

**Family:** Rosaceae

**Taxon:** *Pyracantha koidzumii*

**Synonym:** *Cotoneaster koidzumii* Hayata (basionym)      **Common Name** Formosa firethorn  
tan wan huo ji

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

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)	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)	n
305	Congeneric weed	n=0, y = 1*multiplier (see Appendix 2)	y
401	Produces spines, thorns or burrs	y=1, n=0	y
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	n
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	
605	Requires specialist pollinators	y=-1, n=0	n
606	Reproduction by vegetative fragmentation	y=1, n=-1	n
607	Minimum generative time (years)	1 year = 1, 2 or 3 years = 0, 4+ years = -1	2
701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	y=1, n=-1	n
702	Propagules dispersed intentionally by people	y=1, n=-1	y
703	Propagules likely to disperse as a produce contaminant	y=1, n=-1	n
704	Propagules adapted to wind dispersal	y=1, n=-1	n
705	Propagules water dispersed	y=1, n=-1	
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	
802	Evidence that a persistent propagule bank is formed (>1 yr)	y=1, n=-1	
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: H(HPWRA)

WRA Score 7

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**Supporting Data:**

101	2010. Nesom, G.L.. <i>Pyracantha</i> (Rosaceae) naturalized in Texas and the Southeastern United States. <i>Phytoneuron</i> . 2: 1-6.	"At least 23 cultivars in the southeastern USA are derived from <i>P. koidzumii</i> (Meyer et al. 1994)."
102	2011. WRA Specialist. Personal Communication.	NA
103	2011. WRA Specialist. Personal Communication.	NA
201	2003. Wu, Z.Y./Raven,P.H./Hong, D.Y. (eds.). <i>Flora of China</i> . Vol. 9 (Pittosporaceae through Connaraceae). Science Press & Missouri Botanical Garden Press, Beijing & St. Louis	"Rocky valley areas, seashores, thickets, among shrubs. Taiwan" [Tropic of Cancer crosses Taiwan; climate is tropical to subtropical]
202	2003. Wu, Z.Y./Raven,P.H./Hong, D.Y. (eds.). <i>Flora of China</i> . Vol. 9 (Pittosporaceae through Connaraceae). Science Press & Missouri Botanical Garden Press, Beijing & St. Louis	"Rocky valley areas, seashores, thickets, among shrubs. Taiwan" [Tropic of Cancer crosses Taiwan; climate is tropical to subtropical]
203	1997. Flint, H.L./Lyverse, J.M.. <i>Landscape plants for eastern North America: exclusive of Florida and the immediate Gulf Coast</i> . John Wiley and Sons, New York, NY	"USDA Zones 7b-9a+"
203	2002. Dirr, M.. <i>Dirr's trees and shrubs for warm climates: an illustrated encyclopedia</i> . Timber Press, Portland, OR	"Zones 8 to 10"
203	2011. Backyard Gardener. <i>Pyracantha koidzumii</i> . <a href="http://www.backyardgardener.com/plantname/pda_a0f3.html">http://www.backyardgardener.com/plantname/pda_a0f3.html</a>	" <i>Pyracantha koidzumii</i> is a large evergreen shrub for warmer climates, not hardy elsewhere."
203	2011. Dave's Garden. <i>PlantFiles: Formosa Firethorn, Taiwan Firethorn</i> . <a href="http://davesgarden.com/guides/pf/go/114611/">http://davesgarden.com/guides/pf/go/114611/</a>	"Hardiness: USDA Zone 7a: to -17.7 °C (0 °F) USDA Zone 7b: to -14.9 °C (5 °F) USDA Zone 8a: to -12.2 °C (10 °F) USDA Zone 8b: to -9.4 °C (15 °F) USDA Zone 9a: to -6.6 °C (20 °F) USDA Zone 9b: to -3.8 °C (25 °F) USDA Zone 10b: to 1.7 °C (35 °F)"
204	2003. Starr, F./Starr, K./Loope, L.L.. <i>New plant records from the Hawaiian Archipelago</i> . Bishop Museum Occasional Papers. 74: 23-34.	"Wagner et al. (1990) cited one naturalized species of <i>Pyracantha</i> (firethorn) in Hawai'i, <i>P. angustifolia</i> , which was known to be naturalized on Kaua'i and Hawai'i. Later, Herbarium Pacificum Staff (1999) expanded this to three species, including <i>P. koidzumii</i> , which is endemic to Taiwan and apparently the most commonly cultivated firethorn in Hawai'i. They cite naturalized plants from Koke'e on Kaua'i and the Volcano transfer station on Hawai'i. This thorny, colorful shrub is now also known from Maui where it can be found volunteering in pastures in upper Kula. Material examined: MAUI: E. Maui, Kula, crest of Kekaulike Ave, scattered individuals found throughout pastures, in association with <i>Pennisetum clandestinum</i> and <i>Jacaranda mimosifolia</i> , 3720 ft [1134 m], 31 Aug 2000, Starr & Martz 000831-7." [naturalized in Hawaiian Islands]
205	2010. Wrede, J.. <i>Trees, Shrubs, and Vines of the Texas Hill Country</i> . 2nd Edition. Texas A&M University Press, College Station, Texas	"widely cultivated and escaped into the wild in numerous places."
301	2003. Starr, F./Starr, K./Loope, L.L.. <i>New plant records from the Hawaiian Archipelago</i> . Bishop Museum Occasional Papers. 74: 23-34.	"Wagner et al. (1990) cited one naturalized species of <i>Pyracantha</i> (firethorn) in Hawai'i, <i>P. angustifolia</i> , which was known to be naturalized on Kaua'i and Hawai'i. Later, Herbarium Pacificum Staff (1999) expanded this to three species, including <i>P. koidzumii</i> , which is endemic to Taiwan and apparently the most commonly cultivated firethorn in Hawai'i. They cite naturalized plants from Koke'e on Kaua'i and the Volcano transfer station on Hawai'i. This thorny, colorful shrub is now also known from Maui where it can be found volunteering in pastures in upper Kula. Material examined: MAUI: E. Maui, Kula, crest of Kekaulike Ave, scattered individuals found throughout pastures, in association with <i>Pennisetum clandestinum</i> and <i>Jacaranda mimosifolia</i> , 3720 ft [1134 m], 31 Aug 2000, Starr & Martz 000831-7."
301	2010. Nesom, G.L.. <i>Pyracantha</i> (Rosaceae) naturalized in Texas and the Southeastern United States. <i>Phytoneuron</i> . 2: 1-6.	"Also naturalized in Arizona and Florida (fide PLANTS Database). Images of <i>P. koidzumii</i> collections from Florida are available on the Atlas of Florida Vascular Plants (Wunderlin & Hansen 2008): Citrus Co. (Lakela 25802), Hernando Co. (Correll 52541), Hillsborough Co. (King 66), Okaloosa Co. (Wilhelm 11495), Pasco Co. (Wise 249), Suwannee Co. (Whetstone 14335), and Walton Co. (Wilhelm 8091). Naturalized in California: Ventura Co., Oak View, escape from cultivation in brushy strip under Ventura River bluff N of and near Santa Ana Blvd crossing, 23 Oct 1963, Pollard s.n. (TEX). Native to Taiwan; naturalized in Australia, Hawaii."

302	2002. Dirr, M.. Dirr's trees and shrubs for warm climates: an illustrated encyclopedia. Timber Press, Portland, OR	"Pyracanthas in general have descended from favor due to rampaging growth, spiny branches, and insect and disease problems."
302	2007. Randall, R.P.. Global Compendium of Weeds - <i>Pyracantha koidzumii</i> [Online Database]. <a href="http://www.hear.org/gcw/species/pyracantha_koidzumii/">http://www.hear.org/gcw/species/pyracantha_koidzumii/</a>	"cultivation escape, environmental weed, garden thug, naturalised, weed "
302	2008. Benitez, D.M./Belfield, T./Loh, R./Pratt, L./Christie, A.D.. Inventory of Vascular Plants of the Kahuku Addition, Hawaii Volcanoes National Park. Technical Report 157. Pacific Cooperative Studies Unit, Honolulu, HI	"Seven invasive shrub species originally targeted for mapping were not found in Kahuku: plume poppy ( <i>Bocconia frutescens</i> ), smoke bush ( <i>Buddleja madagascariensis</i> ), Koster's curse ( <i>Clidemia hirta</i> ), firethorn ( <i>Pyracantha koidzumii</i> and <i>P. crenatoserrata</i> ), yellow Himalayan raspberry ( <i>Rubus ellipticus</i> ), Jerusalem cherry ( <i>Solanum pseudocapsicum</i> ), and tibouchina ( <i>Tibouchina</i> spp.) These species are all capable of rapidly increasing their population sizes in natural areas of Hawai'i."
302	2010. Miller, J.H./Chambliss, E.B./Loewenstein, N.J.. A Field Guide for the Identification of Invasive Plants in Southern Forests. General Technical Report SRS-119. USDA Forest Service, Southern Research Station, Asheville, NC	"Other Nonnative Plants Invading Southern Forests and Their Margins, Openings, Waterway Margins, Wetlands, and Stream, River, and Lake Banks" [ <i>P. koidzumii</i> listed under invasive shrubs]
302	2010. Wrede, J.. Trees, Shrubs, and Vines of the Texas Hill Country. 2nd Edition. Texas A&M University Press, College Station, Texas	"widely cultivated and escaped into the wild in numerous places...Unfortunately, the birds have spread the seeds of this plant, so it is now found invading pastures, woodlands, and fencerows throughout the Texas Hill Country and beyond."
302	2011. Learn 2 Grow. Plant Search - <i>Pyracantha koidzumii</i> . <a href="http://www.learn2grow.com/plants/pyracantha-koidzumii/">http://www.learn2grow.com/plants/pyracantha-koidzumii/</a>	"Formosa firethorn has escaped gardens in Australia, Hawaii, the southern United States, and other areas, and is sometimes considered a weed."
302	2011. WRA Specialist. Personal Communication.	Most evidence suggests that, where naturalized, this shrub is a nuisance plant or a minor weed, with no documentation of negative agricultural or ecological impacts. Further evidence may change this designation.
303	2007. Randall, R.P.. Global Compendium of Weeds - <i>Pyracantha koidzumii</i> [Online Database]. <a href="http://www.hear.org/gcw/species/pyracantha_koidzumii/">http://www.hear.org/gcw/species/pyracantha_koidzumii/</a>	No evidence
304	2007. Randall, R.P.. Global Compendium of Weeds - <i>Pyracantha koidzumii</i> [Online Database]. <a href="http://www.hear.org/gcw/species/pyracantha_koidzumii/">http://www.hear.org/gcw/species/pyracantha_koidzumii/</a>	"cultivation escape, environmental weed, garden thug, naturalised, weed " [No description of environmental impacts. See 3.02]
305	2008. Giantomasi, A./Tecco, P.A./Funes, G./Gurvich, D.E./Cabido, M.. Canopy effects of the invasive shrub <i>Pyracantha angustifolia</i> on seed bank composition, richness and density in a montane shrubland (Cordoba, Argentina). <i>Austral Ecology</i> . 33: 68-77.	" <i>Pyracantha angustifolia</i> is an invasive weed in Argentina where it affects woody recruitment, and enhances the recruitment of other woody species."
401	2003. Wu, Z.Y./Raven, P.H./Hong, D.Y. (eds.). <i>Flora of China</i> . Vol. 9 (Pittosporaceae through Connaraceae). Science Press & Missouri Botanical Garden Press, Beijing & St. Louis	"Shrubs caespitose. Branchlets dark gray, often thornlike, initially pubescent, glabrous when old"
401	2010. Wrede, J.. Trees, Shrubs, and Vines of the Texas Hill Country. 2nd Edition. Texas A&M University Press, College Station, Texas	"A large, gangly, thorny, evergreen bush with bright red fall berries."
402	2003. Wu, Z.Y./Raven, P.H./Hong, D.Y. (eds.). <i>Flora of China</i> . Vol. 9 (Pittosporaceae through Connaraceae). Science Press & Missouri Botanical Garden Press, Beijing & St. Louis	No evidence
403	2003. Wu, Z.Y./Raven, P.H./Hong, D.Y. (eds.). <i>Flora of China</i> . Vol. 9 (Pittosporaceae through Connaraceae). Science Press & Missouri Botanical Garden Press, Beijing & St. Louis	"Shrubs caespitose" [not parasitic]

404	2011. Backyard Gardener. <i>Pyracantha koidzumii</i> . <a href="http://www.backyardgardener.com/plantname/pda_a0f3.html">http://www.backyardgardener.com/plantname/pda_a0f3.html</a>	"Tolerances: deer, heat & humidity, rabbits, slope" [thorns may deter browsing]
404	2011. My Own Personal Jungle. Resisting Deer. <a href="http://www.personaljungle.com/?p=488">http://www.personaljungle.com/?p=488</a>	"A sampling of my personal list of what deer will and won't eat:" [list includes <i>Pyracantha koidzumii</i> among those plants that deer will eat]
405	1986. Fuller, T.C./McClintock, E.M.. Poisonous plants of California: Issue 53 of California natural history guides. University of California Press, Berkeley and Los Angeles, CA	"The seeds of <i>Pyracantha</i> are known to produce small amounts of hydrogen cyanide."
405	2005. De Ruff, R.. The Vascular Plants of Upper Newport Bay, Orange County, California. <a href="http://nathistoc.bio.uci.edu/Plants%20of%20Upper%20Newport%20Bay%20%28Robert%20De%20Ruff%29/Plants%20of%20Upper%20Newport%20Bay.htm">http://nathistoc.bio.uci.edu/Plants%20of%20Upper%20Newport%20Bay%20%28Robert%20De%20Ruff%29/Plants%20of%20Upper%20Newport%20Bay.htm</a>	" <i>Pyracantha</i> berries taste awful but they are not poisonous."
405	2009. Sarkar, A.. Herbal Toxicology. Discovery Publishing House, New Delhi, India	"The berries of <i>Pyracantha</i> , however, have been shown by experiments to be nontoxic in four species of laboratory animals. At present there is no reason to assume that <i>Pyracantha</i> berries are poisonous to man." [no evidence of toxicity to animals or humans]
406	2004. Odenwald, N.G./Fryling, C.F./Pope, T.E.. Plants for American Landscapes. LSU Press, Baton Rouge, LA	"Lace bug, spider mites, and fire blight may be problems." [common pests of a broad range of species]
406	2005. USDA Forest Service. Forest Insect and Disease Conditions in the United States 2004. <a href="http://www.fs.fed.us/foresthealth/current_conditions.shtml">www.fs.fed.us/foresthealth/current_conditions.shtml</a>	"Sudden Oak Death – Caused by <i>Phytophthora ramorum</i> , this recently recognized disease is killing oaks and other plant species in California and a small portion of southwestern Oregon...Table of Plants Associated with <i>Phytophthora ramorum</i> in the United States, 2004" [includes <i>P. koidzumii</i> ]
406	2011. Backyard Gardener. <i>Pyracantha koidzumii</i> . <a href="http://www.backyardgardener.com/plantname/pda_a0f3.html">http://www.backyardgardener.com/plantname/pda_a0f3.html</a>	"Can be subject to lacebug, scab, blight, scale and leaf rollers."
407	1986. Fuller, T.C./McClintock, E.M.. Poisonous plants of California: Issue 53 of California natural history guides. University of California Press, Berkeley and Los Angeles, CA	"The seeds of <i>Pyracantha</i> are known to produce small amounts of hydrogen cyanide."
407	2009. Sarkar, A.. Herbal Toxicology. Discovery Publishing House, New Delhi, India	"The berries of <i>Pyracantha</i> , however, have been shown by experiments to be nontoxic in four species of laboratory animals. At present there is no reason to assume that <i>Pyracantha</i> berries are poisonous to man." [no evidence of toxicity to animals or humans]
407	2011. Weedy Connection. Australia - All Weeds - Firethorn. <a href="http://www.weedyconnection.com/database/firethorn.html">http://www.weedyconnection.com/database/firethorn.html</a>	"Although no specific mention has been seen for this species, it belongs to a genus where most, if not all members of the genus produce hydrogen cyanide, a poison that gives almonds their characteristic flavour. This toxin is found mainly in the leaves and seed and is readily detected by its bitter taste. It is usually present in too small a quantity to do any harm but any very bitter seed or fruit should not be eaten. In small quantities, hydrogen cyanide has been shown to stimulate respiration and improve digestion, it is also claimed to be of benefit in the treatment of cancer. In excess, however, it can cause respiratory failure and even death."
408	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.	"Because it is common in dry regions such as northern Mexico, it might do well on the dry, leeward sides of the Islands." [no evidence of increased fire hazards in natural areas, but potential exists if numbers or densities increase in dry areas]
409	2002. Durr, M.. Durr's trees and shrubs for warm climates: an illustrated encyclopedia. Timber Press, Portland, OR	"Full sun, hot, dry locations in well-drained soil suit it best."
409	2011. Backyard Gardener. <i>Pyracantha koidzumii</i> . <a href="http://www.backyardgardener.com/plantname/pda_a0f3.html">http://www.backyardgardener.com/plantname/pda_a0f3.html</a>	"Prefers well drained soil, full sun, and tolerates hot, dry areas."
409	2011. Dave's Garden. PlantFiles: Formosa Firethorn, Taiwan Firethorn. <a href="http://davesgarden.com/guides/pf/go/114611/">http://davesgarden.com/guides/pf/go/114611/</a>	"Sun Exposure: Full Sun"
410	2011. Backyard Gardener. <i>Pyracantha koidzumii</i> . <a href="http://www.backyardgardener.com/plantname/pda_a0f3.html">http://www.backyardgardener.com/plantname/pda_a0f3.html</a>	"pH Range:5 to 7.. Soil Range: Some San to Some Clay"

410	2011. Learn 2 Grow. Plant Search - <i>Pyracantha koidzumii</i> . <a href="http://www.learn2grow.com/plants/pyracantha-koidzumii/">http://www.learn2grow.com/plants/pyracantha-koidzumii/</a>	"Formosa firethorn does best in well-drained soil in full sun, and tolerates a wide variety of soils and exposures once established. "
411	2003. Wu, Z.Y./Raven,P.H./Hong, D.Y. (eds.). Flora of China. Vol. 9 (Pittosporaceae through Connaraceae). Science Press & Missouri Botanical Garden Press, Beijing & St. Louis	"Shrubs caespitose" [not climbing or smothering]
412	2003. Starr, F./Starr, K./Loope, L.L.. New plant records from the Hawaiian Archipelago. Bishop Museum Occasional Papers. 74: 23-34.	"scattered individuals found throughout pastures, in association with <i>Pennisetum clandestinum</i> and <i>Jacaranda mimosifolia</i> " [no evidence to date]
412	2010. Nesom, G.L.. <i>Pyracantha</i> (Rosaceae) naturalized in Texas and the Southeastern United States. <i>Phytoneuron</i> . 2: 1-6.	No evidence
501	2003. Wu, Z.Y./Raven,P.H./Hong, D.Y. (eds.). Flora of China. Vol. 9 (Pittosporaceae through Connaraceae). Science Press & Missouri Botanical Garden Press, Beijing & St. Louis	"Shrubs caespitose" [terrestrial]
502	2003. Wu, Z.Y./Raven,P.H./Hong, D.Y. (eds.). Flora of China. Vol. 9 (Pittosporaceae through Connaraceae). Science Press & Missouri Botanical Garden Press, Beijing & St. Louis	Rosaceae
503	2003. Wu, Z.Y./Raven,P.H./Hong, D.Y. (eds.). Flora of China. Vol. 9 (Pittosporaceae through Connaraceae). Science Press & Missouri Botanical Garden Press, Beijing & St. Louis	Rosaceae [not a nitrogen fixing woody plant]
504	2003. Wu, Z.Y./Raven,P.H./Hong, D.Y. (eds.). Flora of China. Vol. 9 (Pittosporaceae through Connaraceae). Science Press & Missouri Botanical Garden Press, Beijing & St. Louis	"Shrubs caespitose" [not a geophyte]
601	2003. Wu, Z.Y./Raven,P.H./Hong, D.Y. (eds.). Flora of China. Vol. 9 (Pittosporaceae through Connaraceae). Science Press & Missouri Botanical Garden Press, Beijing & St. Louis	No evidence of substantial reproductive failure in native habitat
602	2003. Wu, Z.Y./Raven,P.H./Hong, D.Y. (eds.). Flora of China. Vol. 9 (Pittosporaceae through Connaraceae). Science Press & Missouri Botanical Garden Press, Beijing & St. Louis	"Pome red or orange, globose, with persistent incurved sepals at apex; pyrenes (nutlets) 5."
602	2011. Learn 2 Grow. Plant Search - <i>Pyracantha koidzumii</i> . <a href="http://www.learn2grow.com/plants/pyracantha-koidzumii/">http://www.learn2grow.com/plants/pyracantha-koidzumii/</a>	"Self-Sowing: Yes"
603	2010. Nesom, G.L.. <i>Pyracantha</i> (Rosaceae) naturalized in Texas and the Southeastern United States. <i>Phytoneuron</i> . 2: 1-6.	"Several cultivars are explicitly indicated by Meyer et al. (1994) to be of hybrid origin ( <i>P. koidzumii</i> x <i>P. fortuneana</i> ; <i>P. koidzumii</i> x <i>P. coccinea</i> )." [ability to hybridize naturally unknown]
604	2007. Dickinson, T.A./Lo, E./Talent, N.. Polyploidy, reproductive biology, and Rosaceae: understanding evolution and making classifications. <i>Plant Systematics and Evolution</i> . 266: 59–78.	"Table 2. Genera of Rosaceae subfamily Maloideae, species numbers, ploidy level variation, evidence of apomixis and the breakdown of self-incompatibility (SC) in polyploids" [Unknown. Entry for <i>Pyracantha</i> spp. In table left blank]
605	1992. Fussell, M./Corbet, S.A.. Flower Usage by Bumble-Bees: A Basis for Forage Plant Management. <i>Journal of Applied Ecology</i> . 29(2): 451-465.	"Table 4. Flower taxa visited on more than five walks by each colour group of bumble-bees, ranked in order of group-specific selectivity" [tables includes <i>Pyracantha</i> spp.]
605	1994. Rohrer, J.R./Robertson, K.R./Phipps, J.B.. Floral Morphology of Maloideae (Rosaceae) and its Systematic Relevance. <i>American Journal of Botany</i> . 81(5): 574-581.	"Most maloid flowers produce nectar and have scents... All are presumed to be animal- pollinated..."
605	2002. Frankie, G.W./Thorp, R.W./Schindler, M.H./Ertter, B./Przybylski, M.. Bees in Berkeley?. <i>Fremontia</i> . 30(3-4): 50-58.	"Table 1... <i>Pyracantha</i> spp." [table indicates that <i>Pyracantha</i> species are visited by exotic honeybees with rare to common frequency]
606	2011. WRA Specialist. Personal Communication.	No evidence

607	2011. Learn 2 Grow. Plant Search - <i>Pyracantha koidzumii</i> . <a href="http://www.learn2grow.com/plants/pyracantha-koidzumii/">http://www.learn2grow.com/plants/pyracantha-koidzumii/</a>	"Growth rate: Very Fast" [for a woody shrub, probably 2 to 3 years to flower at minimum]
701	2007. U.S. Fish & Wildlife Service. Cahaba River National Wildlife Refuge Habitat Management Plan. <a href="http://www.fws.gov/cahabariver/Mgmt_Plans.html">http://www.fws.gov/cahabariver/Mgmt_Plans.html</a>	"Roadsides are floristically and structurally similar to successional fields, but typically support a greater plant diversity. Because roads are frequently associated with human habitation, both past and present, roadside plant communities often feature species that have escaped from or persist after cultivation. Examples on the refuge include Chinese wisteria ( <i>Wisteria sinensis</i> ), Rose-of-Sharon ( <i>Hibiscus syriacus</i> ), and Formosa firethorn ( <i>Pyracantha koidzumii</i> )." [displays ability to establish along roadsides, probably due to disturbance. Otherwise, seeds and fruits have no means of external attachment]
702	2002. Dirr, M.. Dirr's trees and shrubs for warm climates: an illustrated encyclopedia. Timber Press, Portland, OR	Ornamental
703	2011. WRA Specialist. Personal Communication.	No evidence, and unlikely, as <i>P. koidzumii</i> is not grown with produce
704	2003. Wu, Z.Y./Raven,P.H./Hong, D.Y. (eds.). Flora of China. Vol. 9 (Pittosporaceae through Connaraceae). Science Press & Missouri Botanical Garden Press, Beijing & St. Louis	"Pome orangish red, depressed-globose, 45 mm." [no adaptations for wind dispersal]
705	2011. Weedy Connection. Australia - All Weeds - Firethorn. <a href="http://www.weedyconnection.com/database/firethorn.html">http://www.weedyconnection.com/database/firethorn.html</a>	"Dispersal: Spread by seed that is mostly bird or water dispersed." [Unknown for <i>P. koidzumii</i> ]
706	2003. Wu, Z.Y./Raven,P.H./Hong, D.Y. (eds.). Flora of China. Vol. 9 (Pittosporaceae through Connaraceae). Science Press & Missouri Botanical Garden Press, Beijing & St. Louis	"Pome orangish red, depressed-globose, 45 mm." [fleshy-fruited; adapted for bird dispersal]
706	2010. Wrede, J.. Trees, Shrubs, and Vines of the Texas Hill Country. 2nd Edition. Texas A&M University Press, College Station, Texas	" <i>Pyracantha</i> 's beautiful red berries make it popular with gardeners and birds. Unfortunately, the birds have spread the seeds of this plant, so it is now found invading pastures, woodlands, and fencerows throughout the Texas Hill Country and beyond."
707	2003. Wu, Z.Y./Raven,P.H./Hong, D.Y. (eds.). Flora of China. Vol. 9 (Pittosporaceae through Connaraceae). Science Press & Missouri Botanical Garden Press, Beijing & St. Louis	"Pome red or orange, globose, with persistent incurved sepals at apex; pyrenes (nutlets) 5." [No means of external attachment, and no evidence of external dispersal by animals]
708	2003. Wu, Z.Y./Raven,P.H./Hong, D.Y. (eds.). Flora of China. Vol. 9 (Pittosporaceae through Connaraceae). Science Press & Missouri Botanical Garden Press, Beijing & St. Louis	"Pome orangish red, depressed-globose, 45 mm." [fleshy-fruited; adapted for bird dispersal]
801	2011. WRA Specialist. Personal Communication.	Unknown
802	2011. WRA Specialist. Personal Communication.	Unknown
803	2003. Weber, E.. Invasive Plant Species of the World. A Reference Guide to Environmental Weeds. CABI Publishing, Wallingford, UK	"Larger plants are cut and the cut stumps treated with herbicide." [herbicide control for <i>P. angustifolia</i> presumably also effective on <i>P. koidzumii</i> ]
804	2004. Odenwald, N.G/Fryling, C.F./Pope, T.E.. Plants for American Landscapes. LSU Press, Baton Rouge, LA	"...a large upright shrub that appears unkempt unless properly pruned...Prune the plant when it is in flower so fruiting wood is left. Maintenance pruning during the growing season is recommended." [tolerates regular pruning]
804	2011. Backyard Gardener. <i>Pyracantha koidzumii</i> . <a href="http://www.backyardgardener.com/plantname/pda_a0f3.html">http://www.backyardgardener.com/plantname/pda_a0f3.html</a>	"The growth habit is multi-stemmed, stiff and upright, needs pruning to be kept tidy."
805	2011. WRA Specialist. Personal Communication.	Unknown