

Taxon: <i>Tabebuia heterophylla</i> (DC.) Britton	Family: Bignoniaceae
Common Name(s): pink manjack pink tabebuia pink tecoma pink trumpet tree white cedar whitewood	Synonym(s): <i>Bignonia leucoxylon</i> L. <i>Bignonia pentaphylla</i> L. <i>Raputia heterophylla</i> DC. <i>Tabebuia capotei</i> Borhidi <i>Tabebuia lucida</i> Britton <i>Tabebuia pentaphylla</i> Hemsl. <i>Tabebuia riparia</i> (Raf.) Sandwith <i>Tabebuia triphylla</i> DC. <i>Tecoma leucoxylon</i> (L.) Mart. ex DC. <i>Tecoma pentaphylla</i> Juss. ex DC.

Assessor: Chuck Chimera	Status: Assessor Approved	End Date: 27 Dec 2019
WRA Score: 5.0	Designation: EVALUATE	Rating: Evaluate

Keywords: Tropical Tree, Naturalized, Pioneer, Shade Intolerant, Wind-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		

Qsn #	Question	Answer Option	Answer
403	Parasitic	y=1, n=0	n
404	Unpalatable to grazing animals	y=1, n=-1	n
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		
409	Is a shade tolerant plant at some stage of its life cycle	y=1, n=0	n
410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	y=1, n=0	y
411	Climbing or smothering growth habit	y=1, n=0	n
412	Forms dense thickets	y=1, n=0	y
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		
604	Self-compatible or apomictic	y=1, n=-1	n
605	Requires specialist pollinators	y=-1, n=0	n
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	y
705	Propagules water dispersed		
706	Propagules bird dispersed	y=1, n=-1	n
707	Propagules dispersed by other animals (externally)	y=1, n=-1	n
708	Propagules survive passage through the gut	y=1, n=-1	n
801	Prolific seed production (>1000/m2)		
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		

Qsn #	Question	Answer Option	Answer
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
	Gentry, A.H. 1992. Bignoniaceae: Part II (Tribe Tecomeae). Flora Neotropica 25(2): 1-370	[No evidence] "Extremely widespread and often very common throughout the Antilles; from sea level to 1000 m. Occurring on many different substrates, including limestone, serpentine, beaches, and palm savannas." ... "Uses. Widely cultivated as an ornamental; also used for timber."

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 23 Dec 2019]	"Native Southern America CARIBBEAN: Anguilla, Antigua and Barbuda, Bahamas, Cayman Islands, Cuba, Dominica, Dominican Republic, Grenada, Guadeloupe, Haiti, Jamaica, Martinique, Montserrat, Netherlands Antilles, [St. Eustatius] St. Kitts and Nevis, [Saint Kitts] St. Lucia, St. Vincent and Grenadines, Trinidad and Tobago, [Tobago] United States, [Puerto Rico, Virgin Islands, U.S.] Virgin Islands (British) [Virgin Gorda] CENTRAL AMERICA: Honduras (Swan Islands)"
	Burns, R.M. & Honkala, B.H. 1990. Silvics of North America. Volume 2: Hardwoods. Agriculture Handbook 654. U.S. Department of Agriculture, Forest Service, Washington, DC.	"Roble is native to Puerto Rico and widely distributed through the West Indies from Hispaniola to Grenada and Barbados. It is also naturalized in Bermuda and planted in southern Florida (16)."

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 23 Dec 2019]	

203	Broad climate suitability (environmental versatility)	y
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Qsn #	Question	Answer
	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	"Although tolerant of a wide variety of environmental conditions, pink tecoma blooms best in hot, dry locations."
	Gentry, A.H. 1992. Bignoniaceae: Part II (Tribe Tecomeae). Flora Neotropica 25(2): 1-370	"Extremely widespread and often very common throughout the Antilles; from sea level to 1000 m. Occurring on many different substrates, including limestone, serpentine, beaches, and palm savannas."
	Burns, R.M. & Honkala, B.H. 1990. Silvics of North America. Volume 2: Hardwoods. Agriculture Handbook 654. U.S. Department of Agriculture, Forest Service, Washington, DC.	"In Puerto Rico, roble is found principally in the Subtropical Dry, Subtropical Moist, and Subtropical Wet life zones (12,15) where the annual rainfall varies from about 850 to 2500 mm (33 to 98 in). Temperature ranges from a mean minimum in January of 16° C (61° F) to a mean maximum of 31° C (88° F) in August (5). Potential evapotranspiration over the same regions varies between 1400 and 1900 mm (55 and 75 in) annually, with the lowest measurements in the mountainous interior. Throughout the West Indies, roble is found predominately in areas where the annual rainfall varies between about 1000 and 2500 mm (39 and 98 in) (table 1). All sites are frost free."
	Gilman, E.F., Watson, D.G., Klein, R.W., Koeser, A.K., Hilbert, D.R. and McLean, D.C. (2018). <i>Tabebuia heterophylla</i> : Pink Trumpet Tree. Fact Sheet ENH-774. Revised. Institute of Food and Agricultural Sciences, University of Florida, Gainesville FL. http://hort.ifas.ufl.edu/ . [Accessed 26 Dec 2019]	"USDA hardiness zones: 10A through 11"
	Cordero, R. A., & Molano-Flores, B. (1996). Germination of <i>Tabebuia heterophylla</i> seeds (Bignoniaceae) from a wet and dry forest of Puerto Rico. <i>Revista de Biología Tropical</i> , 44(3)/45(1): 79-86	[Able to grow in wet and dry forests] "Abstract: Seed germination response of the Puerto Rican wet and dry forest populations of <i>Tabebuia heterophylla</i> trees was tested using a gradient of osmotic potentials from 0 to -1.5 MPa. Morphological comparisons were also made from adult specimens. Dry forest trees showed smaller leaves, fruits, and seeds, and greater specific leaf weight. Dry forest fruits produced smaller seeds than wet forest fruits when similar small fruits were compared. Germination percentage was strongly reduced as osmotic potential decreased, and was significant in both seed origins. This reduction was greater on seeds from the wet forest population. Days for germination showed the same response but this was less evident in the seeds from the dry forest. Osmotic potential lower than -0.9 MPa. completely arrested seed germination in both populations. No significant difference in final germination percentage and days to germinate exist at high osmotic potentials in both seed populations. This physiological capacity along with the morphological modifications indicates why this species can maintain viable populations in the contrasting environmental conditions of the dry and moist forest habitats."

204	Native or naturalized in regions with tropical or subtropical climates	y
	Source(s)	Notes

Qsn #	Question	Answer
	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 23 Dec 2019]	"Native Southern America CARIBBEAN: Anguilla, Antigua and Barbuda, Bahamas, Cayman Islands, Cuba, Dominica, Dominican Republic, Grenada, Guadeloupe, Haiti, Jamaica, Martinique, Montserrat, Netherlands Antilles, [St. Eustatius] St. Kitts and Nevis, [Saint Kitts] St. Lucia, St. Vincent and Grenadines, Trinidad and Tobago, [Tobago] United States, [Puerto Rico, Virgin Islands, U.S.] Virgin Islands (British) [Virgin Gorda] CENTRAL AMERICA: Honduras (Swan Islands)"
	Burns, R.M. & Honkala, B.H. 1990. Silvics of North America. Volume 2: Hardwoods. Agriculture Handbook 654. U.S. Department of Agriculture, Forest Service, Washington, DC.	"Roble is native to Puerto Rico and widely distributed through the West Indies from Hispaniola to Grenada and Barbados. It is also naturalized in Bermuda and planted in southern Florida (16)."

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	"It is cultivated throughout much of the world's tropics for its showy, pinkish flowers." ... "It has been planted extensively as a street and shade tree throughout the Islands and is an integral part of the landscape in many residential neighborhoods, where rows of pink tecoma line the streets."
	Burns, R.M. & Honkala, B.H. 1990. Silvics of North America. Volume 2: Hardwoods. Agriculture Handbook 654. U.S. Department of Agriculture, Forest Service, Washington, DC.	"Roble is native to Puerto Rico and widely distributed through the West Indies from Hispaniola to Grenada and Barbados. It is also naturalized in Bermuda and planted in southern Florida (16)."
	Gentry, A.H. 1992. Bignoniaceae: Part II (Tribe Tecomeae). Flora Neotropica 25(2): 1-370	"Widely cultivated as an ornamental; also used for timber."

301	Naturalized beyond native range	y
	Source(s)	Notes
	Burns, R.M. & Honkala, B.H. 1990. Silvics of North America. Volume 2: Hardwoods. Agriculture Handbook 654. U.S. Department of Agriculture, Forest Service, Washington, DC.	"It is also naturalized in Bermuda and planted in southern Florida (16)."
	Parker, J.L. & Parsons, B. 2012. New Plant Records from the Big Island for 2010–2011. Bishop Museum Occasional Papers 113: 65-74	"Pink trumpet tree is widely cultivated around the island and has previously been recorded as naturalized from Maui and O'ahu (oppenheimer 2003: 8; 2004: 10). at this location, there are numerous, mature, naturalized trees spread around Kīlau Gulch. Material examined. HAWAII: north Hilo Distr. Hwy 19, Laupāhoehoe, 2211534n 265485e. Pink-flowered trees naturalizing in Kīlau Gulch near cultivated specimens. Flowers visited by bees, 23 sep 2010, J. Parker & R. Parsons BIED139."

Qsn #	Question	Answer
	Oppenheimer, H. L. 2004. New Hawaiian plant records for 2003. Bishop Museum Occasional Papers. 79: 8-20	" <i>Tabebuia heterophylla</i> (DC.) Britton New island record First documented as growing outside of cultivation on Maui (Oppenheimer, 2003: 8), pink trumpet tree is also sparingly naturalized on O'ahu in the Ko'olau Range. As this is a widely planted ornamental species with wind-dispersed seeds, it will probably spread beyond plantings on all the islands where it is cultivated. Material examined: O'AHU: Honolulu Distr, UH Mānoa, seedling plants from beneath mature tree, 18 Mar 1991, F. Rauch s.n. (BISH 599682); Palolo Valley, near rim at Wāhila Ridge, 396 m, on bare, red cinder slopes, all size classes observed, 1 Dec 2002, Oppenheimer H120202 (BISH)."
	Oppenheimer, Hank L. 2003. New plant records from Maui and Hawai'i Counties. Bishop Museum Occasional Papers. 73: 3-30	"This species was also noted to be sparingly naturalized around Hilo, Hawai'i; however, no specimens were collected. Material examined: MAUI: West Maui, Lahaina Dist, Honokahua, 67 m, in abandoned pineapple field, 13 Apr 2001, Oppenheimer H40113; 'Alaeloa, 15 m, volunteer seedlings downwind of cultivated tree, 30 Apr 2001, Oppenheimer H40152."
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	[Naturalized and/or weedy in a number of locations] "United States of America-CE- 233, Federated States of Micronesia-W- 107, Marshall Islands-W-429, United States of America-CE-617, Caribbean-N-707, United States of America-W-179, Pacific- E-621, Global-NI-714, United States of America-N-839, Dominican Republic-I- 877, Caribbean-NI-1201, United States of America-N-1292, La Reunion-U-1321, Global-W-1324, Global-I-1404, French Polynesia-N-1514, American Samoa-I- 1544, Cook Islands-I-1544, Federated States of Micronesia-I-1544, Fiji-I-1544, French Polynesia-I-1544, Guam-I-1544, Marshall Islands-I-1544, United States of America-I-1544, Palau-I-1544, Singapore- I-1544, Solomon Islands-I-1544, Caribbean Netherlands-NI-1012, Global-CD-1611, -I-, United States of America-N-2092, Anguilla-W-1977, Aruba-W-1977, Bahamas-W-1977, Bonaire-W-1977, Cook Islands-W-1977, Dominica-W-1977, Dominican Republic-W-1977, Fiji-W- 1977, Grenada-W-1977, Haiti-W-1977, Marshall Islands-W-1977, Mauritius-W- 1977, Micronesia (Federated States of)-W- 1977, Palau-W-1977, Samoa-W-1977, Senegal-W-1977, Seychelles-W-1977, Solomon Islands-W-1977, Zambia-W- 1977."

302	Garden/amenity/disturbance weed	y
	Source(s)	Notes
	Whistler, W.A. 2000. Tropical Ornamentals: A Guide. Timber Press, Portland, OR	"It can spread rapidly by means of its winged seeds and sometimes become naturalized and troublesome."
	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 is one of the <i>Tabebuia</i> species that seeds freely in Hawai'i and may become weedy if it escapes from gardens into forested areas."
	Gilman, E.F., Watson, D.G., Klein, R.W., Koeser, A.K., Hilbert, D.R. and McLean, D.C. (2018). <i>Tabebuia heterophylla</i> : Pink Trumpet Tree. Fact Sheet ENH-774. Revised. Institute of Food and Agricultural Sciences, University of Florida, Gainesville FL. http://hort.ifas.ufl.edu/ . [Accessed 26 Dec 2019]	"not considered a problem species at this time, may be recommended"

Qsn #	Question	Answer
	Weber, E. 2017. Invasive Plant Species of the World, 2nd Edition: A Reference Guide to Environmental Weeds. CABI Publishing, Wallingford, UK	[Impacts unspecified, but may be similar to invasive <i>T. pallida</i>] " <i>Tabebuia pallida</i> is closely related to another invasive tree, <i>Tabebuia heterophylla</i> (DC.) Britton."
	CABI. (2019). Invasive Species Compendium. Wallingford, UK: CAB International. www.cabi.org/isc	[Possibly yes, but potential negative effects are attributed to similarities with <i>T. pallida</i>] " <i>T. heterophylla</i> and the closely related <i>T. pallida</i> both have clear environmental effects, due to shading, and the fact that trees are deciduous and thus the thick litter layer produced may also prevent the growth of native seedlings Impact on Biodiversity In Mauritius, a number of endemic plants are threatened by the closely related <i>T. pallida</i> (Parnell et al., 1989). It is also possible that in regions where it is introduced, species sharing the same ecological niche, i.e. pioneer species, could be displaced if <i>T. heterophylla</i> proves to be a better competitor, as for example, was found in West Africa following the invasion of <i>Cecropia peltata</i> ."

303	Agricultural/forestry/horticultural weed	n
	Source(s)	Notes
	Zimmerman, J. K., Aide, T. M., Rosario, M., Serrano, M., & Herrera, L. (1995). Effects of land management and a recent hurricane on forest structure and composition in the Luquillo Experimental Forest, Puerto Rico. <i>Forest Ecology and Management</i> , 77(1-3), 65-76	"Our current results indicate that establishment of <i>T. heterophylla</i> in abandoned pastures can lead to forest stands with a structure similar to less disturbed forests in as little as 40 years and attests to this species' utility in forest reclamation (Marrero, 1947; Little and Wadsworth, 1991)." [Suggests it could become a pasture problem in its native Puerto Rico, but no evidence that it invades or becomes a pest in managed pastures]
	Randall, R.P. (2017). <i>A Global Compendium of Weeds</i> . 3rd Edition. Perth, Western Australia. R.P. Randall	No evidence

Qsn #	Question	Answer
304	Environmental weed	
	Source(s)	Notes
	Gilman, E.F., Watson, D.G., Klein, R.W., Koeser, A.K., Hilbert, D.R. and McLean, D.C. (2018). <i>Tabebuia heterophylla</i> : Pink Trumpet Tree. Fact Sheet ENH-774. Revised. Institute of Food and Agricultural Sciences, University of Florida, Gainesville FL. http://hort.ifas.ufl.edu/ . [Accessed 26 Dec 2019]	"not considered a problem species at this time, may be recommended"
	Weber, E. 2017. <i>Invasive Plant Species of the World, 2nd Edition: A Reference Guide to Environmental Weeds</i> . CABI Publishing, Wallingford, UK	[Impacts unspecified, but may be similar to invasive <i>T. pallida</i>] " <i>Tabebuia pallida</i> is closely related to another invasive tree, <i>Tabebuia heterophylla</i> (DC.) Britton."
	CABI. (2019). <i>Invasive Species Compendium</i> . Wallingford, UK: CAB International. www.cabi.org/isc	[Possibly yes, but potential negative effects are attributed to similarities with <i>T. pallida</i>] " <i>T. heterophylla</i> and the closely related <i>T. pallida</i> both have clear environmental effects, due to shading, and the fact that trees are deciduous and thus the thick litter layer produced may also prevent the growth of native seedlings Impact on Biodiversity In Mauritius, a number of endemic plants are threatened by the closely related <i>T. pallida</i> (Parnell et al., 1989). It is also possible that in regions where it is introduced, species sharing the same ecological niche, i.e. pioneer species, could be displaced if <i>T. heterophylla</i> proves to be a better competitor, as for example, was found in West Africa following the invasion of <i>Cecropia peltata</i> ."

305	Congeneric weed	y
	Source(s)	Notes
	Weber, E. 2017. <i>Invasive Plant Species of the World, 2nd Edition: A Reference Guide to Environmental Weeds</i> . CABI Publishing, Wallingford, UK	" <i>Tabebuia pallida</i> " ... "The tree considered here has become invasive in the Seychelles, where it forms dense thickets shading out native plants and strongly reducing species richness. Regeneration of native shrubs and trees is prevented, hindering natural succession and forest regeneration (Fleischmann, 1997; Strahm, 1999)."

401	Produces spines, thorns or burrs	n
	Source(s)	Notes
	Gentry, A.H. 1992. <i>Bignoniaceae: Part II (Tribe Tecomeae)</i> . <i>Flora Neotropica</i> 25(2): 1-370	[No evidence] "Shrub or small to large tree to 20 m or more, dichotomously branched, the branchlets terete, lepidote with uniformly small, mostly whitish sessile (occasionally in part subsessile) scales. Leaves mostly 3-5-foliolate, frequently with the basal leaves of some branchlets 1-foliolate, rarely (Tortue Island: <i>T. lindahlii</i>) mostly unifoliolate, the leaflets highly variable in size, shape, and texture"

402	Allelopathic	
	Source(s)	Notes
	WRA Specialist. (2019). Personal Communication	Unknown. No evidence found

403	Parasitic	n
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Qsn #	Question	Answer
	Source(s)	Notes
	Gentry, A.H. 1992. Bignoniaceae: Part II (Tribe Tecomeae). Flora Neotropica 25(2): 1-370	"Shrub or small to large tree to 20 m or more" [No evidence]

404	Unpalatable to grazing animals	n
	Source(s)	Notes
	Meléndez-Ackerman, E. J., Cortés, C., Sustache, J., Aragón, S., Morales-Vargas, M., García-Bermúdez, M., & Fernández, D. S. (2008). Diet of feral goats in Mona Island reserve, Puerto Rico. Caribbean Journal of Science, 44(2), 199-205	[Eaten by goats] "Table 1. Frequency distribution of plant species found in rumen samples of feral goats in Mona Island Reserve according to habit and plant fragment found." [Tabebuia heterophylla - # Rumen samples = 23; Plant parts = L = leaves; S = seeds]

405	Toxic to animals	n
	Source(s)	Notes
	Dave's Garden. (2019). <i>Tabebuia heterophylla</i> . https://davesgarden.com/guides/pf/go/66001/ . [Accessed 26 Dec 2019]	"Danger: N/A"
	Meléndez-Ackerman, E. J., Cortés, C., Sustache, J., Aragón, S., Morales-Vargas, M., García-Bermúdez, M., & Fernández, D. S. (2008). Diet of feral goats in Mona Island reserve, Puerto Rico. Caribbean Journal of Science, 44(2), 199-205	[No evidence. Eaten by goats] "Table 1. Frequency distribution of plant species found in rumen samples of feral goats in Mona Island Reserve according to habit and plant fragment found." [Tabebuia heterophylla - # Rumen samples = 23; Plant parts = L = leaves; S = seeds]
	Quattrocchi, U. 2012. CRC World Dictionary of Medicinal and Poisonous Plants: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. CRC Press, Boca Raton, FL	[No evidence] "Leaves infusion to treat waist pain. Flowers used in traps to catch ground doves."

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

Qsn #	Question	Answer
	<p>Caicedo, J. D., Rivera-Vargas, L. I., Segarra, A. E., & Davis, R. E. (2015). Detection and molecular characterisation of a group 16SrIX phytoplasma infecting citrus (<i>Citrus sinensis</i> and <i>C. limon</i>), coffee (<i>Coffea arabica</i>), periwinkle (<i>Catharanthus roseus</i>), and tabebuia (<i>Tabebuia heterophylla</i>) in Puerto Rico. <i>Australasian Plant Disease Notes</i>, 10(1), 28</p>	<p>"Abstract Few studies have determined the presence of phytoplasmas in important crops in Puerto Rico. Disease symptoms resembling those caused by phytoplasmas were observed in pigeon pea (<i>Cajanus cajan</i>), periwinkle (<i>Catharanthus roseus</i>), tabebuia (<i>Tabebuia heterophylla</i>), Spanish lime (<i>Melicoccus bijugatus</i>), ixora (<i>Ixora coccinea</i>), mango (<i>Mangifera indica</i>), cactus (<i>Opuntia</i> spp.), citrus trees (<i>Citrus</i> spp.), and coffee (<i>Coffea arabica</i>). Sixty-two samples from these species were tested using conventional PCR to amplify the 16S rRNA and ribosomal protein genes (rplVrpsC). Fifty-one percent of the tested samples (corresponding to periwinkle, pigeon pea, citrus, coffee and tabebuia) were positive for phytoplasmas, with amplicons of 0.8 (16S rRNA gene) and 1.2 kb (rplV-rpsC genes), depending upon primers used in PCRs. For both genetic loci, DNA sequences showed 99 % identity with pigeon pea witches' broom phytoplasma (PPWB). Due to the lack of studies of potential insect vectors, common Auchenorrhyncha species were sweep-collected from pigeon pea and citrus and tested for phytoplasma. Of nine insect genera collected, <i>Empoasca kraemeri</i> (Cicadellidae), <i>Melormenis antillarum</i> (Flatidae), and <i>Colpoptera maculifrons</i> (Issidae) were positive for PPWB based on results from conventional PCR and DNA sequence analysis. The findings indicate that these insects fed upon the aforementioned plant species, ingesting contents of phloem, and may act as potential phytoplasma vectors in the field. These are first reports of PPWB phytoplasma infections in citrus species (<i>C. sinensis</i> and <i>C. limon</i>), coffee, periwinkle and tabebuia, and in insects (<i>E. kraemeri</i>, <i>M. antillarum</i> and <i>C. maculifrons</i>) for Puerto Rico."</p>
	<p>Burns, R.M. & Honkala, B.H. 1990. <i>Silvics of North America. Volume 2: Hardwoods. Agriculture Handbook 654. U.S. Department of Agriculture, Forest Service, Washington, DC.</i></p>	<p>"Damaging Agents- In the natural forest, pathogens do not appear to be of any consequence. However, branches of city and roadside trees are often deformed into a witches' broom appearance, apparently by a virus possibly transmitted by the leaf hopper <i>Protalebra tabebuiae</i> (8). The insect also defoliates the tree or causes the leaves to turn yellow and fall prematurely (16,22). A similar disease on a closely related species, <i>Tabebuia pentaphylla</i>, was observed on trees grown for cacao shade on the Paria peninsula of Venezuela (7). Because of the numerous problems with pathogens, some authorities have recommended that closely related members of the same genus be used as substitutes in ornamental plantings."</p>
	<p>Gilman, E.F., Watson, D.G., Klein, R.W., Koeser, A.K., Hilbert, D.R. and McLean, D.C. (2018). <i>Tabebuia heterophylla: Pink Trumpet Tree. Fact Sheet ENH-774. Revised. Institute of Food and Agricultural Sciences, University of Florida, Gainesville FL. http://hort.ifas.ufl.edu/. [Accessed 26 Dec 2019]</i></p>	<p>"No pests or diseases are of major concern."</p>

407	Causes allergies or is otherwise toxic to humans	n
	Source(s)	Notes
	<p>Dave's Garden. (2019). <i>Tabebuia heterophylla</i>. https://davesgarden.com/guides/pf/go/66001/. [Accessed 26 Dec 2019]</p>	<p>"Danger: N/A"</p>

Qsn #	Question	Answer
	USDA, NRCS. (2019). The PLANTS Database. National Plant Data Team, Greensboro, NC. http://plants.usda.gov . [Accessed 26 Dec 2019]	"Toxicity: None"
	Quattrocchi, U. 2012. CRC World Dictionary of Medicinal and Poisonous Plants: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. CRC Press, Boca Raton, FL	[No evidence] "Leaves infusion to treat waist pain. Flowers used in traps to catch ground doves."

408	Creates a fire hazard in natural ecosystems	
	Source(s)	Notes
	Wolfe, B. T., Diaz, G. E. S., & Van Bloem, S. J. (2014). Fire resistance in a Caribbean dry forest: inferences from the allometry of bark thickness. <i>Journal of Tropical Ecology</i> , 30 (2), 133-142	[Probably No. A component of fire resistant forest] "Abstract: Trees' resistance to fire-induced mortality increases with bark thickness, which varies widely among species and generally increases with stem diameter. Because dry forests are more fire-prone than wetter forests, bark may be thicker in these forests. However, where disturbances such as hurricanes suppress stem diameter, trees may not obtain fire-resistant bark thickness. In two hurricane-prone Caribbean dry-forest types in Puerto Rico—deciduous forest and scrub forest—we measured bark thickness on 472 stems of 25 species to test whether tree species obtain bark thicknesses that confer fire resistance, whether bark is thicker in the fire-prone scrub forest than in the deciduous forest, and how bark thickness in Caribbean dry forest compares with other tropical ecosystems. Only 5% of stems within a deciduous-forest stand had bark thickness that would provide < 50% probability of top-kill during low-intensity fire. In contrast, thicker-barked trees dominated the scrub forest, suggesting that fires influenced it. Compared with trees of similar diameter in other regions of the tropics, bark in Caribbean dry forest was thinner than in savanna, similar to other seasonally dry forests, and thicker than moist-to-wet forests. Dry-forest species appear to invest more in fire-resistance than species from wetter forests. However, Caribbean dry forests remain highly vulnerable to fire because the trees rarely reach large enough diameters to be fire resistant."

409	Is a shade tolerant plant at some stage of its life cycle	n
	Source(s)	Notes
	Whistler, W.A. 2000. <i>Tropical Ornamentals: A Guide</i> . Timber Press, Portland, OR	"Fertile, moist, but well-drained soils in sunny to partially shaded places are preferred."
	Gilman, E.F., Watson, D.G., Klein, R.W., Koeser, A.K., Hilbert, D.R. and McLean, D.C. (2018). <i>Tabebuia heterophylla: Pink Trumpet Tree</i> . Fact Sheet ENH-774. Revised. Institute of Food and Agricultural Sciences, University of Florida, Gainesville FL. http://hort.ifas.ufl.edu/ . [Accessed 26 Dec 2019]	"Light requirement: full sun"

Qsn #	Question	Answer
	Burns, R.M. & Honkala, B.H. 1990. <i>Silvics of North America. Volume 2: Hardwoods. Agriculture Handbook 654.</i> U.S. Department of Agriculture, Forest Service, Washington, DC.	"Shaded seedlings grew very little. In natural conditions, wildlings are capable of surviving shade for years with no appreciable growth (21)." ... "Moreover, on a scale of 1 (most tolerant) to 29 (most pioneer), roble ranked 20th in shade tolerance among tree species in the Luquillo Forest (23). The scale considered the presence of seed, seedlings, and understory trees within the forest. Overall, roble blanco is classed as intolerant of shade."
	Dave's Garden. (2019). <i>Tabebuia heterophylla.</i> https://davesgarden.com/guides/pf/go/66001/ . [Accessed 26 Dec 2019]	"Sun Exposure: Full Sun"

410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	y
	Source(s)	Notes
	Burns, R.M. & Honkala, B.H. 1990. <i>Silvics of North America. Volume 2: Hardwoods. Agriculture Handbook 654.</i> U.S. Department of Agriculture, Forest Service, Washington, DC.	"It grows on any soil type and will adapt to poor or degraded soils if moisture is available."
	Gentry, A.H. 1992. <i>Bignoniaceae: Part II (Tribe Tecomeae). Flora Neotropica 25(2): 1-370</i>	"Occurring on many different substrates, including limestone, serpentine, beaches, and palm savannas."
	Gilman, E.F., Watson, D.G., Klein, R.W., Koeser, A.K., Hilbert, D.R. and McLean, D.C. (2018). <i>Tabebuia heterophylla: Pink Trumpet Tree. Fact Sheet ENH-774.</i> Revised. Institute of Food and Agricultural Sciences, University of Florida, Gainesville FL. http://hort.ifas.ufl.edu/ . [Accessed 26 Dec 2019]	"Soil tolerances: clay; sand; loam; alkaline; acidic; well-drained" ... "Pink trumpet tree should be grown in full sun on almost any well-drained soil, wet or dry."

411	Climbing or smothering growth habit	n
	Source(s)	Notes
	Gentry, A.H. 1992. <i>Bignoniaceae: Part II (Tribe Tecomeae). Flora Neotropica 25(2): 1-370</i>	"Shrub or small to large tree to 20 m or more"

412	Forms dense thickets	y
	Source(s)	Notes
	Burns, R.M. & Honkala, B.H. 1990. <i>Silvics of North America. Volume 2: Hardwoods. Agriculture Handbook 654.</i> U.S. Department of Agriculture, Forest Service, Washington, DC.	"In general, it is tolerant of degraded sites and abandoned farm lands where it tends to form nearly pure stands." ... "The seeds germinate in open areas and form dense stands of seedlings." ... "Roble regenerates and forms pure stands on grasslands and degraded soils, in particular on exposed upper slopes and ridges, where competition from faster growing, larger, and more tolerant trees is lacking (19)."

Qsn #	Question	Answer
501	Aquatic	n
	Source(s)	Notes
	Gentry, A.H. 1992. Bignoniaceae: Part II (Tribe Tecomeae). Flora Neotropica 25(2): 1-370	[Terrestrial] "Occurring on many different substrates, including limestone, serpentine, beaches, and palm savannas."

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 26 Dec 2019]	Bignoniaceae

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 26 Dec 2019]	Bignoniaceae

504	Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)	n
	Source(s)	Notes
	Gentry, A.H. 1992. Bignoniaceae: Part II (Tribe Tecomeae). Flora Neotropica 25(2): 1-370	"Shrub or small to large tree to 20 m or more"

601	Evidence of substantial reproductive failure in native habitat	n
	Source(s)	Notes
	Burns, R.M. & Honkala, B.H. 1990. Silvics of North America. Volume 2: Hardwoods. Agriculture Handbook 654. U.S. Department of Agriculture, Forest Service, Washington, DC.	[No evidence] "Roble is native to Puerto Rico and widely distributed through the West Indies from Hispaniola to Grenada and Barbados. It is also naturalized in Bermuda and planted in southern Florida (16)."

602	Produces viable seed	y
	Source(s)	Notes
	Whistler, W.A. 2000. Tropical Ornamentals: A Guide. Timber Press, Portland, OR	"It can spread rapidly by means of its winged seeds and sometimes become naturalized and troublesome."
	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 is one of the <i>Tabebuia</i> species that seeds freely in Hawai'i and may become weedy if it escapes from gardens into forested areas."

Qsn #	Question	Answer
	Burns, R.M. & Honkala, B.H. 1990. Silvics of North America. Volume 2: Hardwoods. Agriculture Handbook 654. U.S. Department of Agriculture, Forest Service, Washington, DC.	"The fruits are pods, about 8 to 20 cm (3 to 8 in) long and 6.5 mm (0.25 in) in diameter. The pods contain many winged seeds each about 2 cm (0.79 in) long. The capsule splits along two lines and seeds are dispersed varying distances from the parent tree, ranging up to 100 m (330 ft) or more, depending upon weather conditions. Dispersal is by wind. The seeds germinate in open areas and form dense stands of seedlings."

603	Hybridizes naturally	
	Source(s)	Notes
	Gentry, A.H. 1992. Bignoniaceae: Part II (Tribe Tecomeae). Flora Neotropica 25(2): 1-370	" <i>Tabebuia</i> x <i>del-riscoi</i> ... This is almost certainly a hybrid between <i>T. lepidophylla</i> and <i>T. heterophylla</i> (or one of the compound-leaved species closely related to the latter)."

604	Self-compatible or apomictic	n
	Source(s)	Notes
	Allen, A. M., & Hiscock, S. J. (2008). Evolution and phylogeny of self-incompatibility systems in angiosperms. In <i>Self-incompatibility in flowering plants</i> (pp. 73-101). Springer, Berlin, Heidelberg	"The combination of self-pollen tube entry into the ovary followed by little or no seed set after self-pollinations has been reported in woody perennial species from many different families, including Sterculiaceae (<i>Theobroma cacao</i> , <i>Sterculia chicha</i> and <i>Cola nitida</i>); Ericaceae (<i>Rhododendron</i> sp.); Fabaceae (<i>Acacia retinodes</i>); Winteraceae (<i>Pseudowintera colorata</i>); Myrtaceae (<i>Eucalyptus</i> sp.); Bignoniaceae (<i>Tabebuia</i> sp.); Malvaceae (<i>Chorisia</i> sp.) (Kenrick et al. 1986; Gibbs and Bianchi 1999; Sage and Sampson 2003)."
	Torre Grossa, J. T., Labbe, P., Fléreau, C., Cousin, M., & Bonnier, S. (1996). Données sur la biologie florale et l'écologie de la pollinisation de <i>Tabebuia heterophylla</i> (Bignoniaceae)," poirier pays" de la Guadeloupe. 18 p.	[Translation from French. "However, they seem to reveal a complex floral biology in <i>Tabebuia heterophylla</i> , from the point of view of the sensitivity of the stigmatic lobes and its impact on the flower's development, from the delayed effect to the expression of self-incompatibility."] "Elles semblent cependant reveler une biologic florale complexe chez <i>Tabebuia heterophylla</i> que ce soit du point de vue de la sensitivite des lobes stigmatiques et de son incidence sur le devcnir de la fleur, de l'effet retard a l'expression de l'auto-incompatibilite, non sculement intra ovarienne, mais probablement intra-ovulaire et de la diversite des origines de la fecondation chez Jes individus pouvant dependre tout autant d'une auto-incompatibilite stricte que d'une auto-compatibilite partielle ou totale"

605	Requires specialist pollinators	n
	Source(s)	Notes
	Parker, J.L. & Parsons, B. 2012. New Plant Records from the Big Island for 2010–2011. Bishop Museum Occasional Papers 113: 65-74	"Flowers visited by bees,"
	Tropical Plants Database, Ken Fern. (2019). <i>Tabebuia heterophylla</i> . http://tropical.theferns.info/viewtropical.php?id=Tabebuia+heterophylla . [Accessed 26 Dec 2019]	"Pollinators: Bees"

Qsn #	Question	Answer
606	Reproduction by vegetative fragmentation	n
	Source(s)	Notes
	Burns, R.M. & Honkala, B.H. 1990. Silvics of North America. Volume 2: Hardwoods. Agriculture Handbook 654. U.S. Department of Agriculture, Forest Service, Washington, DC.	"Vegetative Reproduction- Cuttings were tested on degraded heavy soils in Luquillo Forest and Carite, but only a few survived (19,20). Roble fence posts have been observed to sprout (26), but vegetative reproduction cannot be relied on for reforestation."
	USDA, NRCS. (2019). The PLANTS Database. National Plant Data Team, Greensboro, NC. http://plants.usda.gov . [Accessed 26 Dec 2019]	"Vegetative Spread Rate: None"

607	Minimum generative time (years)	
	Source(s)	Notes
	Gilman, E.F., Watson, D.G., Klein, R.W., Koeser, A.K., Hilbert, D.R. and McLean, D.C. (2018). <i>Tabebuia heterophylla</i> : Pink Trumpet Tree. Fact Sheet ENH-774. Revised. Institute of Food and Agricultural Sciences, University of Florida, Gainesville FL. http://hort.ifas.ufl.edu/ . [Accessed 26 Dec 2019]	"Growth rate: moderate"
	Burns, R.M. & Honkala, B.H. 1990. Silvics of North America. Volume 2: Hardwoods. Agriculture Handbook 654. U.S. Department of Agriculture, Forest Service, Washington, DC.	"Plantations established in Puerto Rico show that the dominant and codominant stems averaged about 1 in (3.3 ft) in height growth and 1 cm (0.4 in) in diameter growth annually over a period of 11 to 14 years (table 2). Annual basal area growth was about 1.5 m ² /ha (6.5 ft ² /acre). Height growth in Hawaii was less, but the measurements were for smaller trees over a shorter period of time."

701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	n
	Source(s)	Notes
	Burns, R.M. & Honkala, B.H. 1990. Silvics of North America. Volume 2: Hardwoods. Agriculture Handbook 654. U.S. Department of Agriculture, Forest Service, Washington, DC.	[No means of external attachment] "The fruits are pods, about 8 to 20 cm (3 to 8 in) long and 6.5 mm (0.25 in) in diameter. The pods contain many winged seeds each about 2 cm (0.79 in) long. The capsule splits along two lines and seeds are dispersed varying distances from the parent tree, ranging up to 100 m (330 ft) or more, depending upon weather conditions. Dispersal is by wind."

Qsn #	Question	Answer
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	"It is cultivated throughout much of the world's tropics for its showy, pinkish flowers." ... "It has been planted extensively as a street and shade tree throughout the Islands and is an integral part of the landscape in many residential neighborhoods, where rows of pink tecoma line the streets."
	Gilman, E.F., Watson, D.G., Klein, R.W., Koeser, A.K., Hilbert, D.R. and McLean, D.C. (2018). <i>Tabebuia heterophylla</i> : Pink Trumpet Tree. Fact Sheet ENH-774. Revised. Institute of Food and Agricultural Sciences, University of Florida, Gainesville FL. http://hort.ifas.ufl.edu/ . [Accessed 26 Dec 2019]	"Pink trumpet tree is well suited for use as a street tree or for other areas such as in parking lot islands and buffer strips where temperatures are high and soil space limited."

703	Propagules likely to disperse as a produce contaminant	n
	Source(s)	Notes
	Burns, R.M. & Honkala, B.H. 1990. <i>Silvics of North America. Volume 2: Hardwoods. Agriculture Handbook 654.</i> U.S. Department of Agriculture, Forest Service, Washington, DC.	"The fruits are pods, about 8 to 20 cm (3 to 8 in) long and 6.5 mm (0.25 in) in diameter. The pods contain many winged seeds each about 2 cm (0.79 in) long. The capsule splits along two lines and seeds are dispersed varying distances from the parent tree, ranging up to 100 m (330 ft) or more, depending upon weather conditions. Dispersal is by wind." [No evidence. Unlikely. Seeds relatively large]

704	Propagules adapted to wind dispersal	y
	Source(s)	Notes
	Burns, R.M. & Honkala, B.H. 1990. <i>Silvics of North America. Volume 2: Hardwoods. Agriculture Handbook 654.</i> U.S. Department of Agriculture, Forest Service, Washington, DC.	"The fruits are pods, about 8 to 20 cm (3 to 8 in) long and 6.5 mm (0.25 in) in diameter. The pods contain many winged seeds each about 2 cm (0.79 in) long. The capsule splits along two lines and seeds are dispersed varying distances from the parent tree, ranging up to 100 m (330 ft) or more, depending upon weather conditions. Dispersal is by wind."

705	Propagules water dispersed	
	Source(s)	Notes
	Burns, R.M. & Honkala, B.H. 1990. <i>Silvics of North America. Volume 2: Hardwoods. Agriculture Handbook 654.</i> U.S. Department of Agriculture, Forest Service, Washington, DC.	"Physiographically, it is most common on slopes and ridges (19) but is also found on flats adjacent to river beds (9)." [Occurs in river beds. Wind-dispersed seeds possibly moved secondarily by water]

Qsn #	Question	Answer
706	Propagules bird dispersed	n
	Source(s)	Notes
	Burns, R.M. & Honkala, B.H. 1990. Silvics of North America. Volume 2: Hardwoods. Agriculture Handbook 654. U.S. Department of Agriculture, Forest Service, Washington, DC.	"The fruits are pods, about 8 to 20 cm (3 to 8 in) long and 6.5 mm (0.25 in) in diameter. The pods contain many winged seeds each about 2 cm (0.79 in) long. The capsule splits along two lines and seeds are dispersed varying distances from the parent tree, ranging up to 100 m (330 ft) or more, depending upon weather conditions. Dispersal is by wind."

707	Propagules dispersed by other animals (externally)	n
	Source(s)	Notes
	Burns, R.M. & Honkala, B.H. 1990. Silvics of North America. Volume 2: Hardwoods. Agriculture Handbook 654. U.S. Department of Agriculture, Forest Service, Washington, DC.	"The fruits are pods, about 8 to 20 cm (3 to 8 in) long and 6.5 mm (0.25 in) in diameter. The pods contain many winged seeds each about 2 cm (0.79 in) long. The capsule splits along two lines and seeds are dispersed varying distances from the parent tree, ranging up to 100 m (330 ft) or more, depending upon weather conditions. Dispersal is by wind." [No means of external attachment]

708	Propagules survive passage through the gut	n
	Source(s)	Notes
	Burns, R.M. & Honkala, B.H. 1990. Silvics of North America. Volume 2: Hardwoods. Agriculture Handbook 654. U.S. Department of Agriculture, Forest Service, Washington, DC.	"The fruits are pods, about 8 to 20 cm (3 to 8 in) long and 6.5 mm (0.25 in) in diameter. The pods contain many winged seeds each about 2 cm (0.79 in) long. The capsule splits along two lines and seeds are dispersed varying distances from the parent tree, ranging up to 100 m (330 ft) or more, depending upon weather conditions. Dispersal is by wind." [No evidence of consumption]

801	Prolific seed production (>1000/m2)	
	Source(s)	Notes
	Burns, R.M. & Honkala, B.H. 1990. Silvics of North America. Volume 2: Hardwoods. Agriculture Handbook 654. U.S. Department of Agriculture, Forest Service, Washington, DC.	"The fruits are pods, about 8 to 20 cm (3 to 8 in) long and 6.5 mm (0.25 in) in diameter. The pods contain many winged seeds each about 2 cm (0.79 in) long." [Large seed structures, <100 per pod] ... "At 55 randomly placed collection stations comprised of 0.5 m ² (5.4 ft ²) screen baskets in the Subtropical Wet Forest of Puerto Rico, roble dropped 39 fruits in 39 months." [Amounts to 24 pods per m ² per year; need 50 seeds per pod to make 1000 seeds per m ² ; this tree is borderline]

802	Evidence that a persistent propagule bank is formed (>1 yr)	
	Source(s)	Notes

Qsn #	Question	Answer
	Burns, R.M. & Honkala, B.H. 1990. Silvics of North America. Volume 2: Hardwoods. Agriculture Handbook 654. U.S. Department of Agriculture, Forest Service, Washington, DC.	"Seeds sown directly in seedbeds after collection in the field showed germination rates of 90 percent within 2 weeks. A 3-week delay in sowing seeds reduced viability to about 55 percent and after 5 weeks, no seeds germinated. Attempts were made to store seeds for long periods using seed moisture contents of 100, 75, 50, and 25 percent at room temperature and at 4' C (40' F). The best germination after 25 months, nearly 55 percent, was attained with the lowest moisture content and temperature combination." [Seeds able to be stored for 2+ years. Longevity in soil unknown]

803	Well controlled by herbicides	
	Source(s)	Notes
	Dowler, C. C., Tschirley, F. H., Bovey, R. W., & Morton, H. L. (1970). Effect of aerially-applied herbicides on Texas and Puerto Rico forests. <i>Weed Science</i> , 18(1), 164-168	[Although data on individual species susceptibility were not tabulated, general observations indicated that <i>Tabebuia heterophylla</i> (DC.) Britton was more resistant to the herbicide treatments than any other species present.] "Abstract. We applied (2,4-dichlorophenoxy)acetic acid (2,4-D), (2, 4,5-trichlorophenoxy)acetic acid (2,4,5-T), 4-amino-3,5-dichloropicolinic acid (picloram), and 1,1'-dimethyl-4,4'-bipyridinium ion (paraquat) alone and in various combinations by aircraft on arborescent species in Texas and Puerto Rico. Paraquat defoliated trees rapidly but did not give long-term control. Picloram defoliated a greater number of species than the other herbicides and defoliation extended over a longer period. No treatment killed all trees in the mixed forest or prevented regrowth and secondary succession for a period of more than 1 year. Higher herbicide rates were necessary to defoliate woody plants in tropical Puerto Rico than in subtropical Texas."

804	Tolerates, or benefits from, mutilation, cultivation, or fire	
	Source(s)	Notes
	USDA, NRCS. (2019). The PLANTS Database. National Plant Data Team, Greensboro, NC. http://plants.usda.gov . [Accessed 26 Dec 2019]	"Coppice Potential: No"
	CABI. (2019). <i>Invasive Species Compendium</i> . Wallingford, UK: CAB International. www.cabi.org/isc	"No specific management information is available on control of <i>T. heterophylla</i> . As with all plants they can be dug up by hand or mechanically when small, and either cut, or cut plus a herbicidal stump treatment when larger, although its ability to coppice has not been ascertained."
	Burns, R.M. & Honkala, B.H. 1990. Silvics of North America. Volume 2: Hardwoods. Agriculture Handbook 654. U.S. Department of Agriculture, Forest Service, Washington, DC.	"Vegetative Reproduction- Cuttings were tested on degraded heavy soils in Luquillo Forest and Carite, but only a few survived (19,20). Roble fence posts have been observed to sprout (26), but vegetative reproduction cannot be relied on for reforestation."

Qsn #	Question	Answer
805	Effective natural enemies present locally (e.g. introduced biocontrol agents)	
	Source(s)	Notes
	WRA Specialist. (2019). Personal Communication	Unknown. Naturalized on multiple Hawaiian Islands, so natural enemies or other limiting factors may be absent or inconsequential

Summary of Risk Traits:

High Risk / Undesirable Traits

- Elevation range exceeds 1000 m, demonstrating environmental versatility
- Thrives in tropical climates
- Naturalized on Oahu, Maui and Hawaii (Hawaiian Islands) and elsewhere
- Pioneer, weedy tree that can form pure stands in abandoned pastures
- Other *Tabebuia* species are invasive
- Tolerates many soil types
- Forms pure stands on grasslands and degraded soils
- Reproduces by seeds
- Seeds dispersed by wind and intentionally through cultivation
- Gaps in biological and ecological information may reduce accuracy or risk prediction

Low Risk Traits

- Despite naturalization and invasiveness, valued as an ornamental and landscaping tree
- Unarmed (no spines, thorns, or burrs)
- Palatable to goats and possibly other browsing animals
- Shade intolerant (may limit spread into intact forests or areas with dense vegetation)
- Reported to be self-incompatible
- Not reported to spread vegetatively

Second Screening Results for Tree/tree-like shrubs

(A) Shade tolerant or known to form dense stands?> Yes. Shade-intolerant, but forms pure stands in abandoned pastures and grasslands

(B) Bird or clearly wind-dispersed?> Yes. Wind-dispersed

(C) Life cycle <4 years? Unknown. Possibly 4+ years to maturity

Outcome = Evaluate