

Taxon: Polianthes tuberosa	Family: Asparagaceae
Common Name(s): tuberosa tuberose	Synonym(s): Agave polianthes Thiede & Eggl Crinum angustifolium Houtt. Polianthes gracilis Link Tuberosa amica Medik.

Assessor: Chuck Chimera	Status: Assessor Approved	End Date: 30 Mar 2015
WRA Score: -9.0	Designation: L	Rating: Low Risk

Keywords: Herbaceous, Ornamental, Fragrant, White-flowered, Vegetatively-Propagated

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	n
103	Does the species have weedy races?	y=1, n=-1	n
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	n
302	Garden/amenity/disturbance weed	n=0, y = 1*multiplier (see Appendix 2)	n
303	Agricultural/forestry/horticultural weed	n=0, y = 2*multiplier (see Appendix 2)	n
304	Environmental weed	n=0, y = 2*multiplier (see Appendix 2)	n
305	Congeneric weed	n=0, y = 1*multiplier (see Appendix 2)	n
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		
405	Toxic to animals		
406	Host for recognized pests and pathogens		
407	Causes allergies or is otherwise toxic to humans		
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	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	y
601	Evidence of substantial reproductive failure in native habitat		
602	Produces viable seed		
603	Hybridizes naturally		
604	Self-compatible or apomictic		
605	Requires specialist pollinators		
606	Reproduction by vegetative fragmentation	y=1, n=-1	y
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		
705	Propagules water dispersed	y=1, n=-1	n
706	Propagules bird dispersed	y=1, n=-1	n
707	Propagules dispersed by other animals (externally)	y=1, n=-1	n
708	Propagules survive passage through the gut	y=1, n=-1	n
801	Prolific seed production (>1000/m2)	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		
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
	Missouri Botanical Garden. 2015. <i>Polianthes tuberosa</i> . http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=a468 . [Accessed 30 Mar 2015]	"Although probably native to Mexico, tuberose is not known to exist naturally in the wild today. It is considered to be a cultigen and has a long history of cultivation dating back to pre-Columbian times."
	Lim, T.K. 2013. <i>Edible Medicinal And Non-Medicinal Plants. Volume 7, Flowers</i> . Springer, Dordrecht	"Besides the normal 'single-tepal' flower, 'double-tepal' tuberose flowers have been developed in white and various colours such as reddish purple, pale purple, pale red, reddish pink, yellow and orange (Huang et al. 2001a, b) and also tuberose with variegated yellow-striped leaves."
	Staples, G.W. & Herbst, D.R. 2005. <i>A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places</i> . Bishop Museum Press, Honolulu, HI	"Fruit is not produced by double-flowered cultivars, so propagation of these is by division of mature clumps or separation of small daughter corms that are produced by mature corms."

102	Has the species become naturalized where grown?	n
	Source(s)	Notes
	Randall, R.P. 2012. <i>A Global Compendium of Weeds</i> . 2nd Edition. Department of Agriculture and Food, Western Australia	" <i>Polianthes tuberosa</i> L. Asparagaceae Cultivated Toxic - Arid 1102-N, 819-N" [References cited that list this taxon as naturalized did not specifically confirm naturalization, only that the plants were present in the region described]

103	Does the species have weedy races?	n
	Source(s)	Notes
	Randall, R.P. 2012. <i>A Global Compendium of Weeds</i> . 2nd Edition. Department of Agriculture and Food, Western Australia	No evidence

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
	Lim, T.K. 2013. <i>Edible Medicinal And Non-Medicinal Plants. Volume 7, Flowers</i> . Springer, Dordrecht	"It is indigenous to Central and southern Mexico. The plant was distributed all over the world as an ornamental and is grown in tropical, subtropical and subtemperate areas. Kenya and Egypt are the leading producers of tuberose for the export market."

Qsn #	Question	Answer
202	Quality of climate match data	High
	Source(s)	Notes
	Lim, T.K. 2013. Edible Medicinal And Non-Medicinal Plants. Volume 7, Flowers. Springer, Dordrecht	

203	Broad climate suitability (environmental versatility)	n
	Source(s)	Notes
	Dave's Garden. 2015. PlantFiles: Single Mexican Tuberosa, Rajanigandha, Sedap Malam - <i>Polianthes tuberosa</i> . http://davesgarden.com/guides/pf/go/458/ . [Accessed 30 Mar 2015]	"Hardiness: 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 10a: to -1.1 °C (30 °F) USDA Zone 10b: to 1.7 °C (35 °F)"
	Lim, T.K. 2013. Edible Medicinal And Non-Medicinal Plants. Volume 7, Flowers. Springer, Dordrecht	"Tuberosa grows best in mild climate: without extremes of high or low temperatures. It thrives in warm humid areas with mean temperatures or 20-32 °C. It is sensitive to low temperatures and frost. High temperatures close to 40 °C reduces flower spike length and quality."
	Learn 2 Grow. 2015. <i>Polianthes tuberosa</i> . http://www.learn2grow.com/plants/polianthes-tuberosa/ . [Accessed 30 Mar 2015]	"USDA Hardiness Zone: 7 - 11"

204	Native or naturalized in regions with tropical or subtropical climates	y
	Source(s)	Notes
	Lim, T.K. 2013. Edible Medicinal And Non-Medicinal Plants. Volume 7, Flowers. Springer, Dordrecht	"It is indigenous to Central and southern Mexico. The plant was distributed all over the world as an ornamental and is grown in tropical, subtropical and subtemperate areas."

205	Does the species have a history of repeated introductions outside its natural range?	y
	Source(s)	Notes
	Kubitzki, K. (ed.). 1998. The Families and genera of vascular plants. Volume III. Flowering plants, Monocotyledons: Liliales (except Orchidaceae). Springer-Verlag, Berlin, Heidelberg, New York	" <i>Polianthes tuberosa</i> is cultivated commercially as a cut flower and in perfumery."
	Lim, T.K. 2013. Edible Medicinal And Non-Medicinal Plants. Volume 7, Flowers. Springer, Dordrecht	"The plant was distributed all over the world as an ornamental and is grown in tropical, subtropical and subtemperate areas. Kenya and Egypt are the leading producers of tuberosa for the export market."

301	Naturalized beyond native range	n
	Source(s)	Notes

Qsn #	Question	Answer
	Randall, R.P. 2012. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	" <i>Polianthes tuberosa</i> L. Asparagaceae Cultivated Toxic - Arid 1102-N, 819-N" [References cited that list this taxon as naturalized did not specifically confirm naturalization, only that the plants were present in the region described]
	Wagner, W.L., Herbst, D.R.& Lorence, D.H. 2015. Flora of the Hawaiian Islands. Smithsonian Institution, Washington, D.C. http://botany.si.edu/pacificislandbiodiversity/hawaiianflora/index.htm . [Accessed 30 Mar 2015]	No evidence

302	Garden/amenity/disturbance weed	n
	Source(s)	Notes
	Randall, R.P. 2012. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	No evidence

303	Agricultural/forestry/horticultural weed	n
	Source(s)	Notes
	Randall, R.P. 2012. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	No evidence

304	Environmental weed	n
	Source(s)	Notes
	Randall, R.P. 2012. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	No evidence

305	Congeneric weed	n
	Source(s)	Notes
	Randall, R.P. 2012. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	No evidence

Qsn #	Question	Answer
401	Produces spines, thorns or burrs	n
	Source(s)	Notes
	Kubitzki, K. (ed.). 1998. The Families and genera of vascular plants. Volume III. Flowering plants, Monocotyledons: Lilianae (except Orchidaceae). Springer-Verlag, Berlin, Heidelberg, New York	[No evidence in genus] "Small to medium-sized; rhizome short, cylindrical, with fleshy roots; leaves 2-15, thin or slightly succulent, linear to lanceolate or elliptic, with a short, soft point; margin entire or minutely papillate; inflorescence a spike or raceme; flowers usually paired at nodes, red, pink, or white; tube narrowly funnel-shaped, straight to curved; filaments included; anthers oblong; stigma with 3 spreading or reflexed lobes; capsule loculicidal."
402	Allelopathic	
	Source(s)	Notes
	WRA Specialist. 2015. Personal Communication	Unknown
403	Parasitic	n
	Source(s)	Notes
	Lim, T.K. 2013. Edible Medicinal And Non-Medicinal Plants. Volume 7, Flowers. Springer, Dordrecht	[No evidence] "Tuberose is a hardy perennial, erect herb, 45-70 cm high with tuberose rootstock and shallow adventitious roots and a short stem. It has elongated linear, bright green leaves clustered at the base of the plant (Plate 1) and smaller clasping leaves along the stem."
404	Unpalatable to grazing animals	
	Source(s)	Notes
	Deer Resistant Plants. 2015. White Tuberose. http://www.deerproofbulbs.com/flowers/tuberose/ . [Accessed 30 Mar 2015]	[Possibly unpalatable] "Considered Deer Resistant: Yes"
405	Toxic to animals	
	Source(s)	Notes
	University of California. 2012. Safe and Poisonous Garden Plants - Toxic Plants (by common name). http://ucanr.edu/sites/poisonous_safe_plants/Toxic_Plants_by_common_Name_659/ . [Accessed 30 Mar 2015]	"Minor Toxicity: Ingestion of these plants may cause minor illnesses such as vomiting or diarrhea. If ingested, call the Poison Control Center or your doctor." [Polianthes tuberosa - Toxicity class = 2]

Qsn #	Question	Answer
406	Host for recognized pests and pathogens	
	Source(s)	Notes
	Missouri Botanical Garden. 2015. <i>Polianthes tuberosa</i> . http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=a468 . [Accessed 30 Mar 2015]	"No serious insect or disease problems. Watch for aphids."
	Staples, G.W. & Herbst, D.R. 2005. <i>A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places</i> . Bishop Museum Press, Honolulu, HI	[Host of common pests and pathogens] "Pests that trouble tuberose include root-knot nematode; spider mites (in hot weather); ants and mealybugs, which transmit the sooty mold fungus; and western flower thrips."

407	Causes allergies or is otherwise toxic to humans	
	Source(s)	Notes
	Quattrocchi, U.. 2012. <i>CRC World Dictionary of Medicinal and Poisonous Plants: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology</i> . CRC Press, Boca Raton, FL	"Irritant. Antifungal, bulbs decoction used in gonorrhoea, pimples and skin diseases. Emollient plasters from the roots."
	University of California. 2012. <i>Safe and Poisonous Garden Plants - Toxic Plants (by common name)</i> . http://ucanr.edu/sites/poisonous_safe_plants/Toxic_Plants_by_common_Name_659/ . [Accessed 30 Mar 2015]	"Minor Toxicity: Ingestion of these plants may cause minor illnesses such as vomiting or diarrhea. If ingested, call the Poison Control Center or your doctor." [<i>Polianthes tuberosa</i> - Toxicity class = 2]
	Lim, T.K. 2013. <i>Edible Medicinal And Non-Medicinal Plants. Volume 7, Flowers</i> . Springer, Dordrecht	" <i>Polianthes tuberosa</i> tuber was found to contain lycorine, an alkaloid that causes vomiting (Gorter 1919)."

408	Creates a fire hazard in natural ecosystems	n
	Source(s)	Notes
	WRA Specialist. 2015. Personal Communication	An herbaceous plant no longer known from the wild. Cultivated for fragrant flowers. No evidence of increased fire risk reported from cultivated plants

409	Is a shade tolerant plant at some stage of its life cycle	n
	Source(s)	Notes
	Whistler, W.A. 2000. <i>Tropical Ornamentals: A Guide</i> . Timber Press, Portland, OR	"Sandy, well-drained soils in sunny places are preferred, particularly at higher elevations in the tropics."
	Lim, T.K. 2013. <i>Edible Medicinal And Non-Medicinal Plants. Volume 7, Flowers</i> . Springer, Dordrecht	"Tuberose prefers a sunny position."
	Staples, G.W. & Herbst, D.R. 2005. <i>A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places</i> . Bishop Museum Press, Honolulu, HI	"Tuberose requires a fertile, well-drained soil, plenty of water, and full sun in order to thrive."

Qsn #	Question	Answer
410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	y
	Source(s)	Notes
	Lim, T.K. 2013. Edible Medicinal And Non-Medicinal Plants. Volume 7, Flowers. Springer, Dordrecht	"Although it can grow in a wide range of soils including saline and alkaline soils, it prefers well drained and aerated sandy loams rich in organic matter with pH of 6-7.5."

411	Climbing or smothering growth habit	n
	Source(s)	Notes
	Lim, T.K. 2013. Edible Medicinal And Non-Medicinal Plants. Volume 7, Flowers. Springer, Dordrecht	"Tuberose is a hardy perennial, erect herb, 45-70 cm high with tuberose rootstock and shallow adventitious roots and a short stem. It has elongated linear, bright green leaves clustered at the base of the plant (Plate 1) and smaller clasping leaves along the stem."

412	Forms dense thickets	n
	Source(s)	Notes
	Whistler, W.A. 2000. Tropical Ornamentals: A Guide. Timber Press, Portland, OR	[No evidence from native or introduced range] "...no longer known in the wild."

501	Aquatic	n
	Source(s)	Notes
	Whistler, W.A. 2000. Tropical Ornamentals: A Guide. Timber Press, Portland, OR	[Terrestrial herb] "Sandy, well-drained soils in sunny places are preferred..."

502	Grass	n
	Source(s)	Notes
	USDA, ARS, National Genetic Resources Program. 2015. Germplasm Resources Information Network - (GRIN) [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland. URL: http://www.ars-grin.gov/ . [Accessed 26 Mar 2015]	"Family: Asparagaceae subfamily: Agavoideae. Also placed in: Agavaceae"

503	Nitrogen fixing woody plant	n
	Source(s)	Notes
	USDA, ARS, National Genetic Resources Program. 2015. Germplasm Resources Information Network - (GRIN) [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland. URL: http://www.ars-grin.gov/ . [Accessed 26 Mar 2015]	"Family: Asparagaceae subfamily: Agavoideae. Also placed in: Agavaceae"

Qsn #	Question	Answer
504	Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)	y
	Source(s)	Notes
	Whistler, W.A. 2000. Tropical Ornamentals: A Guide. Timber Press, Portland, OR	"Herb, erect, to 1 m high (3 1/4 ft) from an underground tuber."

601	Evidence of substantial reproductive failure in native habitat	
	Source(s)	Notes
	Whistler, W.A. 2000. Tropical Ornamentals: A Guide. Timber Press, Portland, OR	[Unknown] "...cultivated for centuries in Mexico as an ornamental for its fragrant white flowers and as an additive to chocolate, but it is no longer known in the wild."

602	Produces viable seed	
	Source(s)	Notes
	Whistler, W.A. 2000. Tropical Ornamentals: A Guide. Timber Press, Portland, OR	"Fruit an oblong capsule, infrequently formed in cultivation."
	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	"Fruit is not produced by double-flowered cultivars, so propagation of these is by division of mature clumps or separation of small daughter corms that are produced by mature corms."
	Learn 2 Grow. 2015. <i>Polianthes tuberosa</i> . http://www.learn2grow.com/plants/polianthes-tuberosa/ . [Accessed 30 Mar 2015]	"Moths pollinate the flowers and green seed capsules that mature to brown follow. "

603	Hybridizes naturally	
	Source(s)	Notes
	Kubitzki, K. (ed.). 1998. The Families and genera of vascular plants. Volume III. Flowering plants, Monocotyledons: Liliaceae (except Orchidaceae). Springer-Verlag, Berlin, Heidelberg, New York	"Artificial interspecific crosses have been made in <i>Hesperaloe</i> (Starr 1995), <i>Polianthes</i> (Bundrant 1985), and <i>Manfreda</i> and between <i>Manfreda</i> and <i>Polianthes</i> (Verhoeck-Williams 1976)."
	Shen, T. M., Huang, K. L., & Huang, T. S. (1986). Study of tuberose hybridization. <i>Acta Horticulturae</i> 205: 71-74	[Hybrid cultivars created artificially] "Tuberose (<i>Polianthes tuberosa</i> L.) has the characters of dichogamy and self-incompatibility. Crosses between single and double varieties produce fruits and seeds when the female parent is 2-3 days after anthesis. Reciprocal crosses between the single and double varieties of tuberose grown in Taiwan produced many single and few double plants in the progenies. Twelve seedlings with improved characteristics were selected from these progenies. Work is now in progress to test stability of these characteristics to produce more prolific and higher quality tuberose varieties. Selection from hybrid seedlings is a very promising breeding method for improvement of cut flower production in tuberose."

604	Self-compatible or apomictic	
	Source(s)	Notes

Qsn #	Question	Answer
	Kubitzki, K. (ed.). 1998. The Families and genera of vascular plants. Volume III. Flowering plants, Monocotyledons: Liliae (except Orchidaceae). Springer-Verlag, Berlin, Heidelberg, New York	"Self-compatibility has been demonstrated in Manfreda and Polianthes (Verhoek-Williams 1975),..."
	Shen, T. M., Huang, K. L., & Huang, T. S. (1986). Study of tuberose hybridization. Acta Horticulturae 205: 71-74	"Tuberose (<i>Polianthes tuberosa</i> L.) has the characters of dichogamy and self-incompatibility."
	Uma, S., & Gowda, J. V. N. (2000). Self-incompatibility studies in <i>Polianthes tuberosa</i> L. Research on Crops, 1(3): 418-420	[Depends on cultivar] "Pollination studies on tuberose (<i>Polianthes tuberosa</i> L.) revealed self-incompatibility in single with no fruit set and 63.78% fruit set on cross pollinating with variegated cultivar. This variegated cultivar is a both male and female fertile variety with sufficient pollen production and recorded a seed set of 12.13 and 28.84% when self- and cross-pollinated, respectively. But seeds obtained after cross pollination with the variegated variety as a female parent recorded lower seed viability and rate of seed germination, suggesting lower fertility and seedling vigour."

605	Requires specialist pollinators	
	Source(s)	Notes
	Kubitzki, K. (ed.). 1998. The Families and genera of vascular plants. Volume III. Flowering plants, Monocotyledons: Liliae (except Orchidaceae). Springer-Verlag, Berlin, Heidelberg, New York	"Hummingbird and hawkmoth pollination is recorded in Manfreda, Prochnyanthes, Polianthes, and Hesperaloe."
	Rocha, M., Good-Avila, S. V., Molina-Freaner, F., Arita, H. T., Castillo, A., García-Mendoza, A., Silva-Montellano, A., Gaut, B.S., Souza, V. & Eguiarte, L. E. (2006). Pollination biology and adaptive radiation of Agavaceae, with special emphasis on the genus Agave. Aliso, 22(1): 327-342	"Most species have whitish flowers, but <i>P. geminiflora</i> (Lex.) Rose, has reddish-orange flowers, and <i>P. densiflora</i> , yellow ones. The species <i>P. tuberosa</i> L. is widely cultivated for its flowers and fragrance (tuberose, nardo in Spanish). Hawkmoth pollination has been suggested for most species except for <i>P. geminiflora</i> , which has been considered to be pollinated by hummingbirds, not only for its color but also because it produces nectar in the late afternoon (Cruden et al. 1983)."
	Shen, T. M., Huang, K. L., & Huang, T. S. (1986). Study of tuberose hybridization. Acta Horticulturae 205: 71-74	"seeds are not produced under natural conditions."

606	Reproduction by vegetative fragmentation	Y
	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	"...propagation of these is by division of mature clumps or separation of small daughter corms that are produce by mature corms."
	Whistler, W.A. 2000. Tropical Ornamentals: A Guide. Timber Press, Portland, OR	"Propagate by division of the tubers or by offsets."
	Learn 2 Grow. 2015. <i>Polianthes tuberosa</i> . http://www.learn2grow.com/plants/polianthes-tuberosa/ . [Accessed 30 Mar 2015]	"The tuberose has elongated underground tubers that spread slowly over time."
	Kubitzki, K. (ed.). 1998. The Families and genera of vascular plants. Volume III. Flowering plants, Monocotyledons: Liliae (except Orchidaceae). Springer-Verlag, Berlin, Heidelberg, New York	[<i>P. tuberosa</i> formerly classified in Agavaceae] "Members of the Agavaceae are efficient vegetatively propagating plants. All genera produce new plants by lateral budding from the parent plant, either directly or from the tips of spreading rhizomes."

Qsn #	Question	Answer
607	Minimum generative time (years)	2
	Source(s)	Notes
	Shoot Gardening. 2015. Polianthes tuberosa 'The Pearl' (Tuberose 'The Pearl'). http://www.shootgardening.co.uk/plant/polianthes-tuberosa-the-pearl . [Accessed 30 Mar 2015]	"2-5 years To maturity"

701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	n
	Source(s)	Notes
	Whistler, W.A. 2000. Tropical Ornamentals: A Guide. Timber Press, Portland, OR	"Fruit an oblong capsule, infrequently formed in cultivation. Propagation by division of the tubers or by offsets."
	Shen, T. M., Huang, K. L., & Huang, T. S. (1986). Study of tuberose hybridization. Acta Horticulturae 205: 71-74	"Furthermore, seeds are not produced under natural conditions."
	WRA Specialist. 2015. Personal Communication	Seeds rarely, if ever, produced. Propagated by tubers. No evidence of inadvertent dispersal

702	Propagules dispersed intentionally by people	y
	Source(s)	Notes
	Kubitzki, K. (ed.). 1998. The Families and genera of vascular plants. Volume III. Flowering plants, Monocotyledons: Liliales (except Orchidaceae). Springer-Verlag, Berlin, Heidelberg, New York	"Polianthes tuberosa is cultivated commercially as a cut flower and in perfumery."
	Lim, T.K. 2013. Edible Medicinal And Non-Medicinal Plants. Volume 7, Flowers. Springer, Dordrecht	"The plant was distributed all over the world as an ornamental and is grown in tropical, subtropical and subtemperate areas. Kenya and Egypt are the leading producers of tuberose for the export market."

703	Propagules likely to disperse as a produce contaminant	n
	Source(s)	Notes
	Shen, T. M., Huang, K. L., & Huang, T. S. (1986). Study of tuberose hybridization. Acta Horticulturae 205: 71-74	[No evidence. Unlikely given lack of seed production in cultivation] "Furthermore, seeds are not produced under natural conditions."

704	Propagules adapted to wind dispersal	
	Source(s)	Notes
	Kubitzki, K. (ed.). 1998. The Families and genera of vascular plants. Volume III. Flowering plants, Monocotyledons: Liliales (except Orchidaceae). Springer-Verlag, Berlin, Heidelberg, New York	[Seeds, if produced, would likely be wind-dispersed. However, seeds rarely produced in cultivation] "Seed dispersal in the capsular species is primarily by wind." ... "Polianthes ... capsule loculicidal."

Qsn #	Question	Answer
705	Propagules water dispersed	n
	Source(s)	Notes
	Kubitzki, K. (ed.). 1998. The Families and genera of vascular plants. Volume III. Flowering plants, Monocotyledons: Liliae (except Orchidaceae). Springer-Verlag, Berlin, Heidelberg, New York	[Seeds, if produced, would likely be wind-dispersed. However, seeds rarely produced in cultivation] "Seed dispersal in the capsular species is primarily by wind." ... "Polianthes ... capsule loculicidal."

706	Propagules bird dispersed	n
	Source(s)	Notes
	Kubitzki, K. (ed.). 1998. The Families and genera of vascular plants. Volume III. Flowering plants, Monocotyledons: Liliae (except Orchidaceae). Springer-Verlag, Berlin, Heidelberg, New York	[Seeds, if produced, would likely be wind-dispersed. However, seeds rarely produced in cultivation] "Seed dispersal in the capsular species is primarily by wind." ... "Polianthes ... capsule loculicidal."

707	Propagules dispersed by other animals (externally)	n
	Source(s)	Notes
	WRA Specialist. 2015. Personal Communication	Seeds rarely, if ever, produced. Propagated by tubers. No means of external attachment

708	Propagules survive passage through the gut	n
	Source(s)	Notes
	Gordon, D. R., Mitterdorfer, B., Pheloung, P. C., Ansari, S., Buddenhagen, C., Chimera, C., ... & Williams, P. A. 2010). Guidance for addressing the Australian Weed Risk Assessment questions. Plant Protection Quarterly, 25(2): 56-74	[No evidence of consumption by animals. No evidence of internal dispersal] "Answer 'no' where the taxon is unlikely to be eaten by animals or if seeds are not viable following passage through the gut."

801	Prolific seed production (>1000/m2)	n
	Source(s)	Notes
	Shen, T. M., Huang, K. L., & Huang, T. S. (1986). Study of tuberose hybridization. Acta Horticulturae 205: 71-74	"Furthermore, seeds are not produced under natural conditions."
	Whistler, W.A. 2000. Tropical Ornamentals: A Guide. Timber Press, Portland, OR	[Not in Hawaiian Islands] "Fruit an oblong capsule, infrequently formed in cultivation."
	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	[Not in Hawaiian Islands] "Fruit is not produced by double-flowered cultivars, so propagation of these is by division of mature clumps or separation of small daughter corms that are produced by mature corms."

Qsn #	Question	Answer
802	Evidence that a persistent propagule bank is formed (>1 yr)	
	Source(s)	Notes
	Learn 2 Grow. 2015. <i>Polianthes tuberosa</i> . http://www.learn2grow.com/plants/polianthes-tuberosa/ . [Accessed 30 Mar 2015]	[Seed longevity unknown. May persist from rhizomes or tubers] "The rhizomes can survive in the ground as long as soil does not freeze. In cold zones they can be lifted and stored in a cool, dry place over winter. Tubers stored in sand tend to fare best. They require at least four months of a warm growing weather to produce flowers."

803	Well controlled by herbicides	
	Source(s)	Notes
	WRA Specialist. 2015. Personal Communication	Unknown. No information on herbicide efficacy or chemical control of this ornamental plant

804	Tolerates, or benefits from, mutilation, cultivation, or fire	
	Source(s)	Notes
	Learn 2 Grow. 2015. <i>Polianthes tuberosa</i> . http://www.learn2grow.com/plants/polianthes-tuberosa/ . [Accessed 30 Mar 2015]	"The rhizomes can survive in the ground as long as soil does not freeze. In cold zones they can be lifted and stored in a cool, dry place over winter. Tubers stored in sand tend to fare best. They require at least four months of a warm growing weather to produce flowers."

805	Effective natural enemies present locally (e.g. introduced biocontrol agents)	
	Source(s)	Notes
	Staples, G.W. & Herbst, D.R. 2005. <i>A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places</i> . Bishop Museum Press, Honolulu, HI	"Pests that trouble tuberose include root-knot nematode; spider mites (in hot weather); ants and mealybugs, which transmit the sooty mold fungus; and western flower thrips."

Summary of Risk Traits:

High Risk / Undesirable Traits

- Thrives in tropical climates
- Potentially toxic to people
- Tolerates many soil types
- A geophyte. Able to reproduce by tuberous corms
- Seeds dispersed by wind (but rarely, if ever, produced in cultivation)
- Spreads vegetatively (slowly)
- Missing ecological information may reduce accuracy of risk prediction

Low Risk Traits

- No confirmed reports of invasiveness or naturalization
- Unarmed (no spines, thorns or burrs)
- Requires full sun (unlikely to grow in intact forest understory)
- Ornamental with fragrant flowers
- Lack of seed production makes inadvertent dispersal and spread unlikely