

Taxon: *Persicaria odorata* (Lour.) Soják

Family: Polygonaceae

Common Name(s): rau ram
renouée odorante
Vietnamese coriander

Synonym(s): *Polygonum odoratum* Lour.

Assessor: Chuck Chimera

Status: Assessor Approved

End Date: 20 Jun 2019

WRA Score: 0.0

Designation: L

Rating: Low Risk

Keywords: Edible Herb, Annual, Perennial, Non-Fruiting, Spreads Vegetatively

Qsn #	Question	Answer Option	Answer
101	Is the species highly domesticated?	y=-3, n=0	n
102	Has the species become naturalized where grown?		
103	Does the species have weedy races?		
201	Species suited to tropical or subtropical climate(s) - If island is primarily wet habitat, then substitute "wet tropical" for "tropical or subtropical"	(0-low; 1-intermediate; 2-high) (See Appendix 2)	High
202	Quality of climate match data	(0-low; 1-intermediate; 2-high) (See Appendix 2)	High
203	Broad climate suitability (environmental versatility)	y=1, n=0	n
204	Native or naturalized in regions with tropical or subtropical climates	y=1, n=0	y
205	Does the species have a history of repeated introductions outside its natural range?	y=-2, ?=-1, n=0	y
301	Naturalized beyond native range	y = 1*multiplier (see Appendix 2), n= question 205	y
302	Garden/amenity/disturbance weed	n=0, y = 1*multiplier (see Appendix 2)	n
303	Agricultural/forestry/horticultural weed	n=0, y = 2*multiplier (see Appendix 2)	n
304	Environmental weed	n=0, y = 2*multiplier (see Appendix 2)	n
305	Congeneric weed	n=0, y = 1*multiplier (see Appendix 2)	y
401	Produces spines, thorns or burrs	y=1, n=0	n
402	Allelopathic		
403	Parasitic	y=1, n=0	n
404	Unpalatable to grazing animals		
405	Toxic to animals	y=1, n=0	n
406	Host for recognized pests and pathogens		
407	Causes allergies or is otherwise toxic to humans	y=1, n=0	n
408	Creates a fire hazard in natural ecosystems	y=1, n=0	n
409	Is a shade tolerant plant at some stage of its life cycle		

Qsn #	Question	Answer Option	Answer
410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	y=1, n=0	n
411	Climbing or smothering growth habit	y=1, n=0	n
412	Forms dense thickets	y=1, n=0	n
501	Aquatic	y=5, n=0	n
502	Grass	y=1, n=0	n
503	Nitrogen fixing woody plant	y=1, n=0	n
504	Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)	y=1, n=0	n
601	Evidence of substantial reproductive failure in native habitat	y=1, n=0	n
602	Produces viable seed	y=1, n=-1	n
603	Hybridizes naturally		
604	Self-compatible or apomictic		
605	Requires specialist pollinators	y=-1, n=0	n
606	Reproduction by vegetative fragmentation	y=1, n=-1	y
607	Minimum generative time (years)	1 year = 1, 2 or 3 years = 0, 4+ years = -1	1
701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	y=1, n=-1	n
702	Propagules dispersed intentionally by people	y=1, n=-1	y
703	Propagules likely to disperse as a produce contaminant	y=1, n=-1	n
704	Propagules adapted to wind dispersal	y=1, n=-1	n
705	Propagules water dispersed	y=1, n=-1	y
706	Propagules bird dispersed	y=1, n=-1	n
707	Propagules dispersed by other animals (externally)	y=1, n=-1	n
708	Propagules survive passage through the gut	y=1, n=-1	n
801	Prolific seed production (>1000/m2)	y=1, n=-1	n
802	Evidence that a persistent propagule bank is formed (>1 yr)	y=1, n=-1	n
803	Well controlled by herbicides	y=-1, n=1	y
804	Tolerates, or benefits from, mutilation, cultivation, or fire	y=1, n=-1	y
805	Effective natural enemies present locally (e.g. introduced biocontrol agents)		

Supporting Data:

Qsn #	Question	Answer
101	Is the species highly domesticated?	n
	Source(s)	Notes
	Guzman, C. C. de & Siemonsma, J. S. (eds.). (1999). Plant resources of South-East Asia, No.13. Spices. Backhuys Publishers, Leiden, The Netherlands	[No evidence of domestication] "Rau ram is native to and is cultivated in Indo-China. Since the 1960s its cultivation has spread with Vietnamese migrants, mainly to Australia, the Philippines and the United States." ... "It is unlikely that germplasm collections of rau ram are being maintained and there are no breeding programmes."

102	Has the species become naturalized where grown?	
	Source(s)	Notes
	WRA Specialist. (2019). Personal Communication	NA

103	Does the species have weedy races?	
	Source(s)	Notes
	WRA Specialist. (2019). Personal Communication	NA

201	Species suited to tropical or subtropical climate(s) - If island is primarily wet habitat, then substitute "wet tropical" for "tropical or subtropical"	High
	Source(s)	Notes
	USDA, ARS, Germplasm Resources Information Network. 2019. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 17 Jun 2019]	"Native Asia-Tropical INDO-CHINA: Cambodia, Laos, Thailand, Vietnam MALESIA: Malaysia (Malaya)"

202	Quality of climate match data	High
	Source(s)	Notes
	USDA, ARS, Germplasm Resources Information Network. 2019. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 17 Jun 2019]	

203	Broad climate suitability (environmental versatility)	n
	Source(s)	Notes
	Dave's Garden. (2019). Vietnamese Coriander - <i>Persicaria odorata</i> . https://davesgarden.com/guides/pf/go/310/ . [Accessed 19 Jun 2019]	"Hardiness: USDA Zone 11: above 4.5 °C (40 °F)"

Qsn #	Question	Answer
	Guzman, C. C. de & Siemonsma, J. S. (eds.). (1999). Plant resources of South-East Asia, No.13. Spices. Backhuys Publishers, Leiden, The Netherlands	"Rau ram requires warm and humid growing conditions. Light frost is probably tolerated. It grows best under partial shade, but full sunlight is tolerated if ample moisture is available. In Vietnam it can be grown and harvested year-round, but it grows best in spring. In cold and dry winters in northern Vietnam it may wither away."
	Missouri Botanical Garden. (2019). <i>Persicaria odorata</i> . http://www.missouribotanicalgarden.org . [Accessed 19 Jun 2019]	"Zone: 9 to 11"

204	Native or naturalized in regions with tropical or subtropical climates	y
	Source(s)	Notes
	USDA, ARS, Germplasm Resources Information Network. 2019. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 19 Jun 2019]	"Native Asia-Tropical INDO-CHINA: Cambodia, Laos, Thailand, Vietnam MALESIA: Malaysia (Malaya)"
	Guzman, C. C. de & Siemonsma, J. S. (eds.). (1999). Plant resources of South-East Asia, No.13. Spices. Backhuys Publishers, Leiden, The Netherlands	"Rau ram is native to and is cultivated in Indo-China. Since the 1960s its cultivation has spread with Vietnamese migrants, mainly to Australia, the Philippines and the United States."

205	Does the species have a history of repeated introductions outside its natural range?	y
	Source(s)	Notes
	van Wyk, B.-E. 2014. Culinary Herbs and Spices of the World. University of Chicago Press, Chicago, IL	"ORIGIN Southeast Asia. It is nowadays commonly cultivated as a culinary herb in many parts of the world."
	Guzman, C. C. de & Siemonsma, J. S. (eds.). (1999). Plant resources of South-East Asia, No.13. Spices. Backhuys Publishers, Leiden, The Netherlands	"Rau ram is native to and is cultivated in Indo-China. Since the 1960s its cultivation has spread with Vietnamese migrants, mainly to Australia, the Philippines and the United States."

301	Naturalized beyond native range	y
	Source(s)	Notes
	Guzman, C. C. de & Siemonsma, J. S. (eds.). (1999). Plant resources of South-East Asia, No.13. Spices. Backhuys Publishers, Leiden, The Netherlands	"Distribution and occurrence: Widely cultivated as a culinary herb and has potential to naturalise in wet situations, as has happened in Victoria. Native to Asia."
	Royal Botanic Gardens Victoria. (2019). VicFlora Flora of Victoria - <i>Persicaria odorata</i> . https://vicflora.rbg.vic.gov.au . [Accessed 17 Jun 2019]	"Grown as a culinary herb, occasionally escaping from gardens into nearby creeks and wetlands."
	Heenan, P. B., de Lange, P. J., Cameron, E. K., & Parris, B. S. 2008. Checklist of dicotyledons, gymnosperms, and pteridophytes naturalised or casual in New Zealand: additional records 2004–06. <i>New Zealand Journal of Botany</i> , 46(2): 257-283	" <i>Persicaria odorata</i> (Lour.) Soják. Vietnamese mint NEWRECORD:AK 297489,P. J. de Lange 6685, 12 Sep 2006, North Auckland, Auckland City, Mt Albert. NOTES: Garden Discard. A single large patch growing downstream of houses in a popular reserve. Widely cultivated as a pot and salad herb."
	New Zealand Plant Conservation Network. (2010). Flora Details - <i>Persicaria odorata</i> . http://nzpcn.org.nz/flora_details.aspx?ID=4304 . [Accessed 17 Jun 2019]	"Year Naturalised - 2006"

Qsn #	Question	Answer
	Wagner, W.L., Herbst, D.R.& Lorence, D.H. (2019). Flora of the Hawaiian Islands. Smithsonian Institution, Washington, D.C. http://botany.si.edu/ . [Accessed 20 Jun 2019]	No evidence to date

302	Garden/amenity/disturbance weed	n
	Source(s)	Notes
	Richardson, F. J., Richardson, R. G., & Shepherd, R. C. H. 2011. Weeds of the South-East: An Identification Guide for Australia. Second Edition. RG and FJ Richardson, Victoria, Australia	"An occasional garden escape." [In a book of "weeds", but description suggests impacts may be minimal or innocuous]
	Manningham City Council. (2010). Weeds: Identification and control of common weeds in Manningham. Doncaster, Australia. www.manningham.vic.gov.au	"The following plants, in addition to those already discussed, cause problems in this region." [Includes <i>Persicaria odorata</i> , but impacts are unspecified]
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	No evidence

303	Agricultural/forestry/horticultural weed	n
	Source(s)	Notes
	Richardson, F. J., Richardson, R. G., & Shepherd, R. C. H. 2011. Weeds of the South-East: An Identification Guide for Australia. Second Edition. RG and FJ Richardson, Victoria, Australia	"An occasional garden escape." [In a book of "weeds", but description suggests impacts may be minimal or innocuous]
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	No evidence

304	Environmental weed	n
	Source(s)	Notes
	Richardson, F. J., Richardson, R. G., & Shepherd, R. C. H. 2011. Weeds of the South-East: An Identification Guide for Australia. Second Edition. RG and FJ Richardson, Victoria, Australia	"An occasional garden escape." [In a book of "weeds", but description suggests impacts may be minimal or innocuous]
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	No evidence

305	Congeneric weed	y
	Source(s)	Notes
	Thapa, C. B. (2015). Weed Flora of Maize Field in Pokhara, Nepal. Nepal Journal of Science and Technology, 3(1): 9-14	"A total of 95 common weeded species were collected from the maize field of Pokhara, central part of Nepal. Seventy-two species belonged to dicots representing 26 families and 56 genera, 22 species belonged to monocots representing 5 families and 18 genera and one species belonged to pteridophyte." [Includes <i>Polygonum capitatum</i>]

Qsn #	Question	Answer
	Lake, E. C., Hough-Goldstein, J., & D'Amico, V. (2014). Integrating Management Techniques to Restore Sites Invaded by Mile-a Minute Weed, <i>Persicaria perfoliata</i> . <i>Restoration Ecology</i> , 22(2), 127-133	" <i>Persicaria perfoliata</i> is a spiny annual vine of Asian origin that established in York County, Pennsylvania, in the 1930s (Moul 1948) and has since invaded 13 states in the eastern United States (Hough-Goldstein et al. 2008a, 2012). Mile-a-minute weed can form dense monocultures and outcompete native plants in a variety of habitats and thus poses a threat to natural ecosystems (Mountain 1989; Hough-Goldstein et al. 2008a)."
	Singh, R. D., Venugopal, K., Gupta, R. K., & Singh, G. B. 1985. Study of weed flora, crop weed competition and chemical weed control for wheat in Sikkim. In Abstracts of papers, annual conference of Indian Society of Weed Science, 1985. (pp. 82-83).	"The influence of the weed free duration and relative effectiveness of 2,4-D Na, Weedone 48 [2,4-D] and tribunil on wheat were studied. The main weed flora consisted of <i>Polygonum capitatum</i> , <i>Cyperus rotundus</i> , <i>Chenopodium album</i> , <i>Amaranthus viridis</i> and <i>Phalaris minor</i> . Max. weed population and weed DW were observed in the unweeded control. The highest grain yield (5.07 t/ha) was obtained when plots were kept weed free till harvest followed by weed free until 60 days after sowing (4.79 t) and this increased the yield by 43 and 35%, resp. In another experiment, max. yield (3 t) was obtained with tribunil at 1.5 kg a/ha followed by 2 hand weedings (2.74 t/ha) with an increase of 29.3 and 18.3, resp. Tribunil gave the highest net return."
	Randall, R.P. (2017). <i>A Global Compendium of Weeds</i> . 3rd Edition. Perth, Western Australia. R.P. Randall	A number of species are listed as naturalized and/or weeds

401	Produces spines, thorns or burrs	n
	Source(s)	Notes
	Guzman, C. C. de & Siemonsma, J. S. (eds.). (1999). <i>Plant resources of South-East Asia, No.13. Spices</i> . Backhuys Publishers, Leiden, The Netherlands	[No evidence] "Short-lived perennial, fragrant herb, somewhat glandular in all parts. Stem ascending, 30-35 cm tall, 2-3 mm in diameter, red, grooved; base trailing and forming roots at all nodes, much thicker than upright part. Leaves alternate; ocrea membranous, short, up to a quarter of the length of the internode, loosely enveloping the stem, parallel veined, each vein culminating at apex in a long silky hair, with some glandular dots in horizontal lines; petiole attached to basal part of ocrea; blade entire, lanceolate to ovate-lanceolate, base attenuate, apex acuminate or obtuse, green, marked with red, margins and veins, especially the midrib, with appressed, fairly long hairs. Inflorescence an axillary, long, many-flowered, narrow spike, single or in pairs or in a small cluster; bracts long and funnel-shaped, with long hairs on margins. Flowers hermaphrodite; perianth pentamerous, white to purplish-pink, persistent in fruit; stamens 8; styles 3. Fruit triangular, 1.5 mm long, acuminate at both ends, smooth and shiny."

402	Allelopathic	
	Source(s)	Notes

Qsn #	Question	Answer
	<p>Li, D. W., Wang, D. M., Li, J. L., & Chen, C. (2009). Allelopathic effects of Polygonatum odoratum rhizome extracts and its isolated allelochemicals. <i>Allelopathy Journal</i>, 23(1): 119-127</p>	<p>[Possibly yes. Demonstrated in controlled laboratory setting] "Abstract: In Petri dish bioassay, the allelopathic effects of different extracts (petroleum, ethyl acetate, n-butanol and aqueous) of Polygonatum odoratum rhizome were studied on the seed germination and growth of wheat, cucumber and carrot. The allelopathic inhibitory effects depended on the extracts concentration. All extracts inhibited the seed germination and shoot growth, however, petroleum extracts inhibited the root growth at higher concentrations but stimulated at lower concentrations. The ethyl acetate extracts proved most inhibitory followed by aqueous extracts, n-butanol extracts and petroleum extracts. Two rare C-methylated homoisoflavanones: 3-(4'-hydroxy-benzyl)-5,7-dihydroxy-6,8-dimethyl-chroman-4-one (1) and 3-(4'-hydroxy-benzyl)-5,7-dihydroxy-6-methyl-8-methoxy-chroman-4-one (2), were isolated and purified from the ethyl acetate extracts using silica gel and Sephadex LH-20 column chromatography. Their structures were identified using ID and 2D NMR spectroscopy. Compound 2 was isolated from the Polygonatum, genus for the first time. Although the two isolated compounds did not inhibit seed germination, but were inhibitory to root and shoot growth of test spp. At 0.5 mg/ml concentration. the compound 1 inhibited the root growth of carrot and wheat by 84.6% and 88.2%, respectively, while, Compound 2 caused inhibition in carrot, cucumber and wheat by 87.9, 67.8 and 90.9%, respectively. These results indicated that P. odoratum may be allelopathic to succeeding crops."</p>

403	Parasitic	n
	Source(s)	Notes
	<p>PlantUse English contributors. (2019). <i>Persicaria odorata</i> (PROSEA). https://uses.plantnet-project.org/en/Persicaria_odorata_(PROSEA). [Accessed 17 Jun 2019]</p>	<p>"Short-lived perennial, fragrant herb, somewhat glandular in all parts." [Polygonaceae. No evidence]</p>

404	Unpalatable to grazing animals	
	Source(s)	Notes
	<p>Staples, G.W. & Herbst, D.R. 2005. <i>A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places</i>. Bishop Museum Press, Honolulu, HI</p>	<p>"Grasshoppers and other chewing insects attack the foliage and may defoliate the plant, but chemical insecticides are not advisable if the leaves are to be eaten" [Palatable to insects and people. Probably palatable to browsing and grazing mammals]</p>
	<p>Guzman, C. C. de & Siemonsma, J. S. (eds.). (1999). <i>Plant resources of South-East Asia, No.13. Spices</i>. Backhuys Publishers, Leiden, The Netherlands</p>	<p>"The leaves of rau ram are used to flavour many Vietnamese dishes. The fresh leaves are eaten in salads and also with incubated duck eggs" [Palatable to humans. Probably palatable to browsing animals]</p>

405	Toxic to animals	n
	Source(s)	Notes

Qsn #	Question	Answer
	Gardenersworld.com (2019). <i>Persicaria odorata</i> . https://www.gardenersworld.com/plants/persicaria-odorata/ . [Accessed 19 Jun 2019]	" <i>Persicaria odorata</i> has no toxic effects reported. No reported toxicity to: No reported toxicity to Birds No reported toxicity to Cats No reported toxicity to Dogs No reported toxicity to Horses No reported toxicity to Livestock No reported toxicity to People "
	Quattrocchi, U. 2012. CRC World Dictionary of Medicinal and Poisonous Plants: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. CRC Press, Boca Raton, FL	No evidence

406	Host for recognized pests and pathogens	
	Source(s)	Notes
	Guzman, C. C. de & Siemonsma, J. S. (eds.). (1999). Plant resources of South-East Asia, No.13. Spices. Backhuys Publishers, Leiden, The Netherlands	"Diseases and pests. Occasional damage to rau ram from diseases and pests is reported from Vietnam, but the causal agents are not known. In the United States fungal diseases and slugs sometimes affect rau ram. Providing more sunlight can reduce damage. Caterpillars are the main problem in the Philippines."
	Missouri Botanical Garden. (2019). <i>Persicaria odorata</i> . http://www.missouribotanicalgarden.org . [Accessed 19 Jun 2019]	"Problems. No serious insect or disease problems."

407	Causes allergies or is otherwise toxic to humans	n
	Source(s)	Notes
	Gardenersworld.com (2019). <i>Persicaria odorata</i> . https://www.gardenersworld.com/plants/persicaria-odorata/ . [Accessed 19 Jun 2019]	" <i>Persicaria odorata</i> has no toxic effects reported. No reported toxicity to: No reported toxicity to Birds No reported toxicity to Cats No reported toxicity to Dogs No reported toxicity to Horses No reported toxicity to Livestock No reported toxicity to People "
	Guzman, C. C. de & Siemonsma, J. S. (eds.). (1999). Plant resources of South-East Asia, No.13. Spices. Backhuys Publishers, Leiden, The Netherlands	[Edible. No evidence] "Uses The leaves of rau ram are used to flavor many Vietnamese dishes. The fresh leaves are eaten in salads and also with incubated duck eggs, while fresh or cooked leaves are used in various fish, shellfish (mussels, clams, oysters), turtle and frog dishes."
	Quattrocchi, U. 2012. CRC World Dictionary of Medicinal and Poisonous Plants: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. CRC Press, Boca Raton, FL	No evidence

408	Creates a fire hazard in natural ecosystems	n
	Source(s)	Notes

Qsn #	Question	Answer
	Missouri Botanical Garden. (2019). <i>Persicaria odorata</i> . http://www.missouribotanicalgarden.org . [Accessed 19 Jun 2019]	"Plants prefer boggy soils including ones with some standing water. Best in part shade, but tolerates full sun as long as ample soil moisture and good air circulation are present." [No evidence. Unlikely given habit and habitat]
	Guzman, C. C. de & Siemonsma, J. S. (eds.). (1999). Plant resources of South-East Asia, No.13. Spices. Backhuys Publishers, Leiden, The Netherlands	"Short-lived perennial, fragrant herb, somewhat glandular in all parts." ... "Rau ram requires warm and humid growing conditions." [No evidence]

409	Is a shade tolerant plant at some stage of its life cycle	
	Source(s)	Notes
	Guzman, C. C. de & Siemonsma, J. S. (eds.). (1999). Plant resources of South-East Asia, No.13. Spices. Backhuys Publishers, Leiden, The Netherlands	"It grows best under partial shade, but full sunlight is tolerated if ample moisture is available."
	Dave's Garden. (2019). Vietnamese Coriander - <i>Persicaria odorata</i> . https://davesgarden.com/guides/pf/go/310/ . [Accessed 19 Jun 2019]	"Sun Exposure: Full Sun"
	Missouri Botanical Garden. (2019). <i>Persicaria odorata</i> . http://www.missouribotanicalgarden.org . [Accessed 19 Jun 2019]	"Sun: Full sun to part shade"

410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	n
	Source(s)	Notes
	Guzman, C. C. de & Siemonsma, J. S. (eds.). (1999). Plant resources of South-East Asia, No.13. Spices. Backhuys Publishers, Leiden, The Netherlands	"Fertile soils with adequate soil moisture are essential for optimal production."
	Gardenersworld.com (2019). <i>Persicaria odorata</i> . https://www.gardenersworld.com/plants/persicaria-odorata/ . [Accessed 19 Jun 2019]	"Soil type: Clay / heavy / moist"

411	Climbing or smothering growth habit	n
	Source(s)	Notes
	PlantUse English contributors. (2019). <i>Persicaria odorata</i> (PROSEA). https://uses.plantnet-project.org/en/Persicaria_odorata_(PROSEA) . [Accessed 17 Jun 2019]	"Short-lived perennial, fragrant herb, somewhat glandular in all parts."

Qsn #	Question	Answer
412	Forms dense thickets	n
	Source(s)	Notes
	Guzman, C. C. de & Siemonsma, J. S. (eds.). (1999). Plant resources of South-East Asia, No.13. Spices. Backhuys Publishers, Leiden, The Netherlands	"Rau ram is native to and is cultivated in Indo-China. Since the 1960s its cultivation has spread with Vietnamese migrants, mainly to Australia, the Philippines and the United States." ... "Short-lived perennial, fragrant herb, somewhat glandular in all parts. Stem ascending, 30-35 cm tall, 2-3 mm in diameter, red, grooved; base trailing and forming roots at all nodes, much thicker than upright part." [No evidence. Widely cultivated]

501	Aquatic	n
	Source(s)	Notes
	PlantUse English contributors. (2019). <i>Persicaria odorata</i> (PROSEA). https://uses.plantnet-project.org/en/Persicaria_odorata_(PROSEA) . [Accessed 17 Jun 2019]	[Terrestrial] "Short-lived perennial, fragrant herb, somewhat glandular in all parts."

502	Grass	n
	Source(s)	Notes
	USDA, ARS, Germplasm Resources Information Network. 2019. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 17 Jun 2019]	Family: Polygonaceae Subfamily: Polygonoideae Tribe: Persicarieae

503	Nitrogen fixing woody plant	n
	Source(s)	Notes
	USDA, ARS, Germplasm Resources Information Network. 2019. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 17 Jun 2019]	Family: Polygonaceae Subfamily: Polygonoideae Tribe: Persicarieae

504	Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)	n
	Source(s)	Notes
	PlantUse English contributors. (2019). <i>Persicaria odorata</i> (PROSEA). https://uses.plantnet-project.org/en/Persicaria_odorata_(PROSEA) . [Accessed 17 Jun 2019]	"Short-lived perennial, fragrant herb, somewhat glandular in all parts. Stem ascending, 30-35 cm tall, 2-3 mm in diameter, red, grooved; base trailing and forming roots at all nodes, much thicker than upright part." [No evidence]

Qsn #	Question	Answer
601	Evidence of substantial reproductive failure in native habitat	n
	Source(s)	Notes
	PlantUse English contributors. (2019). <i>Persicaria odorata</i> (PROSEA). https://uses.plantnet-project.org/en/Persicaria_odorata_(PROSEA) . [Accessed 17 Jun 2019]	"Rau ram is native to and is cultivated in Indo-China. Since the 1960s its cultivation has spread with Vietnamese migrants, mainly to Australia, the Philippines and the United States." [No evidence. Widespread]

602	Produces viable seed	n
	Source(s)	Notes
	Staples, G. & Kristiansen, M.S. 1999. Ethnic culinary herbs: a guide to identification and cultivation in Hawaii. University of Hawaii Press, Honolulu, HI	"Fruits have not been documented and may never form." ... "Seed: Unknown."
	Guzman, C. C. de & Siemonsma, J. S. (eds.). (1999). Plant resources of South-East Asia, No.13. Spices. Backhuys Publishers, Leiden, The Netherlands	"Rau ram is usually and easily propagated by stem cuttings with 4-6 internodes (8-10 cm long) taken from the top of mature stems." ... "Seed is difficult to obtain in the United States and Australia."
	Dave's Garden. (2019). Vietnamese Coriander - <i>Persicaria odorata</i> . https://davesgarden.com/guides/pf/go/310/ . [Accessed 17 Jun 2019]	"Seed Collecting: N/A: plant does not set seed, flowers are sterile, or plants will not come true from seed"

603	Hybridizes naturally	
	Source(s)	Notes
	WRA Specialist. (2019). Personal Communication	Unknown. No evidence found

604	Self-compatible or apomictic	
	Source(s)	Notes

Qsn #	Question	Answer
	Kong, M. J., & Hong, S. P. (2018). Morphological traits of a distylous taxon, <i>Persicaria odorata</i> subsp. <i>conspicua</i> (Polygonaceae). <i>Flora</i> , 243, 58-66	[Unknown. One morph may be incompatible] "Heterostyly is a reproductive system in which plant populations comprise two or three morphs with different lengths of pistil and stamen. In the present study, we demonstrated clear morphological traits of <i>Persicaria odorata</i> subsp. <i>conspicua</i> , a distylous taxon. Like other distylous species, the length of the style and filament are different between the two morphs." ... "However, the fruits were not found in one-morph populations of this taxon, thus further studies are needed to know extent of the separation can affect self-incompatibility. Since we observed several insect visitors as potential pollinators of <i>P. odorata</i> subsp. <i>conspicua</i> in all populations, it is also noteworthy that we were only able to collect fruits from the CH populations only. As we mentioned above, the CH population was the only population with both morphs. Therefore, this species may possess an incompatibility system like other general heterostylous species to prevent selfing and intra-morph fertilization (Mather and de Winton, 1941; Hiratsuka and Nakao, 1996; Yonekura, 2012). However, further experiments—like on artificial pollination of various combinations— are necessary to determine the heteromorphic incompatibility of <i>P. odorata</i> subsp. <i>conspicua</i> , as the results of non-fruiting in populations with only one morph could be the consequence of habitat conditions or environmental constraints."
	Guzman, C. C. de & Siemonsma, J. S. (eds.). (1999). <i>Plant resources of South-East Asia, No.13. Spices</i> . Backhuys Publishers, Leiden, The Netherlands	[Unknown] "Inflorescence an axillary, long, many-flowered, narrow spike, single or in pairs or in a small cluster; bracts long and funnel-shaped, with long hairs on margins; flowers hermaphrodite; perianth pentamerous, white to purplish-pink, persistent in fruit; stamens 8; styles 3."

605	Requires specialist pollinators	n
	Source(s)	Notes
	Kong, M. J., & Hong, S. P. (2018). Morphological traits of a distylous taxon, <i>Persicaria odorata</i> subsp. <i>conspicua</i> (Polygonaceae). <i>Flora</i> , 243, 58-66	"Since we observed several insect visitors as potential pollinators of <i>P. odorata</i> subsp. <i>conspicua</i> in all populations, it is also noteworthy that we were only able to collect fruits from the CH populations only."

606	Reproduction by vegetative fragmentation	y
	Source(s)	Notes
	Staples, G. & Kristiansen, M.S. 1999. <i>Ethnic culinary herbs: a guide to identification and cultivation in Hawaii</i> . University of Hawaii Press, Honolulu, HI	"A sprawling annual herb with reddish stems that turn up at the tips; roots form freely from the nodes."
	van Wyk, B.-E. 2014. <i>Culinary Herbs and Spices of the World</i> . University of Chicago Press, Chicago, IL	"Cuttings are very easily rooted or side shoots with roots may be planted."
	PlantUse English contributors. (2019). <i>Persicaria odorata</i> (PROSEA). https://uses.plantnet-project.org/en/Persicaria_odorata_(PROSEA) . [Accessed 17 Jun 2019]	"Rau ram is usually and easily propagated by stem cuttings with 4-6 internodes (8-10 cm long) taken from the top of mature stems. These are planted obliquely 5-6 cm apart with a row spacing of 10-15 cm in raised beds of light, well-manured soil and are watered well."

Qsn #	Question	Answer
607	Minimum generative time (years)	1
	Source(s)	Notes
	PlantUse English contributors. (2019). <i>Persicaria odorata</i> (PROSEA). https://uses.plantnet-project.org/en/Persicaria_odorata_(PROSEA) . [Accessed 17 Jun 2019]	[Flowers in first year, but seeds may not be produced. Able to be spread and cultivated vegetatively] "Rau ram is a tender perennial. In Vietnam and the Philippines flowering is profuse and starts in the first year. In Vietnam flowering occurs in August-September and fruiting in September-October. In the United States rau ram flowers only occasionally and only after vernalization. Harvesting can continue when plants are flowering. Under greenhouse conditions in the United States leaves can be harvested year-round."
701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	n
	Source(s)	Notes
	Staples, G. & Kristiansen, M.S. 1999. Ethnic culinary herbs: a guide to identification and cultivation in Hawaii. University of Hawaii Press, Honolulu, HI	[Propagated vegetatively in Hawaii] "Fruits have not been documented and may never form." ... "Seed: Unknown." ... "Easily propagated by tip and stem cuttings 3-4 inches long"
702	Propagules dispersed intentionally by people	y
	Source(s)	Notes
	PlantUse English contributors. (2019). <i>Persicaria odorata</i> (PROSEA). https://uses.plantnet-project.org/en/Persicaria_odorata_(PROSEA) . [Accessed 17 Jun 2019]	"Rau ram is native to and is cultivated in Indo-China. Since the 1960s its cultivation has spread with Vietnamese migrants, mainly to Australia, the Philippines and the United States."
703	Propagules likely to disperse as a produce contaminant	n
	Source(s)	Notes
	Staples, G. & Kristiansen, M.S. 1999. Ethnic culinary herbs: a guide to identification and cultivation in Hawaii. University of Hawaii Press, Honolulu, HI	"Fruits have not been documented and may never form."
704	Propagules adapted to wind dispersal	n
	Source(s)	Notes
	Guzman, C. C. de & Siemonsma, J. S. (eds.). (1999). Plant resources of South-East Asia, No.13. Spices. Backhuys Publishers, Leiden, The Netherlands	"Fruit triangular, 1.5 mm long, acuminate at both ends, smooth and shiny." [Fruits, if produced, lack adaptations for wind dispersal, but small size could allow for some movement by wind]
	Staples, G. & Kristiansen, M.S. 1999. Ethnic culinary herbs: a guide to identification and cultivation in Hawaii. University of Hawaii Press, Honolulu, HI	"Fruits have not been documented and may never form."
705	Propagules water dispersed	y
	Source(s)	Notes
	Royal Botanic Gardens Victoria. (2019). VicFlora Flora of Victoria - <i>Persicaria odorata</i> . https://vicflora.rbg.vic.gov.au . [Accessed 20 Jun 2019]	"Grown as a culinary herb, occasionally escaping from gardens into nearby creeks and wetlands."

Qsn #	Question	Answer
	Heenan, P. B., de Lange, P. J., Cameron, E. K., & Parris, B. S. 2008. Checklist of dicotyledons, gymnosperms, and pteridophytes naturalised or casual in New Zealand: additional records 2004–06. <i>New Zealand Journal of Botany</i> , 46(2): 257-283	" <i>Persicaria odorata</i> (Lour.) Soják. Vietnamese mint NEWRECORD:AK 297489,P. J. de Lange 6685, 12 Sep 2006, North Auckland, Auckland City, Mt Albert. NOTES: Garden Discard. A single large patch growing downstream of houses in a popular reserve. Widely cultivated as a pot and salad herb."
	Guzman, C. C. de & Siemonsma, J. S. (eds.). (1999). <i>Plant resources of South-East Asia, No.13. Spices</i> . Backhuys Publishers, Leiden, The Netherlands	[Probably dispersed by water in wet situations] "Distribution and occurrence: Widely cultivated as a culinary herb and has potential to naturalise in wet situations, as has happened in Victoria. Native to Asia."

706	Propagules bird dispersed	n
	Source(s)	Notes
	Guzman, C. C. de & Siemonsma, J. S. (eds.). (1999). <i>Plant resources of South-East Asia, No.13. Spices</i> . Backhuys Publishers, Leiden, The Netherlands	"Fruit triangular, 1.5 mm long, acuminate at both ends, smooth and shiny." [Fruit, if produced, are not fleshy and unlikely to be consumed by frugivores]

707	Propagules dispersed by other animals (externally)	n
	Source(s)	Notes
	Staples, G. & Kristiansen, M.S. 1999. <i>Ethnic culinary herbs: a guide to identification and cultivation in Hawaii</i> . University of Hawaii Press, Honolulu, HI	"Fruits have not been documented and may never form."

708	Propagules survive passage through the gut	n
	Source(s)	Notes
	Guzman, C. C. de & Siemonsma, J. S. (eds.). (1999). <i>Plant resources of South-East Asia, No.13. Spices</i> . Backhuys Publishers, Leiden, The Netherlands	"Fruit triangular, 1.5 mm long, acuminate at both ends, smooth and shiny." [Fruits, if formed, unlikely to be intentionally consumed b frugivores]
	Staples, G. & Kristiansen, M.S. 1999. <i>Ethnic culinary herbs: a guide to identification and cultivation in Hawaii</i> . University of Hawaii Press, Honolulu, HI	"Fruits have not been documented and may never form."

801	Prolific seed production (>1000/m2)	n
	Source(s)	Notes
	Staples, G. & Kristiansen, M.S. 1999. <i>Ethnic culinary herbs: a guide to identification and cultivation in Hawaii</i> . University of Hawaii Press, Honolulu, HI	"Fruits have not been documented and may never form." ... "Seed: Unknown."

802	Evidence that a persistent propagule bank is formed (>1 yr)	n
	Source(s)	Notes
	Staples, G. & Kristiansen, M.S. 1999. <i>Ethnic culinary herbs: a guide to identification and cultivation in Hawaii</i> . University of Hawaii Press, Honolulu, HI	"Fruits have not been documented and may never form."

Qsn #	Question	Answer
803	Well controlled by herbicides	y
	Source(s)	Notes
	Loh, R. K., Tunison, T., Zimmer, C., Mattos, R., & Benitez, D (2014). A review of invasive plant management in Special Ecological Areas, Hawai'i Volcanoes National Park, 1984-2007. Technical Report 187. Pacific Cooperative Studies Unit, University of Hawaii, Honolulu, HI	"Table 2. Herbicide Control Methods for Target Invasive Weeds" [Persicaria capitata - Herbicide Control Method = 2-5% Garlon 4 Foliar. Persicaria odorata would probably be effectively controlled as well]
	Foo, C. L., Harrington, K. C., & MacKay, M. B. (2010). Herbicide tolerance of three ornamental ground cover species: Polygonum capitatum, Sedum mexicanum and Soleirolia soleirolii. Pp. 303-306 In Proceedings of the 17th Australasian weeds Conference.	[P. odorata would probably be effectively controlled by the herbicides used to control P. capitatum] "The most damaging of the herbicides for P. capitatum was dicamba, and this would be a very suitable chemical for controlling the species should it become troublesome (Table 1). When looking at herbicides that would be useful for controlling weeds selectively within this ground cover species, haloxyfop was successfully tolerated and thus will be useful for grass weed control. Likewise, the tribenuron treatment was tolerated quite well and this gives good general control of a wide range of broadleaved species. A tribenuron/haloxyfop mixture has been useful for weed control in our field plots since this trial. The three residual herbicides tested, simazine, pendimethalin and oxadiazon, were all tolerated quite well and could be used to help get this ground cover species established. However, there was some initial damage from the oxadiazon."
	WRA Specialist. (2019). Personal Communication	No information on herbicide efficacy of this species, but herbicides used on invasive Persicaria species would likely be effective if needed

804	Tolerates, or benefits from, mutilation, cultivation, or fire	y
	Source(s)	Notes
	PlantUse English contributors. (2019). Persicaria odorata (PROSEA). https://uses.plantnet-project.org/en/Persicaria_odorata_(PROSEA) . [Accessed 17 Jun 2019]	"Rau ram can be rejuvenated by cutting back the stems."

805	Effective natural enemies present locally (e.g. introduced biocontrol agents)	
	Source(s)	Notes
	WRA Specialist. (2019). Personal Communication	Unknown

Summary of Risk Traits:

High Risk / Undesirable Traits

- Thrives in tropical climates
- Naturalized outside native range, but no evidence in the Hawaiian Islands to date
- Included in some weed lists in Australia, but no negative impacts have been described
- Other *Persicaria* (*Polygonum*) species have become invasive
- Reproduces vegetatively
- Able to reach maturity in one growing season (but limited to vegetative spread)
- Intentionally cultivated by people, and able to spread along watercourses
- Tolerates cutting

Low Risk Traits

- Although listed as a weed in a few locations, there have been no negative impacts described
- Unarmed (no spines, thorns, or burrs)
- Non-toxic
- Edible
- Fruit and seeds not produced in the Hawaiian Islands
- May be self-incompatible
- Lack of seed production minimizes risk of long-distance dispersal
- Herbicides likely effective at control if needed