



***Plant Risk Evaluator -- PRETM
Evaluation Report***

Firmiana simplex -- Texas

2017 Farm Bill PRE Project

PRE Score: 15 -- Evaluate this plant further

Confidence: 75 / 100

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

Privacy: Public

Status: Completed

Evaluation Date: June 5, 2017

This PDF was created on August 13, 2018



Plant Evaluated

Firmiana simplex



Image by Wikipedia



Evaluation Overview

A PRE™ screener conducted a literature review for this plant (*Firmiana simplex*) 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.

General Information

Status: Completed

Screener: Kim Taylor

Evaluation Date: June 5, 2017

Plant Information

Plant: *Firmiana simplex*

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

Not a 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 *screeners* has a **Very High** confidence in this answer based on the available literature.

Answer / Justification:

Bonap shows the species naturalized in the Southeastern US from Maryland south to Florida and west to Texas. Brizickey notes that the plant is naturalized mostly in the southeastern Coastal Plain from "northern Florida to North Carolina, southern Alabama, and Louisiana. It is a fast growing tree with smooth gray-green bark, occurring on roadsides, in city lots, thickets, and mixed deciduous woods." Younghance and Freeman categorizes the plant as a "non-native species that apparently survive and reproduce outside of cultivation (by either seed or asexual means)" Hunt noted in 1947 that the species was "Occasionally escaped from cultivation" in Charleston, South Carolina.

Reference(s):

- Kartesz, J. T. (2015). The Biota of North America Program (BONAP).
 - YOUNGHANCE, STEVEN. L., & FREEMAN JOHN. D. (1996). ANNOTATED CHECKLIST OF TREES AND SHRUBS OF ALABAMA. SIDA, Contributions to Botany. 17, 367–384.
 - Hunt, K. W. (1947). The Charleston Woody Flora. The American Midland Naturalist. 37, 670–756.
 - Brizicky, G. K. (1966). THE GENERA OF STERCULIACEAE IN THE SOUTHEASTERN UNITED STATES. Journal of the Arnold Arboretum. 47, 60–74.
-



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 *screeners* has a **Very High** confidence in this answer based on the available literature.

Answer / Justification:

This species is naturalized in the southeastern US which is a climate match with portions of Texas

Reference(s):

- Kartesz, J. T. (2015). The Biota of North America Program (BONAP).
-

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 *screeners* has a **Very High** confidence in this answer based on the available literature.

Answer / Justification:

Listed on Texas invasive list as well as by the Georgia Exotic Pest Plant Council, the South Carolina Exotic Pest Plant Council, and the Tennessee Exotic Pest Plant Council.

Reference(s):

- Invasive Plant Atlas of the United States (0). Chinese parasoltree: *Firmiana simplex* (Malvales: Sterculiaceae): Invasive Plant Atlas of the United States.
 - Austin Invasive Management (0). Texas Invasives- *Firmiana simplex*.
-



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 *screeners* has a **Very High** confidence in this answer based on the available literature.

Answer / Justification:

All areas of the US where the species is listed as invasive, including Texas, Tennessee, South Carolina, and Georgia are a climate match.

Reference(s):

- Invasive Plant Atlas of the United States (0). Chinese parasoltree: *Firmiana simplex* (Malvales: Sterculiaceae): Invasive Plant Atlas of the United States.
 - Austin Invasive Management (0). Texas Invasives- *Firmiana simplex*.
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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:

No other species in the genus appear to be invasive.

Reference(s):

- U.S. National Plant Germplasm Network (0). Taxonomy - GRIN-Global Web v 1.9.8.2.
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6. Is the species (or cultivar or variety) found predominately in a climate matching the region of concern?

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

Answer / Justification:

The species is native to temperate Asia (China, Japan, Taiwan). About half of this area appears to be a climate match for Texas.

Reference(s):

- GBIF (0). *Firmiana simplex* (L.) W. F Wight (GBIF).
 - U.S. National Plant Germplasm Network (0). Taxonomy - GRIN-Global Web v 1.9.8.2.
-

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 **Very High** confidence in this answer based on the available literature.



Answer / Justification:

Nesom lists this species as an F3 woody species indicating that it is "Relatively few in number, known from relatively few localities, usually in disturbed habitats, repeatedly introduced or perhaps merely long-persisting at some localities, not showing aggressively invasive tendencies, or perhaps incipiently invasive." This tree has very large leaves (up to 12 in) which will shade out vegetation below. It is also noted as being an aggressive competitor. Siebenthaler notes that "numerous locations throughout the parish have been completely conquered by the aggressive invader, suffocating hundreds of acres of native vegetation, wreaking total environmental havoc, and creating a control nightmare in the process." "Whether as seedlings, saplings or mature trees, they've evolved to successfully block light from reaching the forest floor regardless of growth stage, thereby preventing all but a few hardy indigenous species from surviving". The Tennessee Exotic Pest Plant Council lists it as a species of Alert indicating it's "invasiveness in Tennessee undetermined; known invasive in similar habitats, severe threat in adjacent states, or substantial management difficulty".

Reference(s):

- Nesom, G. L. (2009). ASSESSMENT OF INVASIVENESS AND ECOLOGICAL IMPACT IN NON-NATIVE PLANTS OF TEXAS. *Journal of the Botanical Research Institute of Texas*. 3, 971–991.
 - Invasive Plant Atlas of the United States (0). Chinese parasol tree: *Firmiana simplex* (Malvales: Sterculiaceae): Invasive Plant Atlas of the United States.
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8. Is the plant noted as promoting fire and/or changing fire regimes?

- 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] .
-



9. Is the plant a health risk to humans or animals/fish? Has the species been noted as impacting grazing systems?

- 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] .
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10. Does the plant produce impenetrable thickets, blocking or slowing movement of animals, livestock, or humans?

- 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:

The plant appears to form single trees and does not form thickets.

Reference(s):

- [Anonymous] .
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Reproductive Strategies (Questions 11 - 17)

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

- 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:

"Root sprouts have not been observed"

Reference(s):

- Miller, J. H., Chambliss E. B., & Loewenstein N. J. (2010). A field guide for the identification of invasive plants in southern forests.
-

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

Answer / Justification:

There is no evidence of this.

Reference(s):

- [Anonymous] .
-

13. Does the species (or cultivar or variety) commonly produce viable seed?

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

Answer / Justification:

Propogation is by seed. Missouri Botanical Garden notes the species will self seed somewhat aggressively.



Reference(s):

- Gilman, E. F., & Watson D. G. (0). Firmian simplex - IFAS extention.
 - Missouri Botanical Garden PlantFinder (0). Firmiana simplex - Plant Finder.
-

14. Does this plant produce copious viable seeds each year (> 1000)?

- 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:

No specific information could be found on the number of seeds produced each year but we can infer that a large quantity of seeds are produced. Fruits have 5 stalked follicles with up to 4 seeds each. Therefore each fruit will produce 20 seeds. This would require a tree to produce only 50 fruits per year to produce 1000 seeds. Since these trees can grow rather large (30-45 feet in height) it is highly likely that over 50 fruits would be produced in a year. Personal observations of the plant as well as photographs of the plant in flower support this.

Reference(s):

- Brizicky, G. K. (1966). THE GENERA OF STERCULIACEAE IN THE SOUTHEASTERN UNITED STATES. Journal of the Arnold Arboretum. 47, 60–74.
 - Missouri Botanical Garden PlantFinder (0). Firmiana simplex - Plant Finder.
-

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 **Low** confidence in this answer based on the available literature.



Answer / Justification:

The literature suggests that shed seeds quickly germinate. It does not appear to have a long dormancy period.

Reference(s):

- OMCSeeds.com (0). Chinese Parasol Tree (*Firmiana Simplex*) 10 seeds (\#361).
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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?

Answer / Justification:

I found no mention of age until flowering.

Reference(s):

- [Anonymous] .
-

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 **Medium** confidence in this answer based on the available literature.

Answer / Justification:

Different sources indicate the plant flowers from June to July or May to July. Seeds ripen in the fall with fruits produced quickly after flowering, from June to April. "Fruit drop throughout winter".

Reference(s):

- Miller, J. H., Chambliss E. B., & Loewenstein N. J. (2010). A field guide for the identification of invasive plants in southern forests.
- Missouri Botanical Garden PlantFinder (0). *Firmiana simplex* - Plant Finder.



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 **High** confidence in this answer based on the available literature.

Answer / Justification:

The seeds are high fat but have "not been observed as spread by wildlife"

Reference(s):

- Miller, J. H., Chambliss E. B., & Loewenstein N. J. (2010). A field guide for the identification of invasive plants in southern forests.
-

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:

"The seeds, which remain firmly attached to the margins of the opened, leaflike, apparently deciduous follicles, are probably dispersed by wind." "Spreads and forms infestations by wind- and water-dispersed seeds."



Reference(s):

- Miller, J. H., Chambliss E. B., & Loewenstein N. J. (2010). A field guide for the identification of invasive plants in southern forests.
 - Brizicky, G. K. (1966). THE GENERA OF STERCULIACEAE IN THE SOUTHEASTERN UNITED STATES. *Journal of the Arnold Arboretum*. 47, 60–74.
 - wiki.bugwood.org (0). IPSF/*Firmiana simplex* - Bugwoodwiki.
-

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 *screeener* 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: 15 -- Evaluate this plant further

Confidence: 75 / 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:

- Hans Landel December 18, 2017
- Steve Moore August 30, 2017

This evaluation has a total of 2 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.