Plant Risk Evaluator -- PRE™
Evaluation Report

Tanacetum vulgare -- Minnesota

2017 Farm Bill PRE Project

PRE Score: 17 -- Reject (high risk of invasiveness)
Confidence: 83 / 100
Questions answered: 20 of 20 -- Valid (80% or more questions answered)

Privacy: Public
Status: Completed

Evaluation Date: August 30, 2017

This PDF was created on June 15, 2018

Plant Evaluated

Tanacetum vulgare

Image by Wikipedia

Evaluation Overview

A PRE™ screener conducted a literature review for this plant (*Tanacetum vulgare*) 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

Having the status of an invasive/noxious/restricted weed/plant in multiple states clearly makes this plant one to avoid. It displaces native vegetation, produces a large amount of viable seed, and is readily dispersed by humans and animals including birds and passing animals.

General Information

Status: Completed
Screener: Mike Monterusso
Evaluation Date: August 30, 2017

Plant Information

Plant: *Tanacetum vulgare*

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: **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:

Tanacetum vulgare has naturalized in numerous US states.

Reference(s):

- United States Department of Agriculture (2017). Plants Profile for Tanacetum vulgare (common tansy).

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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:

It has naturalized in Wisconsin.

Reference(s):

- United States Department of Agriculture (2017). Plants Profile for Tanacetum vulgare (common tansy).

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

Answer / Justification:

It is noted to be invasive in Colorado, Montana, Wyoming, and Washington.

Reference(s):

- United States Department of Agriculture (2017). Plants Profile for Tanacetum vulgare (common tansy).

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

Answer / Justification:

It is restricted in Wisconsin.

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

Answer / Justification:

There is some evidence suggesting Tanacetum parthenium is invasive in Wisconsin but the information is limited.

Reference(s):

- Invasive Plant Atlas of the United States (2015). feverfew: Tanacetum parthenium (Asterales: Asteraceae): 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:

According to GBIF, most occurrences are in Europe and the coastal regions of the US.

Reference(s):

- GBIF (2016). Tanacetum vulgare 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: **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:

"Tansy clumps can form a monoculture that crowds out other species, including native plants..."

Reference(s):

- Minnesota Department of Agriculture (2013). Common Tansy.

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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:

"Altered fire regimes in common tansy habitats were not reported, but fuels in dense patches of the previous year's stems may change fire behavior or increase fire severity in areas with an abundance of common tansy.

Reference(s):

- Gucker, C. L. (2009). Tanacetum vulgare. In: Fire Effects Information System.

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

Answer / Justification:

"Mature tansy is toxic to cattle and horses so they generally avoid eating it. Occasionally, cattle and horses eat tansy, particularly when it is immature or in hay. Tansy consumption by cattle is associated with off-taste milk production..."

Reference(s):

- Minnesota Department of Agriculture (2013). Common Tansy.

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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:

No evidence found.

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

Answer / Justification:

"Although several sources report that rhizomatous growth has not been as important to common tansy spread and range expansion as seed dispersal and establishment, many report that large colonies and dense clumps are primarily the result of spreading rhizomes..."

Reference(s):

- Gucker, C. L. (2009). Tanacetum vulgare. In: Fire Effects Information System.

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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:

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

Answer / Justification:

"Seed dispersal and seedling establishment are largely responsible for the spread of common tansy populations."

Reference(s):

- Gucker, C. L. (2009). Tanacetum vulgare. In: Fire Effects Information System.

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14. Does this plant produce copious viable seeds each year (> 1000)?

- 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:

" Reviews report "prolific" and "profuse" seed production by common tansy plants. In a gardening guide, Sperka reports that common tansy "self sows readily". Another review suggests that if 20 to 200 flower heads are produced per stem, common tansy plants may produce 50,000 seeds... "

Reference(s):

- Gucker, C. L. (2009). Tanacetum vulgare. In: Fire Effects Information System.

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

Answer / Justification:

"About 75% of seeds collected in October from Gallatin County, Montana, germinated in the laboratory after 1 month of cold stratification. Cold temperatures increased the germination rate of common tansy seed..."

Reference(s):

- Gucker, C. L. (2009). Tanacetum vulgare. In: Fire Effects Information System.

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

Answer / Justification:

"...common tansy typically produces seed in its 2nd year and that populations produce 10,000 to 100,000 seeds/m²/year."

Reference(s):

- Gucker, C. L. (2009). Tanacetum vulgare. In: Fire Effects Information System.

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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:

T. vulgare flowers and sets seed once/year.

Reference(s):

- [Anonymous] .

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

Answer / Justification:

"Animals and humans are also likely dispersers of common tansy seed... birds feed on common tansy seeds; however, viability of seed passing through the digestive tract was not tested. Common tansy seed in animal fur, bird feathers, and soil caught in paws, hooves... may also contribute to dispersal."

Reference(s):

- Gucker, C. L. (2009). Tanacetum vulgare. In: Fire Effects Information System.

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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:

Dispersal by wind or water has been noted but no distance was reported: "Several researchers report that common tansy seed is also transported by water. Common tansy seeds have high oil content and floating has been observed, although floating duration was not reported. In Wisconsin, common tansy is especially common along ditch banks, and water-dispersed seed is considered important to the colonization of waterways."

Reference(s):

- Gucker, C. L. (2009). Tanacetum vulgare. In: Fire Effects Information System.

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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:

"Seed dispersal by equipment used in areas with common tansy is also likely. White reports that common tansy is often found in gravel pits and roadside habitats, where equipment use is generally heavy. If common tansy flower heads are present in hay fields, they could also be transported in hay bales. Dispersal of rhizome fragments also contributes to the spread of common tansy."

Reference(s):

- Gucker, C. L. (2009). Tanacetum vulgare. In: Fire Effects Information System.

Total PRE Score

PRE Score: 17 -- Reject (high risk of invasiveness)
Confidence: 83 / 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:

• Laura Van Riper	November 27, 2017
• Tom Buechel	November 9, 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.