

Taxon: <i>Dahlia pinnata</i> Cav.	Family: Asteraceae
Common Name(s): Aztec dahlia dahlia garden dahlia pinnate dahlia	Synonym(s): <i>Dahlia ×hortensis</i> Guillaumin <i>Dahlia ×hybrida hort.</i> , nom. inval. <i>Dahlia rosea</i> Cav. <i>Dahlia variabilis</i> (Willd.) Desf. <i>Georgina variabilis</i> Willd.

Assessor: Chuck Chimera	Status: Assessor Approved	End Date: 1 Dec 2022
WRA Score: 0.0	Designation: L	Rating: Low Risk

Keywords: Perennial Herb, Naturalized Elsewhere, Tuberos Roots, Bee-Pollinated, Gravity-Dispersed

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		
406	Host for recognized pests and pathogens		
407	Causes allergies or is otherwise toxic to humans		

Qsn #	Question	Answer Option	Answer
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	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	y
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		
607	Minimum generative time (years)	1 year = 1, 2 or 3 years = 0, 4+ years = -1	1
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		
704	Propagules adapted to wind dispersal	y=1, n=-1	n
705	Propagules water dispersed	y=1, n=-1	n
706	Propagules bird dispersed	y=1, n=-1	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/m ²)		
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?	n
	Source(s)	Notes
	Misra, R. L., Saini, H. C., Dhyani, D., Verma, T. S., Thakur, P. C., Singh, A. M. A. R., & Kumar, R. (1990). Genetic diversity in dahlia (<i>Dahlia variabilis</i>). <i>Indian Journal of Genetics & Plant Breeding</i> , 50(1), 51-55	"Abstract : On the basis of D2analysis of 9 characters, 23 <i>D. variabilis</i> [<i>D. pinnata</i>] varieties were grouped into 10 clusters. Intercluster values suggested that very little domestication had occurred. Three clusters were each comprised of only one variety (Arthur Godfrey, African Queen and Pioneer); these varieties are recommended for the exploitation of hybrid vigour."
	Lim, T.K. (2014). <i>Edible Medicinal And Non-Medicinal Plants</i> . Volume 7, Flowers. Springer, Dordrecht	[Cultivated for a long period of time. Not heavily domesticated] "The common garden variety Dahlia was once an important root crop and medicinal plant among the pre-Columbian Indians of Central Mexico, Yucatan and Guatemala. Its roots were valued both for the nutritious inulin stored inside them and for the antibiotic compounds concentrated in the skin of the tubers (Whitley 1985)."
102	Has the species become naturalized where grown?	
	Source(s)	Notes
	WRA Specialist. (2022). Personal Communication	NA
103	Does the species have weedy races?	
	Source(s)	Notes
	WRA Specialist. (2022). 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
	Lim, T.K. (2014). <i>Edible Medicinal And Non-Medicinal Plants</i> . Volume 7, Flowers. Springer, Dordrecht	"The species is native to Mexico and Central America to Columbia."
202	Quality of climate match data	High
	Source(s)	Notes
	Lim, T.K. (2014). <i>Edible Medicinal And Non-Medicinal Plants</i> . Volume 7, Flowers. Springer, Dordrecht	"The species is native to Mexico and Central America to Columbia."
203	Broad climate suitability (environmental versatility)	n
	Source(s)	Notes
	Lim, T.K. (2014). <i>Edible Medicinal And Non-Medicinal Plants</i> . Volume 7, Flowers. Springer, Dordrecht	"Dahlia grows best in full sun in friable, moderately moist, well-drained, fertile soils with pH 6–6.5. It thrives best in volcanic soils as found in its natural habitat in Mexico. It is frost tender and drought intolerant."

Qsn #	Question	Answer
	Sorensen, P. D. (1969). Revision of the genus <i>Dahlia</i> (Compositae, Heliantheae—Coreopsidinae). <i>Rhodora</i> , 71 (786), 309-365	"Rocky slopes, 7000-10,000 ft., southern Hidalgo south to northern Guerrero, west from the Mexico-Puebla border at Volcan Popocatepetl to western Mexico state, frequent in the volcanic mountains just west and southwest of Mexico City."
	Plants for a Future. (2022). <i>Dahlia pinnata</i> . https://pfaf.org . [Accessed 28 Nov 2022]	"USDA hardiness - 8-11"

204	Native or naturalized in regions with tropical or subtropical climates	y
	Source(s)	Notes
	Lim, T.K. (2014). <i>Edible Medicinal And Non-Medicinal Plants</i> . Volume 7, Flowers. Springer, Dordrecht	"The species is native to Mexico and Central America to Columbia."

205	Does the species have a history of repeated introductions outside its natural range?	y
	Source(s)	Notes
	Randall, R.P. (2017). <i>A Global Compendium of Weeds</i> . 3rd Edition. Perth, Western Australia. R.P. Randall	[Recorded in the following locations] "Major Pathway/s: Contaminant, Crop, Herbal, Ornamental Dispersed by: Humans, Escapee References: United States of America-N-101, Czech Republic-U-400, United Kingdom-N-519, Austria-UC-708, United Kingdom-UC-812, Mexico-W-890, Ireland-U-894, Europe-N-819, Galpagos Islands-CN-1157, China-N-1215, Mexico-W-1226, Norway-N-1243, China-N-1344, India-U-1345, Zimbabwe-U-1365, Spain-U-1454, Czech Republic-U-1522, North Korea-N-1600, Austria-W-1609, Norway-W-1609, Bolivia-N-1630, Brazil-N-1559, Global-CD-1611, Czech Republic-U-1731, China-N-1758, Austria-W-1977, Croatia-W-1977, Czech Republic-W-1977, France-W-1977, India-W-1977, Ireland-W-1977, Mongolia-W-1977, Norway-W-1977, Peru-W-1977, Venezuela-W-1977, Zimbabwe-W-1977."

Qsn #	Question	Answer
301	Naturalized beyond native range	y
	Source(s)	Notes
	Dai, X. K., et al. (2016). Factors Governing the Naturalization-to-Invasion Transition of Exotic Plants in Shenzhen, China. <i>Applied Ecology and Environmental Research</i> , 14(3), 637-677	"Table S4. Checklist of naturalized plant species in Shenzhen" [Includes <i>Dahlia pinnata</i>]
	Randall, R.P. (2017). <i>A Global Compendium of Weeds</i> . 3rd Edition. Perth, Western Australia. R.P. Randall	[Reported to be naturalized and/or weedy in several locations] "References: United States of America-N- 101, Czech Republic-U-400, United Kingdom-N-519, Austria-UC-708, United Kingdom-UC-812, Mexico-W-890, Ireland-U-894, Europe-N-819, Galapagos Islands-CN-1157, China-N-1215, Mexico-W-1226, Norway-N-1243, China-N-1344, India-U-1345, Zimbabwe-U-1365, Spain-U-1454, Czech Republic-U-1522, North Korea-N-1600, Austria-W-1609, Norway-W-1609, Bolivia-N-1630, Brazil-N-1559, Global-CD-1611, Czech Republic-U-1731, China-N-1758, Austria-W-1977, Croatia-W-1977, Czech Republic-W-1977, France-W-1977, India-W-1977, Ireland-W-1977, Mongolia-W-1977, Norway-W-1977, Peru-W-1977, Venezuela-W-1977, Zimbabwe-W-1977."

302	Garden/amenity/disturbance weed	
	Source(s)	Notes
	Plants for a Future. (2022). <i>Dahlia pinnata</i> . https://pfaf.org . [Accessed 30 Nov 2022]	"Weed Potential No"
	Randall, R.P. (2017). <i>A Global Compendium of Weeds</i> . 3rd Edition. Perth, Western Australia. R.P. Randall	[Cited as a weed of unspecified impacts] "References: United States of America-N-101, Czech Republic-U-400, United Kingdom-N-519, Austria-UC-708, United Kingdom-UC-812, Mexico-W-890, Ireland-U-894, Europe-N-819, Galapagos Islands-CN-1157, China-N-1215, Mexico-W-1226, Norway-N-1243, China-N-1344, India-U-1345, Zimbabwe-U-1365, Spain U-1454, Czech Republic-U-1522, North Korea-N-1600, Austria-W-1609, Norway-W-1609, Bolivia-N-1630, Brazil-N-1559, Global-CD-1611, Czech Republic-U-1731, China-N-1758, Austria-W-1977, Croatia-W-1977, Czech Republic-W-1977, France-W-1977, India-W-1977, Ireland-W-1977, Mongolia-W-1977, Norway-W-1977, Peru-W-1977, Venezuela-W-1977, Zimbabwe-W-1977."

303	Agricultural/forestry/horticultural weed	n
	Source(s)	Notes
	Randall, R.P. (2017). <i>A Global Compendium of Weeds</i> . 3rd Edition. Perth, Western Australia. R.P. Randall	No evidence

304	Environmental weed	n
	Source(s)	Notes
	Randall, R.P. (2017). <i>A Global Compendium of Weeds</i> . 3rd Edition. Perth, Western Australia. R.P. Randall	No evidence

305	Congeneric weed	

Qsn #	Question	Answer
	Source(s)	Notes
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	There are a few species that are reported to be naturalized and/or weeds, but evidence of negative impacts has not been corroborated.

401	Produces spines, thorns or burrs	n
	Source(s)	Notes
	Lim, T.K. (2014). Edible Medicinal And Non-Medicinal Plants. Volume 7, Flowers. Springer, Dordrecht	[No evidence] "A deciduous, branched, perennial herb, to 1.8 m high with large subterraneous tuberous roots. Internode of stems hollow, leaves opposite or whorled, simple to 2-pinnatisect with 3–5 elliptic, serrated leaflets, glabrous and glaucous beneath (Plates 2 and 3). Inflorescence of solitary or few, long-pedunculate, involucrate, radiate capitulum, 10–20 cm across. Involucral bracts in 2 series, the outer series rather fleshy and foliaceous, inner series membranous and shortly united at the base, receptacle scaly. Disc florets bisexual, actinomorphic, tubular, 5-lobed sometimes mostly or all replaced by ray florets as in cultivated hybrid progeny. Ray florets, several marginal rows, zygomorphic, female and fertile, or neuter, the ligules patent with incurved or recurved margins, purple in wild plants and white, yellow, pink, red or purple in horticultural improved plants (Plates 1 , 2 and 3). Achenes dorsally compressed, pappus absent or shortly bidentate."

402	Allelopathic	
	Source(s)	Notes
	WRA Specialist. (2022). Personal Communication	Unknown. No evidence found

403	Parasitic	n
	Source(s)	Notes
	Lim, T.K. (2014). Edible Medicinal And Non-Medicinal Plants. Volume 7, Flowers. Springer, Dordrecht	"A deciduous, branched, perennial herb, to 1.8 m high with large subterraneous tuberous roots." [Asteraceae]

404	Unpalatable to grazing animals	n
	Source(s)	Notes

Qsn #	Question	Answer
	<p>Olguín Limón, C. (2010). Selectividad de tres cérvidos exóticos y el venado cola blanca <i>odocoileus virginianus</i>, en un bosque de encino. Universidad Autónoma de San Luis Potosí, San Luis Potosi, Mexico</p>	<p>[Browsed by deer] "Food competency among native and exotic deer species was evaluated by estimating preference indexes and seasonal selectivity of white deer tail and exotics deers in a Deciduous Oak Forest. This study was carried out in a livestock enterprise located at Villa de Zaragoza, S.L.P. Mexico. Animals studied were white tail deer and exotic species axis, sika and fallow deer. During drought and wet season a reference plants collection was performed and feces samples were taken to determine diet composition by microhistological technique. Animal selection for plant species was estimated by the selectivity index and highest species palatability by preference index. Results showed that yearly diet for white deer tail and axis was conformed mainly by forbs, while sika and fallow deer for grasses. Similar tendency was observed during drought season for axis and fallow deer but white tail deer changed to forbs and shrubs and sika to grasses, shrubs and trees almost in the same proportion of the diet. In regard to plant category, highest selectivity indexes for all deers was obtained for forbs, a exception was observed for sika deer that showed highest index for grasses. Similarities among preference of individual species were observed for white tail deer and sika for <i>Cyperus acicularis</i>; for sika and fallow deer, <i>Acalypha heredaceae</i> and for Axis and fallow deer, <i>Dahlia pinnata</i> and <i>Castilleja glandulosa</i>. White deer tail mainly selected forbs in both seasons, while exotics deers used proportionally all plant categories, preference index did not show competency among white deer and exotics under the low stocking rate."</p>

405	Toxic to animals	
	Source(s)	Notes
	<p>Plants for a Future. (2022). <i>Dahlia pinnata</i>. https://pfaf.org. [Accessed 30 Nov 2022]</p>	<p>"Known Hazards None known"</p>
	<p>Olguín Limón, C. (2010). Selectividad de tres cérvidos exóticos y el venado cola blanca <i>odocoileus virginianus</i>, en un bosque de encino. Universidad Autónoma de San Luis Potosí, San Luis Potosi, Mexico</p>	<p>[No evidence] "Similarities among preference of individual species were observed for white tail deer and sika for <i>Cyperus acicularis</i>; for sika and fallow deer, <i>Acalypha heredaceae</i> and for Axis and fallow deer, <i>Dahlia pinnata</i> and <i>Castilleja glandulosa</i>. White deer tail mainly selected forbs in both seasons, while exotics deers used proportionally all plant categories, preference index did not show competency among white deer and exotics under the low stocking rate."</p>
	<p>Wag! (2022). What is Dahlia Poisoning https://wagwalking.com/condition/dahlia-poisoning. [Accessed 30 Nov 2022]</p>	<p>[Possibly toxic to dogs] "Dahlia poisoning is a mild condition characterized by gastrointestinal distress if eaten, and dermatitis with skin contact. The dahlia is a popular garden plant and often sold as bouquets or cut flowers for indoor decoration. The toxic principles in the dahlia are not known at this time, but whether the flower, leaves, or root is handled or eaten, it can cause stomach upset and skin inflammation with itching."</p>

406	Host for recognized pests and pathogens	
	Source(s)	Notes

Qsn #	Question	Answer
	<p>PictureThis. (2022). Garden dahlia (<i>Dahlia pinnata</i>) Care Guide. https://www.picturethisai.com/care/Dahlia_pinnata.html. [Accessed 30 Nov 2022]</p>	<p>"Pests and Diseases Powdery Mildew Gray Mold Spider Mites European Corn Borers Other Uncommon Pests or Diseases Moreover, there are some less common pests and diseases listed below that need your attention Stem Rot Mosaic Disease Wilt Disease Charcoal Rot Southern Blight Nematodes"</p>

407	Causes allergies or is otherwise toxic to humans	
	Source(s)	Notes
	<p>Lim, T.K. (2014). Edible Medicinal And Non-Medicinal Plants. Volume 7, Flowers. Springer, Dordrecht</p>	<p>"The flower petals are eaten in salads; the tubers are eaten as vegetables in some parts of Mexico (Uphof 1968 ; Hedrick 1972 ; Facciola 1990 ; Roberts 2000). A sweet extract of the tuber, called 'dacopa', is used as a beverage or as a flavouring, mixed with hot or cold water or milk or sprinkled on ice cream. Its naturally sweet mellow taste is said to combine the characteristics of coffee, tea and chocolate. Some culinary recipes of Dahlia flowers include Mexican mealie and chili dish, cream cheese and Dahlia dip and sundried tomato and Dahlia bread (Roberts 2000)."</p>
	<p>Spoerke, D.G. & Smolinske, S.C. (1990). Toxicity of Houseplants. CRC Press, Boca Raton, FL</p>	<p>[Possible cause of dermatitis] "Toxic Class - Dahlia species contain phototoxic polyacetylene compounds. Specific Mechanism - Dermatitis may result from the irritating, sensitizing, and phototoxic properties of the polyacetylene group. Potential Manifestations - Skin - Dahlia species are generally considered to be nontoxic. Occupational dermatitis due to handling the tubers, and photodermatitis due to contact with the leaf have been described."</p>

Qsn #	Question	Answer
408	Creates a fire hazard in natural ecosystems	n
	Source(s)	Notes
	Vivar-Evans, S., Barradas, V. L., Sánchez-Coronado, M. E., De Buen, A. G., & Orozco-Segovia, A. (2006). Ecophysiology of seed germination of wild <i>Dahlia coccinea</i> (Asteraceae) in a spatially heterogeneous fire-prone habitat. <i>Acta Oecologica</i> , 29(2), 187-195	[Ecology of <i>Dahlia coccinea</i> suggests species are adapted to survive fire, but do not increase fire risk] " <i>D. coccinea</i> was one of the most conspicuous elements after the fire events of 1998 at the reserve of El Pedregal de San Ángel (Martínez-Mateos, 2001). This species could survive and become successful after a fire event either because its tubers and/or seeds survive as they are protected by soil, and/or because germination is enhanced by fire, which is a common strategy among the species growing in fire-prone habitats (Trabaud, 1987)."
	Sorensen, P. D. (1969). Revision of the genus <i>Dahlia</i> (Compositae, Heliantheae—Coreopsidinae). <i>Rhodora</i> , 71 (786), 309-365	[No evidence that this plant grows in fire prone areas or otherwise increases fire risk] "Rocky slopes, 7000-10,000 ft., southern Hidalgo south to northern Guerrero, west from the Mexico-Puebla border at Volcan Popocatepetl to western Mexico state, frequent in the volcanic mountains just west and southwest of Mexico City."

409	Is a shade tolerant plant at some stage of its life cycle	n
	Source(s)	Notes
	Plants for a Future. (2022). <i>Dahlia pinnata</i> . https://pfaf.org . [Accessed 30 Nov 2022]	"An easily grown plant so long as the soil does not dry out[260]. It requires a deep rich soil and a sunny position[164], disliking shade [200]."
	Lim, T.K. (2014). <i>Edible Medicinal And Non-Medicinal Plants. Volume 7, Flowers</i> . Springer, Dordrecht	" <i>Dahlia</i> grows best in full sun in friable, moderately moist, well-drained, fertile soils with pH 6–6.5."

410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	n
	Source(s)	Notes
	Lim, T.K. (2014). <i>Edible Medicinal And Non-Medicinal Plants. Volume 7, Flowers</i> . Springer, Dordrecht	" <i>Dahlia</i> grows best in full sun in friable, moderately moist, well-drained, fertile soils with pH 6–6.5. It thrives best in volcanic soils as found in its natural habitat in Mexico."
	PictureThis. (2022). Garden dahlia (<i>Dahlia pinnata</i>) Care Guide. https://www.picturethisai.com/care/Dahlia_pinnata.html . [Accessed 30 Nov 2022]	"Garden dahlia can be cultivated in fertile and loose sandy soil with good drainage. The planting location or culture soil should be changed every year. If it is planted continuously in the same soil, the plant tends to degrade and becomes susceptible to pests and diseases. When garden dahlia is potted, it is generally recommended to use soil made up of garden soil (50%), leaf mould (20%), sandy soil (20%), and organic fertilizer (10%). Compacted soil easily brings about water accumulation and root rot, so it cannot be used. The soil should be regularly loosened to increase air permeability. "
	All About Gardening. (2022). How to Plant, Grow, and Care for Dahlias. https://www.allaboutgardening.com/dahlias/ . [Accessed 30 Nov 2022]	"They can be picky about soil type, and love to have their space." ... "Species <i>Dahlia pinnata</i> spp. ... Soil Type Loose, Rich, Loamy"

Qsn #	Question	Answer
411	Climbing or smothering growth habit	n
	Source(s)	Notes
	Lim, T.K. (2014). Edible Medicinal And Non-Medicinal Plants. Volume 7, Flowers. Springer, Dordrecht	"A deciduous, branched, perennial herb, to 1.8 m high with large subterraneous tuberous roots."

412	Forms dense thickets	n
	Source(s)	Notes
	Sorensen, P. D. (1969). Revision of the genus <i>Dahlia</i> (Compositae, Heliantheae—Coreopsidinae). <i>Rhodora</i> , 71 (786), 309-365	"Rocky slopes, 7000-10,000 ft., southern Hidalgo south to northern Guerrero, west from the Mexico-Puebla border at Volcan Popocatepetl to western Mexico state, frequent in the volcanic mountains just west and southwest of Mexico City." [No evidence]
	Lim, T.K. (2014). Edible Medicinal And Non-Medicinal Plants. Volume 7, Flowers. Springer, Dordrecht	"The species is native to Mexico and Central America to Columbia." [No evidence]

501	Aquatic	n
	Source(s)	Notes
	Sorensen, P. D. (1969). Revision of the genus <i>Dahlia</i> (Compositae, Heliantheae—Coreopsidinae). <i>Rhodora</i> , 71 (786), 309-365	[Terrestrial] "Rocky slopes, 7000-10,000 ft., southern Hidalgo south to northern Guerrero, west from the Mexico-Puebla border at Volcan Popocatepetl to western Mexico state, frequent in the volcanic mountains just west and southwest of Mexico City."

502	Grass	n
	Source(s)	Notes
	USDA, Agricultural Research Service, National Plant Germplasm System. (2022). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. https://npgsweb.ars-grin.gov/ . [Accessed 22 Nov 2022]	"Family: Asteraceae (alt. Compositae) Subfamily: Asteroideae Tribe: Coreopsideae"

503	Nitrogen fixing woody plant	n
	Source(s)	Notes
	USDA, Agricultural Research Service, National Plant Germplasm System. (2022). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. https://npgsweb.ars-grin.gov/ . [Accessed 22 Nov 2022]	"Family: Asteraceae (alt. Compositae) Subfamily: Asteroideae Tribe: Coreopsideae"

504	Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)	y
	Source(s)	Notes
	Lim, T.K. (2014). Edible Medicinal And Non-Medicinal Plants. Volume 7, Flowers. Springer, Dordrecht	"A deciduous, branched, perennial herb, to 1.8 m high with large subterraneous tuberous roots."

Qsn #	Question	Answer
601	Evidence of substantial reproductive failure in native habitat	n
	Source(s)	Notes
	Lim, T.K. (2014). Edible Medicinal And Non-Medicinal Plants. Volume 7, Flowers. Springer, Dordrecht	"The species is native to Mexico and Central America to Columbia."

602	Produces viable seed	y
	Source(s)	Notes
	Sorensen, P. D. (1969). Revision of the genus <i>Dahlia</i> (Compositae, Heliantheae—Coreopsidinae). <i>Rhodora</i> , 71 (786), 309-365	"achenes 11-13 mm. long, 2-3 mm. wide, linear-oblongate, slightly appressed pubescent near base."
	Lim, T.K. (2014). Edible Medicinal And Non-Medicinal Plants. Volume 7, Flowers. Springer, Dordrecht	"New varieties are propagated from seeds, and rare varieties are propagated by grafting onto rootstocks. Generally propagation by cuttings is deemed best."
	Plants for a Future. (2022). <i>Dahlia pinnata</i> . https://pfaf.org . [Accessed 30 Nov 2022]	"Seed - sow late winter to mid spring in a greenhouse. The seed usually germinates in 1 - 3 weeks at 20°C [164]. When they are large enough to handle, prick the seedlings out into individual pots and grow them on in the greenhouse for at least their first winter. Plant them out into their permanent positions in late spring or early summer, after the last expected frosts. Cuttings of young shoots in early spring."
	da Silva Matos, S. A., & de Oliveira, G. P. (2019). Potential germination of commercialized seeds and production of dahlia seedlings in Varzea Grande, Mato Grosso, Brazil. <i>Acta Biológica Catarinense</i> , 6(4), 114-114	"There is little information on the cultivation of species with ornamental potential in Mato Grosso. The aim of this work was to evaluate, in Varzea Grande (MT), the favorable environment for the production of <i>Dahlia pinnata</i> Cav. and the quality of the seeds sold for this purpose. The experiment took place at the Seed Laboratory and at the experimental field of Varzea Grande University Center (Univag), Mato Grosso. Seeds of this species were purchased in commercial packaging. The seeded materials were arranged in the greenhouse with 50% shading (Sombrite®) and in full sun, both with daily irrigation. Growth assessment was performed from the seventh day after emergence. The number of emerged plants was evaluated from the first week after sowing until the establishment of seedlings. Analysis of variance was performed by Tukey test at 5% and regression analysis. The germination test showed 71% of normal seedlings, a lower value than the minimum germination described in the package, and emergence and establishment of 32% of the seedlings. The evaluated conditions, in greenhouse under 50% shading, were favorable to the production of <i>Dahlia pinnata</i> , even when commercial seeds presented low germination potential."

Qsn #	Question	Answer
603	Hybridizes naturally	
	Source(s)	Notes
	Hansen, H. V., & Hjerting, J. P. (1996). Observations on chromosome numbers and biosystematics in <i>Dahlia</i> (Asteraceae, Heliantheae) with an account on the identity of <i>D. pinnata</i> , <i>D. rosea</i> , and <i>D. coccinea</i> . <i>Nordic Journal of Botany</i> , 16(4), 445-455	[Unknown. Possibly] "According to Lawrence (1970) <i>D. pinnata</i> was of hybridogene origin (no parents indicated), while Sorensen (1969, 1970) took <i>D. pinnata</i> to represent the wild species described in Sorensen (1969), notwithstanding that Cavanilles presumably diagnosed a domesticated plant. According to Sorensen, it was only after the introduction to Madrid that 'the native <i>D. pinnata</i> ' (i.e., <i>D. sorensenii</i>) came to cross with <i>D. coccinea</i> ." ... "Native dahlia hybrids are rarely seen in the nature of Mexico."

604	Self-compatible or apomictic	
	Source(s)	Notes
	Sorensen, P. D. (1969). Revision of the genus <i>Dahlia</i> (Compositae, Heliantheae—Coreopsidinae). <i>Rhodora</i> , 71 (786), 309-365	"The great variability in <i>Dahlia</i> plants is due to the prevailing self-incompatibility which maintains in all progeny a rather high degree of heterozygosity."
	Hansen, H. V., & Hjerting, J. P. (1996). Observations on chromosome numbers and biosystematics in <i>Dahlia</i> (Asteraceae, Heliantheae) with an account on the identity of <i>D. pinnata</i> , <i>D. rosea</i> , and <i>D. coccinea</i> . <i>Nordic Journal of Botany</i> , 16(4), 445-455	[Possibly self-incompatible] "Sorensen (1969: 406) concluded that most dahlia species are self-incompatible, while Lawrence's remarks on this question were somewhat ambiguous (Lawrence 1929, 1931a, 1932, 1970). According to our tests, performed on indoor plants, <i>D. merckii</i> is perfectly self-fertile. All other species tested are generally self-sterile, but late in the season a few achenes (cypselas) may now and then ripen on some of the diploid taxa. From these observations, one would expect <i>D. merckii</i> to be self-fertile also in the open field. In reality, this seems to count for most diploid taxa. Single specimens of <i>D. australis</i> (7250), <i>D. coccinea</i> (1422, 7000), <i>D. merckii</i> (1395, 7180), and <i>D. tubulata</i> (7069) have often been planted in isolation or at least far removed from partners, and all have repeatedly been shown to self-fertilize. We surmise that the tetraploid taxa are practically self-sterile when being grown in the general beds or in outdoor isolation, but there may be exceptions to this."

605	Requires specialist pollinators	n
	Source(s)	Notes
	Wróblewska, A., Stawiarz, E., & Masierowska, M. (2016). Evaluation of Selected Ornamental Asteraceae as a Pollen Source for Urban Bees. <i>Journal of Apicultural Science</i> , 60 (2), 179-192	"The interest shown by the insects in the forage as well as formation of pollen loads (<i>C. macrocephala</i> , <i>C. officinalis</i> , <i>C. sulphureus</i> , <i>D. pinnata</i>) provide evidence of the attraction held by those plants for both domesticated and wild bees." ... "Among the species investigated in our study, <i>D. pinnata</i> , <i>C. macrocephala</i> , and <i>T. rotundifolia</i> are the most valuable sources of pollen food for managed and wild Hymenoptera."

Qsn #	Question	Answer
	Abhivivek, K. R., Sharma, H. K., & Thakur, M. (2021). Diversity of polleniferous plants of <i>Apis mellifera</i> L. in mid hill region of Himachal Pradesh. <i>Journal of Entomology and Zoology Studies</i> , 9(2), 1184-1193	[<i>Dahlia pinnata</i> pollen collected on honey bees] "This study was carried out in Nauni, mid hill region of Himachal Pradesh, in 2017 to determine the pollen resources of the honey bee, <i>Apis mellifera</i> L. through pollen load analysis. The pollen loads were collected from returning foragers to hives maintained at the university apiary. Pollen analysis of pollen loads of <i>A. mellifera</i> done throughout the year showed the presence of 66 pollen types belonged to 29 botanical families. Major polleniferous plant species that provided homogenous (unifloral) pollen loads were <i>Actinidia deliciosa</i> , <i>Allium cepa</i> , <i>Bidens pilosa</i> , <i>Bombax cieba</i> , <i>Brassica campestris</i> , <i>Calendula officinalis</i> , <i>Centaurea cyanus</i> , <i>Cosmos sulphureus</i> , <i>Cucumis sativus</i> , <i>Dahlia pinnata</i> , <i>Erigeron annuus</i> , <i>Eschscholzia californica</i> , <i>Eucalyptus hybrida</i> , <i>Grewia optiva</i> , <i>Helianthus annuus</i> , <i>Hypericum oblongifolium</i> , <i>Lagerstroemia indica</i> , <i>Malus domestica</i> , <i>Opuntia dillenii</i> , <i>Ornithogalum thyrsoides</i> , <i>Parthenium hysterophorus</i> , <i>Peltophorum ferrugineum</i> , <i>Prunus armeniaca</i> , <i>P. domestica</i> , <i>P. persica</i> , <i>P. puddum</i> , <i>Punica granatum</i> , <i>Pyrus communis</i> , <i>P. pashia</i> , <i>Robinia pseudoacacia</i> , <i>Rosa moschata</i> , <i>Toona ciliata</i> , <i>Trifolium repens</i> , <i>Trigonella foenum-graecum</i> , <i>Venidium fastuosum</i> , <i>Zea mays</i> and <i>Zinnia elegans</i> . The plant family that provided the highest pollen plant diversity was Asteraceae (14pollen types) followed by Rosaceae (10) and Fabaceae (8). The identified bee flora comprises ornamentals, horticultural plants, vegetables, condiments, oil seed plants, cereal, wild plants and weeds. These data provide a piece of information on bee pollen foraging plants of primary importance in the development of colonies in mid hill regions of Himachal."
	Vernon, A. (2014). <i>The Plant Lover's Guide to Dahlias</i> . Timber Press, Portland, OR	[General description of <i>Dahlia</i> pollinators] "Our natural pollinators, particularly many species of bees and hoverflies, are exceptional pollinators of dahlias. They do a great job of visiting the tiny florets that make up the dahlia flower as they mature over time."

606	Reproduction by vegetative fragmentation	
	Source(s)	Notes
	Plants for a Future. (2022). <i>Dahlia pinnata</i> . https://pfaf.org . [Accessed 1 Dec 2022]	"Cuttings of young shoots in early spring. The tubers are usually brought into the greenhouse in late winter in order to encourage early growth and young basal shoots are removed as soon as they are large enough[200]. Division. The roots are usually harvested in the autumn. These can be divided into individual tubers when planting out in the spring. Each portion should have a growing point [200]."
	Lim, T.K. (2014). <i>Edible Medicinal And Non-Medicinal Plants</i> . Volume 7, Flowers. Springer, Dordrecht	[Possibly, although no indication that plants spread vegetatively from tuberous roots] "A deciduous, branched, perennial herb, to 1.8 m high with large subterraneous tuberous roots."

Qsn #	Question	Answer
607	Minimum generative time (years)	1
	Source(s)	Notes
	The Flowering Farmhouse. (2021). Growing Dahlias From Seed. https://thefloweringfarmhouse.com/2021/02/01/growing-dahlias-from-seed/ . [Accessed 1 Dec 2022]	[General description] "Once you decide to grow dahlias from seed, you will want to start your dahlia seeds indoors. Start your seeds indoors 6-8 weeks prior to your last frost date. This will give your dahlia flower seeds enough time to get growing so that they can flower in the summer months. It takes about 100-120 days for the seeds to produce flowers."

701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	n
	Source(s)	Notes
	Martínez-Orea, Y. et al. (2014). Seed rain as a source of propagules for natural regeneration in a temperate forest in Mexico City. <i>The Journal of the Torrey Botanical Society</i> , 141(2), 135-150	[Dahlia species without obvious dispersal mechanisms] "Barochory was assigned to those diaspores that lack evident specialized dispersal structures and simply fall to the ground due to gravity." ... "Appendix 1. Identified species in the seed rain of plots corresponding to three vegetation types of the MRB temperate forest (Mexico city):" [Dahlia pinnata - DS - dispersal syndrome - Barochory]

702	Propagules dispersed intentionally by people	y
	Source(s)	Notes
	Randall, R.P. (2017). <i>A Global Compendium of Weeds</i> . 3rd Edition. Perth, Western Australia. R.P. Randall	"Major Pathway/s: Contaminant, Crop, Herbal, Ornamental Dispersed by: Humans, Escapee"

703	Propagules likely to disperse as a produce contaminant	
	Source(s)	Notes
	Randall, R.P. (2017). <i>A Global Compendium of Weeds</i> . 3rd Edition. Perth, Western Australia. R.P. Randall	[Possibly. Unable to corroborate reports of transport as a contaminant] "Major Pathway/s: Contaminant, Crop, Herbal, Ornamental Dispersed by: Humans, Escapee"

704	Propagules adapted to wind dispersal	n
	Source(s)	Notes
	Martínez-Orea, Y. et al. (2014). Seed rain as a source of propagules for natural regeneration in a temperate forest in Mexico City. <i>The Journal of the Torrey Botanical Society</i> , 141(2), 135-150	"Barochory was assigned to those diaspores that lack evident specialized dispersal structures and simply fall to the ground due to gravity." [Related species, <i>Dahlia pinnata</i> , lacks specialized adaptations for dispersal]

705	Propagules water dispersed	n
	Source(s)	Notes
	Martínez-Orea, Y. et al. (2014). Seed rain as a source of propagules for natural regeneration in a temperate forest in Mexico City. <i>The Journal of the Torrey Botanical Society</i> , 141(2), 135-150	"Barochory was assigned to those diaspores that lack evident specialized dispersal structures and simply fall to the ground due to gravity." [Dahlia pinnata lacks specialized adaptations for dispersal]

Qsn #	Question	Answer
	Sorensen, P. D. (1969). Revision of the genus <i>Dahlia</i> (Compositae, Heliantheae—Coreopsidinae). <i>Rhodora</i> , 71 (786), 309-365	"Rocky slopes, 7000-10,000 ft., southern Hidalgo south to northern Guerrero, west from the Mexico-Puebla border at Volcan Popocatepetl to western Mexico state, frequent in the volcanic mountains just west and southwest of Mexico City." [Barochory may result in secondary dispersal by water, but generally not known to occur in riparian habitats]

706	Propagules bird dispersed	n
	Source(s)	Notes
	Martínez-Orea, Y. et al. (2014). Seed rain as a source of propagules for natural regeneration in a temperate forest in Mexico City. <i>The Journal of the Torrey Botanical Society</i> , 141(2), 135-150	[<i>Dahlia</i> species without obvious dispersal mechanisms] "Barochory was assigned to those diaspores that lack evident specialized dispersal structures and simply fall to the ground due to gravity." ... "Appendix 1. Identified species in the seed rain of plots corresponding to three vegetation types of the MRB temperate forest (Mexico City):" [<i>Dahlia pinnata</i> - DS - dispersal syndrome - Barochory]

707	Propagules dispersed by other animals (externally)	n
	Source(s)	Notes
	Martínez-Orea, Y. et al. (2014). Seed rain as a source of propagules for natural regeneration in a temperate forest in Mexico City. <i>The Journal of the Torrey Botanical Society</i> , 141(2), 135-150	[<i>Dahlia</i> species without obvious dispersal mechanisms] "Barochory was assigned to those diaspores that lack evident specialized dispersal structures and simply fall to the ground due to gravity." ... "Appendix 1. Identified species in the seed rain of plots corresponding to three vegetation types of the MRB temperate forest (Mexico City):" [<i>Dahlia pinnata</i> - DS - dispersal syndrome - Barochory]

708	Propagules survive passage through the gut	n
	Source(s)	Notes
	Martínez-Orea, Y. et al. (2014). Seed rain as a source of propagules for natural regeneration in a temperate forest in Mexico City. <i>The Journal of the Torrey Botanical Society</i> , 141(2), 135-150	[<i>Dahlia</i> species without obvious dispersal mechanisms] "Barochory was assigned to those diaspores that lack evident specialized dispersal structures and simply fall to the ground due to gravity." ... "Appendix 1. Identified species in the seed rain of plots corresponding to three vegetation types of the MRB temperate forest (Mexico City):" [<i>Dahlia pinnata</i> - DS - dispersal syndrome - Barochory]

801	Prolific seed production (>1000/m2)	n
	Source(s)	Notes
	Martínez-Orea, Y. et al. (2014). Seed rain as a source of propagules for natural regeneration in a temperate forest in Mexico City. <i>The Journal of the Torrey Botanical Society</i> , 141(2), 135-150	Unknown. High densities not recorded in this study

802	Evidence that a persistent propagule bank is formed (>1 yr)	n

Qsn #	Question	Answer
	Source(s)	Notes
	McDonald, M. B. (2005). Flower Seed Longevity and Deterioration, Pp. 187-206 in Flower Seeds Biology and Technology. CABI Publishing, Wallingford	[Longevity under natural conditions not specified] "Table 10.1. Relative storage life of flower seeds if maintained under satisfactory storage conditions. Short = less than 1 year, Medium = less than 3 years. Long = more than 3 years." [Dahlia = Medium]

803	Well controlled by herbicides	
	Source(s)	Notes
	Southward, R. C., Harrington, K. C., Hampton, J. G., & Han, H. (1998). Selective herbicides for dahlia production. Proceedings Agronomy Society of N.Z. 28: 11-15	[Unknown. No evidence that Dahlias are controlled with herbicides, but some herbicides used to control weeds in Dahlia can harm the cultivated plants] "Herbicide efficacy and tolerance were investigated in 'Figaro' series Hammett dahlias. In the first experiment inter-row applications of oxyfluorfen, oxyfluorfen plus oryzalin, oxadiazon, and oxadiazon plus simazine herbicide treatments to two month old plants did not affect field grown tuber yields, or subsequent forced re-sprouting under glasshouse conditions. Trifluralin and oryzalin treatments reduced tuber yields as much as leaving weeds uncontrolled. This was probably due to competition from inadequately controlled weeds, as no obvious toxic effects were observed from these two herbicides. The second experiment evaluated thirteen herbicides applied either preor postemergence to dahlias grown in pots both from seeds and transplanted seedlings. Of the pre-emergence treatments, alachlor, chlorpropham, chlorthal-dimethyl, pendimethalin and trifluralin did not injure either direct-sown or transplanted plants. Methabenzthiazuron did inhibit the early growth of direct sown dahlia, but plants recovered very quickly. Terbacil damaged direct sown dahlia, but not transplanted seedlings. EPTC, oxyfluorfen, oryzalin, and simazine all caused some injury to direct sown and transplanted dahlias. Of the post-emergence treatments, chlorpropham did not injure either direct sown or transplanted dahlia. Chlorthal-dimethyl, haloxyfop, and methabenzthiazuron caused some plant injury to early growth of direct-sown seedlings, but injured plants recovered quickly."

804	Tolerates, or benefits from, mutilation, cultivation, or fire	
	Source(s)	Notes
	WRA Specialist. (2022). Personal Communication	Unknown but plants probably able to resprout from tuberous roots

805	Effective natural enemies present locally (e.g. introduced biocontrol agents)	
	Source(s)	Notes
	WRA Specialist. (2022). Personal Communication	Unknown

Summary of Risk Traits:

High Risk / Undesirable Traits

- Thrives and can spread in regions with tropical climates
- Naturalized elsewhere (but no evidence in the Hawaiian Islands to date)
- Unconfirmed reports of weediness
- Other species may be weedy or invasive
- Potentially toxic to dogs if ingested
- May be toxic or cause skin irritation if handled
- Tolerates many soil types
- Reproduces by seeds and vegetatively from tuberous roots
- Dahlia species capable of flowering 100-120 days from seed
- Seeds dispersed by gravity and through intentional cultivation

Low Risk Traits

- No confirmed reports of negative impacts where naturalized
- Unarmed (no spines, thorns, or burrs)
- Palatable to deer and possibly other browsing animals
- Grows best in high light environments (dense shade may inhibit spread)
- Plants may be self-incompatible, or produce limited seeds when selfing
- Lack of specialized adaptations for long distance dispersal may limit risk of unintentional spread