JIMMY CARTER PLANT MATERIALS CENTER
USDA-NRCS
AMERICUS, GEORGIA

NOTICE OF RELEASE OF AMERICUS INDIANGRASS (Sorghastrum nutans (L.) (Nash)

June, 2002

UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
ATHENS, GEORGIA

NOTICE OF RELEASE OF 'AMERICUS' INDIANGRASS

The Natural Resources Conservation Service, U.S. Department of Agriculture announce the naming and release of 'Americus' Indiangrass (*Sorghastrum nutans* (L.) Nash.). 'Americus' Indiangrass has been assigned the PI number 514673.

Collection Site Information: 'Americus' originated as a seed collection in 1979. Seed was collected from native plant stands in four counties (Barbour Co. Ala., Houston Co. Ala., Sumter Co. Ga., and Terrell Co. Ga.) Seed site locations are as follows:
9021211- Barbour Co. Ala. North side of Ala. Hwy. 131 .6 miles west of milepost 27. Elev.500 ft. MLRA-133. 9021207- Houston Co. Ala. Roadside of US 231 , 1.4 miles south of milepost 30,MLRA -133 on a 3% slope. 9023089- Sumter Co. Ga. 2.2 miles east of technical school road in Americus. MLRA-133 on a 2% slope. 9021345- Terrell Co. Ga. West bank of RR just south of Ga. Hwy 45. 3% slope, MLRA - 133.

Description:

This selection is a warm season perennial tall grass native to the Southeastern U.S.

Plant Ht 150 – 300 cm Plant Wd 25 – 100 cm
Leaf blade – glabrous and scabrous – margin serrate and slightly involute
Leaf blade Ln 400 – 625 mm Leaf blade Wd 7 – 22 mm
Leaf sheath – pubescent to glabrous
Leaves both basal/cauline
Foliage color – green-blue green-yellow green
Ligule Ln 5 – 10.0 mm Ligule cilia – none
Node – pubescent
Internodes – glabrous
Culm Dia. 3.6 – 7.4 mm
Much branching from base
Inflorescence open panicle (wind -pollinated)
Panicle Ln 230 – 595 mm Panicle Wd 40 – 190 mm
Panicle branches – 10 to 16
1 floret/spikelet
Glumes – lance-elliptic, awnless yellow tawny brown in color
1st glume Ln 4.0 – 6.0 mm and ciliate

2nd glume Ln 4.0 – 6.0 mm
Lemma – yellowish thin hyaline, Lemma Ln 4 – 6 mm
With twisted awn 11-13 mm long. Total lemma length with awn ~ 18-20 mm
Palea – absent
Dates – Boot (8-30 – 9-15) Bloom (9-16 – 10-4) Harvest (10- 17 – 11- 4)
Seed Yield – low 27#/Ac high 166#/Ac
Grain Color – Yellowish brown – reddish brown
Grain Ln 5-8 mm Grain Wd 2 mm
Grain with Awn (Ln) 10mm – 18 mm
Grain Shape – ovate/elliptic

Method of Breeding and Selection: After four years of study at the Jimmy Carter Plant Materials Center, four accessions from an initial evaluation of 93 indiangrass accessions were selected for cultivar use. Criteria for selection included adaptability, growth, vigor, stand, seed production, disease, resistance, and insect resistance. Bulked seed from a crossing block of the four selections (9021211, 9021207,9023089,and 9021345) produced the composite called PI-514673.

Attached is the comparative testing results of PI- 514673 conducted at Americus and Athens, Ga.

Ecological Considerations and Evaluation: ' Americus' was "OK to release" when evaluated through the " Worksheet for conducting an environmental evaluation of NRCS plant releases. This document is attached.

Conservation Use: Dry matter production and survivability of 'Americus' makes it suitable for livestock forage and erosion control use. Because of the showy inflorescence display in late summer it can be utilized in landscape plantings. 'Americus' can also provide food and cover for wildlife.

Area of Adaptation: All quantitative and qualitative data was taken from the Piedmont and Coastal Plain of Georgia. However, it is probably well adapted to most of the Southeastern United States and as far west as Arkansas and East Texas. Local testing will have to be conducted to verify its actual useful range. It is tolerant of most upland sites. It is most productive on moderately well to well drained soils of the Piedmont and Coastal Plain (MLRA 133A,135, 136, and USDA winter hardiness zones 7b,8a,8b). During exceptionally humid and wet summers this cultivar is adversely affected by disease such as rust.

Availability of Plant Materials: Breeder seed will be maintained by the Jimmy Carter Plant Materials Center and the Alabama Crop Improvement Association, Auburn, Alabama.

References:

Little, T.M. and F.J. Hills. 1978. Agricultural Experimentation. John Wiley and Sons. New York.

Radford,A.E., H.E. Ahles and C.R. Bell. 1968. Manual of the Vascular Flora of the Carolinas. The University of North Carolina Press, Chapel Hill, North Carolina.

Prepared by:

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COMPARATIVE TESTING RESULTS OF PI-514673
INDIANGRASS

Conducted by: USDA-NRCS, Jimmy Carter PMC, Americus, Georgia.
Dr. Joe Bouton, University of Georgia, Athens, Georgia.

Introduction:

(a) Comparative testing of indiangrass lines was conducted at Americus, Georgia and Athens, Georgia from 1989-1993. Response variables included forage quality determination and dry matter yield determination.

(b) Also comparative testing of indiangrass lines was conducted at Americus from 1996-1998. Survivability was the response variable.

Materials and Methods:

(a) Tests were conducted in Athens and Americus to determine forage quality (IVDMD) and dry matter production (kg/ha) at two clipping times for 'Lometa', 'Rumsey', PI-514673, and Pensacola bahiagrass (control). The tests in Athens were on both a low fertility and a high fertility site. Evaluations were made from 1989-1993. Each treatment (entry) was replicated six times in a randomized complete block design.

(b) Tests were conducted in Americus (Jimmy Carter PMC) to determine survivability of forage grass after grazing events from 1996-1998. This test was an unreplicated split-plot design with main plots called grazed and ungrazed. Within the main plots were 12 replications each of PI-514673, 'Lometa', and 'Pensacola' bahiagrass (control). Grazed plots were grazed twice in 1996 (June and August), twice in 1997 (July and August), and twice in 1998 (July and August). Each grazing event took the indiangrass from about 18" in height to an 8" stubble. Survivability was measured as a survivability stem ratio (x100)

$$\frac{\text{Final stem count (year)}}{\text{Initial stem count 1995}}$$

RESULTS:

(a) The low soil fertility site at Athens indicated PI-514673 produced significantly more dry matter (kg/ha) at heading than Rumsey during the entire three years of testing (Tables 1-5).

PI-514673 also produced a significantly higher IVDMD value than Rumsey or Lometa averaged over 1989 and 1990 (Table 4).

Data from the high fertility site at Athens in 1990 and 1991 indicates PI-514673 produced more yield (kg/ha) in July and heading than Rumsey (Tables 6-8).

Results from tests at Americus in 1993 (Jimmy Carter PMC) show PI-514673 produces more dry matter at heading than Rumsey (Table 11). Total dry matter production averaged over three years (1991-1993) at Americus indicates PI-514673 produced significantly more dry matter than Rumsey (Table 14).

(b) Over the three-year evaluation period under grazed conditions, there was no difference between PI-514673 and Lometa survivability. However, under ungrazed conditions, the survivability of PI-514673 is higher than Lometa. PI-514673 produces a better survival ratio ungrazed than it does under grazed. While Lometa shows no difference in survival ratio between grazed or ungrazed (Tables 15-20).

DISCUSSION:

Data from Athens and Americus, Georgia indicate PI-514673 produces more dry matter than Rumsey indiangrass.

Grazing data from Americus shows no significant difference between PI-514673 and Lometa survivability under grazed conditions. However, under ungrazed conditions, the survivability of PI-5l4673 is higher than Lometa.

Research information indicates the PI-514673 indiangrass shows several superior characteristics to known standards.

TABLES:

TABLE 1 LOW FERTILITY SITE YIELD & IVDMD DATA TAKEN AT HEADING ATHENS, GEORGIA TEST (1989)

Cultivar	Mean DM Yield (Kg/Ha)	Mean IVDMD Value
PI-514673	1110	479.66
Pensacola Bahia	364.50	502.96
Rumsey	276.60	435.08
Lometa	911.66	475.36
LSD (.05)	297.50	31.10

TABLE 2 LOW FERTILITY SITE YIELD & IVDMD DATA TAKEN AT HEADING ATHENS, GEORGIA TEST (1990)

Cultivar	Mean DM Yield (Kg/Ha)	Mean IVDMD Value
PI-514673	4599.66	522.26
Pensacola Bahia	2025.16	442.15
Rumsey	3351.83	414.73
Lometa	4143.66	440.55
LSD (.05)	1104.50	46.20

TABLE 3 LOW FERTILITY SITE YIELD DATA TAKEN AT HEADING ATHENS, GEORGIA TEST (1991)

Cultivar	Mean DM Yield (Kg/Ha)
PI-514673	5471.50
Pensacola Bahia	2636.83
Rumsey	3585
Lometa	4677.33
LSD (.05)	1032.90

TABLE 4 LOW FERTILITY SITE YIELD & IVDMD DATA TAKEN AT HEADING ATHENS, GEORGIA TEST (1989-1990)

Cultivar	Average Mean DM Yield (Kg/Ha)	Average Mean IVDMD Value
PI- 514673	2854.83	500.96
Pensacola Bahia	1194.83	472.55
Rumsey	1814.25	424.9
Lometa	2527.66	457.95
LSD (.05)	548.1	26.7

TABLE 5 LOW FERTILITY SITE YIELD DATA TAKEN AT HEADING ATHENS, GEORGIA TEST (1989-1991)

Cultivar	Average Mean DM Yield (Kg/Ha)
PI-514673	3727.05
Pensacola Bahia	1675.50
Rumsey	2404.50
Lometa	3244.22
LSD (.05)	1005.90

TABLE 6 HIGH FERTILITY SITE YIELD & IVDMD DATA ATHENS, GEORGIA TEST (1990)

Cultivar	Mean DM Yield (Kg/Ha)	Mean IVDMD Value
	Taken in July	From July Clipping
PI-514673	3217.00	499.78
Pensacola Bahia	2220.66	519.10
Rumsey	1750.66	550.25
Lometa	2574.33	469.93
LSD (.05)	865.10	48.20

Cultivar	Mean DM Yield (Kg/Ha)	Mean IVDMD Value
	Taken at Heading	From Heading Clipping
PI-514673	3905.83	468.81
Pensacola Bahia	2658.33	528.35
Rumsey	2583.83	511.06
Lometa	4748.50	464.30
LSD (.05)	1117.30	39.40

Cultivar	Total Mean DM Yield (Kg/Ha)
	From July and Heading Clipping
PI-514673	7122.83
Pensacola Bahia	4879.00
Rumsey	4334.50
Lometa	7322.83
LSD (.05)	1660.2

TABLE 7 HIGH FERTILITY SITE YIELD DATA ATHENS, GEORGIA TEST (1991)

Cultivar	Mean DM Yield (Kg/Ha) Taken in July	Mean DM Yield (Kg/Ha) Taken at Heading
PI-514673	8929.16	3206.66
Pensacola Bahia	4157.50	2678.33
Rumsey	5218.83	2328.50
Lometa	7374.16	3791.83
LSD (.05)	2097.30	828.90

Cultivar	Total Mean DM Yield (Kg/Ha) from July and Heading Clipping
PI-514673	12,135.83
Pensacola Bahia	6,836.33
Rumsey	7,547.33
Lometa	11,166.00
LSD (.05)	2,652.70

TABLE 8 HIGH FERTILITY SITE YIELD DATA ATHENS, GEORGIA TEST (1990-1991)

Cultivar	Average Mean DM Yield (Kg/Ha) Taken in July	Average Mean DM Yield (Kg/Ha) Taken at Heading
PI-514673	6073.08	3556.25
Pensacola Bahia	3189.08	2668.58
Rumsey	3484.75	2456.16
Lometa	4974.25	4270.16
LSD (.05)	2373.80	666.50

Cultivar	AverageTotal Mean DM Yield(Kg/Ha) from July and Heading Clipping
PI-514673	9,629.33
Pensacola Bahia	5,857.66
Rumsey	5,940.91
Lometa	9.244.41
LSD (.05)	1,499.40

TABLE 9 AMERICUS YIELD DATA TEST (1991)

Cultivar	Mean DM Yield (Kg/Ha) Taken in July	Mean DM Yield (Kg/Ha) Taken at Heading
PI-514673	4233.33	1516.66
Pensacola Bahia	2040.00	1683.33
Rumsey	2936.66	1136.66
Lometa	3476.66	1320.00
LSD (.05)	1583.50	411.9

Cultivar	Total Mean DM Yield (Kg/Ha) from July and Heading Clipping
PI-514673	5750.00
Pensacola Bahia	3723.33
Rumsey	4073.33
Lometa	4796.66
LSD (.05)	N.S.

TABLE 10 AMERICUS YIELD DATA TEST (1992)

Cultivar	Mean DM Yield (Kg/Ha) Taken in July	Mean DM Yield (Kg/Ha) Taken at Heading
PI-514673	926.67	690.00
Pensacola Bahia	406.67	593.33
Rumsey	916.67	425.00
Lometa	1236.67	663.33
LSD (.05)	355	N.S.

Cultivar	Total Mean DM Yield (Kg/Ha) from July and Heading Clipping
PI-514673	1616.67
Pensacola Bahia	1000.00
Rumsey	1341.67
Lometa	1900.00
LSD (.05)	473

TABLE 11 AMERICUS YIELD DATA TEST (1993)

Cultivar	Mean DM Yield (Kg/Ha) Taken in July	Mean DM Yield (Kg/Ha) Taken at Heading
PI-514673	640	560
Pensacola Bahia	297	517
Rumsey	660	387
Lometa	827	760
LSD (.05)	223.67	150.06

Cultivar	Total Mean DM Yield (Kg/Ha) from July and Heading Clipping
PI-514673	1200
Pensacola Bahia	813.33
Rumsey	1046.67
Lometa	1586.66
LSD (.05)	280.10

TABLE 12 AMERICUS YIELD DATA TEST (1993)

Cultivar	Average Mean DM Yield (Kg/Ha) From July & Heading Clipping
PI-514673	600
Pensacola Bahia	407
Rumsey	523.5
Lometa	793.5
LSD (.05)	140

TABLE 13 AMERICUS YIELD DATA TEST (1992 & 1993)

Cultivar	Average Total Mean DM Yield (Kg/Ha) from July & Heading
PI-514673	1408.33
Pensacola Bahia	906.67
Rumsey	1194.17
Lometa	1743.33
LSD (.05)	309.34

TABLE 14 AMERICUS YIELD DATA TEST (1991, 1992 & 1993)

Cultivar	Average Total Mean DM Yield (Kg/Ha) from July & Heading
PI-514673	2855.50
Pensacola Bahia	1845.54
Rumsey	2153.88
Lometa	2761.11
LSD (.05)	635.02

TABLE 15 JIMMY CARTER PMC SURVIVABILITY STEM RATIO (1996)

Cultivar	Grazed Survivability Stem Ratio	Ungrazed Survivability Stem Ratio
PI-514673	37.83	124.80
Lometa	51.58	66.75
Pensacola Bahia	86.83	90.58
LSD (.05)	13.83	31.42

TABLE 16 JIMMY CATER PMC SURVIVABILITY STEM RATIO (1996)

Cultivar	Survivability Stem Ratio
Grazed PI-514673	37.83
Ungrazed PI-514673	124.83
LSD (0.05)	22.78
Grazed Lometa	51.58
Ungrazed Lometa	66.75
LSD (0.05)	22.78

TABLE 17 JIMMY CARTER PMC SURVIVABILITY STEM RATIO (1997)

Cultivar	Grazed Survivability Stem Ratio	Ungrazed Survivability Stem Ratio
PI-514673	25.74	57.31
Lometa	32.89	34.02
Pensacola Bahia	72.91	66.65
LSD (.05)	13.91	17.36

TABLE 18 JIMMY CARTER PMC SURVIVABILITY STEM RATIO (1997)

Cultivar	Survivability Stem Ratio
Grazed PI-514673	25.74
Ungrazed PI-514673	57.31
LSD (0.05)	15.42
Grazed Lometa	32.89
Ungrazed Lometa	34.02
LSD (0.05)	15.42

TABLE 19 JIMMY CARTER PMC SURVIVABILITY STEM RATIO (1998)

Cultivar	Grazed Survivability Stem Ratio	Ungrazed Survivability Stem Ratio
PI-514673	23.04	63.07
Lometa	31.18	37.92
Pensacola Bahia	69.08	57.47
LSD (.05)	15.63	15.15

TABLE 20 JIMMY CARTER PMC SURVIVABILITY STEM RATIO (1998)

Cultivar	Survivability Stem Ratio
Grazed PI-514673	23.04
Ungrazed PI-514673	63.07
LSD (0.05)	15.10
Grazed Lometa	31.18
Ungrazed Lometa	37.92
LSD (0.05)	15.10

Exhibit 540-31 Worksheet for Documenting an Environmental Evaluation of NRCS Plant Releases

Introduction

This worksheet is used to conduct and document an Environmental Evaluation of Plant Materials releases. Criteria relating to the biological characteristics of a plant, the potential impact on ecosystems, the ease of managing the plant, and conservation need are scored. These scores and their interpretation are used with a decision flowchart to determine the appropriate course of action for making a release. As with any such ranking system, it is necessary to use sound judgement and experience when interpreting the final results.

Understanding this worksheet

The primary purpose for this worksheet is to determine if the plant release has the potential to adversely affect the environment or natural surroundings. It is possible for a plant to rate low on Part 1 (Impact on Habitats), and thus be released without further consideration, and still have a high rating on Part 4 (Biological Characteristics) indicating that the plant has the ability to propagate and maintain itself naturally. Good conservation plants usually need to persist to be able to solve the conservation problem or need for which they were intended. This is even more important for plants used in critical areas, i.e. severely eroding sites. In light of this fact, the most important criteria being used in this worksheet to determine release include those in Part 1 (Impact on Habitats) and Part 2 (Ease of Management). Parts 3 (Conservation Need) and 4 (Biological Characteristics) are used when the decision is not so clear and there is the potential for a high impact on habitats and control may be moderate to difficult.

Instructions

Rate the plant or release based on the following criteria by circling your assessment. If the criteria does not apply to the species or release, then do not rate for that criteria. If you do not have enough information on the species or plant release to complete at least Parts 1, 2 and 4 in Section A, then additional data must be accumulated through literature searches, cooperators, or studies to be able to complete these sections. Additional notes which may be used to clarify or interpret the ranking should be included in the margins of this worksheet. For plant releases which may be considered nearly unacceptable for release it may be helpful to have other PM staff or cooperators complete copies of this worksheet to provide additional documentation.

All rating criteria must be completed, even if it is found in Section A, Part 1 that the plant has a low impact on the environment. Evaluation of all criteria will provide documentation that a thorough evaluation was completed for the plant at the time of release. This documentation may be needed in the future if questions are raised about the potential invasiveness or control of the plant.

When finished with ranking, interpretation, and decision making, record the final decision on the next page of this worksheet. A completed worksheet must be included with the release documentation and a copy sent to the NPMC for filing.

Environmental Evaluation of Plant Materials Releases

Name of person scoring: Malcome S. Kirkland **Date of scoring:** June 26,2000

Scientific Name: Sorghastrum nutans **Common Name:** Yellow Indiangrass

Release Name: Americus

Is the plant native to the US?	**Yes**	**No**	**Yes**
Is the plant native to the area of intended use?	**Yes**	**No**	**Yes**
Authority used to determine native status:	**Vascular flora of**		**Carolinas**
What is the intended area of use for this plant?	**Southeastern US**		
What is the intended use for this plant?	**Forage,erosion**		**Control,wild**
Areas in which the release is known to be invasive or has a high probability of being invasive:	**none**		

Summary of Criteria from Section A	**Score**
Part 1. Impact on Habitats, Ecosystems, and Land Use	**3**
Part 2. Ease of Management	**9**
Part 3. Conservation Need and Plant Use	**9**
Part 4. Biological Characteristics	**36**

Final Determination of Release Based on the Environmental Evaluation:

X ☐ **OK to Release**

☐ **OK to Release but qualify use and intended area of use***

☐ **Do Not Release - NPL determines if release is made***

☐ **Do Not Release - document and destroy materials**

I certify that this Environmental Evaluation was conducted with the most accurate and current information possible. Charles M Owsley & Malcome S. Kirkland

Signature of Person Scoring Date

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

National Program Leader, PM **Date**

* An Environmental Assessment (EA) and/or Environmental Impact Statement (EIS) may be required prior to release. If required, attach the EA and/or EIS to this worksheet and to the release notice.

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 or provide support information may be included in the right margin of the worksheet or attached on a separate sheet of paper.

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 X
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 X
b)	Minor negative impacts to ecosystem processes	2
c)	Known significant negative impacts to ecosystems 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)	No negative impact; causes no perceivable changes in native populations	0 X
b)	Noticeable negative influences on community composition	5
c)	Causes major negative alterations in community composition	10

4) Allelopathy

a)	No known allelopathic effects on other plants	0 X
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 (aquatic and terrestrial), including threatened and endangered species (coordinate with USFWS and state Heritage Programs as appropriate)

a)	No negative impact on habitat, or this criteria not applicable based on intended use for the plant	0 X
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 X
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 3

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 no longer desirable.

1) Level of effort required for control

a)	Effective control can be achieved with mechanical treatment	0 X
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 X
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 X
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) Seed banks

a) Seeds viable in the soil for 1 year or less	0 X
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 X
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 X
c) Resprouts and produces seed in same year	5
Total Possible Points	**40**
Total Points for Part 2	**9**

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 X

2) Availability of Other Plants to Solve the Same Need

a) Many other plants available	1
b) Few other plants available	3 X
c) No other plants available	5

3) Consequences of <u>Not</u> Releasing This Plant

a) No impact to conservation practices	0
b) Minor impact on one or more conservation practice	1 X
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	**9**

<u>Part 4. Biological Characteristics</u>

This part evaluates 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 <u>under natural conditions</u>, 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 (<u>skip to #11</u>)	0
b) Reproduces almost entirely by vegetative means	1
c) Reproduces only by seeds	3
d) Reproduces vegetatively and by seed	5 X

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 X
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 X
d) Requires 1 year	5

<u>** If reproduces only by seed, skip to #5</u>

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

a) Vegetative reproduction rate maintains population (plant spreads but older parts die out)	1 X
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 #11

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 X

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 X

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 X
d)	Many-seeded (>1,000)	5

8) Dispersal ability

a)	Limited dispersal (<20') and few plants produced (<100)	1 X
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 X
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 X
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	0
b) Moderately competitive for limiting factors	5 X
c) Highly competitive for limiting factors	10
Total Possible Points	**70**
Total Points for Part 4	**36**

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.

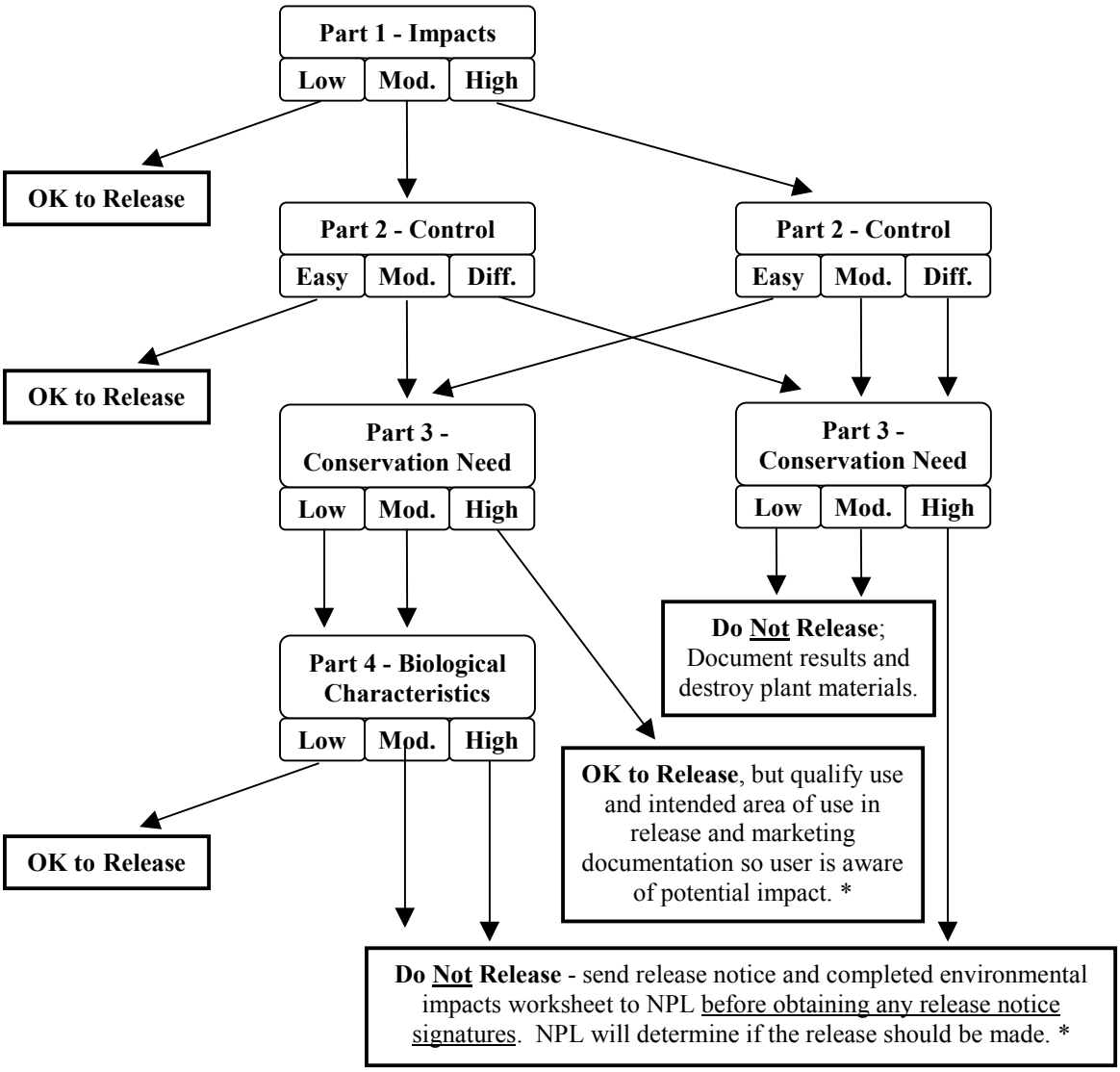
Section B. Scoring and Interpretation

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	**Low** chance plant is going to affect the environment
	16-25	**Mod**erate chance plant is going to affect the environment
	26-45	**High** chance plant is going to affect the environment
Part 2. Ease of Management	0-20	**Easy** to control
	21-30	**Mod**erate to control
	31-40	**Diff**icult to control
Part 3. Conservation Need and Plant Use	0-5	**Low** need
	6-9	**Mod**erate need
	10-15	**High** need
Part 4. Biological Characteristics	0-25	**Low** chance plant is going to propagate and increase itself
	26-40	**Mod**erate chance plant is going to propagate and increase itself
	41-70	**High** chance plant is going to propagate and increase itself

Section C. Action to Take for Releasing Plants

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 NPMM Part 540.73(a)(3)).

Worksheet Revised 5/23/00

Signatures for release of:

'Americus' Indiangrass (*Sorghastrum nutans* (L.) Nash)

_____ _____

Date

State Conservationist
United States Department of Agriculture
Natural Resources Conservation Service
Athens, Georgia

_____ _____

Date

State Conservationist
United States Department of Agriculture
Natural Resources Conservation Service
Columbia, South Carolina

_____ _____

Date

State Conservationist
United States Department of Agriculture
Natural Resources Conservation Service
Raleigh, North Carolina

_____ _____

Date

State Conservationist
United States Department of Agriculture
Natural Resources Conservation Service
Auburn, Alabama

_____ _____

Date

Director, Ecological Sciences Division
United States Department of Agriculture
Natural Resources Conservation Service
Washington, D.C.