

Family: *Myrtaceae*

Taxon: *Eugenia brasiliensis*

Synonym: *Eugenia dombeyi* (Spreng.) Skeels
Myrtus dombeyi Spreng.
Stenocalyx brasiliensis O. Berg

Common Name Brazil cherry
grumichama
cerisier du Brésil
grumixama

Questionnaire :	current 20090513	Assessor:	Chuck Chimera	Designation:	EVALUATE
Status:	Assessor Approved	Data Entry Person:	Chuck Chimera	WRA Score	1
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	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)	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	
405	Toxic to animals			y=1, n=0	n
406	Host for recognized pests and pathogens			y=1, n=0	y
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	
410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)			y=1, n=0	n

411	Climbing or smothering growth habit	y=1, n=0	n
412	Forms dense thickets	y=1, n=0	y
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	
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	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	y
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: EVALUATE

WRA Score 1

Supporting Data:

101	1987. Morton, J.. Fruits of warm climates. J.F. Morton, Miami, FL http://www.hort.purdue.edu/newcrop/morton/grumichama.html	No evidence that <i>Eugenia brasiliensis</i> is highly domesticated
201	1987. Morton, J.. Fruits of warm climates. J.F. Morton, Miami, FL http://www.hort.purdue.edu/newcrop/morton/grumichama.html	The grumichama is native and wild in coastal southern Brazil, especially in the states of Parana and Santa Catarina. It is cultivated in and around Rio de Janeiro, also in Paraguay.
202	1987. Morton, J.. Fruits of warm climates. J.F. Morton, Miami, FL http://www.hort.purdue.edu/newcrop/morton/grumichama.html	The grumichama is native and wild in coastal southern Brazil, especially in the states of Parana and Santa Catarina. It is cultivated in and around Rio de Janeiro, also in Paraguay. [native range well known]
203	1987. Morton, J.. Fruits of warm climates. J.F. Morton, Miami, FL http://www.hort.purdue.edu/newcrop/morton/grumichama.html	Climate: The grumichama is subtropical, surviving temperatures of 26° F (-3.33° C) in Brazil. It is better suited to Palm Beach than to southern Florida. In Hawaii, the tree fruits best from sea-level to an altitude of no more than 300 ft (90 m).
204	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.	native to southern coastal Brazil, especially in the states of Parana and Santa Catarina
205	1987. Morton, J.. Fruits of warm climates. J.F. Morton, Miami, FL http://www.hort.purdue.edu/newcrop/morton/grumichama.html	A specimen was growing in Hope Gardens, Jamaica, in 1880 and a tree was planted in the Botanical Gardens, Singapore, in 1888, fruited in 1903. It has long since vanished from both of these locations. An attempt to grow it in the Philippines in the early 1920's did not meet with success. Neither did a trial in Israel. An early introduction, perhaps by Don Francisco de Paula Marin in 1791, was made in Hawaii and the tree was adopted into numerous local gardens. The United States Department of Agriculture received seeds from Mauritius in 1911 (S.P.I. #30040); plants and seeds from Bahia, Brazil, in 1914 (S.P.I. #36968), and more seeds from Mauritius in 1922 (S.P.I. #54797). Plants were set out at the Plant Introduction Station in Miami and prospered. Other plantings were made in California where it seemed even better adapted but has apparently disappeared. The United States Department of Agriculture raised seedlings at Puerto Arturo, Honduras, and transferred some plants to the Langetilla Experimental Garden at Tela in 1926. They flourished there and flowered and fruited well.
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.	It has been introduced widely to many tropical and subtropical countries.
301	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.	Grumichama was introduced to Hawaii perhaps as early as 1791 by Don Francisco de Paula Marin and was certainly present prior to 1821. Once widely grown in gardens around the state, it probably persists today mostly in research collections, older gardens, and the collections of tropical fruit fanciers. [no evidence of naturalization]
301	2007. Pacific Island Ecosystems at Risk (PIER). <i>Eugenia brasiliensis</i> . http://www.hear.org/pier/scientificnames/..%5Cspecies%5CEugenia_brasiliensis.htm	"Lining the side of the Hana Highway at Ulumalu in Haiku, and was also in nearby gulches. Forest and Kim Starr, pers. Comm. 2009.
302	2007. Randall, R.. Global Compendium of Weeds. http://www.hear.org/gcw/	No records as a weed of gardens or disturbance
303	2007. Randall, R.. Global Compendium of Weeds. http://www.hear.org/gcw/	No evidence of <i>Eugenia brasiliensis</i> as a weed of Agricultural/forestry/horticultural
304	2007. Randall, R.. Global Compendium of Weeds. http://www.hear.org/gcw/	No evidence that <i>Eugenia brasiliensis</i> is an environmental weed
305	2003. Weber, E.. Invasive Plant Species of the World. A Reference Guide to Environmental Weeds.. CABI Publishing, Wallingford, UK	<i>Eugenia uniflora</i> : forms dense thickets that displace native plants and prevents their regeneration.
401	1987. Morton, J.. Fruits of warm climates. J.F. Morton, Miami, FL http://www.hort.purdue.edu/newcrop/morton/grumichama.html	The highly ornamental tree is slender, erect, usually to 25 or 35 ft (7.5-10.5 m) high, short trunked and heavily foliated with opposite, oblong-oval leaves 3 1/2 to 5 in (9-16 cm) long, 2 3/8 in (5-6 cm) wide, with recurved margin; glossy, thick, leathery, and minutely pitted on both surfaces. [no spines, thorns or burrs]

402	1987. Morton, J.. Fruits of warm climates. J.F. Morton, Miami, FL http://www.hort.purdue.edu/newcrop/morton/grumichama.html	No evidence of allelopathy
403	1987. Morton, J.. Fruits of warm climates. J.F. Morton, Miami, FL http://www.hort.purdue.edu/newcrop/morton/grumichama.html	Not parasitic
404	2010. WRA Specialist. Personal Communication.	Unknown [no information found on palatability of foliage, only fruit]
405	1987. Morton, J.. Fruits of warm climates. J.F. Morton, Miami, FL http://www.hort.purdue.edu/newcrop/morton/grumichama.html	No evidence of toxic properties for animals or humans
406	1987. Morton, J.. Fruits of warm climates. J.F. Morton, Miami, FL http://www.hort.purdue.edu/newcrop/morton/grumichama.html	In Hawaii, the fruits are heavily attacked by the Mediterranean fruit fly.
406	2001. Rayachhetry, M. B./Van, T. K./Center T.D./Elliott, M.L.. Host Range of Puccinia psidii, a Potential Biological Control Agent of Melaleuca quinquenervia in Florida. Biological Control. 22: 38-45.	Host of Puccinia psidii
407	2005. Fischer, D.C.H./Limberger, R.P./Henriques, A.T./Moreno, P.R.H.. Essential Oils from Leaves of Two Eugenia brasiliensis Specimens from Southeastern Brazil. Journal of Essential Oil Research. 17: 499-500.	The essential oils from leaves of two specimens of Eugenia brasiliensis collected at two locations in the southeastern Brazilian cerrado were analyzed by GC and GC/MS. The main constituents found in the leaf oil from both specimens were α - and 3-selinene and 13 caryophyllene. The specimen collected at Jaboticabal contained 3-selinene (17.3%) as the major component, while the specimen from Martinho Prado contained a selinene (14.8%) as the major compound. Additionally, the specimen from Martinho Prado produced relatively high amounts of α - and 13-pinene (6.6% and 3.6 %, respectively). [no evidence of toxicity]
408	1987. Morton, J.. Fruits of warm climates. J.F. Morton, Miami, FL http://www.hort.purdue.edu/newcrop/morton/grumichama.html	No evidence that tree is a fire hazard or prone to burning
409	2005. Faucon, P.. Grumichama. Desert-Tropicals, http://www.desert-tropicals.com/Plants/Myrtaceae/Eugenia_brasiliensis.html	Sun Exposure: Full sun to light shade
409	2009. Educational Concerns For Hunger Organization (ECHO). Fruiting Trees, Shrubs and Herbaceous Plants. http://www.echonet.org/content/fruitInformation/625	Full sun is preferred and alkaline soils should be avoided.
409	2010. Trade Winds Fruit. Grumichama - Eugenia brasiliensis. http://www.tradewindsfruit.com/grumichama.htm	Can be grown in sun or in shade.
410	1987. Morton, J.. Fruits of warm climates. J.F. Morton, Miami, FL http://www.hort.purdue.edu/newcrop/morton/grumichama.html	The grumichama does better on acid sand in Central Florida than it does on limestone in the south. It is reported to prefer deep, fertile, sandy loam. Sturrock says it grows well in rich clay in Cuba but is adversely affected by the long, dry season.
411	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.	Slender tree 25 to 35 feet tall [no climbing or smothering growth habit]
412	1912. Stockberger, W.W.. Tannin Plants of Paraguay. The Journal of the American Leather Chemists Association. 7: 185-192.	Abundant in the forests where in certain low places it forms dense thickets.
501	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.	Terrestrial tree [not aquatic]

502	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.	Myrtaceae
503	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.	Myrtaceae [not nitrogen fixing]
504	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.	Slender tree 25 to 35 feet tall [not a geophyte]
601	1997. Galetti, M./Martuscelli, P./Olmos, F./Aleixo, A.. Ecology and conservation of the jacutinga <i>Pipile jacutinga</i> in the Atlantic forest of Brazil. <i>Biological Conservation</i> . 82 (1): 31-39.	No evidence of substantial reproductive failure in native habitat
602	1987. Morton, J.. Fruits of warm climates. J.F. Morton, Miami, FL http://www.hort.purdue.edu/newcrop/morton/grumichama.html	Wilson Popenoe stated that propagation in Brazil is entirely by seeds which remain viable for several weeks and germinate in about a month. Fenzi says that seeds, cuttings and air layers are employed, and Sturrock has mentioned that grafting is easy.
603	2010. WRA Specialist. Personal Communication.	Ability to hybridize naturally unknown
604	1996. Lughadha, E.N./Proenca, C.. A Survey of the Reproductive Biology of the Myrtoideae (Myrtaceae). 83 (4): 480-503.	Self-compatibility unknown for <i>Eugenia brasiliensis</i>
605	1996. Lughadha, E.N./Proenca, C.. A Survey of the Reproductive Biology of the Myrtoideae (Myrtaceae). 83 (4): 480-503.	Most <i>Eugenia</i> species are pollinated by species of Apidae [bees]
606	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.	usually propagated by seed, but cuttings, air layers, and grafts have all proved successful [no evidence of vegetative spread]
607	1987. Morton, J.. Fruits of warm climates. J.F. Morton, Miami, FL http://www.hort.purdue.edu/newcrop/morton/grumichama.html	The grumichama is of slow growth when young unless raised in a mixture of peat moss and sand and then given a thick layer of peat moss around the roots when setting out, and kept heavily fertilized. In Hawaii, it has taken 7 years to reach 7 ft. Fruiting begins when the plants are 4 to 5 years old.
607	2005. Faucon, P.. Grumichama. Desert-Tropicals, http://www.desert-tropicals.com/Plants/Myrtaceae/Eugenia_brasiliensis.html	Propagation: Easy from seeds fruiting after 3 years, but with unreliable quality, cuttings [potentially 3 years]
607	2010. Trade Winds Fruit. Grumichama - <i>Eugenia brasiliensis</i> . http://www.tradewindsfruit.com/grumichama.htm	Propagation: By seeds, which can take up to 4 years to begin bearing.
701	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.	Fruit flattened-globose, 0.5-0.75", red turning dark purple-black when ripe, flesh juicy, apex capped by persistent sepal. Seeds 1-3, to 0.5" wide, pale tan to greenish gray [no means of external attachment, and fairly large seeds unlikely to be dispersed unintentionally]
702	1987. Morton, J.. Fruits of warm climates. J.F. Morton, Miami, FL http://www.hort.purdue.edu/newcrop/morton/grumichama.html	The tree is regarded as remarkable for the short period from flowering to fruiting. In Florida, it has been in full bloom in late April and loaded with fruits 30 days later. The crop ripens quickly over just a few days. In Hawaii, the trees bloom and fruit from July to December, with the main crop in the fall. Trees in Brazil vary considerably in time of flowering and fruiting so that the overall season extends from November to February. [ornamental and fruit tree]
703	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.	Fruit flattened-globose, 0.5-0.75", red turning dark purple-black when ripe, flesh juicy, apex capped by persistent sepal. Seeds 1-3, to 0.5" wide, pale tan to greenish gray [no evidence, and fairly large seeds unlikely to become a contaminant of produce]
704	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.	Fruit flattened-globose, 0.5-0.75", red turning dark purple-black when ripe, flesh juicy, apex capped by persistent sepal. Seeds 1-3, to 0.5" wide, pale tan to greenish gray [no adaptations for wind dispersal]

705	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.	Fruit flattened-globose, 0.5-0.75", red turning dark purple-black when ripe, flesh juicy, apex capped by persistent sepal. Seeds 1-3, to 0.5" wide, pale tan to greenish gray [no evidence of or adaptations for water dispersal]
706	1997. Galetti, M./Martuscelli, P./Olmos, F./Aleixo, A.. Ecology and conservation of the jacutinga Pipile jacutinga in the Atlantic forest of Brazil. Biological Conservation. 82 (1): 31-39.	Table 1. Fruit species consumed by jacutingas, Pipile jacutinga, in southeastern Brazil [includes <i>Eugenia brasiliensis</i>]...The jacutinga Pipile jacutinga was formerly one of the most abundant game bird cracids in the Atlantic forest of Brazil.
707	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.	Fruit flattened-globose, 0.5-0.75", red turning dark purple-black when ripe, flesh juicy, apex capped by persistent sepal. Seeds 1-3, to 0.5" wide, pale tan to greenish gray [no evidence of external transport by animals, and no means of external attachment]
708	1997. Galetti, M./Martuscelli, P./Olmos, F./Aleixo, A.. Ecology and conservation of the jacutinga Pipile jacutinga in the Atlantic forest of Brazil. Biological Conservation. 82 (1): 31-39.	Fruit consumed by Pipile jacutinga, a Brazilian game bird [seeds presumed to be adapted for gut passage]
801	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.	Fruit flattened-globose, 0.5-0.75", red turning dark purple-black when ripe, flesh juicy, apex capped by persistent sepal. Seeds 1-3, to 0.5" wide, pale tan to greenish gray [fairly large seeds unlikely to reach densities >1000/m ²]
802	2008. Liu, K./Eastwood, R. J./Flynn, S./Turner, R. M./Stuppy, W. H.. Seed Information Database (release 7.1, May 2008). http://www.kew.org/data/sid	Storage Behaviour: Recalcitrant Storage Conditions: Seeds are sensitive to desiccation, only 7.5% germinate following 1 month open storage at 15°C and 75% r.h., no seeds germinate following 1 month open storage at 23°C and 45% r.h., whereas 89% germinate following 6 months storage at 15°C with seeds imbibed with 10-4M ABA (Goldbach, 1979b); viability lost within 6 weeks in open storage at room temperature (Verheij & Coronel, 1991) [seeds unlikely to persist in soil seed bank]
803	2001. Langeland, K.A./Stocker, R.K.. Control of Non-native Plants in Natural Areas of Florida. Institute of Food and Agricultural Sciences, University of Florida, Gainesville, FL http://mrec.ifas.ufl.edu/ldspmgmt/Ldsp%20Turf%20Mgmt/PDFfiles/WG20900.pdf	For seedlings and small plants up to 1/2 inch diameter, use a basal bark treatment with 10% Garlon 4. This species takes a long time to die, and may require a subsequent herbicide application. For larger stems, use a cut-stump treatment with either 50% Garlon 3A or 10% Garlon 4 [information is for control of the invasive <i>Eugenia uniflora</i> , and should therefore work on <i>E. brasiliensis</i>]
804	2010. WRA Specialist. Personal Communication.	Unknown if <i>E. brasiliensis</i> tolerates or benefits from mutilation, cultivation or fire.
805	2001. Rayachhetry, M. B./Van, T. K./Center T.D./Elliott, M.L.. Host Range of <i>Puccinia psidii</i> , a Potential Biological Control Agent of <i>Melaleuca quinquenervia</i> in Florida. Biological Control. 22: 38-45.	Host of <i>Puccinia psidii</i> [<i>P. psidii</i> widespread in Hawaii, but impacts on <i>E. brasiliensis</i> unknown]