1765 | 759 | 2524 |
| Mean | 1758 | 712 | 2470 |
| $LSD_{0.05}$ | NS | NS | NS |
| CV% | 36 | 41 | 29 |

[1]NS = Not Significant Planted: June 1, 2016
Fertilizer: 335 lb/A of 15-5-10 at planting; 50 lb/A of N using (33-0-0S) after each harvest

| Table 5. Seeded bermudagrass plot ratings (percent ground cover) at Starkville, 2016. | | |
|---|---|---|
| **Variety** | **Harvest date** | |
| | **9/1/16** | **10/13/16** |
| | % | % |
| BAR RUB 619 | 55 | 10 |
| Common | 43 | 15 |
| ETSCII325102H | 70 | 9 |
| ETSCITNS1115 | 53 | 7 |
| Laredo | 49 | 19 |
| MBS 416 | 36 | 10 |
| Mowhawk | 72 | 8 |
| Penn 17 | 30 | 26 |
| Texas Tough+ | 63 | 32 |

| Table 6. Bahiagrass and bermudagrass seed sources. | |
|---|---|
| **Varieties** | **Seed company** |
| **Bermudagrass** | |
| BAR RUB 619 | Barenburg |
| Common | MSU Check |
| ETSCII325102H | East Texas Seed |
| ETSCITNS1115 | East Texas Seed |
| Laredo | Allied Seed, LLC |
| MBS 416 | MBS |
| Mowhawk | Pennington |
| Penn 17 | Pennington |
| Texas Tough+ | East Texas Seed |
| | |
| **Bahiagrass** | |
| Argentine | MSU Check |
| Pensacola | MSU Check |
| TifQuik | MSU Check |
| Tifton9 | MSU Check |
| UASandMt | MSU Check |
| UFRiata | MSU Check |


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**George M. Hopper, Director** **www.mafes.msstate.edu**