

Taxon: Guadua angustifolia	Family: Poaceae
Common Name(s): Columbian thorny bamboo guadua	Synonym(s): Bambusa guadua Humb. & Bonpl. Guadua aculeata Rupr. ex E. Fourn.

Assessor: Chuck Chimera	Status: Assessor Approved	End Date: 29 Jan 2015
WRA Score: 5.0	Designation: EVALUATE	Rating: Evaluate

Keywords: Naturalized, Economically Important, Clumping, Thorny, Thicket-Forming

Qsn #	Question	Answer Option	Answer
101	Is the species highly domesticated?	y=-3, n=0	n
102	Has the species become naturalized where grown?		
103	Does the species have weedy races?		
201	Species suited to tropical or subtropical climate(s) - If island is primarily wet habitat, then substitute "wet tropical" for "tropical or subtropical"	(0-low; 1-intermediate; 2-high) (See Appendix 2)	High
202	Quality of climate match data	(0-low; 1-intermediate; 2-high) (See Appendix 2)	High
203	Broad climate suitability (environmental versatility)	y=1, n=0	y
204	Native or naturalized in regions with tropical or subtropical climates	y=1, n=0	y
205	Does the species have a history of repeated introductions outside its natural range?	y=-2, ?=-1, n=0	y
301	Naturalized beyond native range	y = 1*multiplier (see Appendix 2), n= question 205	y
302	Garden/amenity/disturbance weed	n=0, y = 1*multiplier (see Appendix 2)	n
303	Agricultural/forestry/horticultural weed		
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	y
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)	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	y
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		
607	Minimum generative time (years)	1 year = 1, 2 or 3 years = 0, 4+ years = -1	>3
701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	y=1, n=-1	n
702	Propagules dispersed intentionally by people	y=1, n=-1	y
703	Propagules likely to disperse as a produce contaminant	y=1, n=-1	n
704	Propagules adapted to wind dispersal	y=1, n=-1	y
705	Propagules water dispersed		
706	Propagules bird dispersed	y=1, n=-1	n
707	Propagules dispersed by other animals (externally)	y=1, n=-1	n
708	Propagules survive passage through the gut		
801	Prolific seed production (>1000/m ²)	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
	CAB International, 2005. Forestry Compendium. CAB International, Wallingford, UK	[No evidence] "Although there are several useful <i>Guadua</i> species, <i>G. angustifolia</i> is the most commonly encountered bamboo in cultivation in C and S America, and is also still found in extensive natural stands (guadual), especially in Colombia and Ecuador. Its large size, along with exceptional timber qualities, versatility and relative natural durability have resulted in it becoming a major source of constructional material. Traditional buildings made largely of <i>G. angustifolia</i> culms reach impressive dimensions. Culms are used singly or bound together to make pillars and beams. Flattened culms provide boards (esterillas) used in flooring, ceilings and wall panels, which can be rendered with mud, plaster or cement to extend useful life. New techniques of culm preservation, design and construction have resulted in expanded use of <i>G. angustifolia</i> culms, with complex beams and trusses, and large roof spans. Traditional techniques have allowed construction of multi-storey buildings made entirely of <i>Guadua angustifolia</i> culms, and the prospects for this species as a reliable raw material for the construction of a wide range of modern buildings are very bright."

102	Has the species become naturalized where grown?	
	Source(s)	Notes
	WRA Specialist. 2015. Personal Communication	NA

103	Does the species have weedy races?	
	Source(s)	Notes
	WRA Specialist. 2015. 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
	Clayton, W.D., Vorontsova, M.S., Harman, K.T. and Williamson, H. 2006 onwards. GrassBase - The Online World Grass Flora. http://www.kew.org/data/grasses-db.html . [Accessed 28 Jan 2015]	"DISTRIBUTION North America: Mexico. South America: Mesoamericana, northern South America, western South America, Brazil, and southern South America. "

202	Quality of climate match data	High
	Source(s)	Notes
	CAB International, 2005. Forestry Compendium. CAB International, Wallingford, UK	

Qsn #	Question	Answer
203	Broad climate suitability (environmental versatility)	y
	Source(s)	Notes
	CAB International, 2005. Forestry Compendium. CAB International, Wallingford, UK	[Elevation range exceeds 1000 m in tropical climates. Demonstrates environmental versatility] "G. angustifolia grows optimally from sea level up to 1800 m altitude. It grows best at lower altitudes; above 1000 m, culms become smaller in length and diameter." ... "The species has a broad ecological amplitude, occurring in lowland rainforest, lower montane rainforest, semi-deciduous forest, deciduous forest, more humid savannah, and secondary forests."

204	Native or naturalized in regions with tropical or subtropical climates	y
	Source(s)	Notes
	CAB International, 2005. Forestry Compendium. CAB International, Wallingford, UK	"G. angustifolia occurs from S. Mexico (Veracruz) through C. America to Peru, Brazil and Guyana. As it is widely cultivated, it is not clear how much of this distribution is natural, although Colombia and Ecuador would appear to contain most of the natural stands, with occurrences in Venezuela as well. In Colombia it is especially common in the coffee-growing Caldas region, middle to upper watersheds of the Cauca and Magdalena rivers, and in Southern Llanos."
	Young, S. M., & Judd, W. S. 1992. Systematics of the <i>Guadua angustifolia</i> complex (Poaceae: Bambusoideae). <i>Annals of the Missouri Botanical Garden</i> , 79(4): 737-769	" <i>Guadua angustifolia</i> has the widest geographic range of any species in <i>Guadua</i> . Its northernmost localities are found in the state of Veracruz, Mexico, and its southernmost localities are found in northeastern Argentina and southeastern Paraguay. <i>Guadua angustifolia</i> is one of only three species that are known from both Central and South America"

205	Does the species have a history of repeated introductions outside its natural range?	y
	Source(s)	Notes
	CAB International, 2005. Forestry Compendium. CAB International, Wallingford, UK	"G. angustifolia has been introduced to many other countries in the New World, including the US, Brazil, Argentina and many islands in the Caribbean, as well as the Galapagos Islands."

301	Naturalized beyond native range	y
	Source(s)	Notes
	Bungartz, F., Herrera, H.W., Jaramillo, P., Tirado, N., Jiménez Uzcátegui, G., Ruiz, D., Guézou, A. & Ziemmeck, F. (eds.). 2009. Charles Darwin Foundation Galapagos Species Checklist. Charles Darwin Foundation, Puerto Ayora, Galapagos: http://www.darwinfoundation.org/datazone/checklists/ . [Accessed 29 Jan 2015]	" <i>Guadua angustifolia</i> " ... "Es - Escaped - Taxon introduced for agricultural or domestic use; naturalized in the wild."

Qsn #	Question	Answer
	USDA, ARS, National Genetic Resources Program. 2015. Germplasm Resources Information Network - (GRIN) [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland. URL: http://www.ars-grin.gov/ . [Accessed 29 Jan 2015]	"Naturalized: NORTHERN AMERICA Southern Mexico: Mexico - Puebla, Veracruz SOUTHERN AMERICA Mesoamerica: Costa Rica; El Salvador; Guatemala; Honduras; Nicaragua; Panama Northern South America: Guyana Western South America: Peru Southern South America: Argentina [n.]; Paraguay; Uruguay [n.]"

302	Garden/amenity/disturbance 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

303	Agricultural/forestry/horticultural weed	
	Source(s)	Notes
	CAB International, 2005. Forestry Compendium. CAB International, Wallingford, UK	[Potential to impact crops grown in the vicinity] "G. angustifolia is a vigorous, spreading species, which has to be grown in areas where it has room to spread. Plantation margins must be kept under control to prevent it invading other crops."

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	<i>Guadua amplexifolia</i> listed as naturalized; <i>Guadua trinii</i> listed as a weed [Unable to find evidence of or description of impacts]

401	Produces spines, thorns or burrs	y
	Source(s)	Notes
	Quattrocchi, U. 2006. CRC World Dictionary of Grasses: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. CRC Press, Boca Raton, FL	"armed at the base, lower branches strongly thorny with long straight thorns ... "
	Clayton, W.D., Vorontsova, M.S., Harman, K.T. and Williamson, H. 2006 onwards. GrassBase - The Online World Grass Flora. http://www.kew.org/data/grasses-db.html . [Accessed 27 Jan 2015]	"Culms erect; 2000–3000 cm long; 100–130 mm diam.; woody; with root thorns from the nodes"

Qsn #	Question	Answer
402	Allelopathic	
	Source(s)	Notes
	Ríos, C., & Rosabal, M. 2008. Potencial alelopático de bambúes tropicales. Efecto sobre la germinación y el crecimiento de cultivos tropicales. Centro Agrícola, 35(2): 79-84	[Show allelopathic effects under laboratory conditions] "Effects of <i>Guadua angustifolia</i> Kunth, <i>Bambusa vulgaris</i> Schrader ex Wendland, <i>Dendrocalamus strictus</i> Nees and leaves extracts on seed germination and grow of beans (<i>Phaseolus vulgaris</i> L.), tomato (<i>Lycopersicon esculentum</i> Mill.), lettuce (<i>Lactuca sativa</i> L.), corn (<i>Zea mays</i> L.), rice (<i>Oryza sativa</i> L.), gourd melon (<i>Cucumis melo</i>), sesame (<i>Sesamum indicum</i> L.), turnip (<i>Brassica napus</i> L.) eggplant (<i>Solanum melongena</i> L.) seeds were studied." ... "All bamboo species tested showed an allelopathic effect." ... "The strongest allelopathic effect was observed for <i>G. angustifolia</i> and <i>B. vulgaris</i> between the determined concentrations and the observed allelopathic effects is discussed."

403	Parasitic	n
	Source(s)	Notes
	Clayton, W.D., Vorontsova, M.S., Harman, K.T. and Williamson, H. 2006 onwards. GrassBase - The Online World Grass Flora. http://www.kew.org/data/grasses-db.html . [Accessed 27 Jan 2015]	"Perennial; caespitose. Rhizomes short; pachymorph. Culms erect; 2000–3000 cm long; 100–130 mm diam.; woody; with root thorns from the nodes." [Poaceae]

404	Unpalatable to grazing animals	
	Source(s)	Notes
	CAB International, 2005. Forestry Compendium. CAB International, Wallingford, UK	"agroforestry; land reclamation; soil conservation; erosion control; ornamental" [Palatability unknown, but fodder not listed among the uses]

405	Toxic to animals	n
	Source(s)	Notes
	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	Host for recognized pests and pathogens	
	Source(s)	Notes
	CAB International, 2005. Forestry Compendium. CAB International, Wallingford, UK	"Two insect pests are recorded for <i>G. angustifolia</i> . <i>Pudichmus agemur</i> , a large beetle, perforates new shoots, causing extensive damage. Lepidopteran larvae can cause temporary defoliation. Harvested culms are very susceptible to powder-post beetle attack (<i>Dinoderus minutus</i>)."

Qsn #	Question	Answer
407	Causes allergies or is otherwise toxic to humans	n
	Source(s)	Notes
	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
	CAB International, 2005. Forestry Compendium. CAB International, Wallingford, UK	"G. angustifolia grows optimally from sea level up to 1800 m altitude. It grows best at lower altitudes; above 1000 m, culms become smaller in length and diameter. Like most spreading bamboos G. angustifolia requires ample rainfall, well distributed through the year. Along rivers and lakes it grows almost permanently in humid conditions, and elsewhere it requires good precipitation if it is to attain maximum dimensions." [Unknown. No indication that this bamboo promotes fire, but dense growth could potentially fuel fires in cultivated settings]
	Mena, J., Vera, S., Correal, J. F., & Lopez, M. 2012. Assessment of fire reaction and fire resistance of <i>Guadua angustifolia</i> kunth bamboo. Construction and Building Materials, 27(1): 60-65	[As a building material, shows some fire resistance] "The main challenge for construction industry today is sustainability. Bamboo has properties that make it sustainable, but its fire behavior remains unknown. This paper presents an exploratory research on fire behavior of <i>Guadua angustifolia</i> kunth (a.k.) bamboo. Fire reaction was assessed through critical heat flux for ignition and flame spread while fire resistance through charring rate and strength variation with temperature. Fire reaction fall within standard limits used for structural woods, while fire resistance results are higher than that of plywood. Based on these preliminary results, <i>Guadua</i> a.k. would be adequate as structural and indoor finishing building material."

409	Is a shade tolerant plant at some stage of its life cycle	
	Source(s)	Notes
	Backyard Gardener. 2015. <i>Guadua angustifolia</i> . http://www.backyardgardener.com/plantname/pda_711d-2.html . [Accessed 29 Jan 2015]	"Light Range: Part Shade to Full Sun"
	Dave's Garden. 2015. PlantFiles: Columbian Thorny Bamboo - <i>Guadua angustifolia</i> . http://davesgarden.com/guides/pf/go/64095/ . [Accessed 29 Jan 2015]	"Sun Exposure: Full Sun"
	Hitchcock, A.S. 1922. Grasses of British Guiana. Contributions from the United States National Herbarium. Volume 22, Part 6. Government Printing Office, Washington, D.C.	[Occurs in areas where light penetrates] "Most of the remaining species might be called forest grasses. They grow at the edge of the forest or in somewhat open woods where light penetrates. The following are forest grasses : <i>Guadua angustifolia</i> . A bamboo; infrequent."

Qsn #	Question	Answer
410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	n
	Source(s)	Notes
	CAB International, 2005. Forestry Compendium. CAB International, Wallingford, UK	"G. angustifolia, like most bamboos, grows at its best on alluvial soils on flat or undulating sites with moderate fertility, more than 60 cm depth, good drainage and a pH of 5.5 to 7.0. It is not clear how tolerant G. angustifolia is of conditions less favourable than those of its native habitat, but it is likely to be more demanding than many Bambusa species."
411	Climbing or smothering growth habit	n
	Source(s)	Notes
	Clayton, W.D., Vorontsova, M.S., Harman, K.T. and Williamson, H. 2006 onwards. GrassBase - The Online World Grass Flora. http://www.kew.org/data/grasses-db.html . [Accessed 27 Jan 2015]	"Culms erect; 2000–3000 cm long; 100–130 mm diam.; woody; with root thorns from the nodes."
412	Forms dense thickets	y
	Source(s)	Notes
	Quattrocchi, U. 2006. CRC World Dictionary of Grasses: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. CRC Press, Boca Raton, FL	"grows very quickly, forming groves and extensive thickets, armed at the base ..."
501	Aquatic	n
	Source(s)	Notes
	Quattrocchi, U. 2006. CRC World Dictionary of Grasses: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. CRC Press, Boca Raton, FL	[Terrestrial, but near aquatic habitats] "...found along rives and streams, forest edge on riverbanks, alluvial soils..."
502	Grass	y
	Source(s)	Notes
	USDA, ARS, National Genetic Resources Program. 2015. Germplasm Resources Information Network - (GRIN) [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland. URL: http://www.ars-grin.gov/ . [Accessed 28 Jan 2015]	Family: Poaceae (alt. Gramineae) subfamily: Bambusoideae tribe: Bambuseae
503	Nitrogen fixing woody plant	n
	Source(s)	Notes
	CAB International, 2005. Forestry Compendium. CAB International, Wallingford, UK	"Very open, spreading, bamboo, rhizomes sympodial with very long necks, 2-5(-8) m long."
504	Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)	n

Qsn #	Question	Answer
	Source(s)	Notes
	Clayton, W.D., Vorontsova, M.S., Harman, K.T. and Williamson, H. 2006 onwards. GrassBase - The Online World Grass Flora. http://www.kew.org/data/grasses-db.html . [Accessed 28 Jan 2015]	"HABIT Perennial; caespitose. Rhizomes short; pachymorph."
	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. <i>Plant Protection Quarterly</i> , 25(2): 56-74	[<i>Guadua angustifolia</i> is a rhizomatous bamboo] "This question addresses taxa that have specialized organs and should not include plants with just rhizomes/ stolons..."

601	Evidence of substantial reproductive failure in native habitat	n
	Source(s)	Notes
	Young, S. M., & Judd, W. S. 1992. Systematics of the <i>Guadua angustifolia</i> complex (Poaceae: Bambusoideae). <i>Annals of the Missouri Botanical Garden</i> , 79(4): 737-769	" <i>Guadua angustifolia</i> has the widest geographic range of any species in <i>Guadua</i> . Its northernmost localities are found in the state of Veracruz, Mexico, and its southernmost localities are found in northeastern Argentina and southeastern Paraguay. <i>Guadua angustifolia</i> is one of only three species that are known from both Central and South America; the others are <i>G. paniculata</i> and <i>G. amplexifolia</i> ."

602	Produces viable seed	y
	Source(s)	Notes
	CAB International, 2005. <i>Forestry Compendium</i> . CAB International, Wallingford, UK	" <i>G. angustifolia</i> is a periodically flowering bamboo, normally with large well separated non-tillering culms from spreading rhizomes. When it has flowered seed is available for large-scale propagation."

603	Hybridizes naturally	
	Source(s)	Notes
	Young, S. M., & Judd, W. S. 1992. Systematics of the <i>Guadua angustifolia</i> complex (Poaceae: Bambusoideae). <i>Annals of the Missouri Botanical Garden</i> , 79(4): 737-769	Unknown. No hybrids reported in this publication

604	Self-compatible or apomictic	
	Source(s)	Notes
	Quattrocchi, U. 2006. <i>CRC World Dictionary of Grasses: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology</i> . CRC Press, Boca Raton, FL	"self-reproducing" [Possibly self-compatible]
	Clayton, W.D., Vorontsova, M.S., Harman, K.T. and Williamson, H. 2006 onwards. GrassBase - The Online World Grass Flora. http://www.kew.org/data/grasses-db.html . [Accessed 29 Jan 2015]	[Unknown] "FLORETS Fertile lemma ovate; 8–16 mm long; coriaceous; without keel; 11–17 -veined. Lemma apex acute. Palea 1 length of lemma; 6 -veined. Palea keels winged; conspicuously winged. Palea surface pubescent; hairy on back. Apical sterile florets resembling fertile though underdeveloped. FLOWER Lodicules 3. Anthers 6. Stigmas 3. Ovary umbonate. "

Qsn #	Question	Answer
605	Requires specialist pollinators	n
	Source(s)	Notes
	Zomlefer, W.B. 1994. Guide to Flowering Plant Families. The University of North Carolina Press, Chapel Hill & London	Poaceae [anemophilous. Wind-pollinated]

606	Reproduction by vegetative fragmentation	
	Source(s)	Notes
	Young, S. M., & Judd, W. S. 1992. Systematics of the <i>Guadua angustifolia</i> complex (Poaceae: Bambusoideae). Annals of the Missouri Botanical Garden, 79(4): 737-769	"Vegetative dispersal must certainly be a factor in increasing their range; studies have been done that show the ease with which culms root when planted (McClure, 1966)."
	CAB International, 2005. Forestry Compendium. CAB International, Wallingford, UK	"Very open, spreading, bamboo, rhizomes sympodial with very long necks, 2-5(-8) m long. " ... "G. angustifolia can be propagated by seed, clump division, culm and branch cuttings, and by tissue culture." ... "The lateral branch segment method utilizes the natural rooting potential of vigorous basal branches, which may become buried in the soil. Success rates of 50-95% are to be expected." [Unknown if vegetative reproduction occurs in wild populations, but as a sympodial species, the bamboo is a clumping, or "non-running" bamboo]

607	Minimum generative time (years)	>3
	Source(s)	Notes
	CAB International, 2005. Forestry Compendium. CAB International, Wallingford, UK	"On good sites <i>G. angustifolia</i> is one of the most vigorous of all known bamboos. Commercially valuable culms 6-8 cm in diameter and 10-15 m tall can be produced 5-7 years after establishment."
	Young, S. M., & Judd, W. S. 1992. Systematics of the <i>Guadua angustifolia</i> complex (Poaceae: Bambusoideae). Annals of the Missouri Botanical Garden, 79(4): 737-769	"The flowering cycle for <i>Guadua angustifolia</i> has not been accurately determined, but it appears to be close to 30 or 35 years."

701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	n
	Source(s)	Notes
	Young, S. M., & Judd, W. S. 1992. Systematics of the <i>Guadua angustifolia</i> complex (Poaceae: Bambusoideae). Annals of the Missouri Botanical Garden, 79(4): 737-769	[No evidence, and unlikely, as this is a clumping bamboo that flowers infrequently, and after long intervals] "The flowering cycle for <i>Guadua angustifolia</i> has not been accurately determined, but it appears to be close to 30 or 35 years."

702	Propagules dispersed intentionally by people	y
	Source(s)	Notes
	CAB International, 2005. Forestry Compendium. CAB International, Wallingford, UK	" <i>G. angustifolia</i> is the most widely-grown and economically important bamboo in the New World."

703	Propagules likely to disperse as a produce contaminant	n
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Qsn #	Question	Answer
	Source(s)	Notes
	Young, S. M., & Judd, W. S. 1992. Systematics of the <i>Guadua angustifolia</i> complex (Poaceae: Bambusoideae). <i>Annals of the Missouri Botanical Garden</i> , 79(4): 737-769	"The flowering cycle for <i>Guadua angustifolia</i> has not been accurately determined, but it appears to be close to 30 or 35 years." [No evidence, and unlikely, as this bamboo produces viable seeds, albeit only after long period of time]

704	Propagules adapted to wind dispersal	Y
	Source(s)	Notes
	Young, S. M., & Judd, W. S. 1992. Systematics of the <i>Guadua angustifolia</i> complex (Poaceae: Bambusoideae). <i>Annals of the Missouri Botanical Garden</i> , 79(4): 737-769	[When produced, seeds presumably wind or gravity dispersed] "Speculation on the factors resulting in such extensive distributions is difficult because of the paucity of information on the mechanisms of dispersal of these large bamboos. Discontinuities in flowering periods can be very long, up to 35 years, and no studies have been made to ascertain the vectors responsible for seed dispersal or seed-dispersal distances of these bamboos. Vegetative dispersal must certainly be a factor in increasing their range; studies have been done that show the ease with which culms root when planted (McClure, 1966)."

705	Propagules water dispersed	
	Source(s)	Notes
	Quattrocchi, U. 2006. <i>CRC World Dictionary of Grasses: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology</i> . CRC Press, Boca Raton, FL	"found along rivers and streams, forest edge on river banks, alluvial soils." [Distribution suggests movement of seeds or culm fragments by water may be possible]
	Young, S. M., & Judd, W. S. 1992. Systematics of the <i>Guadua angustifolia</i> complex (Poaceae: Bambusoideae). <i>Annals of the Missouri Botanical Garden</i> , 79(4): 737-769	"These large bamboos frequently grow along riverbanks, and floods could serve as an efficient means of vegetative dispersal, especially downstream." ... "Long-distance dispersal between continents or islands could possibly occur when culm sections are carried by ocean currents. No studies have tested the viability of culms after prolonged exposure to seawater, but the first author has observed clumps growing within a kilometer of the ocean and on islands within tidal bays."

706	Propagules bird dispersed	n
	Source(s)	Notes
	Clayton, W.D., Vorontsova, M.S., Harman, K.T. and Williamson, H. 2006 onwards. <i>GrassBase - The Online World Grass Flora</i> . http://www.kew.org/data/grasses-db.html . [Accessed 29 Jan 2015]	"FRUIT Caryopsis with adherent pericarp." [Seeds rarely produced. Seeds, if/when produced, are not fleshy-fruited]

Qsn #	Question	Answer
707	Propagules dispersed by other animals (externally)	n
	Source(s)	Notes
	Clayton, W.D., Vorontsova, M.S., Harman, K.T. and Williamson, H. 2006 onwards. GrassBase - The Online World Grass Flora. http://www.kew.org/data/grasses-db.html . [Accessed 29 Jan 2015]	"FRUIT Caryopsis with adherent pericarp." [Unlikely. Seeds rarely produced. Seeds, if/when produced, lack means of external attachment]

708	Propagules survive passage through the gut	
	Source(s)	Notes
	WRA Specialist. 2015. Personal Communication	Unknown. Unlikely to be internally dispersed

801	Prolific seed production (>1000/m2)	n
	Source(s)	Notes
	Rios, H. C. 1996. Propagation of <i>Guadua angustifolia</i> . Pp. 34-38 in R. Rao & C. B. Sastry. Bamboo, People and the Environment. Proceedings of the Vth International Bamboo Workshop and the IV International Bamboo Congress Ubud, Bali, Indonesia 19-22 June 1995. Volume 1 Propagation and Management. INBAR, New Delhi	"Both in Colombia and Mexico, <i>G. angustifolia</i> flowers sporadically, but a high percentage of spikelet florets show low fertility index. Consequently, it is very difficult to start a reforestation program using seeds or seedlings. The low efficiency of the natural propagation system of <i>G. angustifolia</i> has forced researchers to look for new propagation methods."

802	Evidence that a persistent propagule bank is formed (>1 yr)	
	Source(s)	Notes
	CAB International, 2005. Forestry Compendium. CAB International, Wallingford, UK	"- Seed storage orthodox"
	Guimarães, S., Martins, S. V., Neri, A. V., Gleriani, J. M., & de Almeida Silva, K. 2014. Banco de sementes de áreas em restauração florestal em Aimorés, MG. Pesquisa Florestal Brasileira, 34(80)	[<i>Guadua angustifolia</i> present in the seed bank, but longevity unknown] "Abstract - With the objective to evaluate the soil seed bank of four distinct areas undergoing restoration activities of different intensities 30 samples of topsoil from 30 x 25 x 7.0 cm in deep were collected in each area and transported to greenhouse at 25 °C and relative humidity around 70%."

803	Well controlled by herbicides	
	Source(s)	Notes
	Cruzado, H. J., Muzik, T. J., & Kennard, W. C. 1961. Control of bamboo in Puerto Rico by herbicides. <i>Weeds</i> , 9(1): 20-26	[Unknown for <i>G. angustifolia</i> . Other bamboo taxa are effectively controlled with herbicides] "The experiments show different susceptibilities to herbicides among bamboo species. The well-known solid bamboo, <i>Dendrocalamus strictus</i> , was the most susceptible of the species tested and was easily eradicated with herbicides. The most resistant species were the running-type bamboo, <i>Phyllostachys bambusoides</i> , and the so-called common bamboo, <i>Bambusa vulgaris</i> . Even these species were controlled with herbicides; although retreatment, or combinations of herbicides may sometimes be necessary. The other species were intermediate in tolerance."

Qsn #	Question	Answer
804	Tolerates, or benefits from, mutilation, cultivation, or fire	y
	Source(s)	Notes
	CAB International, 2005. Forestry Compendium. CAB International, Wallingford, UK	"- Ability to sucker; regenerate rapidly; coppice"

805	Effective natural enemies present locally (e.g. introduced biocontrol agents)	
	Source(s)	Notes
	WRA Specialist. 2015. Personal Communication	Unknown

Summary of Risk Traits:

High Risk / Undesirable Traits

- Elevation range exceeds 1000 m in tropical climates, demonstrating environmental versatility
- Thrives in tropical climates
- Naturalized in the Galapagos, and in several locations throughout Central & South America
- Vigorous, spreading species that may invade crops when grown in close proximity
- Armed at the base, lower branches strongly thorny with long straight thorns
- Potentially allelopathic
- Forms dense thickets in native range
- May produce viable seeds that can be dispersed by gravity, wind or people
- Able to coppice & resprout after cutting

Low Risk Traits

- No reports of negative impacts where cultivated
- Non-toxic
- The most widely-grown and economically important bamboo in the New World
- A sympodial, or clumping bamboo
- Long time to reproductive maturity (35 years or more)
- Lack of seed production until possibly at the end of long life cycle would limit inadvertent dispersal

Second Screening Results for Tree/tree-like shrubs

(A) Shade tolerant or known to form dense stands?> Yes. Form dense stands. Shade-tolerance unknown

(B) Bird OR Wind-dispersed?> Presumably wind-dispersed (when seeds are produced)

(C) Life cycle <4 years? No.

Outcome = Evaluate Further