Plant Risk Evaluator -- PRE™
Evaluation Report

Asclepias curassavica -- Texas

2017 Farm Bill PRE Project

PRE Score: 12 -- Accept (low risk of invasiveness)
Confidence: 80 / 100
Questions answered: 20 of 20 -- Valid (80% or more questions answered)

Privacy: Public
Status: Completed

Evaluation Date: September 1, 2017

This PDF was created on July 06, 2018

Plant Evaluated

Asclepias curassavica

Image by Fan Wen

Evaluation Overview

A PRE™ screener conducted a literature review for this plant (*Asclepias curassavica*) 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

A well-known garden plant used as a host plant for monarch butterflies. Seeds are readily available for purchase for this reason. The species is naturalized in many warm-temperate to tropical areas but is only noted as invasive in Hawaii. It does not spread vegetatively and seeds are wind dispersed.

General Information

Status: Completed
Screener: Kim Taylor
Evaluation Date: September 1, 2017

Plant Information

Plant: *Asclepias curassavica*

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 and USDA Plants indicate the species is naturalized in parts of South Texas, California, Louisiana, Tennessee and Florida. It is also naturalized in parts of Africa, China, Japan, Australia, Hawaii, the Galapagos Islands, and many Pacific islands.

Reference(s):

- Kartesz, J. T. (2015). The Biota of North America Program (BONAP).
- United States Department of Agriculture (2014). USDA-NRCS Plants Database.
- U.S. National Plant Germplasm Network (0). Taxonomy - GRIN-Global Web v 1.9.8.2 Asclepias curassavica.

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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:

The species is naturalized in parts of South Texas, California, Louisiana, Tennessee and Florida. Much of the southern US has a similar climate to Texas.

Reference(s):

- Kartesz, J. T. (2015). The Biota of North America Program (BONAP).

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

Answer / Justification:

Reported invasive in Haleakala National Park in Hawaii.

Reference(s):

- Invasive Plant Atlas of the United States (0). bloodflower milkweed: Asclepias curassavica (Gentianales: Asclepiadaceae): Invasive Plant Atlas of the United States.

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

Answer / Justification:

This species is noted as invasive in Hawaii and other tropical regions that do not share a similar climate to Texas.

Reference(s):

- Wyatt, R., & Broyles S. B. (1997). The Weedy Tropical Milkweeds Asclepias curassavica and A. fruticosa are Self-Compatible. Biotropica. 29, 232–234.
- Invasive Plant Atlas of the United States (0). balloon cottonbush: Asclepias physocarpa (Gentianales: Asclepiadaceae): Invasive Plant Atlas of the United States.

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

Answer / Justification:

Asclepias physocarpa is noted as being invasive in Haleakala National Park in Hawaii but this area does not share a similar climate to Texas.

Reference(s):

- Invasive Plant Atlas of the United States (0). balloon cottonbush: Asclepias physocarpa (Gentianales: Asclepiadaceae): Invasive Plant Atlas of the United States.

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:

Approximately a third of the total range of the species has a similar climate to Texas, particularly parts of the US, China, and Australia.

Reference(s):

- GBIF (0). Asclepias curassavica L. - 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: **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:

Asclepias curassavica "is reported to be weedy or invasive across many tropical and subtropical regions of the Americas, Australia and Asia, as well as in China, South East Asia and the Pacific." Despite this, it is not clear that the species displaces native plants. More information is needed.

Reference(s):

- CABI (2014). Asclepias curassavica (bloodflower) Datasheet (CABI).

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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.

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

Answer / Justification:

GRIN notes that it is potentially poisonous to mammals. "Given the toxicity of A. curassavica, economic impacts are also likely to include illness and death of livestock." "Milkweeds are poisonous or distasteful to birds and mammals." "The latex of A. curassavica is toxic and can cause serious reactions if ingested or touched. Globinmed (2013) gives the signs of toxicity as ‘vertigo, headache, vomiting, diarrhoea, stomach cramps, pallor, chills and arrhythmia’. The latex is painful if it comes in contact with eyes and can cause hazy vision. It can also produce dermatitis in susceptible individuals (Globinmed, 2013). The leaves of A. curassavica may be dangerous to pets if eaten due to the high levels of glycosides in the plant (Spurgeon, 2013)."

Reference(s):

- CABI (2014). Asclepias curassavica (bloodflower) Datasheet (CABI).
- U.S. National Plant Germplasm Network (0). Taxonomy - GRIN-Global Web v 1.9.8.2 Asclepias curassavica.

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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:

This species is herbaceous and does not produce impenetrable thickets.

Reference(s):

- [Anonymous] .

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:

Asclepias curassavica reproduces by seed. Cut stems can be rooted but this does not appear to happen naturally. There is no vegetative reproduction.

Reference(s):

- CABI (2014). Asclepias curassavica (bloodflower) Datasheet (CABI).
- Missouri Botanical Garden PlantFinder (0). Asclepias curassavica - Plant Finder.

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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:

Naturally detached fragments do not appear to produce new plants. If they do, this is not a common method of reproduction for the species.

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

Answer / Justification:

Asclepias curassavica fruit are "many seeded". "A. curassavica is dependent on seeds for dispersal, and seeds are easily germinated."

Reference(s):

- CABI (2014). Asclepias curassavica (bloodflower) Datasheet (CABI).
- Pacific Island Ecosystems at Risk (PIER) (0). Asclepias curassavica (PIER species info).

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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:

Fruit are noted as being "many seeded." Each pod has 70 to 80 seeds.

Reference(s):

- CABI (2014). Asclepias curassavica (bloodflower) Datasheet (CABI).

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

Answer / Justification:

Most milkweed seeds require stratification to germinate in significant numbers but this is not the case for A. curassavica. Asclepias curassavica germinates after 30 to 120 days when sown in 65 to 70 F soil. Wyatt and Broyles noted they had 100% germination in 3 weeks.

Reference(s):

- Clothier, T. (0). Annual/Biennial Seed Germination Database.
- MonarchWatch.org (0). Monarch Watch : Milkweed : Propagation.

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

Answer / Justification:

The species is either an annual or a perennial dependent on climate. It completes its life cycle in one year, producing flowers and seeds.

Reference(s):

- MonarchButterflyGarden.net (0). Asclepias Curassavica - Tropical Milkweed for Monarchs.

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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: **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:

The species flowers from June to October.

Reference(s):

- Missouri Botanical Garden PlantFinder (0). Asclepias curassavica - Plant Finder.

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:

Seeds are wind dispersed. There is no evidence of dispersal by animals.

Reference(s):

- CABI (2014). Asclepias curassavica (bloodflower) Datasheet (CABI).
- Pacific Island Ecosystems at Risk (PIER) (0). Asclepias curassavica (PIER species info).

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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 species is wind dispersed with "plumed seeds that float in the wind". Seeds have silky white hairs that assist in dispersal by wind.

Reference(s):

- CABI (2014). Asclepias curassavica (bloodflower) Datasheet (CABI).
- Pacific Island Ecosystems at Risk (PIER) (0). Asclepias curassavica (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 notes the species is a "potential seed contaminant".

Reference(s):

- U.S. National Plant Germplasm Network (0). Taxonomy - GRIN-Global Web v 1.9.8.2 Asclepias curassavica.

Total PRE Score

PRE Score: 12 -- Accept (low risk of invasiveness)
Confidence: 80 / 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:

• Jed Aplaca	January 2, 2018
• Hans Landel	December 18, 2017
• Steve Moore	September 7, 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.

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.