

**Family:** *Sapotaceae*

**Taxon:** *Synsepalum dulcificum*

**Synonym:** *Bumelia dulcifica* Schumach. (basionym)  
*Sideroxylon dulcificum* (Schumach.) A. DC.

**Common Name:** miracle fruit  
miracle berry  
miraculous berry  
fruit miraculeux

|                        |   |                           |  |                       |
|------------------------|---|---------------------------|--|-----------------------|
| <b>Questionnaire :</b> | current 20090513  | <b>Assessor:</b>          | Chuck Chimera                                      | <b>Designation:</b> L |
| <b>Status:</b>         | Assessor Approved   | <b>Data Entry Person:</b> | Chuck Chimera                                      | <b>WRA Score</b> -3   |
| 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                                    | y                     |
| 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  |                           | y=1, n=0   |                       |
| 403                    | Parasitic   |                           | y=1, n=0   | n                     |
| 404                    | Unpalatable to grazing animals  |                           | y=1, n=-1  |                       |
| 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   | y                     |
| 410                    | Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)  |                           | y=1, n=0   | n                     |

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| 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   | 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                                   | 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   | y=1, n=-1                                   | n |
| 706 | Propagules bird dispersed  | y=1, n=-1                                   | y |
| 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                                   | n |
| 802 | Evidence that a persistent propagule bank is formed (>1 yr)                                    | y=1, n=-1                                   | n |
| 803 | Well controlled by herbicides  | y=-1, n=1                                   |   |
| 804 | Tolerates, or benefits from, mutilation, cultivation, or fire                                  | y=1, n=-1                                   |   |
| 805 | Effective natural enemies present locally (e.g. introduced biocontrol agents)                  | y=-1, n=1                                   |   |

Designation: L

WRA Score -3

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**Supporting Data:**

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| 101 | 2005. Staples, G.W./Herbst, D.R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI  | [Is the species highly domesticated? No] No evidence  |
| 102 | 2012. WRA Specialist. Personal Communication.   | NA  |
| 103 | 2012. WRA Specialist. Personal Communication.   | NA  |
| 201 | 1968. Inglett, G.E./May, J.F.. Tropical Plants with Unusual Taste Properties. Economic Botany. 22(4): 326-331.  | [Species suited to tropical or subtropical climate(s) - 2-High] "The miracle fruit, or miraculous berry, <i>Synsepalum dulcificum</i> (Schum) Daniell, is indigenous to tropical West Africa, from Ghana to the Congo"  |
| 202 | 1968. Inglett, G.E./May, J.F.. Tropical Plants with Unusual Taste Properties. Economic Botany. 22(4): 326-331.  | [Quality of climate match data? 2-High] "The miracle fruit, or miraculous berry, <i>Synsepalum dulcificum</i> (Schum) Daniell, is indigenous to tropical West Africa, from Ghana to the Congo"  |
| 203 | 1987. Martin, F.W./Campbell, C.W./Puberté, R.M.. Perennial Edible Fruits of the Tropics: An Inventory. Agriculture Handbook No. 642. U.S. Department of Agriculture, Washington, DC   | [Broad climate suitability (environmental versatility)? No] "Cultural requirements: Hot, wet tropical lowlands with acid soils having organic content. Grows well in light shade. Not tolerant of frost."   |
| 203 | 1996. California Rare Fruit Growers, Inc.. Fruit Facts. Volume 2: Miracle Fruit. <a href="http://www.crfg.org/pubs/ff/miraclefruit.html">http://www.crfg.org/pubs/ff/miraclefruit.html</a>  | [Broad climate suitability (environmental versatility)? No] "Adaptation: Coming from hot, wet tropical lowlands, the plant is intolerant of frost and should be considered a container plant except in southern Florida and Hawaii."  |
| 204 | 1968. Inglett, G.E./May, J.F.. Tropical Plants with Unusual Taste Properties. Economic Botany. 22(4): 326-331.  | [Native or naturalized in regions with tropical or subtropical climates? Yes] "The miracle fruit, or miraculous berry, <i>Synsepalum dulcificum</i> (Schum) Daniell, is indigenous to tropical West Africa, from Ghana to the Congo"  |
| 205 | 1968. Inglett, G.E./May, J.F.. Tropical Plants with Unusual Taste Properties. Economic Botany. 22(4): 326-331.  | [Does the species have a history of repeated introductions outside its natural range? Yes] "The miracle fruit has been introduced into the United States Department of Agriculture Federal Experiment Station in Puerto Rico as plant introduction No. 73071. In Puerto Rico, the shrub bears several times a year and attains a height of 6 ft (9). <i>Synsepalum dulcificum</i> grows also in Florida (Campbell, C. W.; Snow, Robert, personal communications) and can be found at the University of Florida Subtropical Experiment Station, Homestead, and at the Fairchild Tropical Garden. It has limited use in private gardens as an ornament or curiosity." |
| 205 | 1981. Pilz, G.E.. Sapotaceae of Panama. Annals of the Missouri Botanical Garden. 68(1): 172-203.  | [Does the species have a history of repeated introductions outside its natural range?? Yes] "This species occurs in west and central Africa from Ghana, Benin, southern Nigeria, Cameroun, to Zaire. It is widely cultivated in the tropics"  |
| 205 | 1987. Martin, F.W./Campbell, C.W./Puberté, R.M.. Perennial Edible Fruits of the Tropics: An Inventory. Agriculture Handbook No. 642. U.S. Department of Agriculture, Washington, DC   | [Does the species have a history of repeated introductions outside its natural range? Yes] "Distribution: Widely introduced into Tropics but not common outside native area."   |
| 205 | 2005. Staples, G.W./Herbst, D.R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI  | [Does the species have a history of repeated introductions outside its natural range? Yes] "...native to western and central Africa and widely cultivated elsewhere."   |
| 301 | 2005. Wagner, W.L./Herbst, D.R./Lorence, D.H.. Flora of the Hawaiian Islands website. Smithsonian Inst., Washington, D.C. <a href="http://botany.si.edu/pacificislandbiodiversity/hawaiianflora/index.htm">http://botany.si.edu/pacificislandbiodiversity/hawaiianflora/index.htm</a> | [Naturalized beyond native range? No evidence from Hawaiian Islands]  |
| 301 | 2007. Randall, R.P.. Global Compendium of Weeds - Index [Online Database]. <a href="http://www.hear.org/gcw/">http://www.hear.org/gcw/</a>  | [Naturalized beyond native range? No] No evidence   |
| 301 | 2009. Chong, K.Y./Tan, H.T.W./Corlett, R.T.. A Checklist of the Total Vascular Plant Flora of Singapore: Native, Naturalized and Cultivated Species. Raffles Museum of Biodiversity Research, National University of Singapore, Singapore   | [Naturalized beyond native range? No evidence from Singapore] " <i>Synsepalum dulcificum</i> (Schumach. & Thonn.) Daniell; Sapotaceae; cultivated only"   |
| 302 | 2007. Randall, R.P.. Global Compendium of Weeds - Index [Online Database]. <a href="http://www.hear.org/gcw/">http://www.hear.org/gcw/</a>  | [Garden/amenity/disturbance weed? No] No evidence   |

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| 303 | 2007. Randall, R.P.. Global Compendium of Weeds - Index [Online Database]. <a href="http://www.hear.org/gcw/">http://www.hear.org/gcw/</a>  | [Agricultural/forestry/horticultural weed? No] No evidence  |
| 304 | 2007. Randall, R.P.. Global Compendium of Weeds - Index [Online Database]. <a href="http://www.hear.org/gcw/">http://www.hear.org/gcw/</a>  | [Environmental weed? No] No evidence  |
| 305 | 2007. Randall, R.P.. Global Compendium of Weeds - Index [Online Database]. <a href="http://www.hear.org/gcw/">http://www.hear.org/gcw/</a>  | [Congeneric weed? No] No evidence   |
| 401 | 1981. Pilz, G.E.. Sapotaceae of Panama. <i>Annals of the Missouri Botanical Garden</i> . 68(1): 172-203.  | [Produces spines, thorns or burrs? No] "Shrubs or small trees lacking spines. Leaves alternate, exstipulate; blades firm, the lateral veins generally few. Flower sessile or short-pedicellate; sepals 5, uniseriate, united for more than half their length; corolla lobes 5, lacking appendages; stamens epipetalous, the filaments attached at the level of the sinuses, the staminodes alternating with the stamens, petaloid; ovary 5-loculed. Fruit baccate; seeds solitary, the seed scar lateral, very broad, covering about half the seed, the endosperm absent, the cotyledons fleshy." [Genus description]   |
| 402 | 2003. Fujii, Y./Parvez, S. S./Parvez, M.M./Ohmae, Y./Iida, O.. Screening of 239 medicinal plant species for allelopathic activity using the sandwich method. <i>Weed Biology and Management</i> . 3: 233–241.                   | [Allelopathic? Potentially] "Leaf litter of 239 medicinal plant species were collected from the Izu Experimental Station for Medicinal Plants, National Institute of Health Sciences, Shizuoka, Japan, and these were subjected to analysis of their allelopathic effects using the sandwich method, as shown in Figure 1. We used lettuce ( <i>Lactuca sativa</i> " ... "Table 1. Screening of leaf litter of 239 medicinal plant species under different families using the sandwich method" [Synsepalum dulcificum shows inhibitory effects on lettuce seeds, but the results were not statistically significant]  |
| 403 | 1981. Pilz, G.E.. Sapotaceae of Panama. <i>Annals of the Missouri Botanical Garden</i> . 68(1): 172-203.  | [Parasitic? No] "Shrub or small tree to 3 m." [Sapotaceae. Not parasitic]   |
| 404 | 2012. WRA Specialist. Personal Communication.   | [Unpalatable to grazing animals? Unknown] No information found on palatability of foliage to browsing/grazing animals.  |
| 405 | 2008. Wagstaff, D.J.. International poisonous plants checklist: an evidence-based reference. CRC Press, Boca Raton, FL  | International poisonous plants checklist  |
| 405 | 2012. Skyfield Tropical. Encyclopedia : Rare Fruit Trees - Synsepalum dulcificum. <a href="http://www.skyfieldtropical.com/encyclopedia/miracle-fruit/">http://www.skyfieldtropical.com/encyclopedia/miracle-fruit/</a>         | [Toxic to animals? No] "Dangers: None "   |
| 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> | International poisonous plants checklist  |
| 406 | 1996. California Rare Fruit Growers, Inc.. Fruit Facts. Volume 2: Miracle Fruit. <a href="http://www.crfg.org/pubs/ff/miraclefruit.html">http://www.crfg.org/pubs/ff/miraclefruit.html</a>                                      | [Host for recognized pests and pathogens? No] "Pests and diseases: Watch for mealybugs, spider mites and other indoor potted plant pests. Waterlogged plant will succumb to root rot. "   |
| 406 | 2012. eHow. My Miracle Berry Won't Produce Fruit. <a href="http://www.ehow.com/info_12043079_miracle-berry-wont-produce-fruit.html">http://www.ehow.com/info_12043079_miracle-berry-wont-produce-fruit.html</a>                 | [Host for recognized pests and pathogens? No] "While miracle berries suffer from relatively few insect infestations, several common pests attack this shrub. Spider mites and mealybugs are two common predators that attack miracle berry plants. These pests consume vital resources and weaken their host's immune system by feeding on the plant's sap. This damage causes wilting and discoloration of leaves, diminishes growth potential and decreases fruit yield. A large infestation prevents the emergence of fruit altogether."   |
| 407 | 1968. Inglett, G.E./May, J.F.. Tropical Plants with Unusual Taste Properties. <i>Economic Botany</i> . 22(4): 326-331.  | [Causes allergies or is otherwise toxic to humans? No] "The miracle fruit has the amazing ability to cause sour fruits to taste sweet after the inside of the mouth has been thoroughly exposed to the fruit's mucilaginous pulp. This unusual taste-modifying property will cause acidic lemons, limes, grapefruit, rhubarb and strawberries, to taste very pleasantly sweet. Generally, any sour material eaten or drunk for several hours after exposure will be transformed into sweetness. Salty or bitter foods do not appear to be influenced. The West African natives use the miracle fruit to render their stale and acidulated maize bread (kankies) more palatable and to give sweetness to their sour palm wine and their beer (pitto). The unique properties of this fruit were first described by Daniell (10)." |
| 407 | 1981. Pilz, G.E.. Sapotaceae of Panama. <i>Annals of the Missouri Botanical Garden</i> . 68(1): 172-203.  | [Causes allergies or is otherwise toxic to humans? No] "The fruits of the "Miracle Berry," when eaten, have the peculiar property of making anything eaten within 2 or 3 hours afterwards taste sweet, even very acid substances like sour limes (Nigerian Trees 2: 363. 1964)."  |

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| 407 | 1987. Martin, F.W./Campbell, C.W./Puberté, R.M.. Perennial Edible Fruits of the Tropics: An Inventory. Agriculture Handbook No. 642. U.S. Department of Agriculture, Washington, DC   | [Causes allergies or is otherwise toxic to humans? No] "Utilization: Pulp eaten with other foods to counter sour or bitter flavors; used to flavor palm wine. Flavor of pulp sweet, insipid. Not important as a food crop. Attempts to exploit the striking effect on perception of sour flavors in development of artificial sweeteners have not been successful but are continuing." [No evidence. Widely utilized]   |
| 408 | 1981. Pilz, G.E.. Sapotaceae of Panama. Annals of the Missouri Botanical Garden. 68(1): 172-203.  | [Creates a fire hazard in natural ecosystems? No] No evidence   |
| 408 | 2008. Takenoshita, Y./Ando, C./Yamagiwa, J.. Fruit Phenology of the Great Ape Habitat in the Moukalaba-Doudou National Park, Gabon. African Study Monographs. Supplementary Issue. 39: 23-39.                                   | [Creates a fire hazard in natural ecosystems? No] "Field study was conducted in the Moukalaba Doudou National Park, Gabon (Fig. 1). The Park covers an area of 5,028 km <sup>2</sup> , which consists of a mosaic of forest, savanna, and swamp." [Representative native habitat not fire prone]  |
| 409 | 1987. Martin, F.W./Campbell, C.W./Puberté, R.M.. Perennial Edible Fruits of the Tropics: An Inventory. Agriculture Handbook No. 642. U.S. Department of Agriculture, Washington, DC   | [Is a shade tolerant plant at some stage of its life cycle? Yes] "Grows well in light shade.."  |
| 410 | 1996. California Rare Fruit Growers, Inc.. Fruit Facts. Volume 2: Miracle Fruit. <a href="http://www.crfg.org/pubs/ff/miraclefruit.html">http://www.crfg.org/pubs/ff/miraclefruit.html</a>                                      | [Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)? No] "Soils: An acid soil is a must for miracle fruit. They prefer a soil acidity of pH 4.5 to 5.8." ... "Be sure that the soil is well draining as the plants do not like to sit in wet soils."  |
| 410 | 2012. Top Tropicals. <i>Synsepalum dulcificum</i> . <a href="http://toptropicals.com/html/toptropicals/plant_wk/synsepalum.htm">http://toptropicals.com/html/toptropicals/plant_wk/synsepalum.htm</a>                           | [Tolerates a wide range of soil conditions? No] "If planted in alkaline limestone based soils, the plant may die. These plants seem to live for acid, thriving in it, and then converting it! They must have rich, well-drained soils that are acid in pH, with lots of peat moss, and require constant supply of micronutrients. On alkaline soils they often are grown in large containers with generous amounts of peat moss for sustained success in fruiting." |
| 411 | 1968. Inglett, G.E./May, J.F.. Tropical Plants with Unusual Taste Properties. Economic Botany. 22(4): 326-331.  | [Climbing or smothering growth habit? No] "In West Africa, the shrub or small tree attains a height of 6 to 15 ft. It has dense foliage clustered at the tips of its slender branches"  |
| 412 | 1992. Hughes, R.H./Hughes, J.S.. A directory of African wetlands. IUCN, Gland, Switzerland  | [Forms dense thickets? No] "In the swift flowing cataract ridden section of the Zaire River between Matadi and Kinshasa, other low thickets develop in sites subject to frequent but short periods of inundation." [A component of thicket vegetation in native range, but no evidence that <i>Synsepalum</i> has formed monospecific thickets within native or introduced range]   |
| 501 | 1981. Pilz, G.E.. Sapotaceae of Panama. Annals of the Missouri Botanical Garden. 68(1): 172-203.  | [Aquatic? No] "Shrub or small tree to 3 m." [Terrestrial]   |
| 502 | 1981. Pilz, G.E.. Sapotaceae of Panama. Annals of the Missouri Botanical Garden. 68(1): 172-203.  | [Grass? No] "Shrub or small tree to 3 m." [Sapotaceae]  |
| 503 | 1981. Pilz, G.E.. Sapotaceae of Panama. Annals of the Missouri Botanical Garden. 68(1): 172-203.  | [Nitrogen fixing woody plant? No] "Shrub or small tree to 3 m." [Sapotaceae]  |
| 504 | 1981. Pilz, G.E.. Sapotaceae of Panama. Annals of the Missouri Botanical Garden. 68(1): 172-203.  | [Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)? No] "Shrub or small tree to 3 m."  |
| 601 | 1988. Steentoft, M.. Flowering Plants in West Africa. Cambridge University Press, Cambridge, UK   |   |
| 601 | 1989. Keay, R.W.J.. Trees of Nigeria. Clarendon Press, Oxford, UK   | [Evidence of substantial reproductive failure in native habitat? No] No evidence  |
| 602 | 1987. Martin, F.W./Campbell, C.W./Puberté, R.M.. Perennial Edible Fruits of the Tropics: An Inventory. Agriculture Handbook No. 642. U.S. Department of Agriculture, Washington, DC   | [Produces viable seed? Yes] "Propagation by seed, cuttings."  |
| 602 | 1996. California Rare Fruit Growers, Inc.. Fruit Facts. Volume 2: Miracle Fruit. <a href="http://www.crfg.org/pubs/ff/miraclefruit.html">http://www.crfg.org/pubs/ff/miraclefruit.html</a>                                      | [Produces viable seed? Yes] "Propagation: Propagation of miracle fruit is usually either by seed or cuttings."  |
| 603 | 2012. WRA Specialist. Personal Communication.   | [Hybridizes naturally? Unknown] No information on hybridization found   |
| 604 | 2012. Skyfield Tropical. Encyclopedia : Rare Fruit Trees - <i>Synsepalum dulcificum</i> . <a href="http://www.skyfieldtropical.com/encyclopedia/miracle-fruit/">http://www.skyfieldtropical.com/encyclopedia/miracle-fruit/</a> | [Self-compatible or apomictic? Yes] "Flowering/Pollination: Self-fertile"   |

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| 605 | 1981. Pilz, G.E.. Sapotaceae of Panama. Annals of the Missouri Botanical Garden. 68(1): 172-203.  | [Requires specialist pollinators? No] "Flowers 1-5(-10) in the axils or at recently defoliated nodes; pedicels to 2 mm long, rufous tomentose; calyx 3-5 mm long, the 5 lobes short, triangular, rufous pubescent; corolla glabrous, 5-7 mm long, the 5 lobes entire, about as long as the tube; filaments attached at the level of the sinuses, the staminodes erose, ovate, 2 mm long; ovary pubescent, 5-loculed, the style 5-10 mm long." [Floral morphology does not suggest any adaptations for specialized pollinators] |
| 605 | 1991. Harley, M.M.. The Pollen Morphology of the Sapotaceae. Kew Bulletin. 46(3): 379-491.  | "Information on pollination within the family is sparse, although it is not unreasonable to assume from the overall morphology and habitat of the majority of the species that a fairly limited range of vectors operates. It is quite probable that many species are not pollinator specific and can take advantage of more than one vector type." ... "  |
| 606 | 1987. Martin, F.W./Campbell, C.W./Puberté, R.M.. Perennial Edible Fruits of the Tropics: An Inventory. Agriculture Handbook No. 642. U.S. Department of Agriculture, Washington, DC                   | [Reproduction by vegetative fragmentation? No] "Propagation by seed, cuttings." [No evidence]  |
| 607 | 1987. Martin, F.W./Campbell, C.W./Puberté, R.M.. Perennial Edible Fruits of the Tropics: An Inventory. Agriculture Handbook No. 642. U.S. Department of Agriculture, Washington, DC                   | [Minimum generative time (years)? 4+] "Fruit production in 4-5 years from seed. Flowers several times a year (Florida). Fruit ellipsoid, 2-3 cm long; external color red, internal white."   |
| 607 | 2012. Top Tropicals. <i>Synsepalum dulcificum</i> . <a href="http://toptropicals.com/html/toptropicals/plant_wk/synsepalum.htm">http://toptropicals.com/html/toptropicals/plant_wk/synsepalum.htm</a> | [Minimum generative time (years)? 2+] "Seed to fruit in 2 to 3 years. Flower to fruit in 30 to 45 days."   |
| 701 | 1981. Pilz, G.E.. Sapotaceae of Panama. Annals of the Missouri Botanical Garden. 68(1): 172-203.  | [Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)? No] "Fruit red purple at maturity, ovoid, 1.6-2 cm long; seeds solitary, ovoid, 1.2 1.5 cm long, the seed scar lateral, very broad, covering about half the seed and extending the entire length." [Unlikely. Fruit and seeds relatively large and without a means of external attachment]  |
| 702 | 2005. Staples, G.W./Herbst, D.R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI                                    | [Propagules dispersed intentionally by people? Yes] "...native to western and central Africa and widely cultivated elsewhere."   |
| 703 | 1981. Pilz, G.E.. Sapotaceae of Panama. Annals of the Missouri Botanical Garden. 68(1): 172-203.  | [Propagules likely to disperse as a produce contaminant? No] "Fruit red purple at maturity, ovoid, 1.6-2 cm long; seeds solitary, ovoid, 1.2 1.5 cm long, the seed scar lateral, very broad, covering about half the seed and extending the entire length." [No evidence, and Unlikely. Fruit and seeds relatively large]  |
| 704 | 1981. Pilz, G.E.. Sapotaceae of Panama. Annals of the Missouri Botanical Garden. 68(1): 172-203.  | [Propagules adapted to wind dispersal? No] "Fruit red purple at maturity, ovoid, 1.6-2 cm long; seeds solitary, ovoid, 1.2 1.5 cm long, the seed scar lateral, very broad, covering about half the seed and extending the entire length."  |
| 704 | 2003. Hardesty, B.D./Parker, V.T.. Community Seed Rain Patterns and a Comparison to Adult Community Structure in a West African Tropical Forest. Plant Ecology. 164(1): 49-64.                        | [Propagules adapted to wind dispersal? No] "Table 3... <i>Synsepalum</i> sp... Dispersal Mode = NWD: non-wind, predominantly vertebrate dispersed)"  |
| 705 | 1981. Pilz, G.E.. Sapotaceae of Panama. Annals of the Missouri Botanical Garden. 68(1): 172-203.  | [Propagules water dispersed? No] "Fruit red purple at maturity, ovoid, 1.6-2 cm long; seeds solitary, ovoid, 1.2 1.5 cm long, the seed scar lateral, very broad, covering about half the seed and extending the entire length." [Fruit adapted for vertebrate dispersal]   |
| 706 | 1968. Inglett, G.E./May, J.F.. Tropical Plants with Unusual Taste Properties. Economic Botany. 22(4): 326-331.  | [Propagules bird dispersed? Yes] "From December to June, it yields ripe red fruits which are ellipsoidal, about 0.75 inch long and composed of a thin layer of pulp surrounding a single large seed." [Fleshy-fruited, so presumably bird or vertebrate dispersed]   |
| 707 | 1981. Pilz, G.E.. Sapotaceae of Panama. Annals of the Missouri Botanical Garden. 68(1): 172-203.  | [Propagules dispersed by other animals (externally)? No] "Fruit red purple at maturity, ovoid, 1.6-2 cm long; seeds solitary, ovoid, 1.2 1.5 cm long, the seed scar lateral, very broad, covering about half the seed and extending the entire length." [Fruit & seed adapted for consumption and internal dispersal, with no means of external attachment]  |

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| 708 | 1997. Cipollini, M.L./Levey, D.J.. Secondary Metabolites of Fleshy Vertebrate-Dispersed Fruits: Adaptive Hypotheses and Implications for Seed Dispersal. <i>The American Naturalist</i> . 150(3): 346-372. | [Propagules survive passage through the gut? Yes. Presumably] "Whether secondary metabolites can be used by frugivores to predict fruit quality depends on how consistently they are associated with the nutritional reward of the fruit pulp. There seems little correlation between fruit color and nutrient content of fruits (Willson and Whelan 1990). This lack of pattern may be due, in part, to mimicry of high-quality species by low-quality species. For instance, some fleshy fruits produce low-calorie or nonnutritive sweeteners, which may mimic the principal reward of fleshy fruits (i.e., sugars). In fact, many "artificial" sweeteners come from fleshy fruits, including the protein monellin in miracle fruit ( <i>Synsepalum dulcificum</i> ), which is 1,000 times sweeter than sucrose on a gram-for-gram basis, and a protein in serendipity berry ( <i>Dioscoreophyllum cumminsii</i> ), which is 3,000 times sweeter than sucrose (Myers 1983)." |
| 801 | 1981. Pilz, G.E.. Sapotaceae of Panama. <i>Annals of the Missouri Botanical Garden</i> . 68(1): 172-203.   | [Prolific seed production (>1000/m <sup>2</sup> )? No] "Shrub or small tree to 3 m." ... "Fruit red purple at maturity, ovoid, 1.6-2 cm long; seeds solitary, ovoid, 1.2-1.5 cm long..." [Highly unlikely, given small stature and relatively large seed size]  |
| 802 | 1996. California Rare Fruit Growers, Inc.. Fruit Facts. Volume 2: Miracle Fruit. <a href="http://www.crfg.org/pubs/ff/miraclefruit.html">http://www.crfg.org/pubs/ff/miraclefruit.html</a>                 | [Evidence that a persistent propagule bank is formed (>1 yr)? No] "As the seed viability is short, plant the cleaned seed immediately just below the soil line. When shipping cleaned seed for others to plant, package in a small plastic bag and enclose a slightly moistened toweling. Seed that are allowed to dry can be shipped for at least two weeks but rapidly lose their viability."   |
| 802 | 2008. Royal Botanic Gardens Kew. Seed Information Database (SID). Version 7.1. <a href="http://data.kew.org/sid/">http://data.kew.org/sid/</a>   | [Evidence that a persistent propagule bank is formed (>1 yr)? No] "Storage Behaviour: Recalcitrant? Storage Conditions: Viability can be maintained for 1 month in moist storage at 20°C (Riley, 1981)"   |
| 803 | 2012. WRA Specialist. Personal Communication.  | [Well controlled by herbicides? Unknown] No evidence that this species is being controlled with herbicides. No information available on herbicide efficacy.   |
| 804 | 2012. WRA Specialist. Personal Communication.  | [Tolerates, or benefits from, mutilation, cultivation, or fire? Unknown]  |
| 805 | 2012. WRA Specialist. Personal Communication.  | [Effective natural enemies present locally (e.g. introduced biocontrol agents)? Unknown]  |