

Taxon: <i>Alibertia edulis</i> (Rich.) A. Rich. ex DC.	Family: Rubiaceae
Common Name(s): marmelada puruí	Synonym(s): <i>Alibertia longistipulata</i> Riley <i>Alibertia panamensis</i> Riley <i>Cordia edulis</i> (A. Rich.) Kuntze <i>Garapatica edulis</i> (A. Rich.) Karst. <i>Gardenia edulis</i> (A. Rich.) Poir. in Lam <i>Genipa edulis</i> Rich. <i>Sabicea edulis</i> (A. Rich.) Seem., B. D.

Assessor: Chuck Chimera	Status: Assessor Approved	End Date: 4 Apr 2016
WRA Score: -3.0	Designation: L	Rating: Low Risk

Keywords: Tropical Tree, Unarmed, Edible Fruit, Shade-Tolerant, Dioecious

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	n
301	Naturalized beyond native range	y = 1*multiplier (see Appendix 2), n= question 205	n
302	Garden/amenity/disturbance weed	n=0, y = 1*multiplier (see Appendix 2)	n
303	Agricultural/forestry/horticultural weed	n=0, y = 2*multiplier (see Appendix 2)	n
304	Environmental weed	n=0, y = 2*multiplier (see Appendix 2)	n
305	Congeneric weed	n=0, y = 1*multiplier (see Appendix 2)	n
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	y=1, n=-1	n
405	Toxic to animals	y=1, n=0	n

Qsn #	Question	Answer Option	Answer
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	y=1, n=0	y
410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)		
411	Climbing or smothering growth habit	y=1, n=0	n
412	Forms dense thickets	y=1, n=0	n
501	Aquatic	y=5, n=0	n
502	Grass	y=1, n=0	n
503	Nitrogen fixing woody plant	y=1, n=0	n
504	Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)	y=1, n=0	n
601	Evidence of substantial reproductive failure in native habitat	y=1, n=0	n
602	Produces viable seed	y=1, n=-1	y
603	Hybridizes naturally		
604	Self-compatible or apomictic	y=1, n=-1	n
605	Requires specialist pollinators	y=-1, n=0	n
606	Reproduction by vegetative fragmentation	y=1, n=-1	n
607	Minimum generative time (years)	1 year = 1, 2 or 3 years = 0, 4+ years = -1	2
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		
707	Propagules dispersed by other animals (externally)	y=1, n=-1	n
708	Propagules survive passage through the gut	y=1, n=-1	y
801	Prolific seed production (>1000/m ²)		
802	Evidence that a persistent propagule bank is formed (>1 yr)		
803	Well controlled by herbicides		
804	Tolerates, or benefits from, mutilation, cultivation, or fire	y=1, n=-1	n
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
	Hammer, K., & Khoshbakht, K. (2015). A domestication assessment of the big five plant families. Genetic Resources and Crop Evolution, 62(5), 665-689	"Table 4 Domesticated taxa in Rubiaceae" [Alibertia edulis - Domestication category = W: Weakly domesticated]
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
	Woodson, R. E., Schery, R. W., & Dwyer, J. D. (1980). Flora of Panama. Part IX. Family 179. Rubiaceae--Part 1. Annals of the Missouri Botanical Garden, 67(1), 1-256	"Alibertia edulis is one of the most common shrubs in Panama. It ranges from Mexico to the Amazon Basin, although Steyermark does not include it in his Flora de Venezuela. It occurs in the West Indies."
202	Quality of climate match data	High
	Source(s)	Notes
	Woodson, R. E., Schery, R. W., & Dwyer, J. D. (1980). Flora of Panama. Part IX. Family 179. Rubiaceae--Part 1. Annals of the Missouri Botanical Garden, 67(1), 1-256	
203	Broad climate suitability (environmental versatility)	n
	Source(s)	Notes
	FAO. 1986. Food and fruit-bearing forest species 3: Examples from Latin America. FAO Forestry Paper, 44(3). Food & Agriculture Organization of the United Nations, Rome	"Alibertia edulis occurs on nutrient poor oxisols and ultisols of the savannas, cerrados, open secondary growth and open forests that are periodically flooded but not waterlogged. Its rainfall requirements range between 1400 mm to over 3000 mm; the mean annual temperature throughout most of its range is c. 26°C but it can be as low as 13°C at Acre cr 9.6°C at Belem. It has not been found fruiting about 800 m."

Qsn #	Question	Answer
204	Native or naturalized in regions with tropical or subtropical climates	y
	Source(s)	Notes
	Woodson, R. E., Schery, R. W., & Dwyer, J. D. (1980). Flora of Panama. Part IX. Family 179. Rubiaceae--Part 1. Annals of the Missouri Botanical Garden, 67(1), 1–256	"Alibertia edulis is one of the most common shrubs in Panama. It ranges from Mexico to the Amazon Basin, although Steyermark does not include it in his Flora de Venezuela. It occurs in the West Indies."

205	Does the species have a history of repeated introductions outside its natural range?	n
	Source(s)	Notes
	USDA, ARS, Germplasm Resources Information Network, 2016. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 1 Apr 2016]	"Cultivated: Southern America Brazil: Brazil Western South America: Colombia; Ecuador; Peru"

301	Naturalized beyond native range	n
	Source(s)	Notes
	Randall, R.P. 2012. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	No evidence
	Wagner, W.L., Herbst, D.R.& Lorence, D.H. 2016. Flora of the Hawaiian Islands. Smithsonian Institution, Washington, D.C. http://botany.si.edu/pacificislandbiodiversity/hawaiianflora/index.htm . [Accessed 1 Apr 2016]	No evidence

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

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

401	Produces spines, thorns or burrs	n
	Source(s)	Notes
	Woodson, R. E., Schery, R. W., & Dwyer, J. D. (1980). Flora of Panama. Part IX. Family 179. Rubiaceae--Part 1. Annals of the Missouri Botanical Garden, 67(1), 1-256	[No evidence] "Shrubs or small trees, presumably dioecious, the branchlets terete or often ultimately angular, smooth, glabrous, stiffly ascending. Leaves narrowly oblong, falcately oblong, oblong, ovate or rarely obovate-oblong, 6-20 cm long, 2-8 cm wide, deltoid at the apex, acuminate, the acumen to 0.1 cm long, usually acute, deltoid to obtuse at the base; the costa plane to prominulous above, prominent beneath, to 0.2 cm wide, glabrous, the lateral veins 6-15, arcuate, to 2 cm apart, thin-coriaceous, lustrous, glabrous; petioles 0.5-1.0 cm long, rarely absent, glabrous; stipules connate or free, deltoid, narrowly deltoid or obovate-oblong, ca. 1.5(-2.0) cm long, 0.4-0.6 cm wide, attenuate-acuminate, the acumen often longer than the corpus, scarios, striate-venose, glabrous."

402	Allelopathic	
	Source(s)	Notes
	WRA Specialist. 2016. Personal Communication	Unknown

403	Parasitic	n
	Source(s)	Notes
	Woodson, R. E., Schery, R. W., & Dwyer, J. D. (1980). Flora of Panama. Part IX. Family 179. Rubiaceae--Part 1. Annals of the Missouri Botanical Garden, 67(1), 1-256	"Shrubs or small trees, presumably dioecious, the branchlets terete or often ultimately angular, smooth, glabrous, stiffly ascending." [Rubiaceae. No evidence]

404	Unpalatable to grazing animals	n
	Source(s)	Notes
	Hernandez-Revol, M. S. M., Hernandez-Martinez, D. C. F., Abrante Hernandez, M. S. T., & Pimentel-Pimentel, C. O. (2012). Composition of the diet <i>Odocoileus virginianus</i> Zimmermann, 1780 in the city the Forest Tibisi comprehensive enterprise mines. Revista Forestal Baracoa, 31(2): 65-71	"TABLA 1 Especies de plantas y partes consumidas por los venados" [Translation from Spanish "Species of plants and parts consumed by deer] [Alibertia edulis leaves & sprouts consumed]

Qsn #	Question	Answer
	Keuroghlian, A., Eaton, D. P., & Desbiez, A. L. (2009). The response of a landscape species, white-lipped peccaries, to seasonal resource fluctuations in a tropical wetland, the Brazilian Pantanal. <i>International Journal of Biodiversity and Conservation</i> , 1(4), 087-097	[<i>Alibertia edulis</i> fruit consumed. Palatability of foliage unknown] "Table 3. Percents (>1%, wet and dry seasons combined) of fruits consumed by white-lipped peccaries, based on surveys of foraging trails conducted from 2000 to 2004 at Fazenda Rio Negro, Aquidauana, Mato Grosso do Sul, Brazil. Species are listed from highest to lowest percent consumed."

405	Toxic to animals	n
	Source(s)	Notes
	Hernandez-Revol, M. S. M., Hernandez-Martinez, D. C. F., Abrante Hernandez, M. S. T., & Pimentel-Pimentel, C. O. (2012). Composition of the diet <i>Odocoileus virginianus</i> Zimmermann, 1780 in the city the Forest Tibisi comprehensive enterprise mines. <i>Revista Forestal Baracoa</i> , 31(2): 65-71	Leaves and sprouts consumed by deer. No evidence of toxicity
	Quattrocchi, U. 2012. <i>CRC World Dictionary of Medicinal and Poisonous Plants: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology</i> . CRC Press, Boca Raton, FL	No evidence
	Wagstaff, D.J. 2008. <i>International poisonous plants checklist: an evidence-based reference</i> . CRC Press, Boca Raton, FL	No evidence

406	Host for recognized pests and pathogens	n
	Source(s)	Notes
	FAO. 1986. <i>Food and fruit-bearing forest species 3: Examples from Latin America</i> . FAO Forestry Paper, 44(3). Food & Agriculture Organization of the United Nations, Rome	"No pests have been observed."
	de Carvalho Júnior, A. A., Hennen, J. F., Hennen, M. M., & Figueiredo, M. B. (2008). Fungos causadores de ferrugens (Uredinales) em áreas de cerrado no estado de São Paulo, Brasil. <i>Rodriguésia</i> 59(1): 001-055	<i>Alibertia edulis</i> reported to be a host of <i>Puccinia farameae</i>

407	Causes allergies or is otherwise toxic to humans	n
	Source(s)	Notes
	Janick, J. & Paull, R.E. 2008. <i>The Encyclopedia of Fruit & Nuts</i> . CABI Publishing, Wallingford, UK	"The fruit is eaten fresh or used to make jams and sweets."
	Quattrocchi, U. 2012. <i>CRC World Dictionary of Medicinal and Poisonous Plants: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology</i> . CRC Press, Boca Raton, FL	No evidence
	Wagstaff, D.J. 2008. <i>International poisonous plants checklist: an evidence-based reference</i> . CRC Press, Boca Raton, FL	No evidence

408	Creates a fire hazard in natural ecosystems	n
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Qsn #	Question	Answer
	Source(s)	Notes
	Hoffmann, W. A., & Moreira, A. G. (2002). The role of fire in population dynamics of woody plants. <i>The Cerrados of Brazil. Ecology and Natural History of a Neotropical Savanna</i> , 159-177. Columbia University Press, New York, NY	[Does not survive in fire prone habitat] "Fire has a particularly strong effect on species composition of more closed physiognomies such as cerradão (chapter 6). Moreira (1996) found that five of the ten most abundant species in a fire-protected cerradão were totally absent in sampled areas of adjacent unprotected cerradão. Cerradão generally includes fire-sensitive species typical of forest, as shown earlier. <i>Emmotum nitens</i> , <i>Ocotea spixiana</i> and <i>Alibertia edulis</i> are forest species typical of cerradão that rarely, if ever, are found in more open cerrado (Furley and Ratter 1988). The establishment of <i>E. nitens</i> in open cerrado is probably constrained by the absence of a resprouting ability in seedlings of this species. <i>Emmotum nitens</i> and <i>A. edulis</i> have highly branched roots without any of the enlarged taproot that characterizes many cerrado woody plants (Labouriau et al. 1964; Rizzini 1965; Moreira 1987, 1992; Oliveira and Silva 1993)."
	FAO. 1986. Food and fruit-bearing forest species 3: Examples from Latin America. FAO Forestry Paper, 44(3). Food & Agriculture Organization of the United Nations, Rome	[Unlikely. Occurs in very wet habitat] " <i>Alibertia edulis</i> occurs on nutrient poor oxisols and ultisols of the savannas, cerrados, open secondary growth and open forests that are periodically flooded but not waterlogged. Its rainfall requirements range between 1400 mm to over 3000 mm;"

409	Is a shade tolerant plant at some stage of its life cycle	y
	Source(s)	Notes
	Kursar, T. A., Engelbrecht, B. M., Burke, A., Tyree, M. T., El Omari, B., & Giraldo, J. P. (2009). Tolerance to low leaf water status of tropical tree seedlings is related to drought performance and distribution. <i>Functional Ecology</i> , 23(1), 93-102	"Table 1. Study species. All species except <i>Apeiba aspera</i> and <i>Ochroma pyramidale</i> are shade tolerant and can persist in the forest understorey" [Includes <i>Alibertia edulis</i> among shade tolerant species]
	Gotsch, S. G., Powers, J. S., & Lerdau, M. T. (2010). Leaf traits and water relations of 12 evergreen species in Costa Rican wet and dry forests: patterns of intra-specific variation across forests and seasons. <i>Plant Ecology</i> , 211(1), 133-146	[A shade-tolerant understory shrub] "Table 1 Species information for focal trees in this study" [<i>Alibertia edulis</i> - Growth type = Understory shrub]

410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	
	Source(s)	Notes
	FAO. 1986. Food and fruit-bearing forest species 3: Examples from Latin America. FAO Forestry Paper, 44(3). Food & Agriculture Organization of the United Nations, Rome	" <i>Alibertia edulis</i> occurs on nutrient poor oxisols and ultisols of the savannas, cerrados, open secondary growth and open forests that are periodically flooded but not waterlogged."

411	Climbing or smothering growth habit	n
	Source(s)	Notes
	Woodson, R. E., Schery, R. W., & Dwyer, J. D. (1980). Flora of Panama. Part IX. Family 179. Rubiaceae--Part 1. <i>Annals of the Missouri Botanical Garden</i> , 67(1), 1-256	"Shrubs or small trees, presumably dioecious, the branchlets terete or often ultimately angular, smooth, glabrous, stiffly ascending."

Qsn #	Question	Answer
412	Forms dense thickets	n
	Source(s)	Notes
	FAO. 1986. Food and fruit-bearing forest species 3: Examples from Latin America. FAO Forestry Paper, 44(3). Food & Agriculture Organization of the United Nations, Rome	"In parts of its range it can occur in densities of 10-20 plants/ha over large area,,; it is more commonly found in densities of 1-2 plants/ha."
501	Aquatic	n
	Source(s)	Notes
	FAO. 1986. Food and fruit-bearing forest species 3: Examples from Latin America. FAO Forestry Paper, 44(3). Food & Agriculture Organization of the United Nations, Rome	[Terrestrial tree] "Alibertia edulis occurs on nutrient poor oxisols and ultisols of the savannas, cerrados, open secondary growth and open forests that are periodically flooded but not waterlogged."
502	Grass	n
	Source(s)	Notes
	USDA, ARS, Germplasm Resources Information Network, 2016. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 1 Apr 2016]	Family: Rubiaceae Subfamily: Ixoroideae
503	Nitrogen fixing woody plant	n
	Source(s)	Notes
	USDA, ARS, Germplasm Resources Information Network, 2016. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 1 Apr 2016]	Family: Rubiaceae Subfamily: Ixoroideae
504	Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)	n
	Source(s)	Notes
	Woodson, R. E., Schery, R. W., & Dwyer, J. D. (1980). Flora of Panama. Part IX. Family 179. Rubiaceae--Part 1. Annals of the Missouri Botanical Garden, 67(1), 1-256	"Shrubs or small trees"
601	Evidence of substantial reproductive failure in native habitat	n
	Source(s)	Notes
	Woodson, R. E., Schery, R. W., & Dwyer, J. D. (1980). Flora of Panama. Part IX. Family 179. Rubiaceae--Part 1. Annals of the Missouri Botanical Garden, 67(1), 1-256	[No evidence] "Alibertia edulis is one of the most common shrubs in Panama. It ranges from Mexico to the Amazon Basin, although Steyermark does not include it in his Flora de Venezuela. It occurs in the West Indies."
602	Produces viable seed	y

Qsn #	Question	Answer
	Source(s)	Notes
	Janick, J. & Paull, R.E. 2008. The Encyclopedia of Fruit & Nuts. CABI Publishing, Wallingford, UK	"Normally it is propagated by seeds."
	FAO. 1986. Food and fruit-bearing forest species 3: Examples from Latin America. FAO Forestry Paper, 44(3). Food & Agriculture Organization of the United Nations, Rome	"The seeds germinate rapidly (30 to 50 days) if sown soon after removal from the fruit."

603	Hybridizes naturally	
	Source(s)	Notes
	Taylor, C. M., Sánchez-González, J., Hammel, B., Lorence, D. H., Persson, C., Delprete, P. G., & Gereau, R. E. (2011). Rubiacearum Americanarum Magna Hama Pars XXVIII: New Taxa, New Combinations, New Names, and Lectotypification for Several Species Found in Mexico and Central America. <i>Novon</i> , 21(1), 133–148	Unknown. No hybrids reported

604	Self-compatible or apomictic	n
	Source(s)	Notes
	Janick, J. & Paull, R.E. 2008. The Encyclopedia of Fruit & Nuts. CABI Publishing, Wallingford, UK	The cream-coloured, dioecious flowers are almost sessile and terminate the branches. The flowers are either solitary or in clusters."

605	Requires specialist pollinators	n
	Source(s)	Notes
	Hilje, B., Calvo-Alvarado, J., Jiménez-Rodríguez, C., & Sánchez Azofeifa, A. (2015). Tree species composition, breeding systems, and pollination and dispersal syndromes in three forest successional stages in a tropical dry forest in Mesoamerica. <i>Tropical Conservation Science</i> , 8(1), 76-94	"Appendix 1. Tree species observed in numbers and percentages, including diameter at breast height (DBH), their breeding system, and pollination and seed dispersal syndrome in three tropical dry forest stages in Santa Rosa National Park, Guanacaste, Costa Rica." [Alibertia edulis - Pollination Syndrome = Lepidopterophily (Order Lepidoptera, moths, hawkmoths, and butterflies)]

606	Reproduction by vegetative fragmentation	n
	Source(s)	Notes
	Janick, J. & Paull, R.E. 2008. The Encyclopedia of Fruit & Nuts. CABI Publishing, Wallingford, UK	"Normally it is propagated by seeds."

607	Minimum generative time (years)	2
	Source(s)	Notes
	FAO. 1986. Food and fruit-bearing forest species 3: Examples from Latin America. FAO Forestry Paper, 44(3). Food & Agriculture Organization of the United Nations, Rome	"Fruiting will begin in the second or third year in the field."

Qsn #	Question	Answer
701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	n
	Source(s)	Notes
	Woodson, R. E., Schery, R. W., & Dwyer, J. D. (1980). Flora of Panama. Part IX. Family 179. Rubiaceae--Part 1. Annals of the Missouri Botanical Garden, 67(1), 1–256	[No means of external attachment, although some seeds could potentially adhere to something if covered in pulp] "Fruits terminal, sessile, solitary, rotund to compressed- rotund, to 3 cm in diam., the persistent calyx coroniform and cylindrical, to 0.5 cm long, rarely to 1 cm long, ligneous, smooth, glabrous; seeds numerous in a slimy pulp, suborbicular, ca. 0.5 cm in diam., striate."
702	Propagules dispersed intentionally by people	y
	Source(s)	Notes
	Fruit Lover's Seed Co. 2016. Tropical Fruit Seed List. http://www.fruitlovers.com/seedlistUSA.html . [Accessed 4 Apr 2016]	Seeds sold online
703	Propagules likely to disperse as a produce contaminant	n
	Source(s)	Notes
	Woodson, R. E., Schery, R. W., & Dwyer, J. D. (1980). Flora of Panama. Part IX. Family 179. Rubiaceae--Part 1. Annals of the Missouri Botanical Garden, 67(1), 1–256	[No evidence. Relatively large fruits & seeds]
704	Propagules adapted to wind dispersal	n
	Source(s)	Notes
	Woodson, R. E., Schery, R. W., & Dwyer, J. D. (1980). Flora of Panama. Part IX. Family 179. Rubiaceae--Part 1. Annals of the Missouri Botanical Garden, 67(1), 1–256	"Fruits terminal, sessile, solitary, rotund to compressed- rotund, to 3 cm in diam., the persistent calyx coroniform and cylindrical, to 0.5 cm long, rarely to 1 cm long, ligneous, smooth, glabrous; seeds numerous in a slimy pulp, suborbicular, ca. 0.5 cm in diam., striate."
705	Propagules water dispersed	
	Source(s)	Notes
	FAO. 1986. Food and fruit-bearing forest species 3: Examples from Latin America. FAO Forestry Paper, 44(3). Food & Agriculture Organization of the United Nations, Rome	[Buoyancy of fruit unknown. Possible that they may be dispersed by water if growing in flooded areas] " <i>Alibertia edulis</i> occurs on nutrient poor oxisols and ultisols of the savannas, cerrados, open secondary growth and open forests that are periodically flooded but not waterlogged."

Qsn #	Question	Answer
706	Propagules bird dispersed	
	Source(s)	Notes
	Hilje, B., Calvo-Alvarado, J., Jiménez-Rodríguez, C., & Sánchez Azofeifa, A. (2015). Tree species composition, breeding systems, and pollination and dispersal syndromes in three forest successional stages in a tropical dry forest in Mesoamerica. <i>Tropical Conservation Science</i> , 8(1), 76-94	[Reported to be mammal dispersed. Potentially bird-dispersed, but no direct evidence] "Appendix 1. Tree species observed in numbers and percentages, including diameter at breast height (DBH), their breeding system, and pollination and seed dispersal syndrome in three tropical dry forest stages in Santa Rosa National Park, Guanacaste, Costa Rica." [Alibertia edulis - Seed dispersal Syndrome = Mastochory (mammals other than bats)]

707	Propagules dispersed by other animals (externally)	n
	Source(s)	Notes
	Woodson, R. E., Schery, R. W., & Dwyer, J. D. (1980). Flora of Panama. Part IX. Family 179. Rubiaceae--Part 1. <i>Annals of the Missouri Botanical Garden</i> , 67(1), 1-256	[No means of external attachment, although some seeds could potentially adhere to something if covered in pulp] "Fruits terminal, sessile, solitary, rotund to compressed- rotund, to 3 cm in diam., the persistent calyx coroniform and cylindrical, to 0.5 cm long, rarely to 1 cm long, ligneous, smooth, glabrous; seeds numerous in a slimy pulp, suborbicular, ca. 0.5 cm in diam., striate."

708	Propagules survive passage through the gut	y
	Source(s)	Notes
	Ribeiro, L. F., & Tabarelli, M. (2002). A structural gradient in cerrado vegetation of Brazil: changes in woody plant density, species richness, life history and plant composition. <i>Journal of Tropical Ecology</i> , 18(05), 775-794	"Appendix 1." [Alibertia edulis - Seed dispersal = (VE) vertebrate-dispersed species]
	Hilje, B., Calvo-Alvarado, J., Jiménez-Rodríguez, C., & Sánchez Azofeifa, A. (2015). Tree species composition, breeding systems, and pollination and dispersal syndromes in three forest successional stages in a tropical dry forest in Mesoamerica. <i>Tropical Conservation Science</i> , 8(1), 76-94	[Presumably Yes] "Appendix 1. Tree species observed in numbers and percentages, including diameter at breast height (DBH), their breeding system, and pollination and seed dispersal syndrome in three tropical dry forest stages in Santa Rosa National Park, Guanacaste, Costa Rica." [Alibertia edulis - Seed dispersal Syndrome = Mastochory (mammals other than bats)]
	Defler, T. & Stevenson, P. R. (eds.). 2014. <i>The Woolly Monkey: Behavior, Ecology, Systematics, and Captive Research</i> . Springer	Seeds of <i>Alibertia edulis</i> collected in the droppings of woolly monkeys

801	Prolific seed production (>1000/m2)	
	Source(s)	Notes
	Janick, J. & Paull, R.E. 2008. <i>The Encyclopedia of Fruit & Nuts</i> . CABI Publishing, Wallingford, UK	"The round fruit is green, 2-4 cm in diameter and weighs 10-30 g, enclosing between ten and 30 seeds. The tree produces 30-80 fruit/plant." [Produces between 300-2400 seeds per year. Densities per m2 unknown]

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

Qsn #	Question	Answer
	Lima, M.de J.V.Jr., Hong, T. D., Arruda, Y. M. B. C., Mendes, A. M. S., & Ellis, R. H. (2014). Classification of seed storage behaviour of 67 Amazonian tree species. <i>Seed Science and Technology</i> , 42(3), 363-392	[Unknown. Possibly orthodox or intermediate seed storage] "Within zone III, the additional (third) criterion of seed shape is most helpful: since they have flat seeds, we can estimate (correctly) that <i>Alibertia edulis</i> , <i>Cedrela fissilis</i> , <i>Couma utilis</i> , <i>Couratari atrovinosa</i> , <i>C. guianensis</i> , <i>C. longipedicellata</i> , <i>C. stellata</i> , <i>Genipa americana</i> and <i>Schefflera morototoni</i> are either orthodox or intermediate and not recalcitrant (table 2)."

803	Well controlled by herbicides	
	Source(s)	Notes
	WRA Specialist. 2016. Personal Communication	Unknown. No information on herbicide efficacy or chemical control of this species

804	Tolerates, or benefits from, mutilation, cultivation, or fire	n
	Source(s)	Notes
	Hoffmann, W. A., & Moreira, A. G. (2002). The role of fire in population dynamics of woody plants. <i>The Cerrados of Brazil. Ecology and Natural History of a Neotropical Savanna</i> , 159-177. Columbia University Press, New York, NY	[Does not tolerate fire] "Fire has a particularly strong effect on species composition of more closed physiognomies such as cerradão (chapter 6). Moreira (1996) found that five of the ten most abundant species in a fire-protected cerradão were totally absent in sampled areas of adjacent unprotected cerradão. Cerradão generally includes fire-sensitive species typical of forest, as shown earlier. <i>Emmotum nitens</i> , <i>Ocotea spixiana</i> and <i>Alibertia edulis</i> are forest species typical of cerradão that rarely, if ever, are found in more open cerrado (Furley and Ratter 1988). The establishment of <i>E. nitens</i> in open cerrado is probably constrained by the absence of a resprouting ability in seedlings of this species. <i>Emmotum nitens</i> and <i>A. edulis</i> have highly branched roots without any of the enlarged taproot that characterizes many cerrado woody plants (Labouriau et al. 1964; Rizzini 1965; Moreira 1987, 1992; Oliveira and Silva 1993)."
	Moreira, A. G. (2000). Effects of fire protection on savanna structure in Central Brazil. <i>Journal of Biogeography</i> , 27(4), 1021-1029	[Unable to resprout after fire] " <i>A. edulis</i> and <i>E. nitens</i> have highly ramified roots and lack the enlarged, underground bulbous root structure that is characteristic of many Cerrado woody plants and which allows them to resprout after fire (Rizzini & Heringer, 1961; Labouriau et al., 1964; Moreira, 1987, 1992; Oliveira & Silva, 1993)."

805	Effective natural enemies present locally (e.g. introduced biocontrol agents)	
	Source(s)	Notes
	WRA Specialist. 2016. Personal Communication	Unknown

Summary of Risk Traits:

High Risk / Undesirable Traits

- Thrives in tropical climates
- Shade tolerant
- Reproduces by seeds
- Reaches maturity in 2-3 years
- Seeds dispersed by frugivorous animals, & intentionally by people for cultivation

Low Risk Traits

- No reports of invasiveness or naturalization, but no evidence of widespread introduction outside native range
- Unarmed (no spines, thorns or burrs)
- Palatable to deer & possibly other browsing animals
- Non-toxic
- Edible fruit
- Dioecious
- Not reported to spread vegetatively
- Relatively large fruit & seeds unlikely to be inadvertently dispersed
- Does not tolerate fires