

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

**NOTICE OF RELEASE OF OZARK LITTLE BLUESTEM
SELECTED CLASS OF NATURAL GERMPLASM**

The Natural Resources Conservation Service (NRCS), U.S. Department of Agriculture, announces the release of a selected class of little bluestem (*Schizachyrium scoparium*, Michx.) for southern counties in Missouri and Illinois.

As a selected class release, this plant will be referred to as Ozark Germplasm little bluestem to document its original area of collections. Ozark Germplasm little bluestem is released as a selected class release of certified seed (genetically manipulated). It has been assigned the NRCS accession number 9083271.

This alternative release procedure is justified because there are no existing commercial sources of little bluestem collected from numerous native sites throughout this specific region. Propagation material of specific ecotypes is needed for conservation programs, wildlife cover and forage for livestock, as well as roadside plantings and prairie restoration and enhancement. The potential for immediate use is high.

Collection Site Information: Collections were taken from native prairie remnants within the counties in Missouri south of the Missouri River and southern Illinois in the Ozark region. Vegetative materials were collected from 51 native sites throughout the two states. A minimum of three collections per Major Land Resource Area for each state was requested. Three Major Land Resource Areas (MLRA's) were represented. Ozark Highland, (116A) had collections from 6 counties of Perry, Cape Girardeau, Ripley, Taney, Miller, and 2 from Maries. Cherokee Prairies, (112) had collections from Barton and 2 collections from Pettis. Southern Illinois Claypan Area (113) had 1 collection from Wayne County.

Ecotype Description: Ozark Germplasm fits within the description of little bluestem. Little bluestem is a medium tall, warm season, bunch type grass with coarse stems at basal leaves (Hughes, Heath and Metcalf, 1951). As a perennial it begins growth in late spring and continues through the hot summer period until the first killing frost. It is easily mistaken for common broomsedge, *Andropogon virginicus*. Plants are slender to robust, compressed, 50 to 150 cm. tall, erect, the upper half freely branching; sheaths and blades commonly glabrous or nearly so, frequently sparsely pilose at their junction, rarely pubescent to villous throughout, the blades 3 to 6 mm. wide, flat; raceme 3 to 6 mm. long, mostly curved, the filiform peduncles mostly wholly or partly included in the sheaths, commonly spreading, the rachis slender, flexuous, pilose, sometimes copiously so; sessile spikelet mostly 6 to 8 mm. long, scabrous, the awn 8 to 15 mm. long; pedicellate spikelet usually reduced, short-awned, spreading, the pedicel pilose (Steyermark, 1968). It develops full stands where moisture is sufficient, but gets clumpy on drier sites. It has value as a persistent low maintenance cover plant and as summer forage.

Collections of little bluestem from east to west across Missouri improves the adaptation of the release to the entire zone.

Method of Selection: The eleven collections that comprise Ozark Germplasm little bluestem (Accession 9083271) were selected from a collection of 46 accessions of little bluestem originating in Missouri and Illinois (Table 1). These 46 accessions included 12 plants each for a total 612 plants in the evaluation. Eighty-seven of the 612 were selected for forage quality analysis and 17 plants were selected that comprise accession 9079130 (Table 2). Plants were selected for forage quality and apparent quantity, and regrowth potential following defoliation, late maturity, vigor, and quick seedling emergence. Initial evaluation selection data was taken in 1999-2000 (cycle 1). The eleven selections were placed in a poly cross block and seed harvested was used to start cycle 2. Selections from cycle 1 were based on quick emerging progeny that were placed into a new evaluation nursery. Selections from this evaluation nursery (cycle 2) comprise the breeders (G0) block of accession 9083271.

Ecological Considerations and Evaluation: Ozark Germplasm little bluestem is a collection of naturally occurring germplasm. Ozark Germplasm little bluestem did not meet the assessment of a plant that could become invasive based on guidelines adopted by the NRCS Plant Materials Program. Ozark Germplasm little bluestem was “okay to release” when evaluated through the “Worksheet for Conducting an Environmental Evaluation of Plant Materials Releases”.

Anticipated Conservation Use: Ozark Germplasm can be used in a range seeding, a pasture seeding, prairie restoration, prairie landscaping, wildlife cover and roadside restoration.

Field Testing: In 2008 a field planting was done in Osage County in MLRA 116A, Ozark Highland area, to test the performance in comparison between 9083271 and Aldous little bluestem. The first year performance on seedling vigor was good for 9083271 with some seedlings obtaining 1 foot in height, averaging 6 inches in height, compared to Aldous with a fair vigor and seedlings only averaging 4 inches in height. In 2009, the field planting was evaluated for stand density and height. Accession 9083271 densities were 80% and a height of 5 feet compared to Aldous density of 40% and a height of 4 feet.



In 2009, a field planting was conducted in MLRA 115, Central Mississippi Wooded Slopes, in Lincoln County. The planting was a 1 acre field border practice. This planting comparison was between 9083271 little bluestem on 0.5 acre to 0.5 acre of Aldous little bluestem. The field border was planted into existing crop residue and annual vegetation, which had glyphosate applied at 2qts/acre on April 22, 2009. The two little bluestems were planted, using a no-till drill, on 0.5 acres each on June 2, 2009, followed by an application of imazapic at 8 oz/acre after planting. By mid July, 9083271 had obtained 6 inches in height, with rows emerging within good

weed control in the field border. Aldous was 3 inches in height with rows, however emergence was spotty; again weed control was good in the field border. In November 2009 after the growing season, stand density counts results for 9083271 average 62% stand compared to Aldous with 39% stand.

Potential Area of Adaptation: Ozark Germplasm was collected from a wide variety of soils, so there is a potential for a broad range of adaptation. It grows well on deep to shallow, sandy to fine-textured and rocky soils. It tolerates low rainfall and is often found on droughty sites. It is not tolerant to heavy shade.

Little bluestem occurs in prairies, glades, rocky open woods, abandoned fields, sandy open ground, waste places, and along railroads (Hitchcock, 1951). Ozark Germplasm originated throughout the southern counties of the Missouri Ozarks within portions of MLRA's 112, 114, 116a and 116b. It is found in USDA plant hardiness zones 5 and 6.

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. 244 (Seventh Printing, 1996), Steyermark, J. A; Iowa State University Press, Ames, IA 1968.

Manual of Grasses of the United States; pp. 753-755, Hitchcock, A.S., United States Department of Agriculture, Washington, DC, 1951.

Forages; p. 514, Hughes, H.D.; Heath, M.E.; Metcalfe, D.S., The Iowa State College Press, Ames, Iowa, 1951.

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Signatures for release of:

Ozark Germplasm little bluestem (*Schizachyrium scoparium*, Michx.)

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Table 1. Initial collection of little bluestem accessions in Missouri and Illinois. Accessions in *italic* comprise Ozark Germplasm USDA-NRCS Elsberry, MO.

ACCESSION	REFERENCE		MLRA	COUNTY	STATE
	NUMBER	COLLECTOR			
<i>9078895</i>	<i>MO-3</i>	<i>Joe Tousignant</i>	<i>N116B</i>	<i>Cape Girardeau</i>	<i>Missouri</i>
<i>9078899</i>	<i>MO-7</i>	<i>Tommy Robins/ Jim Hofer</i>	<i>116</i>	<i>Ripley</i>	<i>Missouri</i>
9078900	MO-8	Grant P. Butler	N116B	Jefferson	Missouri
9078901	MO-9			Iron	Missouri
9078903	MO-11	Arch J. Mueller	M115	Ste. Genevieve	Missouri
9078904	MO-12			St. Francois	Missouri
9078905	MO-13	J. Mark Mitchell		Butler	Missouri
9078906	MO-14	Randy C. Miller	N116A	Shannon	Missouri
9078907	MO-15	Tom Johnson	N116B	Bollinger	Missouri
9078908	MO-16	Tom Johnson	N116A	Bollinger	Missouri
9078909	MO-17	Randy C. Miller	N116B	Reynolds	Missouri
9078911	MO-19	Tom Johnson	N116A	Wayne	Missouri
9078912	MO-20	Mark E. Nussbaum	N116B	Cape Girardeau	Missouri
<i>9078915</i>	<i>MO-23</i>	<i>Claude F. Peifer</i>	<i>116B</i>	<i>Perry</i>	<i>Missouri</i>
9078916	MO-24	Grant P. Butler/ Bryan L. Westfall	N116A	Washington	Missouri
9078925	MO-33	Gary J. Barker	M109	Gentry	Missouri
9078926	MO-34			Vernon	Missouri
9078928	MO-36	Todd E. Mason	M109	Worth	Missouri
<i>9078942</i>	<i>MO-50</i>	<i>Ian S. Kurtz</i>	<i>116A</i>	<i>Taney</i>	<i>Missouri</i>
9078943	MO-52	Dennis Shirk/ Ed Gillmore	115	Gasconade	Missouri
9078944	MO-53	Dennis Shirk/ Ed Gillmore	116	Osage	Missouri
9078945	MO-54	Raleigh Redman	112	Henry	Missouri
9078946	MO-55	Dennis Shirk/ Ed Gillmore	116	Maries	Missouri
9078947	MO-56	Jerry Cloyed	M112	Barton	Missouri
9078948	MO-57	Ian S. Kurtz	116A	Taney	Missouri
9078949	MO-58	Ben A. Reed	M112	Barton	Missouri
<i>9078950</i>	<i>MO-59</i>	<i>Jerry Cloyed</i>	<i>M112</i>	<i>Barton</i>	<i>Missouri</i>
<i>9078952</i>	<i>MO-60</i>	<i>M. Denise Brown</i>	<i>N116A</i>	<i>Miller</i>	<i>Missouri</i>
9078953	MO-61	M. Denise Brown	N116B	Miller	Missouri
9078954	MO-62	Howard L. Coambes	N116B	Cedar	Missouri
9078955	MO-63	Howard L. Coambes	N116B	Cedar	Missouri
9078958	MO-66	Rod Doolen		Wayne	Missouri
9078959	MO-67	Rod Doolen		Wayne	Missouri
9078963	MO-69	Maurice Davis/ Steve Clubine		Pettis	Missouri
	MO-71	Maurice Davis/ Steve Clubine		St. Clair	Missouri
	MO-72	Maurice Davis/ Steve Clubine		Benton	Missouri

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ACCESSION	REFERENCE NUMBER	COLLECTOR	MLRA	COUNTY	STATE
<i>9078964</i>	<i>MO-73</i>	<i>Maurice Davis/</i>		<i>Pettis</i>	<i>Missouri</i>
<i>9078965</i>	<i>MO-74</i>	<i>Maurice Davis/</i>		<i>Pettis</i>	<i>Missouri</i>
		Steve Clubine			
9078966	MO-77	Maurice Davis/		Maries	Missouri
		Steve Clubine			
9078967	MO-78	Dennis Shirk		Maries	Missouri
<i>9078968</i>	<i>MO-79</i>	<i>Steve Clubine</i>		<i>Maries</i>	<i>Missouri</i>
<i>9078969</i>	<i>MO-80</i>	<i>Maurice Davis</i>		<i>Maries</i>	<i>Missouri</i>
9078970	MO-81			Lawrence	Missouri
9078889	IL-17	Michael Stanfill/	115	Monroe	Illinois
9078892	IL-20	Michael Stanfill/	113	Washington	Illinois
		Marty Kemper			
<i>9078893</i>	<i>IL-21</i>	<i>Remington T. Irwin</i>	<i>114</i>	<i>Wayne</i>	<i>Illinois</i>

Table 2. Plant performance ratings and forage quality estimates of accessions comprising Ozark Germplasm little bluestem 1999-2000, USDA-NRCS Elsberry, MO.

Plant Number ¹	1999						2000		
	Aug Forage Rating ²	Aug Vigor Rating ³	First Seedhead ⁴	Quality Rating			Oct Regrowth Rating ⁸	Jun Forage Rating ⁹	Jun Vigor Rating ¹⁰
				% N ⁵	% CP ⁶	% ADF ⁷			
MO-23	3	5	6-Sep	2.1	13	33	4	1	2
IL-21	3	3	12-Sep	2	13	34	3	4	3
IL-21	4	5	8-Sep	2	13	33	2	3	3
MO-23	2	4	27-Aug	2	13	34	1	1	3
MO-3	4	3	26-Aug	2	13	35	3	3	2
MO-79	3	3	14-Sep	1.9	12	37	2	1	3
MO-3	7	4	13-Sep	1.9	12	34	3	3	2
MO-7	1	2	10-Sep	1.9	12	36	3	2	2
MO-60	3	3	8-Aug	1.9	12	38	3	2	2
IL-21	4	7	7-Sep	1.8	11	36	3	4	3
MO-7	1	2	25-Aug	1.8	11	36	4	1	1
MO-73	2	3	25-Jul	1.8	11	36	2	1	2
MO-59	5	4	27-Jul	1.7	10	35	2	2	2
MO-50	2	4	10-Sep	1.6	10	37	1	1	2
MO-80	1	3	28-Jul	1.6	10	35	2	1	2
MO-50	3	5	15-Sep	1.5	9	37	2	1	3
MO-74	1	4	12-Aug	1.5	9	36	2	1	3

1)Plant Number describes the collection the plant originated from; 2)Forage Rating and 3)Vigor Rating are a subjective rating given to each individual plant based on their appearance in Aug 1999; 4)First Seedhead is the date the recorded when the initial seedheads were noticed; Quality Rating – 5)% Nitrogen, 6)% Crude Protein, and 7)% ADF (Acid Detergent Fiber) were measured from grab samples taken from each individual plant; 8)Regrowth Rating is a subjective rating taken in October 2000 based on the amount of regrowth present after an early forage harvest; 9)Forage Rating and 10)Vigor Rating are a subjective rating given to each individual plant based on their appearance in June 2000. Ratings are based on a scale of 1-9. 1 = Excellent and 9 = Poor