

Species Dataform and Scoresheet for *Miscanthus sinensis* Anderson (Chinese silvergrass)

Species Dataform and Scoresheet		
<i>Miscanthus sinensis</i> Anderson (Chinese silvergrass)		
Native range: Eastern Asia Date evaluated: April 2, 2009		
	Answer Choices	Response
Introductory Questions		
1. Current federal and state regulations	Y/N	N
Comments: Appears on several invasive species lists (not laws) in the Southeastern U.S., including Georgia (Important), South Carolina (Significant threat), Tennessee (Rank 2, Significant threat), Kentucky (Severe threat), Virginia (Low invasiveness), and the U.S. Forest Service Policy (Category 2, Species suspected to be invasive (Invasive.org 2009).		
2. Occurrence in the horticultural trade	Y/N	Y
Comments: Popular ornamental grass (Hockenberry Meyer 2004).		
3. North Carolina nativity	Y/N	N
Comments: Native to Eastern Asia (Weakley 2008).		
4. Presence in natural areas	Y/N	Unknown
Comments: Naturalized in 3 counties (Buncombe, Madison, and Henderson) in western North Carolina (Zone 6) (Hockenberry Meyer 2008) along roadsides and in pastures. Common along roadsides (Weakley 2008), but is unclear if <i>M. sinensis</i> is found in natural areas in North Carolina. <i>Miscanthus sinensis</i> is a pioneer, early successional species that is very shade intolerant and quickly shaded out as natural succession progresses.		
5. Non-invasive cultivars	Y/N	Y
Comments: Researchers at North Carolina State University are working on developing new, seedless, noninvasive cultivars for landscape applications. <i>Miscanthus x giganteus</i> is a sterile triploid hybrid (Jorgensen and Muhs 2001)		
	Maximum Point Value	Number of Points Assigned
Section 1. Ecological Impact		
1a. Impact on abiotic ecosystem processes	10	4
Comments: Monocultural stands can alter native ecosystems and delay reforestation (Hockenberry Meyer 2008). Highly flammable and a wildland fire hazard (Miller 2003). May alter fire regime (Remaley 2003), but it is unclear if <i>M. sinensis</i> is present in natural areas of North Carolina.		
1b. Impact on plant community structure	20	0
Comments: Aggressive, spreading plant with invasive potential (Gilman 1999). Forms extensive infestations (Miller 2003).		
1c. Impact on species of special concern	5	0
Comments: Unknown impacts on species of special concern.		
1d. Impact on higher trophic levels	5	0
Comments: Unknown impacts on higher trophic levels.		
Section 1. Subrank	40	4
Section 2. Current Distribution and Potential		

for Expansion		
2a. Local range expansion	7	4
Comments: Becoming aggressively weedy in North Carolina (Weakley 2008).		
2b. Long-distance dispersal potential	13	3
Comments: <i>Miscanthus sinensis</i> sets a significant amount of airborne seed (Hockenberry Meyer 2003). Generally spread along roadsides and woodland borders (Wilson and Knox 2006). Interstate highways in western North Carolina provide a corridor for the spread of airborne seeds of <i>Miscanthus</i> (Hockenberry 2008).		
2c. Reproductive characteristics	8	6
Comments: Adaptable to a wide range of environmental conditions (Wilson and Knox 2006). Wind-pollinated and capable of seeding (Wilson and Knox 2006). While seed viability varies by cultivar and location, Wilson and Knox (2006) found that the total averaged germination among cultivars was between 42-66% in Florida. Viable seedlings are readily produced in mild climates, including Zone 6 of western North Carolina (Hockenberry Meyer 2004). Heavy seed set (Hockenberry Meyer 2004, Ogura and Yura 2008). <i>Miscanthus sinensis</i> sets a significant amount of airborne seed (Hockenberry Meyer 2003).		
2d. Range of communities	6	0
Comments: Colonizes a variety of sites but grows best in moist well-drained areas. Invades shores of reservoirs, roadsides, and old fields in the Southeastern United States (Remaley 2003). However, <i>M. sinensis</i> appears to occur only along the transportation corridors in any of the natural communities of North Carolina, so it is not considered to have yet invaded these systems. <i>Miscanthus sinensis</i> may be found adjacent to the ecological type, Low elevation mesic forests (Shafale and Weakley 1990).		
2e. Similar habitats invaded elsewhere	6	0
Comments: In addition to Western North Carolina, <i>Miscanthus sinensis</i> has naturalized in southeastern Pennsylvania, the Washington, D.C. area, and Iowa (Hockenberry Meyer 2003), but the affected ecological types are unknown.		
Section 2. Subrank	40	13
Section 3. Management Difficulty		
3a. Herbicidal control	5	3
Comments: To treat with herbicides, the previous year's growth should be removed by cutting the plant back to the ground. After the new growth is approximately 12" tall in mid spring or early summer, plants may be treated with glyphosate (Hockenberry Meyer 2003). An adequate amount of actively growing foliage should be present for effective herbicide treatments (Hockenberry Meyer 2003).		
3b. Nonchemical control methods	2	1
Comments: Hand pulling is ineffective due to the large root system and ability to resprout from root fragments (Remaley 2003). Regular mowing can reduce the growth of <i>M. sinensis</i> and eventually kill it (Hockenberry Meyer 2008). However, mowing or burning <i>M. sinensis</i> when plants are dormant in winter or early spring may increase plant growth (Hockenberry Meyer 2008).		
3c. Necessity of individual treatments	2	2
Comments: Plants should be cut back and allowed to grow approximately 12" before treating with glyphosate (Hockenberry Meyer 2003).		

3d. Average distribution	2	1
Comments: Dense infestations may form monocultural stands (Hockenberry Meyer 2008).		
3e. Likelihood of reestablishment	2	1
Comments: Mowing must be repeated, sometimes for several years, if a seed bank has been established (Hockenberry Meyer 2003).		
3f. Accessibility of invaded areas	2	1
Comments: Readily naturalizes in areas long distances from its planting (Wilson and Knox 2006).		
3g. Impact on native species and environment	5	2
Comments: Nontarget plants may be killed or injured by root uptake (Miller 2003).		
Section 3. Subrank	20	11
Section 4. Benefits and Value		
4a. Estimated Wholesale Value in North Carolina	-7	-6
Comments: The estimated wholesale value attributed to <i>M. sinensis</i> is \$39,284,800 in North Carolina (Trueblood 2009).		
4b. Percentage of total sales	-5	-4
Comments: Among the producers that sell this species, the highest percentage of total sales attributed to this species from any one grower is estimated to be: 26-50%. (Trueblood 2009).		
4c. Ecosystem services	-1	0
4d. Wildlife habitat	-1	0
4e. Cultural and social benefits	-1	0
Section 4. Subrank	-15	-10
Overall Score	100	18
Overall Recommendation: Noninvasive and recommended for use – These species have limited ecological impact, distribution and invasive potential, and management difficulty in relation to economic value. They may be locally problematic but their reproductive biology and other traits limit their rate of invasion to natural areas. (Overall Score: 0 – 33)		
Summary: <i>Miscanthus sinensis</i> (Chinese silvergrass) is noninvasive in North Carolina and may be recommended for use by the North Carolina Nursery and Landscape Association. While <i>M. sinensis</i> has naturalized in at least 3 counties (Buncombe, Madison, and Henderson) in western North Carolina (Hockenberry Meyer 2008). However, the infestations are found along roadsides and in pastures, rather than natural areas. Because <i>Miscanthus sinensis</i> is a pioneer, early successional species that is very shade intolerant, it is typically outcompeted over time and rarely found in natural areas. Weakley (2008) indicated that <i>M. sinensis</i> is becoming aggressively weedy in North Carolina, and other states in the southeastern U.S. have included Chinese silvergrass on state listings of invasive species (Invasive.org 2009), so additional monitoring of the distribution, spread, and environmental impacts in North Carolina would be prudent. Some cultivars of <i>Miscanthus</i> are sterile, e.g., <i>M. x giganteus</i> . Researchers at North Carolina State University are working on developing new, seedless, noninvasive cultivars for landscape applications. Use of seedless cultivars would be desirable when they become available. The species		

appears to have very high economic value in the North Carolina nursery industry.

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