

<b>Taxon:</b> <i>Cordyline fruticosa</i> (L.) A. Chev.	<b>Family:</b> Asparagaceae
<b>Common Name(s):</b> red ti	<b>Synonym(s):</b> <i>Asparagus terminalis</i> L. <i>Cordyline terminalis</i> Kunth <i>Dracaena terminalis</i> Lam. <i>Terminalis fruticosa</i> (L.) Kuntze

<b>Assessor:</b> No Assessor	<b>Status:</b> Assessor Approved	<b>End Date:</b> 25 Apr 2018
<b>WRA Score:</b> 4.0	<b>Designation:</b> EVALUATE	<b>Rating:</b> Evaluate

**Keywords:** Tropical Shrub, Ornamental, Seed-Producing, Bird-Dispersed, Spreads Vegetatively

Qsn #	Question	Answer Option	Answer
101	Is the species highly domesticated?	y=-3, n=0	n
102	Has the species become naturalized where grown?		
103	Does the species have weedy races?		
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		
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		
401	Produces spines, thorns or burrs	y=1, n=0	n
402	Allelopathic		
403	Parasitic	y=1, n=0	n
404	Unpalatable to grazing animals	y=1, n=-1	n
405	Toxic to animals	y=1, n=0	y
406	Host for recognized pests and pathogens		
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

Qsn #	Question	Answer Option	Answer
409	Is a shade tolerant plant at some stage of its life cycle		
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		
604	Self-compatible or apomictic	y=1, n=-1	n
605	Requires specialist pollinators	y=-1, n=0	n
606	Reproduction by vegetative fragmentation	y=1, n=-1	y
607	Minimum generative time (years)		
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	y
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 <sup>2</sup> )	y=1, n=-1	n
802	Evidence that a persistent propagule bank is formed (>1 yr)		
803	Well controlled by herbicides		
804	Tolerates, or benefits from, mutilation, cultivation, or fire	y=1, n=-1	y
805	Effective natural enemies present locally (e.g. introduced biocontrol agents)		

**Supporting Data:**

Qsn #	Question	Answer
101	Is the species highly domesticated?	n
	Source(s)	Notes
	Lim, T.K. 2015. Edible Medicinal And Non-Medicinal Plants. Volume 9, Modified Stems, Roots, Bulbs. Springer, Dordrecht	"The species is believed to have originated in Southeast Asia and Papua New Guinea, but was carried throughout much of the Pacific by early Polynesians. It is now widely cultivated and sometimes naturalised in these areas including northeastern Australia, New Zealand and the Pacific Islands." [General description for <i>Cordyline fruticosa</i> ]
	Clay, H.F. & Hubbard, J.C. 1987. The Hawaii Garden: Tropical Exotics. University of Hawaii Press, Honolulu, HI	[Red ti not domesticated] "Red ti is native to Malaysia, Indonesia, and other tropical South Pacific islands. It is almost identical with green ti (also classified as <i>Cordyline terminalis</i> ), except for the notable face that it has kept the ability to produce seeds, whereas the green ti has lost this ability."

102	Has the species become naturalized where grown?	
	Source(s)	Notes
	WRA Specialist. 2018. Personal Communication	NA

103	Does the species have weedy races?	
	Source(s)	Notes
	WRA Specialist. 2018. Personal Communication	NA

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
	Clay, H.F. & Hubbard, J.C. 1987. The Hawaii Garden: Tropical Exotics. University of Hawaii Press, Honolulu, HI	"Red ti is native to Malaysia, Indonesia, and other tropical South Pacific islands."

202	Quality of climate match data	High
	Source(s)	Notes
	Clay, H.F. & Hubbard, J.C. 1987. The Hawaii Garden: Tropical Exotics. University of Hawaii Press, Honolulu, HI	

203	Broad climate suitability (environmental versatility)	n
	Source(s)	Notes
	Lim, T.K. 2015. Edible Medicinal And Non-Medicinal Plants. Volume 9, Modified Stems, Roots, Bulbs. Springer, Dordrecht	"Being a tropical species, the plant thrives in a warm and humid environment from the lowlands to the mountainous areas with mean annual temperatures of 18–30 °C."
	Clay, H.F. & Hubbard, J.C. 1987. The Hawaii Garden: Tropical Exotics. University of Hawaii Press, Honolulu, HI	"Very adaptable; will grow in almost any place that is protected from heavy winds. Grows best in cool, moist, wind-free locations, in soil rich in humus and with constant water supply."

Qsn #	Question	Answer
	Wagner, W.L., Herbst, D.R.& Sohmer, S.H. 1999. Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	[Ti naturalized at elevations below 1000 m] "in Hawai'i a Polynesian introduction, extensively cultivated and occurring widely in hala forest, mesic valleys, and mesic forest, 5-610 m, on all of the main islands except Kaho'olawe"

204	<b>Native or naturalized in regions with tropical or subtropical climates</b>	y
	<b>Source(s)</b>	<b>Notes</b>
	Clay, H.F. & Hubbard, J.C. 1987. The Hawaii Garden: Tropical Exotics. University of Hawaii Press, Honolulu, HI	"Red ti is native to Malaysia, Indonesia, and other tropical South Pacific islands."

205	<b>Does the species have a history of repeated introductions outside its natural range?</b>	y
	<b>Source(s)</b>	<b>Notes</b>
	Lim, T.K. 2015. Edible Medicinal And Non-Medicinal Plants. Volume 9, Modified Stems, Roots, Bulbs. Springer, Dordrecht	"It is now widely cultivated and sometimes naturalised in these areas including northeastern Australia, New Zealand and the Pacific Islands."
	Wagner, W.L., Herbst, D.R.& Sohmer, S.H. 1999. Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	"widely spread by early human migrations; in Hawai'i a Polynesian introduction, extensively cultivated"
	Clay, H.F. & Hubbard, J.C. 1987. The Hawaii Garden: Tropical Exotics. University of Hawaii Press, Honolulu, HI	[Cultivated in Hawaiian Islands] "Many Hawaiians believe that a red ti grown near the home is an open invitation to misfortune. Malays believe the opposite: to them, a red-leafed ti dispels evil spirits."

301	<b>Naturalized beyond native range</b>	y
	<b>Source(s)</b>	<b>Notes</b>
	Wagner, W.L., Herbst, D.R.& Sohmer, S.H. 1999. Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	"widely spread by early human migrations; in Hawai'i a Polynesian introduction, extensively cultivated and occurring widely in hala forest, mesic valleys, and mesic forest, 5-610 m, on all of the main islands except Kaho'olawe" [Cordyline fruticosa has naturalized]

302	<b>Garden/amenity/disturbance weed</b>	
	<b>Source(s)</b>	<b>Notes</b>
	CABI. 2018. Invasive Species Compendium. Wallingford, UK: CAB International. www.cabi.org/isc	"C. fruticosa is an evergreen flowering plant that has become essentially pantropical. It is widespread in the Pacific Islands, Australia and tropical Asia (Little and Skolmen, 2003). Usually it is closely associated with settlements and occurs in gardens and hedges, but sometimes it has become naturalized in wild areas, spreading by seed and cuttings of stems or rhizomes. It is a common houseplant and this leads to dispersal in warm temperate areas when discarded. There are no reports that it damages native vegetation."
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	Cordyline fruticosa, Cordyline rubra, Cordyline stricta, & Cordyline terminalis listed as naturalized and/or weeds, but impacts are minimal or unspecified

Qsn #	Question	Answer
303	<b>Agricultural/forestry/horticultural weed</b>	n
	<b>Source(s)</b>	<b>Notes</b>
	CABI. 2018. Invasive Species Compendium. Wallingford , UK: CAB International. www.cabi.org/isc	[No evidence of impacts to agriculture] "C. fruticosa appears to be an entirely benign invasive species in ecological terms. It could potentially invade crops by being fragmented by ploughing, but there are no reports of this."
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	No evidence

304	<b>Environmental weed</b>	n
	<b>Source(s)</b>	<b>Notes</b>
	CABI. 2018. Invasive Species Compendium. Wallingford , UK: CAB International. www.cabi.org/isc	"C. fruticosa is an evergreen flowering plant that has become essentially pantropical. It is widespread in the Pacific Islands, Australia and tropical Asia (Little and Skolmen, 2003). Usually it is closely associated with settlements and occurs in gardens and hedges, but sometimes it has become naturalized in wild areas, spreading by seed and cuttings of stems or rhizomes. It is a common houseplant and this leads to dispersal in warm temperate areas when discarded. There are no reports that it damages native vegetation."

305	<b>Congeneric weed</b>	
	<b>Source(s)</b>	<b>Notes</b>
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	<i>Cordyline fruticosa</i> , <i>Cordyline rubra</i> , <i>Cordyline stricta</i> , & <i>Cordyline terminalis</i> listed as naturalized and/or weeds, but impacts are minimal or unspecified

401	<b>Produces spines, thorns or burrs</b>	n
	<b>Source(s)</b>	<b>Notes</b>
	Clay, H.F. & Hubbard, J.C. 1987. The Hawaii Garden: Tropical Exotics. University of Hawaii Press, Honolulu, HI	[No evidence] "An erect, woody, evergreen plant that can grow to 12 feet or more in height. Single or multiple stems support clusters of 18-inch-long, glossy, spatulate leaves."

402	<b>Allelopathic</b>	
	<b>Source(s)</b>	<b>Notes</b>
	Nawaz, H., Hussain, N., Yasmeen, A., Alam, S., & Nasrullah, H. M. (2013-14). Screening Faisalabad flora for allelopathic potential. <i>Journal of Research (Science)</i> 24-25 (1-4): 1-23	"Table 5: Allelopathic potential of selected plant species against lettuce ( <i>Lactuca sativa</i> L.)" [ <i>Cordyline terminalis</i> extracts exhibit some allelopathic effects]

Qsn #	Question	Answer
403	Parasitic	n
	Source(s)	Notes
	Clay, H.F. & Hubbard, J.C. 1987. The Hawaii Garden: Tropical Exotics. University of Hawaii Press, Honolulu, HI	"An erect, woody, evergreen plant that can grow to 12 feet or more in height. Single or multiple stems support clusters of 18-inch-long, glossy, spatulate leaves." [Asparagaceae. No evidence]

404	Unpalatable to grazing animals	n
	Source(s)	Notes
	Forsyth, D. M., Coomes, D. A., Nugent, G., & Hall, G. M. J. (2002). Diet and diet preferences of introduced ungulates (Order: Artiodactyla) in New Zealand. <i>New Zealand Journal of Zoology</i> , 29 (4): 323-343	"Appendix Indigenous plants recorded in the diet of ungulates in New Zealand, and where available, the preference(s) of ungulates for that species." [Cordyline spp. consumed by ungulates]
	Kobayashi, K., Griffis, J., Kawabata, A. & Sako, G. 2007. Hawaiian Ti. <i>Ornamentals and Flowers</i> . OF-33. CTAHR, UH Manoa, Honolulu, HI	"Leaves have been used as thatch for houses, rain capes, sandals, plates, food for horses and cattle, fishnets for hukilau, whistles, and as sleds to slide down slopes."
	WRA Specialist. 2018. Personal Communication	Cattle & goats browse on fresh & picked leaves of <i>Cordyline fruticosa</i>

405	Toxic to animals	y
	Source(s)	Notes
	eHow. 2018. Is Cordyline Fruticosa Poisonous to Dogs? <a href="https://www.ehow.com/info_12321237_cordyline-fruticosa-poisonous-dogs.html">https://www.ehow.com/info_12321237_cordyline-fruticosa-poisonous-dogs.html</a> . [Accessed 25 Apr 2018]	"Although people eat it, you don't want Spot snacking on any part of this plant. The ti plant contains saponins, which can cause vomiting in cats and dogs -- sometimes bloody -- excessive saliva, depression and loss of appetite. If you think your dog has ingested some of this plant, contact your local veterinarian immediately."
	ASPCA. 2018. Toxic and Non-Toxic Plants - Ti-Plant. <a href="https://www.asPCA.org/pet-care/animal-poison-control/toxic-and-non-toxic-plants/ti-plant">https://www.asPCA.org/pet-care/animal-poison-control/toxic-and-non-toxic-plants/ti-plant</a> . [Accessed 25 Apr 2018]	"Toxicity: Toxic to Dogs, Toxic to Cats Toxic Principles: Saponins Clinical Signs: Vomiting (occasionally with blood), depression, anorexia, hypersalivation, dilated pupils (cats)"
	Kobayashi, K., Griffis, J., Kawabata, A. & Sako, G. 2007. Hawaiian Ti. <i>Ornamentals and Flowers</i> . OF-33. CTAHR, UH Manoa, Honolulu, HI	[No evidence for horses & cattle] "Leaves have been used as thatch for houses, rain capes, sandals, plates, food for horses and cattle, fishnets for hukilau, whistles, and as sleds to slide down slopes."

406	Host for recognized pests and pathogens	
	Source(s)	Notes
	Clay, H.F. & Hubbard, J.C. 1987. The Hawaii Garden: Tropical Exotics. University of Hawaii Press, Honolulu, HI	"To control scale, apply summer oil or malathion. For mealybugs. use diazinon or malathion. For Chinese rose beetles. spray with one of the residual insecticides. During very wet periods leaves may develop numerous yellow spots due to a fungus disease; to prevent spread; remove affected leaves. Control by fungicides is difficult."

Qsn #	Question	Answer
	Kobayashi, K., Griffis, J., Kawabata, A. & Sako, G. 2007. Hawaiian Ti. Ornamentals and Flowers. OF-33. CTAHR, UH Manoa, Honolulu, HI	[Affected by widespread & common plant pests] "Problems affecting ti are listed on pages 8–11. Pesticides may be applied to ti plants for landscape use and in containerized production nurseries, but they should not be applied to ti plants or ti leaves intended for culinary or adornment uses." [Includes Aphids, Broad mites, Carmine spider mites, false spider mites, Fungus gnats, Chinese rose beetles, Grasshoppers and katydids, Green garden loopers, Mealybugs, longtailed mealybugs, Nematodes, Scales, Thrips, rust thrips, Whiteflies, Snails and slugs, Cercospora leaf spot, Fusarium stem and root rot, & Pseudomonas bacterial stripe]

407	Causes allergies or is otherwise toxic to humans	n
	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	[No evidence. Possible irritant, but not toxic] "Irritant. Lower part of the rhizome eaten with betel for diarrhea. Leaves and stem heated and placed on fresh cuts; leaves and stalks squeezed and the juice mixed with water and drunk for diarrhea and dysentery; for dysentery, diarrhea and bleeding stool, pound young leaves of <i>Uncaria acida</i> with young leaves of <i>Cordyline fruticosa</i> and drunk the juice; leaves infusion for amenorrhea, tuberculosis, blood clotting. Flowers infusion febrifuge. Plant used to heal wounds, cuts, inflammations, fever, stomach bleeding, a poultice for wounds. Sacred, ritual, ceremonial, protection, exorcism, to bring good fortune, magical medicinal use for madness, healing magic, prevention against evil spirits, planted on graves; used by ghost societies ceremonially."
	Lim, T.K. 2015. Edible Medicinal And Non-Medicinal Plants. Volume 9, Modified Stems, Roots, Bulbs. Springer, Dordrecht	[No evidence] "The rhizomes, leaves, young shoots and seeds are eaten (Hedrick 1972 ; Ochse and van den Brink 1980 ; Facciola 1990 ). The fleshy rhizome contains up to 20 % sugar, mainly fructose, and is used as a natural sweetener in New Zealand and for the production of an alcoholic beverage okolehao in Hawaii. The large, sweet, white rhizome of some cultivars are cooked, roasted or baked for up to four days in earthen ovens to be consumed as food, sweets, refreshment or confectionery in Fiji, Papua New Guinea and the Pacific Islands. In Java, the young shoots are cooked and eaten as lalap with rice. In the Hawaiian kitchens, food is wrapped into the leaves for cooking. The Maoris in New Zealand eat both the leaves and seeds."

408	Creates a fire hazard in natural ecosystems	n
	Source(s)	Notes
	Clay, H.F. & Hubbard, J.C. 1987. The Hawaii Garden: Tropical Exotics. University of Hawaii Press, Honolulu, HI	[No evidence. Generally not cultivated in fire prone areas] "Very adaptable; will grow in almost any place that is protected from heavy winds. Grows best in cool, moist, wind-free locations, in soil rich in humus and with constant water supply."

409	Is a shade tolerant plant at some stage of its life cycle	
	Source(s)	Notes

Qsn #	Question	Answer
	Clay, H.F. & Hubbard, J.C. 1987. The Hawaii Garden: Tropical Exotics. University of Hawaii Press, Honolulu, HI	"The red-leafed forms are best grown in partial shade."
	CABI. 2018. Invasive Species Compendium. Wallingford , UK: CAB International. www.cabi.org/isc	"Tolerant of shade" [Pertains to <i>C. fruticosa</i> in general, & not specifically to red ti]
<b>410</b>	<b>Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)</b>	<b>n</b>
	<b>Source(s)</b>	<b>Notes</b>
	Clay, H.F. & Hubbard, J.C. 1987. The Hawaii Garden: Tropical Exotics. University of Hawaii Press, Honolulu, HI	"Grows best in cool, moist, wind-free locations, in soil rich in humus and with constant water supply."
	Kobayashi, K., Griffis, J., Kawabata, A. & Sako, G. 2007. Hawaiian Ti. Ornamentals and Flowers. OF-33. CTAHR, UH Manoa, Honolulu, HI	"Ti plants grow best in deep, fertile, moist, acidic, well-drained soils that are high in organic matter. Soil pH should be 5.5 to 6.5."
<b>411</b>	<b>Climbing or smothering growth habit</b>	<b>n</b>
	<b>Source(s)</b>	<b>Notes</b>
	Clay, H.F. & Hubbard, J.C. 1987. The Hawaii Garden: Tropical Exotics. University of Hawaii Press, Honolulu, HI	"An erect, woody, evergreen plant that can grow to 12 feet or more in height. Single or multiple stems support clusters of 18-inch-long, glossy, spatulate leaves."
<b>412</b>	<b>Forms dense thickets</b>	<b>n</b>
	<b>Source(s)</b>	<b>Notes</b>
	CABI. 2018. Invasive Species Compendium. Wallingford , UK: CAB International. www.cabi.org/isc	"There are no reports of damaging populations of <i>C. fruticosa</i> as it does not appear to form dense groves of significant extent."
	Wagner, W.L., Herbst, D.R.& Sohmer, S.H. 1999. Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	[No evidence from Hawaiian Islands] "in Hawai'i a Polynesian introduction, extensively cultivated and occurring widely in hala forest, mesic valleys, and mesic forest, 5-610 m, on all of the main islands except Kaho'olawe"
<b>501</b>	<b>Aquatic</b>	<b>n</b>
	<b>Source(s)</b>	<b>Notes</b>
	Clay, H.F. & Hubbard, J.C. 1987. The Hawaii Garden: Tropical Exotics. University of Hawaii Press, Honolulu, HI	[Terrestrial] "An erect, woody, evergreen plant that can grow to 12 feet or more in height." ... "Very adaptable; will grow in almost any place that is protected from heavy winds."
<b>502</b>	<b>Grass</b>	<b>n</b>
	<b>Source(s)</b>	<b>Notes</b>
	USDA, ARS, Germplasm Resources Information Network. 2018. National Plant Germplasm System [Online Database]. <a href="http://www.ars-grin.gov/npgs/index.html">http://www.ars-grin.gov/npgs/index.html</a> . [Accessed 24 Apr 2018]	Family: Asparagaceae Subfamily: Lomandroideae
<b>503</b>	<b>Nitrogen fixing woody plant</b>	<b>n</b>



Qsn #	Question	Answer
	<b>Source(s)</b>	<b>Notes</b>
	USDA, ARS, Germplasm Resources Information Network. 2018. National Plant Germplasm System [Online Database]. <a href="http://www.ars-grin.gov/npgs/index.html">http://www.ars-grin.gov/npgs/index.html</a> . [Accessed 24 Apr 2018]	Family: Asparagaceae Subfamily: Lomandroideae

<b>504</b>	<b>Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)</b>	<b>n</b>
	<b>Source(s)</b>	<b>Notes</b>
	Lim, T.K. 2015. Edible Medicinal And Non-Medicinal Plants. Volume 9, Modified Stems, Roots, Bulbs. Springer, Dordrecht	[A shrub with tuber-like subterranean rhizomes] "Plants erect, evergreen shrub growing to 1–3 m high and spread of 1 m, with a strong usually unbranched, slender, woody stem with rings of leaf scars and enlarged tuber-like subterranean rhizomes"

<b>601</b>	<b>Evidence of substantial reproductive failure in native habitat</b>	<b>n</b>
	<b>Source(s)</b>	<b>Notes</b>
	Clay, H.F. & Hubbard, J.C. 1987. The Hawaii Garden: Tropical Exotics. University of Hawaii Press, Honolulu, HI	"Red ti is native to Malaysia, Indonesia, and other tropical South Pacific islands." [No evidence]
	Wagner, W.L., Herbst, D.R. & Sohmer, S.H. 1999. Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	[No evidence] "Native range unknown, but possibly indigenous to the Himalayas, southeastern Asia, Malesia, and northern Australia, widely spread by early human migrations; in Hawai'i a Polynesian introduction, extensively cultivated"

<b>602</b>	<b>Produces viable seed</b>	<b>y</b>
	<b>Source(s)</b>	<b>Notes</b>
	Clay, H.F. & Hubbard, J.C. 1987. The Hawaii Garden: Tropical Exotics. University of Hawaii Press, Honolulu, HI	"Red ti is native to Malaysia, Indonesia, and other tropical South Pacific islands. It is almost identical with green ci (also classified as <i>Cordyline terminalis</i> ), except for the notable fact that it has kept the ability to produce seeds, whereas the green ti has lost this ability. Because of this important difference, the red ti is able to produce progeny showing many different and beautiful leaf variations which enthusiasts collect with much pleasure and sometimes at considerable expense."

Qsn #	Question	Answer
603	Hybridizes naturally	
	Source(s)	Notes
	CABI. 2018. Invasive Species Compendium. Wallingford , UK: CAB International. www.cabi.org/isc	"In Australia there is a risk that it will hybridise with northern native cordylines ( <i>C. cannifolia</i> , <i>C. manners-suttoniae</i> , <i>C. petiolaris</i> , <i>C. murchinsoniae</i> ) but there are no reports of this having occurred. New Zealand species and some Australian cordyline species hybridize (Simpson, 2000)."
	Beever, R. E., & Parkes, S. L. (1996). Self-incompatibility in <i>Cordyline australis</i> (Asteliaceae). <i>New Zealand Journal of Botany</i> , 34(1), 135-137	[Unknown. No evidence found for <i>C. fruticosa</i> , but hybridization documented in genus] "Natural hybridisation of <i>C. australis</i> has been reported with <i>C. banksii</i> (Kirk 1874; Esler 1961 ) and with <i>C. pumilio</i> (Carse 1926), and artificial hybridisation has been demonstrated both with <i>C. kaspar</i> and with a putative F1 hybrid between <i>C. australis</i> and <i>C. kaspar</i> (Beever 1981)."

604	Self-compatible or apomictic	n
	Source(s)	Notes
	Hinkle, A. E. (2007). Population structure of Pacific <i>Cordyline fruticosa</i> (Laxmanniaceae) with implications for human settlement of Polynesia. <i>American Journal of Botany</i> , 94(5), 828-839	"Western and horticultural plants were self-pollinated to test for self-compatibility;" ... "When Western Polynesian and horticultural plants with viable pollen were crossed (Treatment 1), 58% of the flowers set fruit. The results from Treatment 1 differed significantly from all other treatments (P , 0.0001). Fruiting was very low or entirely absent in self-crosses and the control, consistent with the low proportion of selfing and parthenocarpy seen in other species of <i>Cordyline</i> (Beever, 1983; Beever and Parkes, 1996). No fruits developed in any of the Eastern Polynesian plants despite treatment with pollen that had resulted in a high incidence of fruit set in Treatment 1. Eastern Polynesian pollen appeared to be ineffective in producing fruit in fertile Western Polynesian and horticultural plants that set fruit in Treatment 1."

605	Requires specialist pollinators	n
	Source(s)	Notes
	Dave's Garden. 2018. <i>Cordyline</i> , Hawaiian Ti Plant, Good Luck Plant, Green Ti Plant 'Chocolate Queen' - <i>Cordyline fruticosa</i> . <a href="https://davesgarden.com/guides/pf/go/192853/">https://davesgarden.com/guides/pf/go/192853/</a> . [Accessed 25 Apr 2018]	"This plant is attractive to bees, butterflies and/or birds"
	Wagner, W.L., Herbst, D.R.& Sohmer, S.H. 1999. Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	[Flowers not specialized] "Flowers in panicle inflorescences ca. 20-30 cm long, each one sessile, subtended by 3 small bracts; tepals white, the outer ones tinged pink, 8-15 mm long, becoming strongly reflexed."

Qsn #	Question	Answer
606	<b>Reproduction by vegetative fragmentation</b>	<b>y</b>
	<b>Source(s)</b>	<b>Notes</b>
	CABI. 2018. Invasive Species Compendium. Wallingford , UK: CAB International. www.cabi.org/isc	"Being mostly sterile in a large part of its range, it reproduces by stem pieces or very rare reproductive seed events. It can probably regenerate after fire from buried rhizomes, and can also be dispersed by flood water." [Generic description presumably relevant, in regards to vegetative reproduction, to red ti]

607	<b>Minimum generative time (years)</b>	
	<b>Source(s)</b>	<b>Notes</b>
	Kobayashi, K., Griffis, J., Kawabata, A. & Sako, G. 2007. Hawaiian Ti. Ornamentals and Flowers. OF-33. CTAHR, UH Manoa, Honolulu, HI	"Ti is an upright evergreen shrub with slender single or branched stems, growing up to 10 feet high. Its spread is 3–4 feet. The growth rate is moderate to moderately fast." [As a shrub, probably 2+ years to maturity]

701	<b>Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)</b>	<b>n</b>
	<b>Source(s)</b>	<b>Notes</b>
	Clay, H.F. & Hubbard, J.C. 1987. The Hawaii Garden: Tropical Exotics. University of Hawaii Press, Honolulu, HI	"Periodically, clusters of large fragrant pink or light red-violet flowers emerge at the tops, followed by occasional bright red berries." [No evidence. No means of external attachment]

702	<b>Propagules dispersed intentionally by people</b>	<b>y</b>
	<b>Source(s)</b>	<b>Notes</b>
	Clay, H.F. & Hubbard, J.C. 1987. The Hawaii Garden: Tropical Exotics. University of Hawaii Press, Honolulu, HI	[Cultivated as an ornamental] "USE Specimen plant: mass planting; container plant; colorful tropical foliage."

703	<b>Propagules likely to disperse as a produce contaminant</b>	<b>n</b>
	<b>Source(s)</b>	<b>Notes</b>
	CABI. 2018. Invasive Species Compendium. Wallingford , UK: CAB International. www.cabi.org/isc	"C. fruticosa appears to be an entirely benign invasive species in ecological terms. It could potentially invade crops by being fragmented by ploughing, but there are no reports of this." [No evidence of crop contamination]
	Lim, T.K. 2015. Edible Medicinal And Non-Medicinal Plants. Volume 9, Modified Stems, Roots, Bulbs. Springer, Dordrecht	"Fruit reddish, round, three-parted, 1 cm diameter berries, several to many seeded."
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	"Major Pathway/s: Crop, Herbal, Ornamental"

704	<b>Propagules adapted to wind dispersal</b>	<b>n</b>
	<b>Source(s)</b>	<b>Notes</b>
	Clay, H.F. & Hubbard, J.C. 1987. The Hawaii Garden: Tropical Exotics. University of Hawaii Press, Honolulu, HI	"Periodically, clusters of large fragrant pink or light red-violet flowers emerge at the tops, followed by occasional bright red berries."

Qsn #	Question	Answer
705	<b>Propagules water dispersed</b>	<b>y</b>
	<b>Source(s)</b>	<b>Notes</b>
	CABI. 2018. Invasive Species Compendium. Wallingford , UK: CAB International. www.cabi.org/isc	"it spreads by stem/rhizome pieces, and sometimes by seed, both of which could be dispersed by flood water." ... "It can probably regenerate after fire from buried rhizomes, and can also be dispersed by flood water."

706	<b>Propagules bird dispersed</b>	<b>y</b>
	<b>Source(s)</b>	<b>Notes</b>
	CABI. 2018. Invasive Species Compendium. Wallingford , UK: CAB International. www.cabi.org/isc	"In wild plants the fruit is a round red berry about 8 mm diameter, adapted for bird dispersal, and contains many black seeds."
	Clay, H.F. & Hubbard, J.C. 1987. The Hawaii Garden: Tropical Exotics. University of Hawaii Press, Honolulu, HI	"Periodically, clusters of large fragrant pink or light red-violet flowers emerge at the tops, followed by occasional bright red berries."
	Stocker, G. C., & Irvine, A. K. (1983). Seed dispersal by cassowaries ( <i>Casuarius casuarius</i> ) in North Queensland's rainforests. <i>Biotropica</i> , 15(3): 170-176	"TABLE 1. Some characteristics of plant propagules collected in Cassowary dung." [Includes <i>Cordyline terminalis</i> ]

707	<b>Propagules dispersed by other animals (externally)</b>	<b>n</b>
	<b>Source(s)</b>	<b>Notes</b>
	Clay, H.F. & Hubbard, J.C. 1987. The Hawaii Garden: Tropical Exotics. University of Hawaii Press, Honolulu, HI	"Periodically, clusters of large fragrant pink or light red-violet flowers emerge at the tops, followed by occasional bright red berries." [No means of external attachment]

708	<b>Propagules survive passage through the gut</b>	<b>y</b>
	<b>Source(s)</b>	<b>Notes</b>
	Clay, H.F. & Hubbard, J.C. 1987. The Hawaii Garden: Tropical Exotics. University of Hawaii Press, Honolulu, HI	"Periodically, clusters of large fragrant pink or light red-violet flowers emerge at the tops, followed by occasional bright red berries."
	Stocker, G. C., & Irvine, A. K. (1983). Seed dispersal by cassowaries ( <i>Casuarius casuarius</i> ) in North Queensland's rainforests. <i>Biotropica</i> , 15(3): 170-176	"TABLE 1. Some characteristics of plant propagules collected in Cassowary dung." [Includes <i>Cordyline terminalis</i> ]

801	<b>Prolific seed production (&gt;1000/m2)</b>	<b>n</b>
	<b>Source(s)</b>	<b>Notes</b>
	Little Jr., E.L. & Skolmen, R.G. 1989. Common forest trees of Hawaii: (native and introduced). USDA Agriculture Handbook No. 679. USDA Forest Service, Washington, D.C.	"Fruits (berries) rarely formed, about 1/4 in (6 mm) in diameter, yellow, turning to bright red. Seeds few, shiny black."
	Clay, H.F. & Hubbard, J.C. 1987. The Hawaii Garden: Tropical Exotics. University of Hawaii Press, Honolulu, HI	"Red ti is native to Malaysia, Indonesia, and other tropical South Pacific islands. It is almost identical with green ti (also classified as <i>Cordyline terminalis</i> ), except for the notable fact that it has kept the ability to produce seeds, whereas the green ti has lost this ability." [No evidence that an excess of 1000 seeds per m2 are produced]

802	<b>Evidence that a persistent propagule bank is formed (&gt;1 yr)</b>	

Qsn #	Question	Answer
	<b>Source(s)</b>	<b>Notes</b>
	Royal Botanic Gardens Kew. (2018) Seed Information Database (SID). Version 7.1. Available from: <a href="http://data.kew.org/sid/">http://data.kew.org/sid/</a> . [Accessed 25 Apr 2018]	"Storage Behaviour: No data available for species. Of 2 known taxa of genus <i>Cordyline</i> , 100.00% Orthodox(p/?)"

803	Well controlled by herbicides	
	<b>Source(s)</b>	<b>Notes</b>
	CABI. 2018. Invasive Species Compendium. Wallingford, UK: CAB International. <a href="http://www.cabi.org/isc">www.cabi.org/isc</a>	"There are probably no reasons to control this species because it is seldom a problem of any sort. However, it might be desirable to manage some islands as sanctuaries where only indigenous species are tolerated. The species is likely to be susceptible to common herbicides (as <i>C. australis</i> is), and could be manually eradicated by digging out the rhizomes."
	WRA Specialist. 2018. Personal Communication	Unknown. Considered a desirable plant that is intentionally cultivated & not targeted for control

804	Tolerates, or benefits from, mutilation, cultivation, or fire	y
	<b>Source(s)</b>	<b>Notes</b>
	Clay, H.F. & Hubbard, J.C. 1987. The Hawaii Garden: Tropical Exotics. University of Hawaii Press, Honolulu, HI	"Remove faded leaves; plant may be severely pruned to rejuvenate it."

805	Effective natural enemies present locally (e.g. introduced biocontrol agents)	
	<b>Source(s)</b>	<b>Notes</b>
	Wagner, W.L., Herbst, D.R. & Sohmer, S.H. 1999. Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	[Unknown, but widely cultivated & established] "extensively cultivated and occurring widely in hala forest, mesic valleys, and mesic forest, 5-610 m, on all of the main islands except Kaho'olawe"

**Summary of Risk Traits:**

High Risk / Undesirable Traits

- Thrives in tropical climates
- Species is widely naturalized, including all main Hawaiian Islands. Red ti may not be as widely distributed
- Toxic to dogs & cats
- Reproduces by seeds & vegetatively by rhizomes
- Seeds dispersed by birds, water & intentionally by people
- Able to resprout after cutting

Low Risk Traits

- No reports of damage to native ecosystems or vegetation
- Unarmed (no spines, thorns, or burrs)
- Provides fodder for livestock
- Ornamental
- Largely self-incompatible

Second Screening Results for Tree/tree-like shrubs

(A) Shade tolerant or known to form dense stands?> Partial shade tolerant. Not known to form dense stands.

(B) Bird-dispersed?> Yes. Dispersed by birds

(C) Life cycle <4 years? Unknown

Outcome = Evaluate