

Taxon: <i>Vitex gigantea</i> Kunth	Family: Lamiaceae
Common Name(s): pechiche pechichi tillo blanco	Synonym(s): <i>Vitex gigantea</i> var. <i>congestiflora</i>

Assessor: Chuck Chimera	Status: Assessor Approved	End Date: 1 Jun 2022
WRA Score: 1.0	Designation: EVALUATE	Rating: Evaluate

Keywords: Tropical Tree, Unarmed, Edible Fruit, Single-Seeded, Bird-Dispersed

Qsn #	Question	Answer Option	Answer
101	Is the species highly domesticated?	y=-3, n=0	n
102	Has the species become naturalized where grown?		
103	Does the species have weedy races?		
201	Species suited to tropical or subtropical climate(s) - If island is primarily wet habitat, then substitute "wet tropical" for "tropical or subtropical"	(0-low; 1-intermediate; 2-high) (See Appendix 2)	High
202	Quality of climate match data	(0-low; 1-intermediate; 2-high) (See Appendix 2)	High
203	Broad climate suitability (environmental versatility)	y=1, n=0	n
204	Native or naturalized in regions with tropical or subtropical climates	y=1, n=0	y
205	Does the species have a history of repeated introductions outside its natural range?	y=-2, ?=-1, n=0	?
301	Naturalized beyond native range	y = 1*multiplier (see Appendix 2), n= question 205	n
302	Garden/amenity/disturbance weed	n=0, y = 1*multiplier (see Appendix 2)	n
303	Agricultural/forestry/horticultural weed	n=0, y = 2*multiplier (see Appendix 2)	n
304	Environmental weed	n=0, y = 2*multiplier (see Appendix 2)	n
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	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		

Qsn #	Question	Answer Option	Answer
410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)		
411	Climbing or smothering growth habit	y=1, n=0	n
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		
604	Self-compatible or apomictic		
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	n
705	Propagules water dispersed		
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 ²)		
802	Evidence that a persistent propagule bank is formed (>1 yr)		
803	Well controlled by herbicides		
804	Tolerates, or benefits from, mutilation, cultivation, or fire		
805	Effective natural enemies present locally (e.g. introduced biocontrol agents)		

Supporting Data:

Qsn #	Question	Answer
101	Is the species highly domesticated?	n
	Source(s)	Notes
	United States Forest Service (1947). The Forests of Western and Central Ecuador. USDA Forest Service, Washington, D.C.	"Wet tropical forest at Pichilingue, Los Rios, and mountain forest at Piedras, El Oro. Also in the dry tropical forest." [No evidence of domestication]

102	Has the species become naturalized where grown?	
	Source(s)	Notes
	WRA Specialist. (2022). Personal Communication	NA

103	Does the species have weedy races?	
	Source(s)	Notes
	WRA Specialist. (2022). 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. (2022). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. https://npgsweb.ars-grin.gov/ . [Accessed 27 May 2022]	"Native Southern America CENTRAL AMERICA: Honduras WESTERN SOUTH AMERICA: Bolivia, Ecuador, Peru"

202	Quality of climate match data	High
	Source(s)	Notes
	USDA, Agricultural Research Service, National Plant Germplasm System. (2022). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. https://npgsweb.ars-grin.gov/ . [Accessed 27 May 2022]	

203	Broad climate suitability (environmental versatility)	n
	Source(s)	Notes
	KewScience. (2022). Plants of the World Online - <i>Vitex gigantea</i> . http://powo.science.kew.org . [Accessed 30 May 2022]	"Elevation range: 350–400 m a.s.l. Native to Colombia. Colombian departments: Cundinamarca, Huila."
	Tropicos.org. (2022). Tropicos v3.3.2. Missouri Botanical Garden. http://www.tropicos.org/ . [Accessed 30 May 2022]	Collected at elevations of 0 m - 800 m and latitudes from 00°12'S - 14°47'S, to 00°08'N - 09°48'N

Qsn #	Question	Answer
204	Native or naturalized in regions with tropical or subtropical climates	y
	Source(s)	Notes
	USDA, Agricultural Research Service, National Plant Germplasm System. (2022). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. https://npgsweb.ars-grin.gov/ . [Accessed 27 May 2022]	"Native Southern America CENTRAL AMERICA: Honduras WESTERN SOUTH AMERICA: Bolivia, Ecuador, Peru"

205	Does the species have a history of repeated introductions outside its natural range?	?
	Source(s)	Notes
	rarepalmseeds.com. (2022). <i>Vitex gigantea</i> . https://www.rarepalmseeds.com/vitex-gigantea . [Accessed 30 May 2022]	"It is locally popular for its very hard wood that is used for furniture and construction, but would also make a very nice ornamental tree for the tropics." [Sold commercially, but unclear how widespread it has been cultivated outside native range]

301	Naturalized beyond native range	n
	Source(s)	Notes
	Imada, C. (2019). Hawaiian Naturalized Vascular Plants Checklist (February 2019 update). Bishop Museum Technical Report 69. Bishop Museum, Honolulu, HI	No evidence
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	No evidence

302	Garden/amenity/disturbance weed	n
	Source(s)	Notes
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	No evidence
	CABI. (2022). Invasive Species Compendium. Wallingford, UK: CAB International. www.cabi.org/isc	No evidence

303	Agricultural/forestry/horticultural weed	n
	Source(s)	Notes
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	No evidence
	CABI. (2022). Invasive Species Compendium. Wallingford, UK: CAB International. www.cabi.org/isc	No evidence

Qsn #	Question	Answer
304	Environmental weed	n
	Source(s)	Notes
	CABI. (2022). Invasive Species Compendium. Wallingford, UK: CAB International. www.cabi.org/isc	No evidence
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	No evidence

305	Congeneric weed	y
	Source(s)	Notes
	Cousins, M. M., Briggs, J., Gresham, C., Whetstone, J., & Whitwell, T. (2010). Beach Vitex (<i>Vitex rotundifolia</i>): An invasive coastal species. <i>Invasive Plant Science and Management</i> , 3(3): 340-345	"Beach vitex (<i>Vitex rotundifolia</i>) is a salt tolerant, perennial, invasive shrub that has naturalized in coastal areas of the southeastern United States. Since its introduction in the 1980's, this Pacific Rim native has invaded many fragile beach dune ecosystems along the Mid-Atlantic, Southern Atlantic, and Gulf of Mexico. Large scale monocultures of beach vitex supplant native species through rapid vegetative reproduction and seed production. Fruits are capable of water-based dispersal, allowing for potential rapid range expansion in coastal areas. Ecosystem damage resulting from exclusion of native plant species by beach vitex and fears associated with potential negative impacts on sea turtle nesting have served to promote the control and survey efforts presently underway in coastal areas of the Carolinas, Virginia, and Maryland."
	Marler, T. E. (2020). Three invasive tree species change soil chemistry in Guam forests. <i>Forests</i> , 11(3), 279	"Established stands of <i>Leucaena leucocephala</i> (Lam.) de Wit, <i>Spathodea campanulata</i> P. Beauv., and <i>Vitex parviflora</i> Juss. modified soils in Guam's limestone forests, reducing storage pools of carbon, nitrogen, and phosphorus. Background and Objectives: Invasive plants may engineer negative changes in ecosystem properties. This study was conducted to determine changes in soil chemistry following infestations of three problematic tree species on Guam. Materials and Methods: Minerals, metals, and mineralization dynamics were measured in invaded sites and paired sites with biodiverse native tree cover. Results: Most soil properties were significantly changed by long-term infestations of the invasive tree species. The soils within invaded sites exhibited total carbon, total nitrogen, and available phosphorus that were less than native sites. In contrast, the carbon/nitrogen ratio increased for every species site combination. The other chemical properties were idiosyncratic among the sites and species. Conclusions: Mitigation and restoration activities that include the removal of these trees from project sites may require many years for the below ground ecosystems to return to their native state. These three invasive trees decrease the ability of Guam soils to sequester recalcitrant forms of carbon, nitrogen, and phosphorus." ... "The documented increase in <i>V. parviflora</i> population on Guam in recent years [24] confirms the need to expand the control efforts of this aggressive invader."
	Mafnas, J.S. (2010). Guam Statewide Forest Resource Assessment and Resource Strategy. 2010 - 2015. Department of Agriculture Forestry & Soil Resources Division, Mangilao, Guam	"Trees such as <i>Molucca albizia</i> (<i>Falcataria moluccana</i>), African tulip (<i>Spathodea campanulata</i>) and vitex (<i>Vitex parviflora</i>) grow at rapid rates and hinder growth and establishment of native forests." ... "In northern Guam, this habitat is often dominated by <i>Vitex parviflora</i> , an introduced species from the Philippines. However, within this forested area native plants can be found as understory cover."

Qsn #	Question	Answer
401	Produces spines, thorns or burrs	n
	Source(s)	Notes
	Popenoe, W. (1924). Economic fruit-bearing plants of Ecuador. Contributions from the United States National Herbarium 24: 101-134	[No evidence] "The pechichi is a tree up to 10 meters high, with palmately compound leaves, composed of elliptic to obovate-elliptic acuminate leaflets, 5 to 15 cm. in length and sparsely pubescent on both surfaces. The small purplish flowers are followed by oval fruits of the size and appearance of ripe olives; they have a thin, almost black skin, juicy brown flesh, and a single elliptic stone of rather large size. The flavor is rather bitter, and not apt to be appreciated by those unaccustomed to it. The tree can not be considered of much economic importance or value."
402	Allelopathic	
	Source(s)	Notes
	WRA Specialist. (2022). Personal Communication	Unknown. No evidence found
403	Parasitic	n
	Source(s)	Notes
	Llerena Arroyo, A. (2020). <i>Vitex gigantea kunth</i> . Recursos Naturales Alimentarios. Universidad Nacional Mayor de San Marcos, Lima, Peru	"El pechiche es un precioso y fragante árbol del litoral ecuatoriano el cual es utilizado para extraer tablas de madera y pisos de casas, se cosecha entre diciembre y enero." [Translation from Spanish: The pechiche is a beautiful and fragrant tree from the Ecuadorian coast which is used to extract wooden boards and floors from houses, it is harvested between December and January.]
404	Unpalatable to grazing animals	
	Source(s)	Notes
	Popenoe, W. (1924). Economic fruit-bearing plants of Ecuador. Contributions from the United States National Herbarium 24: 101-134	[Edible fruit. Palatability of foliage to browsing animals unknown] "The small purplish flowers are followed by oval fruits of the size and appearance of ripe olives; they have a thin, almost black skin, juicy brown flesh, and a single elliptic stone of rather large size. The flavor is rather bitter, and not apt to be appreciated by those unaccustomed to it."
	WRA Specialist. (2022). Personal Communication	Unknown
405	Toxic to animals	n
	Source(s)	Notes
	Tropical Plants Database, Ken Fern. (2022). <i>Vitex gigantea</i> . http://tropical.theferns.info . [Accessed 30 May 2022]	"Known Hazards - None known"
	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

Qsn #	Question	Answer
	Wagstaff, D.J. (2008). International poisonous plants checklist: an evidence-based reference. CRC Press, Boca Raton, FL	No evidence

406	Host for recognized pests and pathogens	
	Source(s)	Notes
	Vilatuña, J., Valenzuela, P., Bolaños, J., Hidalgo, R., & Mariño, A. (2016). Hospederos de moscas de la fruta <i>Anastrepha</i> spp. y <i>Ceratitis capitata</i> (Diptera: Tephritidae) en Ecuador. Ecuador es Calidad: Revista Científica Ecuatoriana, 3(1): 6 pp	"Fruit flies are considered one of the most high concern pests due to the economic impact they cause. Therefore, in 2014 the National Fruit Flies Management Project was established in order to control and manage this pest. One of the objectives of this project, is to identify the host species, in order to implement strategies of integrated management and reduce populations of this pest insect, and thereby improve the fruit production. During 2014 and 2015, sixty eight plant species were sampled in the seventeen provinces where the PNMMF (National Fruit Flies Management Project) is carried out, so far thirty one host plants of this pest were registered, spread over eighteen botanical families. For the first time, three plant species were registered as hosts of this pest insect in Ecuador." ... "Hasta el momento se han registrado que las especies:" ... "no son atacadas por especímenes de moscas de la fruta." [pechiche (<i>Vitex gigantea</i> Kunth) not attacked by this species of fruit fly]
	Sunshine Seeds. (2022). <i>Vitex gigantea</i> . http://www.sunshine-seeds.de/Vitex-gigantea-34849p.html?language=en . [Accessed 1 Jun 2022]	"Pests: Spider mites > especially under glass"

407	Causes allergies or is otherwise toxic to humans	n
	Source(s)	Notes
	Tropical Plants Database, Ken Fern. (2022). <i>Vitex gigantea</i> . http://tropical.theferns.info . [Accessed 30 May 2022]	"Known Hazards - None known"
	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
	Wagstaff, D.J. (2008). International poisonous plants checklist: an evidence-based reference. CRC Press, Boca Raton, FL	No evidence

408	Creates a fire hazard in natural ecosystems	
	Source(s)	Notes
	Llerena Arroyo, A. (2020). <i>Vitex gigantea</i> kunth. Recursos Naturales Alimentarios. Universidad Nacional Mayor de San Marcos, Lima, Peru	"Los mejores rendimientos se obtienen con 23 a 27°C de temperatura media y 1000 a 1200 milímetros de precipitación anual. Los suelos ideales para el crecimiento del pechiche deben ser bien desarrollados, bien drenados y aireados, y, aún más fértiles si son aluviales volcánicos y profundos. Esta especie no resiste suelos anegados, pantanosos y compactados, el suelo puede ser ligeramente ácido." [Grows in areas of 1000 to 1200 mm annual precipitation. Unknown, but no evidence of increase fire risk found]

Qsn #	Question	Answer
	United States Forest Service (1947). The Forests of Western and Central Ecuador. USDA Forest Service, Washington, D.C.	"Wet tropical forest at Pichilingue, Lo• Rios, and mountain forest at Piedras, El Oro. Also in the dry tropical forest." [Unknown. May contribute to fuel load in dry forests]

409	Is a shade tolerant plant at some stage of its life cycle	
	Source(s)	Notes
	Sunshine Seeds. (2022). <i>Vitex gigantea</i> . http://www.sunshine-seeds.de/Vitex-gigantea-34849p.html?language=en . [Accessed 1 Jun 2022]	"Locations: sun to semi-shade"
	rarepalmseeds.com. (2022). <i>Vitex gigantea</i> . https://www.rarepalmseeds.com/vitex-gigantea . [Accessed 30 May 2022]	"Sun Exposure: Light shade when young; Light shade in dry, hot climate"

410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	
	Source(s)	Notes
	Llerena Arroyo, A. (2020). <i>Vitex gigantea</i> kunth. Recursos Naturales Alimentarios. Universidad Nacional Mayor de San Marcos, Lima, Peru	"Los suelos ideales para el crecimiento del pechiche deben ser bien desarrollados, bien drenados y aireados, y, aún más fértiles si son aluviales volcánicos y profundos. Esta especie no resiste suelos anegados, pantanosos y compactados, el suelo puede ser ligeramente ácido." [The ideal soils for the growth of pechiche must be well developed, well drained and aerated, and even more fertile if they are alluvial, volcanic and deep. This species does not resist waterlogged, swampy and compacted soils, the soil can be slightly acidic.]

411	Climbing or smothering growth habit	n
	Source(s)	Notes
	United States Forest Service (1947). The Forests of Western and Central Ecuador. USDA Forest Service, Washington, D.C.	"A large tree, growing to 30 inches in diameter and 100 feet in height. Leaves opposite, palmate, with 3 to 5 oblong, acute, short-petiolate leaflets, densely hairy beneath, 8 to 20 cm. long. Fruit olive-sized, edible."

412	Forms dense thickets	
	Source(s)	Notes
	United States Forest Service (1947). The Forests of Western and Central Ecuador. USDA Forest Service, Washington, D.C.	[Unknown. No evidence found] "Wet tropical forest at Pichilingue, Lo• Rios, and mountain forest at Piedras, El Oro. Also in the dry tropical forest."

501	Aquatic	n
	Source(s)	Notes
	United States Forest Service (1947). The Forests of Western and Central Ecuador. USDA Forest Service, Washington, D.C.	[Terrestrial] "Wet tropical forest at Pichilingue, Los Rios, and mountain forest at Piedras, El Oro. Also in the dry tropical forest."

Qsn #	Question	Answer
502	Grass	n
	Source(s)	Notes
	USDA, Agricultural Research Service, National Plant Germplasm System. (2022). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. https://npgsweb.ars-grin.gov/ . [Accessed 27 May 2022]	"Family: Lamiaceae (alt. Labiatae) Subfamily: Viticoideae"

503	Nitrogen fixing woody plant	n
	Source(s)	Notes
	USDA, Agricultural Research Service, National Plant Germplasm System. (2022). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. https://npgsweb.ars-grin.gov/ . [Accessed 27 May 2022]	"Family: Lamiaceae (alt. Labiatae) Subfamily: Viticoideae"

504	Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)	n
	Source(s)	Notes
	Popenoe, W. (1924). Economic fruit-bearing plants of Ecuador. Contributions from the United States National Herbarium 24: 101-134	"The pechichi is a tree up to 10 meters high, with palmately compound leaves, composed of elliptic to obovate-elliptic acuminate leaflets, 5 to 15 cm. in length and sparsely pubescent on both surfaces. The small purplish flowers are followed by oval fruits of the size and appearance of ripe olives; they have a thin, almost black skin, juicy brown flesh, and a single elliptic stone of rather large size."

601	Evidence of substantial reproductive failure in native habitat	n
	Source(s)	Notes
	KewScience. (2022). Plants of the World Online - <i>Vitex gigantea</i> . http://powo.science.kew.org . [Accessed 30 May 2022]	"IUCN Red List Assessment (2021): LC."

602	Produces viable seed	y
	Source(s)	Notes
	Isamar, B. B. A. (2020). El cultivo de Pechiche (<i>Vitex gigantea</i> Kunth) y su importancia en los sistemas agroforestales. Universidad Agraria del Ecuador, Guayaquil	"La propagación de la plántula de pechiche se realiza de forma sexual (mediante semilla) la cual no es idéntica a la planta madre por la existencia de la variación genética, para efectuar la propagación se realizan varios procesos en los cuales se realiza la siembra de la semilla en pequeñas fundas negras de 5 x 7 cm con tierra preparada con sustrato, durante el tiempo que permanezca en las fundas la planta debe de recibir medidas especiales de cuidado tales como: riego adecuado, fertilización, control de maleza, entre otros factores; luego del periodo de 4 a 5 meses la planta se encuentra lista para ser trasplantada al terreno deseado"

Qsn #	Question	Answer
	Tropical Plants Database, Ken Fern. (2022). <i>Vitex gigantea</i> . http://tropical.theferns.info . [Accessed 30 May 2022]	"Propagation - Seed"
	Llerena Arroyo, A. (2020). <i>Vitex gigantea</i> kunth. Recursos Naturales Alimentarios. Universidad Nacional Mayor de San Marcos, Lima, Peru	"Se propaga por semilla y tiene crecimiento medio."

603	Hybridizes naturally	
	Source(s)	Notes
	WRA Specialist. (2022). Personal Communication	Unknown

604	Self-compatible or apomictic	
	Source(s)	Notes
	Llerena Arroyo, A. (2020). <i>Vitex gigantea</i> kunth. Recursos Naturales Alimentarios. Universidad Nacional Mayor de San Marcos, Lima, Peru	[Unknown. Other species reported to be self-compatible] "Sus flores son zigomorfas (simetría bilateral) de coloración azuladas o violáceas agrupadas en inflorescencia panicular con garganta blanca, cuando el árbol florece se cubre totalmente de flores grandes, vistosas, de 8 cm de longitud." [Its flowers are zygomorphic (bilateral symmetry) with a bluish or violet color, grouped in panicle inflorescences with a white throat. When the tree blooms, it is completely covered with large, showy flowers, 8 cm long.]

605	Requires specialist pollinators	n
	Source(s)	Notes
	Llerena Arroyo, A. (2020). <i>Vitex gigantea</i> kunth. Recursos Naturales Alimentarios. Universidad Nacional Mayor de San Marcos, Lima, Peru	"Sus flores son zigomorfas (simetría bilateral) de coloración azuladas o violáceas agrupadas en inflorescencia panicular con garganta blanca, cuando el árbol florece se cubre totalmente de flores grandes, vistosas, de 8 cm de longitud." [Its flowers are zygomorphic (bilateral symmetry) with a bluish or violet color, grouped in panicle inflorescences with a white throat. When the tree blooms, it is completely covered with large, showy flowers, 8 cm long.]

606	Reproduction by vegetative fragmentation	n
	Source(s)	Notes
	Isamar, B. B. A. (2020). El cultivo de Pechiche (<i>Vitex gigantea</i> Kunth) y su importancia en los sistemas agroforestales. Universidad Agraria del Ecuador, Guayaquil	"La propagación de la plántula de pechiche se realiza de forma sexual (mediante semilla)" [The propagation of the pechiche seedling is carried out sexually (by means of seed)]

Qsn #	Question	Answer
607	Minimum generative time (years)	
	Source(s)	Notes
	Isamar, B. B. A. (2020). El cultivo de Pechiche (<i>Vitex gigantea</i> Kunth) y su importancia en los sistemas agroforestales. Universidad Agraria del Ecuador, Guayaquil	[Unknown] "Es un fruto exótico de nuestro país cuya producción se da una vez al año entre diciembre y enero, su propagación es de manera sexual mediante semillas y tiene un crecimiento medio" [t is an exotic fruit from our country whose production occurs once a year between December and January, its propagation is sexually through seeds and it has a medium growth]

701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	n
	Source(s)	Notes
	Llerena Arroyo, A. (2020). <i>Vitex gigantea</i> kunth. Recursos Naturales Alimentarios. Universidad Nacional Mayor de San Marcos, Lima, Peru	[No evidence. No means of external attachment] "Posee una drupa carnosa de forma ovoide con una coloración verde cuando esta tierna y purpura-rojiza cuando está madura. El fruto tiene un tamaño de 1.5 a 2 cm de longitud con una semilla ligeramente ovoide." [It has a fleshy, ovoid-shaped drupe that is green when tender and reddish-purple when ripe. The fruit is 1.5 to 2 cm long with a slightly ovoid seed. It is propagated by seed and has medium growth.]

702	Propagules dispersed intentionally by people	y
	Source(s)	Notes
	rarepalmseeds.com. (2022). <i>Vitex gigantea</i> . https://www.rarepalmseeds.com/vitex-gigantea . [Accessed 30 May 2022]	Seeds sold online

703	Propagules likely to disperse as a produce contaminant	n
	Source(s)	Notes
	Llerena Arroyo, A. (2020). <i>Vitex gigantea</i> kunth. Recursos Naturales Alimentarios. Universidad Nacional Mayor de San Marcos, Lima, Peru	[No evidence. Unlikely. Single-seeded fruit relatively large] "Posee una drupa carnosa de forma ovoide con una coloración verde cuando esta tierna y purpura-rojiza cuando está madura. El fruto tiene un tamaño de 1.5 a 2 cm de longitud con una semilla ligeramente ovoide." [It has a fleshy, ovoid-shaped drupe that is green when tender and reddish-purple when ripe. The fruit is 1.5 to 2 cm long with a slightly ovoid seed. It is propagated by seed and has medium growth.]

Qsn #	Question	Answer
704	Propagules adapted to wind dispersal	n
	Source(s)	Notes
	Llerena Arroyo, A. (2020). <i>Vitex gigantea kunth</i> . Recursos Naturales Alimentarios. Universidad Nacional Mayor de San Marcos, Lima, Peru	[No evidence. Fleshy fruited] "Posee una drupa carnosa de forma ovoide con una coloración verde cuando esta tierna y purpura-rojiza cuando está madura. El fruto tiene un tamaño de 1.5 a 2 cm de longitud con una semilla ligeramente ovoide." [It has a fleshy, ovoid-shaped drupe that is green when tender and reddish-purple when ripe. The fruit is 1.5 to 2 cm long with a slightly ovoid seed. It is propagated by seed and has medium growth.]

705	Propagules water dispersed	
	Source(s)	Notes
	Llerena Arroyo, A. (2020). <i>Vitex gigantea kunth</i> . Recursos Naturales Alimentarios. Universidad Nacional Mayor de San Marcos, Lima, Peru	[Unknown if fruits or seeds are buoyant] "Posee una drupa carnosa de forma ovoide con una coloración verde cuando esta tierna y purpura-rojiza cuando está madura. El fruto tiene un tamaño de 1.5 a 2 cm de longitud con una semilla ligeramente ovoide." [It has a fleshy, ovoid-shaped drupe that is green when tender and reddish-purple when ripe. The fruit is 1.5 to 2 cm long with a slightly ovoid seed. It is propagated by seed and has medium growth.]

706	Propagules bird dispersed	y
	Source(s)	Notes
	Berg, K. S., Socola, J., & Angel, R. R. (2007). Great Green Macaws and the annual cycle of their food plants in Ecuador. <i>Journal of Field Ornithology</i> , 78(1), 1-10	"Typically, macaws pry open exocarps with their bills and extract and consume only seeds. However, macaws consume the entire fruit of two species (<i>Cecropia littoralis</i> and <i>Vitex gigantea</i>)."
	Llerena Arroyo, A. (2020). <i>Vitex gigantea kunth</i> . Recursos Naturales Alimentarios. Universidad Nacional Mayor de San Marcos, Lima, Peru	[Presumably yes. Fleshy fruited] "Posee una drupa carnosa de forma ovoide con una coloración verde cuando esta tierna y purpura-rojiza cuando está madura. El fruto tiene un tamaño de 1.5 a 2 cm de longitud con una semilla ligeramente ovoide." [It has a fleshy, ovoid-shaped drupe that is green when tender and reddish-purple when ripe. The fruit is 1.5 to 2 cm long with a slightly ovoid seed. It is propagated by seed and has medium growth.]

707	Propagules dispersed by other animals (externally)	n
	Source(s)	Notes
	Llerena Arroyo, A. (2020). <i>Vitex gigantea kunth</i> . Recursos Naturales Alimentarios. Universidad Nacional Mayor de San Marcos, Lima, Peru	[No evidence. No means of external attachment] "Posee una drupa carnosa de forma ovoide con una coloración verde cuando esta tierna y purpura-rojiza cuando está madura. El fruto tiene un tamaño de 1.5 a 2 cm de longitud con una semilla ligeramente ovoide." [It has a fleshy, ovoid-shaped drupe that is green when tender and reddish-purple when ripe. The fruit is 1.5 to 2 cm long with a slightly ovoid seed.]

708	Propagules survive passage through the gut	y
	Source(s)	Notes

Qsn #	Question	Answer
	Llerena Arroyo, A. (2020). <i>Vitex gigantea</i> kunth. Recursos Naturales Alimentarios. Universidad Nacional Mayor de San Marcos, Lima, Peru	[Presumably Yes. Fleshy fruited] "Posee una drupa carnosa de forma ovoide con una coloración verde cuando esta tierna y purpura-rojiza cuando está madura. El fruto tiene un tamaño de 1.5 a 2 cm de longitud con una semilla ligeramente ovoide." [It has a fleshy, ovoid-shaped drupe that is green when tender and reddish-purple when ripe. The fruit is 1.5 to 2 cm long with a slightly ovoid seed. It is propagated by seed and has medium growth.]
	Berg, K. S., Socola, J., & Angel, R. R. (2007). Great Green Macaws and the annual cycle of their food plants in Ecuador. <i>Journal of Field Ornithology</i> , 78(1), 1-10	[Presumably yes] "Typically, macaws pry open exocarps with their bills and extract and consume only seeds. However, macaws consume the entire fruit of two species (<i>Cecropia litoralis</i> and <i>Vitex gigantea</i>)."

801	Prolific seed production (>1000/m2)	
	Source(s)	Notes
	Llerena Arroyo, A. (2020). <i>Vitex gigantea</i> kunth. Recursos Naturales Alimentarios. Universidad Nacional Mayor de San Marcos, Lima, Peru	[Unlikely. Relatively large, single-seeded fruit produced] "Posee una drupa carnosa de forma ovoide con una coloración verde cuando esta tierna y purpura-rojiza cuando está madura. El fruto tiene un tamaño de 1.5 a 2 cm de longitud con una semilla ligeramente ovoide." [It has a fleshy, ovoid-shaped drupe that is green when tender and reddish-purple when ripe. The fruit is 1.5 to 2 cm long with a slightly ovoid seed.]

802	Evidence that a persistent propagule bank is formed (>1 yr)	
	Source(s)	Notes
	WRA Specialist. (2022). Personal Communication	Unknown

803	Well controlled by herbicides	
	Source(s)	Notes
	Simpson, T. (2006). Guam CSP invasive weed management guide. United States Department of Agriculture, Natural Resources Conservation Service. Pacific Islands Area - West. Mongmong, Guam	[Unknown. Herbicides may be effective on the congeneric species <i>Vitex parviflora</i>] "Cut the tree trunk near the ground and immediately treat the fresh cut stump surface by spot or wand application of glyphosate or triclopyr herbicide. Collect the plant material and burn it or remove it from contact with the soil. Repeat the treatment every six months as necessary until the tree is no longer present."
	WRA Specialist. (2022). Personal Communication	Unknown. No information on herbicide efficacy or chemical control of this species.

804	Tolerates, or benefits from, mutilation, cultivation, or fire	
	Source(s)	Notes
	WRA Specialist. (2022). Personal Communication	Unknown. Other species are able to coppice or resprout

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

Qsn #	Question	Answer
	Source(s)	Notes
	WRA Specialist. (2022). Personal Communication	Unknown

Summary of Risk Traits:

High Risk / Undesirable Traits

- Grows in tropical climates
- Other *Vitex* species have become invasive
- Reproduces by seeds
- Seeds dispersed by birds and through intentional cultivation
- Gaps in biological and ecological information may reduce accuracy of risk prediction

Low Risk Traits

- No reports of naturalization or invasiveness, but limited evidence of cultivation outside native range
- Unarmed (no spines, thorns, or burrs)
- No evidence of toxicity reported (edible fruit)
- Relatively large, single-seeded fruit unlikely to be accidentally dispersed

Second Screening Results for Trees/tree-like shrubs

(A) Shade tolerant or known to form dense stands? Tolerates partial or light shade. Unknown if able to form dense stands

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

(C) Life cycle <4 years? Unknown

Outcome = Evaluate further