

Assessment date 18 April 2016

<i>Combretum indicum</i> ALL ZONES		Answer	Score
1.01	Is the species highly domesticated?	n	0
1.02	Has the species become naturalised where grown?		
1.03	Does the species have weedy races?		
2.01	Species suited to Florida's USDA climate zones (0-low; 1-intermediate; 2-high) North Zone: suited to Zones 8, 9 Central Zone: suited to Zones 9, 10 South Zone: suited to Zone 10	2	
2.02	Quality of climate match data (0-low; 1-intermediate; 2-high)	2	
2.03	Broad climate suitability (environmental versatility)	y	1
2.04	Native or naturalized in habitats with periodic inundation North Zone: mean annual precipitation 50-70 inches Central Zone: mean annual precipitation 40-60 inches South Zone: mean annual precipitation 40-60 inches	y	1
2.05	Does the species have a history of repeated introductions outside its natural range?	y	
3.01	Naturalized beyond native range	y	2
3.02	Garden/amenity/disturbance weed	y	2
3.03	Weed of agriculture	unk	
3.04	Environmental weed	y	4
3.05	Congeneric weed	y	2
4.01	Produces spines, thorns or burrs	y	1
4.02	Allelopathic	unk	0
4.03	Parasitic	n	0
4.04	Unpalatable to grazing animals	n	-1
4.05	Toxic to animals	unk	0
4.06	Host for recognised pests and pathogens	n	0
4.07	Causes allergies or is otherwise toxic to humans	unk	0
4.08	Creates a fire hazard in natural ecosystems	unk	0
4.09	Is a shade tolerant plant at some stage of its life cycle	n	0
4.10	Grows on infertile soils (oligotrophic, limerock, or excessively draining soils). North & Central Zones: infertile soils; South Zone: shallow limerock or Histisols.	unk	0
4.11	Climbing or smothering growth habit	y	1
4.12	Forms dense thickets	unk	0
5.01	Aquatic	n	0
5.02	Grass	n	0
5.03	Nitrogen fixing woody plant	n	0
5.04	Geophyte	n	0
6.01	Evidence of substantial reproductive failure in native habitat	n	0
6.02	Produces viable seed	y	1

6.03	Hybridizes naturally	unk	-1
6.04	Self-compatible or apomictic	unk	-1
6.05	Requires specialist pollinators	n	0
6.06	Reproduction by vegetative propagation	y	1
6.07	Minimum generative time (years)	unk	-1
7.01	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	unk	-1
7.02	Propagules dispersed intentionally by people	y	1
7.03	Propagules likely to disperse as a produce contaminant	n	-1
7.04	Propagules adapted to wind dispersal	n	-1
7.05	Propagules water dispersed	y	1
7.06	Propagules bird dispersed	unk	-1
7.07	Propagules dispersed by other animals (externally)	n	-1
7.08	Propagules dispersed by other animals (internally)	unk	-1
8.01	Prolific seed production	n	-1
8.02	Evidence that a persistent propagule bank is formed (>1 yr)	unk	-1
8.03	Well controlled by herbicides	unk	1
8.04	Tolerates, or benefits from, mutilation or cultivation	n	-1
8.05		?	
Total Score		6	
Implemented Pacific Second Screening		yes	
Risk Assessment Results		EVAL	

section	# questions answered	satisfy minimum?
A		10 yes
B		6 yes
C		15 yes
total		31 yes

	Reference	Source data
1.01	1. Schmelzer, G.H. & Gurib-Fakim, A. (Eds.). 2013. Plant Resources of Tropical Africa 11(1). Medicinal Plants 2. PROTA Foundation, Wageningen, Netherlands 2. Encyclopedia of Life. http://eol.org/pages/482267/details (Accessed: 15 March 2016)	1. [No evidence of domestication] "Combretum indicum is native to tropical Asia. There is still doubt whether it is indigenous to East Africa or was introduced there long ago. It is nowadays widely cultivated throughout the tropics and subtropics, mainly as an ornamental plant, and has become naturalized in many localities." 2. cultivated but no evidence of selection for reduced weediness
1.02		Skip to 2.01
1.03		Skip to 2.01
2.01	1. Wu, Z.Y., Raven, P.H. & Hong, D.Y. (eds.). 2007. Flora of China. Vol. 13 (Clusiaceae through Araliaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis 2. US National Plant Germplasm System. http://gringlobal/taxonomydetail.aspx?412158 (Accessed: 15 March 2016) 3. Global Biodiversity Information Facility. http://www.gbif.org/species/3699632 (Accessed: 15 March 2016) 4. PERAL NAPPFAST Global Plant Hardiness. http://www.nappfast.org/Plant_hardiness/2012/PHZ%20update201230%20yr%20%20300dpi.tif (Accessed: 10 March 2016)	1. "Rain forests, low woods, thickets, hedges, mountains, dry hillsides, riversides, roadsides, wasteland, also cultivated; below 1500 m. Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hunan, S Jiangxi, Sichuan, Taiwan, Yunnan; cultivated in Zhejiang [Bangladesh, Cambodia, India (including Andaman Islands), Indonesia, Laos, Malaysia, Myanmar, Nepal, Pakistan, Papua New Guinea, Philippines, Singapore, Sri Lanka, Thailand, Vietnam; coastal E Africa, Indian Ocean islands, Pacific islands" 2. Native to Tanzania, Angola, Benin, Cote D'Ivoire, Ghana, Mali, Nigeria, Sierra Leone, Togo, Zaire, China, Taiwan, Bangladesh, India, Nepal, Sri Lanka, Cambodia, Laos, Myanmar, Thailand, Vietnam, Malaysia, Papua New Guinea, Philippines, and Singapore 3. "China (Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hunan, S-Jiangxi, Sichuan, Yunnan), Taiwan, India, peninsular Malaysia (coasts widespread), Indonesia, Laos, Nepal, Pakistan (introduced), Papua New Guinea, Thailand, Timor, Vietnam, SE-Borneo, Philippines (throughout), New Britain, Solomons, Java, Australia (introduced) (Western Australia (introduced), Northern Territory (introduced), Queensland (introduced)), Taiwan (introduced), trop. Africa, Peru (introduced), Jamaica (introduced), Haiti (introduced), Dominican Republic (introduced), Lesser Antilles (introduced) (St. Barts (introduced), Antigua (introduced), Saba (introduced), Guadeloupe (introduced), Dominica (introduced), Martinique (introduced), St. Lucia (introduced), St. Vincent (introduced), Grenada (introduced), Barbados (introduced)), Cuba (introduced), Puerto Rico (introduced), Panama (introduced), Nicaragua (introduced), El Salvador (introduced), Belize (introduced), Venezuela (introduced), Colombia (introduced), Mexico (introduced), Seychelles (introduced), Madagascar (introduced), New
2.02		Native range is well known.

2.03	<p>1. Wu, Z.Y., Raven, P.H. & Hong, D.Y. (eds.). 2007. Flora of China. Vol. 13 (Clusiaceae through Araliaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis 2. US National Plant Germplasm System. http://gringlobal/taxonomydetail.aspx?412158 (Accessed: 15 March 2016) 3. Global Biodiversity Information Facility. http://www.gbif.org/species/3699632 (Accessed: 15 March 2016) 4. The University of Melbourne. Köppen-Geiger Climate Map of the World. http://people.eng.unimelb.edu.au/mpeel/koppen.html (15 March 2016)</p>	<p>1. "Rain forests, low woods, thickets, hedges, mountains, dry hillsides, riversides, roadsides, wasteland, also cultivated; below 1500 m. Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hunan, S Jiangxi, Sichuan, Taiwan, Yunnan; cultivated in Zhejiang [Bangladesh, Cambodia, India (including Andaman Islands), Indonesia, Laos, Malaysia, Myanmar, Nepal, Pakistan, Papua New Guinea, Philippines, Singapore, Sri Lanka, Thailand, Vietnam; coastal E Africa, Indian Ocean islands, Pacific islands" 2. Native to Tanzania, Angola, Benin, Cote D'Ivoire, Ghana, Mali, Nigeria, Sierra Leone, Togo, Zaire, China, Taiwan, Bangladesh, India, Nepal, Sri Lanka, Cambodia, Laos, Myanmar, Thailand, Vietnam, Malaysia, Papua New Guinea, Philippines, and Singapore 3. "China (Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hunan, S-Jiangxi, Sichuan, Yunnan), Taiwan, India, peninsular Malaysia (coasts widespread), Indonesia, Laos, Nepal, Pakistan (introduced), Papua New Guinea, Thailand, Timor, Vietnam, SE-Borneo, Philippines (throughout), New Britain, Solomons, Java, Australia (introduced) (Western Australia (introduced), Northern Territory (introduced), Queensland (introduced)), Taiwan (introduced), trop. Africa, Peru (introduced), Jamaica (introduced), Haiti (introduced), Dominican Republic (introduced), Lesser Antilles (introduced) (St. Barts (introduced), Antigua (introduced), Saba (introduced), Guadeloupe (introduced), Dominica (introduced), Martinique (introduced), St. Lucia (introduced), St. Vincent (introduced), Grenada (introduced), Barbados (introduced)), Cuba (introduced), Puerto Rico (introduced), Panama (introduced), Nicaragua (introduced), El Salvador (introduced), Belize (introduced), Venezuela (introduced), Colombia (introduced), Mexico (introduced), Seychelles (introduced), Madagascar (introduced), New</p>
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<p>2.04</p>	<p>1. Wu, Z.Y., Raven, P.H. & Hong, D.Y. (eds.). 2007. Flora of China. Vol. 13 (Clusiaceae through Araliaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis 2. US National Plant Germplasm System. ov/gringlobal/taxonomydetail.aspx?412158 (Accessed: 15 March 2016) 3. Global Biodiversity Information Facility. http://www.gbif.org/species/3699632 (Accessed: 15 March 2016) 4. Climate Charts. World Climate Maps. http://www.climate-charts.com/World-Climate-Maps.html#rain (Accessed: 10 March 2016)</p>	<p>1. Rain forests, low woods, thickets, hedgerows, mountains, dry hillsides, riversides, roadsides, wasteland, also cultivated; below 1500 m. Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hunan, S Jiangxi, Sichuan, Taiwan, Yunnan; cultivated in Zhejiang [Bangladesh, Cambodia, India (including Andaman Islands), Indonesia, Laos, Malaysia, Myanmar, Nepal, Pakistan, Papua New Guinea, Philippines, Singapore, Sri Lanka, Thailand, Vietnam; coastal E Africa, Indian Ocean islands, Pacific islands" 2. Native to Tanzania, Angola, Benin, Cote D'Ivoire, Ghana, Mali, Nigeria, Sierra Leone, Togo, Zaire, China, Taiwan, Bangladesh, India, Nepal, Sri Lanka, Cambodia, Laos, Myanmar, Thailand, Vietnam, Malaysia, Papua New Guinea, Philippines, and Singapore 3. "China (Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hunan, S-Jiangxi, Sichuan, Yunnan), Taiwan, India, peninsular Malaysia (coasts widespread), Indonesia, Laos, Nepal, Pakistan (introduced), Papua New Guinea, Thailand, Timor, Vietnam, SE-Borneo, Philippines (throughout), New Britain, Solomons, Java, Australia (introduced) (Western Australia (introduced), Northern Territory (introduced), Queensland (introduced)), Taiwan (introduced), trop. Africa, Peru (introduced), Jamaica (introduced), Haiti (introduced), Dominican Republic (introduced), Lesser Antilles (introduced) (St. Barts (introduced), Antigua (introduced), Saba (introduced), Guadeloupe (introduced), Dominica (introduced), Martinique (introduced), St. Lucia (introduced), St. Vincent (introduced), Grenada (introduced), Barbados (introduced)), Cuba (introduced), Puerto Rico (introduced), Panama (introduced), Nicaragua (introduced), El Salvador (introduced), Belize (introduced), Venezuela (introduced), Colombia (introduced), Mexico (introduced), Seychelles (introduced), Madagascar (introduced), New Caledonia (introduced), Fiji (introduced), Christmas Isl. (Austr.), Marshall Isl. (introduced) (Jaluit (introduced)), Micronesia (introduced) (Pohnpei (introduced)), Niue (introduced), Society Isl. (introduced) (Tahiti (introduced), Raiatea (introduced)), Tonga (introduced), Mauritius (introduced), Réunion (introduced)</p>
<p>2.05</p>	<p>1. Wu, Z.Y., Raven, P.H. & Hong, D.Y. (eds.). 2007. Flora of China. Vol. 13 (Clusiaceae through Araliaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis 2. Global Biodiversity Information Facility. http://www.gbif.org/species/3699632 (Accessed: 15 March 2016)</p>	<p>1. "introduced to other parts of tropical Africa and Central and South America; widely cultivated and often naturalized in the tropics" 2. "Pakistan (introduced), ... Australia (introduced) (Western Australia (introduced), Northern Territory (introduced), Queensland (introduced)), Taiwan (introduced), ... Peru (introduced), Jamaica (introduced), Haiti (introduced), Dominican Republic (introduced), Lesser Antilles (introduced) (St. Barts (introduced), Antigua (introduced), Saba (introduced), Guadeloupe (introduced), Dominica (introduced), Martinique (introduced), St. Lucia (introduced), St. Vincent (introduced), Grenada (introduced), Barbados (introduced)), Cuba (introduced), Puerto Rico (introduced), Panama (introduced), Nicaragua (introduced), El Salvador (introduced), Belize (introduced), Venezuela (introduced), Colombia (introduced), Mexico (introduced), Seychelles (introduced), Madagascar (introduced), New Caledonia (introduced), Fiji (introduced), ... Marshall Isl. (introduced) (Jaluit (introduced)), Micronesia (introduced) (Pohnpei (introduced)), Niue (introduced), Society Isl. (introduced) (Tahiti (introduced), Raiatea (introduced)), Tonga (introduced), Mauritius (introduced), Réunion (introduced), Rodrigues (introduced), Andamans (introduced), Nicobars (introduced), ... Bhutan (introduced), Tanzania (introduced), USA (introduced) (Florida (introduced)), U.S. Virgin Isl. (introduced)"</p>

<p>3.01</p>	<p>1. Corlett, R.T. 1988. The Naturalized Flora of Singapore. Journal of Biogeography 15(4): 657-663 2. Wu, Z.Y., Raven, P.H. & Hong, D.Y. (eds.). 2007. Flora of China. Vol. 13 (Clusiaceae through Araliaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis 3. Frohlich, D.& Lau, A. 2014. New plant records for the Hawaiian Islands 2012-2013. Bishop Museum Occasional Papers 115: 7-17 4. Queensland Government. 2014. Weeds of Australia - Rangoon creeper - Quisqualis indica. http://keyserver.lucidcentral.org/weeds/data/03030800-0b07-490a-8d04-0605030c0f01/media/Html/Quisqualis_indica.htm. [Accessed 12 Sep 2014] 5. Plants of AMS Garden: A Garden in the Arabian Deserts of Dubai. https://books.google.com/books?id=i_tpBAAQBAJ&pg=PT487&pg=PT487&dq=%22Combretum+indicum%22+naturalized&source=bl&ots=WfrF0hFvT5&sig=_BzvaDleUDDnOrXuDSqiHqjppA&hl=en&sa=X&ved=0ahUKEwjfh7_i-8LLAhXKqx4KHQFFBEgQ6AEITjAJ#v=onepage&q=%22Combretum%20indicum%22%20naturalized&f=false (Accessed: 15 March 2016)</p>	<p>1. "Appendix 1 Exotic vascular plant species naturalized in Singapore, with habit, region of origin, probable reason for introduction (orn. =as ornamental), date of first record in Singapore (R=first record in Ridley (1922-25) and current status (c=common, l=local, r=rare)." [Quisqualis indica included in list as rare] 2. "introduced to other parts of tropical Africa and Central and South America; widely cultivated and often naturalized in the tropics" 3. "Quisqualis indica L. New naturalized record. Quisqualis indica, a rampant climber native to Malaysia and possibly Africa (Staples & Herbst 2005), was found spreading sparingly outside a home site and at a nearby wetland, where it reached over 7 m into the canopy of a tree. This species can be differentiated from other members of the Combretaceae family in Hawaji by its climbing habit and tubeshaped flowers, which start out white and turn red with age (Staples & Herbst 2005). Material examined. QAHU: Kailua, near 1659 Kanapuu Dr., Jul 2013, US Army 319." 4. "This species is occasionally naturalised in northern Queensland and the northern parts of the Northern Territory. It is possibly also naturalised in south-eastern Queensland. Naturalised overseas in New Caledonia, south-eastern USA (i.e. Florida) and the Caribbean (e.g. Puerto Rico and the Virgin Islands)." 5. "It has since been cultivated and naturalized in tropical areas."</p>
<p>3.02</p>	<p>1. Dunlop, E., Hardcastle, J. & Shah, N.J. 2005. Cousin and Cousine Islands Status and Management of Alien Invasive Species. World Bank / GEF funded project: Improving management of NGO and privately-owned Nature Reserves and high biodiversity islands in Seychelles' 2. Csurhes, S. & Edwards, R. 1998. Potential environmental weeds in Australia: Candidate species for preventative control. Biodiversity Group, Environment Australia, Canberra, Australia 3. Schmelzer, G.H. & Gurib-Fakim, A. (Eds.). 2013. Plant Resources of Tropical Africa 11(1). Medicinal Plants 2. PROTA Foundation, Wageningen, Netherlands 4. Queensland Government. 2014. Weeds of Australia - Rangoon creeper - Quisqualis indica. http://keyserver.lucidcentral.org/weeds/data/03030800-0b07-490a-8d04-0605030c0f01/media/Html/Quisqualis_indica.htm. [Accessed 12 Sep 2014]</p>	<p>1. "Q.indica is a semi-climbing shrub possessing heads of sweetly scented flowers. Introduced as an ornamental, it has shown invasive tendencies, climbing onto the crowns of Ficus, Euphorbia and Pisonia trees. Through vegetative propagation it has the potential to dominate large areas as it has in regions of Mahe and Praslin (Schumacher and Wuthrich, 2000). Control: currently it is confined to one location near the marsh where it is being managed with vigilant herbicide (see section 4.1.2.1)." 2. "Quisqualis indica is an evergreen vine (to c. 3m tall) with oval leaves (c. 10cm long) and red or orange-red flowers. Native to Malaysia, it exists around old settlements in the Northern Territory and is showing signs of weediness (Dunlop, pers. comm.)." 3. [Impacts unspecified] "It is considered invasive in Australia and several of the islands in the Pacific Ocean." 4. [Weedy. Potential environmental weed] "Rangoon creeper (Quisqualis indica) is regarded as an emerging environmental weed in northern Queensland and the northern parts of the Northern Territory and is a potential environmental weed or "sleeper weed " in other warmer and wetter parts of the country. This garden ornamental is persisting and becoming weedy around old settlements in the northern parts of the Northern Territory. For example, Rangoon creeper (Quisqualis indica) is regarded as a medium priority weed species in aboriginal lands in the Northern Land Council area and has been recorded in Holmes Jungle Nature Park. Rangoon creeper (Quisqualis indica) has also been identified as a potential pest species in local government Pest Management Plans for the Cape York Peninsula in northern Queensland. It is possibly also becoming naturalised along creeks in Brisbane in south-eastern Queensland."</p>

3.03	1. Global Compendium of Weeds. http://www.hear.org/gcw/species/quisqualis_indica/ (Accessed: 15 March 2016)	1. Listed as an agricultural weed; insufficient evidence
3.04	1. Queensland Government. 2014. Weeds of Australia - Rangoon creeper - <i>Quisqualis indica</i> . http://keyserver.lucidcentral.org/weeds/data/03030800-0b07-490a-8d04-0605030c0f01/media/Html/Quisqualis_indica.htm . [Accessed 12 Sep 2014] 2. Nevill, J. 2009. Mainstreaming Prevention and Control Measures for Invasive Alien Species into Trade, Transport and Travel across the Production Landscape. National IAS Baseline Report. GOS - UNDP - GEF 3. Global Compendium of Weeds. http://www.hear.org/gcw/species/quisqualis_indica/ (Accessed: 15 March 2016)	1. "Rangoon creeper (<i>Quisqualis indica</i>) is regarded as an emerging environmental weed in northern Queensland and the northern parts of the Northern Territory and is a potential environmental weed or "sleeper weed " in other warmer and wetter parts of the country." 2. "Impacts. This fast growing light-loving vine is highly invasive. Climbing into the crowns of trees it has the potential to dominate large areas as is the case on Mahe and Praslin. It propagates vegetatively by root suckers and by seed that can be water dispersed." 3. Listed as an environmental weed
3.05	1. Pott, A., Pott, V. J., & de Souza, T. W. 2006. Pasture weeds in the Brazilian cerrado region. Embrapa Gado de Corte, Campo Grada, Brazil 2. Holm, L. G., Pancho, J.V., Herberger, J.P. & Plucknett, D.L. 1979. A Geographical Atlas of World Weeds. John Wiley and Sons, New York, NY 3. Global Compendium of Weeds. http://www.hear.org/gcw/scientificnames/scinamec.htm (Accessed: 15 March 2016)	1. [<i>Combretum discolor</i>] "This book presents illustrations and descriptions of over 100 of the main pasture weeds of central western Brazil. Some of the most important include <i>Acacia farnesiana</i> , <i>Acosmium subelegans</i> , <i>Andira humilis</i> [<i>Andira laurifolia</i>], <i>Annona coriacea</i> , <i>Calliandra parviflora</i> , <i>Casearia sylvestris</i> , <i>Cenostigma macrophyllum</i> , <i>Cercidium australe</i> , <i>Cnidoscylus cnicodendron</i> , <i>Combretum discolor</i> ..." ... "Brief botanical characters and remarks on the importance, ecology, mechanical control, usefulness and distribution are given for each species. Most are woody plants, predominating spiny species in forest areas and shrubs with strong underground persistence organs. Approximately two-thirds are cerrado species. Half of the weeds belong to the legume, bignoniaceae and compositae families." 2. Two congeners are principal weeds in Zimbabwe. 3. <i>Combretum apiculatum</i> , <i>Combretum imberbe</i> , and <i>Combretum zeyheri</i> are listed as agricultural weeds
4.01	1. Wu, Z.Y., Raven, P.H. & Hong, D.Y. (eds.). 2007. Flora of China. Vol. 13 (Clusiaceae through Araliaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis 2. Flickr. https://www.flickr.com/photos/shubhada_nikharge/14806098980/in/photostream/ (Accessed: 15 March 2016)	1. "petiole persistent and thornlike" ... "Lianas to 8 m tall. Branchlets brownish yellow pubescent. Petiole 5-9 mm, without an inflated joint near base, densely brown pilose when young; leaf blade mostly oblong-elliptic or elliptic, 5-18x 2.5-7 cm, abaxially sometimes brown pilose, adaxially glabrous except slightly brown pilose on midvein, finely white verruculose, rarely tomentose on both surfaces, base obtuse, apex acuminate to shortly caudate; lateral veins in 7 or 8 pairs." 2. See photo
4.02	1. Fujii, Y., Parvez, S. S., Parvez, M., Ohmae, Y., & Iida, O. 2003. Screening of 239 medicinal plant species for allelopathic activity using the sandwich method. <i>Weed Biology and Management</i> , 3(4): 233-241	1. "Table 1. Screening of leaf litter of 239 medicinal plant species under different families using the sandwich method" [<i>Quisqualis indica</i> - ** indicates increasingly strong inhibitory activity.]; however there is no evidence of allelopathy under natural conditions
4.03		No evidence
4.04	1. Backyard Gardener. http://www.backyardgardener.com/plantname/pda_0858.html (Accessed: 15 March 2016)	1. "Tolerances: deer, rabbits"
4.05	1. Schmelzer, G.H. & Gurib-Fakim, A. (Eds.). 2013. Plant Resources of Tropical Africa 11(1). Medicinal Plants 2. PROTA Foundation, Wageningen, Netherlands	1. [Unknown if animals can be poisoned by seeds] "The prospects for <i>Combretum indicum</i> seeds as an anthelmintic are limited, due to the toxic side-effects of quisqualic acid."; insufficient evidence

4.06	<p>1. Schmelzer, G.H. & Gurib-Fakim, A. (Eds.). 2013. Plant Resources of Tropical Africa 11(1). Medicinal Plants 2. PROTA Foundation, Wageningen, Netherlands 2. Florida Gardener. http://www.floridagardener.com/pom/Rangoon%20Creeper.htm (Accessed: 15 March 2016)</p>	<p>1. "Diseases and pests. Combretum indicum is a host to a wide variety of insects, including aphids, scale insects and caterpillars, as well as nematodes, fungi and various crop viruses. These pests and diseases are mainly documented from Asian countries, but probably several of these problems also occur in tropical Africa." 2. "Pests: Aphids, scale insects and caterpillars"; no evidence that this plant is a significant primary or alternate host</p>
4.07	<p>1. Globinmed. 2014. Quisqualis indica. http://www.globinmed.com/index.php?option=com_content&view=article&id=84962:quisqualisindica&catid=719:q. [Accessed 12 Sep 2014] 2. Schmelzer, G.H. & Gurib-Fakim, A. (Eds.). 2013. Plant Resources of Tropical Africa 11(1). Medicinal Plants 2. PROTA Foundation, Wageningen, Netherlands 3. The Lovely Plants. http://www.thelovelyplants.com/quisqualis-indica-the-rangoon-creeper/ (Accessed: 15 March 2016) 4. Florida Gardener. http://www.floridagardener.com/pom/Rangoon%20Creeper.htm (Accessed: 15 March 2016) 5. Emerald Goddess Gardens. http://www.emeraldgoddessgardens.com/index.php?main_page=product_info&products_id=199 (Accessed: 15 March 2016)</p>	<p>1. [Possibly if taken internally] "Mildly toxic, side-effects such as nausea, vomiting and belching (toasting the herb decreases its toxicity), occasionally allergic reaction with skin rashes with or without itching, painful swelling of ankles, increase in body temperature. Overdose: headache, dizziness, nausea, vomiting, diarrhoea, abdominal pain, sweating, cold limbs leading to seizures, drop in blood." 2. [Possibly] "The prospects for Combretum indicum seeds as an anthelmintic are limited, due to the toxic side effects of quisqualic acid." 3. "Rangoon Creeper is used in traditional medicine in Pakistan, China and India to relieve diarrhea, nephritis and rheumatism." 4. "Quisqualis indica is used for traditional medicine in its native lands. Leaves are used to relieve pain caused by fever while the roots are used treat rheumatism." 5. "It is believed to have first been documented in horticultural literature by Dr. John Ivor Murray who set samples of nuts back to Edinburgh in the mid 1800s noting that the Chinese used the nut this plant produces as a treatment for intestinal parasites."</p>
4.08	<p>1. Nevill, J. 2009. Mainstreaming Prevention and Control Measures for Invasive Alien Species into Trade, Transport and Travel across the Production Landscape. National IAS Baseline Report. GOS - UNDP - GEF</p>	<p>1 [Could act as a fuel ladder, but generally not occurring in fire prone habitat] "Q. indica is a ligneous vine that can reach up to 8m in its native range it is typically found on the edges of primary forest, in secondary forests, riverbanks and thickets from sea-level up to about 100m."; insufficient evidence</p>
4.09	<p>1. Schmelzer, G.H. & Gurib-Fakim, A. (Eds.). 2013. Plant Resources of Tropical Africa 11(1). Medicinal Plants 2. PROTA Foundation, Wageningen, Netherlands 2. Dave's Garden. http://davesgarden.com/guides/pf/go/31530/#b (Accessed: 15 March 2016) 3. Flowers of India. http://www.flowersofindia.net/catalog/slides/Rangoon%20Creeper.html (Accessed: 15 March 2016)</p>	<p>1. [Possibly shade tolerant] "It prefers full sun, but light shade is tolerated." 2. "Sun to Partial Shade" 3. "Rangoon creeper does like medium to bright light."</p>
4.10	<p>1. Aguilar, N.O., 1999. Quisqualis L.[Internet] Record from Proseabase. de Padua, L.S., Bunyaphatsara, N. and Lemmens, R.H.M.J. (Editors). PROSEA (Plant Resources of South-East Asia) Foundation, Bogor, Indonesia. http://www.proseanet.org. [Accessed 10 Sep 2014] 2. Gardening Know How. http://www.gardeningknowhow.com/ornamental/vines/rangoon-creeper/rangoon-creeper-vine.htm (Accessed: 15 March 2016) 3. Florida Gardener. http://www.floridagardener.com/pom/Rangoon%20Creeper.htm (Accessed: 15 March 2016)</p>	<p>1. "It occurs from sea-level up to 300 m altitude, preferably in full sunlight, on a wide range of soils, but preferably on well-drained soils." 2. "Quisqualis indica care requires full sun to partial shade. This creeper survives in a variety of soil conditions provided they are well draining and is pH adaptable." 3. "Soil Requirements: Rich, moist, well-drained soil"; insufficient evidence</p>
4.11	<p>1. Wu, Z.Y., Raven, P.H. & Hong, D.Y. (eds.). 2007. Flora of China. Vol. 13 (Clusiaceae through Araliaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis 2. Florida Gardener. http://www.floridagardener.com/pom/Rangoon%20Creeper.htm (Accessed: 15 March 2016)</p>	<p>1. "Lianas to 8 m tall. Branchlets brownish yellow pubescent. Petiole 5-9 mm, without an inflated joint near base, densely brown pilose when young; leaf blade mostly oblong elliptic or elliptic, 5-18 x 2.5-7 cm, abaxially sometimes brown pilose, adaxially glabrous except slightly brown pilose on midvein, finely white verruculose, rarely tomentose on both surfaces, base obtuse, apex acuminate to shortly caudate; lateral veins in 7 or 8 pairs. Inflorescences lax; bracts deciduous, filiform-linear to ovate, 3-12 mm, brown pilose." 2. "Form: Freely branching perennial climber"</p>

4.12	1. Nevill, J. 2009. Mainstreaming Prevention and Control Measures for Invasive Alien Species into Trade, Transport and Travel across the Production Landscape. National IAS Baseline Report. GOS - UNDP - GEF 2. Pacific Island Ecosystems at Risk. http://www.hear.org/pier/species/quisqualis_indica.htm (Accessed: 15 March 2016)	1. [A component of thicket vegetation] "Q. indica is a ligneous vine that can reach up to 8m in its native range it is typically found on the edges of primary forest, in secondary forests, riverbanks and thickets from sea-level up to about 100m." 2. Present in the Phillipines "In thickets and secondary forests"; insufficient evidence
5.01	1. Aguilar, N.O., 1999. Quisqualis L.[Internet] Record from Proseabase. de Padua, L.S., Bunyaphatsara, N. and Lemmens, R.H.M.J. (Editors). PROSEA (Plant Resources of South-East Asia) Foundation, Bogor, Indonesia. http://www.proseanet.org . [Accessed 10 Sep 2014] 2. Atlas of Living Australia. http://bie.ala.org.au/species/urn:lsid:biodiversity.org.au:apni.taxon:82306 (Accessed: 15 March 2016)	1. [Terrestrial] "Quisqualis indica is occasionally found in the same habitat, but more often in more disturbed habitats such as secondary forest, thickets, along streams, and even as a weed along roadsides, on waste places, in rice fields and along railway tracks." 2. "Terrestrial Habitats"
5.02	1. USDA, ARS, National Genetic Resources Program. Germplasm Resources Information Network - (GRIN) [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland. URL: http://www.arsgrin.gov/ . [Accessed] 2. USDA Plants Database. http://plants.usda.gov/core/profile?symbol=QUIN10 (Accessed: 15 March 2016)	1. Combretaceae 2. "Growth Habit: Vine"
5.03	1. USDA, ARS, National Genetic Resources Program. Germplasm Resources Information Network - (GRIN) [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland. URL: http://www.arsgrin.gov/ . [Accessed 12 Sep 2014] 2. Kerala Plants. http://keralaplants.in/keralaplantsdetails.aspx?id=Quisqualis_indica (Accessed: 15 March 2016)	1. Combretaceae 2. "Description: Woody climbers"; no evidence of nitrogen fixation
5.04	1. Flora of Australia Online. 2014. Quisqualis indica. http://www.anbg.gov.au/abrs/onlineresources/flora/stddisplay.xsql?pnid=55060 . [Accessed 12 Sep 2014] 2. Pacific Islands Ecosystems at Risk. http://www.hear.org/pier/species/quisqualis_indica.htm (Accessed: 15 March 2016) 3. Flora of China. http://www.efloras.org/florataxon.aspx?flora_id=2&taxon_id=200014742 (Accessed: 15 March 2016)	1. "Climbing shrub; old stems thorny; branchlets pubescent. Leaves elliptic to oblong, rounded to subcordate at base, shortly acuminate, sparsely pubescent beneath; lamina 4-18 cm long; petiole 5-15 mm long. Spikes 4-10 cm long; bracts 5-10 mm long, narrow. Flowers showy, fragrant, becoming pendulous." 1,2,&3. Evidence of these special structures is not present in the description of this plant
6.01	1. Schmelzer, G.H. & Gurib-Fakim, A. (Eds.). 2013. Plant Resources of Tropical Africa 11(1). Medicinal Plants 2. PROTA Foundation, Wageningen, Netherlands	1. [No evidence] "Combretum indicum is native to tropical Asia. There is still doubt whether it is indigenous to East Africa or was introduced there long ago. It is nowadays widely cultivated throughout the tropics and subtropics, mainly as an ornamental plant, and has become naturalized in many localities." ... "Combretum indicum is commonly planted as an ornamental throughout the tropics and subtropics, and is therefore not threatened by genetic erosion."
6.02	1. Schmelzer, G.H. & Gurib-Fakim, A. (Eds.). 2013. Plant Resources of Tropical Africa 11(1). Medicinal Plants 2. PROTA Foundation, Wageningen, Netherlands 2. Aguilar, N.O., 1999. Quisqualis L.[Internet] Record from Proseabase. de Padua, L.S., Bunyaphatsara, N. and Lemmens, R.H.M.J. (Editors). PROSEA (Plant Resources of South-East Asia) Foundation, Bogor, Indonesia. http://www.proseanet.org . [Accessed 10 Sep 2014] 3. 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 4. Eisikowitch, D., & Rotem, R. 1987. Flower orientation and color change in Quisqualis indica and their possible role in pollinator partitioning. Botanical Gazette 148(2): 175-179 5. Florida Gardener. http://www.floridagardener.com/pom/Rangoon%20Creeper.htm (Accessed: 15 March 2016) 6. John and Jacq's Garden. http://www.jaycjayc.com/quisqualis-indica-rangoon-creeper/ (Accessed: 15 March 2016)	1. "Combretum indicum can be propagated by seeds, stem cuttings, air layering and root suckers." 2. "Fruiting plants are rare in many localities." 3. "Since seed is rarely formed, propagation is usually by 3-4" woody cuttings. When fruit is set, though, the seedlings can form a thick understory beneath the parent plant, indicating that Rangoon creeper might become invasive given the right conditions." 4. [Not in Israel] "At night, white flowers are visited by hawkmoths, while the red flowers are neglected by night visitors. During the day, pink and red flowers are visited by a wide range of visitors: solitary bees, honeybees, flies, and sunbirds. Pollen grains germinate well on the stigmatic fluid during the first few hours, but germination is reduced during the day. Pollen tubes do not penetrate into the style, and seeds are not produced in Israel." 5. "Fruits: Small dry drupe-like seed with five angles and five wings" 6. "Propagation: Easily by seeds, cuttings and layering. Suckers that emerge from the parent plant can be used to propagate new plants."
6.03		No evidence

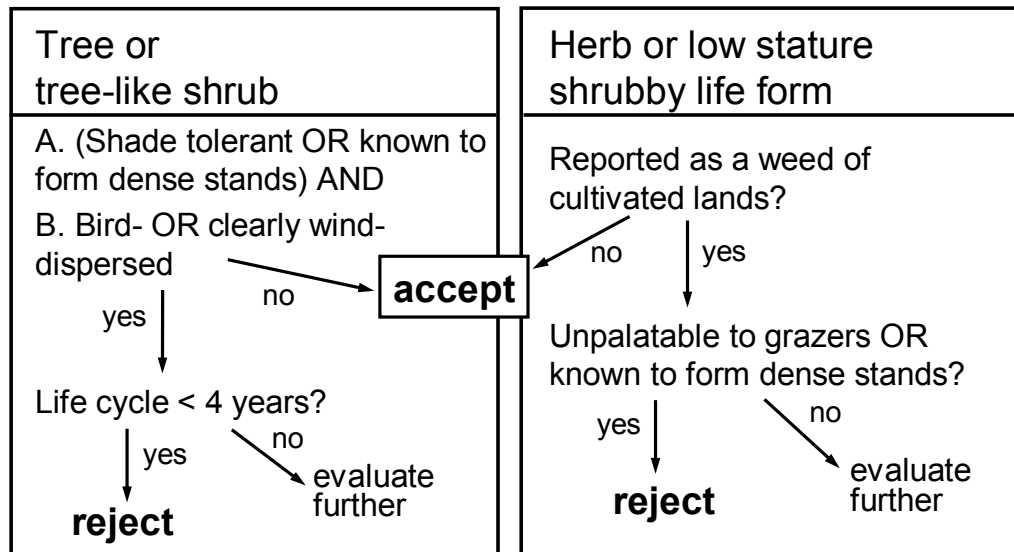
6.04	1. Kubitzki, K., Bayer, C. 7 Stevens, P.F. The families and genera of vascular plants: Volume IX. Flowering Plants. Eudicots. Springer-Verlag, Berlin, Heidelberg, New York	1. [Related species self-incompatible, but unknown for <i>C. indicum</i>] " <i>Combretum fruticosum</i> " "This species has been shown to be self-incompatible (Bernardello et al. 1994)."; insufficient evidence
6.05	1. Flora of Australia Online. 2014. <i>Quisqualis indica</i> . http://www.anbg.gov.au/abrs/onlineresources/flora/stddisplay.xsql?pnid=55060 [Accessed 12 Sep 2014] 2. Eisikowitch, D., & Rotem, R. 1987. Flower orientation and color change in <i>Quisqualis indica</i> and their possible role in pollinator partitioning. <i>Botanical Gazette</i> 148(2): 175-179 3. Staples, G.W. & Herbst, D.R. 2005. <i>A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places</i> . Bishop Museum Press, Honolulu, HI 4. University of Arkansas. http://www.uaex.edu/yard-garden/resource-library/plant-week/rangoon_creeper_10-4-13.aspx (Accessed: 15 March 2016) 5. All Things Plants. http://allthingsplants.com/plants/view/92435/Rangoon-Creeper-Combretum-indicum/ (Accessed: 15 March 2016)	1. "Pollination depends upon the presence of a long-tongued insect pollinator which may be absent from Christmas Is. " 2. [Primarily hawkmoth pollinated] "During the day, pink and red flowers are visited by a wide range of visitors: solitary bees, honeybees, flies, and sunbirds. Pollen grains germinate well on the stigmatic fluid during the first few hours, but germination is reduced during the day. Pollen tubes do not penetrate into the style, and seeds are not produced in Israel. Nectar flow begins at flower dehiscence, reaches its peak at early morning, and then is absorbed by the flower. During the first hours of blooming, the flower is typically "hawkmoth" but, by the next morning, attracts visitors other than hawkmoths." 3. "Since seed is rarely formed, propagation is usually by 3-4" woody cuttings. When fruit is set, though, the seedlings can form a thick understory beneath the parent plant, indicating that Rangoon creeper might become invasive given the right conditions." 4. "The white flowers attract large flying moths such as the hawkmoth and sphinx moth which are unable to see the darker colored flowers in the same cluster. During the daylight as the flowers change from pink to red, a different set of pollinators is attracted to the blossom." 5. "Wildlife Attractant: Bees, Butterflies, Hummingbirds"
6.06	1. Flora of Australia Online. 2014. <i>Quisqualis indica</i> . http://www.anbg.gov.au/abrs/onlineresources/flora/stddisplay.xsql?pnid=55060 . [Accessed 12 Sep 2014] 2. Gardening Know How. http://www.gardeningknowhow.com/ornamental/vines/rangoon-creeper/rangoon-creeper-vine.htm (Accessed: 15 March 2016) 3. Pacific Island Ecosystems at Risk. http://www.hear.org/pier/species/quisqualis_indica.htm (Accessed: 15 March 2016)	1. "It spreads by root suckers as well as by seed." 2. "aggressively fast grower which spreads rapidly with its root suckers" 3. "It spreads by root suckers as well as by seed" (<i>Flora of Australia</i> , Vol. 50).
6.07		No evidence
7.01		No evidence
7.02	1. Staples, G.W. & Herbst, D.R. 2005. <i>A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places</i> . Bishop Museum Press, Honolulu, HI 2. Almost Eden. http://almostedenplants.com/shopping/products/9869-Double-Rangoon-Creeper-Drunken-Sailor-Chinese-Honeysuckle/ (Accessed: 15 March 2016) 3. Emerald Goddess Gardens. http://www.emeraldgoddessgardens.com/index.php?main_page=product_info&products_id=199 (Accessed: 15 March 2016)	1. "cultivated worldwide in tropical regions as an ornamental." ... "In Hawai'i, Rangoon creeper is grown in gardens below 1000' elevation with ample room in which it can spread;" 2&3. Can be purchased online
7.03	1. Staples, G.W. & Herbst, D.R. 2005. <i>A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places</i> . Bishop Museum Press, Honolulu, HI 2. The flora of the presidency of Bombay, Volume 1. https://books.google.com/books?id=JSC1AAAAIAAJ&pg=PA486&lpg=PA486&dq=%22Quisqualis+indica%22+%22rarely%22&source=bl&ots=qPQcdKpeQh&sig=dXFbaYQrfSDBeNgGDIAJSDtgYRQ&hl=en&sa=X&ved=0ahUKEwj8zsSb38PLAhXFbB4KHc1OABYQ6AEIPTAF#v=onepage&q=%22Quisqualis%20indica%22%20%22rarely%22&f=false (Accessed: 15 March 2016) 3. Gardening Know How. http://www.gardeningknowhow.com/ornamental/vines/rangoon-creeper/rangoon-creeper-vine.htm (Accessed: 15 March 2016)	1. [Unlikely given limited seed production in cultivation] "Since seed is rarely formed, propagation is usually by 3-4" woody cuttings. When fruit is set, though, the seedlings can form a thick understory beneath the parent plant, indicating that Rangoon creeper might become invasive given the right conditions." 2. Rarely fruits in Bombay 3. Rarely fruits
7.04	1. Dave's Garden. http://davesgarden.com/guides/pf/showimage/219160/ (Accessed: 15 March 2016)	1. See photos of fruit/seed. No evidence of traits indicating wind dispersal.

7.05	1. Jackson, G. 1974. Cryptogeal germination and other seedling adaptations to the burning of vegetation in savanna regions: The origin of the pyrophytic habit. <i>New Phytologist</i> , 73(4): 771-780 2. Schmelzer, G.H. & Gurib-Fakim, A. (Eds.). 2013. <i>Plant Resources of Tropical Africa 11(1). Medicinal Plants</i> 2. PROTA Foundation, Wageningen, Netherlands 3. Aguilar, N.O., 1999. <i>Quisqualis L.</i> [Internet] Record from Proseabase. de Padua, L.S., Bunyapraphatsara, N. and Lemmens, R.H.M.J. (Editors). PROSEA (Plant Resources of South-East Asia) Foundation, Bogor, Indonesia. http://www.proseanet.org . [Accessed 10 Sep 2014] 4. Pacific Island Ecosystems at Risk. http://www.hear.org/pier/species/quisqualis_indica.htm (Accessed: 15 March 2016)	1. "Quisqualis indica grows along the banks of the wide sandy-bedded rivers of northern Nigeria where the vegetation burns in the dry season. It is a scrambling untidy shrub with a tendency to climb." 2. "The fruits are buoyant in both fresh water and seawater and are thus dispersed." 3. "The fruits of Quisqualis are buoyant in both fresh water and seawater, and are thus dispersed." 4. "Propagation: Seed, often water-dispersed. "It spreads by root suckers as well as by seed" (Flora of Australia, Vol. 50)."
7.06		No evidence
7.07	1. Dave's Garden. http://davesgarden.com/guides/pf/showimage/219160/ (Accessed: 15 March 2016)	1. See photos of fruit/seed. No clear mechanism of attachment.
7.08		No evidence
8.01	1. Staples, G.W. & Herbst, D.R. 2005. <i>A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places</i> . Bishop Museum Press, Honolulu, HI 2. The flora of the presidency of Bombay, Volume 1. https://books.google.com/books?id=JSC1AAAAIAAJ&pg=PA486&lpg=PA486&dq=%22Quisqualis+indica%22+%22rarely%22&source=bl&ots=qPQcdKpeQh&sig=dXFbaYQrfSDBeNgGDIAJSDtgYRQ&hl=en&sa=X&ved=0ahUKEwj8zsSb38PLAhXFbB4KHc1OABYQ6AEIPTAF#v=onepage&q=%22Quisqualis%20indica%22%20%22rarely%22&f=false (Accessed: 15 March 2016) 3. Gardening Know How. http://www.gardeningknowhow.com/ornamental/vines/rangoon-creeper/rangoon-creeper-vine.htm (Accessed: 15 March 2016)	1. [High seed densities unlikely in the Hawaiian Islands] "Since seed is rarely formed, propagation is usually by 3-4" woody cuttings. When fruit is set, though, the seedlings can form a thick understory beneath the parent plant, indicating that Rangoon creeper might become invasive given the right conditions." 2. Rarely fruits in Bombay 3. Rarely fruits
8.02	1. Schmelzer, G.H. & Gurib-Fakim, A. (Eds.). 2013. <i>Plant Resources of Tropical Africa 11(1). Medicinal Plants</i> 2. PROTA Foundation, Wageningen, Netherlands 2. Royal Botanic Gardens Kew. 2008. <i>Seed Information Database (SID). Version 7.1.</i> http://data.kew.org/sid/ . [Accessed 12 Sep 2014]	1. "Seeds germinate easily when fresh." ... "Dried fruits can be stored for up to 1 year, but the effect of storage on the quisqualic acid content is not yet known." [Likely in reference to medicinal use] 2. "Storage Behaviour: No data available for species. Of 1 known taxa of genus Quisqualis, 100.00% Orthodox(p?); insufficient evidence
8.03	1. Dunlop, E., Hardcastle, J. & Shah, N.J. 2005. <i>Cousin and Cousine Islands Status and Management of Alien Invasive Species</i> . World Bank / GEF funded project: Improving management of NGO and privately-owned Nature Reserves and high biodiversity islands in Seychelles	1. [Possibly Yes] "In one instance, a herbicide Vigilant [®] used to aid in control of the invasive rangoon creeper (<i>Quisqualis indica</i>) on Cousin. Vigilant is a low toxicity herbicide gel containing 5% picloram as the active ingredient. It is used on woody weed species where the gel is applied directly to the freshly cut plant stem. This treatment has been in use on Cousin since late November 2004, and to date the results appear promising."; insufficient evidence
8.04	1. Dunlop, E., Hardcastle, J. & Shah, N.J. 2005. <i>Cousin and Cousine Islands Status and Management of Alien Invasive Species</i> . World Bank / GEF funded project: Improving management of NGO and privately-owned Nature Reserves and high biodiversity islands in Seychelles 2. University of Arkansas. http://www.uaex.edu/yard-garden/resource-library/plant-week/rangoon_creeper_10-4-13.aspx (Accessed: 15 March 2016)	1. "Combretum indicum can be maintained as a large shrub with vigilant pruning." 2. "If the plant gets too unruly in its spread, cutting back hard and often will control growth without significantly reducing the number of blooms."
8.05		No evidence

Combretum indicum

Pacific second screening: decision rules for species with WRA scores between 1 and 6

(from Daehler *et al.* 2004)



Vines must pass both tests

This species is not shade tolerant. However there was no information regarding ability to form dense stands or a weed of cultivated areas. Therefore the results of the secondary screen is Evaluate Further