Taxon: Ixora chinensis Lam. **Family:** Rubiaceae

Common Name(s): Chinese ixora **Synonym(s):** Ixora flammea Salisb.
Ixora stricta Roxb.

Assessor: Chuck Chimera **Status:** Assessor Approved **End Date:** 6 Dec 2019

WRA Score: **0.0** **Designation:** L **Rating:** Low Risk

Keywords: Tropical Shrub, Unarmed, Ornamental, Self-Compatible, Bird-Dispersed

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

Qsn #	Question	Answer Option	Answer
410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	y=1, n=0	n
411	Climbing or smothering growth habit	y=1, n=0	n
412	Forms dense thickets	y=1, n=0	n
501	Aquatic	y=5, n=0	n
502	Grass	y=1, n=0	n
503	Nitrogen fixing woody plant	y=1, n=0	n
504	Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)	y=1, n=0	n
601	Evidence of substantial reproductive failure in native habitat	y=1, n=0	n
602	Produces viable seed	y=1, n=-1	y
603	Hybridizes naturally	y=1, n=-1	y
604	Self-compatible or apomictic	y=1, n=-1	y
605	Requires specialist pollinators		
606	Reproduction by vegetative fragmentation	y=1, n=-1	n
607	Minimum generative time (years)		
701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	y=1, n=-1	n
702	Propagules dispersed intentionally by people	y=1, n=-1	y
703	Propagules likely to disperse as a produce contaminant	y=1, n=-1	n
704	Propagules adapted to wind dispersal	y=1, n=-1	n
705	Propagules water dispersed	y=1, n=-1	n
706	Propagules bird dispersed	y=1, n=-1	y
707	Propagules dispersed by other animals (externally)	y=1, n=-1	n
708	Propagules survive passage through the gut	y=1, n=-1	y
801	Prolific seed production (>1000/m2)	y=1, n=-1	n
802	Evidence that a persistent propagule bank is formed (>1 yr)		
803	Well controlled by herbicides		
804	Tolerates, or benefits from, mutilation, cultivation, or fire		
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**
	Lim, T.K. 2014. Edible Medicinal And Non-Medicinal Plants. Volume 8, Flowers. Springer, Dordrecht	[No evidence] "The species is native to Southeast China (Fujian, Guangdong, Guangxi) and Indo-China. It has been introduced and cultivated in Thailand, Malaysia, Indonesia, the Philippines and elsewhere in the tropics."
	Wu, Z. Y., P. H. Raven & D. Y. Hong, (eds). 2011. Flora of China. Vol. 19 (Cucurbitaceae through Valerianaceae, with Annonaceae and Berberidaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	[No evidence] "Thickets, sparse forests; 200–800 m. Fujian, Guangdong, Guangxi [Indonesia, Malaysia, Philippines, Vietnam; widely cultivated in tropical regions]."

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, Agricultural Research Service, National Plant Germplasm System. (2019). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. https://npgsweb.ars-grin.gov/. [Accessed 5 Dec 2019]	"Native Asia-Temperate CHINA: China [Fujian Sheng, Guangdong Sheng, Guangxi Zhuangzu Zizhiqu] Asia-Tropical INDO-CHINA: Cambodia, Laos, Myanmar, Thailand, Vietnam"

202	**Quality of climate match data**	**High**
	Source(s)	**Notes**
	USDA, Agricultural Research Service, National Plant Germplasm System. (2019). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. https://npgsweb.ars-grin.gov/. [Accessed 5 Dec 2019]	

203	**Broad climate suitability (environmental versatility)**	**n**
	Source(s)	**Notes**

Qsn #	Question	Answer
	Dave's Garden. (2019). Ixora Species, Chinese Ixora - Ixora chinensis. https://davesgarden.com/guides/pf/go/53338/. [Accessed 5 Dec 2019]	"Hardiness: USDA Zone 9a: to -6.6 °C (20 °F) USDA Zone 9b: to -3.8 °C (25 °F) USDA Zone 10a: to -1.1 °C (30 °F) USDA Zone 10b: to 1.7 °C (35 °F) USDA Zone 11: above 4.5 °C (40 °F)"
	Wu, Z. Y., P. H. Raven & D. Y. Hong, (eds). 2011. Flora of China. Vol. 19 (Cucurbitaceae through Valerianaceae, with Annonaceae and Berberidaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	"Thickets, sparse forests; 200–800 m. Fujian, Guangdong, Guangxi [Indonesia, Malaysia, Philippines, Vietnam; widely cultivated in tropical regions]."

204	Native or naturalized in regions with tropical or subtropical climates	y
	Source(s)	**Notes**
	Lim, T.K. 2014. Edible Medicinal And Non-Medicinal Plants. Volume 8, Flowers. Springer, Dordrecht	"The species is native to Southeast China (Fujian, Guangdong, Guangxi) and Indo-China. It has been introduced and cultivated in Thailand, Malaysia, Indonesia, the Philippines and elsewhere in the tropics."
	Wu, Z. Y., P. H. Raven & D. Y. Hong, (eds). 2011. Flora of China. Vol. 19 (Cucurbitaceae through Valerianaceae, with Annonaceae and Berberidaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	"Thickets, sparse forests; 200–800 m. Fujian, Guangdong, Guangxi [Indonesia, Malaysia, Philippines, Vietnam; widely cultivated in tropical regions]."

205	Does the species have a history of repeated introductions outside its natural range?	y
	Source(s)	**Notes**
	Staples, G.W. & Herbst, D.R. 2005. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	"Chinese ixora is an old favorite in Hawai'i."
	Wu, Z. Y., P. H. Raven & D. Y. Hong, (eds). 2011. Flora of China. Vol. 19 (Cucurbitaceae through Valerianaceae, with Annonaceae and Berberidaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	"Fujian, Guangdong, Guangxi [Indonesia, Malaysia, Philippines, Vietnam; widely cultivated in tropical regions]."
	Lim, T.K. 2014. Edible Medicinal And Non-Medicinal Plants. Volume 8, Flowers. Springer, Dordrecht	"It has been introduced and cultivated in Thailand, Malaysia, Indonesia, the Philippines and elsewhere in the tropics."

301	Naturalized beyond native range	
	Source(s)	**Notes**
	McCormack, G. 2007. Cook Islands Biodiversity Database, Version 2007.2. Cook Islands Natural Heritage Trust, Rarotonga. http://cookislands.bishopmuseum.org. [Accessed 5 Dec 2019]	"Introduced - Recent, Not naturalised; Land, lowlands"
	Mito, T. & Uesugi, T. (2004). Invasive Alien Species in Japan: The Status Quo and the New Regulation for Prevention of their Adverse Effects. Global Environmental Research 8(2): 171-191	"Table 1 Alien species recognized to be established in Japan or found in the Japanese wild" [Includes Ixora chinensis. Unclear if plant is truly naturalized, or just cultivated]

Qsn #	Question	Answer
	Imada, C. (2019). Hawaiian Naturalized Vascular Plants Checklist (February 2019 update). Bishop Museum Technical Report 69. Bishop Museum, Honolulu, HI	No evidence
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	Reported as naturalized in Japan, and Colombia, but unable to corroborate with references cited.

302	Garden/amenity/disturbance weed	n
	Source(s)	**Notes**
	CABI. (2019). Invasive Species Compendium. Wallingford, UK: CAB International. www.cabi.org/isc	No evidence

303	Agricultural/forestry/horticultural weed	n
	Source(s)	**Notes**
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	No evidence
	CABI. (2019). Invasive Species Compendium. Wallingford, UK: CAB International. www.cabi.org/isc	No evidence

304	Environmental weed	
	Source(s)	**Notes**
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	Listed as an environmental weed, but unable to corroborate with reference cited.
	CABI. (2019). Invasive Species Compendium. Wallingford, UK: CAB International. www.cabi.org/isc	No evidence

305	Congeneric weed	
	Source(s)	**Notes**
	CABI. (2019). Invasive Species Compendium. Wallingford, UK: CAB International. www.cabi.org/isc	[Potentially] "Ixora finlaysoniana is native to China, India and parts of Indochina. Across the tropics it is also commonly cultivated as an ornamental tree or shrub, mainly restricted to gardens and urban areas. It has the potential to spread long distances through trade as an ornamental, however natural dispersal is thought to occur only over short distances. Currently, I. finlaysoniana is only reported as invasive in Cuba and no information is available regarding its impact there."
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	A number of Ixora species have been cited as naturalized and/or weeds, but evidence of impacts has not been corroborated

401	Produces spines, thorns or burrs	n
	Source(s)	**Notes**

Qsn #	Question	Answer
	Wu, Z. Y., P. H. Raven & D. Y. Hong, (eds). 2011. Flora of China. Vol. 19 (Cucurbitaceae through Valerianaceae, with Annonaceae and Berberidaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	[No evidence] "Shrubs, 0.8–2 m tall; branches glabrous. Leaves opposite, sometimes apparently in whorls of 4 due to reduced stem internodes, sessile or petiolate; petiole to 5 mm, glabrous; blade drying leathery, oblanceolate, oblong-oblanceolate, obovate, elliptic-oblong, or lanceolate, 6–18 × 3–6 cm, glabrous on both surfaces, base cuneate to shortly truncate or rounded, apex obtuse or rounded to acute; secondary veins 7–9 pairs; stipules persistent, united around stem to almost interpetiolar, triangular to broadly triangular, 3–7 mm, glabrous to glabrescent, costate, acute and with arista 2–10 mm."

402	Allelopathic	
	Source(s)	**Notes**
	Neelamegam, R. (2011). Allelopathic effect of Ixora coccinea Linn. on seed germination and early seedling growth of paddy (Oryza sativa L.). Journal of Phytology 3 (6): 51-55	[Unknown. Allelopathy reported in genus] "Experiments were conducted to evaluate the allelopathic potential of Ixora coccinea aqueous (leaf, flower and leaf-flower) extracts on paddy (Oryza sativa L.) var. ambai-16 seed germination and seedling growth under in vitro condition. The results indicated that the leaf extract of Ixora showed more negative allelopathic (stimulatory) effect on seed germination, seedling growth, biomass production, seedling vigour index and tolerance index of paddy at low concentration as compared to control, while the higher concentrations of leaf extract and all concentrations of flower and leaf-flower extracts showed positive allelopathic (inhibitory) effect on seed germination and seedling growth parameters of paddy recorded."

403	Parasitic	n
	Source(s)	**Notes**
	Wu, Z. Y., P. H. Raven & D. Y. Hong, (eds). 2011. Flora of China. Vol. 19 (Cucurbitaceae through Valerianaceae, with Annonaceae and Berberidaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	"Shrubs, 0.8–2 m tall; branches glabrous." [Rubiaceae. No evidence]

404	Unpalatable to grazing animals	
	Source(s)	**Notes**
	Setiya, A. V., Narkhede, M. S., & Dongarwar, N. M. (2015). Preliminary survey of fodder plants used by goats Gadchiroli District of Maharashtra State. International Journal of Advanced Research, 3(12), 1157-1167	[Unknown. Other species palatable to goats] "Table 1 – Plants preferred by Goats as fodder" [Includes Ixora arborea - Leaves eaten]

405	Toxic to animals	n
	Source(s)	**Notes**
	Tropical Plants Database, Ken Fern. (2019). Ixora chinensis. http://tropical.theferns.info/viewtropical.php?id=Ixora+chinensis. [Accessed 6 Dec 2019]	"Known Hazards - None known"

Qsn #	Question	Answer
	Lim, T.K. 2014. Edible Medicinal And Non-Medicinal Plants. Volume 8, Flowers. Springer, Dordrecht	[No evidence of toxicity] "Flowers are consumed in Thailand, used in salad and stir-fried (Wongwattanasathien et al. 2010; Kaisoon et al. 2011)."
	NIH U.S. National Library of Medicine. (2019). TOXNET Toxicology Data Network. https://toxnet.nlm.nih.gov/. [Accessed 6 Dec 2019]	No evidence

406	Host for recognized pests and pathogens	
	Source(s)	**Notes**
	Soumyajit, C., Rahi, S., & Suvankar, P. (2009). Ixora chinensis Lam.: a new host plant for Common Silverline Spindasis vulcanus Fabricius,(Lepidoptera: Lycaentdae) from West Bengal. Journal of the Bombay Natural History Society, 106(3), 348-349	"Abstract : This paper reports a new host plant for the common silverline, Spindasis vulcanus, in West Bengal, India. This is thought to be a new host record for S. vulcanus infestation of Ixora chinensis in India."
	CABI. (2019). Invasive Species Compendium. Wallingford, UK: CAB International. www.cabi.org/isc	"Minor host of: Aleurodicus dispersus (whitefly); Pestalotiopsis theae (grey: tea blight) Wild host of: Megalurothrips usitatus (bean flower thrips)"
	Aishwariya, K. K., Manjunatha, M., & Naik, M. I. (2007). Biology and host range of spiralling whitefly. Karnataka Journal of Agricultural Sciences, 20(1), 149-152	"The biology of spiralling whitefly, Aleurodicus dispersus, was studied on guava during winter, summer and wet seasons. A survey was undertaken at fortnightly intervals to record the host plants of spiralling whitefly. The places surveyed included 5 hoblies of Shimoga taluka, Karnataka, India. Comparative data on the morphometric parameters of different stages of whitefly and the comparative seasonal biology of spiralling whitefly are tabulated. The incidence of spiralling whitefly is found throughout the year with shorter life cycle during the summer season, while fecundity was highest in the summer followed by wet and winter seasons. Spiralling whitefly was found to infest 99 host plants belonging to 38 families, which include fruit trees, vegetable crops, ornamentals, and shade and forest trees. There were 11 new host plants recorded for spiralling whitefly, which include Cassia marginata, Cassia montana, Datura fastuosa, Hibiscus collinus, Hibiscus mutabilis, Hibiscus schizopetalus, Ixora chinensis, Ixora coccinea, Jasminum auriculatum, Plumeria alba and Tabernaemontana coronaria."

407	Causes allergies or is otherwise toxic to humans	n
	Source(s)	**Notes**
	Lim, T.K. 2014. Edible Medicinal And Non-Medicinal Plants. Volume 8, Flowers. Springer, Dordrecht	[No evidence] "Flowers are consumed in Thailand, used in salad and stir-fried (Wongwattanasathien et al. 2010; Kaisoon et al. 2011)."
	Quattrocchi, U. 2012. CRC World Dictionary of Medicinal and Poisonous Plants: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. CRC Press, Boca Raton, FL	[Used medicinally. No evidence of toxicity] "A decoction of the root after childbirth and against bronchial disorders. An infusion of the fresh flowers a remedy against incipient tuberculosis and haemorrhage, also prescribed in amenorrhea and hypertension. An infusion of leaves or flowers used against headache.)"
	NIH U.S. National Library of Medicine. (2019). TOXNET Toxicology Data Network. https://toxnet.nlm.nih.gov/. [Accessed 6 Dec 2019]	No evidence

Qsn #	Question	Answer
408	**Creates a fire hazard in natural ecosystems**	**n**
	Source(s)	**Notes**
	Wu, Z. Y., P. H. Raven & D. Y. Hong, (eds). 2011. Flora of China. Vol. 19 (Cucurbitaceae through Valerianaceae, with Annonaceae and Berberidaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	[Widely cultivated, with no evidence of increased fire risk found] "Thickets, sparse forests; 200–800 m. Fujian, Guangdong, Guangxi [Indonesia, Malaysia, Philippines, Vietnam; widely cultivated in tropical regions]."

409	**Is a shade tolerant plant at some stage of its life cycle**	
	Source(s)	**Notes**
	Oakman, H.1995. Harry Oakman's what flowers when: the complete guide to flowering times in tropical and subtropical gardens. Univ. of Queensland Press, St. Lucia, Australia	"Does well in sun or light shade; hardy under most conditions"
	Tropical Plants Database, Ken Fern. (2019). Ixora chinensis. http://tropical.theferns.info/viewtropical.php?id=Ixora+chinensis. [Accessed 6 Dec 2019]	"Succeeds in full sun and in partial shade"
	Dave's Garden. (2019). Ixora Species, Chinese Ixora - Ixora chinensis. https://davesgarden.com/guides/pf/go/53338/. [Accessed 6 Dec 2019]	"Sun Exposure: Full Sun Sun to Partial Shade"

410	**Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)**	**n**
	Source(s)	**Notes**
	Staples, G.W. & Herbst, D.R. 2005. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	"Chinese ixora does not tolerate salt spray exposure and does poorly near the beach. It prefers an organically rich, well-watered, acidic soil."
	Dave's Garden. (2019). Ixora Species, Chinese Ixora - Ixora chinensis. https://davesgarden.com/guides/pf/go/53338/. [Accessed 6 Dec 2019]	"Soil pH requirements: 5.6 to 6.0 (acidic)"

411	**Climbing or smothering growth habit**	**n**
	Source(s)	**Notes**
	Wu, Z. Y., P. H. Raven & D. Y. Hong, (eds). 2011. Flora of China. Vol. 19 (Cucurbitaceae through Valerianaceae, with Annonaceae and Berberidaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	"Shrubs, 0.8–2 m tall; branches glabrous."

412	**Forms dense thickets**	**n**
	Source(s)	**Notes**
	Wu, Z. Y., P. H. Raven & D. Y. Hong, (eds). 2011. Flora of China. Vol. 19 (Cucurbitaceae through Valerianaceae, with Annonaceae and Berberidaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	[Presumably a component of thicket vegetation, and not described as producing dense monocultures] "Thickets, sparse forests; 200–800 m. Fujian, Guangdong, Guangxi [Indonesia, Malaysia, Philippines, Vietnam; widely cultivated in tropical regions]."

501	**Aquatic**	**n**

Qsn #	Question	Answer
	Source(s)	**Notes**
	Wu, Z. Y., P. H. Raven & D. Y. Hong, (eds). 2011. Flora of China. Vol. 19 (Cucurbitaceae through Valerianaceae, with Annonaceae and Berberidaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	[Terrestrial] "Shrubs, 0.8–2 m tall … Thickets, sparse forests; 200–800 m."

502	Grass	n
	Source(s)	**Notes**
	USDA, Agricultural Research Service, National Plant Germplasm System. (2019). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. https://npgsweb.ars-grin.gov/. [Accessed 5 Dec 2019]	Family: Rubiaceae Subfamily: Ixoroideae Tribe: Ixoreae

503	Nitrogen fixing woody plant	n
	Source(s)	**Notes**
	USDA, Agricultural Research Service, National Plant Germplasm System. (2019). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. https://npgsweb.ars-grin.gov/. [Accessed 5 Dec 2019]	Family: Rubiaceae Subfamily: Ixoroideae Tribe: Ixoreae

504	Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)	n
	Source(s)	**Notes**
	Wu, Z. Y., P. H. Raven & D. Y. Hong, (eds). 2011. Flora of China. Vol. 19 (Cucurbitaceae through Valerianaceae, with Annonaceae and Berberidaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	"Shrubs, 0.8–2 m tall; branches glabrous."

601	Evidence of substantial reproductive failure in native habitat	n
	Source(s)	**Notes**
	Wu, Z. Y., P. H. Raven & D. Y. Hong, (eds). 2011. Flora of China. Vol. 19 (Cucurbitaceae through Valerianaceae, with Annonaceae and Berberidaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	[No evidence] "Thickets, sparse forests; 200–800 m. Fujian, Guangdong, Guangxi [Indonesia, Malaysia, Philippines, Vietnam; widely cultivated in tropical regions]."

Qsn #	Question	Answer
602	**Produces viable seed**	**y**
	Source(s)	**Notes**
	Staples, G.W. & Herbst, D.R. 2005. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	"Propagation is nearly always from cuttings, although seed (infrequently produced) is also possible."
	Lim, T.K. 2014. Edible Medicinal And Non-Medicinal Plants. Volume 8, Flowers. Springer, Dordrecht	"The plant is readily propagated by using seeds or stem cuttings."

603	**Hybridizes naturally**	**y**
	Source(s)	**Notes**
	de Padua, L.S., Bunyapraphatsara, N. & Lemmens, R.H.M.J. (Eds.). 1999. Plant Resources of South-East Asia. No 12(1). Medicinal and Poisonous Plants 1. Backhuys Publishers, Leiden, The Netherlands	"The differences between the widely cultivated I. chinensis and I. coccinea are sometimes obscure as a result of selection for rare or extreme forms. Accidental or deliberate hybridization appears to occur. "
	Tyagi, A. P., Racule, T., & Lal, P. (1998). Pollen fertility and breeding biology of three species of genus Ixora. South Pacific Journal of Natural Science, 16, 7-10	[Natural hybrids do not form due to cross incompatibility] "Interspecific crossing results indicated cross incompatibility among the three species studied." … "Pollen germination percentage in three species showed that all the three species produced very high number of fertile pollen and hence almost fully adapted to Fijian climatic conditions. Because all the three species are only partially self-compatible therefore it can safely be assumed that some sort of self-incompatibility mechanism is operating in these species. None of the three species were cross compatible indicating that reproductive isolating mechanisms are in operation and therefore gene exchange is not possible among these species. However to produce interspecific hybrids, breeders have to look for other aids to facilitate fertilization and embryo rescue if embryo abortions occur due to cross incompatibility."

604	**Self-compatible or apomictic**	**y**
	Source(s)	**Notes**
	Tyagi, A. P., Racule, T., & Lal, P. (1998). Pollen fertility and breeding biology of three species of genus Ixora. South Pacific Journal of Natural Science, 16, 7-10	"Pollen viability (fertility) and breeding biology of three species of genus Ixora, namely; 1. chinensis, I. javanica and I. macrothyrsa were studied. Pollen germination in vitro showed that all three species had a very high pollen fertility (> 80%). Sone of the three species was fully self-compatible. Only partial self-compatibility was observed in I. chinensis and I. javanica. Interspecific crossing results indicated cross incompatibility among the three species studied. Causes of cross incompatibility may include cryptic chromosomal differences, chromosomal aberrations and difference in chromosome numbers. Ways to achieve cross compatibility suggested to obtain hybrids among these species for further improvement"

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

Qsn #	Question	Answer
	de Padua, L.S., Bunyapraphatsara, N. & Lemmens, R.H.M.J. (Eds.). 1999. Plant Resources of South-East Asia. No 12(1). Medicinal and Poisonous Plants 1. Backhuys Publishers, Leiden, The Netherlands	"The flowers are mainly pollinated by moths and butterflies probing for the nectar at the corolla base, but honey-suckers may also visit the flowers, particularly the reddish ones."
	Momose, K. (2004). Plant reproductive interval and population density in aseasonal tropics. Ecological Research, 19(2), 245-253	[Unknown. However other members of the genus are pollinated by butterflies, birds and moths.] "In some tropical areas, annual cycles in the environment and plant phenology are not clearly detectable. In such aseasonal tropics, it was found that plant population density is associated with flowering intervals within the same habitats and within the same pollination guilds, if some conditions are satisfied. This finding is based on observations of flowering phenology of butterfly-pollinated understory shrubs of the genus Ixora (Rubiaceae) for 36 months in a mixed dipterocarp forest in Sarawak, northwest Borneo. Plants did not receive sufficient pollination services and fruit set was pollination-limited. Under such conditions, it is theoretically predicted that the plant types that reproduce frequently would have higher population density than those that reproduce less frequently, because common types must avoid competition for pollinators and rare types can have a large floral display by storing resources during long reproductive intervals to attract pollinators efficiently. Observed relationships among plant reproductive intervals, pollinator attractions and population densities in Ixora are consistent with theoretical predictions. Based on the theory proposed in this paper, I discuss a factor promoting diversification of the genus Ixora and other taxa."

606	Reproduction by vegetative fragmentation	n
	Source(s)	**Notes**
	de Padua, L.S., Bunyapraphatsara, N. & Lemmens, R.H.M.J. (Eds.). 1999. Plant Resources of South-East Asia. No 12(1). Medicinal and Poisonous Plants 1. Backhuys Publishers, Leiden, The Netherlands	"Ixora may be propagated by seed, although ornamental species are usually propagated by cuttings." [No evidence of natural vegetative spread]
	Lim, T.K. 2014. Edible Medicinal And Non-Medicinal Plants. Volume 8, Flowers. Springer, Dordrecht	"The plant is readily propagated by using seeds or stem cuttings." [No evidence of natural vegetative spread]

607	Minimum generative time (years)	
	Source(s)	**Notes**
	Staples, G.W. & Herbst, D.R. 2005. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	"It has a moderate growth rate and requires pruning only to shape and to stimulate new growth on which flower buds will appear." [Unknown. As a shrub, probably 2+ years]

701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	n
	Source(s)	**Notes**
	Staples, G.W. & Herbst, D.R. 2005. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	"Propagation is nearly always from cuttings, although seed (infrequently produced) is also possible."

Qsn #	Question	Answer
	de Padua, L.S., Bunyapraphatsara, N. & Lemmens, R.H.M.J. (Eds.). 1999. Plant Resources of South-East Asia. No 12(1). Medicinal and Poisonous Plants 1. Backhuys Publishers, Leiden, The Netherlands	"The seeds are probably dispersed by fruit-eating birds." … "fruit globose, black." [No means of attachment, and seed rarely produced in Hawaiian Islands]

702	Propagules dispersed intentionally by people	y
	Source(s)	**Notes**
	Staples, G.W. & Herbst, D.R. 2005. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	"I. chinensis is an old favorite in Hawai'i."
	Wu, Z. Y., P. H. Raven & D. Y. Hong, (eds). 2011. Flora of China. Vol. 19 (Cucurbitaceae through Valerianaceae, with Annonaceae and Berberidaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	"widely cultivated in tropical regions"

703	Propagules likely to disperse as a produce contaminant	n
	Source(s)	**Notes**
	Staples, G.W. & Herbst, D.R. 2005. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	"Propagation is nearly always from cuttings, although seed (infrequently produced) is also possible." [No evidence. Unlikely given limited seed production]
	de Padua, L.S., Bunyapraphatsara, N. & Lemmens, R.H.M.J. (Eds.). 1999. Plant Resources of South-East Asia. No 12(1). Medicinal and Poisonous Plants 1. Backhuys Publishers, Leiden, The Netherlands	"The seeds are probably dispersed by fruit-eating birds."

704	Propagules adapted to wind dispersal	n
	Source(s)	**Notes**
	Wu, Z. Y., P. H. Raven & D. Y. Hong, (eds). 2011. Flora of China. Vol. 19 (Cucurbitaceae through Valerianaceae, with Annonaceae and Berberidaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	"Drupe reddish black, subglobose and shallowly didymous, 6–7 × 6–7 mm, glabrous."

705	Propagules water dispersed	n
	Source(s)	**Notes**
	Staples, G.W. & Herbst, D.R. 2005. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	"Propagation is nearly always from cuttings, although seed (infrequently produced) is also possible."
	de Padua, L.S., Bunyapraphatsara, N. & Lemmens, R.H.M.J. (Eds.). 1999. Plant Resources of South-East Asia. No 12(1). Medicinal and Poisonous Plants 1. Backhuys Publishers, Leiden, The Netherlands	"The seeds are probably dispersed by fruit-eating birds." … "I. chinensis is reportedly common on river banks in Peninsular Malaysia." [Bird-dispersed seeds might be secondarily dispersed by water in riparian areas. However, limited seed production in the Hawaiian Islands makes this dispersal mode unlikely]

706	Propagules bird dispersed	y

Qsn #	Question	Answer
	Source(s)	**Notes**
	Wu, Z. Y., P. H. Raven & D. Y. Hong, (eds). 2011. Flora of China. Vol. 19 (Cucurbitaceae through Valerianaceae, with Annonaceae and Berberidaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	"Drupe reddish black, subglobose and shallowly didymous, 6–7 × 6–7 mm, glabrous."
	de Padua, L.S., Bunyapraphatsara, N. & Lemmens, R.H.M.J. (Eds.). 1999. Plant Resources of South-East Asia. No 12(1). Medicinal and Poisonous Plants 1. Backhuys Publishers, Leiden, The Netherlands	"The seeds are probably dispersed by fruit-eating birds."

707	Propagules dispersed by other animals (externally)	n
	Source(s)	**Notes**
	Wu, Z. Y., P. H. Raven & D. Y. Hong, (eds). 2011. Flora of China. Vol. 19 (Cucurbitaceae through Valerianaceae, with Annonaceae and Berberidaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	"Drupe reddish black, subglobose and shallowly didymous, 6–7 × 6–7 mm, glabrous." [No means of external attachment]
	de Padua, L.S., Bunyapraphatsara, N. & Lemmens, R.H.M.J. (Eds.). 1999. Plant Resources of South-East Asia. No 12(1). Medicinal and Poisonous Plants 1. Backhuys Publishers, Leiden, The Netherlands	"The seeds are probably dispersed by fruit-eating birds."

708	Propagules survive passage through the gut	y
	Source(s)	**Notes**
	de Padua, L.S., Bunyapraphatsara, N. & Lemmens, R.H.M.J. (Eds.). 1999. Plant Resources of South-East Asia. No 12(1). Medicinal and Poisonous Plants 1. Backhuys Publishers, Leiden, The Netherlands	"The seeds are probably dispersed by fruit-eating birds." [Presumably yes]

801	Prolific seed production (>1000/m2)	n
	Source(s)	**Notes**
	Staples, G.W. & Herbst, D.R. 2005. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	"Propagation is nearly always from cuttings, although seed (infrequently produced) is also possible." [Presumably low seed densities in the Hawaiian Islands, and possibly elsewhere]

802	Evidence that a persistent propagule bank is formed (>1 yr)	
	Source(s)	**Notes**
	Baskin, C.C. & Baskin, J.M. 2014. Seeds Ecology, Biogeography, and Evolution of Dormancy and Germination. Second Edition. Academic Press, San Francisco, CA	"TABLE 11.19 Families and genera of mangrove and mangrove associate trees and shrubs (from Tomlinson, 1986), class of dormancy (or nondormancy) known to occur in the family" [Unknown for I. chinensis. Other Ixora species reported to exhibit Nondormant seeds, and physiological dormancy]

803	Well controlled by herbicides	

Qsn #	Question	Answer
	Source(s)	**Notes**
	WRA Specialist. (2019). Personal Communication	Unknown. No information on herbicide efficacy or chemical control of this species

804	**Tolerates, or benefits from, mutilation, cultivation, or fire**	
	Source(s)	**Notes**
	Staples, G.W. & Herbst, D.R. 2005. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	"It has a moderate growth rate and requires pruning only to shape and to stimulate new growth on which flower buds will appear."

805	**Effective natural enemies present locally (e.g. introduced biocontrol agents)**	
	Source(s)	**Notes**
	Staples, G.W. & Herbst, D.R. 2005. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	"Chinese ixora is an old favorite in Hawai'i." [Unknown. No mention of pests or pathogens limiting cultivation in the Hawaiian Islands]

Summary of Risk Traits:

High Risk / Undesirable Traits
• Thrives in tropical climates
• Possibly naturalized in Japan and Colombia (South America)
• Reproduces by seeds
• Hybridizes with other Ixora species
• Exhibits some self-compatibility
• Seeds dispersed by birds and intentionally by people

Low Risk Traits
• No reports of detrimental impacts or invasiveness
• Unarmed (no spines, thorns, or burrs)
• Non-toxic
• Ornamental value
• Limited seed production in cultivation reduces risk of accidental or long-distance dispersal
• Not reported to spread vegetatively