

UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
ELSBERRY, MISSOURI

**NOTICE OF RELEASE OF REFUGE GERMPLASM BIG BLUESTEM
SELECTED CLASS OF NATURAL GERMPLASM**

The Natural Resources Conservation Service (NRCS), U.S. Department of Agriculture announce the release of a selected ecotype of Refuge Germplasm big bluestem (*Andropogon gerardii* L.). It has been assigned the NRCS accession number 9078832. Refuge Germplasm is released as a selected class of certified seed.

This alternative release procedure is justified because there are no existing commercial sources of big bluestem that are shorter than average in height and stiff stemmed. The potential for immediate use is high.

Collection Site Information: Collections of vegetative material were taken from native prairie remnants in Arkansas. Three collections were selected from the counties of Fulton, Washington, and Montgomery. They refer to the Major Land Resource Area's (MLRA) in Arkansas, 116, 117, and 119.

Description: Big bluestem is a tall, warm-season, perennial, native grass with stiff, erect culms; flattened and keeled sheaths; membranous ligules; and flat or folded leaf blades. Big bluestem has developed a very efficient spreading root system which may reach depths of 5-8 feet (150-200 cm) in northern latitudes, and 6-8 feet (180-240 cm) or more in the southern part of its natural range. Although short rhizomes may be present, it usually makes a bunch type growth. Big bluestem is composed of many ecotypes with a wide range of adaptation to soil and climate. Big bluestem is one of the most widespread and important forage grasses of the North American tallgrass prairie region. It is usually associated with one or more of the other three dominant species; indiagrass, (*Sorghastrum nutans* L. Nash.), switchgrass, (*Panicum virgatum* L.), and little bluestem (*Schizachyrium scoparium* Michx.). Big bluestem occurs on sub-irrigated lowlands, nearly level to gently undulating glacial till plains, overflow sites, level swales and depressions, residual and glacial uplands, and stream terraces and bottomlands along rivers and tributaries.

The Refuge Germplasm selection is at the shorter end of the range of height for the species. Average total height is 4.5 to 5.5 feet tall.

Method of Selection: Three hundred and seventy collections were vegetatively collected from 190 counties throughout the Ozark region of Missouri, Arkansas, Oklahoma, and Illinois. Each collection was increased vegetatively in the greenhouse and planted into an evaluation nursery with two replications and six plants per collection in each replication. Each plant was evaluated independently and ten collections. Selected plants were vegetatively removed, increased vegetatively in the greenhouse, and isolated in an evaluation nursery containing approximately one hundred plants. Three individual plants representing three collections, accession numbers

9056902, 9056906 and 9056906, were selected for their short, columnar shape. These three plants were again vegetatively removed, vegetatively increased in the greenhouse, and planted into a crossing block. Seed from this block was used to establish the increase (G1) field.

Selection Criteria: The Refuge germplasm was selected and isolated because of its shorter than average height and its stiff stem that prevented lodging while being evaluated in an assembly of 370 collections of big bluestem. Refuge had good seed production in 2005, a very dry year with no irrigation. Bulk seed production was 320 bulk pounds of clean seed per acre.

Comparison of Refuge Germplasm big bluestem to 'Rountree' big bluestem was Refuge was approximately two and a half feet shorter and exhibited considerable resistance to lodging from maturity throughout the dormant season with standability to spring.

The Refuge Germplasm selection has characteristics of being very good for wildlife habitat and also works well in buffers and filters.

Ecological Considerations and Evaluation: Refuge Germplasm big bluestem is a selection of naturally occurring germplasm and has undergone selection for its short stature, columnar shape, and resistance to lodging. Refuge Germplasm did not meet the assessment of a plant which could become invasive, based on guidelines adopted by the NRCS Plant Materials Program.

Anticipated Conservation Use: The potential uses of Refuge Germplasm big bluestem include wildlife habitat, vegetative buffers, filters, and landscape uses.

Potential Area of Adaptation: Big bluestem occurs throughout the tallgrass prairie biome. Flowering begins in July and may continue until frost.

Refuge Germplasm big bluestem's recommended area of use is the Ozark Highland region of Southern Missouri, Northern Arkansas, Eastern Oklahoma, and Southern Illinois and could extend into adjacent regions with further testing.

Availability of Plant Materials: G1 material is being produced in limited supply by the Elsberry Plant Materials Center. For information contact USDA, NRCS, Plant Materials Center, 2803 N. Hwy 79, Elsberry, Missouri 63343 (573 898-2012).

References:

Flora of Missouri; p. 932; Steyermark, J. A.; Iowa State University Press, Ames, IA 1968.

Gray's Manual of Botany, p. 232; Fernald, M. L.; Harvard University, Boston, Mass., 1950.

Manual of the Grasses of the United States; pp. 749, 751, and 812; United States Department of Agriculture, Washington, DC, 1951.

Prepared by: Ron Cordsiemon, USDA NRCS Plant Materials Center, 2803 North Hwy 79, Elsberry, Missouri 63343.

Signatures for release of:

Refuge Germplasm big bluestem(*Andropogon gerardii L.*)

Roger A. Hansen
State Conservationist
United States Department of Agriculture
Natural Resources Conservation Service
Columbia, Missouri

Date

William J. Gradle
State Conservationist
United States Department of Agriculture
Natural Resources Conservation Service
Champaign, IL

Date

Richard W. Van Klavern
State Conservationist
United States Department of Agriculture
Natural Resources Conservation Service
Des Moines, Iowa

Date

Robert T. Escherman
National Program Leader – Plant Materials
Ecological Sciences Division
United States Department of Agriculture
Natural Resources Conservation Service
Washington, D.C.

Date