

ANNOUNCING THE RELEASE OF

Riverview American Black Currant
SOURCE IDENTIFIED CLASS OF GERMPLASM

by the
UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

and the
MINNESOTA
AGRICULTURAL EXPERIMENT STATION

and the
NORTH DAKOTA
AGRICULTURAL EXPERIMENT STATION

and the
SOUTH DAKOTA
AGRICULTURAL EXPERIMENT STATION

The United States Department of Agriculture, Natural Resources Conservation Service; Minnesota Agricultural Experiment Station; North Dakota Agricultural Experiment Station; and South Dakota Agricultural Experiment Station announce the naming and release of a seed-propagated source identified class germplasm of American black currant (*Ribes americanum* Mill.).

As a source identified class germplasm release, this plant will be called **Riverview Germplasm American black currant**. There has been no genetic manipulation and it is considered a “natural-track” release. It has been assigned NRCS accession number 9082687. This alternative (germplasm) release procedure is justified because there are no varieties or sources of American black currant recommended for use in this area. The release is a native, local seed source from northeastern South Dakota. This shrub species is native to Minnesota, North Dakota, and South Dakota along moist drainages and streambanks in or on the edge of wooded areas. Riverview is suitable for many conservation and agroforestry uses, including riparian and wildlife plantings, farmstead and field windbreaks, single-row wind barrier plantings, fruit production, and ornamental/recreational plantings. Good windbreak and wildlife characteristics include ease of establishment, compact growth habit, and open branching which helps prevent snow breakage, and the fruit is a valuable food source for wildlife. The dark purple fruit is high in vitamins and antioxidants and can be used for human consumption. Riverview American black currant is adapted to a diverse array of sites. The crimson/gold fall color adds to its visual appeal and desirability in the landscape. The name Riverview was chosen to reference the riparian habitat where the fruit was originally collected within sight of the Big Sioux River.

Collection Site Information: Original seed was hand harvested from naturally occurring plants growing along the Big Sioux River near Watertown, South Dakota, in 1999, and 2001 through 2005. Harvest dates ranged from August 15 to September 4. Staff at Big Sioux Nursery collected seed from several locations approximately 5 miles apart along the floodplain of the river. This area is located in northeastern South Dakota (Codington County), Major Land Resource Area 102A, Rolling Till Prairie. Plant hardiness zone is 4a. Most of this area is in farms, and about 70 percent is cropland. Wooded areas generally are narrow bands along streams and rivers or are shelterbelts around farmsteads. Associated woody species are cottonwood, green ash, boxelder, hackberry, chokecherry, and golden currant. The nearly level to rolling topography has many wetland depressions. The average annual precipitation is 23 inches of which half or more falls during the growing season. The average freeze-free period is 120 days (USDA 1981). The first collection in 1999 was 9 pounds of fruit which yielded ½ pound of clean seed. Future collections of fruit yielded similar ratios of seed (18 to 1). Bareroot seedlings were first sold for conservation use by Big Sioux Nursery in 2001. Seed is planted in the fall. Seedlings are grown in the field for one year. They are dug in the fall and are usually 18 to 24 inches tall. Soils on the nursery are primarily loams with excellent drainage (Larson 2010).

Ecotype Description: *Ribes* is a genus of about 120 species with most abundance being in western North America and eastern Asia. American black currant is a native shrub species 3 to 6 feet tall with erect branches lacking spines on multiple stems. The simple, alternate leaves are 1 to 3 inches wide and gland-dotted beneath with 3 to 5 lobes. The glands are golden yellow in color. Small flowers open in late May and have 5 yellowish petals. Drooping racemes produce glossy red-purple to nearly black fruit in August-September. The globose berries are smooth and contain many seeds. Ripe fruits are sweet and desirable for human consumption. They are commonly eaten by birds and small mammals through the fall season (Stephens 1973, Rosendahl 1955, Stevens 1950). Most of the fruit is produced on 1 year-old wood so pruning back older growth will benefit fruit production. Fall leaf color can be shades of crimson and gold. Propagation is primarily from seed with some possible layering and basal sprouting. American black currant may form open thickets, but does not spread by suckering. Seedling vigor is good, and growth rate is medium. Lifespan is considered short to medium. It has moderate flood tolerance, but will not survive in permanent standing water. Black currant is considered highly drought tolerant. It occurs naturally as an understory species and is shade tolerant (USDA 2010). It is rated high in palatability by browsing animals, but the evaluation plots showed little damage. Chromosome number is $x=8$ and photosynthetic pathway is C_3 . There are approximately 313,000 seeds per pound.

Evaluation and Plant Performance: Bareroot seedlings were received by the Bismarck Plant Materials Center from Big Sioux Nursery beginning in 2001. Plant performance characteristics were evaluated at Off-Center Evaluation Plantings (OCEP) at five locations (Table 1) in Minnesota, North Dakota, and South Dakota from 2001 through 2009. Sites included four different Major Land Resource Areas. Soil textures varied from sand outwash to silty clay loam. Maintenance and weed control were good. The Brookings site had weed barrier for within row weed control. Survival was 100 percent at four of the locations. Plant vigor was rated good to excellent. Height and width are hard to compare because of the different ages, but width at all locations equaled or exceeded height. After seven growing seasons at Morris and Becker, plants averaged about 5.5 feet wide and 3.5 feet tall. No insect problems were noted. Disease symptoms (leaf spot/rust) were variable depending on the rainfall and other environmental conditions, but were generally rated moderate. A total of 20 field plantings in Minnesota (6), North Dakota (8), and South Dakota (6) were evaluated (Table 2). Field plantings are evaluations generally under actual field conditions with private landowners. Field conditions and maintenance varied greatly. Plantings were established in 2006 and 2007. Measurements were recorded in late summer by NRCS field office technicians. Field reviews of all planting sites were also conducted by Plant Materials Center and State Office staff during the summer and fall of 2009. Overall survival averaged 84 percent, even with heavier rates of weed competition in Minnesota. Vigor ratings were rated good. Insects and disease were not a problem. There were

minor instances of moderate leaf spot and rust. Generally, this seemed to depend on the planting site conditions. New sites with more air circulation had less disease than those established in existing tree plantings. Several field plantings had golden currant (*Ribes odoratum*) planted nearby and in all cases the leaves had already fallen in late summer because of leaf disease, compared to the American black currant where most plants were still in full leaf. Fruit production varied with site conditions and age of the plants. Generally, plants with good weed control had at least small amounts of fruit at 3 to 4 years of age. Plants growing in heavy weed/sod competition were surviving although vigor and growth were substantially reduced. Plantings in South Dakota had the best weed control and also the largest plants. Plants established for 3 and 4 years averaged 4.8 feet wide and 3.2 feet tall. Plants that were the same age in Minnesota and North Dakota averaged 2.4 wide and 2.4 tall.

Ecological Considerations: Riverview germplasm American black currant produces good fruit crops on adapted sites. Use of the berries by birds and other wildlife may spread seed and allow plants to become established off-site. The fruit persists well on the plant, but is usually used by wildlife before winter. No off-site movement of the plant was observed at any of the evaluation locations. The plant reproduces primarily by seed, but may form open thickets desirable for wildlife habitat. The species is native to the Northern Great Plains, Midwest, and the Northeastern United States. The compact growth habit, good fruit qualities, and attractive fall colors make it a desirable shrub species in most landscapes where woody vegetation is desired. It is easily controlled by mechanical or chemical means if necessary. It is not tolerant of fire. American black currant is reported to invade sedge meadows in Minnesota (Marshall 1995). This species does serve as an alternate host for the fungus that causes white pine blister rust, but is considered low risk to spread the rust (Van Arsdell et. al. 2002). The federal ban on European black currant (*Ribes nigrum*) was lifted in 1966 as rust-resistant cultivars were being developed. Riverview American black currant was documented as “OK to Release” when rated through the worksheet for “Environmental Evaluation of Plant Material Releases.”

Anticipated Conservation Use: The primary conservation use of Riverview American black currant is for planting in farmstead and field windbreaks, and in wildlife habitat and riparian areas. A secondary benefit is the edible fruit for home use or an alternative income crop. Fruit qualities and amounts would not be as great as compared to improved cultivars of the European black currant. The health food industry has been promoting black currant fruit products for the high content of antioxidants and vitamins.

Potential Area of Adaptation: This selection has performed well in numerous test plantings on diverse sites in North Dakota, South Dakota, and Minnesota. Adaptation is anticipated to be across regions of the Upper Midwest and Northern Great Plains on Conservation Tree and Shrub Groups 1, 3, 4, and 5. The best growth and fruit production occurs on moist, but well-drained sites in full sun. Good weed control improves overall plant performance.

Availability of Plant Materials: Limited quantities of breeder seed and seedling plants will be made available from the USDA Plant Materials Center at Bismarck, North Dakota, for nursery operators to establish seed orchards of Riverview germplasm American black currant. Conservation nurseries in the region sell bareroot seedlings.

References:

Larson, J. 2010. Personal communication. Big Sioux Nursery, Watertown, South Dakota.

Marshall, K. A. 1995. *Ribes americanum*. In: Fire Effects Information System, USDA Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory.

Rosendahl, C. O. 1955. Trees and Shrubs of the Upper Midwest. The University of Minnesota Press, Minneapolis, Minnesota. 411 p.

Stephens, H. A. 1973. Woody Plants of the North Central Plains. The University Press of Kansas, Lawrence, Kansas. 530 p.

Stevens, O. A. 1950. Handbook of North Dakota Plants. Sponsored by North Dakota Institute for Regional Studies. 324 p.

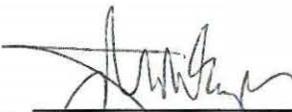
USDA, NRCS. 2010. The PLANTS Database (<http://plants.usda.gov>, 1 February 2010). National Plant Data Center, Baton Rouge, LA 70874-4490 USA.

USDA, SCS. 1981. Land Resource Regions and Major Land Resource Area of the United States. Agricultural Handbook 296, Washington, DC. 156 p.

Van Arsdel, E. P. and Brian W. Geils. 2002. The *Ribes* of Colorado and New Mexico and their rust fungi. Gen. Tech. Rep. RMRS-GTR-XXX. Ogden, UT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station.

Prepared by: Dwight A. Tober, Plant Materials Specialist, USDA-NRCS, P. O. Box 1458, Bismarck, North Dakota 58502; and Michael J. Knudson, Forester, USDA-NRCS Plant Materials Center, 3308 University Drive, Bismarck, North Dakota 58504.

Approvals for the release of Riverview germplasm American black currant, *Ribes americanum* (Mill.):


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

9-21-2010

Date



State Conservationist
United States Department of Agriculture
Natural Resources Conservation Service
Saint Paul, Minnesota

6-28-10

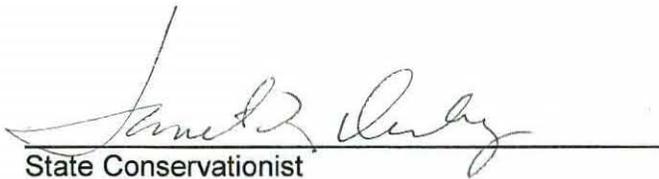
Date



State Conservationist
United States Department of Agriculture
Natural Resources Conservation Service
Bismarck, North Dakota

5/19/10

Date



State Conservationist
United States Department of Agriculture
Natural Resources Conservation Service
Huron, South Dakota

6/2/10
Date



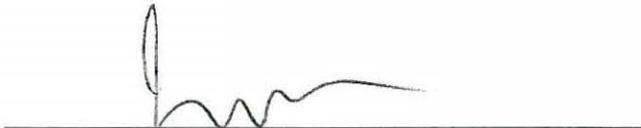
Director
University of Minnesota
Agricultural Experiment Station
Saint Paul, Minnesota

7/27/10
Date



Director
North Dakota State University
Agricultural Experiment Station
Fargo, North Dakota

5/26/10
Date



Director
South Dakota State University
Agricultural Experiment Station
Brookings, South Dakota

3/6/10
Date

Riverview Germplasm American Black Currant Off-Center Evaluations (Table 1)

<i>Evaluation Sites</i>	<i>*MLRA</i>	<i>*CTSGs/Texture</i>	<i>Survival %</i>	<i>Weed Comp. 1 = lowest 9 = highest</i>	<i>Average Vigor 1 = best 9 = poorest</i>	<i>Height (ft) (years)</i>	<i>Canopy (ft) (years)</i>
Morris, MN; planted 2001, evaluated 2007	102A	4/silt clay loam	100	1	2	3.1 (7)	5.3 (7)
Becker, MN; planted 2001, evaluated 2007	91	7/sand outwash	100	1	3	3.9 (7)	6.0 (7)
Brookings, SD; planted 2004, evaluated 2008	102A	3/silt loam	100	1 (fabric)	3	3.8 (5)	6.2 (5)
Bottineau, ND; planted 2007, evaluated 2009	55A	3/loam complex	100	3	3	1.5 (3)	1.6 (5)
Dickinson, ND; planted 2007, evaluated 2009	54	5/fine sandy loam	80	3	3.3	2.0 (3)	2.0 (3)
*MLRA = Major Land Resource Area; CTSGs = Conservation Tree and Shrub Groups							

Riverview Germplasm American Black Currant Field Planting Evaluations (Table 2)

<i>Established 2006 and 2007</i>	<i>Survival %</i>	<i>Weed Comp. 1 = lowest 9 = highest</i>	<i>Average Vigor 1 = best 9 = poorest</i>	<i>Height (ft)</i>	<i>Canopy (ft)</i>
Minnesota, average of 6 sites	80	5	3.3	2.3	2.3
North Dakota, average of 8 sites	89	2.8	2.8	2.4	2.4
South Dakota, average of 6 sites	83	2	2.8	3.2	4.8

Environmental Evaluation of Plant Materials Releases

Name of person

scoring: Dwight Tober

Date of scoring: February 1, 2010

Scientific Name: Ribes americanum

Common Name: American black currant

Release Name: Riverview *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:

ND Plants, Stevens

What is the intended area of use for this plant?

Northern Plains and
Upper Midwest

What is the intended use for this plant?

Wildlife,
Windbreak,
Riparian,
Agroforestry

Areas in which the release is known to be invasive or has a high probability of being invasive:

Sedge meadows in
Minnesota and
Michigan

Summary of Criteria from Section A

Score

Part 1. Impact on Habitats, Ecosystems, and Land Use 18

Part 2. Ease of Management 18

Part 3. Conservation Need and Plant Use 8

Part 4. Biological Characteristics 38

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

I certify that this Environmental Evaluation was conducted with the most accurate and current information possible.

Dwight Tober

Dwight Tober

February 1, 2010

Signature of Person Scoring

Date

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

[Signature]

National Program Leader, PM

9-21-2010

Date

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 supporting 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) Data show 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) 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 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 |
| b) Noticeable changes in community composition that have negative or unknown impacts on 1) biodiversity of natural systems, or on 2) desirable agricultural/developed systems | 5 |
| 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 or seedling growth of other plants | 3 |
| c) Demonstrates allelopathic effects to mature stages of other plants | 5 |

5) Impact on habitat for wildlife (vertebrate or invertebrate) or domestic animals (aquatic and terrestrial), including threatened and endangered species (coordinate with the U.S. Fish and Wildlife Service and State Heritage Programs, as appropriate)	
a) No negative impact on habitat, or this criteria not applicable based on intended use for the plant (explain intended use, why not applicable, and how to ensure plant will not be used in an inappropriate, sensitive context)	0
b) Minor negative impact on habitat or species interactions (e.g., decreased palatability; lower wildlife value; decreased value for undesirable animal species; shifts in herbivore frequency; shifts in disease frequency)	2
c) Significant negative impact on habitat or species interactions (e.g., foliage toxic to animals; significantly lower value for wildlife; excludes desirable animal species from a domesticated area or any native species from wildland area; increases exotic, invasive, or pest species in any 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, or negatively affects biodiversity on same or adjacent wildlands)	5
Total Possible Points 45	
Total Points for Part 1 18	
<u>Part 2. Ease of Management</u>	
<i>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.</i>	
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., reasonably practical and financially feasible control methods, including some forms of 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) Cultural techniques beyond routine management can be used but are unlikely to occur in a timely manner due to expense or difficult logistics	8

e) 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 or wildlife	0
b) Control measures used on release will cause moderate effects on other plants or wildlife	3
c) Control measures used on release will cause major effects on other plants or wildlife	5
<u>**If spreads by seed, or both seed and vegetative means, go to #4</u>	
<u>**If spreads by vegetative means only, go to #5</u>	
4) Seed banks	
a) Seeds viable in the soil for 1 year or less	0
b) Seeds remain viable in the soil for 2-3 years	3
c) Seeds remain viable in the soil for 4-5 years	5
d) Seeds remain viable in the soil for more than 5 years	8
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	4
c) Regeneration from root or stem parts left in the soil	6
6) Resprouts after cutting above-ground parts	
a) Does not resprout <u>or</u> resprouts but the release is sterile and does not produce seed	0
b) Resprouts and produces seed in future years	5
c) Resprouts and produces seed in same year	8
Total Possible Points	47
Total Points for Part 2	18
<u>Part 3. Conservation Need and Plant Use</u>	
<i>This part evaluates the importance of the species or release to meet a conservation need. Describe the conservation need.</i>	
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 Conservation Need	
a) Many other plants available	1
b) Few other plants available	3
c) No other plants available	5

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 8

Part 4. Biological Characteristics

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 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 (<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 |

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 #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
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) Few/Moderate (11-100)	3
d) Moderate seeded (>100 - 999)	5
e) Many-seeded (>1,000)	8
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) Interspecific Hybridization	
a) Has not been observed to hybridize outside the species	0
b) Hybridizes with other species in the same genus	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
c) Highly competitive for limiting factors	10
Total Possible Points	73
Total Points for Part 4	38

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. U.S. 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.

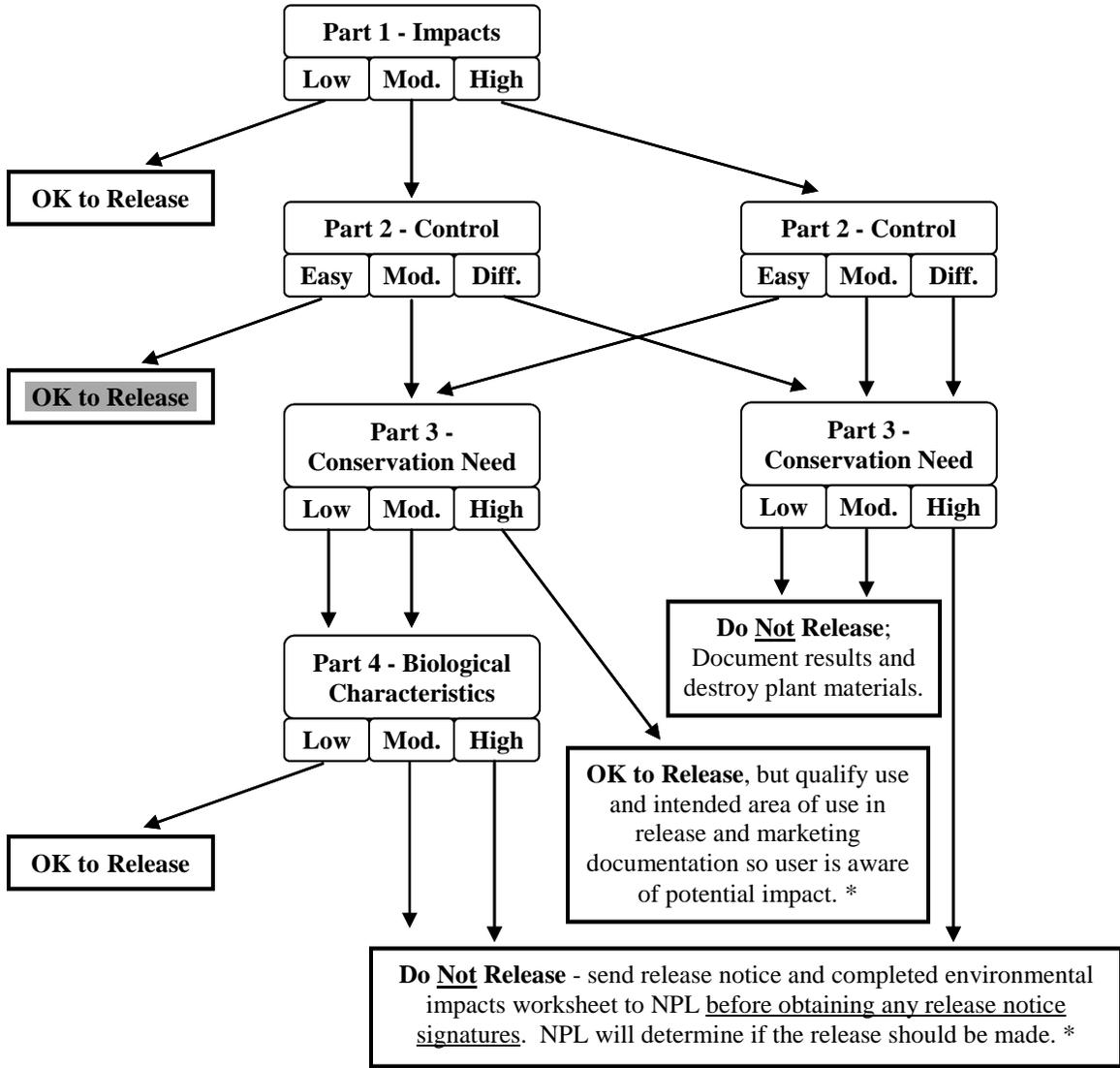
Section B. Scoring and Interpretation

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
	<input type="checkbox"/> 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	<input type="checkbox"/> 0-20	<u>Easy</u> to control
	21-30	<u>Moderate</u> to control
	31-47	<u>Difficult</u> to control
Part 3. Conservation Need and Plant Use	0-5	<u>Low</u> need
	<input type="checkbox"/> 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
	<input type="checkbox"/> 26-40	<u>Moderate</u> chance plant is going to propagate and increase itself
	41-73	<u>High</u> chance plant is going to propagate and increase itself

Section C. Action to Take for Releasing Plants

Follow the decision tree below based on the interpretation above. 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 EA or EIS may need to be prepared prior to release (see NPMM Part 540.33(A)(3)).