Plant Risk Evaluator -- PRE™
Evaluation Report

Nandina domestica 'Firepower' -- Georgia

2017 Farm Bill PRE Project

PRE Score: 2 -- Accept (low risk of invasiveness)
Confidence: 78 / 100
Questions answered: 20 of 20 -- Valid (80% or more questions answered)

Privacy: Public
Status: Completed

Evaluation Date: May 11, 2017

This PDF was created on July 06, 2018

Plant Evaluated

Nandina domestica 'Firepower'

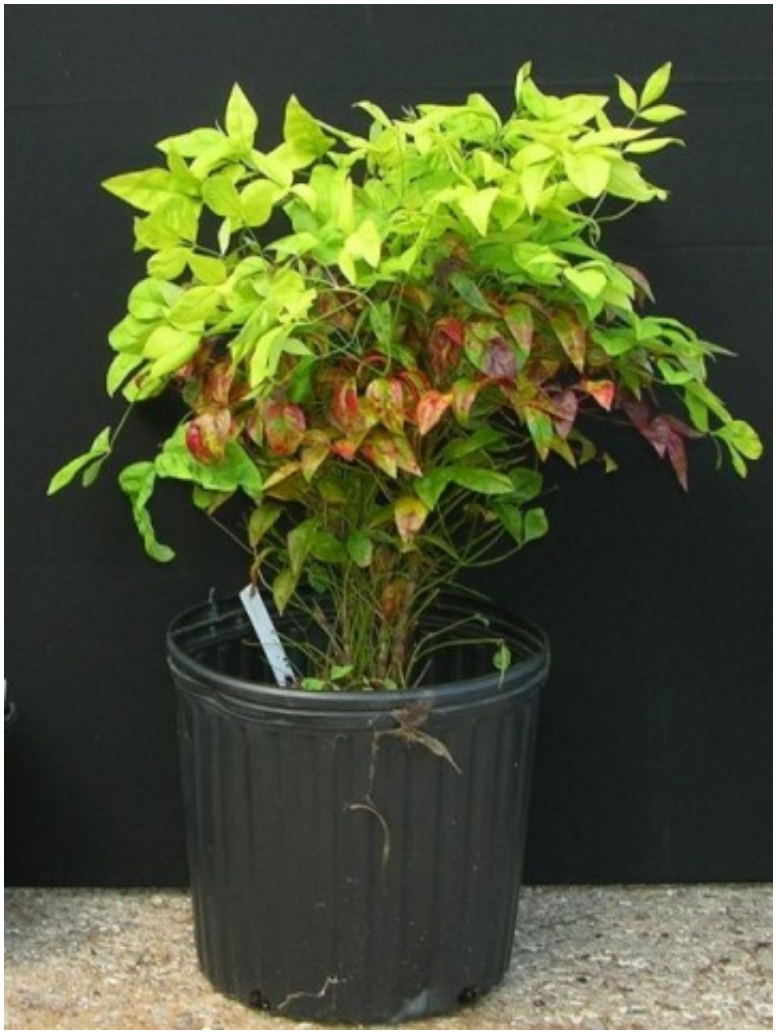

Image by University of Florida, Institute of Food and Agricultural Sciences

Evaluation Overview

A PRE™ screener conducted a literature review for this plant (*Nandina domestica 'Firepower'*) 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

This PRE screening is similar to the evaluation that was done for Ligustrum sinense 'sunshine', which also dealt with a sterile cultivar from a very invasive parent species. Similar to that evaluation the screener chose to answer most of the questions from information provided about the cultivar only, as the loss of fecundity combats the "invasiveness" of the parent species, and there is no record of the cultivar escaping ornamental horticulture. The PRE score remains low for this evaluation because of the cultivar's sterility, allowing for a "No" answer to questions 13-17. The screener believes that this assessment is fair given the cultivars compact and diminutive growth and the fact that it does not bear fruit. This cultivar seems a good alternate to the parent species of Nandina domestica, given that it was introduced sometime before 1985, and no reports of escape or fruiting cultivars have been reported.

General Information

Status: Completed
Screener: Kylie Bucalo
Evaluation Date: May 11, 2017

Plant Information

Plant: *Nandina domestica 'Firepower'*

If the plant is a cultivar, how does its behavior differs from its parent's?
Taken from the University of Florida IFAS extention resource "UF/IFAS research in north and south Florida showed that 'Firepower' nandina does not flower or fruit (Knox and Wilson, 2006). In addition, it differs from the species type ("resident species") of Nandina domestica in being distinctly compact, significantly shorter and in having broader leaflets that typically are lighter green in summer and more red in winter. While not considered rhizomatous, the "crown" of 'Firepower' nandina can increase in diameter with time."

Regional Information

Region Name: Georgia

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

Answer / Justification:

This answer is for cultivar only, there is no evidence of Nandina 'Firepower' escaping ornamental horticulture in any of the researched resources. However parent species Nandina domestica is naturalized across the southeast and has been placed on the Florida Exotic Pest Plant Council's invasive list as a Category I species. GEEPPC rate N. domestica as a Category 2 plant which is an "Exotic plant that is a moderate problem in Georgia natural areas through invading native plant communities and displacing native species, but to a lesser degree than category 1 species."

Reference(s):

- Wilson, G. W. Knox, & B. S. (2015). 'Firepower' Nandina (Nandina domestica): A Noninvasive Nandina for Florida_UFL/IFAS.
- Knox, G. W., & Wilson S. B. (0). Evaluating North and South Florida Landscape Performance and Fruiting of Ten Cultivars and a Wild-type Selection of Nandina domestica, a Potentially Invasive Shrub1.
- Invasive Plant Atlas of the United States (0). sacred bamboo: Nandina domestica (Ranunculales: Berberidaceae): Invasive Plant Atlas of the United States.
- Georgia Exotic Pest Plant Council (0). List of Non-Native Invasive Plants in Georgia - Georgia Exotic Pest Plant Council.
- USDA Plants Database (0). Plants Profile for Nandina domestica (sacred bamboo)_USDA.
- UF/IFAS Center for Aquatic and Invasive Plants (0). Nandina domestica – UF/IFAS Center for Aquatic and Invasive Plants.

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

Answer / Justification:

This answer is for cultivar only, there is no evidence of Nandina 'Firepower' escaping ornamental horticulture in any of the researched resources. See question one, parent species is naturalized across southeast, including region of concern.

Reference(s):

- USDA Plants Database (0). Plants Profile for Nandina domestica (sacred bamboo)_USDA.

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

Answer / Justification:

This answer is for cultivar only, there is no evidence of Nandina 'Firepower' escaping ornamental horticulture and becoming invasive in any of the resources. As the cultivar is reported to be sterile this lowers its risk of "invasiveness" by negating the spread of seed outside ornamental planting areas.

Reference(s):

- [Anonymous] .

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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: **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:

This answer is for cultivar only, there is no evidence of Nandina 'Firepower' escaping ornamental horticulture and becoming invasive in any of the resources. As the cultivar is reported to be sterile this lowers its risk of "invasiveness" by negating the spread of seed outside ornamental planting areas. However it should be noted that parent species Nandina domestica has been placed on the Florida Exotic Pest Plant Council’s invasive list as a Category I species. Florida is a climate match for the region of concern

Reference(s):

- Wilson, G. W. Knox, & B. S. (2015). 'Firepower' Nandina (Nandina domestica): A Noninvasive Nandina for Florida_UFL/IFAS.
- Invasive Plant Atlas of the United States (0). sacred bamboo: Nandina domestica (Ranunculales: Berberidaceae): Invasive Plant Atlas of the United States.
- UF/IFAS Center for Aquatic and Invasive Plants (0). Nandina domestica – UF/IFAS Center for Aquatic and Invasive Plants.

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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:

This answer is given for the parents species Nandina domestica. The parent speciesis naturalized across the southeast and has been placed on the Florida Exotic Pest Plant Council’s invasive list as a Category I species. GEEPPC rate N. domestica as a Category 2 plant which is an "Exotic plant that is a moderate problem in Georgia natural areas through invading native plant communities and displacing native species, but to a lesser degree than category 1 species."

Reference(s):

- Georgia Exotic Pest Plant Council (0). List of Non-Native Invasive Plants in Georgia - Georgia Exotic Pest Plant Council.
- USDA Plants Database (0). Plants Profile for Nandina domestica (sacred bamboo)_USDA.
- UF/IFAS Center for Aquatic and Invasive Plants (0). Nandina domestica – UF/IFAS Center for Aquatic and Invasive Plants.
- Invasive Plant Atlas of the United States (0). sacred bamboo: Nandina domestica (Ranunculales: Berberidaceae): Invasive Plant Atlas of the United States.

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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:

This answer is for cultivar only, there is no evidence of Nandina 'Firepower' escaping ornamental horticulture and becoming invasive in any of the resources, therefore this climate matching question is answered as a no.

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: **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:

This answer is for cultivar only, there is no evidence of Nandina 'Firepower' escaping ornamental horticulture and becoming invasive in any of the resources, and therefore this answer is a no. It should however be noted that the cultivar is described as shade tolerant, as is the parent species. If the cultivar escaped it would most likely be a threat to wooded areas within the region of concern. This is because it is able to adapt to low light conditions and could possibly out-compete natives in heavily shaded woodlands. Again these are simply inferences from the plant's biology, it is understood that the likelihood of escape is low because the cultivar is sterile, and is also described as "dwarf" because of its shortened habit, which would lessen the likelihood of it dominating or smothering many plants in the community.

Reference(s):

- Wilson, G. W. Knox, & B. S. (2015). 'Firepower' Nandina (Nandina domestica): A Noninvasive Nandina for Florida_UFL/IFAS.
- UF/IFAS Center for Aquatic and Invasive Plants (0). Nandina domestica – UF/IFAS Center for Aquatic and Invasive Plants.
- Invasive Plant Atlas of the United States (0). sacred bamboo: Nandina domestica (Ranunculales: Berberidaceae): Invasive Plant Atlas of the United States.

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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 in the resources.

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

Answer / Justification:

The parent species berries and leaves are toxic to livestock and other domestic animals, the berries contain cyanide and when consumed in quantity can be toxic to birds. As the cultivar is sterile the threat from the fruits are negated, however I could not find anything in the cultivar ONLY resources about the toxicity of the leaves. I am assuming here that the leaves may be a threat, as nothing to the contrary has been reported. However I have changed the CL to Low to indicate that none of the resources directly infer the leaves are harmful for the cultivar. The only differences noted in the cultivar resources for the cultivar's leaves are in form and color.

Reference(s):

- Wilson, G. W. Knox, & B. S. (2015). 'Firepower' Nandina (Nandina domestica): A Noninvasive Nandina for Florida_UFL/IFAS.

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

Answer / Justification:

This answer is for cultivar only, there is no evidence of Nandina 'Firepower' escaping ornamental horticulture and becoming invasive in any of the resources, and therefore this answer is a no. The cultivar is described as being "dense" and "compact" when grown together to form a hedge, but given its shorter habit, even if escaped would not likely form a high enough thicket to impend movement.

Reference(s):

- Wilson, G. W. Knox, & B. S. (2015). 'Firepower' Nandina (Nandina domestica): A Noninvasive Nandina for Florida_UFL/IFAS.

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

Answer / Justification:

Excerpts from the IFAS/UFL resource. "Firepower nandina is propagated asexually via division, cuttings or tissue culture", "While not considered rhizomatous, the "crown" of 'Firepower' nandina can increase in diameter with time". Neither of these statements about the cultivar warrant a yes according to the description given in the PRE question information about this question section.

Reference(s):

- Wilson, G. W. Knox, & B. S. (2015). 'Firepower' Nandina (Nandina domestica): A Noninvasive Nandina for Florida_UFL/IFAS.

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

Answer / Justification:

This answer is for cultivar only, there is no evidence of Nandina 'Firepower' having this method of reproduction.

Reference(s):

- [Anonymous] .

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

Answer / Justification:

Cultivar is reported as being sterile.

Reference(s):

- Wilson, G. W. Knox, & B. S. (2015). 'Firepower' Nandina (Nandina domestica): A Noninvasive Nandina for Florida_UFL/IFAS.

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

Answer / Justification:

Cultivar is reported as being sterile.

Reference(s):

- Wilson, G. W. Knox, & B. S. (2015). 'Firepower' Nandina (Nandina domestica): A Noninvasive Nandina for Florida_UFL/IFAS.

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

Answer / Justification:

Cultivar is reported as being sterile.

Reference(s):

- Wilson, G. W. Knox, & B. S. (2015). 'Firepower' Nandina (Nandina domestica): A Noninvasive Nandina for Florida_UFL/IFAS.

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

Answer / Justification:

Cultivar is reported as being sterile.

Reference(s):

- Wilson, G. W. Knox, & B. S. (2015). 'Firepower' Nandina (Nandina domestica): A Noninvasive Nandina for Florida_UFL/IFAS.

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

Answer / Justification:

Cultivar is reported as being sterile.

Reference(s):

- Wilson, G. W. Knox, & B. S. (2015). 'Firepower' Nandina (Nandina domestica): A Noninvasive Nandina for Florida_UFL/IFAS.

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

Answer / Justification:

Cultivar is reported as being sterile.

Reference(s):

- Wilson, G. W. Knox, & B. S. (2015). 'Firepower' Nandina (Nandina domestica): A Noninvasive Nandina for Florida_UFL/IFAS.

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

Answer / Justification:

Cultivar is reported as being sterile.

Reference(s):

- Wilson, G. W. Knox, & B. S. (2015). 'Firepower' Nandina (Nandina domestica): A Noninvasive Nandina for Florida_UFL/IFAS.

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

Answer / Justification:

Cultivar is reported as being sterile.

Reference(s):

- Wilson, G. W. Knox, & B. S. (2015). 'Firepower' Nandina (Nandina domestica): A Noninvasive Nandina for Florida_UFL/IFAS.

Total PRE Score

PRE Score: 2 -- Accept (low risk of invasiveness)
Confidence: 78 / 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:

• Shelly Matthew Prescott	January 4, 2018
• Eamonn Leonard	December 7, 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.