



*Plant Risk Evaluator -- PRETM
Evaluation Report*

***Viburnum dilatatum 'Henneke' CARDINAL
CANDY -- Illinois***

2017 Farm Bill PRE Project

PRE Score: 16 -- Reject (high risk of invasiveness)

Confidence: 72 / 100

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

Privacy: Public

Status: Submitted

Evaluation Date: October 8, 2017

This PDF was created on June 15, 2018



Plant Evaluated

Viburnum dilatatum 'Henneke' CARDINAL CANDY



Image by David J. Stang



Evaluation Overview

A PRE™ screener conducted a literature review for this plant (*Viburnum dilatatum* 'Henneke' CARDINAL CANDY) 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

Its reliable production of abundant red berries makes *Viburnum dilatatum* 'Henneke' a desirable ornamental, but increases its risk of invasiveness. This plant has rarely escaped cultivation in Illinois but is categorized as an emerging threat in the Mid-Atlantic states. Spread in Illinois may be limited by cold hardiness: Steve Worth of Kankakee Nursery says "this variety has not proven reliably hardy in Northern Illinois and we have dropped it from production."

General Information

Status: Submitted

Screener: Emily Russell

Evaluation Date: October 8, 2017

Plant Information

Plant: *Viburnum dilatatum* 'Henneke' CARDINAL CANDY

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

'Henneke' was selected for its superior cold hardiness. The habit is more compact than the species. "Although many of the viburnums need additional viburnums nearby for best fruit production, CARDINAL CANDY seems to produce abundant fruit without having other pollinators in the same area." (MOBOT)

Regional Information

Region Name: Illinois



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

Answer / Justification:

Viburnum dilatatum is naturalized in Illinois, Virginia, Maryland, Delaware, New Jersey, New York, Pennsylvania, Connecticut, Massachusetts, and Rhode Island. 'Henneke' produces copious seeds that can be dispersed long distance by birds. There is no evidence this cultivar is different from the parent species in ability to naturalize.

Reference(s):

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

Answer / Justification:

Viburnum dilatatum is naturalized in Illinois and similar climates in Virginia, Maryland, Delaware, New Jersey, New York, and Pennsylvania. 'Henneke' produces copious seeds that can be dispersed long distance by birds. There is no evidence this cultivar is different from the parent species in ability to naturalize.



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

Answer / Justification:

Viburnum dilatatum is listed as invasive in the Southeast and Mid-Atlantic. In Pennsylvania it is on the watch list. In New Jersey it is categorized as "Emerging Stage 3 - Common (may be regionally abundant). It is highly threatening to native communities." In Virginia it has a "medium" ranking of invasiveness.

Reference(s):

- Center for Invasive Species and Ecosystem Health, University of Georgia (2016). Southeast Exotic Pest Plant Council (SE-EPPC).
 - New Jersey Invasive Species Strike Team (2012). NJ Invasive Species Strike Team Target Species Fact Sheets.
 - Heffernan, K., Engle E., & Richardson C.. (2014). Virginia Invasive Plant Species List.
 - Swearingen, J., Slattery B., Reshetiloff K., & Zwicker S. (2010). Plant Invaders of Mid-Atlantic Natural Areas. 168.
 - Pennsylvania Department of Conservation and Natural Resources (0). DCNR Invasive Plants.
 - Miller, J. H., Chambliss E. B., & Barger C. T. (2016). Invasive Plants of the Thirteen Southern States.
-

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



Answer / Justification:

Pennsylvania, New Jersey, and Virginia have a similar climate to Illinois.

Reference(s):

- New Jersey Invasive Species Strike Team (2012). NJ Invasive Species Strike Team Target Species Fact Sheets.
 - Heffernan, K., Engle E., & Richardson C.. (2014). Virginia Invasive Plant Species List.
 - Pennsylvania Department of Conservation and Natural Resources (0). DCNR Invasive Plants.
-

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

Answer / Justification:

Viburnum opulus var. *opulus* is invasive in the Midwest.

Reference(s):

- Midwest Invasive Plant Network (2015). Midwest Invasive Plant List.
-

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:

Viburnum dilatatum 'Henneke' is grown in the Southeast and Northwest United States, which do not match the climate of Illinois. The native distribution of *Viburnum dilatatum* in Japan and Korea do match, but central China does not match. Spread in Illinois may be limited by cold hardiness: Steve Worth of Kankakee Nursery says "this variety has not proven reliably hardy in Northern Illinois."

Reference(s):

- [Anonymous] .
-

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

Answer / Justification:

For the species: "Shrubs can grow in high thickets that cast dense shade, suppressing natives. A dense cover of young plants produced from seed and vegetative re-growth blanket the ground in infested areas. *V. dilatatum* leafs out earlier in the spring and keeps its leaves later into the fall than most natives, giving it a competitive advantage."

Reference(s):

- Martin, S., & Burgiel S. (2012). Invasive Plant Alert: Linden *Viburnum*.
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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 *screeener* has a **Medium** confidence in this answer based on the available literature.



Answer / Justification:

No evidence of changing fire regimes.

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

Answer / Justification:

No evidence of health risks to humans or animals.

Reference(s):

- [Anonymous] .
-

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:

Viburnum dilatatum can form dense thickets 8-10 feet tall.

Reference(s):

- Martin, S., & Burgiel S. (2012). Invasive Plant Alert: Linden *Viburnum*.



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:

"A dense cover of young plants produced from seed and vegetative re-growth blanket the ground in infested areas." "Cutting should be avoided in spring because cut branches can reproduce by layering."
"This species resprouts strongly, so cutting is not recommended."

Reference(s):

- Martin, S., & Burgiel S. (2012). Invasive Plant Alert: Linden Viburnum.
 - New Jersey Invasive Species Strike Team (2012). NJ Invasive Species Strike Team Target Species Fact Sheets.
-

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

Answer / Justification:

There is no mention of naturally detached fragments in the literature.

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:

"Also on Bob's [Bob Streitmatter, director of Luthy Gardens in Peoria] top 10 list was the Cardinal Candy Linden Viburnum (*Viburnum dilatatum* 'Henneke'). He described it as growing 6x4 feet with bright red fruit. He did, however, warn that it tends to reseed and could come up in unwanted locations."

Reference(s):

- University of Illinois Extension (2016). Viburnums Versatile Shrubs for the Landscape. Extension Connection.
-

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

Answer / Justification:

Fruit production is copious. From the patent for 'Henneke': "Freely flowering With about 294 flowers per cyme and about 1 to 5 cymes per lateral branch. Seed Quantity per fruit: One." From Park Seed catalogue description: "The birds will feast for months on the MASSES of shiny scarlet berries this extra-hardy Linden Viburnum sets! Cardinal Candy™ is well-named for the birds will think that the gates of heaven have opened when they see the thousands upon thousands of small, very shiny, scarlet berries this shrub offers from late summer right through midwinter!" Michael Dirr on *V. dilatatum*: "I have seen fruiting cymes heavy enough to bend the branches." Sources also say that 'Henneke' seems to produce fruit well even without other cultivars near by for pollination.

Reference(s):

- Dirr, M. A. (1998). Manual of Woody Landscape Plants: Their Identification, Ornamental Characteristics, Culture, Propagation and Uses.
- Henneke, R. (2002). *Viburnum* plant named 'Henneke'.
- Park Seed Co. (2017). Cardinal Candy™ *Viburnum*.



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

Answer / Justification:

Michael Dirr on *V. dilatatum*: "seeds require about 5 months warm/3 months cold but even then germination is not guaranteed."

Reference(s):

- Dirr, M. A. (1998). Manual of Woody Landscape Plants: Their Identification, Ornamental Characteristics, Culture, Propagation and Uses.
-

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

Answer / Justification:

'Henneke' produces fruit by four years of age.

Reference(s):

- Henneke, R. (2002). *Viburnum* plant named 'Henneke'.
-



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

Answer / Justification:

'Henneke' is "continuously flowering May through June in Grand Haven, Mich."

Reference(s):

- Henneke, R. (2002). *Viburnum* plant named 'Henneke'.
-

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

Answer / Justification:

Fruits are dispersed by birds.

Reference(s):

- Takanose, Y., & Kamitani T. (2003). Fruiting of fleshy-fruited plants and abundance of frugivorous birds: Phenological correspondence in a temperate forest in central Japan. *Ornithological Science*. 2, 25–32.
 - Missouri Botanical Garden (2017). *Viburnum dilatatum* 'Henneke' CARDINAL CANDY - Plant Finder.
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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 *screeener* has a **Medium** confidence in this answer based on the available literature.

Answer / Justification:

There is no evidence of dispersal by wind or water.

Reference(s):

- [Anonymous] .
-

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 accidental dispersal by humans.

Reference(s):

- [Anonymous] .
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Total PRE Score

PRE Score: 16 -- Reject (high risk of invasiveness)

Confidence: 72 / 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:

- Steve Worth December 22, 2017
- Kim Shearer November 18, 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.

Issue ID # 6201

Date Created: December 21, 2017 - 2:12pm

Date Updated: February 19, 2018 - 7:23pm

Submitted by: Steve Worth

Status: Fixed

Type: Comment

Severity: Minor

Scope: General Information

Issue Description

This variety has not proven reliably hardy in Northern Illinois and we have dropped it from production

Issue Resolution (Screener's Response to Issue)

Added this comment to the evaluation.

Issue ID # 5894

Date Created: November 18, 2017 - 10:20am

Date Updated: December 10, 2017 - 5:45pm

Submitted by: Kim Shearer

Status: Fixed

Type: Suggestion

Severity:



Minor

Scope: Q03. Is the species (or cultivar or variety) noted as being invasive in the U.S. or world?

Issue Description

The Southeast Exotic Pest Plant Council reference takes the reader to a site without the information being referenced. The original source that the invasive plant list for the Southeast states was derived from is located at this link ... <https://www.invasive.org/south/seweeds.cfm>. This should be included as the reference for the Southeast.

NPS link for Plant Invaders of Mid-Atlantic Natural Areas is no longer working/cannot be found.

Issue Resolution (Screener's Response to Issue)

Citation added for Invasive Plants of the Thirteen Southern States.



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.