Taxon: Synedrella nodiflora (L.) Gaertn. **Family:** Asteraceae

Common Name(s): cerbatana
cinderella weed
nodeweed
synedrella

Synonym(s): Verbesina nodiflora L.

Assessor: Chuck Chimera **Status:** Assessor Approved **End Date:** 13 Mar 2019

WRA Score: 15.0 **Designation:** H(HPWRA) **Rating:** High Risk

Keywords: Annual Herb, Crop Weed, Fodder, 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	y
203	Broad climate suitability (environmental versatility)	y=1, n=0	y
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
302	Garden/amenity/disturbance weed	n=0, y = 1*multiplier (see Appendix 2)	y

Qsn #	Question	Answer Option	Answer
302	Garden/amenity/disturbance weed	n=0, y = 1*multiplier (see Appendix 2)	y
303	Agricultural/forestry/horticultural weed	n=0, y = 2*multiplier (see Appendix 2)	y
303	Agricultural/forestry/horticultural weed	n=0, y = 2*multiplier (see Appendix 2)	y
304	Environmental weed		
304	Environmental weed		
305	Congeneric weed	n=0, y = 1*multiplier (see Appendix 2)	n
305	Congeneric weed	n=0, y = 1*multiplier (see Appendix 2)	n
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)		
410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)		
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		
412	Forms dense thickets		
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
503	Nitrogen fixing woody plant	y=1, n=0	n

Qsn #	Question	Answer Option	Answer
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	n
603	Hybridizes naturally	y=1, n=-1	n
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		
606	Reproduction by vegetative fragmentation		
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	y=1, n=-1	n
702	Propagules dispersed intentionally by people	y=1, n=-1	n
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
708	Propagules survive passage through the gut	y=1, n=-1	n

Qsn #	Question	Answer Option	Answer
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)	y=1, n=-1	y
802	Evidence that a persistent propagule bank is formed (>1 yr)	y=1, n=-1	y
803	Well controlled by herbicides		
803	Well controlled by herbicides		
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	"an annual herb native to tropical America and now widely distributed in nearly 50 countries." [No evidence of domestication]

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 13 Mar 2019]	"Native Northern America SOUTHERN MEXICO: Mexico [Chiapas, Colima, Michoacán de Ocampo, Quintana Roo, Tabasco, Veracruz de Ignacio de la Llave, Campeche, Yucatan] Southern America CARIBBEAN: Anguilla, Antigua and Barbuda, Bahamas, Barbados, Cayman Islands, Cuba, Dominica, Grenada, Guadeloupe, Hispaniola, Jamaica, Martinique, Montserrat, Netherlands Antilles, St. Kitts and Nevis, St. Lucia, St. Vincent and Grenadines, Trinidad and Tobago, United States, [Puerto Rico, Virgin Islands, U.S.] Virgin Islands (British) CENTRAL AMERICA: Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Panama NORTHERN SOUTH AMERICA: French Guiana, Guyana, Suriname, Venezuela BRAZIL: Brazil WESTERN SOUTH AMERICA: Colombia, Ecuador, Peru SOUTHERN SOUTH AMERICA: Paraguay [Alto Parana]"

Qsn #	Question	Answer
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 13 Mar 2019]	

203	**Broad climate suitability (environmental versatility)**	**y**
	Source(s)	**Notes**
	NParks Flora&FaunaWeb. (2019). Synedrella nodiflora. https://florafaunaweb.nparks.gov.sg. [Accessed 13 Mar 2019]	"Occurs along roadsides and waste lands at altitudes of 0 - 1200 m."
	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	"S. nodiflora is adapted to many environments. It is particularly well adapted to the partial shade found under jute and plantation crops like tea, coffee, bananas, cacao, and rubber. Plants appear in moist soil and along roads and foot trails."

204	**Native or naturalized in regions with tropical or subtropical climates**	**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.	"Native to the American tropics; in Hawai'i naturalized in relatively low elevation, disturbed areas, documented from all of the main islands except Ni'ihau and Lana'i. First collected on O'ahu in 193Q (Caum s.n., BISH). Pope (1929) stated that at the time it had recently been reported as growing in Hawai'i; however, it was common only on O'ahu and Hawai'i."

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 13 Mar 2019]	"Native Northern America SOUTHERN MEXICO: Mexico [Chiapas, Colima, Michoacán de Ocampo, Quintana Roo, Tabasco, Veracruz de Ignacio de la Llave, Campeche, Yucatan] Southern America CARIBBEAN: Anguilla, Antigua and Barbuda, Bahamas, Barbados, Cayman Islands, Cuba, Dominica, Grenada, Guadeloupe, Hispaniola, Jamaica, Martinique, Montserrat, Netherlands Antilles, St. Kitts and Nevis, St. Lucia, St. Vincent and Grenadines, Trinidad and Tobago, United States, [Puerto Rico, Virgin Islands, U.S.] Virgin Islands (British) CENTRAL AMERICA: Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Panama NORTHERN SOUTH AMERICA: French Guiana, Guyana, Suriname, Venezuela BRAZIL: Brazil WESTERN SOUTH AMERICA: Colombia, Ecuador, Peru SOUTHERN SOUTH AMERICA: Paraguay [Alto Parana] Adventive Northern America SOUTHEASTERN U.S.A.: United States [Florida] Naturalized Africa EAST TROPICAL AFRICA: Kenya, Tanzania, Uganda WEST-CENTRAL TROPICAL AFRICA: Burundi, Cameroon, Central African Republic, Congo, Equatorial Guinea, Gabon, Rwanda, Zaire WEST TROPICAL AFRICA: Cote D'Ivoire, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Nigeria, Senegal, Sierra Leone SOUTH TROPICAL AFRICA: Angola WESTERN INDIAN OCEAN: British Indian Ocean Terr, [Diego Garcia] Mauritius, Reunion, Seychelles Asia-Temperate CHINA: China [Guangdong, Yunnan, Hainan] EASTERN ASIA: Japan, [Ryukyu Islands] Taiwan Asia-Tropical INDIAN SUBCONTINENT: Bhutan, India, Maldives, Nepal, Sri Lanka PAPUASIA: Papua New Guinea, Solomon Islands INDO-CHINA: Cambodia, Thailand, Vietnam MALESIA: Malaysia, Philippines Australasia AUSTRALIA: Australia [Northern Territory, Queensland] Pacific NORTH-CENTRAL PACIFIC: United States [Hawaii] NORTHWESTERN PACIFIC: Marshall Islands, Micronesia, Palau, United States [Guam, Northern Mariana Islands] SOUTH-CENTRAL PACIFIC: Cook Islands, French Polynesia, Kiribati, [Line Islands] Pitcairn SOUTHWESTERN PACIFIC: Fiji, Kiribati, [Gilbert Islands] Nauru, New Caledonia, Niue, Samoa, Tonga, United States, [American Samoa] Vanuatu, Wallis and Futuna Islands"

205	**Does the species have a history of repeated introductions outside its natural range?**	**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	"S. nodiflora is adapted to many environments. It is particularly well adapted to the partial shade found under jute and plantation crops like tea, coffee, bananas, cacao, and rubber. Plants appear in moist soil and along roads and foot trails. It occurs not only in the Americas where it originated, but also in China, Australia, the Caribbean, India, Indonesia, the Philippines, and in several African countries."

301	Naturalized beyond native range	y
	Source(s)	**Notes**
	Oppenheimer, H.. 2007. New plant records from Molokaʻi, Lānaʻi, Maui, and Hawaiʻi for 2006. Bishop Museum Occasional Papers 96:17-34	"Documented from all of the main islands except Niʻihau and Länaʻi (Wagner et al. 1999: 360), nodeweed is widespread at low densities on the latter island in most developed areas. Material examined. LÄNAʻI: Kaumälapaʻu, 20 m, occasional upright herbs, 19 Oct 2006, Oppenheimer H100624."
	Wagner, W.L., Herbst, D.R.& Sohmer, S.H. 1999. Manual of the flowering plants of Hawaii. Revised edition. University of Hawaiʻi Press and Bishop Museum Press, Honolulu, HI.	"Native to the American tropics; in Hawai'i naturalized in relatively low elevation, disturbed areas, documented from all of the main islands except Ni'ihau and Lana'i. First collected on O'ahu in 193Q (Caum s.n., BISH). Pope (1929) stated that at the time it had recently been reported as growing in Hawai'i; however, it was common only on O'ahu and Hawai'i."
	USDA, ARS, Germplasm Resources Information Network. 2019. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html. [Accessed 13 Mar 2019]	"Naturalized Africa EAST TROPICAL AFRICA: Kenya, Tanzania, Uganda WEST-CENTRAL TROPICAL AFRICA: Burundi, Cameroon, Central African Republic, Congo, Equatorial Guinea, Gabon, Rwanda, Zaire WEST TROPICAL AFRICA: Cote D'Ivoire, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Nigeria, Senegal, Sierra Leone SOUTH TROPICAL AFRICA: Angola WESTERN INDIAN OCEAN: British Indian Ocean Terr, [Diego Garcia] Mauritius, Reunion, Seychelles Asia-Temperate CHINA: China [Guangdong, Yunnan, Hainan] EASTERN ASIA: Japan, [Ryukyu Islands] Taiwan Asia-Tropical INDIAN SUBCONTINENT: Bhutan, India, Maldives, Nepal, Sri Lanka PAPUASIA: Papua New Guinea, Solomon Islands INDO-CHINA: Cambodia, Thailand, Vietnam MALESIA: Malaysia, Philippines Australasia AUSTRALIA: Australia [Northern Territory, Queensland] Pacific NORTH-CENTRAL PACIFIC: United States [Hawaii] NORTHWESTERN PACIFIC: Marshall Islands, Micronesia, Palau, United States [Guam, Northern Mariana Islands] SOUTH-CENTRAL PACIFIC: Cook Islands, French Polynesia, Kiribati, [Line Islands] Pitcairn SOUTHWESTERN PACIFIC: Fiji, Kiribati, [Gilbert Islands] Nauru, New Caledonia, Niue, Samoa, Tonga, United States, [American Samoa] Vanuatu, Wallis and Futuna Islands"

Qsn #	Question	Answer
	Queensland Government. (2019). Weeds of Australia. Synedrella nodiflora. http://keyserver.lucidcentral.org. [Accessed 13 Mar 2019]	"Widely naturalised in northern Australia (i.e. naturalised in northern and eastern Queensland, in the northern parts of the Northern Territory, and in northern Western Australia). Also naturalised on Christmas Island and the Cocos Islands. Naturalised overseas in south-eastern USA (i.e. Florida) and Hawaii."

302	Garden/amenity/disturbance weed	y
	Source(s)	**Notes**
	Jones, M. (1994). Flowering Plants of the Gambia. CRC Press, Boca Raton, FL	"A weed of cultivation, roadsides and waste land. In The Gambia, recorded as a serious weed of tree crops."
	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, disturbed areas"
	Whistler, A.W. 1995. Wayside Plants of the Islands: A Guide to the Lowland Flora of the Pacific Island. Isle Botanica, Honolulu, HI	"It was first recorded from the Pacific Islands in 1905 (Samoa), where it is common in disturbed habitats such as lawns, roadsides, and plantations up to 450 m elevation."

303	Agricultural/forestry/horticultural weed	y
	Source(s)	**Notes**
	Jones, M. (1994). Flowering Plants of the Gambia. CRC Press, Boca Raton, FL	"A weed of cultivation, roadsides and waste land. In The Gambia, recorded as a serious weed of tree crops."
	Usharani, B., & Raju, A. S. (2018). Pollination ecology of Synedrella nodiflora (l.) Gaertn.(Asteraceae). Journal of Threatened Taxa, 10(11), 12538-12551	"As an exotic species, it is widely distributed in both natural habitats and cultivated fields in India (Ansari et al. 2016). It is one of the widespread weeds endangering the native flora (Singh et al. 2002) and causing a menace in cultivated fields due to its invasiveness (Singh et al. 2010)."
	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	"This weed is an important species in both crop and noncrop land in all tropical continents, yet relatively few studies exist on its biology." ... "It is particularly well adapted to the partial shade found under jute and plantation crops like tea, coffee, bananas, cacao, and rubber. Plants appear in moist soil and along roads and foot trails."
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	"Weed of: Bananas, Cereals, Forestry, Nursery Production, Orchards & Plantations"

304	Environmental weed	
	Source(s)	**Notes**
	Queensland Government. (2019). Weeds of Australia. Synedrella nodiflora. http://keyserver.lucidcentral.org. [Accessed 13 Mar 2019]	"Cinderella weed (Synedrella nodiflora) is regarded as a minor environmental weed in northern Queensland."
	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	"Common herb of disturbed areas from just above strand zone to pastures, 10-1000 ft." [Not a significant weed of intact ecosystems of the national park]
	Haselwood, E.L., Motter, G.G., & Hirano, R.T. (eds.). 1983. Handbook of Hawaiian Weeds. University of Hawaii Press, Honolulu, HI	"Habitat: A common weed in cultivated areas and lawns."

Qsn #	Question	Answer
	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, disturbed areas, documented from all of the main islands except Ni'ihau and Liina'i."
	Usharani, B., & Raju, A. S. (2018). Pollination ecology of Synedrella nodiflora (l.) Gaertn.(Asteraceae). Journal of Threatened Taxa, 10(11), 12538-12551	"It is one of the widespread weeds endangering the native flora (Singh et al. 2002) and causing a menace in cultivated fields due to its invasiveness (Singh et al. 2010)."
	Csurhes, S. & Edwards, R. 1998. Potential environmental weeds in Australia: Candidate species for preventative control. Biodiversity Group, Environment Australia, Canberra, Australia	"S. nodiflora is unlikely to become a significant environmental weed. It grows thickly on disturbed sites, particularly of cleared rainforest, cultivated lands and plantation (Anon undated, Kleinshmidt and Johnson 1987). It is not a weed of pasture and does not persist under grazing (Kleinschmidt and Johnson 1987). Slashing and cultivation provide good control (Anon. undated)."
	WRA Specialist. (2019). Personal Communication	A potential environmental weed in India, and perhaps elsewhere, but primarily a disturbance and crop weed in Hawaii and other tropical ecosystems

305	Congeneric weed	n
	Source(s)	**Notes**
	Usharani, B., & Raju, A. S. (2018). Pollination ecology of Synedrella nodiflora (l.) Gaertn.(Asteraceae). Journal of Threatened Taxa, 10(11), 12538-12551	"Synedrella is a monotypic genus with only a single species, S. nodiflora."

401	Produces spines, thorns or burrs	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.	[No evidence] "Annual herbs; stems erect to ascending, 1.5-10 dm long. Leaves simple, opposite, ovate to elliptic, margins crenate to serrate, petiolate." … "Leaves 2-10 cm long, 0.7-5.5 cm wide, strigose, petioles 0.5-2 cm long. Involucral bracts 6-8 mm long; rays yellow, 1-2 mm long; disk corollas ca. 3 mm long."

Qsn #	Question	Answer
402	**Allelopathic**	
	Source(s)	**Notes**
	Jacob, L. & Dev, S. S. (2015). Allelopathic Impact Of Certain Weeds On Oryza Sativa L. International Journal of Informative & Futuristic Research 3(3): 1055-1062	[Potentially Yes] "The present work was undertaken with the objectives to make a comparative study on the impact of different weed plants on the growth and yield of rice (Oryza Sativa L.) The weeds selected were Synedrella nodiflora and Cynodon dactylon. Plants grown in control showed higher growth rate and productivity than the plants grown in the potting mixture amended with weed residues of Cynodon dactylon and Synedrella nodiflora. The chlorophyll and carotenoid content of leaves was also higher in control condition. The slow growth of paddy in soils containing Cynodon and Synedrella may be due to allelochemicals produced by the weed plants. In the control condition the paddy plants are healthier than the other two. The study revealed that there is a considerable variation in the growth and productivity of plants. Plants that are grown in the control condition showed higher growth and productivity than other plants which are grown in soil containing weed plants. From the result of the present study, it may be concluded that certain allelochemicals present in the weed plants have impaired the growth and the crop production of paddy."

403	Parasitic	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.	"Annual herbs; stems erect to ascending, 1.5-10 dm long." [Asteraceae. No evidence]

404	Unpalatable to grazing animals	n
	Source(s)	**Notes**
	NParks Flora&FaunaWeb. (2019). Synedrella nodiflora. https://florafaunaweb.nparks.gov.sg. [Accessed 13 Mar 2019]	"It can also be used as a cheaper alternative to commercial forms of rabbit fodder."
	Csurhes, S. & Edwards, R. 1998. Potential environmental weeds in Australia: Candidate species for preventative control. Biodiversity Group, Environment Australia, Canberra, Australia	"It is not a weed of pasture and does not persist under grazing"
	Basak, S. K., Maity, D., & Maiti, G. G. (2010). Bioprospecting of fodder plant resources for domestic animals of Kurseong Hills, Darjeeling, West Bengal. Pleione 4(2): 294-306	"some herbaceous weeds like Ageratum houstonianum, Chromolaena odorata, Ipomoea spp., Synedrella nodiflora, Mikania micrantha, etc. are used as fodder."

405	Toxic to animals	n
	Source(s)	**Notes**
	NParks Flora&FaunaWeb. (2019). Synedrella nodiflora. https://florafaunaweb.nparks.gov.sg. [Accessed 13 Mar 2019]	"It can also be used as a cheaper alternative to commercial forms of rabbit fodder."

Qsn #	Question	Answer
	Basak, S. K., Maity, D., & Maiti, G. G. (2010). Bioprospecting of fodder plant resources for domestic animals of Kurseong Hills, Darjeeling, West Bengal. Pleione 4(2): 294-306	"some herbaceous weeds like Ageratum houstonianum, Chromolaena odorata, Ipomoea spp., Synedrella nodiflora, Mikania micrantha, etc. are used as fodder." [No evidence]

406	Host for recognized pests and pathogens	y
	Source(s)	**Notes**
	Adesiyan, S. O. (1976). Other Contributions: Host Range Studies of the Yam Nematode, Scutellonema bradys. Nematropica, 6(2), 60-63	"A host range study of 30 crop plants and weeds revealed that Benniseed (Sesamum indicum L.) and Cowpea (Vigna unguiculata Walp.) were good alternative hosts of the yam nematode Scutellonema bradys in Nigeria. Siam weed (Eupatorium odoratum L.), Synedrella sp., Roselle (Hibiscus sabdariffa L.), Yam · bean (Sphenostylis stenocarpa Harms.), and Pigeon pea (Cajanus cajan Mill.) were grouped among the moderate hosts. Guinea corn (Sorghum vulgare var Durra Hubbard and Rehd.) and Jute (Corchorus olitorius L.) were regarded as poor hosts. Non-hosts included Maize and Tobacco."
	Wiersema, J.H. & León, B. 1999. World Economic Plants: A Standard Reference. CRC Press, Boca Raton, FL	"Econ: Harmful organism host (crop pests): Weed"
	WRA Specialist. (2019). Personal Communication	Literature searches indicate that Synedrella nodiflora is documented to be an alternate host to several crop pests and pathogens

407	Causes allergies or is otherwise toxic to humans	n
	Source(s)	**Notes**
	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] "Whole plant for body pain. Flowers and roots crushed with betel nut and lime used in diarrhea. Leaf juice applied in case of eczema; poultice applied to Guinea worm and rheumatism; boiled leaves laxative, hemostatic, a decoction drunk for skin troubles, malaria, fevers, heart troubles and used as an enema for epilepsy. For earache, pound the leaves and seed of Nigella sativa and place in the ear. Soft swollen seeds in water applied to swelling, boils and abscesses."
	U.S. Food and Drug Administration. (2019). FDA Poisonous Plant Database. https://www.accessdata.fda.gov/scripts/plantox/index.cfm. [Accessed 13 Mar 2019]	No evidence

Qsn #	Question	Answer
408	**Creates a fire hazard in natural ecosystems**	**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, disturbed areas, documented from all of the main islands except Ni'ihau and Lana'i." [No evidence. Unlikely given annual habit and habitat]
	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. Unlikely given habit and habitat. Thrives in disturbed, shady sites with moist soils] "S. nodiflora is adapted to many environments. It is particularly well adapted to the partial shade found under jute and plantation crops like tea, coffee, bananas, cacao, and rubber. Plants appear in moist soil and along roads and foot trails."

409	Is a shade tolerant plant at some stage of its life cycle	
	Source(s)	**Notes**
	Usharani, B., & Raju, A. S. (2018). Pollination ecology of Synedrella nodiflora (l.) Gaertn.(Asteraceae). Journal of Threatened Taxa, 10(11), 12538-12551	"It grows in humid places, shaded and nutrient rich soils, crop fields, wastelands, roadsides, lawns and disturbed areas."
	NParks Flora&FaunaWeb. (2019). Synedrella nodiflora. https://florafaunaweb.nparks.gov.sg. [Accessed 13 Mar 2019]	"Light Preference : Full Sun"
	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	"S. nodiflora is adapted to many environments. It is particularly well adapted to the partial shade found under jute and plantation crops like tea, coffee, bananas, cacao, and rubber. Plants appear in moist soil and along roads and foot trails."

410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	
	Source(s)	**Notes**
	Usharani, B., & Raju, A. S. (2018). Pollination ecology of Synedrella nodiflora (l.) Gaertn.(Asteraceae). Journal of Threatened Taxa, 10(11), 12538-12551	"It grows in humid places, shaded and nutrient rich soils, crop fields, wastelands, roadsides, lawns and 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	"S. nodiflora is adapted to many environments. It is particularly well adapted to the partial shade found under jute and plantation crops like tea, coffee, bananas, cacao, and rubber. Plants appear in moist soil and along roads and foot trails." [Soil preferences unspecified, but unlikely to be a limiting factor]

411	Climbing or smothering growth habit	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.	"Annual herbs; stems erect to ascending, 1.5-10 dm long."

412	Forms dense thickets	

Qsn #	Question	Answer
	Source(s)	**Notes**
	Csurhes, S. & Edwards, R. 1998. Potential environmental weeds in Australia: Candidate species for preventative control. Biodiversity Group, Environment Australia, Canberra, Australia	[Grows thickly, but unlikely to become an environmental weed] "S. nodiflora is unlikely to become a significant environmental weed. It grows thickly on disturbed sites, particularly of cleared rainforest, cultivated lands and plantation (Anon undated, Kleinshmidt and Johnson 1987). It is not a weed of pasture and does not persist under grazing (Kleinschmidt and Johnson 1987). Slashing and cultivation provide good control (Anon. undated)."

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.	[Terrestrial] "Annual herbs; stems erect to ascending, 1.5-10 dm long." ... "in Hawai'i naturalized in relatively low elevation, 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 13 Mar 2019]	Asteraceae (alt.Compositae)

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 13 Mar 2019]	Asteraceae (alt.Compositae)

504	Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)	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	"S. nodiflora (Figure 93-2} is an ann11al herb; taproot branched; sterns erect, 30 to 80 cm tall with long internodes" [No bulbs, corms, or tubers, but taproot likely allows plant to persist if above-ground vegetation is removed]

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	"Synedrella nodiflora is an annual herb native to tropical America and now widely distributed in nearly 50 countries." [No evidence]

602	Produces viable seed	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	"One of its interesting characteristics is the dimorphic seed produced in the ray and disc florets. Each seed type is so distinct that they appear to represent separate species." … "Both the ray (outer) and disc (inner) florets produce viable seeds with well-developed embryos. A single plant can produce 6330 seeds, and I gm of seed contains approximately 1400 seeds (Pancho 1964)."

603	Hybridizes naturally	n
	Source(s)	**Notes**
	Usharani, B., & Raju, A. S. (2018). Pollination ecology of Synedrella nodiflora (l.) Gaertn.(Asteraceae). Journal of Threatened Taxa, 10(11), 12538-12551	"Synedrella is a monotypic genus with only a single species, S. nodiflora."

604	Self-compatible or apomictic	y
	Source(s)	**Notes**
	Usharani, B., & Raju, A. S. (2018). Pollination ecology of Synedrella nodiflora (l.) Gaertn.(Asteraceae). Journal of Threatened Taxa, 10(11), 12538-12551	"Synedrella nodiflora (L.) Gaertn grows almost throughout the year if the soil is damp. It produces heterogamous capitula with female ray florets anthesing on the first day and bisexual disc florets anthesing on the next three consecutive days. Disc florets are dichogamous, herkogamous, self-compatible, self-pollinating (vector-mediated) and display secondary pollen presentation through an intermediate form of brush mechanism. Ray and disc florets exhibit facultative xenogamy."

605	Requires specialist pollinators	n
	Source(s)	**Notes**
	Usharani, B., & Raju, A. S. (2018). Pollination ecology of Synedrella nodiflora (l.) Gaertn.(Asteraceae). Journal of Threatened Taxa, 10(11), 12538-12551	"Butterflies are principal pollinators while bees, wasps and flies are supplementary pollinators. Thrips Microcephalothrips abdominalis uses the florets as breeding and feeding sites; the feeding activity effects pollination."

606	Reproduction by vegetative fragmentation	
	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	"an annual herb; taproot branched; sterns erect, 30 to 80 cm tall with long internodes; dichotomously branched" … "S. nodiflora can complete its life cycle in 130 to 150 days in Brazil (Lorenzi 1982) and often has two generations annually in Nigeria (Komolafe 1976)."
	Haselwood, E.L., Motter, G.G., & Hirano, R.T. (eds.). 1983. Handbook of Hawaiian Weeds. University of Hawaii Press, Honolulu, HI	"Propagation: By seed."
	Usharani, B., & Raju, A. S. (2018). Pollination ecology of Synedrella nodiflora (l.) Gaertn.(Asteraceae). Journal of Threatened Taxa, 10(11), 12538-12551	"The lower parts of the stems root at the nodes in damp soil conditions. The shallow tap root system is strongly branched." [May spread vegetatively in some situations]

Qsn #	Question	Answer
607	**Minimum generative time (years)**	**1**
	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.	"Annual herbs; stems erect to ascending, 1.5-10 dm long."
	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	"S. nodiflora can complete its life cycle in 130 to 150 days in Brazil (Lorenzi 1982) and often has two generations annually in Nigeria (Komolafe 1976). Plants often appear soon after annual crops are seeded, are most abundant in moist, shaded areas and are prolific seed producers."

701	**Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)**	**y**
	Source(s)	**Notes**
	Usharani, B., & Raju, A. S. (2018). Pollination ecology of Synedrella nodiflora (l.) Gaertn.(Asteraceae). Journal of Threatened Taxa, 10(11), 12538-12551	"The cypselas of disc florets detach earlier than those produced from ray florets. The stiff echinate structures of cypselas of both types of florets enable them to stick readily to hair, fur, clothing and animal skin for dispersal; the cypselas of disc florets being light in weight disperse easily to long distances than those of ray florets which are comparably heavy."

702	**Propagules dispersed intentionally by people**	**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, disturbed areas" [No evidence of intentional introduction or cultivation]
	Flora of North America Editorial Committee. 2006. Flora of North America North of Mexico. Vol. 21. New York and Oxford	"Synedrella nodiflora probably is a recurrent introduction and probably does not persist in the flora area."

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, Livestock, Vehicles, Escapee Weed of: Bananas, Cereals, Forestry, Nursery Production, Orchards & Plantations"
	Mew, T. W. & Misra, J. K. (1994). A Manual of Rice Seed Health Testing. International Rice Research Institute, Los Baños, Philippines	"Table 12.1. Weed seed Contaminants of rice encountered during dry seed inspection of incoming seeds." [Includes Synedrella nodiflora]

704	**Propagules adapted to wind dispersal**	**y**
	Source(s)	**Notes**
	Usharani, B., & Raju, A. S. (2018). Pollination ecology of Synedrella nodiflora (l.) Gaertn.(Asteraceae). Journal of Threatened Taxa, 10(11), 12538-12551	"Seed dispersal is polychorous and represented by anemochory, anthropochory, zoochory and ombrohydrochory."... "Wind dispersed the cypselas efficiently when ambient air is dry."

Qsn #	Question	Answer
	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	"Seeds are spread by wind, water and animals."

705	Propagules water dispersed	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	"Seeds are spread by wind, water and animals."
	Usharani, B., & Raju, A. S. (2018). Pollination ecology of Synedrella nodiflora (l.) Gaertn.(Asteraceae). Journal of Threatened Taxa, 10(11), 12538-12551	"Water also acted as an efficient dispersal agent for the dispersal of cypselas during the rainy season. Therefore, zoochory, anthropochory, anemochory and ombrohydrochory are the functional forms of seed dispersal in this plant."

706	Propagules bird dispersed	n
	Source(s)	**Notes**
	Usharani, B., & Raju, A. S. (2018). Pollination ecology of Synedrella nodiflora (l.) Gaertn.(Asteraceae). Journal of Threatened Taxa, 10(11), 12538-12551	"Seed dispersal is polychorous and represented by anemochory, anthropochory, zoochory and ombrohydrochory."... "The stiff echinate structures of cypselas of both types of florets enable them to stick readily to hair, fur, clothing and animal skin for dispersal" [Potentially externally dispersed by birds, but no evidence of internal dispersal]

707	Propagules dispersed by other animals (externally)	y
	Source(s)	**Notes**
	Usharani, B., & Raju, A. S. (2018). Pollination ecology of Synedrella nodiflora (l.) Gaertn.(Asteraceae). Journal of Threatened Taxa, 10(11), 12538-12551	"The cypselas of disc florets detach earlier than those produced from ray florets. The stiff echinate structures of cypselas of both types of florets enable them to stick readily to hair, fur, clothing and animal skin for dispersal; the cypselas of disc florets being light in weight disperse easily to long distances than those of ray florets which are comparably heavy."

708	Propagules survive passage through the gut	n
	Source(s)	**Notes**
	Blake, S. et al. (2012). Seed dispersal by Galápagos tortoises. Journal of Biogeography, 39(11), 1961-1972	"Table 1 Summary data indicating the frequency of occurrence of intact seeds in dung piles of tortoises (Chelonoidis nigra) found in farmland and in the Gala´pagos National Park on the island of Santa Cruz." [One seed of Synedrella nodiflora found in tortoise dung. Viability unspecified]
	WRA Specialist. (2019). Personal Communication	Although used as fodder in some situations, this plant is unlikely to be commonly dispersed internally after ingestion by animals. The plant is adapted for dispersal by wind, water, and external attachment to animals.

801	Prolific seed production (>1000/m2)	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	"Plants often appear soon after annual crops are seeded, are most abundant in moist, shaded areas and are prolific seed producers."
	Chauhan, B., & Johnson, D. (2009). Seed Germination and Seedling Emergence of Synedrella (Synedrella nodiflora) in a Tropical Environment. Weed Science, 57(1), 36-42	"Synedrella seeds were the fourth most abundant (250 seeds m - 2) of the 23 species encountered in the soil reservoir in the agricultural soil of a humid tropical environment in the upper Belize River valley of British Honduras {Kellman 1974). Sampling done in a field where corn had been grown for 8 yr in Belize found 5,700 viable synedrella seeds m - 2 to a 10-cm depth (Kellman 1978)."

802	**Evidence that a persistent propagule bank is formed (>1 yr)**	**y**
	Source(s)	**Notes**
	Usharani, B., & Raju, A. S. (2018). Pollination ecology of Synedrella nodiflora (l.) Gaertn.(Asteraceae). Journal of Threatened Taxa, 10(11), 12538-12551	"The buried cypselas to 10cm depth in soil remain viable for one year. Chauhan & Johnson (2009) reported that in S. nodiflora, the cypselas germinate immediately but ray floret cypselas if buried in soil would remain dormant for several months and germinate when favourable conditions exist."
	Chauhan, B., & Johnson, D. (2009). Seed Germination and Seedling Emergence of Synedrella (Synedrella nodiflora) in a Tropical Environment. Weed Science, 57(1), 36-42	"The seeds from disc floret are dormant for several years, whereas those produced by ray florets germinate shortly after they were formed." … "Synedrella seeds buried to 15 cm in the soil survived 1 yr in the Philippines {Juliano 1940)."

Qsn #	Question	Answer
803	**Well controlled by herbicides**	
	Source(s)	**Notes**
	Swarbrick, J.T. (1997). Environmental Weeds and Exotic Plants on Christmas Island, Indian Ocean: A Report to Parks Australia. J.T. Swarbrick, Weed Science Consultancy	"Probably susceptible to: 1) residual herbicides at standard rates; 2) translocated herbicides at standard rates; 3) contact herbicides at standard rates"
	Halos, P. M. (1986). Glyphosate mixtures for general weed control in banana plantations [Philippines]. In 17. Anniversary and Annual Convention of the Pest Control Council of the Philippines, Iloilo City (Philippines), 8-10 May 1986	[May be tolerant to glyphosate] "The sequential application of 0.54 kg ai/ha glyphosate + 1.5 kg/ha ammonium sulfate (AMS) followed by 0.27 kg ai/ha glyphosate + 0.75 kg/ha AMS provided better general weed control (GWC) than paraquat at a Guihing banana plantation in a 4.5-month time frame. Two months after the last glyphosate application, the % GWC was still at 35%. The weed species included were presented. Those that received 4-cycle application of 0.75 L/ha paraquat per cycle had 0% GWC. Another set of treatments were initiated in an established hedge row banana plantation. At 60 days after treatment, the wet season application of glyphosate (0.36 and 0.54 kg ai/ha) and mixtures with surfactant, ammonium sulfate, and AMS plus surfactant provided 98 to 100% control of weeds. The rates and times of glyphosate application for controlling grasses, sedges and broadleaves will approximate the 1.5/0.75/0.75/0.75, L/ha/year. The higher dosage of 1.5 L/ha will be applied just after the onset of the rainy season by blanket spraying followed by three subsequent spot application on weeds. However, the more tolerant broadleaves like A. gangetica, B. ocymoides, Commelina benghalensis L., Mikania cordata (Burm. f.) B. L. Robins, E. hirta, and Synedrella nodiflora may eventually take over for which higher rates of glyphosate or alternate herbicides may be applied "
	WRA Specialist. (2019). Personal Communication	May be tolerant to glyphosate. Efficacy of other herbicides unknown

804	**Tolerates, or benefits from, mutilation, cultivation, or fire**	**n**
	Source(s)	**Notes**
	Northern Land Manager. (2004). Fire responses of Synedrella nodiflora. http://www.landmanager.org.au/fire-responses-synedrella-nodiflora. [Accessed 13 Mar 2019]	"Adult fire response: Seeder (>70% mortality when subject to 100% leaf scorch) Resprouting type: None"
	Csurhes, S. & Edwards, R. 1998. Potential environmental weeds in Australia: Candidate species for preventative control. Biodiversity Group, Environment Australia, Canberra, Australia	"S. nodiflora is unlikely to become a significant environmental weed. It grows thickly on disturbed sites, particularly of cleared rainforest, cultivated lands and plantation (Anon undated, Kleinshmidt and Johnson 1987). It is not a weed of pasture and does not persist under grazing (Kleinschmidt and Johnson 1987). Slashing and cultivation provide good control (Anon. undated)."

805	**Effective natural enemies present locally (e.g. introduced biocontrol agents)**	
	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, disturbed areas, documented from all of the main islands except Ni'ihau and Lana'i." [Unknown. Unlikely given widespread distribution]

Summary of Risk Traits:

High Risk / Undesirable Traits
• Broad climate suitability
• Thrives in tropical climates
• Widely naturalized, including main Hawaiian Islands (except Niʻihau)
• A lawn and disturbance weed
• An agricultural weed of several crops
• A potential environmental weed (although impacts in the Hawaiian Islands appear to be minimal)
• May be allelopathic
• An alternate host of crop pests and pathogens
• Reproduces by seeds
• Self-compatible
• An annual, able to complete its life cycle in 130 to 150 days
• Seeds dispersed by wind, water, by external attachment to animals and people, and as a produce contaminant
• Prolific seed production
• Seeds may remain viable in the soil for at least one year

Low Risk Traits
• Despite its designation as a significant crop weed, generally regarded as a weed of minor significance in the Hawaiian Islands
• Unarmed (no spines, thorns, or burrs)
• Provides fodder for livestock
• Slashing and cultivation provide good control