Taxon: Emilia sonchifolia (L.) DC.

Family: Asteraceae

Common Name(s): Cupid's shaving brush
Flora's paintbrush
purple sow thistle
red tassel flower
sow thistle

Synonym(s): Emilia sonchifolia var. javanica
Emilia sonchifolia var. sonchifolia

Assessor: Chuck Chimera **Status:** Assessor Approved **End Date:** 17 Mar 2019

WRA Score: 13.0 **Designation:** H(HPWRA) **Rating:** High Risk

Keywords: Annual Herb, Naturalized, Minor Weed, Self-Compatible, Wind-Dispersed

Qsn #	Question	Answer Option	Answer
101	Is the species highly domesticated?	y=-3, n=0	n
101	Is the species highly domesticated?	y=-3, n=0	n
102	Has the species become naturalized where grown?		
102	Has the species become naturalized where grown?		
103	Does the species have weedy races?		
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
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
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
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
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
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
301	Naturalized beyond native range	y = 1*multiplier (see Appendix 2), n= question 205	y

Qsn #	Question	Answer Option	Answer
302	Garden/amenity/disturbance weed	n=0, y = 1*multiplier (see Appendix 2)	y
302	Garden/amenity/disturbance weed	n=0, y = 1*multiplier (see Appendix 2)	y
303	Agricultural/forestry/horticultural weed		
303	Agricultural/forestry/horticultural weed		
304	Environmental 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
305	Congeneric weed	n=0, y = 1*multiplier (see Appendix 2)	y
401	Produces spines, thorns or burrs	y=1, n=0	n
401	Produces spines, thorns or burrs	y=1, n=0	n
402	Allelopathic		
402	Allelopathic		
403	Parasitic	y=1, n=0	n
403	Parasitic	y=1, n=0	n
404	Unpalatable to grazing animals	y=1, n=-1	n
404	Unpalatable to grazing animals	y=1, n=-1	n
405	Toxic to animals	y=1, n=0	n
405	Toxic to animals	y=1, n=0	n
406	Host for recognized pests and pathogens	y=1, n=0	y
406	Host for recognized pests and pathogens	y=1, n=0	y
407	Causes allergies or is otherwise toxic to humans	y=1, n=0	n
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
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		
409	Is a shade tolerant plant at some stage of its life cycle		
410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	y=1, n=0	y
410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	y=1, n=0	y
411	Climbing or smothering growth habit	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
412	Forms dense thickets	y=1, n=0	n
501	Aquatic	y=5, n=0	n
501	Aquatic	y=5, n=0	n
502	Grass	y=1, n=0	n
502	Grass	y=1, n=0	n

Qsn #	Question	Answer Option	Answer
503	Nitrogen fixing woody plant	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
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
601	Evidence of substantial reproductive failure in native habitat	y=1, n=0	n
602	Produces viable seed	y=1, n=-1	y
602	Produces viable seed	y=1, n=-1	y
603	Hybridizes naturally	y=1, n=-1	y
603	Hybridizes naturally	y=1, n=-1	y
604	Self-compatible or apomictic	y=1, n=-1	y
604	Self-compatible or apomictic	y=1, n=-1	y
605	Requires specialist pollinators	y=-1, n=0	n
605	Requires specialist pollinators	y=-1, n=0	n
606	Reproduction by vegetative fragmentation	y=1, n=-1	n
606	Reproduction by vegetative fragmentation	y=1, n=-1	n
607	Minimum generative time (years)	1 year = 1, 2 or 3 years = 0, 4+ years = -1	1
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	y
701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	y=1, n=-1	y
702	Propagules dispersed intentionally by people		
702	Propagules dispersed intentionally by people		
703	Propagules likely to disperse as a produce contaminant	y=1, n=-1	y
703	Propagules likely to disperse as a produce contaminant	y=1, n=-1	y
704	Propagules adapted to wind dispersal	y=1, n=-1	y
704	Propagules adapted to wind dispersal	y=1, n=-1	y
705	Propagules water dispersed	y=1, n=-1	y
705	Propagules water dispersed	y=1, n=-1	y
706	Propagules bird dispersed	y=1, n=-1	n
706	Propagules bird dispersed	y=1, n=-1	n
707	Propagules dispersed by other animals (externally)	y=1, n=-1	y
707	Propagules dispersed by other animals (externally)	y=1, n=-1	y
708	Propagules survive passage through the gut	y=1, n=-1	n

Qsn #	Question	Answer Option	Answer
708	Propagules survive passage through the gut	y=1, n=-1	n
801	Prolific seed production (>1000/m2)	y=1, n=-1	y
801	Prolific seed production (>1000/m2)	y=1, n=-1	y
802	Evidence that a persistent propagule bank is formed (>1 yr)		
802	Evidence that a persistent propagule bank is formed (>1 yr)		
803	Well controlled by herbicides	y=-1, n=1	y
803	Well controlled by herbicides	y=-1, n=1	y
804	Tolerates, or benefits from, mutilation, cultivation, or fire	y=1, n=-1	n
804	Tolerates, or benefits from, mutilation, cultivation, or fire	y=1, n=-1	n
805	Effective natural enemies present locally (e.g. introduced biocontrol agents)		
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**
	Holm, L.G., Doll, J., Holm, E., Pancho, J.V. & Herberger, J.P. 1997. World Weeds: Natural Histories and Distribution. John Wiley and Sons, Inc., New York, NY	[No evidence] "It is native to the Old World tropics and now occurs in the tropical and subtropical areas of 54 countries (Figure 39-1), often as an early colonizer of disturbed sites."

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**
	Holm, L.G., Doll, J., Holm, E., Pancho, J.V. & Herberger, J.P. 1997. World Weeds: Natural Histories and Distribution. John Wiley and Sons, Inc., New York, NY	"Emilia sonchifolia ... It is native to the Old World tropics and now occurs in the tropical and subtropical areas of 54 countries."

202	**Quality of climate match data**	**High**
	Source(s)	**Notes**
	Holm, L.G., Doll, J., Holm, E., Pancho, J.V. & Herberger, J.P. 1997. World Weeds: Natural Histories and Distribution. John Wiley and Sons, Inc., New York, NY	

203	**Broad climate suitability (environmental versatility)**	**n**
	Source(s)	**Notes**
	Wagner, W.L., Herbst, D.R.& Sohmer, S.H. 1999. Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	"in Hawai'i naturalized in relatively low elevation, dry, disturbed areas on Kaua'i, O'ahu, and Maui."
	Plants for a Future. (2019). Emilia sonchifolia. https://pfaf.org/user/Plant.aspx?LatinName=emilia+sonchifolia. [Accessed 15 Mar 2019]	"USDA hardiness: 8-11"

204	**Native or naturalized in regions with tropical or subtropical climates**	**y**

Qsn #	Question	Answer
	Source(s)	**Notes**
	Holm, L.G., Doll, J., Holm, E., Pancho, J.V. & Herberger, J.P. 1997. World Weeds: Natural Histories and Distribution. John Wiley and Sons, Inc., New York, NY	"It is native to the Old World tropics and now occurs in the tropical and subtropical areas of 54 countries (Figure 39-1), often as an early colonizer of disturbed sites."
	Wagner, W.L., Herbst, D.R.& Sohmer, S.H. 1999. Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	"Native to eastern and southern Asia and western PacifIc; in Hawai'i naturalized in relatively low elevation, dry, disturbed areas on Kaua'i, O'ahu, and Maui." [Also collected on islands of Hawaii and Lanai]

205	Does the species have a history of repeated introductions outside its natural range?	y
	Source(s)	**Notes**
	Holm, L.G., Doll, J., Holm, E., Pancho, J.V. & Herberger, J.P. 1997. World Weeds: Natural Histories and Distribution. John Wiley and Sons, Inc., New York, NY	"It is native to the Old World tropics and now occurs in the tropical and subtropical areas of 54 countries (Figure 39-1), often as an early colonizer of disturbed sites."

301	Naturalized beyond native range	y
	Source(s)	**Notes**
	Oppenheimer, H.. 2007. New plant records from Moloka'i, Lāna'i, Maui, and Hawai'i for 2006. Bishop Museum Occasional Papers 96:17-34	"Emilia sonchifolia (L.) DC New island record var. japonica (N.L. Burm.) Mattf. Known from Kaua'i, O'ahu (Wagner et al. 1999a: 312), and East Maui (Wagner et al. 1997: 52), this weedy herb also occurs on Läna'i. Material examined. LÄNA'I: Känepu'u, uncommon in open, sunny, grassy areas, 460 m, 21 Dec 2006, Oppenheimer H120646."
	Oppenheimer, H. L. & Bartlett, R. T. 2002. New plant records from the main Hawaiian Islands. Bishop Museum Occasional Papers. 69: 1-14	"Emilia sonchifolia (L.) DC. var. sonchifolia New island record. Occurring on Kaua'i, O'ahu, and Maui, (Wagner et al., 1999: 312), this taxon has now been collected on the Big Island. Material examined. HAWAI'I: South Hilo Distr., Waiäkea, common on roadsides and in empty lots, 31 m, 21 Apr 2000, Oppenheimer H40019."
	Holm, L.G., Doll, J., Holm, E., Pancho, J.V. & Herberger, J.P. 1997. World Weeds: Natural Histories and Distribution. John Wiley and Sons, Inc., New York, NY	"It is native to the Old World tropics and now occurs in the tropical and subtropical areas of 54 countries (Figure 39-1), often as an early colonizer of disturbed sites."
	Wagner, W.L., Herbst, D.R.& Sohmer, S.H. 1999. Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	"Native to eastern and southern Asia and western Pacific; in Hawai'i naturalized in relatively low elevation, dry, disturbed areas on Kaua'i, O'ahu, and Maui."

302	Garden/amenity/disturbance weed	y
	Source(s)	**Notes**
	Brisbane City Council. (2019). Weed Identification Tool - Emilia - Emilia sonchifolia var. javanica. https://weeds.brisbane.qld.gov.au/weeds/emilia. [Accessed 15 Mar 2019]	"A weed of crops, pastures, gardens, roadsides, footpaths, parks, lawns, disturbed sites and waste areas."
	PlantUse English contributors. (2019). Emilia sonchifolia (PROSEA). https://uses.plantnet-project.org/en/Emilia_sonchifolia_(PROSEA). [Accessed 15 Mar 2019]	"E. sonchifolia occurs frequently as a weed in compounds, roadsides, grassy fields, on dikelets along rice fields, in cropped fields, tea, rubber and other plantations, teak forest, and on beaches. It prefers sunny or slightly shaded, not too dry localities from sea-level up to 3000 m altitude. It is locally abundant, but always occurs scattered."

Qsn #	Question	Answer
	Haselwood, E.L., Motter, G.G., & Hirano, R.T. (eds.). 1983. Handbook of Hawaiian Weeds. University of Hawaii Press, Honolulu, HI	"Habitat: Found in dry and in wet regions up to 1,000 feet or more. A weed in cultivated areas."
	Zhenghao Xu & Le Chang. 2017. Identification and Control of Common Weeds: Volume 3. Zhejiang University Press, Hangzhou and Springer Nature Singapore	"Habitat: Weedy slopes, roadsides, field margins, sandy places, gardens, wetlands." … "Harmfulness: A weed in uplands or gardens."
	Wagner, W.L., Herbst, D.R.& Sohmer, S.H. 1999. Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	"in Hawai'i naturalized in relatively low elevation, dry, disturbed areas"
	Holm, L.G., Doll, J., Holm, E., Pancho, J.V. & Herberger, J.P. 1997. World Weeds: Natural Histories and Distribution. John Wiley and Sons, Inc., New York, NY	"It has been described as extremely common but not troublesome, which may explain the scarcity of research on this species."

303	Agricultural/forestry/horticultural weed	
	Source(s)	**Notes**
	PlantUse English contributors. (2019). Emilia sonchifolia (PROSEA). https://uses.plantnet-project.org/en/Emilia_sonchifolia_(PROSEA). [Accessed 15 Mar 2019]	"Although E. sonchifolia is a very common weed of field crops, it is not considered very noxious or harmful. Propagation is by seed, and natural dispersal is by wind which easily carries the fruits over great distances."
	Holm, L.G., Doll, J., Holm, E., Pancho, J.V. & Herberger, J.P. 1997. World Weeds: Natural Histories and Distribution. John Wiley and Sons, Inc., New York, NY	"It has been described as extremely common but not troublesome, which may explain the scarcity of research on this species."
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	"Weed of: Bananas, Cereals, Orchards & Plantations, Pastures, Vegetables"
	WRA Specialist. (2019). Personal Communication	A potential crop weed, although impacts appear to be minimal

304	Environmental weed	n
	Source(s)	**Notes**
	PlantUse English contributors. (2019). Emilia sonchifolia (PROSEA). https://uses.plantnet-project.org/en/Emilia_sonchifolia_(PROSEA). [Accessed 15 Mar 2019]	"Although E. sonchifolia is a very common weed of field crops, it is not considered very noxious or harmful. Propagation is by seed, and natural dispersal is by wind which easily carries the fruits over great distances."
	Holm, L.G., Doll, J., Holm, E., Pancho, J.V. & Herberger, J.P. 1997. World Weeds: Natural Histories and Distribution. John Wiley and Sons, Inc., New York, NY	"It has been described as extremely common but not troublesome, which may explain the scarcity of research on this species."
	Medeiros, A.C., Loope, L.L. & Chimera, C.G. 1998. Flowering Plants and Gymnosperms of Haleakala National Park. Technical Report 120. Pacific Cooperative Studies Unit, Honolulu, HI	[Weed of minor significance in Haleakala National Park] "Lower Kipahulu Valley, in coastal strand zone and lower disturbed sites; Manawainui; NE rift, rare weed in disturbed bog turf."
	WRA Specialist. (2019). Personal Communication	A weed of minimal significance in the natural environment

Qsn #	Question	Answer
305	**Congeneric weed**	**y**
	Source(s)	**Notes**
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	"Emilia coccinea … Weed of: Cereals" … "Emilia fosbergii … Weed of: Orchards & Plantations" … "Emilia javanica … Weed of: Pastures" … "Emilia praetermissa … Weed of: Orchards & Plantations" … "Emilia scabra … Weed of: Potatoes"

401	**Produces spines, thorns or burrs**	**n**
	Source(s)	**Notes**
	Wu, Z. Y., Raven, P. H. & Hong, D. Y., (eds.). 2011. Flora of China Volume 20-21 (Asteraceae). Science Press, Beijing & Missouri Botanical Garden Press, St. Louis	[No evidence] "Herbs, annual; root vertical. Stems erect or ascending, gray-green, 25-40 cm tall, rather curved, usually branching from base, glabrous or sparsely pilose. Leaves thick, lower leaves crowded, abaxially dark green, often becoming purple, lyrate-pinnatilobed, 5-10 × 2.5-6.5 cm; terminal lobe large, broadly ovate-triangular, margin irregularly dentate, apex obtuse or subrounded; lateral lobes usually paired, oblong or oblong-lanceolate, both surfaces crisped-hairy, margin shallowly and bluntly dentate, apex obtuse or acute. Median stem leaves lax, sessile, smaller, ovate-lanceolate or oblong-lanceolate, basally hastately semiamplexicaul, margin entire or irregularly denticulate, apically acute; upper leaves few, linear."

402	**Allelopathic**	
	Source(s)	**Notes**
	Ishak, M. S., & Sahid, I. (2014). Allelopathic effects of the aqueous extract of the leaf and seed of Leucaena leucocephala on three selected weed species. AIP Conference Proceedings 1614(1): 659-664	[Unknown. Emilia sonchifolia evaluated as the object of allelopathic extracts] "Abstract. A laboratory experiment was conducted to study the allelopathic effects of the aqueous extract of the leaf and seed of Leucaena leucocephala. The aqueous extracts were individually tested on three selected weed species, namely goatweed (Ageratum conyzoides), coat buttons (Tridax procumbens) and lilac tasselflower (Emilia sonchifolia). The allelopathic effects of the leaf and seed extracts on germination, shoot length, root length and fresh weight of each of the selected weed species were determined. Germination of goatweed, coat buttons and lilac tasselflower were inhibited by the aqueous extracts of both the leaf and seed of L. leucocephala and was concentration dependent. Different concentrations of the aqueous extracts showed various germination patterns on the selected weeds species. Seedling length and fresh weight of goatweed, coat buttons and lilac tasselflower were reduced in response to respective increasing concentrations of the seed extracts. Maximum inhibition by the aqueous seed extract was observed more on the root rather than the shoot growth. The aqueous seed extract at T3 concentration reduced root length of goatweed, coat buttons and lilac tasselflower by 95%, 86% and 91% (of the control) respectively. The aqueous seed extract showed greater inhibitory effects than that of the aqueous leaf extract."

403	**Parasitic**	**n**

Qsn #	Question	Answer
	Source(s)	**Notes**
	Wu, Z. Y., Raven, P. H. & Hong, D. Y., (eds.). 2011. Flora of China Volume 20-21 (Asteraceae). Science Press, Beijing & Missouri Botanical Garden Press, St. Louis	"Herbs, annual; root vertical." [Asteraceae. No evidence]

404	Unpalatable to grazing animals	n
	Source(s)	**Notes**
	Boodoo, A. A., Ramjee, R., Hulman, B., Dolberg, F., & Rowe, J. B. (1990). Evaluation of the basal forage diet of village cows. Livestock Research for Rural Development, 2 (1), 15-23	"Appendix 1: List of assorted fodder - grasses vegetable crop residues twigs shrubs creepers and tree foliage" [Emilia sonchifolia - sometimes used]
	Chaiyarat, R., Laohajinda, W., Kutintara, U., & Nabhitabhata, J. (1999). Ecology of the goral (Naemorhedus goral) in Omkoi Wildlife Sanctuary Thailand. The Natural History Bulletin of the Siam Society, 47, 191-205	"From direct observations we found that goral fed on some forage species that were not found in the feces such as Impatiens chine11sis Linn., one species of the family Asteraceae, Emilia sonchifolia DC., Pteridium aquilinum Kuhn var. Wightianum Tryon, and Borreria sp."
	Asif, M., & Modse, S. (2015). Crop Damage by the Blackbuck Antilope cervicapra in and around Chitta Reserve Forest of Bidar, Karnataka. Int. J. Life. Sci. Scienti. Res, 2(4): 500-505	"Table 3. Food plants of Blackbuck found in Chitta Reserve Forest and its surrounding villages in 2014" [Includes Emilia sonchifolia]

405	Toxic to animals	n
	Source(s)	**Notes**
	Plants for a Future. (2019). Emilia sonchifolia. https://pfaf.org/user/Plant.aspx?LatinName=emilia +sonchifolia. [Accessed 15 Mar 2019]	"Known Hazards: None known"
	Boodoo, A. A., Ramjee, R., Hulman, B., Dolberg, F., & Rowe, J. B. (1990). Evaluation of the basal forage diet of village cows. Livestock Research for Rural Development, 2 (1), 15-23	[No evidence] "Appendix 1: List of assorted fodder - grasses vegetable crop residues twigs shrubs creepers and tree foliage" [Emilia sonchifolia - sometimes used]

406	Host for recognized pests and pathogens	y
	Source(s)	**Notes**

Qsn #	Question	Answer
	Plantwise. (2019). Plantwise Technical Factsheet. red tasselflower (Emilia sonchifolia). https://www.plantwise.org. [Accessed 15 Mar 2019]	"E. sonchifolia has been reported as a weed of 29 crops, but although extremely common, Holm et al. (1997) do not consider it to be troublesome. However, they do report that the species is a serious or principal weed in some areas, for example in cassava in Brazil and India; in cotton, maize and lowland rice in Brazil; in oil palm and rubber in South East Asia; in papaya, groundnut, sweet potato and tomato in Hawaii, USA; in pineapple in Hawaii, USA and Malaysia; and in taro (Colocasia esculenta) in Samoa. It has also been identified as one of the most problematic weeds in the cotton-producing areas of Nicaragua (Solis and de la Cruz, 1992). In other situations E. sonchifolia is but one member of a diverse broadleaf flora. When uncontrolled, E. sonchifolia or E. coccinea can decrease the dry weight of lettuce and mustard cabbage (Brassica juncea) by 70 and 30% respectively (at 11 weeds per crop plant), while tomato fruit yield has been shown to be reduced by 18% by 80-120 weeds per plant. The more competitive, closely spaced crop of sweet corn was not affected by up to 150 weeds per crop plant (Floresca, 1976). In Hawaii, USA, a wilt disease of pawpaw (Carica papayas), caused by tomato spotted wilt tospovirus (TSWV) is invariably associated with orchards which have numerous TSWV infected E. sonchifolia plants (Gonsalves and Truijillo, 1986). Other economically important pathogens for which E. sonchifolia is an alternative host are Xanthomonas campestris pv. phaseoli [X. axonopodis pv. phaseoli], which causes bacterial infection of beans (Phaseolus vulgaris) in Brazil and Cuba (Rodriguez et al., 1991; Valarini and Spadotto, 1995), the yellow spot virus of pineapple [tomato spotted wilt tospovirus] (Frohlich and Rodewald, 1970), and the nematode, Rotylenchulus reniformis, found in bananas in Cuba (Blanco, et al., 1982). It is also a host of Liriomyza huidobrensis, an insect pest of onion (Allium cepa) in Colombia (Hincapie et al., 1993)."
	Oliveira, C. M., & Fontes, J. R. A. (2008). Weeds as hosts for new crop pests: the case of Protortonia navesi (Hemiptera: Monophlebidae) on cassava in Brazil. Weed Research, 48(3), 197-200	"Weeds may serve as reservoirs for new and invasive insect pests. The cassava root scale (Protortonia navesi) is a recent pest in the Brazilian Cerrado that causes qualitative and quantitative damage by sucking plant sap." … "Table 1 Weed species hosts of Protortonia navesi in cassava crop area in Federal District, Brazil" [Includes Emilia sonchifolia]

407	Causes allergies or is otherwise toxic to humans	n
	Source(s)	**Notes**
	Plants for a Future. (2019). Emilia sonchifolia. https://pfaf.org/user/Plant.aspx?LatinName=emilia+sonchifolia. [Accessed 15 Mar 2019]	"Known Hazards: None known"
	Tropical Plants Database, Ken Fern. (2019). Emilia sonchifolia. http://tropical.theferns.info/viewtropical.php?id=Emilia+sonchifolia. [Accessed 15 Mar 2019]	"Known Hazards: None known"

Qsn #	Question	Answer
	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. Used medicinally] "leaves eaten as vegetable" … "Used in Ayurveda, Unani and Sidha. Fresh leaf juice, methanolic and aqueous extracts of Emilia sonchifolia and Emilia prenanthoidea have shown antimicrobial, antioxidant and antiinflammatory activities. Leaves believed to be poisonous. Whole plant ground and applied over wounds for quick healing; fever in children, contact therapy, whole plant hung around the neck. Sun dried plant to cure asthma. Leaves antiphlogistic, antioxidant, febrifuge, astringent, wound dressing, for dysentery and diarrhea, convulsions; leaf decoction febrifuge; juice of the leaves used in toothache, eye inflammation, night blindness and sore ears; leaf rubbed on the forehead to relieve headache; leaves and roots in malaria; boiled leaves eaten as a vegetable for urinary troubles. Flowers chewed to protect teeth from decaying, chewed and kept for a while inside the mouth. Roots infusion drunk for tuberculosis, diarrhea; root juice applied to treat toothache; root decoction in diarrhea."

408	Creates a fire hazard in natural ecosystems	n
	Source(s)	**Notes**
	PlantUse English contributors. (2019). Emilia sonchifolia (PROSEA). https://uses.plantnet-project.org/en/Emilia_sonchifolia_(PROSEA). [Accessed 15 Mar 2019]	[No evidence. Unlikely given annual habit, habitat and scattered distribution] "E. sonchifolia occurs frequently as a weed in compounds, roadsides, grassy fields, on dikelets along rice fields, in cropped fields, tea, rubber and other plantations, teak forest, and on beaches. It prefers sunny or slightly shaded, not too dry localities from sea-level up to 3000 m altitude. It is locally abundant, but always occurs scattered."

409	Is a shade tolerant plant at some stage of its life cycle	
	Source(s)	**Notes**
	Tropical Plants Database, Ken Fern. (2019). Emilia sonchifolia. http://tropical.theferns.info/viewtropical.php?id=Emilia+sonchifolia. [Accessed 15 Mar 2019]	"An easily grown plant[1], succeeding in most well-drained soils in a sunny position[200]."
	Plants for a Future. (2019). Emilia sonchifolia. https://pfaf.org/user/Plant.aspx?LatinName=emilia+sonchifolia. [Accessed 15 Mar 2019]	"It cannot grow in the shade."
	PlantUse English contributors. (2019). Emilia sonchifolia (PROSEA). https://uses.plantnet-project.org/en/Emilia_sonchifolia_(PROSEA). [Accessed 15 Mar 2019]	"It prefers sunny or slightly shaded, not too dry localities from sea-level up to 3000 m altitude."

410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	y
	Source(s)	**Notes**
	Practical Plants. (2019). Emilia sonchifolia - Cupid's Shaving Brush. https://practicalplants.org/wiki/Emilia_sonchifolia. [Accessed 15 Mar 2019]	"An easily grown plant[12], succeeding in most well-drained soils in a sunny position[13]. Plants flower better when growing on nutritionally poor soils, producing much lusher growth on rich soil [13]. Plants are drought tolerant once established[13]."

Qsn #	Question	Answer
	Plants for a Future. (2019). Emilia sonchifolia. https://pfaf.org/user/Plant.aspx?LatinName=emilia+sonchifolia. [Accessed 15 Mar 2019]	"Suitable for: light (sandy), medium (loamy) and heavy (clay) soils and prefers well-drained soil. Suitable pH: acid, neutral and basic (alkaline) soils. It cannot grow in the shade. It prefers moist soil."
	PlantUse English contributors. (2019). Emilia sonchifolia (PROSEA). https://uses.plantnet-project.org/en/Emilia_sonchifolia_(PROSEA). [Accessed 15 Mar 2019]	[Unlikely to be soil or substrate limited] "E. sonchifolia occurs frequently as a weed in compounds, roadsides, grassy fields, on dikelets along rice fields, in cropped fields, tea, rubber and other plantations, teak forest, and on beaches. It prefers sunny or slightly shaded, not too dry localities from sea-level up to 3000 m altitude. It is locally abundant, but always occurs scattered."

411	Climbing or smothering growth habit	n
	Source(s)	**Notes**
	Wu, Z. Y., Raven, P. H. & Hong, D. Y., (eds.). 2011. Flora of China Volume 20-21 (Asteraceae). Science Press, Beijing & Missouri Botanical Garden Press, St. Louis	"Herbs, annual; root vertical. Stems erect or ascending, gray-green, 25-40 cm tall, rather curved, usually branching from base, glabrous or sparsely pilose."

412	Forms dense thickets	n
	Source(s)	**Notes**
	Haselwood, E.L., Motter, G.G., & Hirano, R.T. (eds.). 1983. Handbook of Hawaiian Weeds. University of Hawaii Press, Honolulu, HI	"Found in dry and in wet regions up to 1,000 feet or more. A weed in cultivated areas."
	PlantUse English contributors. (2019). Emilia sonchifolia (PROSEA). https://uses.plantnet-project.org/en/Emilia_sonchifolia_(PROSEA). [Accessed 15 Mar 2019]	[No evidence] "E. sonchifolia occurs frequently as a weed in compounds, roadsides, grassy fields, on dikelets along rice fields, in cropped fields, tea, rubber and other plantations, teak forest, and on beaches. It prefers sunny or slightly shaded, not too dry localities from sea-level up to 3000 m altitude. It is locally abundant, but always occurs scattered."

501	Aquatic	n
	Source(s)	**Notes**
	Wagner, W.L., Herbst, D.R.& Sohmer, S.H. 1999. Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	"in Hawai'i naturalized in relatively low elevation, dry, disturbed areas"

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 15 Mar 2019]	Family: Asteraceae (alt.Compositae) Subfamily: Asteroideae Tribe: Senecioneae Subtribe: Senecioninae

503	Nitrogen fixing woody plant	n
	Source(s)	**Notes**

Qsn #	Question	Answer
	USDA, ARS, Germplasm Resources Information Network. 2019. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html. [Accessed 15 Mar 2019]	Family: Asteraceae (alt.Compositae) Subfamily: Asteroideae Tribe: Senecioneae Subtribe: Senecioninae

504	**Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)**	**n**
	Source(s)	**Notes**
	Wu, Z. Y., Raven, P. H. & Hong, D. Y., (eds.). 2011. Flora of China Volume 20-21 (Asteraceae). Science Press, Beijing & Missouri Botanical Garden Press, St. Louis	"Herbs, annual; root vertical. Stems erect or ascending, gray-green, 25-40 cm tall, rather curved, usually branching from base, glabrous or sparsely pilose."

601	**Evidence of substantial reproductive failure in native habitat**	**n**
	Source(s)	**Notes**
	Holm, L.G., Doll, J., Holm, E., Pancho, J.V. & Herberger, J.P. 1997. World Weeds: Natural Histories and Distribution. John Wiley and Sons, Inc., New York, NY	[No evidence] "It is native to the Old World tropics and now occurs in the tropical and subtropical areas of 54 countries (Figure 39-1), often as an early colonizer of disturbed sites."

Qsn #	Question	Answer
602	**Produces viable seed**	**y**
	Source(s)	**Notes**
	Yamashita, O. M., Guimarães, S. C., Silva, J. L., Carvalho, M. A. C., & Camargo, M. F. (2009). Fatores ambientais sobre a germinação de Emilia sonchifolia. Planta Daninha, 27(4), 673-681	"ABSTRACT - The knowledge of basic aspects of the biology of weeds can contribute significantly to the development of strategies for their handling. Emilia sonchifolia is a weed spread throughout the Brazilian territory; it presents moderate aggressiveness being found in agricultural and urban areas. This work aimed to evaluate germination of E. sonchifolia seeds in temperature conditions and brightness, stress osmotic, saline and pH of solution. Four experiments were accomplished: a) combination of four temperatures (20 ºC, 25 ºC, 30 ºC and 35 ºC) in two conditions of brightness (light absence and presence); b) seven levels of osmotic stress provided for PEG6000 (0; -0.1; -0.2; -0.4; -0.6; -0.8 and -1.0 MPa); c) six levels of saline stress provided for NaCl (0.0; -0.2; -0.4; -0.6; -0.8 and -1.0 MPa) and d) six pH levels (3.0; 5.0; 6.0; 7.0; 9.0 and 11.0) in buffer solutions. The germination of E. sonchifolia seeds was maximized in the presence of light , at constant temperatures of 25 and 30 ºC. There was reduction of germination in conditions with osmotic stress starting from -0.1 MPa and of -0.2 MPa for saline stress. E. sonchifolia is sensive to pH variation, with greater germination of seeds occurring only at pH 6.0."
	Haselwood, E.L., Motter, G.G., & Hirano, R.T. (eds.). 1983. Handbook of Hawaiian Weeds. University of Hawaii Press, Honolulu, HI	"Propagation: By seed. Dispersed by the wind."
	Brisbane City Council. (2019). Weed Identification Tool - Emilia - Emilia sonchifolia var. javanica. https://weeds.brisbane.qld.gov.au/weeds/emilia. [Accessed 15 Mar 2019]	"This species reproduces only by seed, which are easily blown and dispersed by the wind. Seeds may also be spread by machinery, water, vehicles, animals, and in clothing and contaminated agricultural produce."

603	**Hybridizes naturally**	**y**
	Source(s)	**Notes**
	Wagner, W.L., Herbst, D.R.& Sohmer, S.H. 1999. Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	"On Kaua'i, O'ahu, and Maui, Emilia sonchifolia may hybridize with E. fosbergii where they occur together."

604	**Self-compatible or apomictic**	**y**
	Source(s)	**Notes**
	Medabalimi, M. R., Aluri, J. S. R., & Kunuku, V. R. (2017). Pump mechanism, secondary pollen presentation, psychophily and anemochory in Emilia sonchifolia (L.) DC. (Asteraceae). Journal of BioScience and Biotechnology, 6 (2), 129-137	"The high natural fruit and seed set rates recorded indicate that geitonogamy and xenogamy are functional but both modes are essentially vector-mediated. The function of dual modes of breeding suggests that the plant is self-compatible, self- as well as cross-pollinating."

605	**Requires specialist pollinators**	**n**
	Source(s)	**Notes**

Qsn #	Question	Answer
	Medabalimi, M. R., Aluri, J. S. R., & Kunuku, V. R. (2017). Pump mechanism, secondary pollen presentation, psychophily and anemochory in Emilia sonchifolia (L.) DC. (Asteraceae). Journal of BioScience and Biotechnology, 6 (2), 129-137	"The capitulum is the unit of attraction for the insects. Insects visiting the capitula consist of wasps, flies and butterflies and all foraged for nectar only" … "Therefore, butterflies were considered to be the principal pollinators while the wasp and the fly were considered to be supplementary pollinators. Apart from all these insects, thrips were found in mature buds and emerged out during anthesis. They were resident foragers and collected both pollen and nectar from disc florets."

606	Reproduction by vegetative fragmentation	n
	Source(s)	**Notes**
	Haselwood, E.L., Motter, G.G., & Hirano, R.T. (eds.). 1983. Handbook of Hawaiian Weeds. University of Hawaii Press, Honolulu, HI	"An erect annual, 1 to 2 feet high" … "Propagation: By seed. Dispersed by the wind."
	Brisbane City Council. (2019). Weed Identification Tool - Emilia - Emilia sonchifolia var. javanica. https://weeds.brisbane.qld.gov.au/weeds/emilia. [Accessed 15 Mar 2019]	"This species reproduces only by seed, which are easily blown and dispersed by the wind."

607	Minimum generative time (years)	1
	Source(s)	**Notes**
	Wu, Z. Y., Raven, P. H. & Hong, D. Y., (eds.). 2011. Flora of China Volume 20-21 (Asteraceae). Science Press, Beijing & Missouri Botanical Garden Press, St. Louis	"Herbs, annual; root vertical."

701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	y
	Source(s)	**Notes**
	Brisbane City Council. (2019). Weed Identification Tool - Emilia - Emilia sonchifolia var. javanica. https://weeds.brisbane.qld.gov.au/weeds/emilia. [Accessed 15 Mar 2019]	"Seeds may also be spread by machinery, water, vehicles, animals, and in clothing and contaminated agricultural produce."
	Khan, I., Navie, S., George, D., O'Donnell, C., & Adkins, S. W. (2018). Alien and native plant seed dispersal by vehicles. Austral Ecology, 43(1), 76-88	"Table 2. Mean number of viable seeds belonging to different species and found in different seasons on utility vehicles that had been driven on- and off-road in southeast Queensland for 14 days" [Includes Emilia sonchifolia]
	Clifford, H. (1959). Seed Dispersal by Motor Vehicles. Journal of Ecology, 47(2), 311-315	"The results of these observations are summarized in Table 5, from which it may be seen that most of the species that germinated from the mud samples are common along roadsides." … "Table 5. Relative frequency of species recorded along roadsides about Ibadan" [Includes Emilia sonchifolia]

702	Propagules dispersed intentionally by people	

Qsn #	Question	Answer
	Source(s)	**Notes**
	Holm, L.G., Doll, J., Holm, E., Pancho, J.V. & Herberger, J.P. 1997. World Weeds: Natural Histories and Distribution. John Wiley and Sons, Inc., New York, NY	"It is native to the Old World tropics and now occurs in the tropical and subtropical areas of 54 countries (Figure 39-1), often as an early colonizer of disturbed sites."
	Haselwood, E.L., Motter, G.G., & Hirano, R.T. (eds.). 1983. Handbook of Hawaiian Weeds. University of Hawaii Press, Honolulu, HI	"Sometimes cultivated as an ornamental." [Possibly, but as an ubiquitous weed, unlikely to be intentionally spread]

703	Propagules likely to disperse as a produce contaminant	y
	Source(s)	**Notes**
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	"Major Pathway/s: Contaminant, Crop, Herbal, Ornamental Dispersed by: Humans, Vehicles, Water, Escapee Weed of: Bananas, Cereals, Orchards & Plantations, Pastures, Vegetables"
	Brisbane City Council. (2019). Weed Identification Tool - Emilia - Emilia sonchifolia var. javanica. https://weeds.brisbane.qld.gov.au/weeds/emilia. [Accessed 15 Mar 2019]	"Seeds may also be spread by machinery, water, vehicles, animals, and in clothing and contaminated agricultural produce."

704	Propagules adapted to wind dispersal	y
	Source(s)	**Notes**
	Haselwood, E.L., Motter, G.G., & Hirano, R.T. (eds.). 1983. Handbook of Hawaiian Weeds. University of Hawaii Press, Honolulu, HI	"Propagation: By seed. Dispersed by the wind."
	Medabalimi, M. R., Aluri, J. S. R., & Kunuku, V. R. (2017). Pump mechanism, secondary pollen presentation, psychophily and anemochory in Emilia sonchifolia (L.) DC. (Asteraceae). Journal of BioScience and Biotechnology, 6 (2), 129-137	"The achenes consisting of seed capped by a cluster of pappus are highly fragile and become airborne when mature and dry with the slightest gust of wind and fly like a parachute across different habitats and regions. Such a form of seed dispersal typifies anemochory. Anemochory is adaptive and effective for E. sonchifolia due to its predominant occurrence in open sunny areas."
	Brisbane City Council. (2019). Weed Identification Tool - Emilia - Emilia sonchifolia var. javanica. https://weeds.brisbane.qld.gov.au/weeds/emilia. [Accessed 15 Mar 2019]	"This species reproduces only by seed, which are easily blown and dispersed by the wind. Seeds may also be spread by machinery, water, vehicles, animals, and in clothing and contaminated agricultural produce."

705	Propagules water dispersed	y
	Source(s)	**Notes**
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	"Dispersed by: Humans, Vehicles, Water, Escapee"
	Brisbane City Council. (2019). Weed Identification Tool - Emilia - Emilia sonchifolia var. javanica. https://weeds.brisbane.qld.gov.au/weeds/emilia. [Accessed 15 Mar 2019]	"Seeds may also be spread by machinery, water, vehicles, animals, and in clothing and contaminated agricultural produce."

Qsn #	Question	Answer
706	**Propagules bird dispersed**	**n**
	Source(s)	**Notes**
	Medabalimi, M. R., Aluri, J. S. R., & Kunuku, V. R. (2017). Pump mechanism, secondary pollen presentation, psychophily and anemochory in Emilia sonchifolia (L.) DC. (Asteraceae). Journal of BioScience and Biotechnology, 6 (2), 129-137	"The achenes consisting of seed capped by a cluster of pappus are highly fragile and become airborne when mature and dry with the slightest gust of wind and fly like a parachute across different habitats and regions. Such a form of seed dispersal typifies anemochory. Anemochory is adaptive and effective for E. sonchifolia due to its predominant occurrence in open sunny areas."

707	**Propagules dispersed by other animals (externally)**	**y**
	Source(s)	**Notes**
	Brisbane City Council. (2019). Weed Identification Tool - Emilia - Emilia sonchifolia var. javanica. https://weeds.brisbane.qld.gov.au/weeds/emilia. [Accessed 15 Mar 2019]	[Pappus likely aids in external attachment] "The 'seeds' (i.e. achenes or cypselae) are about 5 mm long with five hairy ribs running lengthwise (i.e. longitudinally). They are topped with a tuft (i.e. pappus) of whitish coloured hairs (about 5 mm long)." … "Seeds may also be spread by machinery, water, vehicles, animals, and in clothing and contaminated agricultural produce."

708	**Propagules survive passage through the gut**	**n**
	Source(s)	**Notes**
	Haselwood, E.L., Motter, G.G., & Hirano, R.T. (eds.). 1983. Handbook of Hawaiian Weeds. University of Hawaii Press, Honolulu, HI	"Propagation: By seed. Dispersed by the wind." [Unlikely to be consumed]

801	**Prolific seed production (>1000/m2)**	**y**
	Source(s)	**Notes**
	Misra, J., Pandey, H. N., Tripathi, R. S., & Sahoo, U. K. (1995). Dynamics of buried seed population and seedling cohorts of two dominant weeds in a hill agroecosystem of the humid subtropics of India. Researches on Population Ecology, 37(1), 1-7	"Table 1. Mean population densities of total, germinable, dormant and non-viable seeds of E. sonchifolia and R. pilosa during cropping and fallow periods." [Densities in excess of 1000/m2, up to 1205±83/m2 were recorded for E. sonchifolia in Radish, Maize, and Fallow fields]

Qsn #	Question	Answer
802	**Evidence that a persistent propagule bank is formed (>1 yr)**	
	Source(s)	**Notes**
	Royal Botanic Gardens Kew. (2019) Seed Information Database (SID). Version 7.1. Available from: http://data.kew.org/sid/. [Accessed 15 Mar 2019]	"Storage Behaviour: No data available for species. Of 6 known taxa of genus Emilia, 100.00% Orthodox(p/?)"
	Baskin, C.C. & Baskin, J.M. 2014. Seeds Ecology, Biogeography, and Evolution of Dormancy and Germination. Second Edition. Academic Press, San Francisco, CA	[Possibly No. 0% of the seeds of Emilia sonchifolia were alive after 15 months burial] "About 75% of the Mariscus alternifolius and 50% of the M. flabelliformis and Solenostemon monostachyus seeds remained viable during a 15-mo burial study in Nigeria. About 10% of the seeds of Paspalum orbiculare, Eupatorium odoratum, Digitaria ciliaris, Eragrostis gangetica, Tridax procumbens, Borreria ocymoides, Ageratum conyzoides and Triplotaxis stellulifera and 0% of the seeds of Bidens pilosa and Emilia sonchifolia were alive after 15 mo (Marks and Nwachuku, 1986)."

803	**Well controlled by herbicides**	**y**
	Source(s)	**Notes**
	Zhenghao Xu & Le Chang. 2017. Identification and Control of Common Weeds: Volume 3. Zhejiang University Press, Hangzhou and Springer Nature Singapore	"Management Chemical control can choose metribuzin, prometryn, and bentazon."
	Ronchi, C. P., & Silva, A. A. (2004). Weed control in young coffee plantations through post emergence herbicide application onto total area. Planta Daninha, 22(4), 607-615	"This study was carried out to investigate the efficiency of several herbicides under field conditions, by post-emergence application onto the entire area, their effect on the control of weeds in young coffee plantations and commercial coffee and bean intercropping system, as well as on both crops." … "Broad-leaved weeds (Amaranthus retroflexus, Bidens pilosa, Coronopus didymus, Emilia sonchifolia, Galinsoga parviflora, Ipomoea grandifolia, Lepidium virginicum, and Raphanus raphanistrum) were controlled with high efficiency by sole applications of fomesafen, flazasulfuron, and oxyfluorfen, except B. pilosa, C. didymus, and R. raphanistrum for oxyfluorfen. Sequential applications in sevenday intervals of fomesafen + fluazifop-p-butyl, or clethodim, and two commercial mixtures of fomesafen + fluazifop-p-butyl simultaneously controlled both types of weed."
	Zandstra, B., Particka, M. & Masabni, J. 2004. Guide to Tolerance of Crops and Susceptibility of Weeds to Herbicides. Extension Bulletin E-2833. Michigan State University, East Lansing, Michigan	Excellent pre-emergent control provided by ametryn, bromacil, cyanazine, hexazinone, metribuzin, simazine and simazine. Excellent post-emergent control provided by bromacil, cyanazine, hexazinone, metribuzin, simazine and simazine.

804	**Tolerates, or benefits from, mutilation, cultivation, or fire**	**n**
	Source(s)	**Notes**
	Plantwise. (2019). Plantwise Technical Factsheet. red tasselflower (Emilia sonchifolia). https://www.plantwise.org. [Accessed 15 Mar 2019]	"E. sonchifolia is easily controlled mechanically, while selective chemical control can be achieved in some annual and perennial crops."

805	**Effective natural enemies present locally (e.g. introduced biocontrol agents)**	

Qsn #	Question	Answer
	Source(s)	**Notes**
	Wagner, W.L., Herbst, D.R.& Sohmer, S.H. 1999. Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	"in Hawai 'i naturalized in relatively low elevation, dry, disturbed areas on Kaua 'i, O'ahu, and Maui." [Also on Hawaii and Lanai islands. Unknown, but unlikely to have any effective natural enemies present that limit distribution]

Summary of Risk Traits:

High Risk / Undesirable Traits
• Thrives in tropical climates
• Naturalized on Kauai, Oahu, Maui, Lanai, and Hawaii (Hawaiian Islands) and widely naturalized elsewhere
• A disturbance-adapted weed of crops, pastures, gardens, roadsides, footpaths, parks, lawns, disturbed sites and waste areas
• Other Emilia species are invasive weeds
• Host for crop pests and pathogens
• Tolerates many soil types
• Reproduces by numerous wind-dispersed seeds
• Hybridizes with other Emilia species
• Self-compatible
• Annual weed, reaching maturity in <1 year or growing season
• In addition to wind, seeds dispersed by machinery, water, vehicles, animals, and in clothing and contaminated agricultural produce
• Prolific seed production

Low Risk Traits
• Although a widespread weed, impacts in agriculture and the natural environment generally minimal or insignificant
• Unarmed (no spines, thorns, or burrs)
• Palatable to livestock and grazing animals
• Tolerates light shade, but generally found in full sun (unlikely to invade intact forest)
• Not reported to spread vegetatively
• Herbicides can provide effective control