

<i>Miscanthus sacchariflorus</i> (Amur grass, Silver banner grass, silver plume grass)		Answer	Score
1.01	Is the species highly domesticated?	n	0
1.02	Has the species become naturalised where grown?		
1.03	Does the species have weedy races?		
2.01	Species suited to FL climates (USDA hardiness zones; 0-low, 1-intermediate, 2-high)	2	
2.02	Quality of climate match data (0-low; 1-intermediate; 2-high)	2	
2.03	Broad climate suitability (environmental versatility)	y	1
2.04	Native or naturalized in regions with an average of 11-60 inches of annual precipitation	y	1
2.05	Does the species have a history of repeated introductions outside its natural range?	y	
3.01	Naturalized beyond native range	y	2
3.02	Garden/amenity/disturbance weed	y	2
3.03	Weed of agriculture	y	4
3.04	Environmental weed	y	4
3.05	Congeneric weed	y	2
4.01	Produces spines, thorns or burrs	n	0
4.02	Allelopathic	y	1
4.03	Parasitic	n	0
4.04	Unpalatable to grazing animals	n	-1
4.05	Toxic to animals	n	0
4.06	Host for recognised pests and pathogens	n	0
4.07	Causes allergies or is otherwise toxic to humans	n	0
4.08	Creates a fire hazard in natural ecosystems	n	0
4.09	Is a shade tolerant plant at some stage of its life cycle	n	0
4.10	Grows on infertile soils (oligotrophic, limerock, or excessively draining soils). North & Central Zones: infertile soils; South Zone: shallow limerock or Histisols.	n	0
4.11	Climbing or smothering growth habit	n	0
4.12	Forms dense thickets	y	1
5.01	Aquatic	n	0
5.02	Grass	y	1
5.03	Nitrogen fixing woody plant	n	0
5.04	Geophyte	n	0
6.01	Evidence of substantial reproductive failure in native habitat	n	0
6.02	Produces viable seed	y	1
6.03	Hybridizes naturally	y	1
6.04	Self-compatible or apomictic	n	-1
6.05	Requires specialist pollinators	n	0
6.06	Reproduction by vegetative propagation	y	1
6.07	Minimum generative time (years)		

7.01	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	y	1
7.02	Propagules dispersed intentionally by people	y	1
7.03	Propagules likely to disperse as a produce contaminant	n	-1
7.04	Propagules adapted to wind dispersal	y	1
7.05	Propagules water dispersed	n	-1
7.06	Propagules bird dispersed	n	-1
7.07	Propagules dispersed by other animals (externally)	n	-1
7.08	Propagules dispersed by other animals (internally)	n	-1
8.01	Prolific seed production	y	1
8.02	Evidence that a persistent propagule bank is formed (>1 yr)	y	1
8.03	Well controlled by herbicides	y	-1
8.04	Tolerates, or benefits from, mutilation or cultivation	y	1
8.05	Effective natural enemies present in U.S.		
Total Score		20	
Implemented Pacific Second Screening		No	
Risk Assessment Results		Reject	

	Reference	Source data
1.01		Cultivated, but no evidence of selection for reduced weediness.
1.02		
1.03		
2.01	<p>1. PERAL NAPPFAST Global Plant Hardiness (http://www.nappfast.org/Plant_hardiness/NAPPFAST%20Global%20zones/10-year%20climate/PLANT_HARDINESS_10YR%20gnd.tif). 2. USDA/ARS-GRIN [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland (http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?15948 [Accessed: 8/11/2010]). 3. USDA, NRCS. 2010. The PLANTS Database (http://plants.usda.gov, 11 August 2010). National Plant Data Center, Baton Rouge, LA 70874-4490 USA. 4. Barkworth, M.E. 2008. <i>Miscanthus</i> Andersson. Utah State University: Intermountain Herbarium (http://herbarium.usu.edu/treatments/Miscanthus.htm [Accessed: 8/12/2010]).</p>	<p>No computer analysis was performed. 1. Native to the following hardiness zones: 5-8 (East China); 5-7 (Japan); 5-6 (Korea); 2-4 (Russian Federation). 2. Distributional range: Native Asia-Temperate - Russian Far East (Russian Rederation - Amur, Primorye); China (East); Eastern Asia (Japan - Hokkaido, Honshu, Kyushu, Shikkoku); Korea. Naturalized in North America. 3. Naturalized in USA (CT, IA, IL, MA, ME, MI, MN, MO, NE, NY, WI); CAN (ON, QC). 4. Native to the margins of rivers or marshes in temperate to north-temperate regions of eastern Asia, and appears to require cold and humidity for optimum growth.</p>
2.02		No computer analysis was performed. Native range is well known; refer to 2.01 source data.
2.03	<p>1. Köppen-Geiger climate map (http://www.hydrol-earth-syst-sci.net/11/1633/2007/hess-11-1633-2007.pdf). 2. Refer to all references in question 2.01.</p>	<p>1. Distribution in the native and cultivated ranges is very widespread and occurs in more than 3 climatic groups. Also refer to source data in question 2.01.</p>
2.04	<p>1. Globalis (http://globalis.gvu.unu.edu/ [Accessed: 8/25/2010]).</p>	<p>1. Native Distribution: East China: 400-1400 mm (15-55 in); Japan: 600-2000 mm (24-79 in); Korea 1000-1400 mm (39-55 in); Russian Federation 600-1000 mm (24-39 in). Naturalized distribution: USA (CT, IA, IL, MA, ME, MI, MN, MO, NE, NY, WI) 400-1000 mm (15-39 in); CAN (ON, QC) 600-1000 mm (24-39 in).</p>

2.05	<p>1.a-b. USDA, NRCS. 2010. The PLANTS Database (http://plants.usda.gov, 27 August 2010). National Plant Data Center, Baton Rouge, LA 70874-4490 USA [Accessed: 8/11/2010].</p> <p>2. 4. Barkworth, M.E. 2008. <i>Miscanthus Andersson</i>. Utah State University: Intermountain Herbarium (http://herbarium.usu.edu/treatments/Miscanthus.htm [Accessed: 8/12/2010]).</p> <p>3. Randall, R.P. The Global Compendium of Weeds (http://www.hear.org/gcw/, 24 January 2007).</p> <p>4. Faith T. Campbell. American Lands Alliance. The Global Compendium of Weeds (http://www.hear.org/gcw/, 24 January 2007).</p> <p>5. Minnesota Department of Natural Resources (http://www.dnr.state.mn.us [Accessed: 8/27/2010]).</p> <p>6. Jauron, R. "Extension News." <i>Iowa State University Extension</i> (http://www.extension.iastate.edu/news/2007/sep/070501.htm [Accessed: 8/16/2010]).</p>	<p>1.a. Introduced (Naturalised) Species to the United States.</p> <p>1.b. Listed by Massachusetts (noxious weed); Prohibited.</p> <p>2. It has escaped cultivation in various parts of the <i>Flora</i> region.</p> <p>3. Status(es) (compiled for below "Data Source"): agricultural weed, casual alien, environmental weed, garden thug, naturalized, noxious weed, weed.</p> <p>4. "Worst" invasive plant species in the conterminous United States: weed (environmental weed).</p> <p>5. Invasive terrestrial plant.</p> <p>6. The grass has become naturalized in roadside ditches and waste areas in the Midwest.</p>
3.01	<p>1.a-b. USDA, NRCS. 2010. The PLANTS Database (http://plants.usda.gov, 27 August 2010). National Plant Data Center, Baton Rouge, LA 70874-4490 USA [Accessed: 8/11/2010].</p> <p>2. 4. Barkworth, M.E. 2008. <i>Miscanthus Andersson</i>. Utah State University: Intermountain Herbarium (http://herbarium.usu.edu/treatments/Miscanthus.htm [Accessed: 8/12/2010]).</p> <p>3. Randall, R.P. The Global Compendium of Weeds (http://www.hear.org/gcw/, 24 January 2007).</p> <p>4. Faith T. Campbell. American Lands Alliance. The Global Compendium of Weeds (http://www.hear.org/gcw/, 24 January 2007).</p> <p>5. Minnesota Department of Natural Resources (http://www.dnr.state.mn.us [Accessed: 8/27/2010]).</p>	<p>1.a. Introduced (Naturalised) Species to the United States.</p> <p>1.b. Listed by Massachusetts (noxious weed); Prohibited.</p> <p>2. It has escaped cultivation in various parts of the <i>Flora</i> region.</p> <p>3. Status(es) (compiled for below "Data Source"): agricultural weed, casual alien, environmental weed, garden thug, naturalized, noxious weed, weed.</p> <p>4. "Worst" invasive plant species in the conterminous United States: weed (environmental weed).</p> <p>5. Invasive terrestrial plant.</p>
3.02	<p>1. Randall, R.P. The Global Compendium of Weeds (http://www.hear.org/gcw/, 24 January 2007).</p> <p>2. Ryves, T.B., Clement, E.J. and Foster, M.C. (1996) <i>Alien Grasses of the British Isles</i>. Botanical Society of the British Isles, London.</p>	<p>1. Status(es) (compiled for below "Data Source"): agricultural weed, casual alien, environmental weed, garden thug, naturalized, noxious weed, weed.</p> <p>2. Casual alien, garden thug.</p>
3.03	<p>1. Randall, R.P. The Global Compendium of Weeds (http://www.hear.org/gcw/, 24 January 2007).</p> <p>2. Morita, H. (1997). <i>Handbook of Arable Weeds in Japan</i>. Kumiai Chemical Company.</p> <p>3. Wang, Z., Xin M., Ma D., Song, S., Wang, X., Yan, C., Zhang, D., Feng, W., Ma, E. and Chen, J. (1990). <i>Farmland Weeds in China</i>. A collection of coloured illustrative plates. Agricultural Publishing House. China.</p>	<p>1. Status(es) (compiled for below "Data Source"): agricultural weed, casual alien, environmental weed, garden thug, naturalized, noxious weed, weed.</p> <p>2. Agricultural weed.</p> <p>3. Agricultural weed.</p>

3.04	1. Randall, R.P. The Global Compendium of Weeds (http://www.hear.org/gcw/ , 24 January 2007). 2. Faith T. Campbell; American Lands Alliance; "Worst" Invasive Plant Species in the conterminous United States	1. Status(es) (compiled for below "Data Source"): agricultural weed, casual alien, environmental weed, garden thug, naturalized, noxious weed, weed. 2. Environmental weed.
3.05	1.a-b. USDA, NRCS. 2010. The PLANTS Database (http://plants.usda.gov , 27 August 2010). National Plant Data Center, Baton Rouge, LA 70874-4490 USA [Accessed: 8/11/2010]. 2. Southeast Exotic Pest Plant Council. 1996. Invasive exotic pest plants in Tennessee (19 October 1999). Research Committee of the Tennessee Exotic Pest Plant Council. Tennessee. (http://plants.usda.gov/java/invasiveOne?pubID=SEPPC . [Accessed: 8/27/2010]). 3. Global Invasive Species Database, 2005. <i>Rattus rattus</i> . Available from: http://www.issg.org/database/species/ecology.asp?si=19&fr=1&sts=sss [Accessed 1st September 2005].	1.a. <i>Miscanthus sinensis</i> Andersson is listed for the state of Connecticut as potentially invasive, but not banned. 1.b. <i>Miscanthus sinensis</i> Andersson can be weedy or invasive according to SEPPC. 2. Present on SE-EPPC (AL, GA, KY, MS, SC, TN) lists. 3. <i>Miscanthus sinensis</i> appears on the ISSG list of invasive species.
4.01		No evidence
4.02	1. Chou, C. 2009. <i>Miscanthus</i> plants used as an alternative biofuel material: The basic studies on ecology and molecular evolution. <i>Renewable Energy</i> 34(8): 1908-1912.	1. Chou and his associates paid a great attention to elucidate the mechanism of dominance of <i>Miscanthus</i> vegetation and found that allelopathy plays an important role.
4.03		No evidence
4.04	Meyer, M.H. Management of <i>Miscanthus</i> . University of Minnesota, Department of Horticultural Science, 3/18/2008. Accessed: 8/27/2010.	1. Cattle prefer <i>Miscanthus</i> and in Japan it is controlled in fields by allowing cattle to graze beginning in June. Heavy grazing is a known method in Japan for controlling <i>Miscanthus</i> . Goats, sheep and horses will also eat <i>Miscanthus</i> . Most North American wildlife, including deer, will not eat <i>Miscanthus</i> , it is of little value to wildlife as food.
4.05	Meyer, M.H. Management of <i>Miscanthus</i> . University of Minnesota, Department of Horticultural Science, 3/18/2008. Accessed: 8/27/2010.	1. Cattle prefer <i>Miscanthus</i> and in Japan it is controlled in fields by allowing cattle to graze beginning in June. Heavy grazing is a known method in Japan for controlling <i>Miscanthus</i> . Goats, sheep and horses will also eat <i>Miscanthus</i> . Most North American wildlife, including deer, will not eat <i>Miscanthus</i> , it is of little value to wildlife as food.
4.06		No evidence
4.07		No evidence
4.08	1. Meyer, M.H. <i>Miscanthus</i> Research. University of Minnesota, Department of Horticultural Science, 3/18/2008. Accessed: 8/27/2010.	1. <i>Miscanthus</i> is very tolerant of fire, and regular burning is a common practice to maintain the semi-natural grasslands in Japan.
4.09	1. Meyer, M.H. <i>Miscanthus</i> Research. University of Minnesota, Department of Horticultural Science, 3/18/2008. Accessed: 8/27/2010.	1. <i>Miscanthus</i> described as a small-seeded wind dispersed perennial herbs which dominate early succession communities until shaded out by shrubs and trees.

4.10	1. Kayama, M. 2001. Comparison of the aluminum tolerance of <i>Miscanthus sinensis</i> Anderss and <i>Miscanthus sacchariflorus</i> Bentham in hydroculture. <i>International Journal of Plant Sciences</i> 162(5): 1025-1031.	1. <i>M. sacchariflorus</i> grows on fertile lowlands and alluvial plains
4.11		<i>Poaceae</i>
4.12	1. n.p. Ornamental Grasses, University of Missouri Extension. Accessed: 8/16/2010. 2. Southeast Exotic Pest Plant Council. 1996. Invasive exotic pest plants in Tennessee (19 October 1999). Research Committee of the Tennessee Exotic Pest Plant Council. Tennessee. (http://plants.usda.gov/java/invasiveOne?pubID=SEPPC . [Accessed: 8/27/2010]).	1. Forms a dense upright mass of foliage 48-60" in height. 2.
5.01		
5.02	1. Chou, C. 2009. <i>Miscanthus</i> plants used as an alternative biofuel material: The basic studies on ecology and molecular evolution. <i>Renewable Energy</i> 34(8): 1908-1912.	1. The plant is a C ₄ perennial grass with high productivity of biomass; belongs to family Poaceae
5.03		<i>Poaceae</i>
5.04		<i>Poaceae</i>
6.01		No evidence
6.02	1. Nakagoshi, N. 1984. Buried viable seed populations in forest communities on the Hiba Mountains, Southwestern Japan. <i>Journal of Science of the Hiroshima University</i> , Ser. B, Div. 2, 19: 1-56 In: Meyer, M.H. <i>Miscanthus</i> Research. University of Minnesota, Department of Horticultural Science, 3/18/2008. Accessed: 8/27/2010.	1.a. An intermediate level of seed and viability of 95 seed per m ⁻² at a depth of 10 cm.
6.03	1. Stewart, R. et al. Collection, Nutrient Cycling, Cold Hardiness, Photosynthetic Capacity, and Flowering Phenology of <i>Miscanthus sacchariflorus</i> , <i>Miscanthus sinensis</i> , and Their Natural Hybrids in Native Stands Ranging from Central to Northern Japan. Energy Bioscience Institute, University of Illinois (http://www.energybiosciencesinstitute.org/index.php?option=com_content&task=view&id=131&Itemid=20 [Accessed: 8/30/31]).	1.a. Assess the depth of cold hardiness of <i>M. sinensis</i> , <i>M. sacchariflorus</i> , and their natural hybrids collected from central and northern Japan. 1.b. Measure the photosynthetic capacity of <i>M. sinensis</i> , <i>M. sacchariflorus</i> , and their natural hybrids. 1.c. Evaluate the environmental conditions that have allowed the flowering period of <i>M. sacchariflorus</i> and <i>M. sinensis</i> to overlap where the two species occur in the same areas. 1.d. Collect germplasm of <i>M. sacchariflorus</i> , <i>M. sinensis</i> , and their natural hybrids to develop a public germplasm collection at the University of Illinois Energy Farm.
6.04		
6.05		No evidence

6.06	1. Meyer, M.H. <i>Miscanthus</i> in Iowa and Minnesota, 3/17/2008. Accessed: 8/16/2010. 2. n.p. <i>Ornamental Grasses, University of Missouri Extension</i> . Accessed: 8/16/2010. 3. Meyer, M.H. <i>Miscanthus</i> Research. University of Minnesota, Department of Horticultural Science, 3/18/2008. Accessed: 8/27/2010.	1. Most of the locations are large, rhizomatous clones that were probably originally planted as one ornamental plant. This species sets little or no seed and persists from large rhizomatous root systems usually left on farms or homesteads. 2. Spreads rapidly by rhizomes to form a dense upright mass of foliage 48-60" in height. 3. More dependent on vegetative- rather than seed regeneration.
6.07		
7.01	1. Jauron, R. "Extension News." Iowa State University Extension (http://www.extension.iastate.edu/news/2007/sep/070501.htm [Accessed: 8/16/2010]).	1. The grass has become naturalized in roadside ditches and waste areas in the Midwest
7.02		
7.03		No evidence
7.04	1. Meyer, M.H. <i>Miscanthus</i> Research. <i>University of Minnesota, Department of Horticultural Science</i> , 3/18/2008. Accessed: 8/27/2010.	1. Classified as an anemochore (wind dispersal).
7.05		No evidence
7.06		No evidence
7.07		No evidence
7.08		No evidence
8.01	1. Meyer, M.H. <i>Miscanthus</i> Research. University of Minnesota, Department of Horticultural Science, 3/18/2008. Accessed: 8/27/2010.	1. Annual seed production of 64-962 per plant.
8.02	1. Hayashi & Numato. 1971. In: Meyer, M.H. <i>Miscanthus</i> Research. University of Minnesota, Department of Horticultural Science, 3/18/2008. Accessed: 8/27/2010.	1. About one half of the <i>Miscanthus</i> seeds produced in one year were still viable the following summer.
8.03	1. Minnesota Department of Natural Resources (http://www.dnr.state.mn.us [Accessed: 8/27/2010]). 2. Meyer, M.H. Management of <i>Miscanthus</i> . University of Minnesota, Department of Horticultural Science, 3/18/2008. Accessed: 8/27/2010.	1. Cutting and spot treatment with glyphosate, continued periodically until flowering. 2. An adequate amount (12-24") of actively growing green foliage should be present for good chemical control. When new growth is 12" tall, in mid-spring or early summer, spray all green tissue with glyphosate. Allow the plant to die and, when completely brown, cut the dead foliage back to the ground.
8.04	1.a-b. Meyer, M.H. Management of <i>Miscanthus</i> . University of Minnesota, Department of Horticultural Science, 3/18/2008. Accessed: 8/27/2010.	1.a. Burning, especially in late fall or winter, will increase <i>Miscanthus</i> growth, vigor, and seedset. 1.b. Cutting the plants back in late winter or when dormant will provide NO control and can actually enhance growth if the cuttings are removed, similar to haying.
8.05		