

Mississippi Native Grass Variety Trials, 2015

INTRODUCTION

In recent years, a renewed interest in the use of native crops for forage has prompted selections of ecotypes and development of cultivars that may be better adapted to current forage production systems. This information bulletin discusses the results of trials with the most common native grasses that show adaption to soil and climatic conditions in Mississippi, such as big bluestem (*Andropogon gerardii*), little bluestem (*Schizachyrium scoparium*), switchgrass (*Panicum virgatum*), and indiangrass (*Sorghastrum nutans*). Typically, these cultivars are merely ecotypes chosen from specific areas and adapted for use at different locations. There is now a need to reevaluate the performance of many of these improved varieties for use in Mississippi.

Big bluestem is a perennial bunchgrass, native to the Great Plains and eastern U.S. It is extremely deep rooted, encouraging superior drought tolerance when compared with other warm-season perennials. Big bluestem is one of the most palatable native crops, maintaining excellent forage quality throughout the summer. It does not tolerate close grazing, and improper grazing pressure

could lead to stand thinning. We recommend using rotational stocking to graze this grass to a residual stubble height of 6 inches.

Indiangrass is a perennial bunchgrass, native to the eastern Great Plains and eastern U.S. It can spread not only by seed, but also by rhizomes. This grass can be used for both pasture and hay, and, like big bluestem, it maintains good forage quality throughout the summer. It can tolerate semiclose grazing in a rotational system, but in continuous systems, we recommend a stubble of 10–16 inches.

Switchgrass is one of the most widespread native grasses of North America. It is a perennial bunchgrass that can become tall and stemmy much sooner than indiangrass or big bluestem. Due to its rapid maturity, we recommend intense rotational stocking to maintain stands and good forage quality. Switchgrass is more tolerant of acidic and poorly drained soils than the other native species. This grass has two ecotypes: upland (northern U.S.) and lowland (southern U.S.). Lowland switchgrass yields can reach 6–10 dry tons per acre.

Table 1. Monthly rainfall totals for Poplarville, Starkville, Holly Springs, and Newton, 2015.

Location	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
	<i>in</i>	<i>in</i>	<i>in</i>	<i>in</i>	<i>in</i>	<i>in</i>	<i>in</i>	<i>in</i>	<i>in</i>	<i>in</i>	<i>in</i>	<i>in</i>
Poplarville	3.13	2.3	3.79	5.33	11.44	4.01	4.71	1.00	0.01	6.92	4.4	8.46
Starkville	5.71	4.98	5.47	5.06	5.45	3.18	4.09	2.20	0.95	1.43	0.20	0.09
Holly Springs	0.00	0.53	2.37	2.27	3.09	2.21	0.51	1.00	0.02	0.41	6.44	2.22
Newton	6.71	4.13	4.91	5.15	2.16	4.97	3.57	4.05	3.6	6.82	7.02	6.08
MS 30-yr. avg.	5.30	4.70	5.80	5.60	5.10	3.30	4.50	3.80	3.60	3.30	4.80	5.90

Little bluestem is a perennial bunchgrass that sometimes uses rhizomes to propagate. Though it is found across the continental U.S., with the exception of the far Pacific Coast, it is most prominent in the dryer Midwest. It is more drought-tolerant than switchgrass, big bluestem, and indiangrass, and it can tolerate more intensive grazing than the other native grasses. However, forage quality and palatability quickly decrease with maturity.

In the results presented, comparisons can be statistically evaluated by using the LSD (least significant difference). The LSD represents the amount of yield that must be observed between any two entries to determine if the differences observed were due to cultivar variation alone. The coefficient of variation (CV) represents the variation within the trial to measure the quality of the data presented. Typically, a lower CV represents a trial with low variation between replications.

PROTOCOL

Trials were planted with an Almaco plot drill in 6-by-10-foot plots arranged in a randomized complete block design with four replications. Seeding rates were adjusted to account for pure live seed (PLS) (Table 2). Trials were separated by species due to different optimum harvest times. Plots were not amended with any fertilizer, lime, or irrigation at any time. Seedbed was cultivated 5 months before planting and allowed to settle, receiving glyphosate treatments as needed to eliminate weeds and create a stale seedbed.

Plots from individual species were harvested to a 6-inch stubble height after they reached between 24 and 30 inches of growth. Harvesting was performed using a “Zero Turn” mower equipped with a bagging system and taking a 52-inch swath from the middle of each plot.

To determine dry matter percentage, subsamples were taken from each plot, weighed, and dried in a force-air oven at 131°F until weight remained constant. Statistical analysis was performed using PROC GLM in SAS, and means were considered different at $P < 0.05$. Subsamples

Genus/Species	Seeding rate (PLS)
	<i>lb/A</i>
Big bluestem	12
Indiangrass	10
Little bluestem	5
Switchgrass	8
¹ PLS = Pure Live Seed	

were further used to evaluate forage nutritive value using NIR and the grass hay equation of the NIRS Forage and Feed Testing Consortium (Madison, Wisconsin).

Plateau (imazapic) was used at a rate of 6 ounces per acre as both a preemergence and postemergence application during the establishment year on the indiangrass, big bluestem, and little bluestem. Switchgrass trials received a postemergence application of Pastora (nicosulfuron and metsulfuron methyl) at 1.5 ounces per acre.

RESULTS

All locations were initially planted in May 2013 and allowed 1 year of establishment before data collection was initiated. During the establishment year, occasional mowing and clearing of the plots was performed to minimize weed competition. In general, big bluestem across every location showed superior stand establishment and was considered fully established for most varieties by the end of the first year. All species were fully established in Poplarville by the end of 2013, but indian-

grass and switchgrass had to be replanted in May 2014 in Starkville, Newton, and Holly Springs due to incomplete stands in the plots. Little bluestem ranked as the most difficult to establish with complete stands available for harvest in Poplarville only after two plantings. In Starkville, data from only big bluestem is presented due to incomplete stand establishment with the other species.