

No-Till Planting Guide for Big Bluestem in Missouri, Iowa and Illinois

This guide documents field tested information for the conversion of cool season grass (tall fescue), to big bluestem, *Andropogon gerardii*. Plantings at the Elsberry Plant Materials Center and off center trials in Missouri, Iowa, and Illinois began in 1988. Planting recommendations were developed from this experience.

INTRODUCTION:

Big bluestem is a native warm season perennial bunchgrass noted for its rapid growth during midsummer when high temperatures retard the growth of cool season grasses. Its ability to produce quality forage during summer makes big bluestem an ideal complementary forage grass to cool season pastures. Utilizing warm season pasture grasses in rotation with cool season pastures can help balance a season long grazing system.

Big bluestem, when managed properly, produces excellent hay and forage, adequate ground cover for soil erosion control, and quality wildlife food and cover. It is adapted to a wide range of climate and soils. It may also be seeded in mixed or pure stands. Native stands of big bluestem demonstrate a tremendous amount of genetic diversity within the three state area (Missouri, Iowa, and Illinois). Released varieties such as 'Rountree' big bluestem are well adapted.

SITE SELECTION:

Big bluestem grows well on a wide range of soils. It is not well adapted to excessively wet areas.

Big bluestem often establishes more slowly than many cool season grasses. Planting big bluestem using conventional planting methods can leave soil unprotected for a long period of time creating an erosion hazard on steeper sites. The no-till method of establishment should be considered for these sites. No-till planting can reduce the erosion potential and produce good grass stands.

SITE PREPARATION:

Established stands of cool season grasses can be very durable, and difficult to kill. Where feasible, no-till the field to a row crop such as corn or soybeans for one or two seasons. Another alternative may be to kill the sod with chemical sprays and/or tillage in the fall, followed by a no-till cover of small grain. Where this is not possible, chemical sprays may be the best option. Advanced planning can help minimize chemical application rates and reduce the need for follow-up applications. Do not let previous year's crop go to seed if at all possible. Existing stands of cool season grass can be weakened by overgrazing one or more times before chemical application. (Chemical application can be done prior to planting in the spring. Alternatively with some chemical sprays, cool season sod can be somewhat easier to kill in the fall before the sod goes dormant.) Allow at least ten to 21 days of regrowth to provide adequate leaf surface for good chemical contact before chemical application. The longer time to ensure adequate leaf surface is better. Chemical recommendations include:

- #1. Gramoxone using a split application (2.5 pints/acre works well using low volume (10 gpa or less). Ammonium sulfate according to label recommendations may also help effectiveness of the glyphosate.
- #2. Glyphosate (Roundup) 2.0 quarts/acre works well using low volume (10 gpa or less). Ammonium sulfate, according to label recommendations, may also help effectiveness of the glyphosate.

Other nonresidual chemicals may be substituted if labeled accordingly. Where other crops may be used in sod removal, applying Atrazine in addition to burn down chemical sprays will help kill tall fescue. Atrazine is no longer labeled for use in the establishment of warm season grass.

FERTILIZATION:

Big bluestem is a long lived forage plant. Properly managed stands have been productive for several decades in the Midwest. Soil tests should be taken as a guide to phosphorus and potassium needs. If large amounts are needed, application may be split over more than one year. Manure applications should be considered in planning fertilization programs. Analyses of wastes may be acquired to aid in figuring nutrient needs. Average values may be used based on USDA Waste Manual Values. Manure or nitrogen is not recommended prior to planting or during establishment year due to the weed pressure which can result. Extremely eroded or poor sites may, however, benefit from the application of 20 to 30 pounds of actual nitrogen.

PLANTING DATE:

Early corn planting time is also the best time to seed big bluestem (mid-April to mid-May in the tri-states or, when soil temperatures reach a steady 55 degrees Fahrenheit.) No-till plantings can be made slightly earlier than conventional plantings but tend to become less successful later in the spring if moisture becomes less available. They can also be made slightly later than conventional plantings because they hold moisture better. Later no-till plantings on soils with high clay content may crack back open, dry up and cause very small seedlings to die. This is well documented. Early planting can be done because planters are held up by sod cover but soil temperatures are lower. Dry weather can result in the death of newly germinated plants and corresponding stand failure.

PLANTING PROCEDURES:

For no-till plantings a specially equipped no-till drill is needed. The drill should have coulters able to cut through dense sod and be heavy enough to penetrate hard soil. Depth bands are needed to make sure seeds are not planted too deep. The operating depth of leading coulters should be adjusted to just slightly deeper than desired depth of seed placement. The seed should be placed 1/4" to 1/2" deep in the furrow. Packer wheels should be adapted to the site and adjusted to get good seed to soil contact. Planting rate is eight pounds of pure live seed per acre.

WEED CONTROL:

Chemicals labeled for weed control for warm season grasses are limited. Gramoxone can be used in the spring before big bluestem starts to grow, or in the fall after the big bluestem goes dormant to remove cool season weeds. This application also works to clean up cool season grass that was not initially killed. Mowing weeds at a height high enough not to harm the big bluestem is also an effective way to control weeds. Standard broadleaf weed sprays such as 2,4-D and Banvel may be used anytime after bluestem plants reach the four leaf stage, or are about two to four inches tall.

Weed control on established stands of big bluestem can be minimized by maintaining plant vigor and density through good fertility and management practices. Occasional use of approved chemical sprays will reduce competition and help restore plant vigor to an overgrazed stand. Burning plant residues at initiation of spring growth decreases weed competition and stimulates big bluestem growth. Burning is not usually recommended the spring following the establishment year. Be certain to follow an approved burn plan.

FORAGE MANAGEMENT:

An annual fertilizer application of 60 pounds nitrogen and 30 pounds each of phosphorus and potassium per acre is usually adequate for acceptable yields and forage quality. Fertility rates should be adjusted at least every three years in accordance with soil tests.

Big bluestem may be grazed when it reaches a height of 14 to 16 inches. Graze to reduce about 50 percent of top growth maintaining a minimum height of about eight inches. Grazing should be terminated about three weeks prior to frost date to allow a plant height of 12 inches to be attained before frost. It may be grazed to a height of six to eight inches after frost if forage is needed. Be certain the winter cover is maintained to provide insulation for plants and soil protection.

To obtain optimum forage quantity and quality, hay cuttings should be made just as big bluestem is about to boot (mid-to-late July). Forage quality drops rapidly as seedheads begin to form.

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