

Taxon: Eriobotrya japonica (Thunb.) Lindl.

Family: Rosaceae

Common Name(s): loquat

Synonym(s): Mespilus japonica Thunb.

Assessor: Chuck Chimera

Status: Assessor Approved

End Date: 11 May 2017

WRA Score: 7.0

Designation: H(HPWRA)

Rating: High Risk

Keywords: Naturalized, Subtropical Tree, Environmental Weed, Edible Fruit, Bird-Dispersed

Qsn #	Question	Answer Option	Answer
101	Is the species highly domesticated?	y=-3, n=0	y
102	Has the species become naturalized where grown?	y=1, n=-1	y
103	Does the species have weedy races?	y=1, n=-1	y
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)	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)	y
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	n
403	Parasitic	y=1, n=0	n
404	Unpalatable to grazing animals	y=1, n=-1	n
405	Toxic to animals		
406	Host for recognized pests and pathogens	y=1, n=0	y
407	Causes allergies or is otherwise toxic to humans		
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	y

Qsn #	Question	Answer Option	Answer
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		
604	Self-compatible or apomictic		
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	y
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		
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/m ²)	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		
805	Effective natural enemies present locally (e.g. introduced biocontrol agents)		

Supporting Data:

Qsn #	Question	Answer
101	Is the species highly domesticated?	y
	Source(s)	Notes
	Morton, J.F. 1987. Fruits of Warm Climates. J.F. Morton, Miami, FL	"The loquat is indigenous to southeastern China and possibly southern Japan, though it may have been introduced into Japan in very early times. It is said to have been cultivated in Japan for over 1,000 years." ... "The loquat has been the subject of much horticultural improvement, increasing the size and quality of the fruit. There are said to be over 800 varieties in the Orient."

102	Has the species become naturalized where grown?	y
	Source(s)	Notes
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	Naturalized and an environmental weed

103	Does the species have weedy races?	y
	Source(s)	Notes
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	Naturalized and an environmental weed

201	Species suited to tropical or subtropical climate(s) - If island is primarily wet habitat, then substitute "wet tropical" for "tropical or subtropical"	High
	Source(s)	Notes
	Orwa C., Mutua, A., Kindt R., Jamnadass, R., & Anthony, S. 2009 Agroforestree Database: a tree reference and selection guide version 4.0. http://www.worldagroforestry.org . [Accessed 11 May 2017]	"Originally from regions with a subtropical climate"
	Lim, T.K. (2012). Edible Medicinal and Non-Medicinal Plants. Volume 4, Fruits. Springer, New York	"The loquat is adapted to a subtropical to mild temperate climate."

202	Quality of climate match data	High
	Source(s)	Notes
	USDA, ARS, Germplasm Resources Information Network. 2017. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 10 May 2017]	

203	Broad climate suitability (environmental versatility)	y
	Source(s)	Notes

Qsn #	Question	Answer
	CAB International, 2005. Forestry Compendium. CAB International, Wallingford, UK	"Climatic amplitude (estimates) - Altitude range: 50 - 2000 m - Mean annual rainfall: 800 - 1200 mm - Rainfall regime: summer; uniform - Dry season duration: 0 - 5 months - Mean annual temperature: 15 - 25°C - Mean maximum temperature of hottest month: 25 - 32°C - Mean minimum temperature of coldest month: 12 - 15°C - Absolute minimum temperature: > -10°C
	Lim, T.K. (2012). Edible Medicinal and Non-Medicinal Plants. Volume 4, Fruits. Springer, New York	"The loquat is adapted to a subtropical to mild-temperate climate. In China, it grows naturally at altitudes between 900 and 2,000 m. In India, it grows up to 1,500 m and in Guatemala at elevations of 900–1,200 m, yielding poorly at lower elevations. Well-established trees can tolerate a drop in temperature to -11.11°C. In Japan, the lower temperature limit 7°C, temperatures below this is detrimental to flowers and fruit resulting in flower drop and fruit abortion. Extreme summer heat is detrimental to the crop, and dry, hot winds cause leaf scorch."

204	Native or naturalized in regions with tropical or subtropical climates	y
	Source(s)	Notes
	Parker, J.L. & Parsons, B. 2012. New Plant Records from the Big Island for 2010–2011. Bishop Museum Occasional Papers 113: 65-74	"Loquat has previously been documented as naturalized on Kaua'i, O'ahu, Lāna'i, and Maui (Lorence et al. 1995: 49; Herbarium Pacificum Staff 1999: 8; Oppenheimer 2007: 31; Frohlich & Lau 2008: 8) and is a common, weedy shrub across the island."
	Orwa C., Mutua, A., Kindt R., Jamnadass, R., & Anthony, S. 2009 Agroforestry Database: a tree reference and selection guide version 4.0. http://www.worldagroforestry.org . [Accessed 11 May 2017]	"Originally from regions with a subtropical climate"
	Lim, T.K. (2012). Edible Medicinal and Non-Medicinal Plants. Volume 4, Fruits. Springer, New York	"The loquat is adapted to a subtropical to mild-temperate climate."

205	Does the species have a history of repeated introductions outside its natural range?	y
	Source(s)	Notes
	CAB International, 2005. Forestry Compendium. CAB International, Wallingford, UK	" <i>E. japonica</i> is an evergreen shrub or small tree indigenous to southern China and traditionally cultivated there and in Japan. It is planted throughout the subtropics and tropics as an ornamental and for its sweet-tasting fruit. Propagation is conventional and straightforward. It is planted for commercial use in the Mediterranean, Australia, South Africa, South America, USA and India (Verheij and Coronel, 1991). In South-East Asia it is primarily planted in home gardens. Its flowers and leaves have medicinal value and relieve flu symptoms."

301	Naturalized beyond native range	y
-----	---------------------------------	---

Qsn #	Question	Answer
	Source(s)	Notes
	Herbarium Pacificum Staff. 1999. New Hawaiian plant records for 1998. Bishop Museum Occasional Papers 58: 3-11	"First documented as naturalized on Kaua'i (Lorence et al., 1995), loquat was noted as naturalizing in a dumpsite area below the town of K��okea in the Kula District of East Maui. Material examined. EAST MAUI: K��okea, dry scrubland downslope of Kula Hwy, in shaded gulch next to dumpsite, 2500 ft, 18 Aug 1998, C. Imada, W. Char, & C. Morden 98-13."
	Morton, J.F. 1987. Fruits of Warm Climates. J.F. Morton, Miami, FL	"In India and many other areas, the tree has become naturalized, as it volunteers readily from seed."
	Parker, J.L. & Parsons, B. 2012. New Plant Records from the Big Island for 2010–2011. Bishop Museum Occasional Papers 113: 65-74	"Loquat has previously been documented as naturalized on Kaua'i, O'ahu, L��ana'i, and Maui (Lorence et al. 1995: 49; Herbarium Pacificum Staff 1999: 8; Oppenheimer 2007: 31; Frohlich & Lau 2008: 8) and is a common, weedy shrub across the island. Material examined. HAWAII: South Hilo distr. Hwy 19, Pepe'ekeo, 2198851N, 279188E. Small tree naturalized on roadside. White flowers on hairy brown inflorescence with yellow fruit. Green serrate leaves with white hairy undersides, 27 Oct 2010, J. Parker & R. Parsons BIED146."
	Frohlich, D. & Lau, A. 2008. New plant records from O'ahu for 2007. Bishop Museum Occasional Papers 100: 3-12	"Loquat, native to China and Japan, was introduced to Hawai'i in 1851. It is now commonly grown in the state as an ornamental and for its fruit, which is produced best at elevations over 2500 ft [ca 300 m] (Staples & Herbst 2005). Previously collected as naturalized on Kaua'i and Maui, this species was found spreading from one mature tree in lowland mesic forest in Kalihi Valley, O'ahu. Material examined. O'AHU: Kalihi (UTM 2362263, 620238), tree to 6 m tall, one 3 m sapling and 100+ seedlings occasional in vicinity and up to 30 m below tree, 365 m (1200 ft) (~30 m below main ridge), 12 Aug 2006, A. Lau s.n. (BISH 731468, 731469)."
	Lorence, D.H., Flynn, T.W. & Wagner, W.L. 1995. Contributions to the flora of Hawai'i. III. New additions, range extensions, and rediscoveries of flowering plants. Bishop Museum Occasional Papers 41: 19-58	"The loquat is frequently cultivated as a fruit tree in the Hawaiian Islands. Wagner et al. (1990: 1100) noted that it occasionally escapes from cultivation in Hawaii Volcanoes National Park. On Kauai this species clearly has become naturalized locally in mixed mesic Acacia/Metrosideros forest and along roadsides in the Kokee State Park region. This is a new naturalized record of it in the Hawaiian Islands. <i>Eriobotrya japonica</i> is distinguished from all other Rosaceae in the archipelago by: tree to 4 m tall; stipules brownish tomentose, 5–8 mm long, persistent; leaves with blade obovate-elliptic or oblanceolate, 10–30 x 3.5–9.5 cm, glabrous above, pale brownish tomentulose beneath, margins serrate-dentate distally; flowers in terminal panicles, externally brown-tomentulose; fruits obovoid-ellipsoid, 2–2.5 x 1.5–2 cm, yellow, juicy, tomentulose when young, usually 2-seeded; seeds ellipsoid, plano-convex, 1.5 cm long, brown. Material examined. KAUAI: Waimea District, Puu Ka Pele Forest Reserve, Kauhao Ridge Road leading from Hwy 550 W towards Methodist and Boy Scout camps, 1006–1036 m, 25 Mar 1991, D. Lorence et al. 6731 (BISH, MO, PTBG, US)."

Qsn #	Question	Answer
	Oppenheimer, H.. 2007. New plant records from Moloka'i, Lāna'i, Maui, and Hawai'i for 2006. Bishop Museum Occasional Papers 96:17-34	"Wagner et al. (1999: 1100) considered loquat an occasional escape from cultivation on the Big Island, but Lorence et al. (1995: 49) later documented it as clearly naturalized on Kaua'i. It also occurs outside of cultivation on East Maui (Herbarium Pacificum Staff 1999: 8–9). What is likely this species has also been observed growing in a naturalized state on the Big Island, but only vegetative voucher specimens were obtained, precluding a definitive determination. On Lāna'i it is sparingly naturalized locally, but with more extensive survey is expected to be more widespread, since axis deer could easily disperse the seeds, along with humans unintentionally discarding the seeds in new areas. Trees were also observed to be under cultivation in Lāna'i City. Material examined. LĀNA'I: vicinity of Hulopo'e Gulch, 510 m, sparingly naturalized in Schinus and Psidium forest, 20 Dec 2006, Oppenheimer H120644."

302	Garden/amenity/disturbance weed	n
	Source(s)	Notes
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	Naturalized and an environmental weed

303	Agricultural/forestry/horticultural weed	n
	Source(s)	Notes
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	Naturalized and an environmental weed

304	Environmental weed	y
	Source(s)	Notes
	Motooka, P., Castro, L., Nelson, D., Nagai, G. & Ching, L. 2003. Weeds of Hawaii's Pastures and Natural Areas: An Identification and Management Guide. CTAHR, UH Manoa, Honolulu, HI	"Environmental impact: May have potential for invading native rain forests."
	Queensland Government. (2017). Weeds of Australia. <i>Eriobotrya japonica</i> . http://keyserver.lucidcentral.org . [Accessed 11 May 2017]	"This species is an environmental weed in New South Wales and Queensland, and is also regarded as a potential environmental weed or "sleeper weed" in other parts of Australia. It is particularly common in south-eastern Queensland, where it is ranked among the 200 most important invasive plant species, and in north-eastern New South Wales, where it appears on several local environmental weed lists (e.g. the New South Wales North Coast Environmental Weed Survey list and the Coffs Harbour City Council and Lismore City Council environmental weed lists)." ... "Overseas, loquat (<i>Eriobotrya japonica</i>) has been recorded as a weed in dry summer-rainfall areas in South Africa, where it is noted to compete with native vegetation. It has also become naturalised in mixed mesic forests and along roadsides in some parts of Hawaii and on hillsides and in scrub vegetation in New Zealand."

Qsn #	Question	Answer
	Weedbusters. 2017. Loquat - <i>Eriobotrya japonica</i> . http://www.weedbusters.org.nz/weed-information/eriobotrya-japonica/59/ . [Accessed 11 May 2017]	"Why is it weedy? Produces many well dispersed, highly viable seeds, and grows rapidly. Tolerates wet to dry conditions, hot to moderately cool temperatures, most soils, and moderate shade. How does it spread? Spread by birds, especially New Zealand pigeon, and humans, and in dumped vegetation. Gardens, wastelands, and exotic plantations are common seed sources. What damage does it do? Forms tall stands, replaces native low canopy and mid-tier species. Which habitats is it likely to invade? Disturbed forest and shrubland, and inshore islands, mainly in northern North Island."

305	Congeneric weed	n
	Source(s)	Notes
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	No evidence

401	Produces spines, thorns or burrs	n
	Source(s)	Notes
	Wu, Z. Y., P. H. Raven & D. Y. Hong, eds. 2003. Flora of China. Vol. 9 (Pittosporaceae through Connaraceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	[No evidence] "Trees small, to 10 m tall. Branchlets yellowish brown, densely rusty or grayish rusty tomentose. Stipule subulate, 1 1.5 cm, pubescent, apex acuminate; petiole nearly absent or short, 610 mm, grayish brown tomentose; leaf blade lanceolate, oblanceolate, obovate, or elliptic-oblong, 1230 × 39 cm, leathery, lateral veins 11 or 12 pairs, abaxially densely gray rusty tomentose, adaxially lustrous, rugose, base cuneate, margin entire basally, remotely serrate apically, apex acute or acuminate."

402	Allelopathic	n
	Source(s)	Notes
	Appiah, K., Li, Z., Zeng, R. S., Luo, S., Oikawa, Y., & Fujii, Y. (2015). Determination of allelopathic potentials in plant species in Sino-Japanese floristic region by sandwich method and dish pack method. International Journal of Basic and Applied Sciences, 4(4), 381-394	"Table 1: Radicle and hypocotyl elongation percentages of lettuce seedlings grown on agar gel containing oven-dried plant materials tested using the sandwich method." [Eriobotrya japonica not demonstrated to significantly affect radicle elongation]

403	Parasitic	n
	Source(s)	Notes
	Wu, Z. Y., P. H. Raven & D. Y. Hong, eds. 2003. Flora of China. Vol. 9 (Pittosporaceae through Connaraceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	"Trees small, to 10 m tall. Branchlets yellowish brown, densely rusty or grayish rusty tomentose." [Rosaceae. No evidence]

Qsn #	Question	Answer
404	Unpalatable to grazing animals	n
	Source(s)	Notes
	Morton, J.F. 1987. Fruits of Warm Climates. J.F. Morton, Miami, FL	"Animal feed: The young branches have been lopped for fodder."

405	Toxic to animals	
	Source(s)	Notes
	Morton, J.F. 1987. Fruits of Warm Climates. J.F. Morton, Miami, FL	[Possible. Seeds may be poisonous to poultry] "Animal feed: The young branches have been lopped for fodder." ... " There have been instances of poisoning in poultry from ingestion of loquat seeds. The seeds contain amygdalin (which is converted into HCN); also the lipids, sterol, b-sitosterol, triglyceride, sterolester, diglyceride and compound lipids; and fatty acids, mainly linoleic, palmitic, linolenic and oleic. There is amygdalin also in the fruit peel. The leaves possess a mixture of triterpenes, also tannin, vitamin B and ascorbic acid; in addition, there are traces of arsenic. Young leaves contain saponin. Some individuals suffer headache when too close to a loquat tree in bloom, The emanation from the flowers is sweet and penetrating. "

406	Host for recognized pests and pathogens	y
	Source(s)	Notes
	Cheikh, M., Howell, J. F., Harris, E. J., Salah, H. B., & Soria, F. (1975). Suppression of the Mediterranean fruit fly in Tunisia with released sterile insects. <i>Journal of Economic Entomology</i> , 68(2), 237-243	"In the United States, the Medfly could attack peaches, pears, plums, apples, apricots, avocados, citrus, cherries, figs, grapes, guavas, kumquats, loquats, nectarines, peppers, persimmons, tomatoes, and several nuts. If the Medfly were to become established, consumer prices would go up and produce would become less available. In addition, backyard gardens, as well as commercial production areas, would require increased use of pesticides on a routine basis. " ... "In 1993, APHIS estimated that annual losses attributable to the Medfly in the continental United States would be about \$1.5 billion annually if this exotic pest were to become established. These losses would come in the form of export sanctions, lost markets, treatment costs, reduced crop yields, deformities, and premature fruit drop."
	Enukidze, N. E. (1981). The biology of the oriental fruit moth in Abkhazia. <i>Zashchita Rastenii</i> , 6: 38	"Introduction: Oriental fruit moth (OFM), introduced in the U.S. on nursery stock from Japan between 1913 and 1916, is a serious stone fruit pest in the mid-Atlantic area. This species can be found in various stages during the entire growing season, and is the main reason for season long, repeated insecticide applications. II. Hosts: This insect infests all stones fruit plus apple and pear. Late ripening peach cultivars are particularly vulnerable to OFM. During its life cycle it may also utilize orchard trash, mummified fruits and weed hosts for cocoon sites."

Qsn #	Question	Answer
	Orwa C., Mutua, A., Kindt R., Jamnadass, R., & Anthony, S. 2009 Agroforestry Database: a tree reference and selection guide version 4.0. http://www.worldagroforestry.org . [Accessed 11 May 2017]	"PESTS AND DISEASES The principle enemies of <i>E. japonica</i> in California are pear-blight (<i>Bacillus amylovorus</i>) and loquat scab (<i>Fusicladium dendriticum</i> var. <i>eribotrye</i>). In Florida, the flowers are blighted by the anthracnose fungus (<i>Colletotrichum gloesporioides</i>). In California, 4 insects usually attack the tree: the codling moth (<i>Cydia pomonella</i>), the green apple aphid (<i>Aphis pomi</i>), the San Jose scale (<i>Aspidiotus perniciosus</i>), and the Florida wax scale (<i>Ceroplastes floridensis</i>). In other countries, the fruit is sometimes attacked by the Mediterranean fruit fly (<i>Ceratitis capitata</i>) and the Queensland fruit fly (<i>Bactrocera tryoni</i>). In India, the anar caterpillar (<i>Virachola isocrates</i>) bores into the fruit. Black spot (<i>Spilorea eribotryae</i>) may be serious in some locations. Fire blight (<i>Erwinia amylovora</i>) is one of the most serious diseases of the tree, causing branches to die back. Scab (<i>Spilocaea eribotryae</i>) spoils the fruit."

407	Causes allergies or is otherwise toxic to humans	
	Source(s)	Notes
	Quattrocchi, U. 2012. CRC World Dictionary of Medicinal and Poisonous Plants: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. CRC Press, Boca Raton, FL	[Seeds toxic in large quantities] "Poisonous, cyanogenic glycoside, pit kernel from cracked seeds, toxic if large quantities eaten. Fruits sedative, used in vomiting and relieving thirst."
	Morton, J.F. 1987. Fruits of Warm Climates. J.F. Morton, Miami, FL	[Unripe fruit may cause sickness] "Toxicity: A 5-year-old girl in Florida ate 4 unripe loquats, fell asleep and was difficult to awaken and seemed dazed. After about 2 hours, she was back to normal."

408	Creates a fire hazard in natural ecosystems	n
	Source(s)	Notes
	Orwa C., Mutua, A., Kindt R., Jamnadass, R., & Anthony, S. 2009 Agroforestry Database: a tree reference and selection guide version 4.0. http://www.worldagroforestry.org . [Accessed 11 May 2017]	[No evidence. Not known to occur in fire prone areas] "Originally from regions with a subtropical climate, <i>E. japonica</i> requires a mild climate with rainfall evenly spread throughout the year, without excessive heat, especially during fruit ripening. The most favourable conditions for productivity and quality are to be found near the sea. Once established, it is tolerant of drought and of slight frost. Temperatures lower than -5 deg. C damage the flowers, and those lower than -12 deg. C are fatal."

409	Is a shade tolerant plant at some stage of its life cycle	y
	Source(s)	Notes
	Weedbusters. 2017. Loquat - <i>Eriobotrya japonica</i> . http://www.weedbusters.org.nz/weed-information/eribotrya-japonica/59/ . [Accessed 11 May 2017]	"Tolerates wet to dry conditions, hot to moderately cool temperatures, most soils, and moderate shade."

410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	y
	Source(s)	Notes

Qsn #	Question	Answer
	Lim, T.K. (2012). Edible Medicinal and Non-Medicinal Plants. Volume 4, Fruits. Springer, New York	"Loquat will grow on a wide range of soils of moderate fertility, from light sandy loam to heavy clay and even oolitic limestone, but needs good drainage. It abhors water-logged conditions."
	Hiep, N.T. & Verheij, E.W.M., 1991. <i>Eriobotrya japonica</i> (Thunb.) Lindley [Internet] Record from Proseabase. Verheij, E.W.M. and Coronel, R.E. (Editors). PROSEA (Plant Resources of South-East Asia) Foundation, Bogor, Indonesia. http://www.proseanet.org . [Accessed 10 May 2017]	"Loquats grow well in a wide range of soils, preferring acid over alkaline soils; growth is poor in saline soils. The trees require good drainage and protection from the sun for the surface roots."
	CAB International, 2005. Forestry Compendium. CAB International, Wallingford, UK	"Soil descriptors - Soil texture: light; medium - Soil drainage: free - Soil reaction: acid; neutral"
	Orwa C., Mutua, A., Kindt R., Jamnadass, R. & Anthony, S. 2009 Agroforestry Database: a tree reference and selection guide version 4.0. http://www.worldagroforestry.org . [Accessed 10 May 2017]	"Soil type: Will grow on a great variety of soils, from sands to heavy clays; however, it prefers acid over alkaline soils. The best growth is found in light, well-drained, deep, moist, alluvial soils (gritty subsoil about 1.5 m deep)."

411	Climbing or smothering growth habit	n
	Source(s)	Notes
	Lim, T.K. (2012). Edible Medicinal and Non-Medicinal Plants. Volume 4, Fruits. Springer, New York	"A small, evergreen tree, to 10 m high, with a short trunk, rounded canopy and greyish-rusty tomentose stout twigs"

412	Forms dense thickets	n
	Source(s)	Notes
	Weedbusters. 2017. Loquat - <i>Eriobotrya japonica</i> . http://www.weedbusters.org.nz/weed-information/eriobotrya-japonica/59/ . [Accessed 11 May 2017]	[Possibly] "What damage does it do? Forms tall stands, replaces native low canopy and mid-tier species. "

501	Aquatic	n
	Source(s)	Notes
	Lim, T.K. (2012). Edible Medicinal and Non-Medicinal Plants. Volume 4, Fruits. Springer, New York	[Terrestrial] "A small, evergreen tree, to 10 m high, with a short trunk, rounded canopy and greyish-rusty tomentose stout twigs"

502	Grass	n
	Source(s)	Notes
	USDA, ARS, Germplasm Resources Information Network. 2017. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 10 May 2017]	Family: Rosaceae Subfamily: Amygdaloideae Tribe: Maleae Subtribe: Malinae

503	Nitrogen fixing woody plant	n
-----	-----------------------------	---

Qsn #	Question	Answer
	Source(s)	Notes
	CAB International, 2005. Forestry Compendium. CAB International, Wallingford, UK	No evidence

504	Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)	n
	Source(s)	Notes
	Lim, T.K. (2012). Edible Medicinal and Non-Medicinal Plants. Volume 4, Fruits. Springer, New York	"A small, evergreen tree, to 10 m high, with a short trunk, rounded canopy and greyish-rusty tomentose stout twigs"

601	Evidence of substantial reproductive failure in native habitat	n
	Source(s)	Notes
	Morton, J.F. 1987. Fruits of Warm Climates. J.F. Morton, Miami, FL	[No evidence] "The loquat is indigenous to southeastern China and possibly southern Japan, though it may have been introduced into Japan in very early times. It is said to have been cultivated in Japan for over 1, 000 years. The western world first learned of it from the botanist Kaempfer in 1690. Thunberg, who saw it in Japan in 1712, provided a more elaborate description. It was planted in the National Gardens, Paris, in 1784 and plants were taken from Canton, China, to the Royal Botanical Gardens at Kew, England, in 1787. Soon, the tree was grown on the Riviera and in Malta and French North Africa (Algeria) and the Near East and fruits were appearing on local markets. In 1818, excellent fruits were being produced in hothouses in England. The tree can be grown outdoors in the warmest locations of southern England."

602	Produces viable seed	y
	Source(s)	Notes
	Brisbane City Council. 2017. Weed Identification Tool - loquat - <i>Eriobotrya japonica</i> . http://weeds.brisbane.qld.gov.au/weeds/loquat . [Accessed 11 May 2017]	"Fruit are yellowish and grow to 4cm in diameter with 1-2 large seeds. Fruit mature in Spring and are spread by birds, other animals and humans."
	Morton, J.F. 1987. Fruits of Warm Climates. J.F. Morton, Miami, FL	"Generally, seeds are used for propagation only when the tree is grown for ornamental purposes or for use as rootstock."

603	Hybridizes naturally	
	Source(s)	Notes

Qsn #	Question	Answer
	Fukuda, S., Yamamoto, T., Tominaga, Y., & Nesumi, H. (2007). Possibility of intergeneric hybrids between loquat (<i>Eriobotrya japonica</i> Lindl.) and other Rosaceae plants. Bulletin of the Nagasaki Fruit Tree Experiment Station (Japan)	[Artificial hybrids possible] "Intergeneric hybridizations were carried out between loquat (<i>Eriobotrya japonica</i> Lindl.) and other Rosaceae plants in order to obtain the basic information on intergeneric hybrids. In 4 out of 8 crosses, 4-25% pollinated flowers bore fruits, however, 4 seeds were obtained from the cross of <i>E. japonica</i> cultivar 'Mogi' and <i>Rhaphiolepis indica</i> . Parentage of 4 individuals derived from an intergeneric cross of <i>E. japonica</i> x <i>R. indica</i> , was analyzed using 8 SSR (simple sequence repeat) markers. In 3 out of 4 individuals, the parent-offspring relationships were confirmed because the hybrids inherited SSR alleles from their parents without any discrepancy. Intergeneric hybrid seedlings showed similar leaf characters of <i>R. indica</i> . At the early stage, intergeneric hybrid seedlings died within 4 months after germination. "

604	Self-compatible or apomictic	
	Source(s)	Notes
	Orwa C., Mutua, A., Kindt R., Jamnadass, R., & Anthony, S. 2009 Agroforestry Database: a tree reference and selection guide version 4.0. http://www.worldagroforestry.org . [Accessed]	"A hermaphroditic species, the self-incompatibility of <i>E. japonica</i> is gametophytic."
	Morton, J.F. 1987. Fruits of Warm Climates. J.F. Morton, Miami, FL	[Some varieties are partially self-fertile] "The loquat is normally pollinated by bees. Some cultivars such as 'Golden Yellow' are not self fertile. 'Pale Yellow', 'Advance', and 'Tanaka' are partially self-fertile. In India, it has been observed that cross-pollination generally results in 10-17 % increased production over self pollination. 'Tanaka' pollinated by 'Pale Yellow' has a lower yield than when self-pollinated, indicating a degree of cross-incompatibility. Whereas, when pollinated by 'Advance', the normal yield of 'Tanaka' is nearly doubled."

605	Requires specialist pollinators	n
	Source(s)	Notes
	Abrol, D. P. (1988). Ecology and behaviour of three bee species pollinating loquat (<i>Eriobotrya japonica</i> Lindley). Proceedings of the Indian National Science Academy Part B Biological Sciences, 54, 161-163	"Foraging behaviour of <i>Apis cerana indica</i> F. workers, <i>Bombus asiaticus</i> Morawitz and <i>B. albopoleuralis</i> Friese was studied on flowers of loquat (<i>Eriobotrya japonica</i>) at four sites. Flight activity was initiated only when a minimum threshold of 6.5°C for <i>Bombus</i> species and 10.5°C for <i>A.c. indica</i> was available. Honeybees visited more middle branches than the upper or lower ones whereas bumble bees collected nectar and pollen mostly from the upper branches. The pollinating efficiency of the bees was: <i>B. asiaticus</i> > <i>B. albopoleuralis</i> > <i>A.c. indica</i> . The cessation of flight activity was independent of the prevailing ambient temperature in all the bee species."
	Orwa C., Mutua, A., Kindt R., Jamnadass, R., & Anthony, S. 2009 Agroforestry Database: a tree reference and selection guide version 4.0. http://www.worldagroforestry.org . [Accessed 11 May 2017]	"Honeybees are its pollen vectors. After fertilization, the fruit develops very rapidly."

Qsn #	Question	Answer
	Freihat, N. M., Al-Ghazwi, A. A. M., Zaitoun, S., & Alqudah, A. (2008). Fruit set and quality of loquats (<i>Eriobotrya japonica</i>) as effected by pollinations under sub-humid Mediterranean. <i>Scientia Horticulturae</i> , 117(1), 58-62	"It has been reported that loquats are pollinated by various insects, including bees (<i>Apis</i> sp.), syrphids, houseflies, Myrmeleontidae, Bombinae, and <i>Pieris rapae</i> (L.) (Jonathan et al., 2006)." ... "It is concluded that fruit sugar content as well as flesh percent did improved under open and supplemental pollination. Rainy weather conditions during the flowering time adversely affect most of the studied parameters, and the fruit set in particular. Since wind did not act as a good pollination agent, it is recommended to have some honey bees and/or wild bees close to loquat tress to ensure good crop."
	Morton, J.F. 1987. <i>Fruits of Warm Climates</i> . J.F. Morton, Miami, FL	"The loquat is normally pollinated by bees."

606	Reproduction by vegetative fragmentation	n
	Source(s)	Notes
	Morton, J.F. 1987. <i>Fruits of Warm Climates</i> . J.F. Morton, Miami, FL	"Generally, seeds are used for propagation only when the tree is grown for ornamental purposes or for use as rootstock. Loquat seedlings are preferred over apple, pear, quince or pyracantha rootstocks under most conditions. Quince and pyracantha may cause extreme dwarfing-to less than 8 ft (2.5 in). Quince rootstock tolerates heavier and wetter soils than loquat but is apt to put out numerous suckers. Loquat seeds remain viable for 6 months if stored in partly sealed glass jars under high humidity at room temperature, but the best temperature for storage is 40°F (5 C). They are washed and planted in flats or pots soon after removal from the fruit and the seedlings are transplanted when 6 to 7 in (15-17.5 cm) high to nursery rows. When the stem is 1/2 in (1.25 cm) thick at the base, the seedlings are ready to be top-worked. In India, inarching is commonly practiced but budding and grafting are more popular in most other areas. Shield budding, using 3-month-old scions, is successful. Cleft-grafting has been a common practice in Florida. Veneer-grafting in April has proved to be a superior method in Pakistan. Cuttings are not easy to root. Air-layering may be only 20% successful, though 80 to 100% of the layers root in 6 weeks if treated with 3% NAA (2-naphthoxyacetic acid). Trees that are vegetatively propagated will begin to bear fruit in 5 years or less, as compared to 8 to 10 years in seedling trees. Old seedling trees can be converted by cutting back severely and inserting budwood of a preferred cultivar."

607	Minimum generative time (years)	2
	Source(s)	Notes
	Orwa C., Mutua, A., Kindt R., Jamnadass, R, & Anthony, S. 2009 <i>Agroforestry Database: a tree reference and selection guide</i> version 4.0. http://www.worldagroforestry.org . [Accessed]	"Cloned trees flower readily within 1-2 years, but worthwhile fruit set takes a few more years."
	Morton, J.F. 1987. <i>Fruits of Warm Climates</i> . J.F. Morton, Miami, FL	"Trees that are vegetatively propagated will begin to bear fruit in 5 years or less, as compared to 8 to 10 years in seedling trees."

Qsn #	Question	Answer
701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	y
	Source(s)	Notes
	Weedbusters. 2017. Loquat - <i>Eriobotrya japonica</i> . http://www.weedbusters.org.nz/weed-information/eriobotrya-japonica/59/ . [Accessed 11 May 2017]	"Spread by birds, especially New Zealand pigeon, and humans, and in dumped vegetation. Gardens, wastelands, and exotic plantations are common seed sources."

702	Propagules dispersed intentionally by people	y
	Source(s)	Notes
	Lim, T.K. (2012). Edible Medicinal and Non-Medicinal Plants. Volume 4, Fruits. Springer, New York	"It is widely cultivated along the Yangtze River and southwards especially in Suzhou. It was introduced to Japan by Buddhist monks in the Tang dynasty. Loquat is widely cultivated in suitable areas in subtropical to warm-temperate zones and in the tropics in the highlands. Besides China, other centres of production are in east Asia (Japan), south Asia (India), Australia, South Africa, Central and South America (Brazil) and around the Mediterranean Sea."

703	Propagules likely to disperse as a produce contaminant	n
	Source(s)	Notes
	CAB International, 2005. Forestry Compendium. CAB International, Wallingford, UK	"It is planted for commercial use in the Mediterranean, Australia, South Africa, South America, USA and India (Verheij and Coronel, 1991). In South-East Asia it is primarily planted in home-gardens. Its flowers and leaves have medicinal value and relieve flu symptoms."
	Weedbusters. 2017. Loquat - <i>Eriobotrya japonica</i> . http://www.weedbusters.org.nz/weed-information/eriobotrya-japonica/59/ . [Accessed 11 May 2017]	"Spread by birds, especially New Zealand pigeon, and humans, and in dumped vegetation. Gardens, wastelands, and exotic plantations are common seed sources. "

704	Propagules adapted to wind dispersal	n
	Source(s)	Notes
	Lim, T.K. (2012). Edible Medicinal and Non-Medicinal Plants. Volume 4, Fruits. Springer, New York	"Fruit occurs in clusters of 4–30, green (Plates 3 and 4) turning to yellow or orangey-yellow, globose or obovate, 3–4 cm by 2–5 cm across, skin leathery rusty tomentose later glabrescent, juicy pulp, sweet to sub acid (Plates 5 , 6 , 7). Seed is usually 1-3-(5), brown, angular-ellipsoid, 15 mm by 8 mm (Plate 7)."

705	Propagules water dispersed	
	Source(s)	Notes
	Queensland Government. (2017). Weeds of Australia. <i>Eriobotrya japonica</i> . http://keyserver.lucidcentral.org/ . [Accessed 11 May 2017]	[Distribution along waterways suggests possible secondary dispersal by water] "Loquat (<i>Eriobotrya japonica</i>) has mainly become naturalised in dry sclerophyll forests and along waterways in these regions. It has also been recorded in conservation areas in Queensland (e.g. Tugun Hill Conservation Area on the Gold Coast) and New South Wales (e.g. Heinrich Reserve in the Sydney region)."

Qsn #	Question	Answer
706	Propagules bird dispersed	y
	Source(s)	Notes
	Carleton, A. R., & Owre, O. T. (1975). The red-whiskered bulbul in Florida: 1960-71. <i>The Auk</i> , 92: 40-57	"Citrus, mangos, and avocados were of special interest. The largest fruits we saw wild birds eat were fleshy pomes (3 or 4 cm in diameter) of the exotic loquat (<i>Eriobotrya japonica</i>), which man consumes in Asia but seldom harvests in Florida. The birds ate this fruit when it became overripe, probing into it and gobbling from mushy areas."
	Orwa C., Mutua, A., Kindt R., Jamnadass, R, & Anthony, S. 2009 <i>Agroforestry Database: a tree reference and selection guide version 4.0.</i> http://www.worldagroforestry.org . [Accessed 11 May 2017]	"Fruits borne in clusters, commonly round, oval or pyriform, 2.5-8 cm in length, pale yellow to orange, somewhat downy on the surface; skin about as thick as that of a peach, but slightly tougher; flesh firm and fleshy in some varieties, melting in others, the colour ranging from almost white to deep orange, juicy and with subacid flavour; seeds 4-10, brownish, oblong, 1-2 cm long." ... "Birds and bats disperse the fruit."
	Csurhes, S. & Edwards, R. 1998. Potential environmental weeds in Australia: Candidate species for preventative control. Biodiversity Group, Environment Australia, Canberra, Australia	"The fruit is sweet, orangeyellow and contains a large, brown seed (probably dispersed by birds)."
	Guix, J. C. (2007). The role of alien plants in the composition of fruit eating bird assemblages in Brazilian urban ecosystems. <i>Orsis</i> 22: 087-104	"The major ecological consequence of fruit-eating bird movements into urban areas is that most of these birds can transport viable seeds of alien species in the gut and disperse them in natural and semi-natural areas (see also Guix et al., 2000a, 2000b for Mediterranean areas). In fact, several of these plants (e.g. <i>Coffea</i> spp.; <i>Psidium guajava</i> , <i>Pittosporum</i> spp., <i>Eriobotrya japonica</i> , <i>Morus nigra</i> , <i>Archontophoenix cunninghamiana</i> , <i>Ligustrum lucidum</i>) can colonize successfully protected areas (Guix, 1996)."
	Morton, J.F. 1976. Pestiferous spread of many ornamental and fruit species in South Florida. <i>Proceedings of the Florida State Horticultural Society</i> 89: 348-353	"The massive invasion of large tracts of South Florida by <i>Melaleuca quinquenervia</i> and <i>Casuarina equisetifolia</i> from Australia and <i>Schinus terebinthifolius</i> from Brazil is an environmental problem now receiving serious attention. There are dozens of other introduced ornamental plants and fruit trees which have been multiplying spontaneously in our area for many years or have recently become conspicuous as weeds on private and public properties—some because of seed distribution by exotic birds new to our fauna. Outstanding examples are <i>Cestrum diurnum</i> , <i>Bischofia javanica</i> , <i>Washingtonia robusta</i> , <i>Ptychosperma elegans</i> , <i>Murraya paniculata</i> , <i>Eriobotrya japonica</i> , <i>Pouteria campechiana</i> and <i>Pithecellobium dulce</i> ."

707	Propagules dispersed by other animals (externally)	n
	Source(s)	Notes
	Lim, T.K. (2012). <i>Edible Medicinal and Non-Medicinal Plants. Volume 4, Fruits.</i> Springer, New York	[No means of external attachment] "Fruit occurs in clusters of 4–30, green (Plates 3 and 4) turning to yellow or orangey-yellow, globose or obovate, 3–4 cm by 2–5 cm across, skin leathery rusty tomentose later glabrescent, juicy pulp, sweet to sub acid (Plates 5 , 6 , 7). Seed is usually 1-3-(5), brown, angular-ellipsoid, 15 mm by 8 mm (Plate 7)."

Qsn #	Question	Answer
708	Propagules survive passage through the gut	y
	Source(s)	Notes
	Traveset, A. (1998). Effect of seed passage through vertebrate frugivores' guts on germination: a review. <i>Perspectives in Plant Ecology, Evolution and Systematics</i> , 1 (2), 151-190	"Appendix. List of plant species that have been tested for an effect of seed ingestion by frugivores on germination performance. The first symbol in the "Effect" column represents percentage of germination while the second symbol refers to germination rate (+, enhancement; -, inhibition; 0, neutral)" [<i>Eriobotrya japonica</i> - Effect = +0]
	Izhaki, I., Korine, C., & Arad, Z. (1995). The effect of bat (<i>Rousettus aegyptiacus</i>) dispersal on seed germination in eastern Mediterranean habitats. <i>Oecologia</i> , 101(3), 335-342	"Ripe fruits from six species of plants (carob, <i>Ceratonia siliqua</i> L.; loquat, <i>Eriobotrya japonica</i> ; fig, <i>Ficus carica</i> L.; mulberry, <i>Morus nigra</i> , which are naturally consumed by bats in Israel,"
	Guix, J. C. (2007). The role of alien plants in the composition of fruit eating bird assemblages in Brazilian urban ecosystems. <i>Orsis</i> 22: 087-104	[Presumably Yes] "The major ecological consequence of fruit-eating bird movements into urban areas is that most of these birds can transport viable seeds of alien species in the gut and disperse them in natural and semi-natural areas (see also Guix et al., 2000a, 2000b for Mediterranean areas). In fact, several of these plants (e.g. <i>Coffea</i> spp.; <i>Psidium guajava</i> , <i>Pittosporum</i> spp., <i>Eriobotrya japonica</i> , <i>Morus nigra</i> , <i>Archontophoenix cunninghamiana</i> , <i>Ligustrum lucidum</i>) can colonize successfully protected areas (Guix, 1996)."

801	Prolific seed production (>1000/m2)	n
	Source(s)	Notes
	Dehgan, B. (1998) <i>Landscape Plants for Subtropical Climates</i> . University Press of Florida, Gainesville, FL	"Fruit a pome to 2 inches long, yellowish tp orange, several seeded, edible" [large fruit with few seeds]
	Morton, J.F. 1987. <i>Fruits of Warm Climates</i> . J.F. Morton, Miami, FL	"There may be 1 to 10 seeds, though, ordinarily, only 3 to 5, dark-brown or light-brown, angular -ellipsoid, about 5/8 in (1.5 cm) long and 5/16 in (8 mm) thick."

802	Evidence that a persistent propagule bank is formed (>1 yr)	n
	Source(s)	Notes
	Polat, A. A. (1997) Determination of germination rate coefficients of loquat seeds and their embryos stratified in various media for different durations. <i>Turkish Journal of Agriculture and Forestry</i> , 21 (3), 219-224	"AB: Seeds of the loquat cultivars Gold Nugget and Tanaka were stratified at 4 deg C or kept at room temperature for 15 or 30 days before germination. Stratified seeds and embryos from them germinated more rapidly than unstratified seeds and embryos. The germination rate coefficient of seeds kept at room temperature was higher than that of seeds stratified at 4 deg , while embryos of stratified seeds had a higher germination coefficient than those kept at room temperature. Seeds stored for 30 days, whether at low temperature or not, and the embryos obtained from them germinated more rapidly than those stored for 15 days."
	Morton, J.F. 1987. <i>Fruits of Warm Climates</i> . J.F. Morton, Miami, FL	"Loquat seeds remain viable for 6 months if stored in partly sealed glass jars under high humidity at room temperature, but the best temperature for storage is 40°F (5°C). They are washed and planted in flats or pots soon after removal from the fruit and the seedlings are transplanted when 6 to 7 in (15-17.5 cm) high to nursery rows."

Qsn #	Question	Answer
803	Well controlled by herbicides	y
	Source(s)	Notes
	Weatherspoon, D. M. & Currey, W. L. (1978) Herbicide phytotoxicity evaluations for woody ornamentals. HortScience, 13(3): 357	"Herbicides were evaluated on several woody ornamental species from 1974 to '78. The best results with container-grown plants were achieved by oxadiazon and trifluralin with butralin, oxyfluorfen and prodiamine showing promise."; " Excessive phytotoxicity resulted from perfluidone on dogwood, loquat (<i>Eriobotrya japonica</i>) and ivy,"
	Motooka, P., Castro, L., Nelson, D., Nagai, G. & Ching, L. 2003. Weeds of Hawaii's Pastures and Natural Areas: An Identification and Management Guide. CTAHR, UH Manoa, Honolulu, HI	"Management: Katie Cassel (Kökeÿe Museum) reported application of 20% triclopyr ester product in diesel to cut surfaces effective. The same solution applied basal bark is also effective."
	Weedbusters. 2017. Loquat - <i>Eriobotrya japonica</i> . http://www.weedbusters.org.nz/weed-information/eriobotrya-japonica/59/ . [Accessed 11 May 2017]	"What can I do to get rid of it? Easy to kill. 1. Hand pull or dig small seedlings (all year round). Leave on site to rot down. 2. Ringbark large trees (all year round), leave to die standing. 3. Cut down big plants close to ground (all year round). Leave on site to rot down. 4. Cut and squirt (all year round): 1 cut /100 mm of trunk, apply 1g metsulfuron-methyl 600g/kg per cut. 5. Spray (spring-summer): metsulfuron-methyl 600g/kg (5g/10L). "

804	Tolerates, or benefits from, mutilation, cultivation, or fire	
	Source(s)	Notes
	Kubiak, P. J. 2009. Fire responses of bushland plants after the January 1994 wildfires in northern Sydney. <i>Cunninghamia</i> , 11(1): 131-165	"Appendix 1. Observations on fire responses (after 100% leaf scorch) of vascular plants in the Lane Cove River (LCR) (observations mainly Jan 1994 – Oct 1999) and Narrabeen Lagoon (NL) (Mar – Oct 1994) catchments, following the fires of January 1994." [<i>Eriobotrya japonica</i> k = a small proportion of adult plants of this species were killed by the fires]
	Weedbusters. 2017. Loquat - <i>Eriobotrya japonica</i> . http://www.weedbusters.org.nz/weed-information/eriobotrya-japonica/59/ . [Accessed 11 May 2017]	[Stumps rarely resprout] "What can I do to stop it coming back? Cut stumps rarely resprout. Reseeds in bared areas. Plan for considerable seedling growth after control, dense planting can prevent this. Remove from gardens near to valuable habitats. "

805	Effective natural enemies present locally (e.g. introduced biocontrol agents)	
	Source(s)	Notes
	Staples, G.W. & Herbst, D.R. 2005. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	"Scales on the foliage can be a problem, but the major pest of loquat is the fruit fly, which ruins the fruit unless it is sprayed." [Unknown. Does not appear to limit ability to naturalize in Hawaiian Islands]

Summary of Risk Traits:

High Risk / Undesirable Traits

- Elevation range exceeds 1000 m, demonstrating environmental versatility
- Grows in subtropical to temperate climates
- Naturalized in Hawaiian Islands and elsewhere
- An environmental weed in Australia and New Zealand
- Seeds potentially toxic
- Host of fruit pests
- Moderately shade tolerant
- Tolerates many soil types
- May form dense stands in New Zealand
- Reproduces by seeds
- May reach maturity in 2 years (more commonly 5+ years)
- Seeds dispersed by birds, other frugivorous animals, humans and in dumped garden waste

Low Risk Traits

- Unarmed (no spines, thorns, or burrs)
- Provides fodder for livestock
- Ornamental & edible uses
- Varieties may be self-incompatible
- Not reported to spread vegetatively
- Seeds lose viability within 6 months
- Herbicides may provide effective control