

Family: *Moraceae*

Taxon: *Artocarpus sericicarpus*

Synonym: NA

Common Name: Pedalai
gomihan
gumihan

Questionnaire :	current 20090513	Assessor:	Chuck Chimera	Designation: L
Status:	Assessor Approved	Data Entry Person:	Chuck Chimera	WRA Score -2
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	?
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)	
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	
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

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	
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	
707	Propagules dispersed by other animals (externally)	y=1, n=-1	
708	Propagules survive passage through the gut	y=1, n=-1	
801	Prolific seed production (>1000/m2)	y=1, n=-1	
802	Evidence that a persistent propagule bank is formed (>1 yr)	y=1, n=-1	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 -2

Supporting Data:

101	2012. Skyfield Tropical. Encyclopedia : Rare Fruit Trees - Artocarpus sericarpus. http://www.skyfieldtropical.com/encyclopedia/pedalai/	[Is the species highly domesticated? No] No evidence
102	2012. WRA Specialist. Personal Communication.	NA
103	2012. WRA Specialist. Personal Communication.	NA
201	2012. Skyfield Tropical. Encyclopedia : Rare Fruit Trees - Artocarpus sericarpus. http://www.skyfieldtropical.com/encyclopedia/pedalai/	[Species suited to tropical or subtropical climate(s) 2-high] "History/Origin: Pedalai is native and most common to Malaysia and Borneo; it is also grown in the Philippines to some extent."
202	2012. Skyfield Tropical. Encyclopedia : Rare Fruit Trees - Artocarpus sericarpus. http://www.skyfieldtropical.com/encyclopedia/pedalai/	[Quality of climate match data? 2-high] "History/Origin: Pedalai is native and most common to Malaysia and Borneo; it is also grown in the Philippines to some extent."
203	2012. Skyfield Tropical. Encyclopedia : Rare Fruit Trees - Artocarpus sericarpus. http://www.skyfieldtropical.com/encyclopedia/pedalai/	[Broad climate suitability (environmental versatility)? No] "Tolerance: No salt tolerance. Little drought tolerance...Temperature: Young trees are shocked by temperatures in the 30's, and will slowly succumb within 12 hours at those temperatures. Anything below freezing usually top-kills this species to the ground. It is slightly more cold tolerant when older and established, being more tolerant than breadfruit (artocarpus altilis)...Species Observations: This tree grows quickly when happy, and suffers rather overtly when unhappy. It will drop most of it's leaves if it gets too cold, too dry, or malnourished. This species respirates constantly, so high humidity is very ideal for keeping it happy and vigorous."
204	2012. Skyfield Tropical. Encyclopedia : Rare Fruit Trees - Artocarpus sericarpus. http://www.skyfieldtropical.com/encyclopedia/pedalai/	[Native or naturalized in regions with tropical or subtropical climates? Yes] "History/Origin: Pedalai is native and most common to Malaysia and Borneo; it is also grown in the Philippines to some extent. The fruits are usually collected in the wild, but there are many hobbyists and enthusiasts through the tropics who grow it for it's showy, interesting fruit. "
205	2012. rarepalmseeds.com. Artocarpus sericarpus. http://www.rarepalmseeds.com/pix/ArtSer.shtml	[Does the species have a history of repeated introductions outside its natural range? Possibly No] "Outside of it's native range on Borneo, Sulawesi and the Philippines, where it is also called terap bulu or pedalai, it is virtually unknown."
205	2012. Skyfield Tropical. Encyclopedia : Rare Fruit Trees - Artocarpus sericarpus. http://www.skyfieldtropical.com/encyclopedia/pedalai/	[Does the species have a history of repeated introductions outside its natural range? Possibly] "The fruits are usually collected in the wild, but there are many hobbyists and enthusiasts through the tropics who grow it for it's showy, interesting fruit. "
301	2005. Wagner, W.L./Herbst, D.R./Lorence, D.H.. Flora of the Hawaiian Islands website. Smithsonian Institution, Washington, D.C. http://botany.si.edu/pacificislandbiodiversity/hawaiianflora/index.htm	[Naturalized beyond native range? No] No evidence from Hawaiian Islands
301	2007. Randall, R.P.. Global Compendium of Weeds - Index [Online Database]. http://www.hear.org/gcw/	[Naturalized beyond native rang? No] No evidence
302	2007. Randall, R.P.. Global Compendium of Weeds - Index [Online Database]. http://www.hear.org/gcw/	[Garden/amenity/disturbance weed? No] No evidence
303	2007. Randall, R.P.. Global Compendium of Weeds - Index [Online Database]. http://www.hear.org/gcw/	[Agricultural/forestry/horticultural weed? No] No evidence
304	2007. Randall, R.P.. Global Compendium of Weeds - Index [Online Database]. http://www.hear.org/gcw/	[Environmental weed? No] No evidence
305	2007. Randall, R.P.. Global Compendium of Weeds - Index [Online Database]. http://www.hear.org/gcw/	[Congeneric weed? Possibly] Artocarpus altilis, Artocarpus altilis x marianensis, Artocarpus communis, Artocarpus heterophyllus, and Artocarpus integer listed as naturalized and possibly invasive, but sufficient evidence of impacts was not found
401	2012. Skyfield Tropical. Encyclopedia : Rare Fruit Trees - Artocarpus sericarpus. http://www.skyfieldtropical.com/encyclopedia/pedalai/	[Produces spines, thorns or burrs? No] No evidence

402	2012. WRA Specialist. Personal Communication.	[Allelopathic? No] Genus not known for allelopathic properties
403	2012. Skyfield Tropical. Encyclopedia : Rare Fruit Trees - Artocarpus sericarpus. http://www.skyfieldtropical.com/encyclopedia/pedalai/	[Parasitic? No] "Medium sized tree. Usually under 25' but can be larger." [Moraceae. No evidence]
404	2012. WRA Specialist. Personal Communication.	[Unpalatable to grazing animals? Unknown]
405	2012. Skyfield Tropical. Encyclopedia : Rare Fruit Trees - Artocarpus sericarpus. http://www.skyfieldtropical.com/encyclopedia/pedalai/	[Toxic to animals? No] "Dangers: None."
406	2012. WRA Specialist. Personal Communication.	[Host for recognized pests and pathogens? Unknown]
407	2012. Skyfield Tropical. Encyclopedia : Rare Fruit Trees - Artocarpus sericarpus. http://www.skyfieldtropical.com/encyclopedia/pedalai/	[Causes allergies or is otherwise toxic to humans? No] "Dangers: None...Fruit: Odd-looking read hairy fruit are generally softball sized, with soft sweet white pegs inside. Flavor is considered excellent, among the finest of the sweet tasting artocarpus. Small chesnut-flavored seeds are collected and boiled, also considered excellent. History/Origin: Pedalai is native and most common to Malaysia and Borneo; it is also grown in the Phillipenes to some extent. The fruits are usually collected in the wild, but there are many hobbyists and enthusiasts through the tropics who grow it for it's showy, interesting fruit. "
407	2012. Top Tropicals. Artocarpus sericarpus. Top Tropicals Botanical Garden, http://toptropicals.com/catalog/uid/Artocarpus_sericarpus.htm	[Causes allergies or is otherwise toxic to humans? No] "Pedalai is similar to the marang inside, but has a superior flavor, firmer flesh and slightly larger segments. The sweet, creamy-white flesh is easy to eat and like the marang the segments cling to the central core when the skin is removed. As with all the Artocarpus species the seeds are edible and those of the pedalai are considered to be some of the tastiest. They may be boiled, roasted or fried. Fruit odor is not as strong as it is with the fruit of the marang, Artocarpus odoratissimus."
408	1999. Friday, K.S./Drilling, M./Garrity, D.. Imperata grassland rehabilitation using Agroforestry and Assisted Natural Regeneration. International Centre for Research in Agroforestry, Southeast Asian Regional Research Programme, Bogor, Indonesia	[Creates a fire hazard in natural ecosystems? No] No evidence
408	2012. WRA Specialist. Personal Communication.	[Creates a fire hazard in natural ecosystems? No] No evidence, and genus not known to promote fires
409	1999. Friday, K.S./Drilling, M./Garrity, D.. Imperata grassland rehabilitation using Agroforestry and Assisted Natural Regeneration. International Centre for Research in Agroforestry, Southeast Asian Regional Research Programme, Bogor, Indonesia	[Is a shade tolerant plant at some stage of its life cycle? Not as adult] "Table 3. Sun-demanding trees that can be planted into grasslands. All are native Philippine species recommended for areas with no pronounced dry season." [Sun demanding species include Artocarpus sericarpus]
409	2012. Skyfield Tropical. Encyclopedia : Rare Fruit Trees - Artocarpus sericarpus. http://www.skyfieldtropical.com/encyclopedia/pedalai/	[Is a shade tolerant plant at some stage of its life cycle? Yes] "Light: Appreciates shade when young, and adapts to full sun as it matures. If growing in a pot, give it filtered sunlight for the best results. Direct sun often taxes/burns trees under 6 feet"
410	2012. Skyfield Tropical. Encyclopedia : Rare Fruit Trees - Artocarpus sericarpus. http://www.skyfieldtropical.com/encyclopedia/pedalai/	[Tolerates a wide range of soil conditions? No] "Soil/Nutrition: This species is described as being partial to alluvial soils; mineral rich humus deposits left by lakes and streambeds. Generally, it prefers slightly acidic soils rich in nutrients. A light mix of peat and perlite seems ideal for growing this species in a pot. It performs well on amended sandy soils. Micro-nutrients are very beneficial."
411	2012. Skyfield Tropical. Encyclopedia : Rare Fruit Trees - Artocarpus sericarpus. http://www.skyfieldtropical.com/encyclopedia/pedalai/	[Climbing or smothering growth habit? No] "Medium sized tree. Usually under 25' but can be larger."
412	1999. Friday, K.S./Drilling, M./Garrity, D.. Imperata grassland rehabilitation using Agroforestry and Assisted Natural Regeneration. International Centre for Research in Agroforestry, Southeast Asian Regional Research Programme, Bogor, Indonesia	[Forms dense thickets? No] No evidence
412	2012. WRA Specialist. Personal Communication.	[Forms dense thickets? No] No evidence

501	2012. Skyfield Tropical. Encyclopedia : Rare Fruit Trees - Artocarpus sericarpus. http://www.skyfieldtropical.com/encyclopedia/pedalai/	[Aquatic? No] Terrestrial
502	2012. Tropicos.org. Tropicos [Online Database]. Missouri Botanical Garden, http://www.tropicos.org/	[Grass? No] Moraceae
503	2012. Tropicos.org. Tropicos [Online Database]. Missouri Botanical Garden, http://www.tropicos.org/	[Nitrogen fixing woody plant? No] Moraceae
504	2012. Skyfield Tropical. Encyclopedia : Rare Fruit Trees - Artocarpus sericarpus. http://www.skyfieldtropical.com/encyclopedia/pedalai/	[Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)? No] "Medium sized tree. Usually under 25' but can be larger."
601	2012. WRA Specialist. Personal Communication.	[Evidence of substantial reproductive failure in native habitat? No] No evidence, but information on cultivation within native range is limited.
602	2012. Skyfield Tropical. Encyclopedia : Rare Fruit Trees - Artocarpus sericarpus. http://www.skyfieldtropical.com/encyclopedia/pedalai/	[Produces viable seed? Yes] "Propagation: Seeds, which although perishable, will sprout readily when fresh."
603	2004. Zerega, N.J.C./Ragone, D./Motley, T.J.. Complex origins of breadfruit (Artocarpus altilis, Moraceae): implications for human migrations in Oceania. American Journal of Botany. 91: 760-766.	[Hybridizes naturally? Unknown] "In contrast, most Micronesian breadfruit cultivars appear to be the result of hybridization between A. camansi-derived breadfruit and A. mariannensis." [No evidence, but hybridization possible within genus]
604	2012. Skyfield Tropical. Encyclopedia : Rare Fruit Trees - Artocarpus sericarpus. http://www.skyfieldtropical.com/encyclopedia/pedalai/	[Self-compatible or apomictic? Yes] "Flowering/Pollination: Self-fertile"
605	2010. Zerega, N.J.C./Supardi, M.N.N./Motley, T.J.. Phylogeny and Recircumscription of Artocarpeae (Moraceae) with a Focus on Artocarpus. Systematic Botany. 35(4): 766-782.	[Requires specialist pollinators? Unknown]"In Artocarpus , staminate inflorescences with numerous tightly packed flowers, and frequently with interfloral bracts, provide a potentially attractive breeding site for insects, with ample pollen for larvae and opportunities of protection from predators. Additionally, the pistillate inflorescences of Artocarpus are well protected against phytophagous insects due to the fusion of adjacent perianths (subgenera Artocarpus and Pseudojaca), or in some cases interfloral bracts (section Duricarpus and subgenera Pseudojaca and Prainea), denying easy access to the ovules. It is clear that pollination syndromes in Artocarpeae are still largely unknown, empirical studies will be necessary for further elucidation, and a phylogenetic classification will be a useful tool to understand and interpret pollination in an evolutionary context."
606	2012. Skyfield Tropical. Encyclopedia : Rare Fruit Trees - Artocarpus sericarpus. http://www.skyfieldtropical.com/encyclopedia/pedalai/	[Reproduction by vegetative fragmentation? No] "Propagation: Seeds, which although perishable, will sprout readily when fresh."
607	2012. Skyfield Tropical. Encyclopedia : Rare Fruit Trees - Artocarpus sericarpus. http://www.skyfieldtropical.com/encyclopedia/pedalai/	[Minimum generative time (years)? 3+] "Growth Rate: Moderate to fast...Bearing Age: 3-4 years from seed."
701	2012. Skyfield Tropical. Encyclopedia : Rare Fruit Trees - Artocarpus sericarpus. http://www.skyfieldtropical.com/encyclopedia/pedalai/	[Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)? No] "Fruit: Odd-looking read hairy fruit are generally softball sized, with soft sweet white pegs inside. Flavor is considered excellent, among the finest of the sweet tasting artocarpus. Small chesnut flavored seeds are collected and boiled, also considered excellent." [Unlikely from genus, & no evidence]
702	2012. Hawaiian Tropical Plant Nursery, LLC. Our Products >> Artocarpus sericarpus (pedalai) 5.5 inch square pot. http://www.store.hawaiiantropicalplants.com/Artocarpus-sericarpus-pedalai-55-inch-square-pot-1447.htm	[Propagules dispersed intentionally by people? Yes. For sale in Hawaii] "Common Name: Pedalai. Fruits ripen to yellow-orange and look like a giant rambutan (no relation botanically). Sweet white pulp around each seed. In addition, the seeds are edible and can be boiled or roasted. Ornamental leaves are approximately 3 ft. long on mature plants. This tropical rain forest native requires full sun or light shade and warm temperatures. This plant is reported to be sensitive to cool temperatures and will not tolerate temperatures near freezing."

702	2012. Skyfield Tropical. Encyclopedia : Rare Fruit Trees - Artocarpus sericicarpus. http://www.skyfieldtropical.com/encyclopedia/pedalai/	[Propagules dispersed intentionally by people? Yes] "Fruit: Odd-looking read hairy fruit are generally softball sized, with soft sweet white pegs inside. Flavor is considered excellent, among the finest of the sweet tasting artocarpus. Small chesnut-flavored seeds are collected and boiled, also considered excellent."
703	2012. Skyfield Tropical. Encyclopedia : Rare Fruit Trees - Artocarpus sericicarpus. http://www.skyfieldtropical.com/encyclopedia/pedalai/	[Propagules likely to disperse as a produce contaminant? No] "Fruit: Odd-looking read hairy fruit are generally softball sized, with soft sweet white pegs inside. Flavor is considered excellent, among the finest of the sweet tasting artocarpus. Small chesnut flavored seeds are collected and boiled, also considered excellent." [No evidence and unlikely given nature of fruit]
704	2012. Skyfield Tropical. Encyclopedia : Rare Fruit Trees - Artocarpus sericicarpus. http://www.skyfieldtropical.com/encyclopedia/pedalai/	[Propagules adapted to wind dispersal? NO] "Odd-looking read hairy fruit are generally softball sized, with soft sweet white pegs inside. Flavor is considered excellent, among the finest of the sweet tasting artocarpus. Small chesnut-flavored seeds are collected and boiled, also considered excellent. "
705	2012. Skyfield Tropical. Encyclopedia : Rare Fruit Trees - Artocarpus sericicarpus. http://www.skyfieldtropical.com/encyclopedia/pedalai/	[Propagules water dispersed? No] "Fruit: Odd-looking read hairy fruit are generally softball sized, with soft sweet white pegs inside. Flavor is considered excellent, among the finest of the sweet tasting artocarpus. Small chesnut flavored seeds are collected and boiled, also considered excellent." [No evidence and unlikely given nature of fruit]
706	2006. Plantilla, A.E.. Philippines: The importance of karst environment. Manila Times, October 3, 2006. Rainforest Portal, http://www.rainforestportal.org/shared/reader/welcome.aspx?linkid=61428	[Propagules bird dispersed? Potentially. Consumed by bats] "The Soil and Water Conservation Foundation (SWCF) reports that karst landscapes attract a variety of wildlife, including birds, bats, butterflies and monkeys...Some of these plants are pangli (Pangium edule) eaten by monkeys, civet cats and wild pigs, bangkal (Nauclea orientales), igyo (Dyoxylum decandrum) and antipolo (Artocarpus blancoi), eaten by bats and birds, and gumihan (Artocarpus sericicarpus) eaten by bats."
707	2006. Plantilla, A.E.. Philippines: The importance of karst environment. Manila Times, October 3, 2006. Rainforest Portal, http://www.rainforestportal.org/shared/reader/welcome.aspx?linkid=61428	[Propagules dispersed by other animals (externally)? Unknown] "The Soil and Water Conservation Foundation (SWCF) reports that karst landscapes attract a variety of wildlife, including birds, bats, butterflies and monkeys...Some of these plants are pangli (Pangium edule) eaten by monkeys, civet cats and wild pigs, bangkal (Nauclea orientales), igyo (Dyoxylum decandrum) and antipolo (Artocarpus blancoi), eaten by bats and birds, and gumihan (Artocarpus sericicarpus) eaten by bats." [Seeds probably adapted for internal consumption]
708	2006. Plantilla, A.E.. Philippines: The importance of karst environment. Manila Times, October 3, 2006. Rainforest Portal, http://www.rainforestportal.org/shared/reader/welcome.aspx?linkid=61428	[Propagules survive passage through the gut? Potentially. Consumed by bats] "The Soil and Water Conservation Foundation (SWCF) reports that karst landscapes attract a variety of wildlife, including birds, bats, butterflies and monkeys...Some of these plants are pangli (Pangium edule) eaten by monkeys, civet cats and wild pigs, bangkal (Nauclea orientales), igyo (Dyoxylum decandrum) and antipolo (Artocarpus blancoi), eaten by bats and birds, and gumihan (Artocarpus sericicarpus) eaten by bats."
801	2012. WRA Specialist. Personal Communication.	[Prolific seed production (>1000/m2)? 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)? No] "Storage Behaviour: Recalcitrant"
802	2012. Skyfield Tropical. Encyclopedia : Rare Fruit Trees - Artocarpus sericicarpus. http://www.skyfieldtropical.com/encyclopedia/pedalai/	[Evidence that a persistent propagule bank is formed (>1 yr)? No] "Propagation: Seeds, which although perishable, will sprout readily when fresh."
803	2012. WRA Specialist. Personal Communication.	[Well controlled by herbicides? Unknown] No information on herbicide efficacy on or chemical control of this species.
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]