

Taxon: <i>Euphorbia canariensis</i> L.	Family: Euphorbiaceae
Common Name(s): Canary Island spurge Hercules club Spanish cardón	Synonym(s): <i>Euphorbia canariensis</i> f. <i>viridis</i> G.Kunkel <i>Euphorbia canariensis</i> var. <i>spiralis</i> Bolle ex Boiss. <i>Euphorbia tribuloides</i> Lam. <i>Tithymalus canariensis</i> (L.) H.Karst. <i>Torfasadis canariensis</i> (L.) Raf.

Assessor: Chuck Chimera	Status: Approved	End Date: 2 Aug 2024
WRA Score: 4.0	Designation: L	Rating: Low Risk

Keywords: Clumping Cactoid Succulent, Naturalized Elsewhere, Spiny, Toxic Sap, Ballistic Dispersal

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)	Intermediate
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	y = 1*multiplier (see Appendix 2), n = 0	n
303	Agricultural/forestry/horticultural weed	y = 2*multiplier (see Appendix 2), n = 0	n
304	Environmental weed	y = 2*multiplier (see Appendix 2), n = 0	n
305	Congeneric weed	y = 1*multiplier (see Appendix 2), n = 0	y
401	Produces spines, thorns or burrs	y = 1, n = 0	y
402	Allelopathic		
403	Parasitic	y = 1, n = 0	n
404	Unpalatable to grazing animals	y = 1, n = -1	y
405	Toxic to animals	y = 1, n = 0	y
406	Host for recognized pests and pathogens	y = 1, n = 0	n
407	Causes allergies or is otherwise toxic to humans	y = 1, n = 0	y
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	y
605	Requires specialist pollinators		
606	Reproduction by vegetative fragmentation		
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		
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)	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
	Coello, A. J., Vargas, P., Cano, E., Riina, R., & Fernández-Mazuecos, M. (2024). Phylogenetics and phylogeography of <i>Euphorbia canariensis</i> reveal an extreme Canarian-Asian disjunction but limited inter-island colonization. <i>Plant Biology</i> , 26(3), 398-414	[No evidence of domestication] "One of the most remarkable species of the Canarian flora is the succulent, cactus-like <i>Euphorbia canariensis</i> L. (Fig. 1), a major component of lowland xerophytic communities known, in Spanish, as "cardonal-tabaibal" (Bramwell & Bramwell 1974). Commonly known as "cardllon", <i>E. canariensis</i> is endemic to the Canarian archipelago and occurs on at least six of the seven major islands of the archipelago (Acebes et al. 2010)."

102	Has the species become naturalized where grown?	
	Source(s)	Notes
	WRA Specialist. (2024). Personal Communication	NA

103	Does the species have weedy races?	
	Source(s)	Notes
	WRA Specialist. (2024). 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"	Intermediate
	Source(s)	Notes
	Eggl, U. & Nyffeler, R. (eds.). (2023). <i>Illustrated Handbook of Succulent Plants: Dicotyledons: Rosids</i> . Springer-Verlag, Berlin, Heidelberg, New York	"Distr: All the Canary Islands; predominantly on rocky coastal slopes, to 900 m."
	Arco Aguilar, M. J. D., & Rodríguez Delgado, O. (2018). <i>Vegetation of the Canary Islands</i> . In <i>Vegetation of the Canary Islands</i> (pp. 83-319). Springer, Cham	"The climate of the Canary Islands can be classified, according to the latitudinal situation and the oceanic character of the islands, as maritime subtropical, and, particularly by its seasonal regime with summer drought that lasts more than two months after the summer solstice, as Mediterranean. Within this general climatic framework there are important climatic variations mainly due to the elevation of the island blocks and topographic exposure. The trade-winds play a key role in delimiting the different climatic zones."

202	Quality of climate match data	High
	Source(s)	Notes
	Eggl, U. & Nyffeler, R. (eds.). (2023). <i>Illustrated Handbook of Succulent Plants: Dicotyledons: Rosids</i> . Springer-Verlag, Berlin, Heidelberg, New York	"Distr: All the Canary Islands; predominantly on rocky coastal slopes, to 900 m."

203	Broad climate suitability (environmental versatility)	n
	Source(s)	Notes
	Eggl, U. & Nyffeler, R. (eds.). (2023). <i>Illustrated Handbook of Succulent Plants: Dicotyledons: Rosids</i> . Springer-Verlag, Berlin, Heidelberg, New York	"Distr: All the Canary Islands; predominantly on rocky coastal slopes, to 900 m."

Qsn #	Question	Answer
	Dehgan, B. (2023). Garden Plants Taxonomy: Volume 2: Angiosperms (Eudicots). Springer Nature, Cham, Switzerland	"Hardiness Zone: 9B-12B. Best in seasonally dry Mediterranean climate regions."
	Arco Aguilar, M. J. D., & Rodríguez Delgado, O. (2018). Vegetation of the Canary Islands. In Vegetation of the Canary Islands (pp. 83-319). Springer, Cham	"The climate of the Canary Islands can be classified, according to the latitudinal situation and the oceanic character of the islands, as maritime subtropical, and, particularly by its seasonal regime with summer drought that lasts more than two months after the summer solstice, as Mediterranean. Within this general climatic framework there are important climatic variations mainly due to the elevation of the island blocks and topographic exposure. The trade-winds play a key role in delimiting the different climatic zones. The islands are bathed by the Canary Current, a cool current forming part of the North Atlantic Gyre that descends along the western side of Africa towards the equator. Its waters are cold due to the ascending latitudinal trajectory of the Gulf Stream, its encounter with cold waters of the Labrador Current and overall by the supply of upwelling cold deep waters to the west of the African coast. Water temperatures in summer range between 18 and 20 °C and in winter between 15 and 18 °C. The Canary Current influences the temperatures of the insular coasts up to 300 m a.s.l., delaying the arrival of the lowest winter temperatures to the month of February and the highest of the summer to August. These cold waters cool the coastal areas, whose average relative humidity is 65%. Three classic types of weather can be defined for the Canary Islands: Anticyclonic, Continental-Saharan and Disturbed."

204	Native or naturalized in regions with tropical or subtropical climates	y
	Source(s)	Notes
	Eggle, U. & Nyffeler, R. (eds.). (2023). Illustrated Handbook of Succulent Plants: Dicotyledons: Rosids. Springer-Verlag, Berlin, Heidelberg, New York	"Distr: All the Canary Islands; predominantly on rocky coastal slopes, to 900 m."
	LLIFLE. (2024). <i>Euphorbia canariensis</i> . http://www.llifle.com/Encyclopedia/SUCCULENTS/Family/Euphorbiaceae/15754/Euphorbia_canariensis . [Accessed 2 Aug 2024]	"Hardiness: Some cold tolerance. This spurge has tolerated temperatures down to -6°C and even a little snow. However it can be difficult to get it to look its best without a good amount of heat and sun and so it is only really suited to the tropics (USDA Zones 9-12)"
	Arco Aguilar, M. J. D., & Rodríguez Delgado, O. (2018). Vegetation of the Canary Islands. In Vegetation of the Canary Islands (pp. 83-319). Springer, Cham	"The climate of the Canary Islands can be classified, according to the latitudinal situation and the oceanic character of the islands, as maritime subtropical, and, particularly by its seasonal regime with summer drought that lasts more than two months after the summer solstice, as Mediterranean."

205	Does the species have a history of repeated introductions outside its natural range?	y
	Source(s)	Notes
	Cerrato MD, Ribas-Serra A, Mir-Rosselló PM, Ametller CVC, Cortés- Fernández I, Perelló-Suau S, Fernández SP, Vives LG. (2023). Records of alien plants new for the Flora of The Balearic Islands (West-Mediterranean). <i>BiolInvasions Records</i> 12(4): 887-898	" <i>Euphorbia canariensis</i> is an endemic species of the Canary Islands, which has been widely used for gardening but rarely escaped from cultivation."
	Gallaher, T.J., Brock, K., Kennedy, B.H., Imada, C.T., Imada, K., & Walvoord, N. (2024). Plants of Hawai'i. http://www.plantsofhawaii.org . [Accessed 2 Aug 2024]	"Only found in cultivation "

301	Naturalized beyond native range	y
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Qsn #	Question	Answer
	Source(s)	Notes
	El Mokni, R. (2023). Non-native shrubby species of <i>Euphorbia</i> (Euphorbiaceae) in Tunisia. <i>Flora Mediterranea</i> , 33: 17-29	"Distribution. <i>Euphorbia canariensis</i> is endemic to Canary Islands (POWO 2021). In Europe as in continental Africa, no report till now (Euro+Med 2006+; APD 2022). Habitat in Tunisia. <i>Euphorbia canariensis</i> occurs on the edge of an area where many <i>Opuntia</i> sp. pl. are growing up, within Tunis region (NE Tunisia). Specimen visa (new records). TUNISIA: Tunis, 20.07.2020, R. El Mokni s.n. (Herb. Univ. Monastir!)"
	Cerrato MD, Ribas-Serra A, Mir-Rosselló PM, Ametller CVC, Cortés- Fernández I, Perelló-Suau S, Fernández SP, Vives LG. (2023). Records of alien plants new for the Flora of The Balearic Islands (West-Mediterranean). <i>BiolInvasions Records</i> 12(4): 887-898	" <i>Euphorbia canariensis</i> is an endemic species of the Canary Islands, which has been widely used for gardening but rarely escaped from cultivation. This species can be easily identified due to its stem morphology, distance between spines and plant size and growth form (Cullen et al. 1984). Records for this species outside the Canary Islands are scarce and anecdotal without formal references. Some records are indicated in the GBIF (2022) database but correspond to cultivated individuals. Misfud (2002) indicated its cultivated presence in Malta and occasional casual growth near gardens. The individual here recorded can be considered the first record outside its native range, being one individual, which probably escaped through pruning wastes. Clonal reproduction (as small stems arising next to the main individual) can be noticed, implying active autonomous growth in the area."
	Gallaher, T.J., Brock, K., Kennedy, B.H., Imada, C.T., Imada, K., & Walvoord, N. (2024). <i>Plants of Hawai'i</i> . http://www.plantsofhawaii.org . [Accessed 2 Aug 2024]	"Only found in cultivation"

302	Garden/amenity/disturbance weed	n
	Source(s)	Notes
	El Mokni, R. (2023). Non-native shrubby species of <i>Euphorbia</i> (Euphorbiaceae) in Tunisia. <i>Flora Mediterranea</i> , 33: 17-29	[No evidence of impacts] "Distribution. <i>Euphorbia canariensis</i> is endemic to Canary Islands (POWO 2021). In Europe as in continental Africa, no report till now (Euro+Med 2006+; APD 2022). Habitat in Tunisia. <i>Euphorbia canariensis</i> occurs on the edge of an area where many <i>Opuntia</i> sp. pl. are growing up, within Tunis region (NE Tunisia)."
	Cerrato MD, Ribas-Serra A, Mir-Rosselló PM, Ametller CVC, Cortés- Fernández I, Perelló-Suau S, Fernández SP, Vives LG. (2023). Records of alien plants new for the Flora of The Balearic Islands (West-Mediterranean). <i>BiolInvasions Records</i> 12(4): 887-898	[No impacts described] " <i>Euphorbia canariensis</i> is an endemic species of the Canary Islands, which has been widely used for gardening but rarely escaped from cultivation."
	Randall, R.P. (2017). <i>A Global Compendium of Weeds</i> . 3rd Edition. Perth, Western Australia. R.P. Randall	No evidence

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

Qsn #	Question	Answer
305	Congeneric weed	y
	Source(s)	Notes
	Weber, E. (2017). <i>Invasive Plant Species of the World</i> , 2nd Edition: A Reference Guide to Environmental Weeds. CABI Publishing, Wallingford, UK	[<i>Euphorbia esula</i>] "Leafy spurge has become one of the worst invaders in northern America causing both ecological and economic damage."
	Randall, R.P. (2017). <i>A Global Compendium of Weeds</i> . 3rd Edition. Perth, Western Australia. R.P. Randall	Numerous <i>Euphorbia</i> species have become invasive weeds

401	Produces spines, thorns or burrs	y
	Source(s)	Notes
	Coello, A. J., Vargas, P., Cano, E., Riina, R., & Fernández-Mazuecos, M. (2024). Phylogenetics and phylogeography of <i>Euphorbia canariensis</i> reveal an extreme Canarian-Asian disjunction but limited inter-island colonization. <i>Plant Biology</i> , 26(3), 398-414	" <i>Euphorbia canariensis</i> (Euphorbiaceae; Fig. 1) is a large cactus-like succulent shrub that produces latex. It usually has four-angled branches and curved spines disposed in pairs along the angles."

402	Allelopathic	
	Source(s)	Notes
	WRA Specialist. (2024). Personal Communication	Unknown. No evidence found

403	Parasitic	n
	Source(s)	Notes
	Eggle, U. & Nyffeler, R. (eds.). (2023). <i>Illustrated Handbook of Succulent Plants: Dicotyledons: Rosids</i> . Springer-Verlag, Berlin, Heidelberg, New York	"Shrubs to 3 m, densely branched from the base, sparsely above, forming compact clumps to 10 m" [No evidence]

404	Unpalatable to grazing animals	y
	Source(s)	Notes
	San Marcos Growers. (2024). <i>Euphorbia canariensis</i> - Canary Island Spurge. https://www.smgrowers.com/products/plants/plantdisplay.asp?plant_id=4391 . [Accessed 2 Aug 2024]	"As will most <i>Euphorbia</i> , care needs to be taken when working with it as the white latex sap is poisonous but this also will keep deer and other grazers from eating this plant and it is a very attractive and durable succulent shrub that requires no additional irrigation in our coastal Mediterranean climate."
	Coello, A. J., Vargas, P., Cano, E., Riina, R., & Fernández-Mazuecos, M. (2024). Phylogenetics and phylogeography of <i>Euphorbia canariensis</i> reveal an extreme Canarian-Asian disjunction but limited inter-island colonization. <i>Plant Biology</i> , 26(3), 398-414	"Immature capsules have the appearance of a fruit attractive to birds (bright red with a fleshy appearance; Fig. 1), but the immature tissue of the fruit is full of irritant and toxic latex that makes fruits unpalatable to frugivorous animals. Mature capsules are light red-brown, dry and also unsuitable for endozoochory."
	Gardenia. (2024). <i>Euphorbia canariensis</i> (Canary Island Spurge). https://www.gardenia.net/plant/euphorbia-canariensis . [Accessed 2 Aug 2024]	"This remarkable plant is resilient to most pests and diseases, is deer or rabbit resistant and is easy to care for."

405	Toxic to animals	y
	Source(s)	Notes
	Gardenia. (2024). <i>Euphorbia canariensis</i> (Canary Island Spurge). https://www.gardenia.net/plant/euphorbia-canariensis . [Accessed 2 Aug 2024]	"All parts of the plant are highly toxic if ingested. The milky sap may cause irritation to skin and eyes. Be very careful when handling this plant as the stems break easily and the milky sap can burn the skin. Use gloves and protective goggles."

Qsn #	Question	Answer
	Dehgan, B. (2023). Garden Plants Taxonomy: Volume 2: Angiosperms (Eudicots). Springer Nature, Cham, Switzerland	"Milky acrid latex of <i>Euphorbia canariensis</i> is collected by making an incision on the stems and allowed to solidify. This product which is referred to as euphorbium is extremely poisonous but is used in small quantities as emetic and purgative and for other medicinal purposes."
	LLIFLE. (2024). <i>Euphorbia canariensis</i> . http://www.llifle.com/Encyclopedia/SUCCULENTS/Family/Euphorbiaceae/15754/Euphorbia_canariensis . [Accessed 2 Aug 2024]	"Remarks: It's one of the more poisonous spurges. The latex which is very bitter and acrid contains diterpenes and is considered highly toxic."

406	Host for recognized pests and pathogens	n
	Source(s)	Notes
	Dehgan, B. (2023). Garden Plants Taxonomy: Volume 2: Angiosperms (Eudicots). Springer Nature, Cham, Switzerland	"no serious pests or diseases reported, although no doubt susceptible to rot if overwatered."
	Gardenia. (2024). <i>Euphorbia canariensis</i> (Canary Island Spurge). https://www.gardenia.net/plant/euphorbia-canariensis . [Accessed 2 Aug 2024]	"This remarkable plant is resilient to most pests and diseases, is deer or rabbit resistant and is easy to care for."

407	Causes allergies or is otherwise toxic to humans	y
	Source(s)	Notes
	Gardenia. (2024). <i>Euphorbia canariensis</i> (Canary Island Spurge). https://www.gardenia.net/plant/euphorbia-canariensis . [Accessed 2 Aug 2024]	"All parts of the plant are highly toxic if ingested. The milky sap may cause irritation to skin and eyes. Be very careful when handling this plant as the stems break easily and the milky sap can burn the skin. Use gloves and protective goggles."
	LLIFLE. (2024). <i>Euphorbia canariensis</i> . http://www.llifle.com/Encyclopedia/SUCCULENTS/Family/Euphorbiaceae/15754/Euphorbia_canariensis . [Accessed 2 Aug 2024]	"Remarks: It's one of the more poisonous spurges. The latex which is very bitter and acrid contains diterpenes and is considered highly toxic."

408	Creates a fire hazard in natural ecosystems	n
	Source(s)	Notes
	Taha, A. et al. (2023). Comprehensive review of morphological adaptations and conservation strategies of cactiform succulents: A case study of <i>Euphorbia</i> species in arid ecosystems. <i>Biosystems Diversity</i> , 31(3), 358-367	[No evidence] "Nevertheless, these species form a veritable "green blanket", particularly in areas that seem unlikely to be colonized by plants, such as karst and igneous rock cliffs, coral reefs, and sandbanks (Ettaqy et al., 2020; Al- Qthanin & Al-Yasi, 2021; Chaudhary et al., 2023). This type of substrate with a low water retention capacity is in perfect compatibility with the stem-succulence, the stem being endowed with specialized tissues for water storage (Evans et al., 2014). Therefore, succulents manage to survive in environments marked by high temperatures (Eggli & Nyffeler, 2009). These reasons justify the lower vulnerability of <i>Euphorbia</i> ecosystems to fire, thanks to their high richness in succulents and their poverty in dry grasses (Eiserhardt et al., 2017)."
	Dehgan, B. (2023). Garden Plants Taxonomy: Volume 2: Angiosperms (Eudicots). Springer Nature, Cham, Switzerland	[Succulent. No evidence of flammability] "Clumping cactoid succulent, 10-12 ft. (3-4 m) tall; latex milky and somewhat viscous; medium fast growth rate."

409	Is a shade tolerant plant at some stage of its life cycle	
	Source(s)	Notes
	Dehgan, B. (2023). Garden Plants Taxonomy: Volume 2: Angiosperms (Eudicots). Springer Nature, Cham, Switzerland	"Culture Full sun, in very well-drained preferably sandy-loam soil; no serious pests or diseases reported, although no doubt susceptible to rot if overwatered."

Qsn #	Question	Answer
	LLIFLE. (2024). <i>Euphorbia canariensis</i> . http://www.llifile.com/Encyclopedia/SUCCULENTS/Family/Euphorbiaceae/15754/Euphorbia_canariensis . [Accessed 2 Aug 2024]	"Exposure: It can tolerate moderate shade, and a plant that has been growing in shade should be slowly hardened off before placing it in full sun as the plant will be severely scorched if moved too suddenly from shade into sun."

410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	n
	Source(s)	Notes
	Dehgan, B. (2023). <i>Garden Plants Taxonomy: Volume 2: Angiosperms (Eudicots)</i> . Springer Nature, Cham, Switzerland	"Full sun, in very well-drained preferably sandy-loam soil"
	Gardenia. (2024). <i>Euphorbia canariensis</i> (Canary Island Spurge). https://www.gardenia.net/plant/euphorbia-canariensis . [Accessed 2 Aug 2024]	"Soil Type Loam, Sand Soil pH Acid, Alkaline, Neutral Soil Drainage Well-Drained"
	LLIFLE. (2024). <i>Euphorbia canariensis</i> . http://www.llifile.com/Encyclopedia/SUCCULENTS/Family/Euphorbiaceae/15754/Euphorbia_canariensis . [Accessed 2 Aug 2024]	"Soil: Give the plant an airy growing medium which mainly consists of non organic material such us clay, pumice, lava grit, and only a little peat or leaf-mould."

411	Climbing or smothering growth habit	n
	Source(s)	Notes
	Coello, A. J., Vargas, P., Cano, E., Riina, R., & Fernández-Mazuecos, M. (2024). Phylogenetics and phylogeography of <i>Euphorbia canariensis</i> reveal an extreme Canarian-Asian disjunction but limited inter-island colonization. <i>Plant Biology</i> , 26(3), 398-414	" <i>Euphorbia canariensis</i> (Euphorbiaceae; Fig. 1) is a large cactus-like succulent shrub that produces latex. It usually has four-angled branches and curved spines disposed in pairs along the angles. Mature plants in the field can reach up to 3-4 m in height (Bramwell & Bramwell 2001)."

412	Forms dense thickets	n
	Source(s)	Notes
	Eggle, U. & Nyffeler, R. (eds.). (2023). <i>Illustrated Handbook of Succulent Plants: Dicotyledons: Rosids</i> . Springer-Verlag, Berlin, Heidelberg, New York	"Distr: All the Canary Islands; predominantly on rocky coastal slopes, to 900 m." [No evidence]
	Arco Aguilar, M. J. D., & Rodríguez Delgado, O. (2018). <i>Vegetation of the Canary Islands</i> . In <i>Vegetation of the Canary Islands</i> (pp. 83-319). Springer, Cham	No evidence

501	Aquatic	n
	Source(s)	Notes
	Coello, A. J., Vargas, P., Cano, E., Riina, R., & Fernández-Mazuecos, M. (2024). Phylogenetics and phylogeography of <i>Euphorbia canariensis</i> reveal an extreme Canarian-Asian disjunction but limited inter-island colonization. <i>Plant Biology</i> , 26(3), 398-414	[Terrestrial] "The species inhabits rocky slopes, cliffs and lava fields, from sea level to 900 m (Bramwell & Bramwell 1974)."

Qsn #	Question	Answer
502	Grass	n
	Source(s)	Notes
	USDA, Agricultural Research Service, National Plant Germplasm System. (2024). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. https://npgsweb.ars-grin.gov/gringlobal/taxon/taxonomysearch . [Accessed 1 Aug 2024]	"Family: Euphorbiaceae Subfamily: Euphorbioideae Tribe: Euphorbieae Subtribe: Euphorbiinae"

Qsn #	Question	Answer
503	Nitrogen fixing woody plant	n
	Source(s)	Notes
	USDA, Agricultural Research Service, National Plant Germplasm System. (2024). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. https://npgsweb.ars-grin.gov/gringlobal/taxon/taxonomysearch . [Accessed 1 Aug 2024]	"Family: Euphorbiaceae Subfamily: Euphorbioideae Tribe: Euphorbieae Subtribe: Euphorbiinae"

Qsn #	Question	Answer
504	Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)	n
	Source(s)	Notes
	Coello, A. J., Vargas, P., Cano, E., Riina, R., & Fernández-Mazuecos, M. (2024). Phylogenetics and phylogeography of <i>Euphorbia canariensis</i> reveal an extreme Canarian-Asian disjunction but limited inter-island colonization. <i>Plant Biology</i> , 26(3), 398-414	" <i>Euphorbia canariensis</i> (Euphorbiaceae; Fig. 1) is a large cactus-like succulent shrub that produces latex. It usually has four-angled branches and curved spines disposed in pairs along the angles. Mature plants in the field can reach up to 3-4 m in height (Bramwell & Bramwell 2001)."

Qsn #	Question	Answer
601	Evidence of substantial reproductive failure in native habitat	n
	Source(s)	Notes
	Coello, A. J., Vargas, P., Cano, E., Riina, R., & Fernández-Mazuecos, M. (2024). Phylogenetics and phylogeography of <i>Euphorbia canariensis</i> reveal an extreme Canarian-Asian disjunction but limited inter-island colonization. <i>Plant Biology</i> , 26(3), 398-414	" <i>Euphorbia canariensis</i> is an iconic endemic species representative of the lowland xerophytic communities of the Canary Islands. It is widely distributed in the archipelago despite having diaspores unspecialized for long-distance dispersal."

Qsn #	Question	Answer
602	Produces viable seed	y
	Source(s)	Notes
	Dehgan, B. (2023). <i>Garden Plants Taxonomy: Volume 2: Angiosperms (Eudicots)</i> . Springer Nature, Cham, Switzerland	"Propagation: seed and cuttings."
	LLIFLE. (2024). <i>Euphorbia canariensis</i> . http://www.llifle.com/Encyclopedia/SUCCULENTS/Family/Euphorbiaceae/15754/Euphorbia_canariensis . [Accessed 2 Aug 2024]	"Propagation: The plant can be reproduced by seeds or cuttings (It branches enthusiastically, and offsets are readily available)."

Qsn #	Question	Answer
603	Hybridizes naturally	
	Source(s)	Notes
	WRA Specialist. (2024). Personal Communication	Unknown. No evidence found

604	Self-compatible or apomictic	y
	Source(s)	Notes
	Kubitzki, K. (ed.). (2014). The Families and Genera of Vascular Plants. Vol. XI. Flowering Plants. Eudicots: Malpighiales. Springer, New York	"In Euphorbiaceae, with open-pollinated strictly unisexual flowers, self-incompatibility is rare, and earlier reports of it appear to be incorrect. Self-incompatibility has been shown to be absent or incomplete in Chamaesyce (herbaceous species, Ehrenfeld 1976), Hevea (Bouharmont 1962), and Manihot (Jennings 1963; George and Shifriss 1967)."
	Succulent City. (2024). The Canary Island Spurge 'Euphorbia Canariensis'. https://succulentcity.com/euphorbia-canariensis/ . [Accessed 2 Aug 2024]	"The flowers form clusters comprising a single female flower surrounded by several male flowers. This arrangement allows it to self-pollinate."

605	Requires specialist pollinators	
	Source(s)	Notes
	Falch, M., Schönswetter, P., & Frajman, B. (2019). Both vicariance and dispersal have shaped the genetic structure of Eastern Mediterranean <i>Euphorbia myrsinites</i> (Euphorbiaceae). <i>Perspectives in Plant Ecology, Evolution and Systematics</i> , 39, 125459	" <i>Euphorbia</i> species do not have any specialised pollinators, but cyathia of different species are commonly visited by Hymenopterans, Coleopterans and Dipterans (Traveset and Sáez, 1997; Frajman and Fišer, 2001)."
	Valido, A., and Olesen, J. M. (2010). Pollination on islands: examples from the Macaronesian archipelagos, in <i>Terrestrial Arthropods of Macaronesia: Biodiversity, Ecology and Evolution</i> , eds A. R. M. Serrano, P. A. V. Borges, M. Boieiro, and P. Oromí (Sociedade Portuguesa de Entomologia), 249-283	[Unknown if hawkmoths are obligate pollinators] "Other interesting mutualistic interactions observed in this arid habitat were lizards <i>Gallotia galloti</i> (Lacertidae) visiting flowers of the endemic <i>Echium bonnetii</i> ; the hawkmoth <i>Macroglossum stellatarum</i> on <i>Euphorbia canariensis</i> , and <i>Cyclurus webbianus</i> (Lycaenidae) on <i>Lavandula buchii</i> , among others."

606	Reproduction by vegetative fragmentation	
	Source(s)	Notes
	Coello, A. J., Vargas, P., Cano, E., Riina, R., & Fernández-Mazuecos, M. (2024). Phylogenetics and phylogeography of <i>Euphorbia canariensis</i> reveal an extreme Canarian-Asian disjunction but limited inter-island colonization. <i>Plant Biology</i> , 26(3), 398-414	"Additionally, vegetative reproduction is limited in <i>E. canariensis</i> , and the rooting of stem fragments is uncommon (Kunkel & Kunkel 1978)."
	Cerrato MD, Ribas-Serra A, Mir-Rosselló PM, Ametller CVC, Cortés- Fernández I, Perelló-Suau S, Fernández SP, Vives LG. (2023). Records of alien plants new for the Flora of The Balearic Islands (West-Mediterranean). <i>BiolInvasions Records</i> 12(4): 887-898	[May be a rare occurrence] "The individual here recorded can be considered the first record outside its native range, being one individual, which probably escaped through pruning wastes. Clonal reproduction (as small stems arising next to the main individual) can be noticed, implying active autonomous growth in the area."

Qsn #	Question	Answer
607	Minimum generative time (years)	
	Source(s)	Notes
	LLIFLE. (2024). <i>Euphorbia canariensis</i> . http://www.llifle.com/Encyclopedia/SUCCULENTS/Family/Euphorbiaceae/15754/Euphorbia_canariensis . [Accessed 2 Aug 2024]	"Growing rate: It is a moderately fast grower, and will quickly become large landscape masterpieces in just 3-5 years. If plant becomes very red, this is a sign that the roots have not developed properly. It is a relatively fast growing and long lived plant and once established, it will be content in its position and with its soil for years." [Time to maturity unknown]

701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	n
	Source(s)	Notes
	Coello, A. J., Vargas, P., Cano, E., Riina, R., & Fernández-Mazuecos, M. (2024). Phylogenetics and phylogeography of <i>Euphorbia canariensis</i> reveal an extreme Canarian-Asian disjunction but limited inter-island colonization. <i>Plant Biology</i> , 26(3), 398-414	"Furthermore, mature fruits and seeds of <i>E. canariensis</i> lack hairs, adhesive structures (epizoochorous), wings (anemochorous) or the ability to survive in seawater (thalassochorous). Given all these characteristics, the dispersal traits of <i>E. canariensis</i> fruits were categorized as not specialized in LDD by Arjona et al. (2020)."

702	Propagules dispersed intentionally by people	y
	Source(s)	Notes
	Cerrato MD, Ribas-Serra A, Mir-Rosselló PM, Ametller CVC, Cortés- Fernández I, Perelló-Suau S, Fernández SP, Vives LG. (2023). Records of alien plants new for the Flora of The Balearic Islands (West-Mediterranean). <i>BioInvasions Records</i> 12(4): 887-898	" <i>Euphorbia canariensis</i> is an endemic species of the Canary Islands, which has been widely used for gardening but rarely escaped from cultivation."
	Dehgan, B. (2023). <i>Garden Plants Taxonomy: Volume 2: Angiosperms (Eudicots)</i> . Springer Nature, Cham, Switzerland	"Landscape Uses: succulent rock gardens, as house plants (with caution as to the milky latex and sharp spines), sometimes used as scion in grafting difficult to grow species."
	Gallaher, T.J., Brock, K., Kennedy, B.H., Imada, C.T., Imada, K., & Walvoord, N. (2024). <i>Plants of Hawai'i</i> . http://www.plantsofhawaii.org . [Accessed 2 Aug 2024]	"Only found in cultivation"

703	Propagules likely to disperse as a produce contaminant	
	Source(s)	Notes
	Coello, A. J., Vargas, P., Cano, E., Riina, R., & Fernández-Mazuecos, M. (2024). Phylogenetics and phylogeography of <i>Euphorbia canariensis</i> reveal an extreme Canarian-Asian disjunction but limited inter-island colonization. <i>Plant Biology</i> , 26(3), 398-414	"Seeds are dispersed to the surroundings of the mother plant by explosive dehiscence of capsules (ballochorous dispersal; see Berg 1990)." [Possible if cultivated around other potted plants or crops, but no evidence found]

Qsn #	Question	Answer
704	Propagules adapted to wind dispersal	n
	Source(s)	Notes
	Coello, A. J., Vargas, P., Cano, E., Riina, R., & Fernández-Mazuecos, M. (2024). Phylogenetics and phylogeography of <i>Euphorbia canariensis</i> reveal an extreme Canarian-Asian disjunction but limited inter-island colonization. <i>Plant Biology</i> , 26(3), 398-414	"Seeds are dispersed to the surroundings of the mother plant by explosive dehiscence of capsules (ballochorous dispersal; see Berg 1990). There are reports of the consumption of seeds by a granivorous bird (rock pigeon) in another Canarian <i>Euphorbia</i> with similar seeds (<i>E. balsamifera</i> ; Berg 1990) but, as far as we know, there are no reports of this bird also feeding on <i>E. canariensis</i> seeds. Furthermore, mature fruits and seeds of <i>E. canariensis</i> lack hairs, adhesive structures (epizoochorous), wings (anemochorous) or the ability to survive in seawater (thalassochorous). Given all these characteristics, the dispersal traits of <i>E. canariensis</i> fruits were categorized as not specialized in LDD by Arjona et al. (2020)."

705	Propagules water dispersed	n
	Source(s)	Notes
	Coello, A. J., Vargas, P., Cano, E., Riina, R., & Fernández-Mazuecos, M. (2024). Phylogenetics and phylogeography of <i>Euphorbia canariensis</i> reveal an extreme Canarian-Asian disjunction but limited inter-island colonization. <i>Plant Biology</i> , 26(3), 398-414	"Furthermore, mature fruits and seeds of <i>E. canariensis</i> lack hairs, adhesive structures (epizoochorous), wings (anemochorous) or the ability to survive in seawater (thalassochorous). Given all these characteristics, the dispersal traits of <i>E. canariensis</i> fruits were categorized as not specialized in LDD by Arjona et al. (2020)."

706	Propagules bird dispersed	n
	Source(s)	Notes
	Coello, A. J., Vargas, P., Cano, E., Riina, R., & Fernández-Mazuecos, M. (2024). Phylogenetics and phylogeography of <i>Euphorbia canariensis</i> reveal an extreme Canarian-Asian disjunction but limited inter-island colonization. <i>Plant Biology</i> , 26(3), 398-414	"Immature capsules have the appearance of a fruit attractive to birds (bright red with a fleshy appearance; Fig. 1), but the immature tissue of the fruit is full of irritant and toxic latex that makes fruits unpalatable to frugivorous animals. Mature capsules are light red-brown, dry and also unsuitable for endozoochory. Seeds are dispersed to the surroundings of the mother plant by explosive dehiscence of capsules (ballochorous dispersal; see Berg 1990). There are reports of the consumption of seeds by a granivorous bird (rock pigeon) in another Canarian <i>Euphorbia</i> with similar seeds (<i>E. balsamifera</i> ; Berg 1990) but, as far as we know, there are no reports of this bird also feeding on <i>E. canariensis</i> seeds."

707	Propagules dispersed by other animals (externally)	n
	Source(s)	Notes
	Coello, A. J., Vargas, P., Cano, E., Riina, R., & Fernández-Mazuecos, M. (2024). Phylogenetics and phylogeography of <i>Euphorbia canariensis</i> reveal an extreme Canarian-Asian disjunction but limited inter-island colonization. <i>Plant Biology</i> , 26(3), 398-414	"Furthermore, mature fruits and seeds of <i>E. canariensis</i> lack hairs, adhesive structures (epizoochorous), wings (anemochorous) or the ability to survive in seawater (thalassochorous). Given all these characteristics, the dispersal traits of <i>E. canariensis</i> fruits were categorized as not specialized in LDD by Arjona et al. (2020)."

708	Propagules survive passage through the gut	n
	Source(s)	Notes
	Coello, A. J., Vargas, P., Cano, E., Riina, R., & Fernández-Mazuecos, M. (2024). Phylogenetics and phylogeography of <i>Euphorbia canariensis</i> reveal an extreme Canarian-Asian disjunction but limited inter-island colonization. <i>Plant Biology</i> , 26(3), 398-414	"Mature capsules are light red-brown, dry and also unsuitable for endozoochory."

Qsn #	Question	Answer
801	Prolific seed production (>1000/m2)	n
	Source(s)	Notes
	Dehgan, B. (2023). Garden Plants Taxonomy: Volume 2: Angiosperms (Eudicots). Springer Nature, Cham, Switzerland	"Fruit: trilocular dehiscent red-maroon capsule, each locule containing one seed."
802	Evidence that a persistent propagule bank is formed (>1 yr)	
	Source(s)	Notes
	WRA Specialist. (2024). Personal Communication	Unknown
803	Well controlled by herbicides	
	Source(s)	Notes
	WRA Specialist. (2024). Personal Communication	Unknown
804	Tolerates, or benefits from, mutilation, cultivation, or fire	y
	Source(s)	Notes
	Succulent City. (2024). The Canary Island Spurge 'Euphorbia Canariensis'. https://succulentcity.com/euphorbia-canariensis/ . [Accessed 2 Aug 2024]	[Tolerates pruning] "Pruning These plants can grow to humongous dimensions, and their growth needs to be managed. You can prune the plant due to space constraints, significantly growing it in a garden. It might end up dominating the entire garden if you leave it alone. It is also advisable to remove some branches to be air circulation in the plant and allow light through the branches to keep the plant healthy and enable it to bloom. Pruning is also a part of grooming, where you cut off some of the old branches to keep the plant looking fresh. Ensure you are suited to protect your eyes and skin before pruning. The best time to prune is at the end of winter or the beginning of spring. Timing the pruning this way allows the plant to recover quickly in spring."
805	Effective natural enemies present locally (e.g. introduced biocontrol agents)	
	Source(s)	Notes
	WRA Specialist. (2024). Personal Communication	Unknown

Summary of Risk Traits:

Euphorbia canariensis (Canary Island spurge) is a succulent, cactus-like plant up to 4 meters (about 13 feet) in height native to the Canary Islands. In its native range, it typically grows in arid and semi-arid environments and is often found in rocky areas and coastal regions. It is sometimes planted as an ornamental, and is rarely documented to escape from cultivation, but is now reported to be escaped or naturalized in Tunisia and the Balearic Islands of the Western Mediterranean. Caution: It should be handled with care, and gloves are recommended when pruning or handling the plant because its milky sap is toxic and can cause skin irritation and severe eye irritation.

High Risk / Undesirable Traits

- Escaped or naturalized in Tunisia and the Balearic Islands (West-Mediterranean)
- Other *Euphorbia* species are invasive weeds
- Spiny
- Unpalatable to browsing animals
- Sap toxic to animals and people and can burn the skin and eyes
- Reproduces by seeds and potentially vegetatively by clonal reproduction
- Reported to be Self-fertile
- Seeds dispersed by explosive dehiscence of capsules and through intentional cultivation
- Seeds may form a persistent seed bank (up to 4 years)
- Tolerates and resprouts after cutting and pruning

Low Risk Traits

- No negative impacts reported from cultivated range
- Grows best in high light environments (dense shade may inhibit spread)
- Not reported to form dense stands or increase fire risk in native or introduced ranges

Second Screening Results for Trees/tree-like shrubs

(A) Shade tolerant or known to form dense stands? No

(B) Bird- Or clearly wind- dispersed?> No.

(C) Life cycle <4 years? Unknown

Outcome = Accept (Low Risk)

