

**Family:** *Arecaceae*

**Taxon:** *Acrocomia aculeata*

**Synonym:** *Acrocomia fusiformis* (Sw.) Sweet  
*Acrocomia lasiospatha* Mart.  
*Acrocomia media* O. F. Cook  
*Acrocomia mexicana* Karw. ex Mart.  
*Acrocomia microcarpa* Barb. Rodr.  
*Acrocomia mokayayba* Barb. Rodr.  
*Acrocomia sclerocarpa* Mart.  
*Acrocomia spinosa* (Mill.) H. E. Moore  
*Acrocomia totai* Mart.  
*Acrocomia vinifera* Oerst.  
*Bactris pavoniana* Mart.  
*Cocos fusiformis* Sw.  
*Euterpe aculeata* (Willd.) Spreng.

**Common Name:** coyoli palm  
gru-gru palm  
macaw palm  
Paraguay palm

Questionnaire :	current 20090513	Assessor:	Patti Clifford	Designation: L
Status:	Assessor Approved	Data Entry Person:	Patti Clifford	<b>WRA Score 5</b>
101	Is the species highly domesticated?		y=-3, n=0	n
102	Has the species become naturalized where grown?		y=1, n=-1	
103	Does the species have weedy races?		y=1, n=-1	
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	y
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	y
402	Allelopathic		y=1, n=0	
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
406	Host for recognized pests and pathogens	y=1, n=0	n
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	n
410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	y=1, n=0	y
411	Climbing or smothering growth habit	y=1, n=0	n
412	Forms dense thickets	y=1, n=0	
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	y=1, n=-1	
604	Self-compatible or apomictic	y=1, n=-1	y
605	Requires specialist pollinators	y=-1, n=0	n
606	Reproduction by vegetative fragmentation	y=1, n=-1	
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	
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	y=1, n=-1	
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	y=1, n=-1	y
801	Prolific seed production (>1000/m2)	y=1, n=-1	
802	Evidence that a persistent propagule bank is formed (>1 yr)	y=1, n=-1	y
803	Well controlled by herbicides	y=-1, n=1	
804	Tolerates, or benefits from, mutilation, cultivation, or fire	y=1, n=-1	y

Designation: L

WRA Score 5

## Supporting Data:

101	2012. WRA Specialist. Personal Communication.	[Is the species highly domesticated? No] No evidence.
102	2012. WRA Specialist. Personal Communication.	[Has the species become naturalized where grown? NA]
103	2012. WRA Specialist. Personal Communication.	[Does the species have weedy races? NA]
201	2012. USDA ARS National Genetic Resources Program. Germplasm Resources Information Network - (GRIN). <a href="http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl">http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl</a>	[Species suited to tropical or subtropical climate(s) - If island is primarily wet habitat, then substitute "wet tropical" for "tropical or subtropical"? 2 - High] Native distribution: Mexico Caribbean: Antigua and Barbuda; Cuba; Dominica; Dominican Republic; Grenada; Haiti; Jamaica; Martinique; Puerto Rico; St. Kitts and Nevis; St. Lucia; St. Vincent and Grenadines; Trinidad and Tobago Mesoamerica: Belize; Costa Rica; El Salvador; Guatemala; Honduras; Nicaragua; Panama Northern South America: French Guiana; Guyana; Suriname; Venezuela Brazil: Brazil Western South America: Bolivia; Colombia Southern South America: Argentina; Paraguay.
202	2012. USDA ARS National Genetic Resources Program. Germplasm Resources Information Network - (GRIN). <a href="http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl">http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl</a>	[Quality of climate match data? 2 -High] Native distribution: Mexico Caribbean: Antigua and Barbuda; Cuba; Dominica; Dominican Republic; Grenada; Haiti; Jamaica; Martinique; Puerto Rico; St. Kitts and Nevis; St. Lucia; St. Vincent and Grenadines; Trinidad and Tobago Mesoamerica: Belize; Costa Rica; El Salvador; Guatemala; Honduras; Nicaragua; Panama Northern South America: French Guiana; Guyana; Suriname; Venezuela Brazil: Brazil Western South America: Bolivia; Colombia Southern South America: Argentina; Paraguay.
203	2011. Teles, H./Pires, L.L./Garcia, J./Rosa, J.Q.S./Farias, J.G./Naves, R.V.. Ambientes de ocorrência natural de macauba (Environments with natural occurrence of <i>Acrocomia aculeata</i> ). <i>Pesq. Agropec. Trop.</i> , Goiania. 41: 595-601.	[Broad climate suitability (environmental versatility)? No] In this study in Estado de Goias, Brazil, <i>Acrocomia</i> occurred from 590 m to 794 m in altitude.
203	2012. Dave's Garden. PlantFiles: <i>Acrocomia aculeata</i> . <a href="http://davesgarden.com/guides/pf/go/58546/">http://davesgarden.com/guides/pf/go/58546/</a>	[Broad climate suitability (environmental versatility)? No] Hardiness: USDA Zone 9b: to -3.8 °C (25 °F) USDA Zone 10a: to -1.1 °C (30 °F) USDA Zone 10b: to 1.7 °C (35 °F) USDA Zone 11: above 4.5 °C (40 °F)
204	2012. USDA ARS National Genetic Resources Program. Germplasm Resources Information Network - (GRIN). <a href="http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl">http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl</a>	[Native or naturalized in regions with tropical or subtropical climates? Yes] Native distribution: Mexico Caribbean: Antigua and Barbuda; Cuba; Dominica; Dominican Republic; Grenada; Haiti; Jamaica; Martinique; Puerto Rico; St. Kitts and Nevis; St. Lucia; St. Vincent and Grenadines; Trinidad and Tobago Mesoamerica: Belize; Costa Rica; El Salvador; Guatemala; Honduras; Nicaragua; Panama Northern South America: French Guiana; Guyana; Suriname; Venezuela Brazil: Brazil Western South America: Bolivia; Colombia Southern South America: Argentina; Paraguay.
205	2012. WRA Specialist. Personal Communication.	[Does the species have a history of repeated introductions outside its natural range? No] No evidence of repeated introductions.
301	2000. Flora of North America Editorial Committee. <i>Flora of North America: North of Mexico</i> , Volume 22. Oxford University Press, Oxford, UK	[Naturalized beyond native range? Yes] <i>Acrocomia totai</i> (syn. Of <i>Acrocomia aculeata</i> ) is naturalized in Florida.
302	2012. Randall, R.P.. <i>A Global Compendium of Weeds</i> . 2nd Edition. Department of Agriculture and Food, Western Australia	[Garden/amenity/disturbance weed? No] No evidence.

303	2012. Randall, R.P.. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	[Agricultural/forestry/horticultural weed? No] No evidence.
304	2012. Randall, R.P.. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	[Environmental weed? No] No evidence.
305	2012. Randall, R.P.. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	[Congeneric weed? No] No evidence of an invasive species in genus.
401	2012. Dave's Garden. PlantFiles: <i>Acrocomia aculeata</i> . <a href="http://davesgarden.com/guides/pf/go/58546/">http://davesgarden.com/guides/pf/go/58546/</a>	[Produces spines, thorns or burrs? Yes] Plant has spines or sharp edges.
401	2012. Emporio do Cerrado. The Macauba - <i>Acrocomia aculeata</i> [Accessed 21 November 2012]. <a href="http://emporiocerrado.org.br/en-us/tesouros-do-cerrado/macauba.asp">http://emporiocerrado.org.br/en-us/tesouros-do-cerrado/macauba.asp</a>	[Produces spines, thorns or burrs? Yes] Thorny arborescent palm tree.
402	2012. WRA Specialist. Personal Communication.	[Allelopathic? Unknown]
403	2010. Nickrent, D.. The parasitic plant connection. Department of Plant Biology, Southern Illinois University, Carbondale <a href="http://www.parasiticplants.siu.edu/index.html">http://www.parasiticplants.siu.edu/index.html</a>	[Parasitic? No] Not a parasitic plant family.
404	2012. Emporio do Cerrado. The Macauba - <i>Acrocomia aculeata</i> [Accessed 21 November 2012]. <a href="http://emporiocerrado.org.br/en-us/tesouros-do-cerrado/macauba.asp">http://emporiocerrado.org.br/en-us/tesouros-do-cerrado/macauba.asp</a>	[Unpalatable to grazing animals? No] <i>Acrocomia aculeata</i> is used as a fodder.
405	2008. Wagstaff, D.J.. International poisonous plants checklist: an evidence-based reference. CRC Press, Boca Raton, FL <a href="http://books.google.com/books?id=h7tb-d-5ZAQ8C&amp;pg=PA17&amp;lpg=PA17&amp;dq=International+poisonous+plants+checklist:+an+evidence-based+reference&amp;">http://books.google.com/books?id=h7tb-d-5ZAQ8C&amp;pg=PA17&amp;lpg=PA17&amp;dq=International+poisonous+plants+checklist:+an+evidence-based+reference&amp;</a>	[Toxic to animals? No] No evidence.
405	2012. Specialized Information Services, U.S. National Library of Medicine. TOXNET toxicology data network [online database]. National Institutes of Health, <a href="http://toxnet.nlm.nih.gov/">http://toxnet.nlm.nih.gov/</a>	[Toxic to animals? No] No evidence.
406	1986. FAO. Food and fruit-bearing forest species 3: Examples from Latin America. Food & Agriculture Organisation of the United Nations, Rome, Italy	[Host for recognized pests and pathogens? No] No pests or pathogens are known from <i>Acrocomia aculeata</i> in the wild.
407	2011. Teles, H./Pires, L.L./Garcia, J./Rosa, J.Q.S./Farias, J.G./Naves, R.V.. Ambientes de ocorrência natural de macauba (Environments with natural occurrence of <i>Acrocomia aculeata</i> ). <i>Pesq. Agropec. Trop.</i> , Goiania. 41: 595-601.	[Causes allergies or is otherwise toxic to humans? No] " <i>Acrocomia aculeata</i> , a palm tree common in the Brazilian Savannah region, has been increasingly drawing attention for its high fruit yield and several uses, such as food for humans, fodder, and oil source."
407	2012. Emporio do Cerrado. The Macauba - <i>Acrocomia aculeata</i> [Accessed 21 November 2012]. <a href="http://emporiocerrado.org.br/en-us/tesouros-do-cerrado/macauba.asp">http://emporiocerrado.org.br/en-us/tesouros-do-cerrado/macauba.asp</a>	[Causes allergies or is otherwise toxic to humans? No] Edible fruit, oil is extracted for soap industry and biofuel, wood is used for houses.
408	2012. WRA Specialist. Personal Communication.	[Creates a fire hazard in natural ecosystems? No] No evidence.
409	1986. FAO. Food and fruit-bearing forest species 3: Examples from Latin America. Food & Agriculture Organisation of the United Nations, Rome, Italy	[Is a shade tolerant plant at some stage of its life cycle? No] Full sun.
409	2012. Dave's Garden. PlantFiles: <i>Acrocomia aculeata</i> . <a href="http://davesgarden.com/guides/pf/go/58546/">http://davesgarden.com/guides/pf/go/58546/</a>	[Is a shade tolerant plant at some stage of its life cycle? No] Full sun.

410	2011. Teles, H./Pires, L.L./Garcia, J./Rosa, J.Q.S./Farias, J.G./Naves, R.V.. Ambientes de ocorrência natural de macauba (Environments with natural occurrence of <i>Acrocomia aculeata</i> ). Pesq. Agropec. Trop., Goiania. 41: 595-601.	[Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)?] "Data showed that <i>A. aculeata</i> occurs in soils with more than 50% of base saturation, considered eutrophic, with medium to high fertility and high potassium levels. Its populations are present in areas with total annual rainfall of 1,300-1,700 mm and corrected annual average air temperature of 21.5-22.5°C. Areas with a predominance of cambisols and neosols, with medium texture and in the convex slope, talus, and concave slope of the landscape presented higher plant density."
410	2012. Poetsch, J./Haupenthal, D./Lewandowski, I./Oberlander, D./Hilger, T.. <i>Acrocomia aculeata</i> - a sustainable oil crop. Rural 21 Scientific World. 3: 41-44.	[Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)? Yes] " <i>Acrocomia</i> grows on a diversity of soils, where high amounts of sand and organic matter are preferred and it has been also cultivated on nutrient-poor sandy soils."
411	1986. FAO. Food and fruit-bearing forest species 3: Examples from Latin America. Food & Agriculture Organisation of the United Nations, Rome, Italy	[Climbing or smothering growth habit? No] Palm.
412	2012. WRA Specialist. Personal Communication.	[Forms dense thickets? Unknown]
501	1986. FAO. Food and fruit-bearing forest species 3: Examples from Latin America. Food & Agriculture Organisation of the United Nations, Rome, Italy	[Aquatic? No] Terrestrial; palm.
502	1986. FAO. Food and fruit-bearing forest species 3: Examples from Latin America. Food & Agriculture Organisation of the United Nations, Rome, Italy	[Grass? No] Arecaceae.
503	2010. www.nationmaster.com. Encyclopedia Nitrogen fixation. Nationmaster.com, <a href="http://www.nationmaster.com/encyclopedia/Nitrogen-fixation">http://www.nationmaster.com/encyclopedia/Nitrogen-fixation</a>	[Nitrogen fixing woody plant? No] Not a nitrogen-fixing family.
504	1986. FAO. Food and fruit-bearing forest species 3: Examples from Latin America. Food & Agriculture Organisation of the United Nations, Rome, Italy	[Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)? No] Palm.
601	2012. WRA Specialist. Personal Communication.	[Evidence of substantial reproductive failure in native habitat? No] No evidence.
602	2012. Dave's Garden. PlantFiles: <i>Acrocomia aculeata</i> . <a href="http://davesgarden.com/guides/pf/go/58546/">http://davesgarden.com/guides/pf/go/58546/</a>	[Produces viable seed? Yes] Propagate from seed.
602	2012. Poetsch, J./Haupenthal, D./Lewandowski, I./Oberlander, D./Hilger, T.. <i>Acrocomia aculeata</i> - a sustainable oil crop. Rural 21 Scientific World. 3: 41-44.	[Produces viable seed? Yes] Plants are grown from seed.
603	2012. WRA Specialist. Personal Communication.	[Hybridizes naturally? Unknown]
604	1991. Scariot, A.O./Lileras, E./Hay, J.D.. Reproductive biology of the palm <i>Acrocomia aculeata</i> in Central Brazil. Biotropica. 23: 12-22.	[Self-compatible or apomictic? Yes] The species is self-compatible, with geitonogamy accounting for a significant percentage of fruit set.
605	1991. Scariot, A.O./Lileras, E./Hay, J.D.. Reproductive biology of the palm <i>Acrocomia aculeata</i> in Central Brazil. Biotropica. 23: 12-22.	[Requires specialist pollinators? No] "Although inflorescences are visited by insects of the orders Hymenoptera, Thysanoptera, and Coleoptera, the first two orders do not seem to have any importance in pollination. While eleven species of beetles were found visiting inflorescences of <i>A. aculeata</i> (Table 2), three, due to their very high numbers, are probably responsible for the bulk of pollination: <i>Andranthobius</i> sp. and <i>Mystrops cf mexicana</i> , both ca 3.5 mm long, which occurred in the thousands, and <i>Cyclocephala forsteri</i> , which reaches a size of ca 2.5 cm, and which occurs in the hundreds. All three species reached the inflorescence at dusk or early night, using it as a mating site and source of food and protection, with the first two also laying their eggs there. protection, with the first two also laying their eggs there." Also, wind-pollinated.
605	2012. Emporio do Cerrado. The Macauba - <i>Acrocomia aculeata</i> [Accessed 21 November 2012]. <a href="http://emporiocerrado.org.br/en-us/tesouros-do-cerrado/macauba.asp">http://emporiocerrado.org.br/en-us/tesouros-do-cerrado/macauba.asp</a>	[Requires specialist pollinators? No] Main pollinators are beetles and bees from the Trigonina group.
606	2012. WRA Specialist. Personal Communication.	[Reproduction by vegetative fragmentation? Unknown]

607	1986. FAO. Food and fruit-bearing forest species 3: Examples from Latin America. Food & Agriculture Organisation of the United Nations, Rome, Italy	[Minimum generative time (years)? >3] Trees start to produce fruit after 4-6 years.
701	2012. WRA Specialist. Personal Communication.	[Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)? Unknown]
702	1986. FAO. Food and fruit-bearing forest species 3: Examples from Latin America. Food & Agriculture Organisation of the United Nations, Rome, Italy	[Propagules dispersed intentionally by people? Yes] <i>Acrocomia aculeata</i> is growing in popularity as a plantation species, because of its nutritional, cultural and biofuel values.
702	2012. Poetsch, J./Hauptenthal, D./Lewandowski, I./Oberlander, D./Hilger, T.. <i>Acrocomia aculeata</i> - a sustainable oil crop. Rural 21 Scientific World. 3: 41-44.	[Propagules dispersed intentionally by people? Yes] Considered to be useful as a biofuel crop.
703	2012. WRA Specialist. Personal Communication.	[Propagules likely to disperse as a produce contaminant? No] No evidence.
704	2012. Poetsch, J./Hauptenthal, D./Lewandowski, I./Oberlander, D./Hilger, T.. <i>Acrocomia aculeata</i> - a sustainable oil crop. Rural 21 Scientific World. 3: 41-44.	[Propagules adapted to wind dispersal? No] Fruit rounded, 3-6 cm in diameter, rarely up to 9 cm, dull green to brown; epicarp smooth, thin, rather hard but brittle.
705	2012. WRA Specialist. Personal Communication.	[Propagules water dispersed? Unknown] No information available on buoyancy.
706	2000. Justiniano, M.J./Fredericksen, T.S.. Phenology of tree species in Bolivian dry forests. Biotropica. 32: 276-281.	[Propagules bird dispersed? No] Dispersed by animals and gravity.
707	2000. Justiniano, M.J./Fredericksen, T.S.. Phenology of tree species in Bolivian dry forests. Biotropica. 32: 276-281.	[Propagules dispersed by other animals (externally)? No] Dispersed by animals (internal) and gravity.
707	2012. Poetsch, J./Hauptenthal, D./Lewandowski, I./Oberlander, D./Hilger, T.. <i>Acrocomia aculeata</i> - a sustainable oil crop. Rural 21 Scientific World. 3: 41-44.	[Propagules dispersed by other animals (externally)? No] Fruit rounded, 3-6 cm in diameter, rarely up to 9 cm, dull green to brown; epicarp smooth, thin, rather hard but brittle.
708	2000. Justiniano, M.J./Fredericksen, T.S.. Phenology of tree species in Bolivian dry forests. Biotropica. 32: 276-281.	[Propagules survive passage through the gut? Yes] Seeds are dispersed by animals and gravity.
801	2012. WRA Specialist. Personal Communication.	[Prolific seed production (>1000/m <sup>2</sup> )? Unknown]
802	2012. Emporio do Cerrado. The Macauba - <i>Acrocomia aculeata</i> [Accessed 21 November 2012]. <a href="http://emporiocerrado.org.br/en-us/tesouros-do-cerrado/macauaba.asp">http://emporiocerrado.org.br/en-us/tesouros-do-cerrado/macauaba.asp</a>	[Evidence that a persistent propagule bank is formed (>1 yr)?] Seeds can take up to two years to germinate.
802	2012. Poetsch, J./Hauptenthal, D./Lewandowski, I./Oberlander, D./Hilger, T.. <i>Acrocomia aculeata</i> - a sustainable oil crop. Rural 21 Scientific World. 3: 41-44.	[Evidence that a persistent propagule bank is formed (>1 yr)? Yes] Seeds naturally germinate within 12 and 60 months.
802	2012. Ribeiro, L.M./Oliveira, T.G.S./Carvalho, V.S./Silva, P.O./Neves, S.C./Garcia, Q.S.. The behaviour of macaw palm ( <i>Acrocomia aculeata</i> ) seeds during storage. Seed Science and Technology. 40: 344-353.	[Evidence that a persistent propagule bank is formed (>1 yr)?] Burial and storage under shade conditions maintained 67% seed viability, while 34% of the seeds stored in the open remained viable. Macaw palm seeds are orthodox and can potentially form soil seed banks.
803	2012. WRA Specialist. Personal Communication.	[Well controlled by herbicides? Unknown]
804	2012. Emporio do Cerrado. The Macauba - <i>Acrocomia aculeata</i> [Accessed 21 November 2012]. <a href="http://emporiocerrado.org.br/en-us/tesouros-do-cerrado/macauaba.asp">http://emporiocerrado.org.br/en-us/tesouros-do-cerrado/macauaba.asp</a>	[Tolerates, or benefits from, mutilation, cultivation, or fire? Yes] Fire tolerant.
804	2012. Poetsch, J./Hauptenthal, D./Lewandowski, I./Oberlander, D./Hilger, T.. <i>Acrocomia aculeata</i> - a sustainable oil crop. Rural 21 Scientific World. 3: 41-44.	[Tolerates, or benefits from, mutilation, cultivation, or fire? Yes] Fire and drought tolerant.
805	2012. WRA Specialist. Personal Communication.	[Effective natural enemies present locally (e.g. introduced biocontrol agents)? Unknown]

## **Summary of Risk Traits**

### **High Risk / Undesirable Traits**

- Native to tropical regions
- Naturalized in Florida
- Armed (spines)
- Grows on a wide variety of soils, but prefers sandy and organically enriched soils
- Self-compatible (self-fertile)
- Persistent seed bank
- Tolerates fire and drought

### **Low Risk / Desirable Traits**

- Not a known invasive (limited cultivation outside native range)
- No species in the genus are invasive
- Does not thrive in a wide-variety of climates
- Non-toxic to humans and animals
- Shade-intolerant
- Doesn't produce fruit for 4-6 years
- Limited dispersal agents (humans, animals, gravity)