

**Taxon:** *Calathea lutea* (Aubl.) Schult.

**Family:** Marantaceae

**Common Name(s):** cigar calathea  
platanillo

**Synonym(s):** Maranta lutea Aubl.

**Assessor:** Chuck Chimera

**Status:** Assessor Approved

**End Date:** 1 Aug 2016

**WRA Score:** 8.0

**Designation:** H(HPWRA)

**Rating:** High Risk

**Keywords:** Tropical Herb, Weedy, Ornamental, Dense Stands, Ant-Dispersed

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

Qsn #	Question	Answer Option	Answer
410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	y=1, n=0	n
411	Climbing or smothering growth habit	y=1, n=0	n
412	Forms dense thickets	y=1, n=0	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	y
606	Reproduction by vegetative fragmentation	y=1, n=-1	y
607	Minimum generative time (years)	1 year = 1, 2 or 3 years = 0, 4+ years = -1	1
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	y
708	Propagules survive passage through the gut	y=1, n=-1	y
801	Prolific seed production (>1000/m <sup>2</sup> )	y=1, n=-1	n
802	Evidence that a persistent propagule bank is formed (>1 yr)		
803	Well controlled by herbicides		
804	Tolerates, or benefits from, mutilation, cultivation, or fire	y=1, n=-1	y
805	Effective natural enemies present locally (e.g. introduced biocontrol agents)		

**Supporting Data:**

Qsn #	Question	Answer
101	Is the species highly domesticated?	n
	Source(s)	Notes
	Schultes, R. (1989). <i>Calathea lutea</i> (Marantaceae), a Potential Domesticated and Source of High-Grade Wax. <i>Economic Botany</i> , 4 (4), 509-510	[No evidence of domestication] "It has been estimated that, if planted at about 33,500 per acre, <i>C. lutea</i> might give an annual yield of ca. 36 pounds of crude wax per acre; the first year there would be one harvest of leaves; and two harvests in subsequent years."

102	Has the species become naturalized where grown?	
	Source(s)	Notes
	WRA Specialist. 2016. Personal Communication	NA

103	Does the species have weedy races?	
	Source(s)	Notes
	WRA Specialist. 2016. 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, ARS, Germplasm Resources Information Network, 2016. National Plant Germplasm System [Online Database]. <a href="http://www.ars-grin.gov/npgs/index.html">http://www.ars-grin.gov/npgs/index.html</a> . [Accessed 1 Aug 2016]	"Native: Northern America : Mexico Southern America Brazil: Brazil - Acre, - Amazonas, - Mato Grosso do Sul, - Para, - Amapa Caribbean: Dominica; Guadeloupe; Martinique; Puerto Rico; Trinidad and Tobago - Trinidad Mesoamerica: Belize; Costa Rica; El Salvador; Guatemala; Honduras; Nicaragua; Panama Northern South America: French Guiana; Guyana; Suriname; Venezuela Western South America: Colombia; Ecuador; Peru"

202	Quality of climate match data	High
	Source(s)	Notes
	USDA, ARS, Germplasm Resources Information Network, 2016. National Plant Germplasm System [Online Database]. <a href="http://www.ars-grin.gov/npgs/index.html">http://www.ars-grin.gov/npgs/index.html</a> . [Accessed 1 Aug 2016]	

203	Broad climate suitability (environmental versatility)	n
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Qsn #	Question	Answer
	<b>Source(s)</b>	<b>Notes</b>
	John&Jacq~s Garden. 2016. <i>Calathea lutea</i> . <a href="http://www.jaycjayc.com/calathea-lutea-cuban-cigar/">http://www.jaycjayc.com/calathea-lutea-cuban-cigar/</a> . [Accessed 1 Aug 2016]	"For subtropical and temperate regions: Hardiness: USDA Zone 10-11. Grows well in tropical and subtropical climates."
	Croat, T.B. 1978. Flora of Barro Colorado Island. Stanford University Press, Stanford, CA	[A tropical species] "Coastal areas from Mexico to Peru and Brazil; principally in coastal marshes and disturbed areas along both coasts. In Panama, known from tropical moist forest in the Canal Zone, Bocas del Toro, Colon, Chiriqui, Los Santos, and Darien, from tropical dry forest in Code, from premontane wet forest in Chiriqui and Panama (Cerro Campana), and from tropical wet forest in Colon (near Portobelo)."
	Tropicos.org. 2016. Tropicos [Online Database]. Missouri Botanical Garden. <a href="http://www.tropicos.org/">http://www.tropicos.org/</a> . [Accessed 1 Aug 2016]	Possibly. Collected over an elevation range in excess of 1000 m, but higher elevation collections occur mostly at low latitudes close to the equator.

<b>204</b>	<b>Native or naturalized in regions with tropical or subtropical climates</b>	<b>y</b>
	<b>Source(s)</b>	<b>Notes</b>
	USDA, ARS, Germplasm Resources Information Network, 2016. National Plant Germplasm System [Online Database]. <a href="http://www.ars-grin.gov/npgs/index.html">http://www.ars-grin.gov/npgs/index.html</a> . [Accessed 1 Aug 2016]	"Native: Northern America : Mexico Southern America Brazil: Brazil - Acre, - Amazonas, - Mato Grosso do Sul, - Para, - Amapa Caribbean: Dominica; Guadeloupe; Martinique; Puerto Rico; Trinidad and Tobago - Trinidad Mesoamerica: Belize; Costa Rica; El Salvador; Guatemala; Honduras; Nicaragua; Panama Northern South America: French Guiana; Guyana; Suriname; Venezuela Western South America: Colombia; Ecuador; Peru"

<b>205</b>	<b>Does the species have a history of repeated introductions outside its natural range?</b>	<b>y</b>
	<b>Source(s)</b>	<b>Notes</b>
	Staples, G.W. & Herbst, D.R. 2005. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	" <i>Calathea lutea</i> is the largest cultivated species in the genus." ... " <i>Calathea lutea</i> is not normally cultivated in greenhouses but is spectacular outdoors in southern Florida, Hawaii, and more tropical climates."

<b>301</b>	<b>Naturalized beyond native range</b>	
	<b>Source(s)</b>	<b>Notes</b>
	Graveson, R. 2012. Plants of Saint Lucia - A Pictorial Flora of Wild and Cultivated Vascular Plants. <a href="http://www.saintlucianplants.com/index.html">http://www.saintlucianplants.com/index.html</a> . [Accessed 1 Aug 2016]	"Naturalized arborescent herb along river." [Possibly, although may be native]

Qsn #	Question	Answer
	Wagner, W.L., Herbst, D.R.& Lorence, D.H. 2016. Flora of the Hawaiian Islands. Smithsonian Institution, Washington, D.C. <a href="http://botany.si.edu/">http://botany.si.edu/</a> . [Accessed 1 Aug 2016]	No current evidence from the Hawaiian Islands
	Randall, R.P. 2012. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	No evidence

302	Garden/amenity/disturbance weed	
	Source(s)	Notes
	Croat, T.B. 1978. Flora of Barro Colorado Island. Stanford University Press, Stanford, CA	[Aggressive species of tree-fall gaps. Could behave as a disturbance weed] "Almost never in the forest except in tree-fall areas; occasional on creek beds and shoreline soil deposits." ... "This is the most aggressive species of the genus, according to H. Kennedy (pers. comm.)."

303	Agricultural/forestry/horticultural weed	y
	Source(s)	Notes
	Leoni, J. M., & Costa, F. R. C. (2013). Sustainable use of <i>Calathea lutea</i> in handicrafts: A case study from the Amanã Sustainable Development Reserve in the Brazilian Amazon. <i>Economic Botany</i> , 67(1), 30-40	[Could outcompete crop plants. Considered a weed by farmers] "The cauaçu (area dominated by cauaçu— <i>Calathea lutea</i> ) is a plant formation that arises in abandoned fields. <i>C. lutea</i> sprouts quickly after forest or fallow areas are cut and burned; cauaçu grows so vigorously that farmers eliminate it to prevent it from overcrowding crop plants. Dense stands are usually associated with high várzeas along the river channel that passes through the Corací sector." ... "Cauaçu is considered a weed by farmers of Corací, and by contrast, a NTFP by artisans." [NTFP = non-timber forest products] "Cauaçu is considered a weed because the stands grow fast and compete with other plants in the same areas. Due to its aggressive nature, cauaçu must be cut frequently, a task considered arduous by local farmers."
	Randall, R.P. 2012. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	No evidence

304	Environmental weed	n
	Source(s)	Notes
	Randall, R.P. 2012. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	No evidence

305	Congeneric weed	
	Source(s)	Notes
	Randall, R.P. 2012. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	Possibly. Several species listed as naturalized or as weeds of unspecified impacts

Qsn #	Question	Answer
401	<b>Produces spines, thorns or burrs</b>	n
	<b>Source(s)</b>	<b>Notes</b>
	Anonymous. 1945. Flora of Panama. Part III. Fascicle I. Annals of the Missouri Botanical Garden, 32(1): 1-105	[No evidence] "Plants very stout, 1-5 m. tall, caulescent; leaves longpetiolate, broadly elliptic to suborbicular, obtuse or abruptly acuminate, the base obtuse or rounded then very abruptly and shortly decurrent, 20-150 cm. long, 15-60 cm. broad, glabrous, conspicuously pruinose, particularly the lower surface; callus 5-12 cm. long"
402	<b>Allelopathic</b>	
	<b>Source(s)</b>	<b>Notes</b>
	Leoni, J. M., & Costa, F. R. C. (2013). Sustainable use of <i>Calathea lutea</i> in handicrafts: A case study from the Amanã Sustainable Development Reserve in the Brazilian Amazon. Economic Botany, 67(1), 30-40	[Unknown] "Shading, mechanical interference by litter, or even allelopathy are possible causes of suppression, as has been observed in experimental studies of other species (Bosyl and Reader 1995)."
403	<b>Parasitic</b>	n
	<b>Source(s)</b>	<b>Notes</b>
	Anonymous. 1945. Flora of Panama. Part III. Fascicle I. Annals of the Missouri Botanical Garden, 32(1): 1-105	"Plants very stout, 1-5 m. tall, caulescent" [Marantaceae. No evidence]
404	<b>Unpalatable to grazing animals</b>	
	<b>Source(s)</b>	<b>Notes</b>
	WRA Specialist. 2016. Personal Communication	Palatability of foliage unknown
405	<b>Toxic to animals</b>	n
	<b>Source(s)</b>	<b>Notes</b>
	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
406	<b>Host for recognized pests and pathogens</b>	
	<b>Source(s)</b>	<b>Notes</b>
	John&Jacq~s Garden. 2016. <i>Calathea lutea</i> . <a href="http://www.jaycjayc.com/calathea-lutea-cuban-cigar/">http://www.jaycjayc.com/calathea-lutea-cuban-cigar/</a> . [Accessed 1 Aug 2016]	"Generally free from serious pests and diseases. However, watch out for caterpillars and beetles that may devour the foliage."
407	<b>Causes allergies or is otherwise toxic to humans</b>	n

Qsn #	Question	Answer
	<b>Source(s)</b>	<b>Notes</b>
	Useful Tropical Plants Database. 2016. <i>Calathea lutea</i> . <a href="http://tropical.theferns.info/viewtropical.php?id=Calathea+lutea">http://tropical.theferns.info/viewtropical.php?id=Calathea+lutea</a> . [Accessed 1 Aug 2016]	"Known Hazards None known"
	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	[No evidence] "It is cultivated mainly in tropical America for use as a thatch and wrapping, but only to a minor extent for the wax. In Colombia the leaves are used to wrap candies made of guava paste."
	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	n
	<b>Source(s)</b>	<b>Notes</b>
	Croat, T.B. 1978. Flora of Barro Colorado Island. Stanford University Press, Stanford, CA	"Caulescent herb, 2-3 m tall, mostly glabrous." ... "Almost never in the forest except in tree-fall areas; occasional on creek beds and shoreline soil deposits." [No evidence. Growth form & habitat unlikely to increase fire risk]

409	Is a shade tolerant plant at some stage of its life cycle	
	<b>Source(s)</b>	<b>Notes</b>
	Croat, T.B. 1978. Flora of Barro Colorado Island. Stanford University Press, Stanford, CA	"Almost never in the forest except in tree-fall areas" [Suggests preference for high light environments]
	Lee, D., Bone, R., Tarsis, S., & Storch, D. (1990). Correlates of Leaf Optical Properties in Tropical Forest Sun and Extreme-Shade Plants. American Journal of Botany, 77(3), 370-380	"Among the sun-adapted species are three taxa with high attenuation/ absorbance 652 nm: <i>Calathea lutea</i> (CL), <i>Cecropia peltata</i> (CP), and <i>Ochroma pyramidale</i> (OP). These are rain forest pioneers, whose leaf undersurfaces are exposed to bright sunlight."
	John&Jacq~s Garden. 2016. <i>Calathea lutea</i> . <a href="http://www.jaycjayc.com/calathea-lutea-cuban-cigar/">http://www.jaycjayc.com/calathea-lutea-cuban-cigar/</a> . [Accessed 1 Aug 2016]	"Light: Grows best in partial shade or filtered sunlight. Though it can tolerate full sun when well established or acclimatized, best to provide some shade as direct sunlight may bleach or scorch the leaves."
	Useful Tropical Plants Database. 2016. <i>Calathea lutea</i> . <a href="http://tropical.theferns.info/viewtropical.php?id=Calathea+lutea">http://tropical.theferns.info/viewtropical.php?id=Calathea+lutea</a> . [Accessed 1 Aug 2016]	"Prefers a humus-rich, moist soil and a position with some shade"
	Ross, P. (1961). The Plant Ecology of the Teak Plantations in Trinidad. Ecology, 42(2), 387-398	"The herbaceous layer is restricted by the dense growth overhead to shade and moisture tolerant species such as <i>Heliconia bihai</i> , <i>Ischnosiphon arouina</i> , and <i>Calathea lutea</i> ."

410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	n
	<b>Source(s)</b>	<b>Notes</b>
	Useful Tropical Plants Database. 2016. <i>Calathea lutea</i> . <a href="http://tropical.theferns.info/viewtropical.php?id=Calathea+lutea">http://tropical.theferns.info/viewtropical.php?id=Calathea+lutea</a> . [Accessed 1 Aug 2016]	"Prefers a humus-rich, moist soil..."

Qsn #	Question	Answer
	John&Jacq~s Garden. 2016. <i>Calathea lutea</i> . <a href="http://www.jaycjayc.com/calathea-lutea-cuban-cigar/">http://www.jaycjayc.com/calathea-lutea-cuban-cigar/</a> . [Accessed 1 Aug 2016]	"Soil: Prefers moist, organic-enriched and well-drained soil. Though tolerant of poor clayey soils, it must be free draining."

411	Climbing or smothering growth habit	n
	Source(s)	Notes
	Anonymous. 1945. Flora of Panama. Part III. Fascicle I. Annals of the Missouri Botanical Garden, 32(1): 1-105	"Plants very stout, 1-5 m. tall, caulescent; leaves longpetiolate, broadly elliptic to suborbicular, obtuse or abruptly acuminate, the base obtuse or rounded then very abruptly and shortly decurrent, 20-150 cm. long, 15-60 cm. broad, glabrous, conspicuously pruinose, particularly the lower surface; callus 5-12 cm. long"

412	Forms dense thickets	y
	Source(s)	Notes
	Leoni, J. M., & Costa, F. R. C. (2013). Sustainable use of <i>Calathea lutea</i> in handicrafts: A case study from the Amanã Sustainable Development Reserve in the Brazilian Amazon. Economic Botany, 67(1), 30-40	" <i>C. lutea</i> is associated with early successional stages of secondary vegetation or abandoned fields, often found alone in monospecific stands, called cauaçuzais."
	Schultes, R. (1989). <i>Calathea lutea</i> (Marantaceae), a Potential Domesticated and Source of High-Grade Wax. Economic Botany, 4 (4), 509-510	" <i>Calathea lutea</i> , a large herb ... It is particularly abundant in dense stands along Amazonian rivers, where it is one of the first plants to take over disturbed or cleared areas."
	Anonymous. 1945. Flora of Panama. Part III. Fascicle I. Annals of the Missouri Botanical Garden, 32(1): 1-105	"in coastal thickets and marshes."

501	Aquatic	n
	Source(s)	Notes
	Anonymous. 1945. Flora of Panama. Part III. Fascicle I. Annals of the Missouri Botanical Garden, 32(1): 1-105	[Terrestrial] "in coastal thickets and marshes."

502	Grass	n
	Source(s)	Notes
	USDA, ARS, Germplasm Resources Information Network, 2016. National Plant Germplasm System [Online Database]. <a href="http://www.ars-grin.gov/npgs/index.html">http://www.ars-grin.gov/npgs/index.html</a> . [Accessed 1 Aug 2016]	"Family: Marantaceae"

503	Nitrogen fixing woody plant	n
	Source(s)	Notes
	USDA, ARS, Germplasm Resources Information Network, 2016. National Plant Germplasm System [Online Database]. <a href="http://www.ars-grin.gov/npgs/index.html">http://www.ars-grin.gov/npgs/index.html</a> . [Accessed 1 Aug 2016]	"Family: Marantaceae"



Qsn #	Question	Answer
504	<b>Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)</b>	<b>n</b>
	<b>Source(s)</b>	<b>Notes</b>
	Acevedo-Rodríguez, P. & Strong, M.T. 2005. Monocotyledons and Gymnosperms of Puerto Rico and the Virgin Islands. Contributions from the United States National Herbarium 52: 1-415	"Stout caulescent herb mostly 2-3 m tall, with 3-7 basal leaves and 1 (2) cauline leaves; leaf blades elliptic to ovate or sub-rotund, 30-150 × 18- 60 cm, obtuse, broadly rounded, or apiculate at the apex, rounded or very shortly decurrent at the base, usually glabrous, the upper surface green, the lower surface usually pruinose, sometimes coated with a white, wax-like powder that falls off in flakes."

601	<b>Evidence of substantial reproductive failure in native habitat</b>	<b>n</b>
	<b>Source(s)</b>	<b>Notes</b>
	Croat, T.B. 1978. Flora of Barro Colorado Island. Stanford University Press, Stanford, CA	[No evidence] "Flowers and fruits throughout the year, but activity is greatest during the early rainy season. The fruits develop quickly." ... "Coastal areas from Mexico to Peru and Brazil; principally in coastal marshes and disturbed areas along both coasts. In Panama, known from tropical moist forest in the Canal Zone, Bocas del Toro, Colon, Chiriqui, Los Santos, and Darien, from tropical dry forest in Code, from premontane wet forest in Chiriqui and Panama (Cerro Campana), and from tropical wet forest in Colon (near Portobelo)."

602	<b>Produces viable seed</b>	<b>y</b>
	<b>Source(s)</b>	<b>Notes</b>
	Schultes, R. (1989). <i>Calathea lutea</i> (Marantaceae), a Potential Domesticate and Source of High-Grade Wax. <i>Economic Botany</i> , 4 (4), 509-510	"It can be reproduced easily by seeds or vegetatively by planting pieces of the rhizome; and it can be set out in land that is not of much agricultural use for most other crops."

603	<b>Hybridizes naturally</b>	
	<b>Source(s)</b>	<b>Notes</b>
	Kennedy, H. (1978). Systematics and Pollination of the "closed flowered" Species of <i>Calathea</i> (Marantaceae). University of California Publications in Botany Volume 71. University of California Press, Berkeley and Los Angeles, CA	[Unknown. Natural hybrids documented in genus] "Near the La Lola Cacao Institute (Milla 28) Lim6n Province. Costa Rica. a natural hybrid between <i>C. warscewiczii</i> ; and <i>C. marantifolia</i> was found by Dr. R. L. Dressler"

604	<b>Self-compatible or apomictic</b>	<b>n</b>
	<b>Source(s)</b>	<b>Notes</b>
	Classen-Bockhoff, R., & Heller, A. (2008). Floral Synorganization and Secondary Pollen Presentation in Four Marantaceae from Costa Rica. <i>International Journal of Plant Sciences</i> , 169(6), 745-760	"Depending on the arrangement of the respective parts, self-pollination in the bud is likely in <i>P. pruinosa</i> but is excluded in <i>C. lutea</i> ." ... "In <i>C. lutea</i> and <i>C. platystachya</i> , the styles are longitudinally twisted, whereby the stigmatic cavity is turned away from the pollen sacs. Moreover, in <i>C. lutea</i> , the trigger appendage closes the stigmatic cavity, protecting the bud against selfing."

605	<b>Requires specialist pollinators</b>	<b>y</b>
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Qsn #	Question	Answer
	<b>Source(s)</b>	<b>Notes</b>
	Anonymous. 1945. Flora of Panama. Part III. Fascicle I. Annals of the Missouri Botanical Garden, 32(1): 1-105	"inflorescence terminating the leafy stem, consisting of 2- several pedunculate, flattened, oblong, ellipsoid spikes 15-40 cm. long, 3-5 cm. broad; bracts 2-ranked, more or less conduplicate, nearly orbicular, 3.5-4.5 cm. long and broad, sharply ascending and nearly parallel to the rachis, heavily coriaceous, yellowish brown usually flushed with red or purple, glabrous to rather conspicuously appressed-tomentose; flowers white or very pale yellow, occasionally purplish, 4.0-4.5 cm. long, well exerted from the bracts."
	Croat, T.B. 1978. Flora of Barro Colorado Island. Stanford University Press, Stanford, CA	"The species has been seen pollinated by euglossine bees and is robbed of nectar by hummingbirds."

<b>606</b>	<b>Reproduction by vegetative fragmentation</b>	<b>y</b>
	<b>Source(s)</b>	<b>Notes</b>
	Schultes, R. (1989). <i>Calathea lutea</i> (Marantaceae), a Potential Domesticated and Source of High-Grade Wax. Economic Botany, 4 (4), 509-510	"It can be reproduced easily by seeds or vegetatively by planting pieces of the rhizome; and it can be set out in land that is not of much agricultural use for most other crops."

<b>607</b>	<b>Minimum generative time (years)</b>	<b>1</b>
	<b>Source(s)</b>	<b>Notes</b>
	John&Jacq~s Garden. 2016. <i>Calathea lutea</i> . <a href="http://www.jaycjayc.com/calathea-lutea-cuban-cigar/">http://www.jaycjayc.com/calathea-lutea-cuban-cigar/</a> . [Accessed 1 Aug 2016]	"Propagation: By rhizomes with first flowering occurring within 12 months of planting a rhizome. Can be propagated by division of clumps too."

<b>701</b>	<b>Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)</b>	<b>n</b>
	<b>Source(s)</b>	<b>Notes</b>
	Croat, T.B. 1978. Flora of Barro Colorado Island. Stanford University Press, Stanford, CA	"Fruits capsules; seeds orange, with a brilliant orange aril." [Reported to be dispersed by birds, ants & intentionally by people]

<b>702</b>	<b>Propagules dispersed intentionally by people</b>	<b>y</b>
	<b>Source(s)</b>	<b>Notes</b>
	Staples, G.W. & Herbst, D.R. 2005. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	" <i>Calathea lutea</i> is the largest cultivated species in the genus." ... " <i>Calathea lutea</i> is not normally cultivated in greenhouses but is spectacular outdoors in southern Florida, Hawaii, and more tropical climates."

<b>703</b>	<b>Propagules likely to disperse as a produce contaminant</b>	<b>n</b>
	<b>Source(s)</b>	<b>Notes</b>
	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	[No evidence, and unlikely in cultivation] "Most species in the Hawaiian Islands rarely set fruit unless hand-pollinated."

Qsn #	Question	Answer
704	<b>Propagules adapted to wind dispersal</b>	<b>n</b>
	<b>Source(s)</b>	<b>Notes</b>
	Croat, T.B. 1978. Flora of Barro Colorado Island. Stanford University Press, Stanford, CA	"Fruits capsules; seeds orange, with a brilliant orange aril."

705	<b>Propagules water dispersed</b>	
	<b>Source(s)</b>	<b>Notes</b>
	Standley, P.C. & Dahlgren, B.E. 1937. Flora of Costa Rica - Vol. 18 - Part I. Fieldiana 18: 1-398	"In open swamps and along the banks of streams this plant often forms wide stands."
	Schultes, R. (1989). <i>Calathea lutea</i> (Marantaceae), a Potential Domesticated and Source of High-Grade Wax. <i>Economic Botany</i> , 4 (4), 509-510	[Proximity to rivers & affinity for aquatic habitats suggests that seeds or rhizome fragments could be moved by water] " <i>Calathea lutea</i> , a large herb sometimes obtaining a height of 15 ft, grows wild in semi-inundated or well-drained upland sites in tropical regions of Central America and northern South America. It is particularly abundant in dense stands along Amazonian rivers, where it is one of the first plants to take over disturbed or cleared areas. It can be reproduced easily by seeds or vegetatively by planting pieces of the rhizome; and it can be set out in land that is not of much agricultural use for most other crops."

706	<b>Propagules bird dispersed</b>	<b>y</b>
	<b>Source(s)</b>	<b>Notes</b>
	Horvitz, C. C., Pizo, M. A., y Bello, B. B., LeCorff, J., & Dirzo, R. (2001). Are Plant Species that Need Gaps for Recruitment More Attractive to Seed-dispersing Birds and Ants than Other Species? Pp 145-160 in Levey et al. (eds). <i>Seed Dispersal and Frugivory: Ecology, Evolution, and Conservation</i> . CABI, Wallingford, UK	"Bird-dispersed species in this study are: <i>Calathea lutea</i> (Aubl.) Schult., ..." "...attractiveness of species to avian dispersers was not associated with gap dependency of survival. The order of attractiveness to avian dispersers was <i>C. lutea</i> ..."
	Croat, T.B. 1978. Flora of Barro Colorado Island. Stanford University Press, Stanford, CA	"Fruits capsules; seeds orange, with a brilliant orange aril."

707	<b>Propagules dispersed by other animals (externally)</b>	<b>y</b>
	<b>Source(s)</b>	<b>Notes</b>
	Horvitz, C. C., Pizo, M. A., y Bello, B. B., LeCorff, J., & Dirzo, R. (2001). Are Plant Species that Need Gaps for Recruitment More Attractive to Seed-dispersing Birds and Ants than Other Species? Pp 145-160 in Levey et al. (eds). <i>Seed Dispersal and Frugivory: Ecology, Evolution, and Conservation</i> . CABI, Wallingford, UK	"For those species studied at both sites, the order of attractiveness differed. <i>Calathea lutea</i> was the most attractive to ants at both sites."
	Croat, T.B. 1978. Flora of Barro Colorado Island. Stanford University Press, Stanford, CA	"Fruits capsules; seeds orange, with a brilliant orange aril."
	Kubitzki, K. (ed.). 1998. The Families and genera of vascular plants. Volume IV. Flowering plants, Monocotyledons: Alismatanae and Commelinanae (except Gramineae). Springer-Verlag, Berlin, Heidelberg, New York	"Most species with arillate seeds are probably myrmecochorous." [Evidence of ant dispersal in genus]

Qsn #	Question	Answer
	Gordon, D. R., Mitterdorfer, B., Pheloung, P. C., Ansari, S., Buddenhagen, C., Chimera, C., ... & Williams, P. A. 2010). Guidance for addressing the Australian Weed Risk Assessment questions. Plant Protection Quarterly, 25(2): 56-74	"This dispersal group includes seeds with an oily or fat-rich organ that aids in ant seed dispersal ..."
<b>708</b>	<b>Propagules survive passage through the gut</b>	<b>y</b>
	<b>Source(s)</b>	<b>Notes</b>
	Horvitz, C. C., Pizo, M. A., y Bello, B. B., LeCorff, J., & Dirzo, R. (2001). Are Plant Species that Need Gaps for Recruitment More Attractive to Seed-dispersing Birds and Ants than Other Species? Pp 145-160 in Levey et al. (eds). Seed Dispersal and Frugivory: Ecology, Evolution, and Conservation. CABI, Wallingford, UK	"Bird-dispersed species in this study are: <i>Calathea lutea</i> (Aubl.) Schult., ..." "...attractiveness of species to avian dispersers was not associated with gap dependency of survival. The order of attractiveness to avian dispersers was <i>C. lutea</i> ..."
<b>801</b>	<b>Prolific seed production (&gt;1000/m2)</b>	<b>n</b>
	<b>Source(s)</b>	<b>Notes</b>
	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	"Most species in the Hawaiian Islands rarely set fruit unless hand-pollinated."
<b>802</b>	<b>Evidence that a persistent propagule bank is formed (&gt;1 yr)</b>	
	<b>Source(s)</b>	<b>Notes</b>
	Dalling, J. W., Swaine, M. D., & Garwood, N. C. (1998). Dispersal patterns and seed bank dynamics of pioneer trees in moist tropical forest. Ecology, 79(2): 564-578	[Other species form a persistent seed bank] "Most seeds of <i>Calathea ovandensis</i> , a gap-dependent herb, can persist for several years in the soil under natural conditions (Horvitz and Schemske 1994)."
	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	[Possibly] "In the wild, the seeds develop and are shed during the rainy season but do not germinate until the following rainy season, surviving the dry season in dormancy."
<b>803</b>	<b>Well controlled by herbicides</b>	
	<b>Source(s)</b>	<b>Notes</b>
	WRA Specialist. 2016. Personal Communication	Unknown. No information on herbicide efficacy or chemical control of this species.
<b>804</b>	<b>Tolerates, or benefits from, mutilation, cultivation, or fire</b>	<b>y</b>
	<b>Source(s)</b>	<b>Notes</b>
	Leoni, J. M., & Costa, F. R. C. (2013). Sustainable use of <i>Calathea lutea</i> in handicrafts: A case study from the Amanã Sustainable Development Reserve in the Brazilian Amazon. Economic Botany, 67(1), 30-40	[Resprouts after frequent cutting] "Cauçu is considered a weed because the stands grow fast and compete with other plants in the same areas. Due to its aggressive nature, cauçu must be cut frequently, a task considered arduous by local farmers."
<b>805</b>	<b>Effective natural enemies present locally (e.g. introduced biocontrol agents)</b>	

Qsn #	Question	Answer
	Source(s)	Notes
	WRA Specialist. 2016. Personal Communication	Unknown

**Summary of Risk Traits:**

High Risk / Undesirable Traits

- Elevation range might exceed 1000 m, demonstrating environmental versatility
- Thrives in tropical climates
- Possibly naturalized
- Considered a crop weed in native range
- Forms dense stands in native range
- Reproduces by seeds & vegetatively by rhizomes
- May be self-compatible
- Seeds dispersed by ants, birds & intentionally by people
- Seeds, if produced, may persist in the soil

Low Risk Traits

- Unarmed (no spines, thorns or burrs)
- Ornamental
- Non-toxic
- Requires specialized pollinators
- Limited seed production may reduce risk of inadvertent dispersal