**Family:** Arecaceae  
**Taxon:** *Arenga pinnata*  
**Synonym:**  
- *Arenga gamuto* (Houtt.) Merr.  
- *Arenga griffithii* Seem. ex H. Wendl.  
- *Arenga saccharifera* Labill. ex DC.  
- *Borassus gomutus* Lour.  
- *Caryota onusta* Blanco  
- *Gomutus rumphii* Corrêa  
- *Gomutus saccharifer* (Labill. ex DC.) Spreng.  
- *Gomutus vulgaris* Oken  
- *Saguerus gamuto* Houtt.  
- *Saguerus pinnatus* Warmb (basionym)  
- *Saguerus rumphii* (Corrêa) Roxb.  
- *Saguerus saccharifer* (Labill. ex DC.) Blume  
- *Sagus gomutus* (Lour.) Perr.  

**Common Name** sugar palm

---

**Questionnaire:**  
**Status:** current 20090513  
**Assessor:** Chuck Chimera  
**Data Entry Person:** Chuck Chimera  
**Designation:** H(HPWRA)  
**WRA Score:** 7

<table>
<thead>
<tr>
<th>Question</th>
<th>y/n</th>
<th>y/n</th>
<th>Multiplier</th>
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<tbody>
<tr>
<td>101 Is the species highly domesticated?</td>
<td>n</td>
<td></td>
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<tr>
<td>102 Has the species become naturalized where grown?</td>
<td>y</td>
<td>n</td>
<td></td>
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<tr>
<td>103 Does the species have weedy races?</td>
<td>y</td>
<td>n</td>
<td></td>
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<tr>
<td>201 Species suited to tropical or subtropical climate(s) - If island is primarily wet habitat, then substitute &quot;wet tropical&quot; for &quot;tropical or subtropical&quot;</td>
<td>y</td>
<td>n</td>
<td>(0-low; 1-intermediate; 2-high) (See Appendix 2)</td>
</tr>
<tr>
<td>202 Quality of climate match data</td>
<td>y</td>
<td>n</td>
<td>(0-low; 1-intermediate; 2-high) (See Appendix 2)</td>
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<tr>
<td>203 Broad climate suitability (environmental versatility)</td>
<td>y</td>
<td>n</td>
<td></td>
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<tr>
<td>204 Native or naturalized in regions with tropical or subtropical climates</td>
<td>y</td>
<td>n</td>
<td></td>
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<tr>
<td>205 Does the species have a history of repeated introductions outside its natural range?</td>
<td>y</td>
<td>n</td>
<td></td>
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<tr>
<td>301 Naturalized beyond native range</td>
<td>y</td>
<td>n</td>
<td>y = 1*multiplier (see Appendix 2), n= question 205</td>
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<tr>
<td>302 Garden/amenity/disturbance weed</td>
<td>n</td>
<td></td>
<td>n =0, y = 1*multiplier (see Appendix 2)</td>
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<tr>
<td>303 Agricultural/forestry/horticultural weed</td>
<td>n</td>
<td></td>
<td>n =0, y = 2*multiplier (see Appendix 2)</td>
</tr>
<tr>
<td>304 Environmental weed</td>
<td>n</td>
<td></td>
<td>n =0, y = 2*multiplier (see Appendix 2)</td>
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<tr>
<td>305 Congeneric weed</td>
<td>n</td>
<td></td>
<td>n =0, y = 1*multiplier (see Appendix 2)</td>
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<tr>
<td>401 Produces spines, thorns or burrs</td>
<td>y</td>
<td>n</td>
<td></td>
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<tr>
<td>402 Allelopathic</td>
<td>y</td>
<td>n</td>
<td></td>
</tr>
<tr>
<td>403 Parasitic</td>
<td>y</td>
<td>n</td>
<td></td>
</tr>
<tr>
<td>404 Unpalatable to grazing animals</td>
<td>y</td>
<td>n</td>
<td></td>
</tr>
<tr>
<td>Code</td>
<td>Description</td>
<td>Value</td>
<td>Note</td>
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<td>------</td>
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<tr>
<td>405</td>
<td>Toxic to animals</td>
<td>y=1, n=0</td>
<td></td>
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<tr>
<td>406</td>
<td>Host for recognized pests and pathogens</td>
<td>y=1, n=0</td>
<td>n</td>
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<tr>
<td>407</td>
<td>Causes allergies or is otherwise toxic to humans</td>
<td>y=1, n=0</td>
<td>y</td>
</tr>
<tr>
<td>408</td>
<td>Creates a fire hazard in natural ecosystems</td>
<td>y=1, n=0</td>
<td>n</td>
</tr>
<tr>
<td>409</td>
<td>Is a shade tolerant plant at some stage of its life cycle</td>
<td>y=1, n=0</td>
<td>y</td>
</tr>
<tr>
<td>410</td>
<td>Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)</td>
<td>y=1, n=0</td>
<td>y</td>
</tr>
<tr>
<td>411</td>
<td>Climbing or smothering growth habit</td>
<td>y=1, n=0</td>
<td>n</td>
</tr>
<tr>
<td>412</td>
<td>Forms dense thickets</td>
<td>y=1, n=0</td>
<td>y</td>
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<tr>
<td>501</td>
<td>Aquatic</td>
<td>y=5, n=0</td>
<td>n</td>
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<tr>
<td>502</td>
<td>Grass</td>
<td>y=1, n=0</td>
<td>n</td>
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<td>503</td>
<td>Nitrogen fixing woody plant</td>
<td>y=1, n=0</td>
<td>n</td>
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<tr>
<td>504</td>
<td>Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)</td>
<td>y=1, n=0</td>
<td>n</td>
</tr>
<tr>
<td>601</td>
<td>Evidence of substantial reproductive failure in native habitat</td>
<td>y=1, n=0</td>
<td>n</td>
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<tr>
<td>602</td>
<td>Produces viable seed</td>
<td>y=1, n=0</td>
<td>y</td>
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<tr>
<td>603</td>
<td>Hybridizes naturally</td>
<td>y=1, n=-1</td>
<td>y</td>
</tr>
<tr>
<td>604</td>
<td>Self-compatible or apomictic</td>
<td>y=1, n=-1</td>
<td>y</td>
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<tr>
<td>605</td>
<td>Requires specialist pollinators</td>
<td>y=-1, n=0</td>
<td>n</td>
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<tr>
<td>606</td>
<td>Reproduction by vegetative fragmentation</td>
<td>y=1, n=-1</td>
<td>n</td>
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<tr>
<td>607</td>
<td>Minimum generative time (years)</td>
<td>1 year = 1, 2 or 3 years = 0, 4+ years = -1</td>
<td>&gt;3</td>
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<tr>
<td>701</td>
<td>Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)</td>
<td>y=1, n=-1</td>
<td>n</td>
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<tr>
<td>702</td>
<td>Propagules dispersed intentionally by people</td>
<td>y=1, n=-1</td>
<td>y</td>
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<tr>
<td>703</td>
<td>Propagules likely to disperse as a produce contaminant</td>
<td>y=1, n=-1</td>
<td>n</td>
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<tr>
<td>704</td>
<td>Propagules adapted to wind dispersal</td>
<td>y=1, n=-1</td>
<td>n</td>
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<tr>
<td>705</td>
<td>Propagules water dispersed</td>
<td>y=1, n=-1</td>
<td>n</td>
</tr>
<tr>
<td>706</td>
<td>Propagules bird dispersed</td>
<td>y=1, n=-1</td>
<td>y</td>
</tr>
<tr>
<td>707</td>
<td>Propagules dispersed by other animals (externally)</td>
<td>y=1, n=-1</td>
<td>y</td>
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<tr>
<td>708</td>
<td>Propagules survive passage through the gut</td>
<td>y=1, n=-1</td>
<td>y</td>
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<tr>
<td>801</td>
<td>Prolific seed production (&gt;1000/m2)</td>
<td>y=1, n=-1</td>
<td>n</td>
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<tr>
<td>802</td>
<td>Evidence that a persistent propagule bank is formed (&gt;1 yr)</td>
<td>y=1, n=-1</td>
<td>n</td>
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<tr>
<td>803</td>
<td>Well controlled by herbicides</td>
<td>y=-1, n=1</td>
<td></td>
</tr>
<tr>
<td>804</td>
<td>Tolerates, or benefits from, mutilation, cultivation, or fire</td>
<td>y=1, n=-1</td>
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</table>
### Supporting Data:

<table>
<thead>
<tr>
<th>ID</th>
<th>Date</th>
<th>Author(s)</th>
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<tbody>
<tr>
<td>101</td>
<td>2000</td>
<td>Duke, J. A.</td>
<td>Handbook of nuts. CRC Press, Boca Raton, FL</td>
</tr>
<tr>
<td>101</td>
<td>2008</td>
<td>Janick, J./Paul, R. E.</td>
<td>The encyclopedia of fruit &amp; nuts. Cabi Publishing, Wallingford, UK</td>
</tr>
<tr>
<td>101</td>
<td>2010</td>
<td>World Agroforestry Center. Agroforestry Tree Database - Arenga pinnata.</td>
<td><a href="http://www.worldagroforestry.org/sea/Products/AF">http://www.worldagroforestry.org/sea/Products/AF</a> Databases/af/asp/SpeciesInfo.asp?SpID=119</td>
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<tr>
<td>201</td>
<td>1998</td>
<td>Chan, E./Tettoni, L. I.</td>
<td>Tropical Plants. Tuttle Publishing, North Clarendon, VT</td>
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<tr>
<td>202</td>
<td>1998</td>
<td>Chan, E./Tettoni, L. I.</td>
<td>Tropical Plants. Tuttle Publishing, North Clarendon, VT</td>
</tr>
<tr>
<td>203</td>
<td>2000</td>
<td>Duke, J. A.</td>
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</tr>
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<td>Chan, E./Tettoni, L. I.</td>
<td>Tropical Plants. Tuttle Publishing, North Clarendon, VT</td>
</tr>
<tr>
<td>205</td>
<td>2010</td>
<td>Dave's Garden. PlantFiles: Solitary Sugar Palm. Dave's Garden</td>
<td><a href="http://davesgarden.com/guides/pf/go/62892/">http://davesgarden.com/guides/pf/go/62892/</a></td>
</tr>
<tr>
<td>301</td>
<td>2010</td>
<td>Hashim, N. R./Hughes, F./Bayliss-Smith, T.</td>
<td>Non-native Species in Floodplain Secondary Forests in Peninsular Malaysia. EnvironmentAsia. 3: 43-49.www.tshe.org/EA</td>
</tr>
<tr>
<td>Year</td>
<td>Author(s)</td>
<td>Title</td>
<td>Notes</td>
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<tr>
<td>2007</td>
<td>Randall, R.P.</td>
<td>Global Compendium of Weeds - Arenga pinnata [Online Database]. Hawaii Ecosystems at Risk Project (HEAR), <a href="http://www.hear.org/gcw/species/arenga_pinnata/">http://www.hear.org/gcw/species/arenga_pinnata/</a></td>
<td>Starting to naturalize from gardens (see Daehler and Baker 2006) and spread into native forests (see question 3.04) but not currently regarded as a weed of gardens, or disturbance</td>
</tr>
<tr>
<td>2007</td>
<td>Randall, R.P.</td>
<td>Global Compendium of Weeds. <a href="http://www.hear.org/gcw/">http://www.hear.org/gcw/</a></td>
<td>No evidence that A. pinnata has become a weed of agriculture, horticulture or forestry, but may have potential to become an environmental weed of wet forests.</td>
</tr>
<tr>
<td>2000</td>
<td>Binggeli, P.</td>
<td>The East Usambaras (Tanzania) - The Pearl of Africa. Aliena. 10: 14-15.</td>
<td>Casual observations at two other locations indicate that other species, hitherto not thought to be invading, are also spreading into natural forest including two tree species, Castilla elastica and Arenga pinnata, and a bamboo.</td>
</tr>
<tr>
<td>2008</td>
<td>Meyer, J. Y./Lavergne, C./Hodel, D. R.</td>
<td>Time Bombs in Gardens: Invasive Ornamental Palms in Tropical Islands, with Emphasis on French Polynesia (Pacific Ocean) and the Mascarenes (Indian Ocean), Palms. 52: 71-83.</td>
<td>In 1999, Meyer officially advised the Department of the Environment of French Polynesia to ban introduction of Licuala grandis, Washingtonia spp. And Elaeis guineensis. All new importation of palms of the genera Adonidia, Areca, Arenga, Borassus, Dypsis, Corypha, Howea, Livistona, Phychosperma and Roystonea, as well as Elaeis guineensis, Washingtonia robusta and Phoenix dactylifera are officially illegal in French Polynesia Decree °276 CM 23 May 2005), primarily because f the risk of disease to the coconut, the most economically important plant of the islands.</td>
</tr>
<tr>
<td>2000</td>
<td>Duke, J. A.</td>
<td>Handbook of nuts. CRC Press, Boca Raton, FL</td>
<td>old leaf-bases covering trunk with a mat of tough, black fibers and long spines</td>
</tr>
<tr>
<td>2010</td>
<td>World Agroforestry Center. Agroforestry Tree Database - Arenga pinnata. <a href="http://www.worldagroforestry.org/sea/Products/AFDbases/asf/asp/SpeciesInfo.asp?SpID=119">http://www.worldagroforestry.org/sea/Products/AFDbases/asf/asp/SpeciesInfo.asp?SpID=119</a></td>
<td>As the heavy shade and the dense root system of the sugar palm limit its combination with other crop plants, it is best planted on steeper slopes, easily eroding lands, or in single or double rows near the boundaries of fields, where it contributes to soil stabilization without taking up considerable land area [but no evidence of allelopathy]</td>
<td></td>
</tr>
<tr>
<td>2007</td>
<td>Ecocrop. Arenga pinnata. FAO, <a href="http://ecocrop.fao.org/ecocrop/srv/en/cropView?id=3348">http://ecocrop.fao.org/ecocrop/srv/en/cropView?id=3348</a></td>
<td>Young leaves, still white, are eaten in the same way as palm cabbage. [refers to human consumption, but young leaves probably palatable to browsing grazing animals as well, and older leaves probably unpalatable]</td>
<td></td>
</tr>
<tr>
<td>2007</td>
<td>Riley, E. P.</td>
<td>Flexibility in Diet and Activity Patterns of Macaca tonkeana in Response to Anthropogenic Habitat Alteration. International Journal of Primatology. 28: 107-133.</td>
<td>Dietary diversity is significantly lower in the Anca group, with 52% of their diet being palm fruits from Arenga pinnata. [fruits palatable to Sulawesi Tonkean macaques (Macaca tonkeana)]</td>
</tr>
<tr>
<td>2010</td>
<td>WRA Specialist. Personal Communication.</td>
<td>Palatability of foliage to browsing or grazing animals unknown</td>
<td></td>
</tr>
<tr>
<td>2000</td>
<td>Duke, J. A.</td>
<td>Handbook of nuts. CRC Press, Boca Raton, FL</td>
<td>Juice of the outer covering of fruit is highly corrosive and may cause pain and skin inflammation…Juice of ripe fruit is poisonous. [but animal toxicity unknown]</td>
</tr>
<tr>
<td>2006</td>
<td>Daehler, C. C./Baker, R. F.</td>
<td>New Records of Naturalized and Naturalizing Plants Around Lyon Arboretum, Mānoa Valley, O'ahu. Bishop Museum Occasional Papers. 87: 3-18.</td>
<td>The fruits are dark red, about 2.5 cm in diameter, and are extremely irritating to the skin, containing calcium oxalate crystals. [but no other evidence of toxicity to animals or humans]</td>
</tr>
<tr>
<td>2000</td>
<td>Duke, J. A.</td>
<td>Handbook of nuts. CRC Press, Boca Raton, FL</td>
<td>reported to tolerate disease, drought, fungus, high pH, insects, poor soil, shade, and slope….It is little subject to drought damage, typhoons, insect pests, or fungal diseases…Sugar palm is virtually insect-, pest- and disease-free, one fungus attacking the palm being Ganoderma pseudosseum.</td>
</tr>
<tr>
<td>2000</td>
<td>Duke, J. A.</td>
<td>Handbook of nuts. CRC Press, Boca Raton, FL</td>
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<td>---------------------------------------------------------------------------------------------</td>
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</tr>
<tr>
<td>408</td>
<td>Duke, J. A.. Handbook of nuts. CRC Press, Boca Raton, FL</td>
<td>It flourishes best in humid tropics in a rich moist soil, from sea-level to elevations of 1,200 m, being grown at higher elevations than coconut. [No evidence from native range that A. pinnata contributes to fire frequency or is adapted to fire prone regimens]</td>
<td></td>
</tr>
<tr>
<td>410</td>
<td>Palm Doctor. Palm of the Month: Arenga pinnata. Palm Doctor LLC, <a href="http://www.palmdoctor.com/Palm_Of_The_Month/Arenga_pinnata.htm">http://www.palmdoctor.com/Palm_Of_The_Month/Arenga_pinnata.htm</a></td>
<td>Widely adaptable to many soil types</td>
<td></td>
</tr>
<tr>
<td>411</td>
<td>Duke, J. A.. Handbook of nuts. CRC Press, Boca Raton, FL</td>
<td>Tall, stout palm, 8 to 15 m tall, bole solitary, straight</td>
<td></td>
</tr>
<tr>
<td>504</td>
<td>Duke, J. A.. Handbook of nuts. CRC Press, Boca Raton, FL</td>
<td>Tall, stout palm, 8 to 15 m tall, bole solitary, straight [not a geophyte]</td>
<td></td>
</tr>
<tr>
<td>602</td>
<td>Duke, J. A.. Handbook of nuts. CRC Press, Boca Raton, FL</td>
<td>seeds 2 to 3 per fruit, dull-metallic, gray-brown, trigonous, oblong, 2.5 to 3.5 cm long, 2 to 2.5 cm wide, with copious endosperm</td>
<td></td>
</tr>
<tr>
<td>603</td>
<td>Utami, N.. Natural hybrid between Arenga pinnata and A. obtusifolia in Bogor Botanical Garden (Indonesia). Berita Biologi (Indonesia). 3: 296-299.</td>
<td>The morphology and leaf anatomy of three collections of Arenga sp. of uncertain identity, grown in the Bogor Botanical Gardens (Indonesia) are investigated and compared with those of Arenga pinnata and Arenga obtusifolia. Results showed that the characteristics of those collection oscillate between A. pinnata and A. obtusifolia. It is suggested consequently that the plants represent a natural hybrid of these two latter species.</td>
<td></td>
</tr>
<tr>
<td>604</td>
<td>Duke, J. A.. Handbook of nuts. CRC Press, Boca Raton, FL</td>
<td>plants monoecious...female inflorescences usually preceding male</td>
<td></td>
</tr>
<tr>
<td>606</td>
<td>World Agroforestry Center. Agroforestry Tree Database - Arenga pinnata. <a href="http://www.worldagroforestry.org/sea/Products/AFDbases/af/asp/SpeciesInfo.asp?SpID=119">http://www.worldagroforestry.org/sea/Products/AFDbases/af/asp/SpeciesInfo.asp?SpID=119</a></td>
<td>Reproductive Biology This monoecious palm first flowers when around 10-12 years old; however, sometimes it flowers as early as 5-6 years. Maturity is indicated by simultaneous appearance of 2 short leaves at the top of the stem. The average flowering period of an untapped tree is 4-6 years. [self-compatibility unknown]</td>
<td></td>
</tr>
<tr>
<td>610</td>
<td>Duke, J. A.. Handbook of nuts. CRC Press, Boca Raton, FL</td>
<td>Trees reach reproductive maturity (flowering stage) in 6 to 12 years and continue to flower for about 15 years before replanting.</td>
<td></td>
</tr>
<tr>
<td>611</td>
<td>Duke, J. A.. Handbook of nuts. CRC Press, Boca Raton, FL</td>
<td>Reproductive Biology This monoecious palm first flowers when around 10-12 years old; however, sometimes it flowers as early as 5-6 years. Maturity is indicated by simultaneous appearance of 2 short leaves at the top of the stem. The average flowering period of an untapped tree is 4-6 years.</td>
<td></td>
</tr>
<tr>
<td>612</td>
<td>Duke, J. A.. Handbook of nuts. CRC Press, Boca Raton, FL</td>
<td>seeds 2 to 3 per fruit, dull-metallic, gray-brown, trigonous, oblong, 2.5 to 3.5 cm long, 2 to 2.5 cm wide, with copious endosperm [no evidence of unintentional dispersal, and fruits and seeds fairly large without means of external attachment]</td>
<td></td>
</tr>
</tbody>
</table>

*Arenga pinnata* (Areceaceae)
<table>
<thead>
<tr>
<th>Page</th>
<th>Source</th>
<th>Text</th>
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<tr>
<td>703</td>
<td>2000. Duke, J. A.. Handbook of nuts. CRC Press, Boca Raton, FL</td>
<td>seeds 2 to 3 per fruit, dull-metallic, gray-brown, trigonous, oblong, 2.5 to 3.5 cm long, 2 to 2.5 cm wide, with copious endosperm [unlikely to contaminate produce due to relatively large seed size]</td>
</tr>
<tr>
<td>705</td>
<td>2000. Duke, J. A.. Handbook of nuts. CRC Press, Boca Raton, FL</td>
<td>Trees are hardy, self-sustaining, growing readily in well-drained soil of dark cool valleys, along banks of mountain streams, along forest margins and on partially open hillsides. [distribution along streams suggest fruit may be carried along water courses]</td>
</tr>
<tr>
<td>706</td>
<td>2000. Duke, J. A.. Handbook of nuts. CRC Press, Boca Raton, FL</td>
<td>fruit obvoid to subglobose, smooth, 5 to 6 cm in diameter, [large, fleshy-fruit, too large for most birds, but probably able to be secondarily dispersed on ground by birds or mammals]</td>
</tr>
<tr>
<td>707</td>
<td>2000. Duke, J. A.. Handbook of nuts. CRC Press, Boca Raton, FL</td>
<td>fruit obvoid to subglobose, smooth, 5 to 6 cm in diameter...In forests of Indo-Malaysia, ripe fruits are distributed by various fruit bats, civet cats, and wild swine. [possibly that fruit bats and other dispersers may transport fruits without ingesting seeds]</td>
</tr>
<tr>
<td>708</td>
<td>2000. Duke, J. A.. Handbook of nuts. CRC Press, Boca Raton, FL</td>
<td>fruit obvoid to subglobose, smooth, 5 to 6 cm in diameter...In forests of Indo-Malaysia, ripe fruits are distributed by various fruit bats, civet cats, and wild swine.</td>
</tr>
<tr>
<td>801</td>
<td>2000. Duke, J. A.. Handbook of nuts. CRC Press, Boca Raton, FL</td>
<td>fruit obvoid to subglobose, smooth, 5 to 6 cm in diameter...seeds 2 to 3 per fruit, dull-metallic, gray-brown, trigonous, oblong, 2.5 to 3.5 cm long, 2 to 2.5 cm wide, with copious endosperm [unlikely given relatively large fruit and seed sizes]</td>
</tr>
<tr>
<td>802</td>
<td>2010. World Agroforestry Center. Agroforestry Tree Database - Arenga pinnata. <a href="http://www.worldagroforestry.org/sea/Products/AF">http://www.worldagroforestry.org/sea/Products/AF</a> Databases/af/asp/SpeciesInfo.asp?SpID=119</td>
<td>Germplasm Management Behaviour of seed in storage is recalcitrant; the seed is short-lived, and only 25% survive for 3 months in open storage. [no evidence of seed bank formation in field conditions]</td>
</tr>
<tr>
<td>803</td>
<td>2010. WRA Specialist. Personal Communication.</td>
<td>No information on herbicide control of A. pinnata</td>
</tr>
<tr>
<td>804</td>
<td>2010. WRA Specialist. Personal Communication.</td>
<td>Unknown whether A. pinnata will tolerate mutilation, cultivation or fire [unlikely, but no information found]</td>
</tr>
<tr>
<td>805</td>
<td>2010. WRA Specialist. Personal Communication.</td>
<td>Unknown whether any effective natural enemies are present locally</td>
</tr>
</tbody>
</table>