



***Plant Risk Evaluator -- PRE™
Evaluation Report***

Miscanthus sinensis -- Texas

2017 Farm Bill PRE Project

PRE Score: 17 -- Reject (high risk of invasiveness)

Confidence: 72 / 100

Questions answered: 19 of 20 -- Valid (80% or more questions answered)

Privacy: Public

Status: Submitted

Evaluation Date: September 29, 2017

This PDF was created on August 13, 2018



Plant Evaluated

Miscanthus sinensis



Image by Jungle



Evaluation Overview

A PRE™ screener conducted a literature review for this plant (*Miscanthus sinensis*) in an effort to understand the invasive history, reproductive strategies, and the impact, if any, on the region's native plants and animals. This research reflects the data available at the time this evaluation was conducted.

Summary

Miscanthus sinensis is naturalized across the Eastern U.S. and invasive across much of the South. It spreads both vegetatively and by seed. It forms extensive infestations by escaping from older ornamental plantings into disturbed areas where it can out compete and crowd out native vegetation. Amount of seed produced appears to be variable and may depend on climate as flowering and fruiting times are also highly variable.

General Information

Status: Submitted

Screener: Kim Taylor

Evaluation Date: September 29, 2017

Plant Information

Plant: *Miscanthus sinensis*

If the plant is a cultivar, how does its behavior differs from its parent's?

This evaluation is for the species, not a particular cultivar.

Regional Information

Region Name: Texas



Climate Matching Map

To answer four of the PRE questions for a regional evaluation, a climate map with three climate data layers (Precipitation, UN EcoZones, and Plant Hardiness) is needed. These maps were built using a toolkit created in collaboration with GreenInfo Network, USDA, PlantRight, California-Invasive Plant Council, and The Information Center for the Environment at UC Davis.

Click [here](#) to see the generated climate matching map for this region. This climate match database is hosted by GreenInfo Network and publicly accessible.



Evaluation Questions

These questions are based in an original article published at the University of California, Davis, and can be found on the PLOS One website, here: <https://doi.org/10.1371/journal.pone.0121053>

Invasive History and Climate Matching (Questions 1 - 6)

1. Has the species (or cultivar or variety, if applicable; applies to subsequent "species" questions) become naturalized where it is not native?

- Answer: **Yes**, which contributes **1** points to the total PRE score.
- The *screeener* has a **Very High** confidence in this answer based on the available literature.

Answer / Justification:

Kartesz indicates *Miscanthus sinensis* is naturalized across the eastern U.S. East of the Mississippi River, as well as Missouri, Louisiana, Texas, Colorado, and California. GRIN indicates it is also naturalized in New Zealand.

Reference(s):

- U.S. National Plant Germplasm Network (0). *Miscanthus sinensis* Taxonomy - GRIN-Global Web v 1.9.8.2.
- Kartesz, J. T. (2015). The Biota of North America Program (BONAP).

2. Is the species (or cultivar or variety) noted as being naturalized in the US or world in a similar climate?

- Answer: **Yes**, which contributes **2** points to the total PRE score.
- The *screeener* has a **Very High** confidence in this answer based on the available literature.

Answer / Justification:

Kartesz indicates *Miscanthus sinensis* is naturalized across the eastern U.S. East of the Mississippi River, as well as Missouri, Louisiana, Texas, Colorado, and California.



Reference(s):

- Kartesz, J. T. (2015). The Biota of North America Program (BONAP).
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3. Is the species (or cultivar or variety) noted as being invasive in the U.S. or world?

- Answer: **Yes**, which contributes **2** points to the total PRE score.
- The *screeener* has a **High** confidence in this answer based on the available literature.

Answer / Justification:

Miscanthus sinensis is listed as "agricultural weed, casual alien, cultivation escape, environmental weed, garden thug, naturalised, noxious weed, weed" by the Global Compendium of Weeds. It is listed as "Potentially invasive, not banned" in Connecticut. It is listed by the Southeast Exotic Pest Plant Council as invasive in Tennessee. Listed invasive by TexasInvasives.org. EDD maps indicates the species is invasive in New Hampshire, Connecticut, South Carolina, Georgia, Alabama, Tennessee, Kentucky, and Illinois.

Reference(s):

- Invasive Plant Atlas of the United States (0). Chinese silvergrass: *Miscanthus sinensis* (Cyperales: Poaceae): Invasive Plant Atlas of the United States.
 - Global Compendium of Weeds (GCW) (0). *Miscanthus sinensis* from the Global Compendium of Weeds.
 - TexasInvasives.org (0). Texas Invasives *Miscanthus sinensis*.
 - USDA, & NRCS (2017). The Plants Database.
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4. Is the species (or cultivar or variety) noted as being invasive in the US or world in a similar climate?

- Answer: **Yes**, which contributes **3** points to the total PRE score.
- The *screeener* has a **High** confidence in this answer based on the available literature.



Answer / Justification:

Listed invasive by TexasInvasives.org. EDD maps indicates the species is invasive in New Hampshire, Connecticut, South Carolina, Georgia, Alabama, Tennessee, Kentucky, and Illinois.

Reference(s):

- Invasive Plant Atlas of the United States (0). Chinese silvergrass: *Miscanthus sinensis* (Cyperales: Poaceae): Invasive Plant Atlas of the United States.
 - TexasInvasives.org (0). Texas Invasives *Miscanthus sinensis*.
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5. Are other species of the same genus (or closely related genera) invasive in a similar climate?

- Answer: **No**, which contributes **0** points to the total PRE score.
- The *screeners* has a **High** confidence in this answer based on the available literature.

Answer / Justification:

Miscanthus floridulus, *M. japonicus*, *M. nepalensis*, *M. purpurascens*, and *M. sacchariflorus* all occur in the Global Compendium of Weeds but none appear to be invasive in areas with a similar climate.

Reference(s):

- Global Compendium of Weeds (0). Global Compendium of Weeds: species index.
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6. Is the species (or cultivar or variety) found predominately in a climate matching the region of concern?

- Answer: **No**, which contributes **0** points to the total PRE score.
- The *screeners* has a **High** confidence in this answer based on the available literature.

Answer / Justification:

Less than half of the species range has a similar climate to Texas.



Reference(s):

- GBIF (0). *Miscanthus sinensis* Andersson - gbif.
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Impact on Native Plants and Animals (Questions 7 - 10)

7. Does this plant displace native plants and dominate (overtop or smother) the plant community in areas where it has established?

- Answer: **Yes**, which contributes **1** points to the total PRE score.
- The *screeners* has a **Medium** confidence in this answer based on the available literature.

Answer / Justification:

"Forms extensive infestations by escaping from older ornamental plantings to roadsides, forest margins, and adjacent disturbed sites, especially after burning. Shade tolerant." "Miscanthus sinensis will spread somewhat invasively in the landscape, particularly in some of the milder areas of its growing range. It often initially spreads to disturbed sites such as roadsides, railroad right-of-ways or woodland margins. Invasive potential for the species is significant, but is of less concern for many of the numerous ornamental cultivars, some of which are sterile." "Miscanthus sinensis escapes from ornamental plantings and can form large clumps along disturbed areas, displacing native vegetation."

Reference(s):

- Invasive Plant Atlas of the United States (0). Chinese silvergrass: *Miscanthus sinensis* (Cyperales: Poaceae): Invasive Plant Atlas of the United States.
 - Missouri Botanical Garden PlantFinder (0). *Miscanthus sinensis* - Plant Finder.
 - TexasInvasives.org (0). Texas Invasives *Miscanthus sinensis*.
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8. Is the plant noted as promoting fire and/or changing fire regimes?

- Answer: **Yes**, which contributes **1** points to the total PRE score.
- The *screeners* has a **Very High** confidence in this answer based on the available literature.



Answer / Justification:

"Highly flammable and a fire hazard." "The grass is also extremely flammable and increases fire risks of invaded areas." "Invasive plant publications from southeastern United States indicate that Chinese silvergrass is considered highly flammable and a fire hazard. A survey from the Philippines suggested that Chinese silvergrass provides abundant "material" for fire."

Reference(s):

- Invasive Plant Atlas of the United States (0). Chinese silvergrass: *Miscanthus sinensis* (Cyperales: Poaceae): Invasive Plant Atlas of the United States.
 - TexasInvasives.org (0). Texas Invasives *Miscanthus sinensis*.
 - Waggy, M. A. (2011). *Miscanthus sinensis*. In: Fire Effects Information System.
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9. Is the plant a health risk to humans or animals/fish? Has the species been noted as impacting grazing systems?

- Answer: **Yes**, which contributes **1** points to the total PRE score.
- The *screeener* has a **Medium** confidence in this answer based on the available literature.

Answer / Justification:

Noted as irritating the "Mouth/GI tract" due to physical irritation in horses. The Invasive Species Compendium species datasheet indicates it "causes allergic responses".

Reference(s):

- CABI (0). *Miscanthus sinensis* (eulalia) - cabi.
 - Equines & Toxic Plants (0). Toxic Plant Database.
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10. Does the plant produce impenetrable thickets, blocking or slowing movement of animals, livestock, or humans?

- Answer: **Yes**, which contributes **1** points to the total PRE score.
- The *screeener* has a **Medium** confidence in this answer based on the available literature.



Answer / Justification:

"Plants form impenetrably dense clumps". The plants can grow to over 6 feet tall. A large stand of dense clumps could be difficult to move through.

Reference(s):

- Plants For A Future (PFAF) (0). *Miscanthus sinensis* Eulalia, Chinese silvergrass, Silver Feather, Eulalia Grass, Japanese Silver Grass, Ornamental Grass PFAF Plant Database.
 - efloras.org (0). *Miscanthus sinensis* in Flora of China @ efloras.org.
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Reproductive Strategies (Questions 11 - 17)

11. Does this species (or cultivar or variety) reproduce and spread vegetatively?

- Answer: **Yes**, which contributes **1** points to the total PRE score.
- The *screeener* has a **Very High** confidence in this answer based on the available literature.

Answer / Justification:

"Chinese silvergrass reproduce through rhizomes however seeds may be dispersed mechanically or through wind." " Clumps slowly expand in circumference by short rhizomes, but typically retain tight clump shape." "It can also spread through rhizomes." "Chinese silvergrass regenerates by sprouting from the rhizomes and by tillering."

Reference(s):

- Invasive Plant Atlas of the United States (0). Chinese silvergrass: *Miscanthus sinensis* (Cyperales: Poaceae): Invasive Plant Atlas of the United States.
 - Missouri Botanical Garden PlantFinder (0). *Miscanthus sinensis* - Plant Finder.
 - TexasInvasives.org (0). Texas Invasives *Miscanthus sinensis*.
 - Waggy, M. A. (2011). *Miscanthus sinensis*. In: Fire Effects Information System.
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12. If naturally detached fragments from this plant are capable of producing new plants, is this a common method of reproduction for the plant?

- Answer: **Yes**, which contributes **1** points to the total PRE score.
- The *screeners* has a **High** confidence in this answer based on the available literature.

Answer / Justification:

"Chinese silvergrass regenerates by sprouting from the rhizomes and by tillering." "M. sinensis has a branched, subterranean rhizome system. It spreads rhizomatously, and pieces of rhizome 4 cm long can be used to propagate the plant."

Reference(s):

- Pacific Island Ecosystems at Risk (PIER) (0). *Miscanthus sinensis* (PIER species info).
 - Waggy, M. A. (2011). *Miscanthus sinensis*. In: Fire Effects Information System.
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13. Does the species (or cultivar or variety) commonly produce viable seed?

- Answer: **Yes**, which contributes **1** points to the total PRE score.
- The *screeners* has a **Very High** confidence in this answer based on the available literature.

Answer / Justification:

"Chinese silvergrass reproduce through rhizomes however seeds may be dispersed mechanically or through wind." "This grass will reseed to the point of being somewhat invasive in the milder parts of its growing range."

Reference(s):

- CABI (0). *Miscanthus sinensis* (eulalia) - cabi.
 - Missouri Botanical Garden PlantFinder (0). *Miscanthus sinensis* - Plant Finder.
 - TexasInvasives.org (0). Texas Invasives *Miscanthus sinensis*.
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14. Does this plant produce copious viable seeds each year (> 1000)?

- Answer: **No**, which contributes **0** points to the total PRE score.
- The *screeener* has a **Medium** confidence in this answer based on the available literature.

Answer / Justification:

"Based on a study from Japan, seed production of individual Chinese silvergrass plants ranged from 64 to 1,051 seeds." " Matumura and Yukimura (1975) found no dormancy in *M. sinensis* and a wide variation in seed set over several years."

Reference(s):

- CABI (0). *Miscanthus sinensis* (eulalia) - cabi.
 - Waggy, M. A. (2011). *Miscanthus sinensis*. In: Fire Effects Information System.
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15. Is there significant germination (>25%) of seeds the next growing season, with no requirement of an infrequent environmental condition for seeds to germinate (i.e. fire) or long dormancy period?

- Answer: **Yes**, which contributes **1** points to the total PRE score.
- The *screeener* has a **Medium** confidence in this answer based on the available literature.

Answer / Justification:

"Seed - surface sow in spring in a greenhouse and keep moist. Germination should take place within a couple of weeks." " In Japan, Chinese silvergrass forms a soil seed bank, but densities may vary depending on the plant community and season. In a Chinese silvergrass-dominated grassland, 80% of the Chinese silvergrass seeds collected from the soil seed bank were viable." " Germination testing indicates that Chinese silvergrass seed may have little dormancy and has a high germination capacity over a wide range of environmental conditions." " Matumura and Yukimura (1975) found no dormancy in *M. sinensis* and a wide variation in seed set over several years."



Reference(s):

- CABI (0). *Miscanthus sinensis* (eulalia) - cabi.
 - Plants For A Future (PFAF) (0). *Miscanthus sinensis* Eulalia, Chinese silvergrass, Silver Feather, Eulalia Grass, Japanese Silver Grass, Ornamental Grass PFAF Plant Database.
 - Waggy, M. A. (2011). *Miscanthus sinensis*. In: Fire Effects Information System.
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16. Does this plant produce viable seed within the first three years (for an herbaceous species) to five years (for a woody species) after germination?

Reference(s):

- [Anonymous] .
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17. Does this plant continuously produce seed for >3 months each year or does seed production occur more than once a year?

- Answer: **No**, which contributes **0** points to the total PRE score.
- The *screeener* has a **Very Low** confidence in this answer based on the available literature.

Answer / Justification:

"Pink to red flowers in feathery, whisk-like, loose terminal panicles (8-10" long) bloom above the foliage from late August to October. Flower panicles gradually turn beige by mid-fall as the seeds mature."
"Information pertaining to Chinese silvergrass's North American phenology is limited. It is a warm-season grass. One nursery publication indicated that 'Gracillimus', a Chinese silvergrass cultivar, flowers in October in Portland, Oregon. Floras from the northeastern United States and North and South Carolina indicate that Chinese silvergrass flowers from September through November. One invasive species manual from the Southeast indicates Chinese silvergrass flowers from August to November and produces seed from September to January."

Reference(s):

- Missouri Botanical Garden PlantFinder (0). *Miscanthus sinensis* - Plant Finder.
- Waggy, M. A. (2011). *Miscanthus sinensis*. In: Fire Effects Information System.



Dispersal (Questions 18 - 20)

18. Are the plant's propagules frequently dispersed long distance (>100 m) by mammals or birds or via domestic animals?

- Answer: **No**, which contributes **0** points to the total PRE score.
- The *screeners* has a **Medium** confidence in this answer based on the available literature.

Answer / Justification:

there is no indication of this.

Reference(s):

- [Anonymous] .
-

19. Are the plant's propagules frequently dispersed long distance (>100 m) by wind or water?

- Answer: **Yes**, which contributes **1** points to the total PRE score.
- The *screeners* has a **High** confidence in this answer based on the available literature.

Answer / Justification:

"Chinese silvergrass reproduce through rhizomes however seeds may be dispersed mechanically or through wind." "Chinese silvergrass seed is dispersed by wind." "It can also be dispersed longer distances through its...wind dispersed seeds."

Reference(s):

- Pacific Island Ecosystems at Risk (PIER) (0). *Miscanthus sinensis* (PIER species info).
 - TexasInvasives.org (0). Texas Invasives *Miscanthus sinensis*.
 - Waggy, M. A. (2011). *Miscanthus sinensis*. In: Fire Effects Information System.
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20. Are the plant's propagules frequently dispersed via contaminated seed (agriculture or wildflower packets), equipment, vehicles, boats or clothing/shoes?

- Answer: **No**, which contributes **0** points to the total PRE score.
- The *screeners* has a **Medium** confidence in this answer based on the available literature.

Answer / Justification:

There is no evidence of this.

Reference(s):

- [Anonymous] .
-

Total PRE Score

PRE Score: 17 -- Reject (high risk of invasiveness)

Confidence: 72 / 100

Questions answered: 19 of 20 -- Valid (80% or more questions answered)

PRE Score Legend

The PRE Score is calculated by adding the point totals for each (answered) question.

< 13 : accept (low risk of invasiveness)

13 - 15 : evaluate further

> 15 : reject (high risk of invasiveness)

Questions Answered Legend

It is important to answer at least 16 questions to consider a PRE Score as "valid".

>= 16 : valid (80% or more questions answered)

<= 15 : invalid (not enough questions answered)



Organization Ownership and Content Privacy

Organization: 2017 Farm Bill PRE Project

Content Privacy: Public



Evaluation Reviewers

The PRE approach is to base decisions on science and make decisions by consensus of diverse horticultural stakeholders. The literature review and process of answering PRE's questions are based on science; the decisions of which plants to prioritize are based on consensus. To ensure this process is in place and that PRE is collaborative, volunteer stakeholders are recruited from each region to review evaluations. The following experts in their profession (plant science, conservation, or horticultural trade) have participated as volunteer PRE reviewers for this evaluation:

- Steve Moore

October 4, 2017

This evaluation has a total of 1 reviewer(s).



Evaluation Issues

The following section lists all public issues for this evaluation. Issues provide a way for stakeholder reviewers to communicate any concerns or suggestions they might have with the plant or evaluation. Please email PlantRight@suscon.org if additional action is required to resolve open issues.

There are currently no issues associated with this evaluation.



About PRE and this Plant Evaluation Report

The PlantRight Plant Risk Evaluator -- PRE is an online database and platform enabling those involved in non-native, terrestrial plant production to know before they grow if a plant poses a regional invasive risk. This tool offers many benefits, and we encourage you to visit the PRE website (<https://pre.ice.ucdavis.edu>) for more information.

If you are a nursery trade association, or involved in the research, development or distribution of horticultural plants we invite you to join the PRE community. If you are a plant scientist, affiliated with a horticultural college or botanic garden, and would like to learn more about becoming a PRE Screener, please drop us an email, PlantRight@suscon.org, requesting a PRE Account.

PRE beta funding is provided by Sustainable Conservation (<http://www.suscon.org/>) and a USDA Farm Bill grant.