

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

And

UNIVERSITY OF NORTHERN IOWA
CEDAR FALLS, IOWA

IOWA INTEGRATED ROADSIDE VEGETATION MANAGEMENT PROGRAM
CEDAR FALLS, IOWA

IOWA DEPARTMENT OF TRANSPORTATION
AMES, IOWA

IOWA CROP IMPROVEMENT ASSOCIATION
AMES, IOWA

**NOTICE OF RELEASE OF NORTHERN IOWA GERmplasm
BIG BLUESTEM
SOURCE IDENTIFIED CLASS OF NATURAL GERmplasm**

The Natural Resources Conservation Service (NRCS), U.S. Department of Agriculture and the University of Northern Iowa (UNI), Iowa Integrated Roadside Vegetation Management Program (IRVM), the Iowa Department of Transportation (IDOT), and the Iowa Crop Improvement Association (ICIA) announce the release of a source identified ecotype of big bluestem (*Andropogon gerardii*) for Northern Iowa counties.

As a source identified release, this plant will be referred to as Northern Iowa Germplasm big bluestem to document its original collections. Northern Iowa Germplasm big bluestem is released as a source identified type of certified seed (natural track). It has been assigned the NRCS accession number **9068614**.

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. Propagation material of specific ecotypes is needed for 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 three tiers of counties located in Northern Iowa.

Ecotype 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; indiangrass, (*Sorghastrum nutans* L. Nash.), switchgrass, (*Panicum virgatum* L.), and little bluestem (*Schizachyrium scoparium* (Michx.) Nash.). 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.

Environmental Impact Assessment: Northern Iowa Germplasm big bluestem is a collection of naturally occurring germplasm and has been unaltered. Northern Iowa Germplasm big bluestem 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 Northern Iowa Germplasm big bluestem include roadside plantings, prairie creations and restorations, landscaping, and for increasing plant diversity in prairie communities.

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

Availability of Plant Materials: G1 material is being produced in limited supply by the Elsberry Plant Materials Center and the University of Northern Iowa. For information contact USDA, NRCS, Plant Materials Center, 2803 N. Hwy 79, Elsberry, Missouri 63343 (573 898-2012) or The University of Northern Iowa, Roadside Office, 113 CEEE, Cedar Falls, IA 50614-0293.

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.

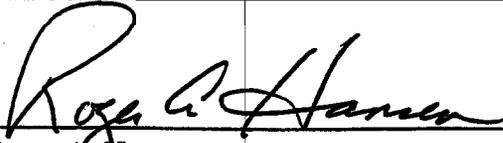
Manual of the Grasses of the United States; pp. 749, 751, and 812; United States Department of Agriculture, Washington, DC, 1951.

Prepared by:

S.B. Bruckerhoff, USDA NRCS Plant Materials Center, 2803 North Hwy 79, Elsberry, Missouri, 63343.

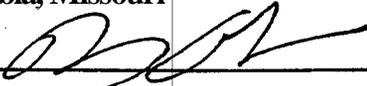
Signatures for release of:

Northern Iowa Germplasm Big Bluestem (*Andropogon gerardii*)



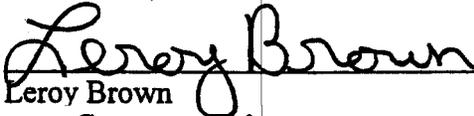
Roger A. Hansen
State Conservationist
United States Department of Agriculture
Natural Resources Conservation Service
Columbia, Missouri

9/5/00
Date



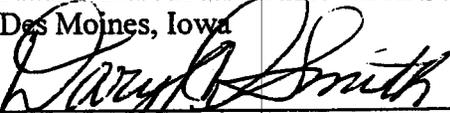
Robert Koob
President
University of Northern Iowa
Cedar Falls, Iowa

9-14-00
Date



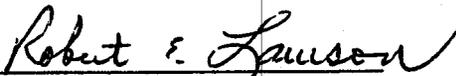
Leroy Brown
State Conservationist
United States Department of Agriculture
Natural Resources Conservation Service
Des Moines, Iowa

8/25/00
Date



Daryl D. Smith
University of Northern Iowa
Cedar Falls, Iowa

9-7-00
Date



Robert E. Lawson
Secretary/Treasurer
Iowa Crop Improvement Association
Ames, Iowa

SEP 7 2000
Date



Richard S. White for Diane Gelburd
Director, Ecological Sciences Division
United States Department of Agriculture
Natural Resources Conservation Service
Washington, D.C.

10/11/00
Date

Environmental Evaluation of Plant Materials Releases

Name of person scoring: Jimmy Henry Date of scoring: 9-14-00

Scientific Name: Andropogon gerardii

Common Name: big bluestem

Release Name: Northern Iowa Germplasm

Is the plant native to the US? Yes No

Is the plant native to the area of intended use? Yes No

Authority used to determine native status: Steiermark-Flora of Missouri

What is the intended area of use for this plant? Northern one-third of Iowa

What is the intended use for this plant? Prairie Restoration and Roadside Planting

Areas in which the release is known to be invasive or has a high probability of being invasive: none

Final Determination of Release Based on the Environmental Evaluation:

- OK to Release**
- OK to Release** but qualify use and intended area of use
- Do Not Release - NPL** determines if release is made

Signature of NPL indicating that it is OK to make the release:

Richard J. White 9/26/00
National Program Leader, PM **date**

- Do Not Release - document and destroy materials**

Section A. Scoring of Criteria for Impact, Management, Need and Biological

Characteristics

Circle the appropriate number for each of the following criteria. Add up the scores for each part and record at the end of each part. Comments which clarify answers may be included in the right margin.

Part 1: Impact on Habitats, Ecosystems, and Land Use

This section assesses the ability of the species or release to adversely affect habitats, ecosystems, and agricultural areas.

- 1) **Ability to invade natural systems where the species does not naturally occur**
 - a) Species not known to spread into natural areas on its own 0
 - b) Establishes only in areas where major disturbance has occurred in the last 20 years (e.g., natural disasters, highway corridors) 3
 - c) Often establishes in mid- to late-successional natural areas where minor disturbances occur (e.g., tree falls, streambank erosion), but no major disturbance in last 20-75 years 6
 - d) Often establishes in intact or otherwise healthy natural areas with no major disturbance for at least 75 years 10

- 2) **Negative impacts on ecosystem processes (e.g., altering fire occurrence, rapid growth may alter hydrology)**
 - a) No perceivable negative impacts 0
 - b) Minor negative impacts to ecosystem processes 2
 - c) Known significant negative impacts to ecosystem processes 6
 - d) Major, potentially irreversible, alteration or disruption of ecosystem processes 10

- 3) **Impacts on the composition of plant communities where the species does not naturally occur**
 - a) Nonnegative impact; causes no perceivable changes in native populations 0
 - b) Noticeable negative influences on community composition 3
 - c) Causes major negative alterations in community composition 10

- 4) **Allelopathy**
 - a) No known allelopathic effects on other plants 0
 - b) Demonstrates allelopathic effects on seed germination of other plants 3
 - c) Demonstrates allelopathic effects to mature stages of other plants 5

- 5) **Impact on habitat for wildlife or domestic animals**
- a) No negative impact on habitat, or this criteria not applicable based on intended use for the plant 0
 - b) Minor negative impact on habitat (e.g., decreased palatability; lower wildlife value; decreased value for undesirable animal species) 2
 - c) Significant negative impact on habitat (e.g., foliage toxic to animals; significantly lower value for wildlife: excludes desirable animal species from an area) 5
- 6) **Impact on other land use**
- a) No negative impacts on other land uses 0
 - b) Minor impacts (plant could invade adjacent areas and decrease its value) 3
 - c) Significant impacts (plant may alter the system or adjacent lands significantly enough to prevent certain uses) 5
- Total Possible Points 45
Total Points for Part 1 5

Part 2. Ease of Management

This part evaluates the degree of management which might be needed to control the species or release if it becomes a problem, or eradicate the species or release if it is not longer desirable.

- 1) **Level of effort required for control**
- a) Effective control can be achieved with mechanical treatment 0
 - b) Can be controlled with one chemical treatment 2
 - c) One or two chemical or mechanical treatments required or biological control is available or practical 5
 - d) Repeated chemical or mechanical control measures required 10
- 2) **Effectiveness of community management to potentially control the plant release**
- a) No management is needed, the plant release is short-lived and will significantly decrease or disappear within 5 years under normal conditions without human intervention 0
 - b) Routine management of a community or restoration/preservation practices (e.g., prescribed burning, flooding, controlled disturbance, pasture renovation) effectively controls the release 2
 - c) Cultural techniques beyond routine management can be used to control the release 4
 - d) The previous options are not effective for managing or controlling the release 10

- 3) **Side effects of chemical or mechanical control measures**
- a) Control measures used on release will have little or no effect on other plants 0
 - b) Control measures used on release will cause moderate effects on other plants (3)
 - c) Control measures used on release will cause major effects on other plants 5

**If spreads by seed, or both seed and vegetative means, go to #4

**If spreads by vegetative means only, go to #5

- 4) **Seedbanks**
- a) Seeds viable in the soil for 1 year or less 0
 - b) Seeds remain viable in the soil for 2-3 years 1
 - c) Seeds remain viable in the soil for 4-5 years 3
 - d) Seeds remain viable in the soil for more than 5 years (5)

- 5) **Vegetative regeneration under natural conditions**
- a) Regeneration from resprouting of cut stumps 1
 - b) Regeneration from pieces of the root left in the soil 3
 - c) Regeneration from root or stem parts left in the soil 5

- 6) **Resprouts after cutting above-ground parts**
- a) Does not resprout or resprouts but the release is sterile and does not produce seed 0
 - b) Resprouts and produces seed in future years (3)
 - c) Resprouts and produces seed in same year 5

Total Possible Points 40
Total Points for Part 2 17

Part 3. Conservation Need and Plant Use

This part evaluates the importance of the species or release to meet a conservation need.

- 1) **Potential Use(s) of the Plant Release**
- a) Used for low-priority issues or single use 1
 - b) Has several uses within conservation 2
 - c) Has many uses within conservation as well as outside of conservation (4)
 - d) Has high-priority use within conservation 5

- 2) **Availability of Other Plants to Solve the Same Need**
- a) Many other plants available 1
 - b) Few other plants available (3)
 - c) No other plants available

3) Consequences of Not Releasing This Plant

- a) No impact to Conservation practices 0
- b) Minor impact on one or more conservation practice 1
- c) Serious impact on one conservation practice **3**
- d) Serious impact on more than one conservation practices 5

Total Possible Points 15
Total Points for Part 3

~~10~~

Part 4. Biological Characteristics

This part evaluate the biological properties which indicate the natural ability of the species or release to propagate and maintain itself under natural conditions. Note: these criteria relate to the species under natural conditions, as opposed to the species under managed conditions used to increase the species, i.e. seed increase programs, or specific propagation methods which do not normally occur in nature.

1) Typical mode of reproduction under natural conditions

- a) Plant does not increase by seed or vegetative means (skip to #11) 0
- b) Reproduces almost entirely by vegetative means 1
- c) Reproduces only by seeds **3**
- d) Reproduces vegetatively and by seed 5

2) Reproduction (by seed or vegetative) in geographic area of intended use

- a) Reproduces only outside the geographic area of intended use 1
- b) Reproduces within the geographic area of intended use **3**
- c) Reproduces in all areas of the United States where plant can be grown 5

3) Time required to reach reproductive maturity by seed or vegetative methods

- a) Requires more than 10 years 1
- b) Requires 5-10 years 2
- c) Requires 2-5 years **3**
- d) Requires 1 year 5

** If reproduces only by seed, skip to #5

4) Vegetative reproduction (by rhizomes, suckering, or self-layering)

- a) Vegetative reproduction rate maintains population (plant spreads but older parts die out) 1
- b) Vegetative reproduction rate results in moderate increase in population size (plant spreads <3' per year) 3
- c) Vegetative reproduction rate results in rapid increase in population size (plant spreads >3' per year) 5

† If reproduces only vegetatively, skip to #1

- 5) **Ability to complete sexual reproductive cycle in area of intended use**
- a) Not observed to complete sexual reproductive cycle in the geographic area of intended use, but completes sexual reproduction in distant areas of the United States 1
 - b) Not observed to complete sexual reproductive cycle in the geographic area of intended use, but completes sexual reproduction in adjoining geographic areas 3
 - c) Observed to complete the sexual reproductive cycle in the geographic area of intended use (5)
- 6) **Frequency of sexual reproduction for mature plant**
- a) Almost never reproduces sexually 0
 - b) Once every five or more years 1
 - c) Every other year 3
 - d) One or more times a year (5)
- 7) **Number of viable seeds per mature plant each reproductive cycle**
- a) None (does not produce viable seed) 0
 - b) Few (1-10) 1
 - c) Moderate (11-1,000) (3)
 - d) Many-seeded (>1,000) 5
- 8) **Dispersal ability**
- a) Limited dispersal (<20') and few plants produced (<100) (1)
 - b) Limited dispersal (<20') and many plants produced (>100) 3
 - c) Greater dispersal (>20') and few plants produced (<100) 7
 - d) Greater dispersal (>20') and many plants produced (>100) 10
- 9) **Germination requirements**
- a) Requires open soil and disturbance to germinate 1
 - b) Can germinate in vegetated areas but in a narrow range or in special conditions (5)
 - c) Can germinate in existing vegetation in a wide range of conditions 10
- 10) **Hybridization**
- a) Has not been observed to hybridize outside the species (0)
 - b) Hybridizes with other species in the same genera 3
 - c) Hybridizes with other genera 5

11) Competitive ability (of established plants)

- a) Poor competitor for limiting factors
- b) Moderately competitive for limiting factors
- c) Highly competitive for limiting factors

0
 5
 10

Total Possible Points 70
Total Points for Part 4 33

References

Many of the criteria used in this rating system were adapted from the following sources

Hiebert, Ron D. and James Stubbendieck 1993. Handbook for Ranking Exotic Plants for Management and Control, US Department of the Interior, National Park Service, Denver, CO.

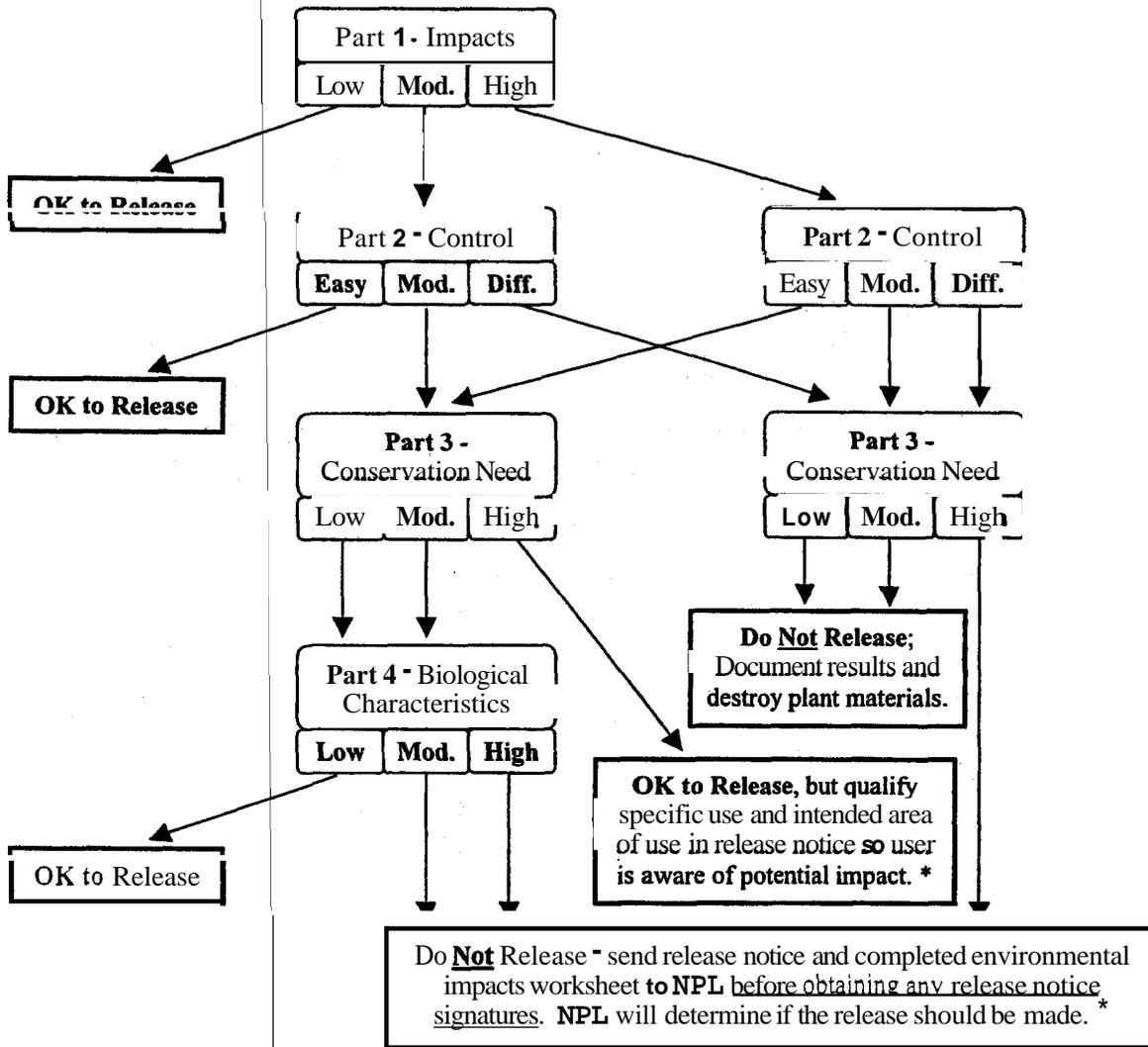
Randall, John M., Nancy Benton, Larry E. Morse, and Gwendolyn A. Thornhurst. 1999. Criteria for Ranking Alien Wildland Weeds. The Nature Conservancy, Arlington, VA

Section B. Scoring and Interpretation

Based on the scores from above, circle the points range you scored to determine the appropriate interpretation. The interpretation will be used to determine the course of action for the release.

Part	Points Scored	Interpretation
Part 1. Impacts on Habitats, Ecosystems, and Land Use	0-15	<u>Low</u> chance plant is going to affect the environment
	16-25	<u>Moderate</u> chance plant is going to affect the environment
	26-45	<u>High</u> chance plant is going to affect the environment
Part 2. Ease of Management	0-20	Easy to control
	21-30	<u>Moderate</u> to control
	31-40	<u>Difficult</u> to control
Part 3. Conservation Need and Plant Use	0-5	<u>Low</u> need
	6-9	<u>Moderate</u> need
	10-15	<u>High</u> need
Part 4. Biological Characteristics	0-25	<u>Low</u> chance plant is going to propagate and increase itself
	26-40	<u>Moderate</u> chance plant is going to propagate and increase itself
	41-70	<u>High</u> chance plant is going to propagate and increase itself

Based on the interpretation above, follow the decision tree below. Start with **your** interpretation rating for **Part 1** (Low, Moderate, or High) and follow the appropriate arrow to the **next** level until you reach a decision box. Once you reach a decision box you **may** stop and record the decision on the first page of this worksheet.



* Indicates that an Environmental Assessment or Environmental Impact Statement may need to be prepared prior to release (see NPM 540.73(a)(3)).

Worksheet Revised 1/13/00