Plant Risk Evaluator -- PRE™
Evaluation Report

Ligustrum sinense 'Sunshine' -- Texas

2017 Farm Bill PRE Project

PRE Score: 5 -- Accept (low risk of invasiveness)
Confidence: 62 / 100
Questions answered: 20 of 20 -- Valid (80% or more questions answered)

Privacy: Public
Status: Completed

Evaluation Date: May 9, 2017

This PDF was created on July 06, 2018

Plant Evaluated

Ligustrum sinense 'Sunshine'

Image by Brighter Blooms

Evaluation Overview

A PRE™ screener conducted a literature review for this plant (*Ligustrum sinense 'Sunshine'*) 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

Ligustrum sinense 'Sunshine' is a supposedly sterile cultivar of the highly invasive parent species. Little information is available specifically about the cultivar. We assume the cultivar is indeed sterile as stated in the patent application but with little available information on the cultivar most confidence levels are set to medium. Any evidence of this cultivar producing flowers or fruit would change the answers to most questions in this evaluation. More research is necessary to confirm the sterility of this cultivar in various environmental conditions.

General Information

Status: Completed
Screener: Kim Taylor
Evaluation Date: May 9, 2017

Plant Information

Plant: *Ligustrum sinense 'Sunshine'*

If the plant is a cultivar, how does its behavior differs from its parent's?
This cultivar is apparently sterile which will drastically alter the answers to questions in this evaluation in comparison to the parent species. The patent for the cultivar states that the plant is sterile as it does not produce flowers or fruit. Plant trials at the Dallas Arboretum also indicate that they have seen no sign of flowers or fruit. From the patent: "The following characteristics of the new cultivar have been repeatedly observed and can be used to distinguish `Sunshine` as a new and distinct cultivar of Ligustrum plant: 1. A mixture of yellow green and medium green-colored growing season foliage; 2. Lack of flower production; and 3. Compact growth habit." The color difference will not likely alter answers to the questions in this evaluation. The compact growth habit differs from the parent species but without more specific information it is unclear how this will impact how the cultivar behaves.

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

Answer / Justification:

The parent species is naturalized throughout the southeastern US but there is no evidence that this cultivar has escaped cultivation.

Reference(s):

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

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

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

Answer / Justification:

The parent species is naturalized throughout the southeastern US but there is no evidence that this cultivar has escaped cultivation.

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

Answer / Justification:

The parent species is naturalized and considered invasive throughout the southeastern US but there is no evidence that this cultivar has escaped cultivation. Since this cultivar is apparently sterile, there is no expectation that the plant has escaped.

Reference(s):

- Kartesz, J. T. (2015). The Biota of North America Program (BONAP).
- McCracken, T. P. (2009). Ligustrum plant named ‘Sunshine’- PATENT.

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

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

Answer / Justification:

The parent species is naturalized and considered invasive throughout the southeastern US but there is no evidence that this cultivar has escaped cultivation. Since this cultivar is apparently sterile, there is no expectation that the plant has escaped.

Reference(s):

- Kartesz, J. T. (2015). The Biota of North America Program (BONAP).
- McCracken, T. P. (2009). Ligustrum plant named ‘Sunshine’- PATENT.

5. Are other species of the same genus (or closely related genera) invasive in a similar climate?

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

Answer / Justification:

Several species of Ligustrum are naturalized, problematic and invasive in the Southeastern US including the parent species Ligustrum sinense, as well as L. japonicum, L. lucidum, L. quihoi, and l. vulgare. All of these are listed invasive by the Invasive Plant Atlas of the United States.

Reference(s):

- Kartesz, J. T. (2015). The Biota of North America Program (BONAP).
- Morris, L. L., Walck J. L., & Hidayati S. N. (2002). Growth and Reproduction of the Invasive Ligustrum sinense and Native Forestiera ligustrina (Oleaceae): Implications for the Invasion and Persistence of a Nonnative Shrub. International Journal of Plant Sciences. 163, 1001–1010.
- TexasInvasives.org (0). Texas Invasives.

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

Answer / Justification:

The parent species is found throughout the southeastern US and China. Both of these areas have a significant amount of climate overlap with Texas.

Reference(s):

- GBIF (0). Ligustrum sinense Lour. GBIF.

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

Answer / Justification:

There is no evidence that this is the case with the 'Sunshine' cultivar. There is no evidence that this cultivar has escaped.

Reference(s):

- [Anonymous] .

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

Answer / Justification:

"All introduced species of Ligustrum produce fruit toxic to humans that cause such symptoms as nausea, headache, abdominal pain, vomiting, diarrhea, weakness, and low blood pressure and body temperature. Where Chinese privet occurs in abundance, floral odors may cause respiratory irritation (Westbrooks & Preacher 1986)" Since this cultivar is sterile none of these should be issues.

Reference(s):

- USDA Plants Database (0). Ligustrum sinense - Chinese Privet USDA.

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

Answer / Justification:

the patent application states that this plant has a "dense thicket like growth habit". The parent species produces impenetrable thickets so it is reasonable that this cultivar does as well. There is no indication in the patent that this cultivar differs from the parent in this manner.

Reference(s):

- Morris, L. L., Walck J. L., & Hidayati S. N. (2002). Growth and Reproduction of the Invasive Ligustrum sinense and Native Forestiera ligustrina (Oleaceae): Implications for the Invasion and Persistence of a Nonnative Shrub. International Journal of Plant Sciences. 163, 1001–1010.
- McCracken, T. P. (2009). Ligustrum plant named ‘Sunshine’- PATENT.

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

Answer / Justification:

The parent species reproduces vegetatively by means of root suckers. The patent application does not state any difference in this type of spread for this cultivar so we infer that there is no difference from the parent species

Reference(s):

- McCracken, T. P. (2009). Ligustrum plant named ‘Sunshine’- PATENT.
- USDA Plants Database (0). Ligustrum sinense - Chinese Privet USDA.

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

Answer / Justification:

The parent species re-sprouts from the roots but there is no evidence that a naturally detached fragment would produce a new plant.

Reference(s):

- USDA Plants Database (0). Ligustrum sinense - Chinese Privet USDA.

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

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

Answer / Justification:

The patent application states that this cultivar is sterile. Plant trials at the Dallas Arboretum indicate that they have seen no sign of flowers or fruit. There are no published studies testing this.

Reference(s):

- McCracken, T. P. (2009). Ligustrum plant named ‘Sunshine’- PATENT.
- Dallas Arboretum Plant Trials (0). Plant of the Month: Ligustrum- Dallas Arboretum plant trials.

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

Answer / Justification:

The patent application states that this cultivar is sterile. Plant trials at the Dallas Arboretum indicate that they have seen no sign of flowers or fruit. There are no published studies testing this.

Reference(s):

- McCracken, T. P. (2009). Ligustrum plant named ‘Sunshine’- PATENT.
- Dallas Arboretum Plant Trials (0). Plant of the Month: Ligustrum- Dallas Arboretum plant trials.

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

Answer / Justification:

The patent application states that this cultivar is sterile. Plant trials at the Dallas Arboretum indicate that they have seen no sign of flowers or fruit. There are no published studies testing this.

Reference(s):

- McCracken, T. P. (2009). Ligustrum plant named ‘Sunshine’- PATENT.
- Dallas Arboretum Plant Trials (0). Plant of the Month: Ligustrum- Dallas Arboretum plant trials.

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

Answer / Justification:

The patent application states that this cultivar is sterile. Plant trials at the Dallas Arboretum indicate that they have seen no sign of flowers or fruit. There are no published studies testing this.

Reference(s):

- McCracken, T. P. (2009). Ligustrum plant named ‘Sunshine’- PATENT.
- Dallas Arboretum Plant Trials (0). Plant of the Month: Ligustrum- Dallas Arboretum plant trials.

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

Answer / Justification:

The patent application states that this cultivar is sterile. Plant trials at the Dallas Arboretum indicate that they have seen no sign of flowers or fruit. There are no published studies testing this.

Reference(s):

- McCracken, T. P. (2009). Ligustrum plant named ‘Sunshine’- PATENT.
- Dallas Arboretum Plant Trials (0). Plant of the Month: Ligustrum- Dallas Arboretum plant trials.

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

Answer / Justification:

The patent application states that this cultivar is sterile. Plant trials at the Dallas Arboretum indicate that they have seen no sign of flowers or fruit. There are no published studies testing this.

Reference(s):

- McCracken, T. P. (2009). Ligustrum plant named ‘Sunshine’- PATENT.
- Dallas Arboretum Plant Trials (0). Plant of the Month: Ligustrum- Dallas Arboretum plant trials.

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

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

Answer / Justification:

The patent application states that this cultivar is sterile. Plant trials at the Dallas Arboretum indicate that they have seen no sign of flowers or fruit. There are no published studies testing this.

Reference(s):

- McCracken, T. P. (2009). Ligustrum plant named 'Sunshine'- PATENT.
- Dallas Arboretum Plant Trials (0). Plant of the Month: Ligustrum- Dallas Arboretum plant trials.

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

Answer / Justification:

The patent application states that this cultivar is sterile. Plant trials at the Dallas Arboretum indicate that they have seen no sign of flowers or fruit. There are no published studies testing this.

Reference(s):

- McCracken, T. P. (2009). Ligustrum plant named 'Sunshine'- PATENT.
- Dallas Arboretum Plant Trials (0). Plant of the Month: Ligustrum- Dallas Arboretum plant trials.

Total PRE Score

PRE Score: 5 -- Accept (low risk of invasiveness)
Confidence: 62 / 100
Questions answered: 20 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:

• Charlotte Reemts	November 13, 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.