

<b>Taxon:</b> <i>Ficus altissima</i> Blume	<b>Family:</b> Moraceae
<b>Common Name(s):</b> council tree counciltree false banyan gao shan rong lofty fig	<b>Synonym(s):</b> <i>Ficus laccifera</i> Roxb.

<b>Assessor:</b> Chuck Chimera	<b>Status:</b> Assessor Approved	<b>End Date:</b> 4 Mar 2023
<b>WRA Score:</b> 7.0	<b>Designation:</b> H(HPWRA)	<b>Rating:</b> High Risk

**Keywords:** Hemiepiphytic Tree, Naturalized (Florida), Strangling, Specialized Pollinator, 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	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
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
303	Agricultural/forestry/horticultural weed	n=0, y = 2*multiplier (see Appendix 2)	n
304	Environmental weed		
305	Congeneric weed	n=0, y = 1*multiplier (see Appendix 2)	y
401	Produces spines, thorns or burrs	y=1, n=0	n
402	Allelopathic		
403	Parasitic	y=1, n=0	n
404	Unpalatable to grazing animals		
405	Toxic to animals		
406	Host for recognized pests and pathogens		
407	Causes allergies or is otherwise toxic to humans		

Qsn #	Question	Answer Option	Answer
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	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	y
412	Forms dense thickets		
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	n
604	Self-compatible or apomictic	y=1, n=-1	n
605	Requires specialist pollinators	y=-1, n=0	y
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/m <sup>2</sup> )	y=1, n=-1	y
802	Evidence that a persistent propagule bank is formed (>1 yr)		
803	Well controlled by herbicides	y=-1, n=1	y
804	Tolerates, or benefits from, mutilation, cultivation, or fire	y=1, n=-1	y
805	Effective natural enemies present locally (e.g. introduced biocontrol agents)		

**Supporting Data:**

Qsn #	Question	Answer
101	Is the species highly domesticated?	n
	Source(s)	Notes
	Zheng, H., Wu, Y., Ding, J., Binion, D., Fu, W., & Reardon, R. (2004). Invasive Plants of Asian Origin Established in the United States and Their Natural Enemies Volume 1. USDA Forest Service, Morgantown, WV	[No evidence of domestication] "Distribution <i>Ficus altissima</i> occurs naturally in Guangdong, Guangxi, Hainan, Sichuan, Yunnan, and is cultivated in Fujian. Economic Importance <i>Ficus altissima</i> is cultivated as an ornamental and as a host for <i>Laccifer lacca</i> ."

102	Has the species become naturalized where grown?	
	Source(s)	Notes
	WRA Specialist. (2023). Personal Communication	NA

103	Does the species have weedy races?	
	Source(s)	Notes
	WRA Specialist. (2023). 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. (2023). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. <a href="https://npgsweb.ars-grin.gov/">https://npgsweb.ars-grin.gov/</a> . [Accessed 1 Mar 2023]	"Native Asia-Temperate CHINA: China [Guangdong Sheng, Yunnan Sheng, Guangxi Zhuangzu Zizhiqu, Hainan Sheng] Asia-Tropical INDIAN SUBCONTINENT: Bhutan, India, Nepal INDO-CHINA: India [Andaman and Nicobar Islands (Andaman Islands)], Myanmar, Thailand, Vietnam MALESIA: Indonesia [Sulawesi, Jawa, Sumatera], Malaysia (Malaya), Philippines"

202	Quality of climate match data	High
	Source(s)	Notes
	USDA, Agricultural Research Service, National Plant Germplasm System. (2023). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. <a href="https://npgsweb.ars-grin.gov/">https://npgsweb.ars-grin.gov/</a> . [Accessed 1 Mar 2023]	"Native Asia-Temperate CHINA: China [Guangdong Sheng, Yunnan Sheng, Guangxi Zhuangzu Zizhiqu, Hainan Sheng] Asia-Tropical INDIAN SUBCONTINENT: Bhutan, India, Nepal INDO-CHINA: India [Andaman and Nicobar Islands (Andaman Islands)], Myanmar, Thailand, Vietnam MALESIA: Indonesia [Sulawesi, Jawa, Sumatera], Malaysia (Malaya), Philippines"

Qsn #	Question	Answer
203	<b>Broad climate suitability (environmental versatility)</b>	<b>y</b>
	<b>Source(s)</b>	<b>Notes</b>
	PictureThis. (2023). Council tree. <i>Ficus altissima</i> . <a href="https://www.picturethisai.com/wiki/Ficus_altissima.html">https://www.picturethisai.com/wiki/Ficus_altissima.html</a> . [Accessed 3 Mar 2023]	"6 to 13 Hardiness Zones"
	Zheng, H., Wu, Y., Ding, J., Binion, D., Fu, W., & Reardon, R. (2004). Invasive Plants of Asian Origin Established in the United States and Their Natural Enemies Volume 1. USDA Forest Service, Morgantown, WV	[Elevation range >1000 m] " <i>Ficus altissima</i> occurs in mountains and plains at elevations of 1 000-2,000 m."

204	<b>Native or naturalized in regions with tropical or subtropical climates</b>	<b>y</b>
	<b>Source(s)</b>	<b>Notes</b>
	Wu, Z.Y., Raven, P.H. & Hong, D.Y. (eds.). (2003). Flora of China. Vol. 5 (Ulmaceae through Basellaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	"Mountains, plains; 100-2000 m. Guangdong, Guangxi, Hainan, Yunnan [Bhutan, India, Indonesia, Malaysia, Myanmar, Nepal, Philippines, Sikkim, Thailand, Vietnam]."
	Imada, C. (2019). Hawaiian Naturalized Vascular Plants Checklist (February 2019 update). Bishop Museum Technical Report 69. Bishop Museum, Honolulu, HI	No evidence

205	<b>Does the species have a history of repeated introductions outside its natural range?</b>	<b>y</b>
	<b>Source(s)</b>	<b>Notes</b>
	Nadel, H., Frank, J. H., & Knight Jr, R. J. (1992). Escapees and accomplices: the naturalization of exotic <i>Ficus</i> and their associated faunas in Florida. <i>Florida Entomologist</i> , 75 (1): 29-38	"Over 60 exotic <i>Ficus</i> (fig) species have been introduced into southern Florida as ornamentals. Three of these, <i>F. altissima</i> Blume, <i>F. benghalensis</i> L., and <i>F. microcarpa</i> L. are now weedy because they are pollinated routinely by immigrant agaonid wasps [ <i>Eupristina</i> sp., <i>Eupristina masoni</i> Saunders, and <i>Parapristina verticillata</i> (Waterston) respectively]."
	Wong, M. (2007). <i>Ficus</i> Plants for Hawai'i Landscapes. Ornamentals and Flowers OF-34. College of Tropical Agriculture and Human Resources, Honolulu, HI	[Cultivated in the Hawaiian Islands] " <i>Ficus altissima</i> (council tree, Fig. 5) is similar to Indian banyan and can be found close to McCoy pavilion at Ala Moana Park on O'ahu."
	Randall, R.P. (2017). <i>A Global Compendium of Weeds</i> . 3rd Edition. Perth, Western Australia. R.P. Randall	[Introduced to a number of locations globally] "Major Pathway/s: Herbal, Ornamental Dispersed by: Humans References: southeast Asia-W-191, Pacific-W-3, United States of America-E-80, United States of America-N-101, United States of America-W-112, United States of America-EX-122, United States of America-EW-179, United States of America-N-419, Pacific-E-621, United States of America-E-151, Australia--, La Reunion-W-1321, Global-W-1376, Global-I-1404, United States of America-E-1736, Australia-Q-1123, United Republic of Tanzania-W-1977."

301	<b>Naturalized beyond native range</b>	<b>y</b>
	<b>Source(s)</b>	<b>Notes</b>

Qsn #	Question	Answer
	Witt, A., Beale, T., & Van Wilgen, B. W. (2018). An assessment of the distribution and potential ecological impacts of invasive alien plant species in eastern Africa. <i>Transactions of the Royal Society of South Africa</i> , 73(3), 217-236	"Table 7. Naturalised species of plants in the East Usambara mountains, Tanzania, as recorded by Sheil (1994)." [Table includes <i>Ficus altissima</i> ]
	Nadel, H., Frank, J. H., & Knight Jr, R. J. (1992). Escapees and accomplices: the naturalization of exotic <i>Ficus</i> and their associated faunas in Florida. <i>Florida Entomologist</i> , 75(1): 29-38	[Naturalized in Florida where the pollinator is present] " <i>Ficus altissima</i> Blume, the closely-related lofty fig, was discovered growing epiphytically at the University of Miami campus in Coral Gables, and has since been found throughout the Miami area, growing on trees and on stone walls (McKey & Kaufmann, in press). Its pollinator, <i>Eupristina</i> sp., probably <i>E. altissima</i> Balakrishnan & Abdurahian, is also well established. Although not nearly as aggressive a weed as <i>F. microcarpa</i> , <i>F. altissima</i> appears to be cropping up more commonly than <i>F. benghalensis</i> . These three species are, as far as we know, the only figs that have escaped cultivation and become naturalized in Florida."
	Randall, R.P. (2017). <i>A Global Compendium of Weeds</i> . 3rd Edition. Perth, Western Australia. R.P. Randall	[Present, and potentially naturalized, and/or weedy in the following locations] "References: southeast Asia-W-191, Pacific- W-3, United States of America-E-80, United States of America-N-101, United States of America-W-112, United States of America-EX-122, United States of America-EW-179, United States of America-N-419, Pacific-E-621, United States of America-E-151, Australia--, La Reunion-W-1321, Global-W-1376, Global-I-1404, United States of America-E-1736, Australia-Q-1123, United Republic of Tanzania-W-1977."

302	Garden/amenity/disturbance weed	y
	Source(s)	Notes
	McKey, D. (1989). Population biology of figs: applications for conservation. <i>Experientia</i> , 45, 661-673	"How the pollinators of <i>F. benghalensis</i> and <i>E. altissima</i> reached Florida is also unknown. Seedlings of the former were first noticed in 1986 (R. Knight, pers. comm.), those of the latter species in 1987 (D. McKey, unpublished). No non-pollinating wasp associates of these species have been noted in Florida. Seedlings of both species are so far restricted to suburban areas. These two species appear to be much less successful in producing juveniles than is <i>F. microcarpa</i> , which, as in Hawaii, has distinctly weedy tendencies and seems much more likely to invade native plant communities. Comparative studies of these three fig species and their pollinators should offer insight on the determinants of success in invasions by introduced fig/wasp pairs."

Qsn #	Question	Answer
	Randall, J.M. & Marinelli, J. (eds.) (1996). Invasive Plants: Weeds of the Global Garden. Brooklyn Botanic Garden, Brooklyn, NY	[ <i>F. altissima</i> , <i>F. benghalensis</i> and <i>F. microcarpa</i> have naturalized in Florida. Unclear if all are having similar impacts. Here, regarded as weed of landscaping, and infrastructure] "Seeds of these species tend to germinate in the crotches of other trees, growing as epiphytes on their host tree until aerial roots reach the ground. Like the Florida native strangler fig, <i>Ficus aurea</i> , the combination of these figs' constricting roots, shade and competition for nutrients usually kills the host tree. They are also becoming increasingly visible growing in cracks in concrete, especially on turnpike overpasses, bridges, walls, buildings and other concrete or stone structures, and if left unchecked, the roots of these trees will cause extensive structural damage and can buckle roadways. These figs grow to immense proportions and have the potential to compete heavily with native plants for sunlight, nutrients and space in natural forest communities." ... "None of these three fig species should be planted within parks or along roadways near natural forest communities in southern Florida. All three are currently on the prohibited list of landscape plants in Dade County, Florida."

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

304	Environmental weed	
	Source(s)	Notes
	Randall, J.M. & Marinelli, J. (eds.) (1996). Invasive Plants: Weeds of the Global Garden. Brooklyn Botanic Garden, Brooklyn, NY	[ <i>F. altissima</i> , <i>F. benghalensis</i> and <i>F. microcarpa</i> have naturalized in Florida. Unclear if all are having similar impacts, but may have detrimental impacts to the natural environment] "Seeds of these species tend to germinate in the crotches of other trees, growing as epiphytes on their host tree until aerial roots reach the ground. Like the Florida native strangler fig, <i>Ficus aurea</i> , the combination of these figs' constricting roots, shade and competition for nutrients usually kills the host tree. They are also becoming increasingly visible growing in cracks in concrete, especially on turnpike overpasses, bridges, walls, buildings and other concrete or stone structures, and if left unchecked, the roots of these trees will cause extensive structural damage and can buckle roadways. These figs grow to immense proportions and have the potential to compete heavily with native plants for sunlight, nutrients and space in natural forest communities." ... "None of these three fig species should be planted within parks or along roadways near natural forest communities in southern Florida. All three are currently on the prohibited list of landscape plants in Dade County, Florida."

305	Congeneric weed	y
	Source(s)	Notes

Qsn #	Question	Answer
	Loope, L.L., Nagata, R.J. & Medeiros, A.C. (1992). Alien plants in Haleakala National Park Pp. 551-576 in Stone et al (eds) Alien plant invasions in native ecosystems of Hawaii. Coop. Nat. Park Resources Studies Unit, University of Hawaii, Honolulu, HI	"Chinese banyan, <i>Ficus microcarpa</i> . Chinese banyan is a strangling, aggressive invader on rocky walls of low-elevation stream courses and sea cliffs in lower Kipahulu. The several dozen known established plants present in the Park should be removed as soon as possible in order to prevent this species from taking over these habitats."
	Weber, E. (2017). Invasive Plant Species of the World, 2nd Edition: A Reference Guide to Environmental Weeds. CABI Publishing, Wallingford, UK	" <i>Ficus carica</i> ... The fast-growing tree has often escaped cultivation and has become invasive in several regions. The tree forms dense thickets crowding out native trees and understorey shrubs in river accompanying forests (Bossard et al., 2000). The dense foliage casts heavy shade, reducing growth of native plants under the crown." ... " <i>Ficus microcarpa</i> ... Little is known about direct ecological effects of colonized host trees or invaded communities. The tree forms impenetrable thickets due to the numerous hanging aerial roots that likely shade out other plants. If laurel fig seedlings grow as epiphytes on trees they send aerial roots to the ground. This may affect the host tree by competing for light and nutrients and because of the constricting roots."
	Motooka, P., Castro, L., Nelson, D., Nagai, G. & Ching, L. (2003). Weeds of Hawaii's Pastures and Natural Areas: An Identification and Management Guide. CTAHR, UH Manoa, Honolulu, HI	[ <i>Ficus microcarpa</i> ] "Environmental impact: Besides shading with its broad canopy, it is a threat to host plants. Banyan roots are very destructive to infrastructures: pavement, home foundations, irrigation ditches."
	WRA Specialist. (2023). Personal Communication	Native <i>Metrosideros polymorpha</i> trees are being colonized and strangled by <i>Ficus macrophylla</i> in the Kalopa State Recreation Area, Hawaii Island. In particular, large, old growth ohia trees along the Kalopa Nature Trail are being affected by both the <i>Ficus macrophylla</i> invasion, as well as by the fungal disease known as Rapid Ohia Death. A local volunteer group affiliated with the Paulo Mauka Kalopa Community Association, and with assistance from the Big Island Invasive Species Committee, has treated <i>F. macrophylla</i> trees with 100% Garlon 4 applied to the strangling roots. The goal was to control this invasive tree and to prevent further damage to the native ohia trees and the associated native forests. Initial results of herbicide applications appeared promising, with >75% defoliation to most trees after 2-3 months. Larger trees may require repeated application to achieve 100% mortality.

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

Qsn #	Question	Answer
	Wu, Z.Y., Raven, P.H. & Hong, D.Y. (eds.). (2003). Flora of China. Vol. 5 (Ulmaceae through Basellaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	[No evidence] "Trees, 25-30 m tall, d.b.h. 40-90 cm. Bark gray, smooth. Branchlets green, ca. 1 cm thick, pubescent. Stipules 2-3 cm, thickly leathery, with gray silky hairs. Petiole robust, 2-5 cm; leaf blade broadly ovate to broadly ovate-elliptic, 10-19 × 8-11 cm, thickly leathery, glabrous, base broadly cuneate, margin entire, apex obtuse, acute; basal lateral veins long, secondary veins 5-7 on each side of midvein, reticulate venation clearly defined in dry leaf. Figs axillary on leafy branchlets, paired, red or yellow when mature, ellipsoid-ovoid, 1.7-2.8 cm, sometimes pubescent when very young, glabrous when mature, apical pore navel-like, convex, sessile; involucre bracts hoodlike, covering young fig, caducous, apex broadly obtuse, scar ringlike. Male, gall, and female flowers within same fig. Male flowers: scattered; calyx lobes 4, transparent, membranous; stamen 1. Gall flowers: sepals 4; style subapical, long. Female flowers: sessile; sepals 4; style elongated. Achenes tuberculate."

402	Allelopathic	
	Source(s)	Notes
	WRA Specialist. (2023). Personal Communication	Unknown. No evidence found

403	Parasitic	n
	Source(s)	Notes
	Wu, Z.Y., Raven, P.H. & Hong, D.Y. (eds.). (2003). Flora of China. Vol. 5 (Ulmaceae through Basellaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	"Trees, 25-30 m tall, d.b.h. 40-90 cm." [No evidence]

404	Unpalatable to grazing animals	
	Source(s)	Notes
	Mangara, J. L. I. (2018). Evaluation of the nutritive value of selected indigenous tree browses as feed for ruminant livestock in South Sudan. PhD Dissertation. Egerton University, Kenya	"Table 9. Indigenous browse forages predominantly fed on by Ruminant livestock in Central Equatoria State of the Republic of South Sudan" [Ficus altissima. Part utilized = Fruits; Animal species utilizing it = Goats]
	Vogel, E. R., Zulfa, A., Hardus, M., Wich, S. A., Dominy, N. J., & Taylor, A. B. (2014). Food mechanical properties, feeding ecology, and the mandibular morphology of wild orangutans. Journal of Human Evolution, 75, 110-124	[Parts of plants palatable to orangutans] "Appendix 1. Mean toughness (J m <sup>-2</sup> ) and Mean Young's Modulus (MPa) of species and items masticated by Pongo abelii at the Ketambe Research Station in Sumatra, Indonesia. Averages for each species/item are taken across all individual feeding bouts" [Ficus altissima reported to chew on bark, fruit pulp, and fruit husks]
	WRA Specialist. (2023). Personal Communication	Fruit edible to animals. Foliage may be palatable, as other Ficus species are also used for fodder

405	Toxic to animals	
	Source(s)	Notes



Qsn #	Question	Answer
	Plant Informer. (2023). <i>Ficus altissima</i> . <a href="https://plantinformer.com/ficus-altissima/">https://plantinformer.com/ficus-altissima/</a> . [Accessed 3 Mar 2023]	" <i>Ficus Altissima</i> Toxicity - The lofty fig tree is considered toxic to humans, cats, and dogs. The stems carry a milky white sap that can cause skin irritation and is toxic if ingested. Toxicity to Humans - All <i>Ficus</i> plants are considered somewhat toxic to humans if ingested, leading to a range of digestive issues, although it is unlikely to be fatal. Do not ingest this houseplant. Always use gloves when handling the council tree, as the milky sap may be irritating to the skin. Toxicity to Cats & Dogs - <i>Ficus Altissima</i> is considered toxic to animals and should never be ingested. Symptoms of ingesting the <i>Ficus Altissima</i> plant in cats and dogs include pawing at mouth, upset stomach, vomiting, and diarrhea. If you suspect that your pet has ingested the plant, contact your veterinarian or call animal poison control."
	Tropical Plants Database, Ken Fern. (2023). <i>Ficus altissima</i> . <a href="https://tropical.theferns.info/viewtropical.php?id=Ficus+altissima">https://tropical.theferns.info/viewtropical.php?id=Ficus+altissima</a> . [Accessed 4 Mar 2023]	"Known Hazards None known" [This contradicts other websites reporting toxicity]
	Plant Care Manual. (2023). <i>Ficus altissima</i> Care Guide. <a href="https://plantcaremanual.com/ficus-altissima/">https://plantcaremanual.com/ficus-altissima/</a> . [Accessed 3 Mar 2023]	"Toxicity - The <i>Ficus altissima</i> is non-toxic to humans. However, if ingested, it can cause gastrointestinal irritation. The sap found in the leaves can also irritate your skin, so wear protective gloves when handling or pruning this tree. The <i>Ficus Altissima</i> can be toxic for cats and dogs on the skin or when ingested. If your cat ingests any part of this plant, including the sap, it may become sick with symptoms such as vomiting, excess salivation, or lack of appetite. The plant may also cause dehydration when ingested."
	WRA Specialist. (2023). Personal Communication	Reports of toxicity are contradictory, and have not been corroborated in peer-reviewed literature.

406	Host for recognized pests and pathogens	
	Source(s)	Notes
	Li, X., Xie, M., Yang, H., Chen, H., Yan, J., Wang, Z., & Fan, S. (2015). Pathogen identification and biological characteristics of leaf blight of <i>Ficus altissima</i> . <i>Southwest China Journal of Agricultural Sciences</i> , 28(6), 2558-2562	"Abstract : One fungal strains causing Leaf blight of <i>Ficus altissima</i> were separated and identified, which was noted for CX0021D4. The morphological identification and ITS sequences systematical analysis of the Pathogen were used, and the cultivation characters of the fungi were further studied. The results showed that the fungal belonged to the species of <i>Fusarium proliferatum</i> . Glucose and beef extract was the best carbon and nitrogen source for the strain. 25-28°C and 28-30°C was the appropriate temperature for colony growth and spore germination respectively. The optimum pH value for conidiophores germination was 7.0-8.0. Illumination was beneficial for conidiophores germination of <i>Fusarium</i> strain. Photoperiod had little influence on mycelial growth. Chlorothalonil was the best fungicides in the test."

Qsn #	Question	Answer
	Plant Care Manual. (2023). <i>Ficus altissima</i> Care Guide. <a href="https://plantcaremanual.com/ficus-altissima/">https://plantcaremanual.com/ficus-altissima/</a> . [Accessed 3 Mar 2023]	"If your plant becomes infested with pests, be sure to take care of them immediately before they become an even bigger issue. You'll want to remove all affected leaves since pests are mostly found on the underside of leaves. If necessary, use commercially available organic sprays that will help protect your tree without causing damage. As far as diseases go, leaf drop is likely one of the most common problems you'll come across with the <i>Ficus altissima</i> , especially if it's growing indoors. This happens because the environment isn't natural for the plant, which causes stress on its systems, weakening it over time."
	Xia, G., Manawasinghe, I. S., Phillips, A. J., You, C., Jayawardena, R. S., Luo, M., & Hyde, K. D. (2022). <i>Lasiodiplodia fici</i> sp. nov., Causing Leaf Spot on <i>Ficus altissima</i> in China. <i>Pathogens</i> , 11(8), 840	[Impacts on other <i>Ficus</i> spp. unknown] "In this paper, a new <i>Lasiodiplodia</i> species is described from <i>Ficus altissima</i> in China. The fungus was shown to be pathogenic, causing leaf spots similar to the ones from which it was isolated. Correct species identification is important in plant pathology for early detection and development of management strategies [33]. Species delineation in <i>Botryosphaeriaceae</i> genera, such as <i>Lasiodiplodia</i> has been the subject of debate in recent years. Morphology and molecular phylogeny have become important criteria in this genus to resolve species [6]. In the phylogenetic analysis of this study, <i>L. fici</i> clusters together with <i>Lasiodiplodia iranensis</i> , <i>L. chiangraiensis</i> and <i>L. thailandica</i> . Together, these four species develop a distinct clade from other <i>Lasiodiplodia</i> species in the tree. Even though, within this cluster, these species developed independent lineages, their morphology and sequence data are very similar (Table 1). This clustering variation might be a result of the host specificity of species. <i>Lasiodiplodia iranensis</i> was introduced from <i>Salvadora persica</i> from Iran, and both <i>L. chiangraiensis</i> and <i>L. thailandica</i> were recorded from Thailand, while <i>L. thailandica</i> is from <i>Mangifera indica</i> , while <i>L. chiangraiensis</i> from dead wood. The new species from this study was found on <i>Ficus altissima</i> in China. Further studies are required to define the limits of species in <i>Lasiodiplodia</i> and to determine whether the four species in this clade are distinct or if they constitute variation within a single species."

407	Causes allergies or is otherwise toxic to humans	
	Source(s)	Notes
	Syamsuardi, S., Mukhtar, E., Nurainas, N., & Suwardi, A. B. (2022). Diversity and use of wild edible fruits in the Bukit Rimbang-Bukit Baling Wildlife Reserve, Kampar, Riau, Indonesia. <i>Biodiversitas</i> , 23(10): 5035-5042	"Table 3. List of wild edible fruits" [ <i>Ficus altissima</i> - Plant part edible = Fruit. The fruit is eaten raw]
	Quattrocchi, U. (2012). <i>CRC World Dictionary of Medicinal and Poisonous Plants: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology</i> . CRC Press, Boca Raton, FL	"Used in Ayurveda and Sidha" [No evidence, but medicinal uses suggest possibility that plant chemical could be toxic in certain situations]

Qsn #	Question	Answer
	Plant Care Manual. (2023). <i>Ficus altissima</i> Care Guide. <a href="https://plantcaremanual.com/ficus-altissima/">https://plantcaremanual.com/ficus-altissima/</a> . [Accessed 3 Mar 2023]	[Possibly mildly toxic or allergenic] "Toxicity - The <i>Ficus altissima</i> is non-toxic to humans. However, if ingested, it can cause gastrointestinal irritation. The sap found in the leaves can also irritate your skin, so wear protective gloves when handling or pruning this tree. The <i>Ficus Altissima</i> can be toxic for cats and dogs on the skin or when ingested. If your cat ingests any part of this plant, including the sap, it may become sick with symptoms such as vomiting, excess salivation, or lack of appetite. The plant may also cause dehydration when ingested."

408	Creates a fire hazard in natural ecosystems	n
	Source(s)	Notes
	Zheng, H., Wu, Y., Ding, J., Binion, D., Fu, W., & Reardon, R. (2004). <i>Invasive Plants of Asian Origin Established in the United States and Their Natural Enemies Volume 1</i> . USDA Forest Service, Morgantown, WV	" <i>Ficus altissima</i> occurs in mountains and plains at elevations of 1 00-2,000 m" [No evidence found of increased fire risk or occurrence in fire prone ecosystems either in native or introduced ranges]

409	Is a shade tolerant plant at some stage of its life cycle	y
	Source(s)	Notes
	Plantly. (2023). <i>Ficus Altissima</i> Plant Care. <a href="https://plantly.io/plant-care/ficus-altissima/">https://plantly.io/plant-care/ficus-altissima/</a> . [Accessed 4 Mar 2023]	"Exposure to Sunlight: Bright, indirect light"
	Chen, H., Cao, M., Baskin, J. M., & Baskin, C. C. (2013). Temperature regulates positively photoblastic seed germination in four ficus (Moraceae) tree species from contrasting habitats in a seasonal tropical rainforest. <i>American Journal of Botany</i> , 100(8), 1683-1687	" <i>Ficus altissima</i> and <i>F. auriculata</i> are shade-tolerant species, the former occurring in the canopy layer (Zhang and Cao, 1995; Zhu, 2006; Cao et al., 2008) and the latter as an understory treelet (Zhang and Cao, 1995; Cao et al., 2008)."
	Florgeous. (2022). How to Grow and Care for <i>Ficus Altissima</i> . updated June 24, 2022. <a href="https://florgeous.com/ficus-altissima-care/">https://florgeous.com/ficus-altissima-care/</a> . [Accessed 4 Mar 2023]	"Sun Exposure - Bright but indirect sunlight"
	Top Tropicals. (2023). <i>Ficus altissima</i> . <a href="https://toptropicals.com/catalog/uid/ficus_altissima.htm">https://toptropicals.com/catalog/uid/ficus_altissima.htm</a> . [Accessed 4 Mar 2023]	Semi-shade

Qsn #	Question	Answer
410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	y
	Source(s)	Notes
	Plantly. (2023). Ficus Altissima Plant Care. <a href="https://plantly.io/plant-care/ficus-altissima/">https://plantly.io/plant-care/ficus-altissima/</a> . [Accessed 4 Mar 2023]	"Ficus altissima maintenance is simplified because Ficus plants, in general, are not fussy about soil. Regular potting soil, such as "indoor potted plant soil" or "houseplant soil," will suffice. In either case, the plant thrives in fertile and well-draining soil. The former will aid in its expansion. And it will be kept alive by the latter. As a result, you'll require both."
	Florgeous. (2022). How to Grow and Care for Ficus Altissima. updated June 24, 2022. <a href="https://florgeous.com/ficus-altissima-care/">https://florgeous.com/ficus-altissima-care/</a> . [Accessed 4 Mar 2023]	"Special features Easily propagated, Grows in most soil types"

411	Climbing or smothering growth habit	y
	Source(s)	Notes
	City of North Miami. (2017). Prohibited Plants List. <a href="https://northmiamifl.gov/DocumentCenter/View/4725/Prohibit-Plants-List-PDF">https://northmiamifl.gov/DocumentCenter/View/4725/Prohibit-Plants-List-PDF</a> . [Accessed 4 Mar 2023]	"Ficus altissima is a massive, evergreen tree with a large, spreading crown; it can grow 30 meters or taller. The bole can be 40 -90cm in diameter, with low buttresses. The plant usually begins life as an epiphyte, growing in the branch of another tree; as it grows older it sends down aerial roots which, when they reach the ground quickly form roots and become much thicker and more vigorous. They supply nutrients to the fig, allowing it to grow faster than the host tree. The aerial roots gradually encircle the host tree, preventing its main trunk from expanding, whilst at the same time the foliage smothers the foliage of the host. Eventually the host dies, leaving the fig to carry on growing without competition."
	Randall, J.M. & Marinelli, J. (eds.) (1996). Invasive Plants: Weeds of the Global Garden. Brooklyn Botanic Garden, Brooklyn, NY	[When pollinators are present, capable of establishing in the canopy of other trees and potentially smothering or strangling them] "Banyan fig, like lofty and laurel figs, often grows as an epiphyte on a host tree. The figs' constricting roots, the shade they create and the competition for nutrients eventually kill their hosts."

412	Forms dense thickets	
	Source(s)	Notes

Qsn #	Question	Answer
	<p>Witt, A., Beale, T., &amp; Van Wilgen, B. W. (2018). An assessment of the distribution and potential ecological impacts of invasive alien plant species in eastern Africa. <i>Transactions of the Royal Society of South Africa</i>, 73(3), 217-236</p>	<p>[A number of species reported to form dense thickets, but no evidence provided <i>Ficus altissima</i>, which is reported as naturalized in this publication] for "With a few exceptions, comprehensive lists of alien plants that invade natural ecosystems are lacking in sub-Saharan Africa. Some available lists are either preliminary or localised, or focus on agricultural weeds. This study set out to compile a list of alien plant species that are invading natural ecosystems and rangelands in five countries in eastern Africa, and to map the distribution of the species that threaten ecosystem integrity and productivity. The location of all alien plant species seen during surveys between 2008 and 2016 was recorded using a hand-held GPS device, as well as their status in terms of either being present and/or naturalised, or invasive and spreading. Individual occurrence records were summarised at the scale of half degree grid cells (25 km × 55 km). The survey covered almost half (522) of the 1063 grid cells in Ethiopia, Kenya, Tanzania, Uganda and Rwanda. We recorded 164 invasive alien species in 110 genera and 47 families. We provide further information on the distribution and impacts of 30 species considered to have the greatest impacts in terms of transforming natural ecosystems, as well as on a further 21 species with limited distributions that could potentially become ecosystem transformers. Invasive alien plants are clearly a widespread and growing problem in eastern Africa, and capacity to manage them effectively remains a problem. A great deal of work needs to be done to raise awareness of the problem, and to identify appropriate responses that will be effective in resource-poor countries."</p>
	<p>Randall, J.M. &amp; Marinelli, J. (eds.) (1996). <i>Invasive Plants: Weeds of the Global Garden</i>. Brooklyn Botanic Garden, Brooklyn, NY</p>	<p>[Potentially, but no evidence at time of publication] "These figs grow to immense proportions and have the potential to compete heavily with native plants for sunlight, nutrients and space in natural forest communities."</p>

501	Aquatic	n
	Source(s)	Notes
	<p>Wu, Z.Y., Raven, P.H. &amp; Hong, D.Y. (eds.). (2003). <i>Flora of China</i>. Vol. 5 (Ulmaceae through Basellaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis</p>	<p>[Terrestrial tree] "Mountains, plains; 100-2000 m."</p>

502	Grass	n
	Source(s)	Notes
	<p>Wu, Z.Y., Raven, P.H. &amp; Hong, D.Y. (eds.). (2003). <i>Flora of China</i>. Vol. 5 (Ulmaceae through Basellaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis</p>	<p>Moraceae</p>

503	Nitrogen fixing woody plant	n
	Source(s)	Notes

Qsn #	Question	Answer
	Wu, Z.Y., Raven, P.H. & Hong, D.Y. (eds.). (2003). Flora of China. Vol. 5 (Ulmaceae through Basellaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	Moraceae
504	<b>Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)</b>	n
	<b>Source(s)</b>	<b>Notes</b>
	Wu, Z.Y., Raven, P.H. & Hong, D.Y. (eds.). (2003). Flora of China. Vol. 5 (Ulmaceae through Basellaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	"Trees, 25-30 m tall, d.b.h. 40-90 cm."
601	<b>Evidence of substantial reproductive failure in native habitat</b>	n
	<b>Source(s)</b>	<b>Notes</b>
	Wu, Z.Y., Raven, P.H. & Hong, D.Y. (eds.). (2003). Flora of China. Vol. 5 (Ulmaceae through Basellaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	"Mountains, plains; 100-2000 m. Guangdong, Guangxi, Hainan, Yunnan [Bhutan, India, Indonesia, Malaysia, Myanmar, Nepal, Philippines, Sikkim, Thailand, Vietnam]." [No evidence]
602	<b>Produces viable seed</b>	y
	<b>Source(s)</b>	<b>Notes</b>
	Chen, H., Cao, M., Baskin, J. M., & Baskin, C. C. (2013). Temperature regulates positively photoblastic seed germination in four ficus (Moraceae) tree species from contrasting habitats in a seasonal tropical rainforest. American Journal of Botany, 100(8), 1683-1687	"Premise of the Study: Differences in seed germination responses of trees in tropical forests to temperature and light quality may contribute to their coexistence. We investigated the effects of temperature and red: far- red light (R:FR ratio) on seed germination of two gap-demanding species ( <i>Ficus hispida</i> and <i>F. racemosa</i> ) and two shade-tolerant species ( <i>F. altissima</i> and <i>F. auriculata</i> ) in a tropical seasonal rainforest in southwest China. • Methods: A R:FR ratio gradient was created by filtering fluorescent light through polyester filters. Four temperature treatments were used to test the effect of temperature on seed germination of the four <i>Ficus</i> tree species across the R:FR gradient. • Key Results: Seeds of the four <i>Ficus</i> species were positively photoblastic. Seed germination of <i>F. hispida</i> and <i>F. racemosa</i> was not affected across the R:FR ratio gradient (0.25- 1.19) at 25/35°C, but it was inhibited under low R:FR at 22/23°C. By contrast, germination percentages of <i>F. altissima</i> and <i>F. auriculata</i> were not inhibited along the entire light gradient in all temperature treatments. • Conclusions: Differences in germination responses of <i>Ficus</i> species might contribute to differences in their habitat preferences. The inhibitory effect of understory temperatures in the forest might be a new mechanism that prevents positively photoblastic seeds of the gap-demanding species such as <i>F. hispida</i> and <i>F. racemosa</i> from germinating in the understory and in small canopy gaps." "Seed germination of <i>Ficus altissima</i> -Germination of <i>F altissima</i> seeds was 80-100% under all R:FR ratios and temperatures (Fig. 1C)."

Qsn #	Question	Answer
	Frank, J. H., & McCoy, E. D. (1995). Introduction to insect behavioral ecology: The good, the bad, and the beautiful: Non-indigenous species in Florida. Invasive adventive insects and other organisms in Florida. Florida Entomologist, 78(1): 1-15	[Yes, where pollinator is present] "Over 60 exotic Ficus (fig) species have been introduced into southern Florida as ornamentals. It was thought that none of these species would set viable seed because each is pollinated only by its own species of agaonid wasp, and the wasps were not introduced. But, <i>Ficus altissima</i> Blume, <i>F. benghalensis</i> L., and <i>F. microcarpa</i> L., are now weeds because they are pollinated routinely by immigrant agaonid wasps. Fertile seeds of these enormous trees now germinate in Dade and Monroe counties. Seedlings sprout in public and private lands and on structures, such as highway bridges, where they pose a maintenance problem, because they can destroy the structures as they grow. They are invasive on public lands. There is evidence that the pollinating wasps of <i>Ficus microcarpa</i> arrived in seeds brought from Hawaii, and there is concern that fruits (and thus seeds) of the other two fig species are being spread by introduced parrots (Nadel et al. 1992)."

603	Hybridizes naturally	n
	Source(s)	Notes
	Nadel, H., Frank, J. H., & Knight Jr, R. J. (1992). Escapees and accomplices: the naturalization of exotic <i>Ficus</i> and their associated faunas in Florida. Florida Entomologist, 75 (1): 29-38	[No evidence found, but hybrids suspected in genus] "It is unlikely that locally available pollinators were responsible for the observed sporadic seeding events in Florida. The "wrong" agaonid is known occasionally to invade syconia, especially when two trees of different species are growing nearby (Wiebes 1966). There are examples from Florida: <i>Parapristina verticillata</i> , the pollinator of <i>F. microcarpa</i> , has been found in one of the native figs, <i>F. aurea</i> ; the pollinator of <i>F. aurea</i> , <i>Pegoscapus jimenezi</i> (Grandi), has, conversely, been found intruding into the syconia of two exotic figs, <i>F. septica</i> and <i>F. religiosa</i> , and the pollinator of the native <i>F. citrifolia</i> , <i>Pegoscapus assuetus</i> (Grandi), has been found in the exotic <i>F. perforata</i> . Seed set was not studied in these instances, however, and none of these intrusions has resulted in reproduction, except for a possible case of hybridization by <i>F. aurea</i> and <i>F. religiosa</i> , noticed by Ramirez (personal communication). He saw apparently hybrid seedlings growing at the USDA station in Miami in 1987. We suspect that hybridization occurs also between the two native species, because during our examination of several hundred trees between 1988 and the present, we noted three remarkable trees with intermediate characters. On the whole, however, intrusion of wrong pollinators does not appear to be an important component of reproduction by figs. Intrusion is a relatively rare phenomenon, and hybridization is even rarer (Ramirez 1970), probably because of further restrictions by interspecific incompatibilities."

604	Self-compatible or apomictic	n
	Source(s)	Notes



Qsn #	Question	Answer
	Peng, Y. Q., Compton, S. G., & Yang, D. R. (2010). The reproductive success of <i>Ficus altissima</i> and its pollinator in a strongly seasonal environment: Xishuangbanna, Southwestern China. <i>Plant Ecology</i> , 209, 227-236	[Self-pollination prevented by producing syconia in synchronous crops] "Despite its northerly location, the fruiting phenology of <i>F. altissima</i> at XTBG is similar to that described for most other monoecious <i>Ficus</i> species, in that individual trees generally produced syconia in synchronous crops (preventing self-pollination), and that there was asynchrony between trees in the timing of syconium production (Bronstein et al. 1990; Compton 1993; Lin et al. 2008)."

605	Requires specialist pollinators	y
	Source(s)	Notes
	Peng, Y. Q., Compton, S. G., & Yang, D. R. (2010). The reproductive success of <i>Ficus altissima</i> and its pollinator in a strongly seasonal environment: Xishuangbanna, Southwestern China. <i>Plant Ecology</i> , 209, 227-236	" <i>Ficus altissima</i> is actively pollinated by the agaonid <i>Euptistina altissima</i> , but also supports an undescribed congener ( <i>Eupristina</i> sp.) which has reduced pollen pockets and fails to pollinate (Peng et al. 2008). <i>Eupristina</i> sp. can develop independently of <i>E. altissima</i> , and can be the only agaonid in a syconium, or even a whole crop of syconia."
	McKey, D. (1989). Population biology of figs: applications for conservation. <i>Experientia</i> , 45, 661-673	" <i>Ficus altissima</i> is pollinated in Florida by a <i>Eupristina</i> sp. the identity of which is not yet certain 54, but which may be the species-specific pollinator of this species, <i>E. altissima</i> (J. T. Wiebes, pers. comm.)." ... "How the pollinators of <i>F. benghalensis</i> and <i>E. altissima</i> reached Florida is also unknown. Seedlings of the former were first noticed in 1986 (R. Knight, pers. comm.), those of the latter species in 1987 (D. McKey, unpublished). No non-pollinating wasp associates of these species have been noted in Florida."
	Spear, M. J., Walsh, J. R., Ricciardi, A., & Zanden, M. (2021). The invasion ecology of sleeper populations: prevalence, persistence, and abrupt shifts. <i>Bioscience</i> , 71 (4), 357-369	"The lack of a mutualist in the introduced range can limit the growth or spread of a nonnative species (Richardson et al. 2000, Mooney and Cleland 2001, Low 2002, Grice and Ainsworth 2003), but reuniting a mutualist pair could trigger the proliferation of both species. For example, nonnative fig trees ( <i>Ficus altissima</i> , <i>Ficus benghalensis</i> , and <i>Ficus microcarpa</i> ) established in Florida (United States) lacked their coevolved pollinator and were ignored by native fig wasps. Decades later, the introduction of the natural partner wasps allowed the low-abundance fig trees to reproduce and spread, producing impacts on native trees (Nadel et al. 1992, Richardson et al. 2000)."

606	Reproduction by vegetative fragmentation	n
	Source(s)	Notes
	Tropical Plants Database, Ken Fern. (2023). <i>Ficus altissima</i> . <a href="https://tropical.theferns.info/viewtropical.php?id=Ficus+altissima">https://tropical.theferns.info/viewtropical.php?id=Ficus+altissima</a> . [Accessed 4 Mar 2023]	"Propagation Seed -"
	Randall, J.M. & Marinelli, J. (eds.) (1996). <i>Invasive Plants: Weeds of the Global Garden</i> . Brooklyn Botanic Garden, Brooklyn, NY	"Seeds of these species tend to germinate in the crotches of other trees, growing as epiphytes on their host tree until aerial roots reach the ground. Like the Florida native strangler fig, <i>Ficus aurea</i> , the combination of these figs' constricting roots, shade and competition for nutrients usually kills the host tree."

607	Minimum generative time (years)	



Qsn #	Question	Answer
	<b>Source(s)</b>	<b>Notes</b>
	Tropical Plants Database, Ken Fern. (2023). <i>Ficus altissima</i> . <a href="https://tropical.theferns.info/viewtropical.php?id=Ficus+altissima">https://tropical.theferns.info/viewtropical.php?id=Ficus+altissima</a> . [Accessed 4 Mar 2023]	"Growth Rate Fast"
	Plantflix. (2023). <i>Ficus Altissima</i> 'Lofty Fig' Seeds. <a href="https://www.plantflix.com/products/ficus-altissima-lofty-fig-seeds">https://www.plantflix.com/products/ficus-altissima-lofty-fig-seeds</a> . [Accessed 4 Mar 2023]	"time to maturity 6 months - 1 year" [Unclear if this site is referring to reproductive maturity from seed]
	Palmer, G.D. (2018). When Does a Fig Tree Bear Fruit? Updated December 15, 2018. <a href="https://homeguides.sfgate.com/how-clean-showerhead-13771618.html">https://homeguides.sfgate.com/how-clean-showerhead-13771618.html</a> . [Accessed 4 Mar 2023]	{Description for other <i>Ficus</i> species} "Fruiting fig trees have a long juvenile period compared to other fruit trees. Most figs will not produce a crop for the first four to five years, notes Rutgers University."

701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	n
	<b>Source(s)</b>	<b>Notes</b>
	Peng, Y. Q., Compton, S. G., & Yang, D. R. (2010). The reproductive success of <i>Ficus altissima</i> and its pollinator in a strongly seasonal environment: Xishuangbanna, Southwestern China. <i>Plant Ecology</i> , 209, 227-236	[Bird-dispersed, when plants are effectively pollinated] "The syconia are axillary and paired (rarely solitary). At the time, they release their fig wasps they are yellow in colour and average 14.0 mm in diameter (SE = 0.99, n = 679), after which they soften and turn red/orange to attract fruit-feeders (mainly birds)."

702	Propagules dispersed intentionally by people	y
	<b>Source(s)</b>	<b>Notes</b>
	Wong, M. (2007). <i>Ficus</i> Plants for Hawai'i Landscapes. Ornamentals and Flowers OF-34. College of Tropical Agriculture and Human Resources, Honolulu, HI	" <i>Ficus altissima</i> (council tree, Fig. 5) is similar to Indian banyan and can be found close to McCoy pavilion at Ala Moana Park on O'ahu."
	Zheng, H., Wu, Y., Ding, J., Binion, D., Fu, W., & Reardon, R. (2004). <i>Invasive Plants of Asian Origin Established in the United States and Their Natural Enemies Volume 1</i> . USDA Forest Service, Morgantown, WV	" <i>Ficus altissima</i> is cultivated as an ornamental and as a host for <i>Laccifer lacca</i> ."
	Imada, C.T., Staples, G.W. & Herbst, D.R. (2005). Annotated Checklist of Cultivated Plants of Hawai'i. <a href="http://www2.bishopmuseum.org/HBS/botany/cultivatedplants/">http://www2.bishopmuseum.org/HBS/botany/cultivatedplants/</a> . [Accessed 2 Mar 2023]	"First Collected: 1926 Locations: Harold L. Lyon Arboretum (Confirmed)"

703	Propagules likely to disperse as a produce contaminant	n
	<b>Source(s)</b>	<b>Notes</b>
	Randall, R.P. (2017). <i>A Global Compendium of Weeds</i> . 3rd Edition. Perth, Western Australia. R.P. Randall	"Major Pathway/s: Herbal, Ornamental"

Qsn #	Question	Answer
704	<b>Propagules adapted to wind dispersal</b>	<b>n</b>
	<b>Source(s)</b>	<b>Notes</b>
	Chen, H., Zhang, Y., Peng, Y., & Corlett, R. T. (2018). Latitudinal effects on phenology near the northern limit of figs in China. <i>Scientific Reports</i> , 8(1), 1-11	"F. altissima is bird-dispersed and fruiting trees appear to be highly attractive to frugivorous species"

705	<b>Propagules water dispersed</b>	<b>n</b>
	<b>Source(s)</b>	<b>Notes</b>
	Chen, H., Zhang, Y., Peng, Y., & Corlett, R. T. (2018). Latitudinal effects on phenology near the northern limit of figs in China. <i>Scientific Reports</i> , 8(1), 1-11	"F. altissima is bird-dispersed and fruiting trees appear to be highly attractive to frugivorous species" [Possibly in riparian habitats, but otherwise not adapted for water dispersal]

706	<b>Propagules bird dispersed</b>	<b>y</b>
	<b>Source(s)</b>	<b>Notes</b>
	Randall, J.M. & Marinelli, J. (eds.) (1996). <i>Invasive Plants: Weeds of the Global Garden</i> . Brooklyn Botanic Garden, Brooklyn, NY	"The fruits are eaten and distributed by birds, and all three species have invaded pine rockland and hardwood forest ecosystems."
	Peng, Y. Q., Compton, S. G., & Yang, D. R. (2010). The reproductive success of <i>Ficus altissima</i> and its pollinator in a strongly seasonal environment: Xishuangbanna, Southwestern China. <i>Plant Ecology</i> , 209, 227-236	"The syconia are axillary and paired (rarely solitary). At the time, they release their fig wasps they are yellow in colour and average 14.0 mm in diameter (SE = 0.99, n = 679), after which they soften and turn red/orange to attract fruit-feeders (mainly birds). Large crops can number many thousands of syconia."

707	<b>Propagules dispersed by other animals (externally)</b>	<b>n</b>
	<b>Source(s)</b>	<b>Notes</b>
	Peng, Y. Q., Compton, S. G., & Yang, D. R. (2010). The reproductive success of <i>Ficus altissima</i> and its pollinator in a strongly seasonal environment: Xishuangbanna, Southwestern China. <i>Plant Ecology</i> , 209, 227-236	"The syconia are axillary and paired (rarely solitary). At the time, they release their fig wasps they are yellow in colour and average 14.0 mm in diameter (SE = 0.99, n = 679), after which they soften and turn red/orange to attract fruit-feeders (mainly birds)." [Ingested and dispersed internally]

708	<b>Propagules survive passage through the gut</b>	<b>y</b>
	<b>Source(s)</b>	<b>Notes</b>
	Sinu, P. A., Unni, A. P., & Jose, T. (2020). Biotic Seed Dispersal Mechanisms of Tropical Rain Forests—Bats, Fishes, and Migratory Birds. <i>Reproductive Ecology of Flowering Plants: Patterns and Processes</i> , 299-334. Springer Nature, Singapore	"Table 14.1 Frugivores/potential dispersal agents of seeds of plants reported from India" [ <i>Ficus altissima</i> - Frugivore/dispersal agent = Bird, mammals]
	Randall, J.M. & Marinelli, J. (eds.) (1996). <i>Invasive Plants: Weeds of the Global Garden</i> . Brooklyn Botanic Garden, Brooklyn, NY	"The fruits are eaten and distributed by birds, and all three species have invaded pine rockland and hardwood forest ecosystems."
	Peng, Y. Q., Compton, S. G., & Yang, D. R. (2010). The reproductive success of <i>Ficus altissima</i> and its pollinator in a strongly seasonal environment: Xishuangbanna, Southwestern China. <i>Plant Ecology</i> , 209, 227-236	"The syconia are axillary and paired (rarely solitary). At the time, they release their fig wasps they are yellow in colour and average 14.0 mm in diameter (SE = 0.99, n = 679), after which they soften and turn red/orange to attract fruit-feeders (mainly birds)."

Qsn #	Question	Answer
	Adyn, M. F., Sibarani, M. C., Utoyo, L. U., Surya, R. A., & Sedayu, A. (2022). Role of siamang ( <i>Symphalangus syndactylus</i> ) as seed dispersal agent in a Sumatran lowland tropical forest. <i>Biodiversitas Journal of Biological Diversity</i> , 23(4): 2101-2110	[Dispersed by gibbons] "Siamang group G consumed 16 fruiting species, but only 13 seeds species were found in feces ( <i>C. odorata</i> , <i>D. dao</i> , <i>E. ribes</i> , <i>F. albipila</i> , <i>F. altissima</i> , <i>F. benjamina</i> , <i>G. parvifolia</i> , <i>L. indica</i> , <i>N. cadamba</i> , <i>P. acuminata</i> , <i>S. koetjape</i> , <i>Vitis sp.</i> , and <i>X. noronhianum</i> )."

801	Prolific seed production (>1000/m2)	y
	Source(s)	Notes
	Peng, Y. Q., Compton, S. G., & Yang, D. R. (2010). The reproductive success of <i>Ficus altissima</i> and its pollinator in a strongly seasonal environment: Xishuangbanna, Southwestern China. <i>Plant Ecology</i> , 209, 227-236	"The syconia are axillary and paired (rarely solitary). At the time, they release their fig wasps they are yellow in colour and average 14.0 mm in diameter (SE = 0.99, n = 679), after which they soften and turn red/orange to attract fruit-feeders (mainly birds). Large crops can number many thousands of syconia."

802	Evidence that a persistent propagule bank is formed (>1 yr)	
	Source(s)	Notes
	SER, INSR, RBGK, (2023). Seed Information Database (SID). <a href="https://ser-sid.org/">https://ser-sid.org/</a> . [Accessed 4 Mar 2023]	No storage information

803	Well controlled by herbicides	y
	Source(s)	Notes
	Randall, J.M. & Marinelli, J. (eds.) (1996). <i>Invasive Plants: Weeds of the Global Garden</i> . Brooklyn Botanic Garden, Brooklyn, NY	"Fig trees are particularly sensitive to triclopyr herbicides as a basal or cut-stump treatment Trees found growing on concrete or rock structures should be treated with herbicide while young to avoid costly structural damage. Use extreme caution when applying herbicide to figs growing as epiphytes to ensure that the poison does not contact the host tree. When exotic figs germinate high in the branches of large trees in natural forest communities, it may be extraordinarily difficult to get close enough to the fig to treat it."
	Langeland, K.A.& Stocker, R.K. (2001). <i>Control of Non-native Plants in Natural Areas of Florida</i> . SP 242. Institute of Food & Agricultural Sciences, University of Florida, Gainesville, FL	[ <i>Ficus altissima</i> <i>Ficus benghalensis</i> <i>Ficus microcarpa</i> ] "Treatment: Basal bark application of 10% Garlon 4 is effective. Comments: All three species invade the interior and edges of hammocks; often found growing as epiphytes (on trees) or epiliths (on rocks or stone structures); exercise care when treating epiphytic figs to ensure that herbicide does not come in contact with the host tree; members of this genus are very sensitive to Garlon 4; extreme care must be taken when treating any vegetation near the native strangler fig and shortleaf fig; spray that contacts surface roots can kill a large tree."

804	Tolerates, or benefits from, mutilation, cultivation, or fire	y
	Source(s)	Notes
	Randall, J.M. & Marinelli, J. (eds.) (1996). <i>Invasive Plants: Weeds of the Global Garden</i> . Brooklyn Botanic Garden, Brooklyn, NY	"Fig trees are particularly sensitive to triclopyr herbicides as a basal or cut-stump treatment" [Implies that cutting without herbicide application will result in regrowth]

Qsn #	Question	Answer
	Plantly. (2023). Ficus Altissima Plant Care. <a href="https://plantly.io/plant-care/ficus-altissima/">https://plantly.io/plant-care/ficus-altissima/</a> . [Accessed 4 Mar 2023]	"Garden and potted Ficus need to be pruned regularly; otherwise, the plants will just grow too huge. Most are fast-growing and can grow to be pretty tall, so keep them trimmed to encourage branching. Once you've acquired the ideal shape, you'll need to cut it regularly to keep it looking good."

805	Effective natural enemies present locally (e.g. introduced biocontrol agents)	
	Source(s)	Notes
	Bhandari, B. (2015). Insect Pests of Common Ficus Species in Hawaii: Hosts and Management. MSc Thesis. University of Hawaii at Manoa, Honolulu	[Pests of Ficus may impact Ficus altissima] "Ficus species are subject to attack by many insect pests. The common insect pests of ficus trees in Hawai'i are Chinese banyan leaf gall wasp, <i>Josephiella microcarpa</i> , Chinese banyan stem gall wasp, <i>Josephiella</i> spp., (Hymenoptera: Chalcidoidea: Agaonidae), lobate lac scale, <i>Paratachardina pseudolobata</i> Kundo and Gullan (Hemiptera: Coccoidea: Kerriidae), ficus whitefly, <i>Singhiella simplex</i> (Hemiptera: Aleyrodidae), cuban laurel thrips, <i>Gynaikothrips ficorum</i> Marchal (Insecta: Thysanoptera: Phlaeothripidae), and weeping fig thrips, <i>Gynaikothrips uzeli</i> Zimmerman (Insecta: Thysanoptera: Phlaeothripidae). The gall inducing wasps are host specific to <i>F. microcarpa</i> , whereas the lobate lac scale has a wide host range including native and endangered plant species of Hawai'i. The ficus whiteflies attack many species of <i>Ficus</i> but it is most commonly found infesting <i>F. benjamina</i> (Mannion et al., 2008; Avery et al., 2011). The cuban laurel thrips and weeping fig thrips usually attack <i>F. microcarpa</i> and <i>F. benjamina</i> respectively (Denmark et al., 2005). Although still can be found occasionally on ficus trees in Hawai'i, ficus whitefly and thrips are no longer considered major pests of ficus in Hawai'i. For example, the predator <i>Montandoniola moraguesi</i> Puton (Hemiptera: Anthocoridae) was introduced to Hawai'i in 1964, and it was successful to control cuban laurel thrips (Funasaki, 1966; Dobbs and Boyd, 2006; Held and Boyd, 2008)."
	WRA Specialist. (2023). Personal Communication	Unknown

**Summary of Risk Traits:**

*Ficus altissima* is pollinated by a species of agaonid wasp. With the introduction of pollinator wasps in Florida, this, and other species of *Ficus*, began to establish and spread, damaging walls, bridges, and other stone or concrete structures. It is also capable of establishing in and potentially strangling other trees, and could become a landscaping or environmental weed.

**High Risk / Undesirable Traits**

- Broad elevation range and potential environmental versatility
- Reported to be naturalized in Florida, Tanzania and perhaps elsewhere (but no evidence in the Hawaiian Islands to date)
- In Florida, a damaging weed of overpasses, bridges, walls, buildings and other concrete or stone structures
- A potential landscaping and environmental weed that can establish in and smother other landscaping and ornamental trees.
- Other *Ficus* species are invasive weeds.
- Sap potentially toxic or allergenic to animals and people (unconfirmed)
- Shade tolerant
- Tolerates many soil types.
- Hemiepiphytic, and potentially strangling or smothering growth habit
- Reproduces by seeds when pollinator (agaonid wasp - *Euptistina altissima*) is present.
- Seeds dispersed by birds, other frugivorous animals, and through intentional cultivation.
- Prolific seed production (when pollinator is present)
- Tolerates heavy grazing, mowing and fire.
- Tolerates pruning, and cutting and will regrow without herbicide application.

**Low Risk Traits**

- Unarmed (no spines, thorns, or burrs)
- Fruit, and foliage, may be palatable to browsing animals.
- Non-seeding in the absence of specialized pollinator wasp
- Individual trees generally produce syconia in synchronous crops (preventing self-pollination)
- Herbicides may provide effective control.