



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

***Cercis canadensis -- Minnesota***

***2017 Farm Bill PRE Project***

**PRE Score:** 2 -- Accept (low risk of invasiveness)

**Confidence:** 76 / 100

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

**Privacy:** Public

**Status:** Completed

**Evaluation Date:** September 6, 2017

*This PDF was created on June 15, 2018*



## Plant Evaluated

*Cercis canadensis*



Image by GreenZmiy



## Evaluation Overview

A PRE™ screener conducted a literature review for this plant (*Cercis canadensis*) 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

In the context of invasiveness, *Cercis canadensis* is a unique plant in Minnesota because it is native to much of Eastern United States, including Wisconsin (which has a similar climate to MN), but according to the USDA it is not native to Minnesota. Interestingly, the USDA does not list this plant as having naturalized in any area outside its native range. *Cercis canadensis* is a common landscape plant throughout much of the US and North America. However, although it does produce a significant amount of seed (with unknown viability), there is no evidence that the seedlings can persist and compete with native species in natural areas.

## General Information

**Status:** Completed

**Screener:** Mike Monterusso

**Evaluation Date:** September 6, 2017

## Plant Information

**Plant:** *Cercis canadensis*

## Regional Information

**Region Name:** Minnesota



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

#### Answer / Justification:

While *Cercis canadensis* is heavily planted in landscapes across the US, there is no evidence of it having established in natural areas.

#### Reference(s):

- [Anonymous] .
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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 *screeener* has a **High** confidence in this answer based on the available literature.

#### Answer / Justification:

No evidence found.

#### Reference(s):

- [Anonymous] .



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

#### Answer / Justification:

*C. canadensis* is often suggested as an acceptable alternative to invasive species.

#### Reference(s):

- Alvey, A. A. (2013). Finding Alternatives to Invasive Ornamental Plants in New York .
- 

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

#### Answer / Justification:

No evidence found.

#### Reference(s):

- [Anonymous] .
- 

### 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 evidence found.

**Reference(s):**

- [Anonymous] .
- 

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

**Answer / Justification:**

Most occurrences are in the Eastern US.

**Reference(s):**

- GBIF (2016). *Cercis canadensis* L..
- 

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

**Answer / Justification:**

No evidence found.



**Reference(s):**

- [Anonymous] .
- 

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

**Answer / Justification:**

No evidence found.

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

**Answer / Justification:**

No evidence found.

**Reference(s):**

- [Anonymous] .
-





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

**Answer / Justification:**

No evidence found.

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

**Answer / Justification:**

No evidence found.

**Reference(s):**

- [Anonymous] .
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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 *screeener* has a **High** confidence in this answer based on the available literature.



**Answer / Justification:**

No evidence found.

**Reference(s):**

- [Anonymous] .
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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 *screeener* has a **Very High** confidence in this answer based on the available literature.

**Answer / Justification:**

"Seeds are released by the opening of fruit sutures or decay of the fruit wall. Most seeds are dispersed during fall and winter by wind and animals."

**Reference(s):**

- Dickson, J. G. (2017). *Cercis canadensis* L.
- 

**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:**

Personal observation... a mature *C. canadensis* could easily produce > 1,000 seeds/year.

**Reference(s):**

- [Anonymous] .



**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?**

**Reference(s):**

- [Anonymous] .
- 

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

**Answer / Justification:**

"Development of young redbud to the flowering stage is rapid. Young redbuds have been observed first flowering when less than 7 years old but do not fruit the first year of blossoming."

**Reference(s):**

- Dickson, J. G. (2017). *Cercis canadensis* L.
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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 **High** confidence in this answer based on the available literature.

**Answer / Justification:**

"Flowering usually occurs sometime from March to May and precedes leafing."



**Reference(s):**

- Dickson, J. G. (2017). *Cercis canadensis* L.
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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: **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:**

While there is some evidence suggesting the seeds are dispersed by wind and animals, there is not indication that this occurs with any frequency or appreciable distance. "Most seeds are dispersed during fall and winter by wind and animals." "Fruit characteristics: does not attract wildlife"

**Reference(s):**

- Gilman, E. F., & Watson D. G. (1993). *Cercis canadensis* - Eastern Redbud Fact Sheet.
  - Dickson, J. G. (2017). *Cercis canadensis* L.
- 

**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:**

While there is some evidence that the seeds are dispersed by wind, it's unlikely to be >100m. "Most seeds are dispersed during fall and winter by wind and animals"



**Reference(s):**

- Dickson, J. G. (2017). *Cercis canadensis* L.
- 

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

**Answer / Justification:**

No evidence found.

**Reference(s):**

- [Anonymous] .
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**Total PRE Score**

**PRE Score:** 2 -- Accept (low risk of invasiveness)

**Confidence:** 76 / 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:

- |                   |                   |
|-------------------|-------------------|
| • Matthew Kaproth | January 22, 2018  |
| • Tim Vogel       | November 22, 2017 |
| • Laura Van Riper | November 21, 2017 |
| • Tom Buechel     | November 9, 2017  |

This evaluation has a total of 4 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](mailto: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](mailto: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.