Plant Risk Evaluator -- PRE™
Evaluation Report

Frangula alnus 'Ron Williams' FINE LINE -- Illinois

2017 Farm Bill PRE Project

PRE Score: 8 -- Accept (low risk of invasiveness)
Confidence: 60 / 100
Questions answered: 19 of 20 -- Valid (80% or more questions answered)

Privacy: Public
Status: Submitted

Evaluation Date: October 22, 2017

This PDF was created on June 15, 2018

Plant Evaluated

Frangula alnus 'Ron Williams' FINE LINE

Image by The Dawes Arboretum

Evaluation Overview

A PRE™ screener conducted a literature review for this plant (*Frangula alnus 'Ron Williams' FINE LINE*) 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

Frangula alnus is invasive in Illinois, causing significant impacts to native ecosystems. The cultivar 'Ron Williams' produces small quantities of non-viable seeds and is marketed as non-invasive. However, some scientists, horticulturists, and lawmakers believe 'Ron Williams' has potential to produce viable seeds and do not recommend planting this cultivar. It is prohibited in several states. One source describes two unpublished studies where seeds of 'Ron Williams' germinated at low rates (Jacquart). More research is needed to confirm that 'Ron Williams' is a safe choice for Illinois.

General Information

Status: Submitted
Screener: Emily Russell
Evaluation Date: October 22, 2017

Plant Information

Plant: *Frangula alnus 'Ron Williams' FINE LINE*

If the plant is a cultivar, how does its behavior differs from its parent's?
The cultivar 'Ron Williams' differs from the species Frangula alnus in its columnar habit, narrow leaf shape, few flowers, and sparse production of non-viable seed. The parents of this cultivar are F. alnus ‘Columnaris’ (seed) and F. alnus ‘Aspleniifolia’ (pollen). Plants are primarily sold under the trademark name of FINE LINE. U.S. Plant Patent PP14,791 issued May 18, 2004.

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

Answer / Justification:

Frangula alnus has naturalized in the United States and Canada. It is unknown if 'Ron Williams' has naturalized. This cultivar is said to produce only a small quantity of non-viable seed and is frequently described as non-invasive. The claim of non-viable seed is disputed by some scientists and horticulturists, but there are not yet any published studies showing evidence of seed production and germination. The two parents of this cultivar, 'Asplenifolia' and 'Columnaris', are suspected of naturalizing (see MI Flora).

Reference(s):

- Jacquart, E., Knight T., Deppe D., & Haggard R. (2010). Indiana Nursery & Landscape News: Indiana Plant Pick Revisited.
- Williams, R. (2004). Rhamnus plant named ‘Ron Williams’.
- USDA NRCS (2017). USDA PLANTS Database: Frangula alnus (glossy buckthorn).
- Reznicek, A.. A., Voss E.. G., & Walters B.. S. (2011). Frangula alnus. In: MICHIGAN FLORA ONLINE.

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

Answer / Justification:

Frangula alnus has naturalized in Illinois and similar climates in the Midwest, Northeast, and Canada. It is unknown if 'Ron Williams' has naturalized. This cultivar is said to produce only a small quantity of non-viable seed and is frequently described as non-invasive. The claim of non-viable seed is disputed by some scientists and horticulturists, but there are not yet any published studies showing evidence of seed production and germination. The two parents of this cultivar, 'Asplenifolia' and 'Columnaris', are suspected of naturalizing (see MI Flora).

Reference(s):

- USDA NRCS (2017). USDA PLANTS Database: Frangula alnus (glossy buckthorn).
- Jacquart, E., Knight T., Deppe D., & Haggard R. (2010). Indiana Nursery & Landscape News: Indiana Plant Pick Revisited.
- Williams, R. (2004). Rhamnus plant named ‘Ron Williams’.
- Reznicek, A.. A., Voss E.. G., & Walters B.. S. (2011). Frangula alnus. In: MICHIGAN FLORA ONLINE.

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

Answer / Justification:

Frangula alnus 'Ron Williams' is prohibited in Illinois, Minnesota, Maine, Massachusetts, and New Hampshire. F. alnus is restricted in Wisconsin and Vermont, but 'Ron Williams' is exempt.

Reference(s):

- New England Wild Flower Society (2017). Frangula alnus (glossy false buckthorn): Go Botany.
- USDA NRCS (2017). USDA PLANTS Database: Frangula alnus (glossy buckthorn).
- Midwest Invasive Plant Network (2015). Midwest Invasive Plant List.

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

Answer / Justification:

Frangula alnus 'Ron Williams' is prohibited in Illinois and Minnesota. On the other hand, F. alnus is restricted in Wisconsin, but 'Ron Williams' is exempt.

Reference(s):

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

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

Answer / Justification:

Frangula alnus and the closely related Rhamnus cathartica are both invasive in the Midwest.

Reference(s):

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

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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:

Native distribution described in GRIN does not predominately match the climate of Illinois.

Reference(s):

- USDA Grin (2011). Frangula alnus. In: Taxonomy - GRIN-Global Web v 1.9.9.2.

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

Answer / Justification:

Frangula alnus does dominate plant communities, but 'Ron Williams' has a columnar habit that would not smother other plants. There is no evidence of seedlings from this plant with wild-type characteristics.

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

Answer / Justification:

No evidence of 'Ron Williams' impacting 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: **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:

Frangula alnus is toxic to humans and animals. Poisoning of horses and cattle have been documented.

Reference(s):

- Sturtevant, R.., Berent L.., & Fusaro A.. (2012). Rhamnus frangula L. - USGS & NOAA.
- USDA Grin (2011). Frangula alnus. In: Taxonomy - GRIN-Global Web v 1.9.9.2.
- Canadian Biodiversity Information Facility (2014). Canadian Poisonous Plants Information System - Alder buckthorn (Common name).

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

Answer / Justification:

Frangula alnus produces impenetrable thickets, but there are not reports of 'Ron Williams' doing so.

Reference(s):

- [Anonymous] .

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:

For the species, Frangula alnus spreads vegetatively by root suckers.

Reference(s):

- Sturtevant, R.., Berent L.., & Fusaro A.. (2012). Rhamnus frangula L. - USGS & NOAA.
- USDA NRCS (2017). USDA PLANTS Database: Frangula alnus (glossy buckthorn).

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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:

There is no evidence of reproducing from fragments in the wild.

Reference(s):

- [Anonymous] .

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

Answer / Justification:

From the patent for 'Ron Williams': "Seed.—Plants of the new Rhamnus have not been observed to produce viable; fruits abort during development." "Low seed set; seed is not viable." However, there are reports that two unpublished studies did successfully germinate seeds of 'Ron Williams.' More research is needed.

Reference(s):

- Williams, R. (2004). Rhamnus plant named ‘Ron Williams’.
- Jacquart, E., Knight T., Deppe D., & Haggard R. (2010). Indiana Nursery & Landscape News: Indiana Plant Pick Revisited.

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

Answer / Justification:

From the patent for 'Ron Williams': "Low seed set; seed is not viable."

Reference(s):

- Williams, R. (2004). Rhamnus plant named ‘Ron Williams’.

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

Answer / Justification:

"In an experimental study, seeds of ‘Fine Line’ had significantly lower germination than the wild-type buckthorn (12% and 83.7%, respectively; Mark C. Starrett, Department of Plant and Soil Sciences, University of Vermont, Burlington, personal communication, 28 December 2010)." At Michigan State University in 2008, 200 seeds of 'Ron Williams' had 5.5% germination.

Reference(s):

- Knight, T. M., Havens K., & Vitt P. (2011). Will the use of Less Fecund Cultivars Reduce the Invasiveness of Perennial Plants?. BioScience. 61, 816–822.
- Jacquart, E., Knight T., Deppe D., & Haggard R. (2010). Indiana Nursery & Landscape News: Indiana Plant Pick Revisited.

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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:

Frangula alnus has a short juvenile period, but the patent application for 'Ron Williams' describes two year old plants "have not been observed to produce viable; fruits abort during development"

Reference(s):

- Williams, R. (2004). Rhamnus plant named ‘Ron Williams’.

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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:

For Frangula alnus: "Glossy buckthorn is typically in bloom from late May until the first frost. It produces fruit from early July through September, and it is not uncommon to see both flowers and fruit (in all stages of ripening) on a single plant." But, for 'Ron Williams': "not freely flowering...Plants flower during June and July in Grand Haven, Mich....about 63 flowers per plant develop during the flowering season...Plants of the new Rhamnus have not been observed to produce viable; fruits abort during development."

Reference(s):

- Sturtevant, R.., Berent L.., & Fusaro A.. (2012). Rhamnus frangula L. - USGS & NOAA.
- Williams, R. (2004). Rhamnus plant named ‘Ron Williams’.

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:

"Frangula alnus seeds are efficiently dispersed usually by starlings, blackbirds, woodducks, elk, mice (Ridley 1930), cedar waxwings, robins and blue jays. Mice are also seed predators (Godwin 1936). Berries of F. alnus are eaten by American robins, Bohemian waxwings, cedar waxwings, rose-breasted grosbeaks, and starlings. The shrub probably has a number of different avian and mammalian dispersal agents." However, it appears that 'Ron Williams' does not usually produce viable seeds.

Reference(s):

- Sturtevant, R.., Berent L.., & Fusaro A.. (2012). Rhamnus frangula L. - USGS & NOAA.

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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:

For Frangula alnus: "ripe fruits are buoyant for up to two weeks and can be transported through waterways." However, it appears that 'Ron Williams' does not usually produce viable seeds.

Reference(s):

- Sturtevant, R.., Berent L.., & Fusaro A.. (2012). Rhamnus frangula L. - USGS & NOAA.

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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:

No evidence of accidental dispersal by humans.

Reference(s):

- [Anonymous] .

Total PRE Score

PRE Score: 8 -- Accept (low risk of invasiveness)
Confidence: 60 / 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:

• Steve Worth	December 21, 2017
• Michael Yanny	December 6, 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 # 6181

Date Created: December 21, 2017 - 8:50am
Date Updated: January 9, 2018 - 5:02pm

Submitted by: Steve Worth

Status: Fixed
Type: Comment
Severity: Minor
Scope: Q01. Has the species (or cultivar or variety, if applicable) become naturalized where it is not native?

Issue Description

There is a great deal of demand for this plant in Illinois and throughout the Midwest. In states such as Iowa where it is not banned it is a top selling shrub. The unique growth habit fills a niche for landscape sites that require a tight narrow plant. There is no research that shows that this cultivar demonstrates any the invasive qualities of its parents.

Issue Resolution (Screener's Response to Issue)

Added this information to the Evaluation Notes.

Issue ID # 6068

Date Created: December 6, 2017 - 1:27pm
Date Updated: December 10, 2017 - 9:04am

Submitted by: Michael Yanny

Status: Fixed
Type: Suggestion
Severity: Minor
Scope: Q02. Is the species (or cultivar or variety) noted as being naturalized elsewhere in the US or world in a similar climate?

Issue Description

Kris Bachtell at the Morton Arboretum presented a paper at a IPPS-Eastern Region meeting about 15 years ago or so about the fertility of 'Asplenifolia'. It had a lower fertility rate than 'Ron Williams'. This paper could likely be found in the published proceeding of the IPPS (International Plant Propagator's Society).

Issue Resolution (Screener's Response to Issue)

I was not able to locate this paper during a quick search today, but have sent an inquiry will add the citation if I am able to find it. Further references are certainly appreciated and would strengthen the answer to this question.

Issue ID # 5867

Date Created: November 14, 2017 - 1:20pm
Date Updated: December 10, 2017 - 8:46am

Submitted by: Kim Shearer

Status: Fixed
Type: Suggestion
Severity: Minor
Scope: Q11. Does this species (or cultivar or variety) reproduce and spread vegetatively?

Issue Description

Could include the patent application for this cultivar to demonstrate that this particular cultivar is propagated through vegetative cuttings.

Issue Resolution (Screener's Response to Issue)

Following the PRE guidelines for this question: "an indication that a species can be propagated vegetatively by horticultural means (e.g., manual division, softwood cuttings) is not sufficient evidence to

answer yes."

Issue ID # 5866

Date Created: November 14, 2017 - 1:19pm
Date Updated: December 10, 2017 - 8:42am

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

No reference for prohibition in the state of Illinois included here. The Midwest Invasive Plant List should at least be included. An additional reference to include would be the Illinois Exotic Weed Act.

Issue Resolution (Screener's Response to Issue)

Added a citation for the Midwest Invasive Plant List to the answer for Q3.

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.