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

# *Lonicera japonica* -- Texas

*2017 Farm Bill PRE Project*

**PRE Score:** 19 -- Reject (high risk of invasiveness)
**Confidence:** 84 / 100
**Questions answered:** 20 of 20 -- Valid (80% or more questions answered)

**Privacy:** Public
**Status:** Completed

**Evaluation Date:** September 29, 2017

*This PDF was created on July 06, 2018*

# Plant Evaluated

*Lonicera japonica*

Image by Aftabbanoori, Wikipedia user

# Evaluation Overview

A PRE™ screener conducted a literature review for this plant (*Lonicera japonica*) 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

Lonicera japonica, like several other members of the genus, is naturalized across much of the Eastern U.S. and considered invasive in Texas. Plants spread vegetatively and climb and smother native vegetation. Plants can spread by bird dispersed seed or by vegetative fragments carried down waterways.

## General Information

**Status:** Completed
**Screener:** Kim Taylor
**Evaluation Date:** September 29, 2017

## Plant Information

**Plant:** *Lonicera japonica*

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

**Answer / Justification:**

Kartesz indicates Lonicera japonica is naturalized across most of the eastern United States. GRIN indicates it is also naturalized in Africa, Australia, New Zealand, Europe, and Hawaii.

**Reference(s):**


- U.S. National Plant Germplasm Network (0). Lonicera japonica Taxonomy - GRIN-Global Web v 1.9.8.2.
- 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: **Yes**, which contributes **2** points to the total PRE score.
- The *screener* has a **Very High** confidence in this answer based on the available literature.

**Answer / Justification:**

Kartesz indicates Lonicera japonica is naturalized across most of the eastern United States, much of which shares a climate with Texas. USDA Plants indicates it is also naturalized across much of the Great Plains and Southwest, which also share a climate with Texas.

**Reference(s):**


- Kartesz, J. T. (2015). The Biota of North America Program (BONAP).
- USDA, & NRCS (2017). The Plants Database.


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

**Answer / Justification:**

Lonicera japonica is listed as an "agricultural weed, casual alien, cultivation escape, environmental weed, garden thug, naturalised, noxious weed, sleeper weed, weed" by the Global Compendium of Weeds. Lonicera japonica is listed as "Invasive, banned" in Connecticut, "Prohibited" in Massachusetts,"Prohibited Invasive Species" in New Hampshire, and a "Class B noxious weed" in Vermont. USDA Plants indicates the species is on State Noxious Weed lists in 46 states. " Japanese honeysucke is listed as a Category 1 invasive by the Florida Exotic Pest Plant Council." It is listed as invasive by TexasInvasives.org. EDD Maps indicates the species is invasive in Wisconsin, Illinois, Kentucky, Tennessee, Georgia, Alabama, South Carolina, Florida, Vermont, New Hampshire, Massachusets and Connecticut. "Japanese honeysuckle is listed by the state of Vermont as a Category II plant: "exotic plant species considered to have the potential to displace native plants either on a localized or widespread scale". It is listed as an "exotic weed" and prohibited for sale within the state by the Illinois Department of Conservation" "Becoming a serious pest in Hawai‘i. Also a pest in Australia and elsewhere in the US. On New Zealand noxious weed list and banned from sale in that country. A pest plant on Christmas Island (Indian Ocean). Reported to be invasive in the Canary Islands."

**Reference(s):**


- Invasive Plant Atlas of the United States (0). Japanese honeysuckle: Lonicera japonica (Dipsacales: Caprifoliaceae): Invasive Plant Atlas of the United States.
- Pacific Island Ecosystems at Risk (PIER) (0). Lonicera japonica (PIER species info).
- Global Compendium of Weeds (GCW) (0). Lonicera japonica information from the Global Compendium of Weeds (GCW).
- Florida Invasive Plants (FLIP) (0). Lonicera japonica Plant Details - FLIP.
- Munger, G. T. (2002). Species: Lonicera japonica.
- TexasInvasives.org (0). Texas Invasives - Lonicera japonica.
- 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 *screener* has a **Very High** confidence in this answer based on the available literature.

**Answer / Justification:**

Japanese honeysucke is listed as a Category 1 invasive by the Florida Exotic Pest Plant Council." It is listed as invasive by TexasInvasives.org. EDD Maps indicates the species is invasive in Wisconsin, Illinois, Kentucky, Tennessee, Georgia, Alabama, South Carolina, Florida, Vermont, New Hampshire, Massachusets and Connecticut.

**Reference(s):**


- Invasive Plant Atlas of the United States (0). Japanese honeysuckle: Lonicera japonica (Dipsacales: Caprifoliaceae): Invasive Plant Atlas of the United States.
- Florida Invasive Plants (FLIP) (0). Lonicera japonica Plant Details - FLIP.
- TexasInvasives.org (0). Texas Invasives - Lonicera japonica.


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

**Answer / Justification:**

Several species of Lonicera are problematic in areas with similar climate to Texas including L. xbella, L. fragrantissima, L. maackii, L. morrowii, and L. tatarica. 37 species of Lonicera are listed in the Global Compendium of Weeds.

**Reference(s):**


- Global Compendium of Weeds (GCW) (0). Lonicera japonica information from the Global Compendium of Weeds (GCW).
- Kartesz, J. T. (2015). The Biota of North America Program (BONAP).

### 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 *screener* 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). Lonicera japonica Thunb. - 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: **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:**

"Lonicera japonica is able to displace native species by outcompeting native plants for light, space, water, and nutrients. Lonicera japonica grows very rapidly, and will send out runners that will root and grow anywhere. In nature, honeysuckle vines will twine around anything growing in close proximity, eventually covering small trees and shrubs. This can lead to the collapse of the trees and shrubs due to the mere weight of vegetation. Dense thickets of vegetation prevent the germination and growth of many native species, eventually preventing the replacement of understory shrubs and trees. Honeysuckle opens the door for many other invasive species to invade, further decreasing the natural diversity of forests or natural areas. Japanese honeysucke is listed as a Category 1 invasive by the Florida Exotic Pest Plant Council."" ""In North America, Japanese honeysuckle has few natural enemies which allows it to spread widely and out-compete native plant species. Its evergreen to semi-evergreen nature gives it an added advantage over native species in many areas. Shrubs and young trees can be killed by girdling when vines twist tightly around stems and trunks, cutting off the flow of water through the plant. Dense growths of honeysuckle covering vegetation can gradually kill plants by blocking sunlight from reaching their leaves. Vigorous root competition also helps Japanese honeysuckle spread and displace neighboring native vegetation."" ""This vine can be quite invasive, and can rapidly cover and literally suffocate shrubs or small trees if allowed to climb on them."" ""A very vigorous climbing plant, it makes a good dense ground cover plant where it has the space to run over the ground but it will swamp smaller plants"" ""This species has the potential to become a rampant weed, it has escaped from cultivation in N. America whre it can outcompete native species."" ""Lonicera japonica invades a wide variety of habitats including forest floors, canopies, roadsides, wetlands, and disturbed areas. It can girdle small saplings by twining around them, and can form dense mats in the canopies of trees, shading everything below."" ""Once established, Japanese honeysuckle colonies can spread rapidly. Stems growing along the ground provide structure for new twining stems so that, even in the absence of other supporting vegetation, Japanese honeysuckle can form dense mats of monospecific vegetation up to 5 feet (1.5 m) deep."" ""Japanese honeysuckle can suppress advance regeneration of shade intolerant and mid-tolerant species, and can outcompete seedlings and saplings following small-scale disturbance events that create canopy openings. Self-replacement of overstory species, already diminished by competition from fire-intolerant but shade-tolerant species such as maples (Acer spp.), may be inhibited even further by Japanese honeysuckle competition."

**Reference(s):**


- Invasive Plant Atlas of the United States (0). Japanese honeysuckle: Lonicera japonica (Dipsacales: Caprifoliaceae): Invasive Plant Atlas of the United States.
- Missouri Botanical Garden PlantFinder (0). Lonicera japonica 'Aureoreticulata' - Plant Finder.
- Plants For A Future (PFAF) (0). Lonicera japonica Japanese Honeysuckle PFAF Plant Database.
- Florida Invasive Plants (FLIP) (0). Lonicera japonica Plant Details - FLIP.
- Munger, G. T. (2002). Species: Lonicera japonica.
- TexasInvasives.org (0). Texas Invasives - Lonicera japonica.

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

**Answer / Justification:**

"climbing Japanese honeysuckle can become ladder fuel. Fire may reach 15 feet (4.5 m) or more into the canopy on Japanese honeysuckle vines" The species has a "high" flammability rating

**Reference(s):**


- Pacific Island Ecosystems at Risk (PIER) (0). Lonicera japonica (PIER species info).
- Munger, G. T. (2002). Species: Lonicera japonica.


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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:**

"The leaves contain saponins. Saponins are quite toxic but are poorly absorbed by the human body and so most pass through without harm. They can be found in many common foods such as some beans. Thorough cooking, and perhaps changing the cooking water once, will normally remove most of the saponins. Saponins are much more toxic to some creatures, such as fish, and hunting tribes have traditionally put large quantities of them in streams, lakes etc in order to stupefy or kill the fish."

**Reference(s):**


- Plants For A Future (PFAF) (0). Lonicera japonica Japanese Honeysuckle PFAF Plant Database.


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

**Answer / Justification:**

"Dense thickets of vegetation prevent the germination and growth of many native species, eventually preventing the replacement of understory shrubs and trees." While the species is smothering, it is not thicket forming.

**Reference(s):**

- Pacific Island Ecosystems at Risk (PIER) (0). Lonicera japonica (PIER species info).
- Florida Invasive Plants (FLIP) (0). Lonicera japonica Plant Details - FLIP.

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

**Answer / Justification:**

"Lonicera japonica grows very rapidly, and will send out runners that will root and grow anywhere." " forming long woody rhizomes that sprout frequently." " Growth and spread of Japanese honeysuckle is through vegetative (plant growth) and sexual (seed) means. It produces long vegetative runners that develop roots where stem and leaf junctions (nodes) come in contact with moist soil. Underground stems (rhizomes) help to establish and spread the plant locally." "Once established, Japanese honeysuckle colonies can spread rapidly. Stems growing along the ground provide structure for new twining stems so that, even in the absence of other supporting vegetation, Japanese honeysuckle can form dense mats of monospecific vegetation up to 5 feet (1.5 m) deep."

**Reference(s):**


- Florida Invasive Plants (FLIP) (0). Lonicera japonica Plant Details - FLIP.
- Munger, G. T. (2002). Species: Lonicera japonica.
- TexasInvasives.org (0). Texas Invasives - Lonicera japonica.


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

**Answer / Justification:**

"This is not a common method of dispersal, although stem fragments are carried by water in floods." "Grazing and ungulate mammals including deer, sheep, goats, and cattle may assist spread by transporting vegetative fragments and dispersing seeds."

**Reference(s):**


- CABI (0). Lonicera japonica (Japanese honeysuckle) - cabi.


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

**Answer / Justification:**

"Growth and spread of Japanese honeysuckle is through vegetative (plant growth) and sexual (seed) means...Long distance dispersal is by birds and other wildlife that readily consume the fruits and defecate the seeds at various distances from the parent plant."

**Reference(s):**


- TexasInvasives.org (0). Texas Invasives - Lonicera japonica.


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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:**

"Each fruit contains 2-3 small brown to black ovate seeds." The species does not appear to produce copious amounts of seed. "L. japonica is generally described as producing abundant fruit in North America. Fruit production in New Zealand and Australia varies considerably from place to place and year to year, some stands producing no fruit in any one year. Fruit are produced most abundantly on side shoots of second-year or older wood."

**Reference(s):**


- Invasive Plant Atlas of the United States (0). Japanese honeysuckle: Lonicera japonica (Dipsacales: Caprifoliaceae): Invasive Plant Atlas of the United States.
- CABI (0). Lonicera japonica (Japanese honeysuckle) - cabi.
- Pacific Island Ecosystems at Risk (PIER) (0). Lonicera japonica (PIER species info).


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

**Answer / Justification:**

"Seed - best sown as soon as it is ripe in a cold frame. Stored seed requires 2 months cold stratification and should be sown as soon as possible in a cold frame." "Although there are no published studies examining Japanese honeysuckle seed banks, indirect evidence suggests a low potential for formation of persistent seed banks. Germination of most seeds appears to occur during the spring immediately following dispersal." "L. japonica seeds require a period of cold temperatures to break dormancy. Germination in soil of 63% was achieved following exposure to temperatures of 5-8°C for 60 days (Leatherman, 1955). Germination occurs in spring, as soon as air temperatures exceed 10°C."

**Reference(s):**


- CABI (0). Lonicera japonica (Japanese honeysuckle) - cabi.
- Plants For A Future (PFAF) (0). Lonicera japonica Japanese Honeysuckle PFAF Plant Database.
- Munger, G. T. (2002). Species: Lonicera japonica.


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

**Answer / Justification:**

"Flowering and seed production are most prolific, and occur at an earlier age, when plants are in open habitats. In eastern Texas, Japanese honeysuckle bore fruit at age 3 when plants were open-grown and at age 5 when shade-grown. In general, fruit production peaked when plants were 4 to 6 years old and declined considerably thereafter."

**Reference(s):**


- Munger, G. T. (2002). Species: Lonicera japonica.


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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:**

"Flowers appear from May to frost and give way to black berries which mature in late summer to fall." "Fl. Apr-Jun, fr. Oct-Nov." "It is in flower from Jun to July." "Flowering occurs from April to July"

**Reference(s):**

- Invasive Plant Atlas of the United States (0). Japanese honeysuckle: Lonicera japonica (Dipsacales: Caprifoliaceae): Invasive Plant Atlas of the United States.
- Missouri Botanical Garden PlantFinder (0). Lonicera japonica 'Aureoreticulata' - Plant Finder.
- efloras.org (0). Lonicera japonica in Flora of China @ efloras.org.
- Plants For A Future (PFAF) (0). Lonicera japonica Japanese Honeysuckle PFAF Plant Database.

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## 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: **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:**

"Fruit a black, globose berry, 5-6 mm (0.25 in) long, with 2-3 seeds per berry." "Long distance dispersal is by birds and other wildlife that readily consume the fruits and defecate the seeds at various distances from the parent plant." " Japanese honeysuckle seeds are frequently dispersed by frugivorous birds and small mammals [47,57,146]. Bird dispersal is typically by species that frequent brushy areas, thickets, and forest openings. Birds that frequent forest openings, for example, usually fly from 1 opening to another, depositing seeds at each roosting site. This means of seed dispersal generally ensures deposition in a habitat where the seedling has a high probability of success, such as beneath a sapling tree suitable for stem twining." "Grazing and ungulate mammals including deer, sheep, goats, and cattle may assist spread by transporting vegetative fragments and dispersing seeds."

**Reference(s):**


- CABI (0). Lonicera japonica (Japanese honeysuckle) - cabi.
- Florida Invasive Plants (FLIP) (0). Lonicera japonica Plant Details - FLIP.
- Munger, G. T. (2002). Species: Lonicera japonica.
- TexasInvasives.org (0). Texas Invasives - Lonicera japonica.


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

**Answer / Justification:**

The seeds are dispersed by birds and are not dispersed by wind or water. "This is not a common method of dispersal, although stem fragments are carried by water in floods."

**Reference(s):**


- CABI (0). Lonicera japonica (Japanese honeysuckle) - cabi.
- Pacific Island Ecosystems at Risk (PIER) (0). Lonicera japonica (PIER species info).


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

**Answer / Justification:**

GRIN indicates the species is a "potential seed contaminant" "Attempts to control L. japonica by mowing can result in its spread, especially if fragments of vines are caught in machinery."

**Reference(s):**


- U.S. National Plant Germplasm Network (0). Lonicera japonica Taxonomy - GRIN-Global Web v 1.9.8.2.
- CABI (0). Lonicera japonica (Japanese honeysuckle) - cabi.


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# Total PRE Score

**PRE Score:** 19 -- Reject (high risk of invasiveness)
**Confidence:** 84 / 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 |
| • Trey Wyatt | November 1, 2017 |
| • Steve Moore | October 4, 2017 |

This evaluation has a total of 3 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.

## Issue ID # 5832

**Date Created:** November 13, 2017 - 9:29am
**Date Updated:** January 2, 2018 - 1:05pm

**Submitted by:** Charlotte Reemts

**Status:** Fixed
**Type:** Suggestion
**Severity:** Major
**Scope:** Evaluation as a whole

**Issue Description**

References are missing for many questions, including ones where the text is clearly quoted from the un-named references.

**Issue Resolution (Screener's Response to Issue)**

Possible techinical issue. All references have been added.

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## Issue ID # 5294

**Date Created:** October 4, 2017 - 6:44am
**Date Updated:** January 2, 2018 - 1:07pm

**Submitted by:** Steve Moore

**Status:** Fixed
**Type:** Comment

**Severity:** Minor
**Scope:** General Information

**Issue Description** I think that the invasiveness of this plant is accepted by most all horticultural industries, it doesn't remove the value that this plant has as a landscape item. Management recommendations need to be made when offering this plant for sale. **Issue Resolution (Screener's Response to Issue)**

I agree that management recomendations should be made if this plant continues to be offered for sale.

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# 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.