

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

**NOTICE OF RELEASE OF OZ-70 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 big bluestem (*Andropogon gerardii* L.) for the Ozark regions of Southern Missouri, Northern Arkansas, Eastern Oklahoma, and Southern Illinois.

As a selected release, this plant will be referred to as OZ-70 Germplasm big bluestem. It has been assigned the NRCS accession number 9078831. OZ-70 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 collected from numerous native sites throughout this specific region that has been specifically selected for forage production and exhibits resistance to rust. Seed of this specific ecotype is needed for quality summer forage for livestock production. The potential for immediate use is high.

**Collection Site Information:** Collections were taken from native prairie remnants from Southern Missouri, Northern Arkansas, Eastern Oklahoma, and Southern Illinois. Seventy of three hundred and seventy collections were selected from this region. See attachment #2 for Location, Major Land Resource Area (MLRA) and collector of each collection selected.

**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 subirrigated 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 abundant, leafy forage is palatable to all classes of livestock.

**Method of Selection:** Three hundred and seventy collections were vegetatively collected from one hundred and ninety counties throughout the Ozark region described above. 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 70 of 4,680 plants were selected based on amount of forage, late maturity, and

rust resistance. Selected plants were vegetatively removed and isolated in a crossing block. Seed produced from the crossing block was separated by weight, propagated by seed and planted into a second evaluation nursery. Plants were selected for forage quality and quantity, seed production, rust resistance, and late maturity. Unwanted plants were removed and seed produced from this block was used to establish an increase (G1) field and given the accession number 9078831. This accession was then compared with 'Rountree' big bluestem for forage quality emergence, and maturity date at the Elsberry PMC and rust resistance in field plantings within its intended area of use. (See attachment #1.)

**Ecological Considerations and Evaluation:** OZ-70 Germplasm big bluestem is a selection of naturally occurring germplasm and has undergone selection for forage quantity and quality, late maturity, and rust resistance. OZ-70 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 OZ-70 Germplasm Big bluestem include forage production, and erosion control, vegetative buffers and filters,

Big bluestem is palatable and makes good forage and hay. Since it is a warm season species, it will furnish late spring and summer pasture. It can be used in pure stands or in mixtures with other warm season grasses.

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

OZ-70 Germplasm big bluestem's recommended area of use is the Ozark Highland region of Southern Missouri, Northern Arkansas, Eastern Oklahoma, and Southern Illinois.

**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:**

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**Signatures for release of:**

**OZ-70 Germplasm big bluestem (*Andropogon gerardii* L.)**

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The OZ-70 selection has very good forage production and vigor that appears to be comparable or better than ‘Rountree’. OZ-70 is approximately two weeks later in booting than ‘Rountree and forage quality is better when tested at Elsberry. (see below) ‘Rountree’ exhibits considerable more rust when compared to OZ-70 in Southern Missouri. OZ-70 also has very good seed production with a 2003 yield of 280 bulk pounds of clean seed per acre.

Forage clipping of OZ-70 Germplasm were compared with ‘Rountree’. These samples were replicated and taken at different stages of growth and forage quality of the OZ-70 selection compared favorably to ‘Rountree’ as indicated by data below.

| Clipping date | Percent Protien |             | Percent ADF |             | Percent NDF |             |
|---------------|-----------------|-------------|-------------|-------------|-------------|-------------|
|               | <u>OZ</u>       | <u>‘RT’</u> | <u>OZ</u>   | <u>‘RT’</u> | <u>OZ</u>   | <u>‘RT’</u> |
| 6/19/02       | 14.3            | 8.0         | 30.9        | 35.7        | 55.8        | 60.8        |
| 7/8/02        | 8.2             | 5.8         | 34.1        | 33.0        | 59.3        | 60.5        |
| 8/30/02*      | 11.4            | 11.9        | 34.3        | 34.7        | 54.6        | 56.6        |

\* Regrowth material from 7/8/02 clipping.

OZ = OZ-70 Germplasm big bluestem, ‘RT’ = ‘Rountree’ big bluestem, ADF = acid detergent fiber, NDF = neutral detergent fiber.

OZ-70 Germplasm big bluestem was compared to ‘Rountree’ big bluestem for establishment and ‘Rountree’ was quicker to establish indicating better seedling vigor when new (previous year’s harvest) seed was planted. A seeding trial was conducted in 2003 and compared seed harvested in 2002, 2001, and a mixture of seed harvested in 1997 through 2000.

The results below indicate some seed dormancy in new crop seed but all plots developed very good to excellent stands and had seedhead production the first year.

|                                     | <u>Stems per row foot</u> | <u>Percent cover</u> |
|-------------------------------------|---------------------------|----------------------|
| Winter dormant planting, 2002 seed  | 16                        | 92                   |
| Winter dormant planting, 2001 seed  | 14                        | 78                   |
| Winter dormant planting, 97-00 seed | 8                         | 65                   |
| Spring planting 2002 seed           | 10                        | 60                   |
| Spring planting 2001 seed           | 14                        | 87                   |
| Spring planting 97-00 seed          | 10                        | 75                   |