

## **Planting Guide**

### **Big Bluestem in South Carolina** (Andropogon gerardii)

#### **GENERAL USE**

Big bluestem is a native, perennial, warm season grass noted for its rapid growth in the mid to late summer when high temperatures retard the growth of cool season grasses. The primary use of big bluestem is as livestock forage seeded in pure stands or mixtures. It is not as highly rated as switchgrass or indiangrass for wildlife cover because snow on mature big bluestem can cause severe lodging.

#### **CHARACTERISTICS**

Big bluestem produces a deep, extensive, fibrous root system and short rhizomes. Big bluestem plants can be distinguished from other warm season grasses, even when they are young, by the long hairs on the stem and upper leaf near the base of the leaf. The stem is round and has a reddish tint at its base. The seed head normally has three finger-like branches like a turkey's foot.

Growth begins in late April or early May, and increases rapidly with higher temperatures. It produces about seventy percent of its annual growth after June 15. Its average date of seed maturity is September 9. If undisturbed, it attains a height of four to six feet, and establishes a very deep root system.

#### **ADAPTABILITY**

Big bluestem is winter hardy, and will grow throughout North Carolina. It is adapted to all soil textures and drainage classes except very poorly drained conditions. Deep, well-drained soils are preferred for optimum production. A collection of local accessions is currently being evaluated at the plant materials center.

#### **ECOTYPES AND CULIVARS**

Stands established from seed of local stands will be well adapted to the area in the proximity of the collection site and will preserve the genetic integrity of the plant communities in the area. The adaptation of that seed beyond the immediate area will be unknown without testing. The seed production and quality, forage production and quality, and wildlife habitat value will also be unknown. Commercial seed producers will set their prices based on the risk of seed production and the potential market for seed with unknown adaptation. Suther Germplasm, originally from Cabarrus County, North Carolina and released by the Cape May, New Jersey Plant Materials Center, may be adapted to the northwestern half of the state (plant hardiness zones 7)

Regionally adapted cultivars are the products of extensive collection and testing within a region. The plant material is tested extensively for its adaptation throughout the region and dependability of seed production, forage production, and wildlife habitat value. Commercial seed producers set their price with full knowledge of the cultivars' potential

seed production and its market based on the area of adaptation. 'Kaw', originally from Kansas and released by the Manhattan, Kansas Plant Materials Center, is adapted to the northwestern half of the state (plant hardiness zones 7). 'Earl', originally from Parker County, Texas and recently released from the Knox City, Texas Plant Materials Center is adapted to the entire state (in plant hardiness zone 7 and 8).

## **ESTABLISHMENT**

For optimum germination and growth, freshly collected seed of big bluestem requires a cold, moist stratification before it will germinate at high temperatures. Ecotypes and cultivars from further south will germinate without stratification at a higher rate than cultivars from further north, but earlier seedings will germinate earlier and survive summer droughts better.

It should be drilled into prepared seedbeds or no-till. Prepared seedbeds must be fine, firm surfaces free of competition. The seeding must be packed after drilling to insure good seed to soil contact. Seedings into fields that have been pastures or hayfields must have good weed control of the live vegetation on the site before drilling. No-till seedings are recommended in fields that have been pastures or hayfields to minimize the exposure of weed seeds to ideal germination conditions.

Native grass and forb seed is bought, sold, and seeding rates are developed by pounds of pure live seed. Pure live seed is the amount of actual seed that will germinate in an amount of seed. Because the germination of native seeds is not dependable year to year and many species have awns, hairs or other impurities attached to the seed, pure live seed is the only dependable way of handling native seeds. Drills must be calibrated to sow the correct amount of bulk seed to deliver the specified pure live seed. For example, to deliver 5 pounds of pure live seed with 50% germination and 50% purity, the drill must sow  $5/0.5 \times 0.5 = 5/0.25 = 20$  pounds of bulk seed.

Seeding Dates – Optimum - Before the local date of last frost

Northwestern South Carolina – May 1

Southeastern South Carolina – April 1

Last date to avoid extensive summer drought mortality – May 15

Seeding Rate – 165,000 seeds per pound, pure stand rates based on 30 pure live seeds per square foot drilled for wildlife habitat and restoration, 50 pure live seeds per square foot drilled for forage and erosion control, rates mixtures should be reduced in proportion to the number of species in the mix and the desired representation of each species in the mix:

At 30 seeds per square foot (1.3 million seeds per acre),  
8 pounds of pure live seed per acre drilled in pure stands

At 50 seeds per square foot (2.2 million seeds per acre),  
13 pounds of pure live seed per acre drilled in pure stands

Seeding Depth – ¼ to 1/2 inch

Big bluestem seed is chaffy, and must be debarbed mechanically, sown with drills with chaffy seed boxes capable of handling the seed, or mixed with an inert material (weight of the inert material equal to the weight of the seed). Mechanical debarbing will add one dollar per pound to the price of the seed, but will allow seeding with conventional

drills.

The seedling vigor of big bluestem is poor, as it is for all perennial, native warm season grasses. Weed control is critical for stand survival. The only residual herbicide approved for use with perennial native warm season grasses is Plateau, which may be applied at or after seeding. Weed control may also be done with contact herbicides or mowing. Most contact broadleaf herbicides are approved for use on warm season grasses. Annual weeds may be controlled by mowing over the top of the big bluestem to prevent the weeds from making seed. All cool season grasses may be controlled when the big bluestem is dormant with a contact herbicide; some are controlled by Plateau.

The stand should be fertilized to raise the levels of phosphorus and potassium to moderate levels for corn (100 bushes per acre yield) before seeding. Nitrogen should not be applied until mid-summer once the stand is established and competing well with any weeds. Nitrogen rates the first year should be thirty to forty pounds per acre. The pH should be maintained between 6.0 and 6.5 for optimum production.

## **MANAGEMENT**

Stands managed for forage should be fertilized annually with eighty pounds of nitrogen per acre, split into applications in June and August. Nutrient contributions from manure of grazing livestock should be accounted for. Moderate soil test levels of phosphorus and potassium should be maintained.

Pastures should be grazed when the stands reach twelve to sixteen inches tall. Animals should be removed when the grass is six to eight inches tall. Hay should be cut when the grass is at boot stage, and a stubble height of six inches should be left. A height of twelve inches should be left at frost. After frost, the grass may be grazed to six inches.

Weed control may be accomplished by maintaining plant vigor. Broadleaf weeds may be controlled with a contact herbicides applied during the growing season; some may be controlled by Plateau before or during the growing season. Cool season grasses may be controlled with contact herbicides applied when the big bluestem is dormant; some may be controlled by Plateau before or during the growing season.

Stands managed for wildlife and not harvested for forage should be burned every three to five years to stimulate the stand and reduce excessive mulch accumulations that restrict the movement of new hatchlings and attract nest predators.

Prepared by Robert Glennon, USDA-NRCS Natural Resource Specialist, Washington, DC, (former plant materials center manager in Florida and Louisiana and specialist for Florida and the Gulf Coast and Pennsylvania and West Virginia), February 2007,pgbigbluestemAL.doc