



Establishment, Management and Benefits of Warm-Season Perennial Grasses

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There are over 12 million acres in warm-season perennial grasses (WPGs) across the southern USA to support the livestock. The main species are bahiagrass (*Paspalum notatum*) and bermudagrass (*Cynodon dactylon*). These warm-season perennial grasses are normally used for permanent or semi-permanent pastures or hay production. Grazing warm-season perennials can be beneficial throughout the hot summer months. These forages have rapid growth rates during June, July, and August while cool-season forages exhibit limited growth. They grow best between late spring and early fall when temperatures are between 80° and 90° F.



Bahiagrass is a deep-rooted, sod-forming species that is well adapted to a wide range of soils and conditions in the southern USA. It is adapted to poorly drained soils and shaded areas (woodlands) better than bermudagrass. Bahiagrass is a prolific seed producer and can also be spread by short, stout stolons. Some of the advantages of bahiagrass include tolerance to drought and close grazing, low disease and insect damage, adequate nutritive value, and low to moderate fertility to maintain adequate forage production. Bahiagrass as a pasture alternative tends to have forage production earlier in the spring and later in the fall than bermudagrass. Despite bahiagrass requiring a low level of management, it could respond well to proper fertility (nitrogen) and grazing management practices. Some of the most common commercially available varieties include Argentine, Pensacola, U-Riata, UA Sand Mountain, Tifton-9 (Fig. 1).

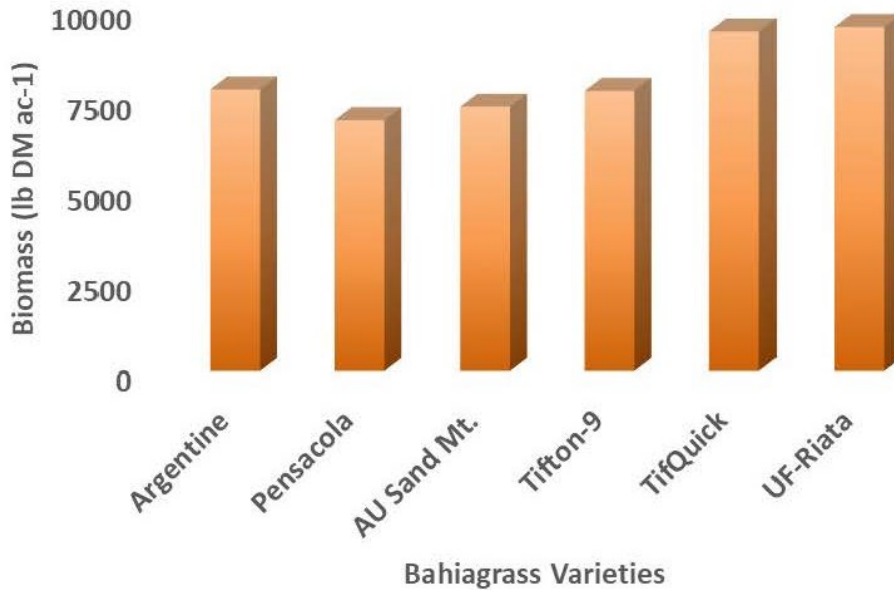


Bermudagrass is a sod-forming grass that can be used for grazing or hay. It is often the preferred PWSG due to high yields and nutritive value and tolerance to high traffic. There are seeded and sprigged (rhizomes and stolons) varieties of bermudagrass available in the market. Sprigged varieties do not produce viable seeds. One of the disadvantages of sprigged varieties is the slow establishment and the timing of establishment which will require a prepared seedbed and specialized equipment. Bermudagrass also requires higher nitrogen applications to achieve greater yields. Seeded types of bermudagrass might produce 20 to 30% less biomass per acre than the sprigged varieties (Fig. 2) once they are well established. Seeded varieties can be pure varieties or a blend of seeded varieties that are marketed under trade names (Fig. 3).

Many producers are hesitant to use warm-season perennials because of the seed, fertilizer, and fuel costs and loss of field production during establishment. Success with warm-season grasses depends on recognizing that management requirements are important in establishing long-term productivity. Differences in establishment method, fertilization, and grazing management are especially important.

Seedbed Preparation and Planting

More planting failures are due to poor seedbed preparation. Seedbed preparation along with soil fertility are the most important practices in establishing WPGs and are usually overlooked by producers. It is important to have good seed-to-soil contact. An ideal seedbed should be firm below the planting depth, free of weeds and excessive residue that can compete with seed emergence. Planting into a loose seedbed increases the risk of planting too deep and reducing ger-



mination. A glyphosate application at 10 days before planting or a paraquat application at 3 days before planting can help control emerging weeds and reduce weed competition during establishment.

The planting window depends on the local precipitation pattern, the species used, the method of planting, and the time of weedy growth. Planting WPGs should be done when seedlings will have the longest possible period of good growing conditions for establishment. Warm-season perennial grasses will germinate when soil temperatures are above 55° F and they should be planted between mid-May and early June after the risk of frost.

The two common methods of seeding perennial warm-season grasses are prepared seedbed (by drill planting (row) or broadcasting) and using a no-till drill. Drilling should be the preferred method because the seed is placed in the soil at a controlled planting depth, thus improving the probability of stand establishment. Broadcasting (spreading the seed over the soil surface) is more recommended in situations where land is being converted to pastureland and there might be issues with rocks, stumps, or other types of debris that inhibit seedbed preparation. If broadcasting seed into a prepared seedbed, it is recommended to use a cultipacker to increase seed to soil contact. Broadcast is ineffective without some soil disturbance before the seeding operation.

Seeding Rate and Weed Control During Establishment

Warm-season perennial grasses can be seeded from mid-April to June 30 depending on location and rainfall. Seeding rates depend on the species, method of seeding, and potential site productivity. Bahiagrass and bermudagrass are recommended to be planted at 20 and 10 pounds per acre, respectively, when drilling into a prepared seedbed. Consider using 25% more seed if broadcasting. These seeding rates should be based on pounds of pure live seed (PLS). PLS is the percentage of the bulk seed material that is a live seed. This is determined by multiplying percentage germination by percentage purity of the seed lot.

When hard seeds are involved, $PLS = (\text{percent germination} + \text{percent hard seed}) \times \text{percent purity}$.

Warm-season grasses often establish slowly and compete poorly with weeds. Good weed control during the establishment phase is important to improve ground cover. Young bahiagrass and bermudagrass seedlings are less competitive to weed pressure from annual grasses and broad-leaf weeds. Weed competition can cause shading on emerging seedlings and compete with them for water and nutrients. Once bermudagrass and bahiagrass seedlings have reached a height of 8 to 10 inches (3- to 4-leaf stage), 2,4-D can be used to control young broadleaf weeds. It is important to pay attention to the rate of 2,4-D application and the height of the seedlings since 2,4-D could have pre-emergence activity on grass seed germination and affect hard seed bahiagrass and bermudagrass seeds that have not yet germinated. Unfortunately, there are no herbicides that selectively control annual

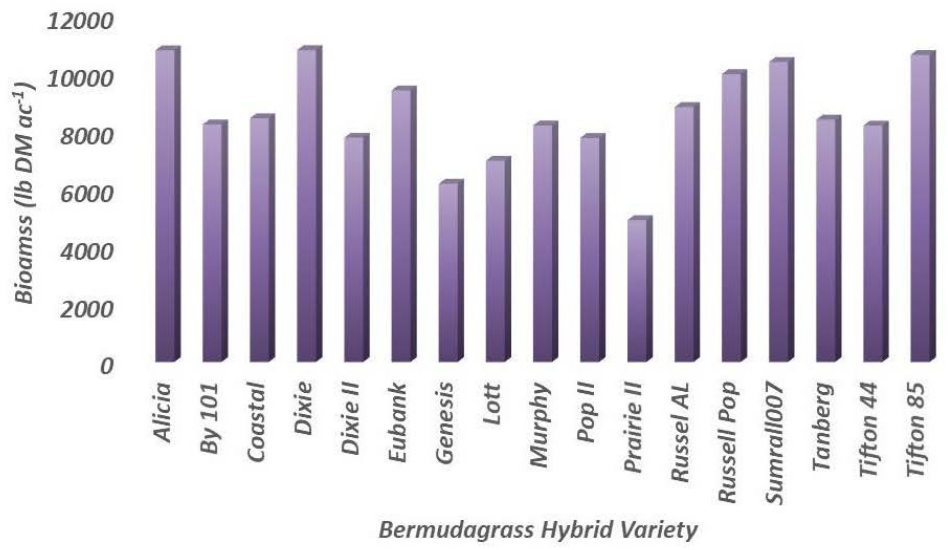


Figure 2. Mean forage production of bermudagrass hybrid varieties in Mississippi.

grasses in newly established bahiagrass or bermudagrass.

Producers tend to over-seed their PWSG pastures with a cool-season annual grass such as annual ryegrass and/or small grains and annual clovers. It is recommended not to overseed a newly established pasture since species such as annual ryegrass can delay and compete with new growth the following spring. It is best to wait until pastures have a year of full establishment.

Fertilizing Newly Established Grasses

When fertilizing a newly established PWSGs, a soil test is recommended. Many producers attempt to guess the fertilizer needs and it is a practice that could be economically expensive when over-fertilizing or could impact grass establishment when under fertilizing. Knowing the nutrient needs before preparing the seedbed, allows incorporating lime, phosphorus, and potassium to ensure that new seedlings have the needed nutrients to increase root development and growth. A general suggestion is 30 pounds each of P₂O₅ and K₂O per acre at planting might be ideal. Applying nitrogen before or at planting will create excessive weed competition and will not be adequately utilized by desired grass seedlings. Apply 30 to 50 pounds of N per acre after the seedlings emerge and start to grow. Early planting might receive a second application of 40 to 60 pounds of N per acre in early- to mid-summer to promote rapid recovery and coverage.

Grazing Management of New Grass Stands

It usually is best not to graze bahiagrass and bermudagrass until they have reached a 12 inches height after establishment and if the environmental conditions are favorable for regrowth. Grazing too early can reduce root growth and carbohydrate reserves and reduce the stand during the stress periods of high temperature and humidity (July to August). It is recommended to leave at least a 4 inches stubble height to allow for the rapid recovery period. Hay harvest is not recommended until the grasses are 15 inches in height.

Upcoming Events

March 31, 2022— **Beef Cattle Field Day | Newton, MS**
Pre-register by March 25 at 601-683-2084.

June 2, 2022— **White Sand Experiment Station Field Day | White Sand (Poplarville), MS**
More information coming soon.

For upcoming forage related events visit: <http://forages.pss.msstate.edu/events.html>

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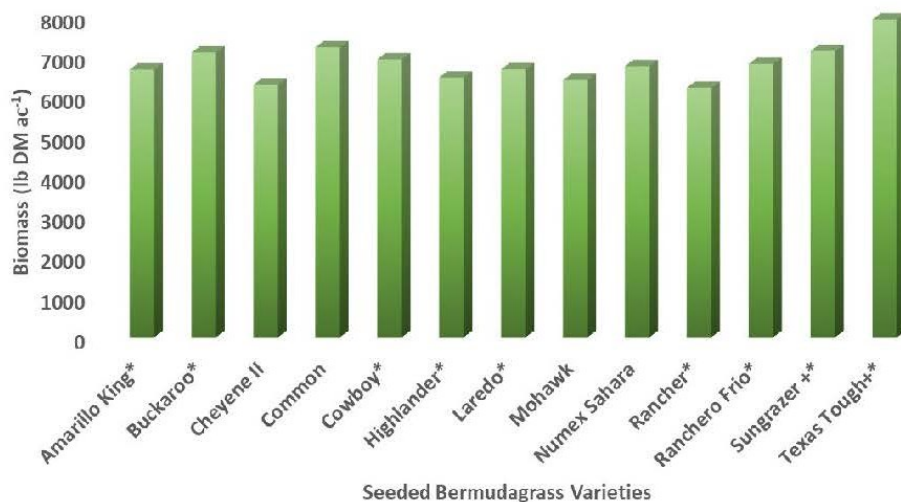


Figure 3. Mean forage production of bermudagrass seeded varieties in Mississippi (*indicates bermudagrass blends).