Key Words: High Risk, Naturalized, Zoochorous seeds, Edible Fruit, Cultivated

***Family:*** ***Ebenaceae***

***Taxon:*** ***Diospyros digyna***

***Synonym:*** *Diospyros membranacea A. DC.*
*Diospyros obtusifolia Humb. & Bonpl. ex Wil*
*Diospyros obtusifolia Kunth*
*Diospyros sapota Roxb.*
*Diospyros nigra Blanco*

***Common Name:*** Black persimmon
Black sapote
Sapote negro

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

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|---|---|---|---|
| **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** | **y** |
| **204** | **Native or naturalized in regions with tropical or subtropical climates** | **y=1, n=0** | **y** |
| **205** | **Does the species have a history of repeated introductions outside its natural range?** | **y=-2, ?=-1, n=0** | **y** |
| **301** | **Naturalized beyond native range** | **y = 1*multiplier (see Appendix 2), n= question 205** | **y** |
| **302** | **Garden/amenity/disturbance weed** | **n=0, y = 1*multiplier (see Appendix 2)** | **y** |
| **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)** | |
| **305** | **Congeneric weed** | **n=0, y = 1*multiplier (see Appendix 2)** | **y** |
| **401** | **Produces spines, thorns or burrs** | **y=1, n=0** | **n** |
| **402** | **Allelopathic** | **y=1, n=0** | **n** |
| **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** | |
| **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** | |
| **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** |

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| **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** | **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** | **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** | **>3** |
| **701** | **Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)** | **y=1, n=-1** | **n** |
| **702** | **Propagules dispersed intentionally by people** | **y=1, n=-1** | **y** |
| **703** | **Propagules likely to disperse as a produce contaminant** | **y=1, n=-1** | **n** |
| **704** | **Propagules adapted to wind dispersal** | **y=1, n=-1** | **n** |
| **705** | **Propagules water dispersed** | **y=1, n=-1** | |
| **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** | |
| **803** | **Well controlled by herbicides** | **y=-1, n=1** | **n** |
| **804** | **Tolerates, or benefits from, mutilation, cultivation, or fire** | **y=1, n=-1** | **y** |
| **805** | **Effective natural enemies present locally (e.g. introduced biocontrol agents)** | **y=-1, n=1** | |

**Designation:** H(HPWRA) **WRA Score** 7

**Supporting Data:**

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|---|---|---|
| 101 | 1987. Morton, J.F.. Fruits of warm climates - Black Sapote (Diospyros digyna). J.F. Morton, Miami, FL http://www.hort.purdue.edu/newcrop/morton/black_sapote.html | [Is the species highly domesticated? Yes for seedless varieties] "Certain trees tend to bear very large, seedless or nearly seedless fruits maturing in summer instead of winter as most do, but no varietal names have been attached to them in Florida." |
| 101 | 2008. Janick, J./Paull, R.E.. The encyclopedia of fruit & nuts. Cabi Publishing, Wallingford, UK | [Is the species highly domesticated? No] "Trees vary in shape and hairiness of leaves and the size, shape, seediness, flesh colour and sweetness of the fruit. Selections have been made in the Philippines. 'Manilla' and 'Valesca' are old, mainly seedless, cultivars. Clonal selections in Australia have led to cultivars including 'Bernecker' and 'Maher.'" [Assessment refers to wild-type. Seedless cultivars would likely be low risk] |
| 102 | 2012. WRA Specialist. Personal Communication. | NA |
| 103 | 2012. WRA Specialist. Personal Communication. | NA |
| 201 | 1978. Woodson, Jr., R.E./Schery, R.W./White, F.. Flora of Panama. Part VIII. Family 155. Ebenaceae. Annals of the Missouri Botanical Garden. 65(1): 145-154. | [Species suited to tropical or subtropical climate(s) 2-High] "Diospyros digyna, which has edible fruit, extends southwards from Mexico to Panama and Colombia." |
| 202 | 1978. Woodson, Jr., R.E./Schery, R.W./White, F.. Flora of Panama. Part VIII. Family 155. Ebenaceae. Annals of the Missouri Botanical Garden. 65(1): 145-154. | [Quality of climate match data? 2-High] "Diospyros digyna, which has edible fruit, extends southwards from Mexico to Panama and Colombia." |
| 203 | 1987. Morton, J.F.. Fruits of warm climates - Black Sapote (Diospyros digyna). J.F. Morton, Miami, FL http://www.hort.purdue.edu/newcrop/morton/black_sapote.html | [Broad climate suitability (environmental versatility)? Yes] "The black sapote is not strictly tropical inasmuch as it is hardy as far north as Palm Beach County, Florida, if protected from frost during the first few years. Trees that have become well established have withstood occasional brief exposures to 28º or 30º F ( 2.22º or-1.11º C). In Mexico, the tree is cultivated up to elevations of 5,000 or even 6,000 ft (1,500-1,800 m)." |
| 203 | 2008. Gargiullo, M.B./Magnuson, B.L/Kimball, L.D.. A field guide to plants of Costa Rica. Oxford University Press US, New York, NY | [Broad climate suitability (environmental versatility)? Yes] "Habitat: Wet to seasonally dry forests; also cultivated for fruit. Altitude: Sea level to 1200 m." [Elevation range exceeds 1000 m] |
| 203 | 2008. Janick, J./Paull, R.E.. The encyclopedia of fruit & nuts. Cabi Publishing, Wallingford, UK | [Broad climate suitability (environmental versatility)? Yes] "The species has become indigenous to primary and secondary low-and medium-altitude forests in the Philippines. It can withstand light, short frosts in places like Palm Beach in Florida, if protected, and it is cultivated up to 2000 m in Mexico, but it does better below 600-700 m. It prefers humid conditions and without strong winds." |
| 204 | 1978. Woodson, Jr., R.E./Schery, R.W./White, F.. Flora of Panama. Part VIII. Family 155. Ebenaceae. Annals of the Missouri Botanical Garden. 65(1): 145-154. | [Native or naturalized in regions with tropical or subtropical climates? Yes] "Diospyros digyna, which has edible fruit, extends southwards from Mexico to Panama and Colombia." |
| 205 | 1987. Morton, J.F.. Fruits of warm climates - Black Sapote (Diospyros digyna). J.F. Morton, Miami, FL http://www.hort.purdue.edu/newcrop/morton/black_sapote.html | [Does the species have a history of repeated introductions outside its natural range? Yes] "The black sapote is native along both coasts of Mexico from Jalisco to Chiapas, Veracruz and Yucatan and in the forested lowlands of Central America, and it is frequently cultivated throughout this range. It was apparently carried by the Spaniards to Amboina before 1692, and to the Philippines long before 1776, and eventually reached Malacca, Mauritius, Hawaii, Brazil, Cuba, Puerto Rico and the Dominican Republic." |
| 205 | 2005. Horsburgh, C./Noller, J.. Exotic Tropical Fruits and Vegetables Category Marketing Opportunities. RIRDC Publication No 05/112. Rural Industries Research and Development Corporation, Kingston | [Does the species have a history of repeated introductions outside its natural range? Yes] "Black sapote is produced mainly in coastal areas, from Far North Queensland to northern NSW and tolerated a range of climates, being frost tolerant. North Queensland had a few small commercial plantings, typically around 20 trees within a mix of exotic fruit crops and is often planted as a windbreak. (Onley et al 2005)" |
| 205 | 2008. Janick, J./Paull, R.E.. The encyclopedia of fruit & nuts. Cabi Publishing, Wallingford, UK | [Does the species have a history of repeated introductions outside its natural range? Yes] "Probably a native to the forested lowlands of Mexico and Central America, it was taken by the Spanish to the Philippines and now naturalized in the Moluccas and Sulawesi. It is cultivated in Mexico and Guatemala, but is a minor fruit elsewhere." |
| 301 | 1976. Morton, J.F.. Pestiferous spread of many ornamental and fruit species in South Florida. Proceedings of the Florida State Horticultural Society. 89: 348-353. | [Naturalized beyond native range? Potentially Yes] "Diospyros digyna Jacq. BLACK SAPOTE. Mexico; Central America. Locally spontaneous from seed." |

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| 301 | 2001-2012. Gann, G.D./Bradley, K.A./Woodmansee, S.W.. The Floristic Inventory of South Florida Database Online. The Institute for Regional Conservation, Miami http://www.regionalconservation.org | [Naturalized beyond native range? Yes] "SOUTH FLORIDA Native Status: Not Native, Naturalized " |
| 301 | 2007. McCormack, G.. Cook Islands Biodiversity Database, Version 2007.2.. Cook Islands Natural Heritage Trust, Rarotonga http://cookislands.bishopmuseum.org | [Naturalized beyond native range? No evidence from Cook Islands] "COOK ISLANDS STATUS: Introduced - Recent, Not naturalised; Land, lowlands" |
| 301 | 2008. Janick, J./Paull, R.E.. The encyclopedia of fruit & nuts. Cabi Publishing, Wallingford, UK | [Naturalized beyond native range? Yes] "Probably a native to the forested lowlands of Mexico and Central America, it was taken by the Spanish to the Philippines and now naturalized in the Moluccas and Sulawesi. It is cultivated in Mexico and Guatemala, but is a minor fruit elsewhere." |
| 301 | 2012. Wagner, W.L./Herbst, D.R./Khan, N./Flynn, T.. Hawaiian Vascular Plant Updates: A Supplement to the Manual of the Flowering Plants of Hawai`i & Hawai`i's Ferns & Fern Allies. http://botany.si.edu/pacificislandbiodiversity/hawaianflora/supplement.htm | [Naturalized beyond native range? No evidence from Hawaiian Islands] |
| 301 | 2012. World Agroforestry Centre. Agroforestry Tree Database - Diospyros digyna. PROSEA, http://www.worldagroforestrycentre.org/sea/products/afdbases/af/asp/SpeciesInfo.asp?SpID=18080 | [Naturalized beyond native range? Yes] "It has, to some extent, become naturalized in the Moluccas and Sulawesi." |
| 302 | 2001. Langeland, K.A./Stocker, R.K.. Control of Non-native Plants in Natural Areas of Florida. Institute of Food & Agricultural Sciences, University of Florida, Gainesville, FL http://mrec.ifas.ufl.edu/ldspmgt/Ldsp%20Turf%20Mgmt/PDFfiles/WG20900.pdf | [Garden/amenity/disturbance weed? Yes] "Treatment: Large individuals are difficult to kill. Applying 50% Garlon 3A to a freshly cut stump is recommended. Basal bark treatments with Garlon 4 does not work. Comments: Black bark, shiny alternate leaves; scattered throughout a few hammocks in South Florida; fruits large, edible; green when ripe." [Controlled with herbicides, but impacts unspecified. Potentially an environmental weed] |
| 303 | 2007. Randall, R.P.. Global Compendium of Weeds - Diospyros digyna [Online Database]. http://www.hear.org/gcw/species/diospyros_digyna/ | [Agricultural/forestry/horticultural weed? No] No evidence |
| 304 | 2001. Langeland, K.A./Stocker, R.K.. Control of Non-native Plants in Natural Areas of Florida. Institute of Food & Agricultural Sciences, University of Florida, Gainesville, FL http://mrec.ifas.ufl.edu/ldspmgt/Ldsp%20Turf%20Mgmt/PDFfiles/WG20900.pdf | [Environmental weed? Potentially] "Black bark, shiny alternate leaves; scattered throughout a few hammocks in South Florida; fruits large, edible; green when ripe." [Controlled with herbicides, but impacts unspecified] |
| 305 | 2007. Randall, R.P.. Global Compendium of Weeds - Index [Online Database]. http://www.hear.org/gcw/ | [Congeneric weed? Yes] Several species of Diosypyros listed as weeds of some type. |
| 401 | 1978. Woodson, Jr., R.E./Schery, R.W./White, F.. Flora of Panama. Part VIII. Family 155. Ebenaceae. Annals of the Missouri Botanical Garden. 65(1): 145-154. | [Produces spines, thorns or burrs? No] "Tree to 20 m tall; bark black, scaling in small pieces; branchlets minutely strigillose. Leaves subcoriaceous, drying grey green or blackish; lamina to 18 cm long and 7 cm wide, elliptic, oblong elliptic or lanceolate-elliptic, the apex obtuse to subacuminate, the base cuneate, the lower surface glabrous except for a few minute, in part forking, strigillose hairs, the lateral nerves in 8-12 pairs, the tertiary and other veins forming a close but inconspicuous reticulum." |
| 402 | 1987. Morton, J.F.. Fruits of warm climates - Black Sapote (Diospyros digyna). J.F. Morton, Miami, FL http://www.hort.purdue.edu/newcrop/morton/black_sapote.html | [Allelopathic? No] No evidence |
| 402 | 2008. Janick, J./Paull, R.E.. The encyclopedia of fruit & nuts. Cabi Publishing, Wallingford, UK | [Allelopathic? No] No evidence |
| 403 | 1978. Woodson, Jr., R.E./Schery, R.W./White, F.. Flora of Panama. Part VIII. Family 155. Ebenaceae. Annals of the Missouri Botanical Garden. 65(1): 145-154. | [Parasitic? No] "Tree to 20 m tall; bark black, scaling in small pieces; branchlets minutely strigillose." [Ebenaceae] |

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| 404 | 2002. Serio-Silva, J.C./Rico-Gray, V./Hernández-Salazar, L.T./Espinosa-Gómez, R.. The Role of Ficus (Moraceae) in the Diet and Nutrition of a Troop of Mexican Howler Monkeys, Alouatta palliata mexicana, Released on an Island in Southern Veracruz, Mexico. | [Unpalatable to grazing animals? No] "Table 1. Plant species consumed by howler monkeys in Agaltepec ranked by selection ratio" [Young leaves of Diospyros digyna consumed] |
| 405 | 1987. Morton, J.F.. Fruits of warm climates - Black Sapote (Diospyros digyna). J.F. Morton, Miami, FL http://www.hort.purdue.edu/newcrop/morton/black_sapote.html | [Toxic to animals? Potentially] "Unripe black sapotes are very astringent, irritant, caustic and bitter, and have been used as fish poison in the Philippines." |
| 406 | 2005. Horsburgh, C./Noller, J.. Exotic Tropical Fruits and Vegetables Category Marketing Opportunities. RIRDC Publication No 05/112. Rural Industries Research and Development Corporation, Kingston | [Host for recognized pests and pathogens? No] "Sapote has the advantage of being a strong cyclone-proof tree that is tolerant to frost, with relatively few insect pests and a lengthy harvest season." [Insignificant pests] |
| 406 | 2008. Janick, J./Paull, R.E.. The encyclopedia of fruit & nuts. Cabi Publishing, Wallingford, UK | [Host for recognized pests and pathogens? No] "No serious diseases or pests are reported. The fruit is a fruit-fly host." |
| 407 | 1987. Morton, J.F.. Fruits of warm climates - Black Sapote (Diospyros digyna). J.F. Morton, Miami, FL http://www.hort.purdue.edu/newcrop/morton/black_sapote.html | [Causes allergies or is otherwise toxic to humans? Potentially, If unlikely] "Unripe black sapotes are very astringent, irritant, caustic and bitter, and have been used as fish poison in the Philippines." |
| 408 | 1978. Woodson, Jr., R.E./Schery, R.W./White, F.. Flora of Panama. Part VIII. Family 155. Ebenaceae. Annals of the Missouri Botanical Garden. 65(1): 145-154. | [Creates a fire hazard in natural ecosystems? No] No evidence |
| 408 | 1987. Morton, J.F.. Fruits of warm climates - Black Sapote (Diospyros digyna). J.F. Morton, Miami, FL http://www.hort.purdue.edu/newcrop/morton/black_sapote.html | [Creates a fire hazard in natural ecosystems? No] No evidence |
| 408 | 2008. Janick, J./Paull, R.E.. The encyclopedia of fruit & nuts. Cabi Publishing, Wallingford, UK | [Creates a fire hazard in natural ecosystems? No] No evidence |
| 409 | 2008. Baret, S./Cournac, L./Thebaud, C./Edwards, P./Strasberg, D.. Effects of canopy gap size on recruitment and invasion of the non-indigenous Rubus alceifolius in lowland tropical rain forest on Reunion. Journal of Tropical Ecology. 24: 1–9. | [Is a shade tolerant plant at some stage of its life cycle? Yes] "We recorded 11 exotic plant species in the transects. These species were: Rubus alceifolius (recovering 2.43% within gaps vs. 0.32% understorey of the total transect area), Psidium cattleianum (0.08% within gaps vs. 0.13% understorey), Diospyros digyna (0.20% understorey)," [Found in understory on Reunion Island |
| 409 | 2010. Hopkins Tropical Fruit Nursery. Fruit Tree Information. http://www.hopkinstropicalfruitnursery.com/fruit-trees.html | [Is a shade tolerant plant at some stage of its life cycle? Yes] "Light: Full sun to partial shade" |
| 410 | 1987. Morton, J.F.. Fruits of warm climates - Black Sapote (Diospyros digyna). J.F. Morton, Miami, FL http://www.hort.purdue.edu/newcrop/morton/black_sapote.html | [Tolerates a wide range of soil conditions? Yes] "The tree has a broad adaptability as to terrain. In Mexico it grows naturally in dry forests or on alluvial clay near streams or lagoons where it is frequently subject to flooding. Nevertheless, it thrives on moist sandy loam, on well-drained sand or oolitic limestone with very little top-soil in southern Florida. It is said to flourish on all the soils of Cuba." |
| 410 | 2008. Janick, J./Paull, R.E.. The encyclopedia of fruit & nuts. Cabi Publishing, Wallingford, UK | [Tolerates a wide range of soil conditions ? Yes] "The tree is adapted to a wide range of soil types and can withstand flooding and salinity. It does best in a light, deep soil, rich in organic matter, but can grow in shallow soils as well. It is sensitive to drought but can stand sporadic floods." |
| 410 | 2012. World Agroforestry Centre. Agroforestry Tree Database - Diospyros digyna. PROSEA, http://www.worldagroforestrycentre.org/sea/products/afdbases/af/asp/SpeciesInfo.asp?SpID=18080 | [Tolerates a wide range of soil conditions? Yes] "Soil types: The tree adapts to different soil types and survives flooding." |
| 411 | 1978. Woodson, Jr., R.E./Schery, R.W./White, F.. Flora of Panama. Part VIII. Family 155. Ebenaceae. Annals of the Missouri Botanical Garden. 65(1): 145-154. | [Climbing or smothering growth habit? No] "Tree to 20 m tall; bark black, scaling in small pieces; branchlets minutely strigillose." |

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| 412 | 1978. Woodson, Jr., R.E./Schery, R.W./White, F.. Flora of Panama. Part VIII. Family 155. Ebenaceae. Annals of the Missouri Botanical Garden. 65(1): 145-154. | [Forms dense thickets? No] No evidence in Panama |
| 412 | 2001. Langeland, K.A./Stocker, R.K.. Control of Non-native Plants in Natural Areas of Florida. Institute of Food & Agricultural Sciences, University of Florida, Gainesville, FL http://mrec.ifas.ufl.edu/ldspmgt/Ldsp%20Turf%20Mgmt/PDFfiles/WG20900.pdf | [Forms dense thickets? No] "Black bark, shiny alternate leaves; scattered throughout a few hammocks in South Florida; fruits large, edible; green when ripe." [No evidence in Florida] |
| 412 | 2008. Baret, S./Cournac, L./Thebaud, C./Edwards, P./Strasberg, D.. Effects of canopy gap size on recruitment and invasion of the non-indigenous Rubus alceifolius in lowland tropical rain forest on Reunion. Journal of Tropical Ecology. 24: 1–9. | [Forms dense thickets? No] No evidence in Reunion |
| 412 | 2008. Gargiullo, M.B./Magnuson, B.L/Kimball, L.D.. A field guide to plants of Costa Rica. Oxford University Press US, New York, NY | [Forms dense thickets? No] No evidence in Costa Rica |
| 501 | 1978. Woodson, Jr., R.E./Schery, R.W./White, F.. Flora of Panama. Part VIII. Family 155. Ebenaceae. Annals of the Missouri Botanical Garden. 65(1): 145-154. | [Aquatic? No] Terrestrial |
| 502 | 1978. Woodson, Jr., R.E./Schery, R.W./White, F.. Flora of Panama. Part VIII. Family 155. Ebenaceae. Annals of the Missouri Botanical Garden. 65(1): 145-154. | [Grass? Ebenaceae |
| 503 | 1978. Woodson, Jr., R.E./Schery, R.W./White, F.. Flora of Panama. Part VIII. Family 155. Ebenaceae. Annals of the Missouri Botanical Garden. 65(1): 145-154. | [Nitrogen fixing woody plant? No] Ebenaceae |
| 504 | 1978. Woodson, Jr., R.E./Schery, R.W./White, F.. Flora of Panama. Part VIII. Family 155. Ebenaceae. Annals of the Missouri Botanical Garden. 65(1): 145-154. | [Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)? No] "Tree to 20 m tall; bark black, scaling in small pieces;" |
| 601 | 2008. Janick, J./Paull, R.E.. The encyclopedia of fruit & nuts. Cabi Publishing, Wallingford, UK | [Evidence of substantial reproductive failure in native habitat? No] No evidence |
| 602 | 2008. Janick, J./Paull, R.E.. The encyclopedia of fruit & nuts. Cabi Publishing, Wallingford, UK | [Produces viable seed? Yes] "It is usually grown from seeds that germinate in 30 days and keep viability for several months after drying…" |
| 603 | 2012. WRA Specialist. Personal Communication. | [Hybridizes naturally? Unknown] |
| 604 | 2000. Ricker, M./Siebe, C./Sánchez B., S./Shimada, K./Larson, B.C./Martínez-Ramos, M./Montagnini, F.. Optimising seedling management: Pouteria sapota, Diospyros digyna, and Cedrela odorata in a Mexican rainforest. Forest Ecology and Management. 139: 63- | [Self-compatible or apomictic? No] "Diospyros digyna is a dioecious tree of tropical lowland forest, native from south Mexico to Costa Rica, and in the Carribean." |
| 604 | 2008. Janick, J./Paull, R.E.. The encyclopedia of fruit & nuts. Cabi Publishing, Wallingford, UK | [Self-compatible or apomictic? No] "The tree is usually andromonoecious or polygamous, some flowers have both male and female organs, others that are solely male have a gardenia-like scent. The axillary flowers are borne in clusters (three to seven) of male flowers while the hermaphrodite flowers often are born singly in the leaf axils." … "Self-incompatibility has been reported in solitary trees." |

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| 605 | 1978. Woodson, Jr., R.E./Schery, R.W./White, F.. Flora of Panama. Part VIII. Family 155. Ebenaceae. Annals of the Missouri Botanical Garden. 65(1): 145-154. | [Requires specialist pollinators? No] "Male flowers subsessile in ca. 5-flowered cymules in the axils of leaves or bracts towards the base of the current year's shoot; peduncle ca. 0.5 cm long; calyx to 1 cm long, minutely puberulous on both surfaces, the tube cup shaped, 0.4-0.5 cm long, the lobes 4-5, ca. 0.5 cm long, plicate, reduplicate; corolla to 1.8 cm long, more or less conical in bud, urceolate at anthesis, the tube ca. 1.2 cm long, strigillose-tomentellous outside, the lobes 4-5, suborbicular, 0.6 cm long, 0.6 cm wide, glabrous except for the sparsely strigillose part which is exposed before the flower opens; stamens ca. 20, to 0.9 cm long, attached mostly in pairs to the base of the corolla tube, included, the filament and connective densely strigillose, the connective short apiculate; ovary rudimentary, minute, setulose. Female flowers solitary or in fascicles of 2 3, borne otherwise as in the male flowers; calyx and corolla similar to those in the male flowers but the calyx longer and the corolla shorter and broader; staminodes ca. 12, 0.3-0.8 cm long, attached to the base of the corolla tube; ovary 0.5 cm long, 0.4 cm wide, subglobose, tomentellous, the styles 4-5, ca. 0.5 cm long, united at the base, ending on the inner face in fleshy, irregularly lobed stigmas, the locules 8 or 10, uniovulate." |
| 605 | 1995. Roubik, D.W.. Pollination of cultivated plants in the tropics. FAO Services Bulletin 118. FAO, Rome, Italy | [Requires specialist pollinators? No] "Diospyros digyna" … "Pollinators = bee, wasp, fly" |
| 606 | 1987. Morton, J.F.. Fruits of warm climates - Black Sapote (Diospyros digyna). J.F. Morton, Miami, FL http://www.hort.purdue.edu/newcrop/morton/black_sapote.html | [Reproduction by vegetative fragmentation? No] "The black sapote is usually grown from seeds, which remain viable for several months in dry storage and germinate in about 30 days after planting in flats. Vegetative propagation is not commonly practiced but the tree has been successfully air-layered and also shield budded using mature scions." |
| 607 | 1987. Morton, J.F.. Fruits of warm climates - Black Sapote (Diospyros digyna). J.F. Morton, Miami, FL http://www.hort.purdue.edu/newcrop/morton/black_sapote.html | [Minimum generative time (years)? 5+] "Most begin to bear in 5 to 6 years but some trees may take somewhat longer. The tree is naturally vigorous and receives little or no cultural attention in Florida though it has been noted that it benefits from fertilization." |
| 607 | 2008. Janick, J./Paull, R.E.. The encyclopedia of fruit & nuts. Cabi Publishing, Wallingford, UK | [Minimum generative time (years)? 4] "The juvenile stage can be as short as 3-4 years with the flowers borne on the new shoots." |
| 701 | 1978. Woodson, Jr., R.E./Schery, R.W./White, F.. Flora of Panama. Part VIII. Family 155. Ebenaceae. Annals of the Missouri Botanical Garden. 65(1): 145-154. | [Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)? No] "Fruit (4-)6-8 cm in diameter, subglobose, black and glabrous when ripe; seeds 8 or 10 or fewer by abortion, 2 cm long, 1 cm wide, 0.5 cm thick, reddish brown; endosperm not ruminate; fruiting calyx 1.4-2 cm long, saucer shaped, glabrous outside, tomentellous inside, the lobes hemiorbicular to ovate, 0.6 0.9 cm long, the margin undulate." [Highly unlikely, as fruits and seeds are relatively large and lack means of external attachment] |
| 702 | 2008. Janick, J./Paull, R.E.. The encyclopedia of fruit & nuts. Cabi Publishing, Wallingford, UK | [Propagules dispersed intentionally by people? Yes] "The tree is grown widely as an ornamental." |
| 703 | 1978. Woodson, Jr., R.E./Schery, R.W./White, F.. Flora of Panama. Part VIII. Family 155. Ebenaceae. Annals of the Missouri Botanical Garden. 65(1): 145-154. | [Propagules likely to disperse as a produce contaminant? No] "Fruit (4-)6-8 cm in diameter, subglobose, black and glabrous when ripe; seeds 8 or 10 or fewer by abortion, 2 cm long, 1 cm wide, 0.5 cm thick, reddish brown; endosperm not ruminate; fruiting calyx 1.4-2 cm long, saucer shaped, glabrous outside, tomentellous inside, the lobes hemiorbicular to ovate, 0.6 0.9 cm long, the margin undulate." [Highly unlikely, as fruits and seeds are relatively large] |
| 704 | 1978. Woodson, Jr., R.E./Schery, R.W./White, F.. Flora of Panama. Part VIII. Family 155. Ebenaceae. Annals of the Missouri Botanical Garden. 65(1): 145-154. | [Propagules adapted to wind dispersal? No] "Fruit (4-)6-8 cm in diameter, subglobose, black and glabrous when ripe; seeds 8 or 10 or fewer by abortion, 2 cm long, 1 cm wide, 0.5 cm thick, reddish brown; endosperm not ruminate; fruiting calyx 1.4-2 cm long, saucer shaped, glabrous outside, tomentellous inside, the lobes hemiorbicular to ovate, 0.6 0.9 cm long, the margin undulate." |
| 705 | 1976. Morton, J.F.. Pestiferous spread of many ornamental and fruit species in South Florida. Proceedings of the Florida State Horticultural Society. 89: 348-353. | [Propagules water dispersed? Potentially] "In Mexico it grows naturally in dry forests or on alluvial clay near streams or lagoons where it is frequently subject to flooding." [Distribution along streams and lagoons in flooded areas suggests seeds may be dispersed by water within native range] |
| 706 | 1978. Woodson, Jr., R.E./Schery, R.W./White, F.. Flora of Panama. Part VIII. Family 155. Ebenaceae. Annals of the Missouri Botanical Garden. 65(1): 145-154. | [Propagules bird dispersed? Yes. Potentially] "Fruit (4-)6-8 cm in diameter, subglobose, black and glabrous when ripe; seeds 8 or 10 or fewer by abortion, 2 cm long, 1 cm wide, 0.5 cm thick, reddish brown; endosperm not ruminate; fruiting calyx 1.4-2 cm long, saucer shaped, glabrous outside, tomentellous inside, the lobes hemiorbicular to ovate, 0.6-0.9 cm long, the margin undulate." |

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| 706 | 2001. Graham, C.. Habitat Selection and Activity Budgets of Keel-Billed Toucans at the Landscape Level. The Condor. 103(4): 776-784. | [Propagules bird dispersed? Yes] "Secondary vegetation also was usually avoided except by one toucan (toucan 5) in January. This bird made numerous foraging trips to two fruiting tree species, Cestrum oblongifolium (Solanaceae) and Diospyros digyna (Ebenaceae). Although no other toucans were marked while these species had fruit, unmarked toucans were seen foraging in these species. Thus, secondary forests may also provide important fruit resources during parts of the year (Levey 1988, Blake et al. 1990, Loiselle and Blake 1994)." |
| 707 | 1978. Woodson, Jr., R.E./Schery, R.W./White, F.. Flora of Panama. Part VIII. Family 155. Ebenaceae. Annals of the Missouri Botanical Garden. 65(1): 145-154. | [Propagules dispersed by other animals (externally)? No] "Fruit (4-)6-8 cm in diameter, subglobose, black and glabrous when ripe; seeds 8 or 10 or fewer by abortion, 2 cm long, 1 cm wide, 0.5 cm thick, reddish brown; endosperm not ruminate; fruiting calyx 1.4-2 cm long, saucer shaped, glabrous outside, tomentellous inside, the lobes hemiorbicular to ovate, 0.6 0.9 cm long, the margin undulate." [Although fruit and seeds may be carried externally for consumption, they lack a means of external attachment and appear to be adapted primarily for internal dispersal] |
| 708 | 1978. Woodson, Jr., R.E./Schery, R.W./White, F.. Flora of Panama. Part VIII. Family 155. Ebenaceae. Annals of the Missouri Botanical Garden. 65(1): 145-154. | [Propagules survive passage through the gut? Yes. Presumably] "Fruit (4-)6-8 cm in diameter, subglobose, black and glabrous when ripe; seeds 8 or 10 or fewer by abortion, 2 cm long, 1 cm wide, 0.5 cm thick, reddish brown; endosperm not ruminate; fruiting calyx 1.4-2 cm long, saucer shaped, glabrous outside, tomentellous inside, the lobes hemiorbicular to ovate, 0.6 0.9 cm long, the margin undulate." |
| 708 | 1995. Moll, D./Jansen, K.P.. Evidence for a Role in Seed Dispersal by Two Tropical Herbivorous Turtles. Biotropica. 27(1): 121-127. | [Propagules survive passage through the gut? Yes/ Potentially turtle-dispersed] "Vogt and Guzman (1988) suggested that Mexican Staurotypus triporcatus may play a role in dispersing and aiding in the germination of seeds of Diospyros digyna." |
| 708 | 2005. Horsburgh, C./Noller, J.. Exotic Tropical Fruits and Vegetables Category Marketing Opportunities. RIRDC Publication No 05/112. Rural Industries Research and Development Corporation, Kingston | [Propagules survive passage through the gut? Yes] "The main issues affecting production were poor fruit appearance, fruit blackening before ripening, and flying fox attack." [Flying foxes presumably consume fruits and disperse seeds] |
| 708 | 2008. Gargiullo, M.B./Magnuson, B.L/Kimball, L.D.. A field guide to plants of Costa Rica. Oxford University Press US, New York, NY | [Propagules survive passage through the gut? Yes] "Fruit fleshy, becoming black at maturity … 6-8 cm, flattened globe, base cupped by enlarged calyx, rind thin, brittle, sprinkled with small, pale dots, flesh black, soft, sweet, edible, seeds to 10, to 3 cm long, lens-shaped; fruits June-Feb., eaten by monkeys." |
| 801 | 1978. Woodson, Jr., R.E./Schery, R.W./White, F.. Flora of Panama. Part VIII. Family 155. Ebenaceae. Annals of the Missouri Botanical Garden. 65(1): 145-154. | [Prolific seed production (>1000/m2)? No] "Fruit (4-)6-8 cm in diameter, subglobose, black and glabrous when ripe; seeds 8 or 10 or fewer by abortion, 2 cm long, 1 cm wide, 0.5 cm thick, reddish brown; endosperm not ruminate; fruiting calyx 1.4-2 cm long, saucer shaped, glabrous outside, tomentellous inside, the lobes hemiorbicular to ovate, 0.6 0.9 cm long, the margin undulate." [Unlikely given relatively large size of fruits and seeds] |
| 801 | 1997. Lindquist, E.S.. Patterns of Coastal Forest Composition, Structure, and Recruitment, Costa Rica: Functions of an Environmental Gradient, Seed Rain Distribution, and Crab Predation Pressure. PhD Diss.. Cornell University, Cornell, NY | [Prolific seed production (>1000/m2)? No] "Table 3. Cumulative density, frequencies, and germination rates for plant species present in seed traps … Diospyros digyna … Density (m-2) = 1.0" |
| 802 | 1987. Morton, J.F.. Fruits of warm climates - Black Sapote (Diospyros digyna). J.F. Morton, Miami, FL http://www.hort.purdue.edu/newcrop/morton/black_sapote.html | [Evidence that a persistent propagule bank is formed (>1 yr)? Probably No] "The black sapote is usually grown from seeds, which remain viable for several months in dry storage and germinate in about 30 days after planting in flats. " [Evidence from natural field conditions unknown] |
| 802 | 2008. Royal Botanic Gardens Kew. Seed Information Database (SID). Version 7.1. http://data.kew.org/sid/ | [Evidence that a persistent propagule bank is formed (>1 yr)? Probably No] "Storage Conditions: Viability maintained for 6 months in moist storage at 20°C (Riley, 1981); seeds can be stored dry for several months (Verheij & Coronel, 1991); MCS= 49.7%, LSMC= 30%, viability is reduced from 92% to 73% when seed moisture contents are reduced from 50% to 20% (Hernandez, 1992) Comment: The high viability (73%) resulting from desiccation to 20% mc implies that this species may not show recalcitrant seed storage behaviour. More investigations of seed storage behaviour with successful dormancy-breaking treatments are needed." |
| 803 | 2001. Langeland, K.A./Stocker, R.K.. Control of Non-native Plants in Natural Areas of Florida. Institute of Food & Agricultural Sciences, University of Florida, Gainesville, FL http://mrec.ifas.ufl.edu/ldspmgt/Ldsp%20Turf%20Mgmt/PDFfiles/WG20900.pdf | [Well controlled by herbicides? No] "Treatment: Large individuals are difficult to kill. Applying 50% Garlon 3A to a freshly cut stump is recommended. Basal bark treatments with Garlon 4 does not work." |

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| 804 | 2008. Janick, J./Paull, R.E.. The encyclopedia of fruit & nuts. Cabi Publishing, Wallingford, UK | [Tolerates, or benefits from, mutilation, cultivation, or fire? Yes] "As in most trees the ideal for fruit production is to cut the main stem at a height of about 90-100 cm in order to get three to four main branches arising below this point. This strategy results in a lower canopy height that makes tree management easier." [Tolerate cutting to a height of 1 m and resprouts] |
| 805 | 2012. WRA Specialist. Personal Communication. | [Effective natural enemies present locally (e.g. introduced biocontrol agents)? Unknown] |