

<b>Taxon:</b> <i>Portulaca pilosa L.</i>	<b>Family:</b> Portulacaceae
<b>Common Name(s):</b> hairy pigweed kiss-me-quick	<b>Synonym(s):</b> <i>Portulaca cyanosperma</i> Egler

<b>Assessor:</b> Chuck Chimera	<b>Status:</b> Assessor Approved	<b>End Date:</b> 8 Jan 2021
<b>WRA Score:</b> 23.0	<b>Designation:</b> H(Hawai'i)	<b>Rating:</b> High Risk

**Keywords:** Prostrate Herb, Widely Naturalized, Environmental Weed, Palatable, Self-Compatible

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	y
204	Native or naturalized in regions with tropical or subtropical climates	y=1, n=0	y
205	Does the species have a history of repeated introductions outside its natural range?	y=-2, ?=-1, n=0	y
301	Naturalized beyond native range	y = 1*multiplier (see Appendix 2), n= question 205	y
302	Garden/amenity/disturbance weed	n=0, y = 1*multiplier (see Appendix 2)	y
303	Agricultural/forestry/horticultural weed	n=0, y = 2*multiplier (see Appendix 2)	n
304	Environmental weed	n=0, y = 2*multiplier (see Appendix 2)	y
305	Congeneric weed	n=0, y = 1*multiplier (see Appendix 2)	y
401	Produces spines, thorns or burrs	y=1, n=0	n
402	Allelopathic		
403	Parasitic	y=1, n=0	n
404	Unpalatable to grazing animals	y=1, n=-1	n
405	Toxic to animals	y=1, n=0	n
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	n
408	Creates a fire hazard in natural ecosystems	y=1, n=0	n
409	Is a shade tolerant plant at some stage of its life cycle	y=1, n=0	n

Qsn #	Question	Answer Option	Answer
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		
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	y=-1, n=0	n
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	1
701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	y=1, n=-1	y
702	Propagules dispersed intentionally by people	y=1, n=-1	y
703	Propagules likely to disperse as a produce contaminant	y=1, n=-1	y
704	Propagules adapted to wind dispersal	y=1, n=-1	n
705	Propagules water dispersed	y=1, n=-1	y
706	Propagules bird dispersed	y=1, n=-1	y
707	Propagules dispersed by other animals (externally)	y=1, n=-1	y
708	Propagules survive passage through the gut	y=1, n=-1	y
801	Prolific seed production (>1000/m2)		
802	Evidence that a persistent propagule bank is formed (>1 yr)		
803	Well controlled by herbicides	y=-1, n=1	y
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)	y=-1, n=1	n

**Supporting Data:**

Qsn #	Question	Answer
101	Is the species highly domesticated?	n
	Source(s)	Notes
	Wagner, W.L., Herbst, D.R.& Sohmer, S.H. 1999. Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	[No evidence] "Pantropical; in Hawai'i naturalized in usually dry, open, strand to coastal habitats or lava fields, 0-620 m, on all of the main islands except Lana'i and Kaho'olawe. First collected on Kaua'i in 1922"

102	Has the species become naturalized where grown?	
	Source(s)	Notes
	WRA Specialist. (2021). Personal Communication	NA

103	Does the species have weedy races?	
	Source(s)	Notes
	WRA Specialist. (2021). 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
	USDA, Agricultural Research Service, National Plant Germplasm System. (2021). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. <a href="https://npgsweb.ars-grin.gov/">https://npgsweb.ars-grin.gov/</a> . [Accessed 6 Jan 2021]	"Native Northern America NORTH-CENTRAL U.S.A.: United States [Kansas, Missouri, Oklahoma] SOUTHEASTERN U.S.A.: United States [Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee] SOUTH-CENTRAL U.S.A.: United States [New Mexico, Texas] SOUTHWESTERN U.S.A.: United States [Arizona] REGION: Mexico Southern America CARIBBEAN: Netherlands Antilles [Saba], Antigua and Barbuda [Antigua], Bahamas, Cuba, Dominica, Dominican Republic, Grenada, Haiti, Jamaica, St. Lucia, Martinique, Trinidad and Tobago [Trinidad], United States [Puerto Rico], St. Vincent and Grenadines CENTRAL AMERICA: Belize, Costa Rica, Guatemala, Honduras, Nicaragua, Panama, El Salvador NORTHERN SOUTH AMERICA: Venezuela BRAZIL: Brazil WESTERN SOUTH AMERICA: Colombia, Ecuador, Peru"

Qsn #	Question	Answer
202	Quality of climate match data	High
	Source(s)	Notes
	USDA, Agricultural Research Service, National Plant Germplasm System. (2021). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. <a href="https://npgsweb.ars-grin.gov/">https://npgsweb.ars-grin.gov/</a> . [Accessed 6 Jan 2021]	

203	Broad climate suitability (environmental versatility)	y
	Source(s)	Notes
	LLIFLE - Encyclopedia of living forms. (2021). <i>Portulaca pilosa</i> . <a href="http://www.llifle.com/">http://www.llifle.com/</a> . [Accessed 7 Jan 2021]	"Altitude range: 0–2000 metres above sea level."
	Tropicos.org. (2021). Missouri Botanical Garden. <a href="http://www.tropicos.org/">http://www.tropicos.org/</a> . [Accessed 7 Jan 2021]	Collected over an elevation range of 0-3700 m and latitude ranges of 00°43'N to 17°55'N and 00°04'S to 26°25'S

204	Native or naturalized in regions with tropical or subtropical climates	y
	Source(s)	Notes
	USDA, Agricultural Research Service, National Plant Germplasm System. (2021). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. <a href="https://npgsweb.ars-grin.gov/">https://npgsweb.ars-grin.gov/</a> . [Accessed 6 Jan 2021]	"Native Northern America NORTH-CENTRAL U.S.A.: United States [Kansas, Missouri, Oklahoma] SOUTHEASTERN U.S.A.: United States [Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee] SOUTH-CENTRAL U.S.A.: United States [New Mexico, Texas] SOUTHWESTERN U.S.A.: United States [Arizona] REGION: Mexico Southern America CARIBBEAN: Netherlands Antilles [Saba], Antigua and Barbuda [Antigua], Bahamas, Cuba, Dominica, Dominican Republic, Grenada, Haiti, Jamaica, St. Lucia, Martinique, Trinidad and Tobago [Trinidad], United States [Puerto Rico], St. Vincent and Grenadines CENTRAL AMERICA: Belize, Costa Rica, Guatemala, Honduras, Nicaragua, Panama, El Salvador NORTHERN SOUTH AMERICA: Venezuela BRAZIL: Brazil WESTERN SOUTH AMERICA: Colombia, Ecuador, Peru"
	Wagner, W.L., Herbst, D.R.& Sohmer, S.H. 1999. Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	"Pantropical; in Hawai'i naturalized in usually dry, open, strand to coastal habitats or lava fields, 0-620 m, on all of the main islands except Lana'i and Kaho'olawe. First collected on Kaua'i in 1922 (Skottsberg 1062, BISH)."

205	Does the species have a history of repeated introductions outside its natural range?	y
	Source(s)	Notes

Qsn #	Question	Answer
	<p>CABI. (2021). <i>Portulaca pilosa</i> (kiss-me-quick). In: Invasive Species Compendium. Wallingford, UK: CAB International. <a href="http://www.cabi.org/isc">www.cabi.org/isc</a></p>	<p>"Since the earliest records of <i>P. pilosa</i> from Florida and North Carolina, the species has spread to all southeastern states of the USA, including Texas, and inland to Tennessee, where it was found in 1978 (Kral, 1981). It was also found relatively recently in northern Louisiana (Matthews and Levins, 1985a). Matthews and Levins (1985b) discuss the spread of <i>P. pilosa</i> to the USA. Based on the ranges of variation in the species, including differences that prompted the untenable separation of southwestern specimens as <i>P. mundula</i>, they hypothesized two introductions: one from Mexico and another from the Caribbean. Whether this was a natural range extension is not discussed. Based on the available data from the southeast and pattern of historical reports, the species does seem to be a recent introduction to the southeastern states, probably introduced via ballast and other human activities, while possibly native to the southwestern States, particularly New Mexico and Arizona. In Australia the species probably arrived with ship ballast between 1870 and 1920, possibly with multiple introductions (Menkins, 2015). In Africa, all available records are from the last several decades (Löve, 1987; Maroyi, 2006; CJB, 2015). In Asia the species was first found in Taiwan in 1929 (Xu et al., 2012; IBCAS, 2015), in China in Fujian in 1933 and Guangdong in 1974 (IBCAS, 2015), and in Singapore around 1922-1925 and Hong Kong in 1954 (Corlett, 1988). <i>P. pilosa</i> was found in Vietnam in 1965 (IBCAS, 2015), while in Japan a collection was made in the Ryukyu Islands in 1973 (IBCAS, 2015). Reports of the species from India and Pakistan are also recent (Murthy et al., 2006; Gnanasekaran et al., 2012; Joshi et al., 2013; Flora of Pakistan, 2015)."</p>

301	Naturalized beyond native range	y
	Source(s)	Notes
	<p>Wagner, W.L., Herbst, D.R. &amp; Sohmer, S.H. 1999. Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.</p>	<p>"Pantropical; in Hawai'i naturalized in usually dry, open, strand to coastal habitats or lava fields, 0-620 m, on all of the main islands except Lana'i and Kaho'olawe. First collected on Kaua'i in 1922 (Skottsberg 1062, BISH)."</p>
	<p>Wood, K. R. &amp; LeGrande, M. (2006). An annotated checklist and new island records of flowering plants from Lehua Islet, Ni'ihau, Hawai'i. Bishop Museum Occasional Papers 87:19-29</p>	<p>"<i>Portulaca pilosa</i> L. 'Äkulikuli is a nonnative, naturalized, perennial herb with purple-red stems and magenta flowers. It was not observed by Caum but we found it occasionally throughout the islet and sometimes locally common along the inner crescent."</p>

Qsn #	Question	Answer
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	" <i>Portulaca pilosa</i> L. Portulacaceae Total N° of Refs: 73 Global Risk Score: 14.4 Rating: Medium Toxic - Habit: annual Herb Preferred Climate/s: Dryland, Subtropical, Tropical Origin: Africa, S Am Major Pathway/s: Contaminant, Crop, Herbal, Ornamental Dispersed by: Humans, Cattle, Livestock, Vehicles, Escapee References: Cuba-A-14, Australia-W-93, Taiwan-W-235, Australia-W-205, Brazil-W-362, Brazil-W-407, United States of America-CE-617, Singapore-N-196, Australia-N-7, Australia-W-269, Central America-W-157, Japan-N-287, Japan-W-286, Australia-N-945, Global-N-85, United States of America-N-301, Japan-N-794, Hungary-U-809, United States of America-N-839, Australia-W-853, Australia-N-856, Australia-N-868, Paraguay-NI-876, Mexico-W-890, Dominican Republic-A-925, Venezuela-A-932, India-N-976, Australia-N-354, Australia-N-1049, Europe-N-819, United States of America-N-1115, Gal pagos Islands-CN-1157, Mexico-W-1226, Italy-U-251, Hungary-U-1255, Japan-N-1278, United States of America-N-1292, south and southeast Asia-A-1320, Global-W-1324, Global-W-1349, Vietnam-E-1386, India-I-1389, south and southeast Asia-A-1408, Australia-N-1491, Global-ZD-1495, China-I-1496, Australia-ZD-1509, Mexico-W-1510, Venezuela-W-1511, Taiwan-A-87, Thailand-A-87, Argentina-A-87, Dominican Republic-A-87, Trinidad-A-87, Australia, northern-W-1204, Global-CD-1611, Taiwan-W-1748, China-N-1758, North America-N-1760, Italy-U-1887, India-I-1992, New Zealand-U-2048, Cuba-R-2054, Australia-W-1977, Botswana-W-1977, China-W-1977, India-W-1977, Italy-W-1977, Japan-W-1977, Kenya-W-1977, Malaysia-W-1977, Palau-W-1977, Viet Nam-W-1977."

302	Garden/amenity/disturbance weed	y
	Source(s)	Notes
	CABI. (2021). <i>Portulaca pilosa</i> (kiss-me-quick). In: Invasive Species Compendium. Wallingford, UK: CAB International. <a href="http://www.cabi.org/isc">www.cabi.org/isc</a>	[Disturbance weed with environmental impacts, and a weed of lawns] "Habitats with frequent disturbances are the most likely to be invaded by <i>P. pilosa</i> . This is particularly true of coastal habitats that undergo frequent disturbance due to coastal storms. In such situations <i>P. pilosa</i> may compete with native herbaceous species. If it colonizes bare soils following storms and prevents establishment of native perennials it may have long-term effects on soil stability." ... " <i>P. pilosa</i> can become invasive when grown as an ornamental and is known as a troublesome weed of lawns (Georgia Lawn, 2015)."

303	Agricultural/forestry/horticultural weed	n
	Source(s)	Notes
	CABI. (2021). <i>Portulaca pilosa</i> (kiss-me-quick). In: Invasive Species Compendium. Wallingford, UK: CAB International. <a href="http://www.cabi.org/isc">www.cabi.org/isc</a>	"Although <i>P. pilosa</i> has a broad global range, it is not generally considered a problematic agricultural weed, despite its preference for disturbed soils. In the USA it is described as a common weed of one or more crops in Louisiana, Alabama, Georgia, South Carolina, North Carolina and Puerto Rico (Invasive.org, 2015)."

Qsn #	Question	Answer
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	Cited as a weed of agriculture in a number of references, but primarily a disturbance weed

304	Environmental weed	y
	Source(s)	Notes
	CABI. (2021). <i>Portulaca pilosa</i> (kiss-me-quick). In: Invasive Species Compendium. Wallingford, UK: CAB International. <a href="http://www.cabi.org/isc">www.cabi.org/isc</a>	"Where it is regarded as invasive, <i>P. pilosa</i> competes with native and endangered species in sensitive habitats. For example, in the Puhimau Hotspot in the Hawai'i Volcanoes National Park, it is one of two invasive species threatening the largest remaining population of the federally endangered <i>Portulaca sclerocarpa</i> (Loh et al., 2014). It has also been reported as a threat through invasion and competition to three other endangered Hawaiian species: <i>Scaevola coriacea</i> (US Fish and Wildlife Service, 2010a), <i>Sesbania tomentosa</i> (US Fish and Wildlife Service, 2010b) and <i>Vigna o-wahuensis</i> (US Fish and Wildlife Service, 2011)."

305	Congeneric weed	y
	Source(s)	Notes
	CABI. (2021). <i>Portulaca oleracea</i> (purslane). In: Invasive Species Compendium. Wallingford, UK: CAB International. <a href="http://www.cabi.org/isc">www.cabi.org/isc</a>	" <i>P. oleracea</i> is an aggressive weed in most agricultural settings. Seeds on or near the surface of the soil germinate rapidly following ploughing (seeds require light for germination), so there is immediate competition with newly sown crops. This rapid growth is usually horizontal, covering the surface of the soil. Yields can be reduced by 20-40%, depending on the crop. Purslane grows best under warm conditions, so crops in subtropical areas are affected more than those in temperate areas. A field experiment was conducted in China to determine the relationship between the yield loss of summer maize and infestations of <i>P. oleracea</i> . Weed infestations did not significantly affect grain weight or ear number of the maize. The relationship between yield loss and the density of <i>P. oleracea</i> was S-shaped (Ni HanWen et al., 2000). Field experiments were conducted in Brazil to determine the effect of different periods of weed competition on groundnuts. The presence of weeds including <i>P. oleracea</i> resulted in decreased pod and kernel yields and groundnut dry matter (Kasai et al., 1997). Reservoir for Other Pests Purslane can also act as a reservoir for other diseases, particularly those caused by nematodes and some viruses."
	Zimmerman, C. (1976). Growth Characteristics of Weediness in <i>Portulaca Oleracea</i> L. <i>Ecology</i> , 57(5), 964-974	" <i>Portulaca oleracea</i> is a weed of arable land found throughout the United States (Eric Hulten, personal communication) and, according to Coquillant (1951), is the eighth most common plant on earth."
	Haselwood, E.L., Motter, G.G., & Hirano, R.T. (eds.). 1983. Handbook of Hawaiian Weeds. University of Hawaii Press, Honolulu, HI	[ <i>Portulaca oleracea</i> ] "Found almost everywhere except in cold regions. A common weed in cultivated areas and lawns."
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	[ <i>Portulaca oleracea</i> ] "Weed of: Bananas, Bulbs, Carrots, Cereals, Cotton, Cucurbits/Melons, Cutflowers, Forestry, Grapevines, Nursery Production, Orchards & Plantations, Pastures, Pome Fruits, Potatoes, Sunflowers, Vegetables"

Qsn #	Question	Answer
401	Produces spines, thorns or burrs	n
	Source(s)	Notes
	Wagner, W.L., Herbst, D.R.& Sohmer, S.H. 1999. Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	[No evidence] "Perennial herbs from a taproot; stems green when young, usually purplish red when exposed to sun, prostrate to weakly ascending, 3-20 cm long, forming irregular mats. Leaves alternate or clustered at the ends of the branches, oblong-elliptic to linear, 4-15 (-25) mm long, 0.5-2 (-4) mm wide, petioles ca. 1-2 mm long, with a tuft of hairs 1-18 mm long in the axil. Flowers (1) 2-10 in congested terminal cymes subtended by a series of involucre leaves ca. 10-12 mm long, bracteoles 0.7-2.5 mm long, partly obscured by hairs ca. 3-18 mm long; sepals 2.5-5 mm long, margins somewhat scarios, apex sometimes inconspicuously hooded; petals (4) 5, magenta, obovate, 5-6 (-10) mm long; stamens (7-) 20-30; anthers globose to elliptic; style 3-7 branched. Capsules broadly ellipsoid, ca. 2-3 (-4) mm long, circumscissile at or slightly below middle. Seeds dark blue with a metallic luster, the surface tuberculate, especially along margins"

402	Allelopathic	
	Source(s)	Notes
	WRA Specialist. (2021). Personal Communication	Unknown. No evidence found

403	Parasitic	n
	Source(s)	Notes
	Wagner, W.L., Herbst, D.R.& Sohmer, S.H. 1999. Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	"Perennial herbs from a taproot; stems green when young, usually purplish red when exposed to sun, prostrate to weakly ascending, 3-20 cm long, forming irregular mats." [Portulacaceae]

404	Unpalatable to grazing animals	n
	Source(s)	Notes
	CABI. (2021). <i>Portulaca pilosa</i> (kiss-me-quick). In: Invasive Species Compendium. Wallingford, UK: CAB International. <a href="http://www.cabi.org/isc">www.cabi.org/isc</a>	"In some situations, <i>P. pilosa</i> has proved to be a valuable fodder plant for cattle. In New Mexico, USA, <i>P. pilosa</i> and some other annual forbs have been known to make up to 32% of the summer and autumn diet of cattle in rangeland pastures (Allison et al., 1977). In Australia in native grass pastures oversown with legumes in southern subcoastal Queensland, the apparently insignificant and low-growing plants of <i>P. pilosa</i> were estimated to contribute over 400 g dry matter to the daily diet of individual cattle in late autumn-early winter (Jones and Bunch, 1999)."

405	Toxic to animals	n
	Source(s)	Notes



Qsn #	Question	Answer
	CABI. (2021). <i>Portulaca pilosa</i> (kiss-me-quick). In: Invasive Species Compendium. Wallingford, UK: CAB International. <a href="http://www.cabi.org/isc">www.cabi.org/isc</a>	"There are occasional reports of <i>P. pilosa</i> being consumed. Geesink (1972) reports that it is used as a leafy vegetable in Melanesia, while Kumar et al. (2013) report the same for south India. The safety of its use as a vegetable is unknown, and some do not recommend its consumption; the closely related <i>P. oleracea</i> is known to accumulate oxalates and nitrates (Dowling and McKenzie, 1993) but there are no published records of problems with poisoning with <i>P. pilosa</i> either in humans or livestock (Jones and Bunch, 1999)."
	Jones, R. M., & Bunch, G. A. (1999). Levels of seed in faeces of cattle grazing speargrass ( <i>Heteropogon contortus</i> ) pastures oversown with legumes in southern subcoastal Queensland. <i>Tropical Grasslands</i> , 33, 11-17	"While there can be problems with oxalate and nitrate poisoning in <i>P. oleracea</i> (Dowling and McKenzie 1993), there are no published records of problems with <i>P. pilosa</i> and no indications that it posed a problem in this experiment. In any case, problems with <i>P. oleracea</i> are primarily associated with hungry cattle suddenly exposed to fresh forage dominated by this species."
	Nellis, D.W. (1994). <i>Seashore Plants of South Florida and the Caribbean</i> . Pineapple Press Inc., Sarasota, FL	[Unlikely to be consumed in quantities large enough to result in poisoning] "A dark-green oil extracted from the seeds is toxic, but in small doses it expels intestinal worms."

406	Host for recognized pests and pathogens	n
	Source(s)	Notes
	LLIFLE - Encyclopedia of living forms. (2021). <i>Portulaca pilosa</i> . <a href="http://www.llifle.com/">http://www.llifle.com/</a> . [Accessed 8 Jan 2021]	"Pests and diseases: No serious insect or disease problems. Watch for aphids. Stem or root rots can be a problem in wet soils."
	CABI. (2021). <i>Portulaca pilosa</i> (kiss-me-quick). In: Invasive Species Compendium. Wallingford, UK: CAB International. <a href="http://www.cabi.org/isc">www.cabi.org/isc</a>	[No evidence] "Although <i>P. pilosa</i> has a broad global range, it is not generally considered a problematic agricultural weed, despite its preference for disturbed soils. In the USA it is described as a common weed of one or more crops in Louisiana, Alabama, Georgia, South Carolina, North Carolina and Puerto Rico (Invasive.org, 2015)."

Qsn #	Question	Answer
407	Causes allergies or is otherwise toxic to humans	n
	Source(s)	Notes
	Quattrocchi, U. 2012. CRC World Dictionary of Medicinal and Poisonous Plants: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. CRC Press, Boca Raton, FL	"SE Asia. Prostrate woolly herb, terete stems, small red flowers surrounded by long hairs, subglobose capsule, many black shining seeds, highly variable species, whole plant as vegetable" ... "Leaves intensely bitter, diuretic, cooling, stomachic and emmenagogue. Boils in the groin, make a poultice of it along with <i>Monochoria vaginalis</i> and turmeric."
	CABI. (2021). <i>Portulaca pilosa</i> (kiss-me-quick). In: Invasive Species Compendium. Wallingford, UK: CAB International. <a href="http://www.cabi.org/isc">www.cabi.org/isc</a>	"There are occasional reports of <i>P. pilosa</i> being consumed. Geesink (1972) reports that it is used as a leafy vegetable in Melanesia, while Kumar et al. (2013) report the same for south India. The safety of its use as a vegetable is unknown, and some do not recommend its consumption; the closely related <i>P. oleracea</i> is known to accumulate oxalates and nitrates (Dowling and McKenzie, 1993) but there are no published records of problems with poisoning with <i>P. pilosa</i> either in humans or livestock (Jones and Bunch, 1999)."
	Nellis, D.W. (1994). <i>Seashore Plants of South Florida and the Caribbean</i> . Pineapple Press Inc., Sarasota, FL	[Unlikely to be consumed in quantities large enough to result in poisoning] "Edible The young plant may be cooked and eaten. Toxic A dark-green oil extracted from the seeds is toxic, but in small doses it expels intestinal worms."

408	Creates a fire hazard in natural ecosystems	n
	Source(s)	Notes
	Wagner, W.L., Herbst, D.R. & Sohmer, S.H. 1999. <i>Manual of the flowering plants of Hawaii</i> . Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	[No evidence. Prostrate habit and habitat unlikely to contribute to fire risk] "Perennial herbs from a taproot; stems green when young, usually purplish red when exposed to sun, prostrate to weakly ascending, 3-20 cm long, forming irregular mats." ... "in Hawai'i naturalized in usually dry, open, strand to coastal habitats or lava fields"
	CABI. (2021). <i>Portulaca pilosa</i> (kiss-me-quick). In: Invasive Species Compendium. Wallingford, UK: CAB International. <a href="http://www.cabi.org/isc">www.cabi.org/isc</a>	No evidence

409	Is a shade tolerant plant at some stage of its life cycle	n
	Source(s)	Notes
	CABI. (2021). <i>Portulaca pilosa</i> (kiss-me-quick). In: Invasive Species Compendium. Wallingford, UK: CAB International. <a href="http://www.cabi.org/isc">www.cabi.org/isc</a>	" <i>P. pilosa</i> prefers sunny, open locations on shallow, sandy or gravelly soils, often growing on rocky outcrops. The soil must be very well-drained. Full sun is required for flowering."

410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	y
	Source(s)	Notes
	LLIFLE - Encyclopedia of living forms. (2021). <i>Portulaca pilosa</i> . <a href="http://www.llifle.com/">http://www.llifle.com/</a> . [Accessed 8 Jan 2021]	"Soils: it grows well in poor, sandy or gravelly soils. The soil must be very well-drained"

Qsn #	Question	Answer
	CABI. (2021). <i>Portulaca pilosa</i> (kiss-me-quick). In: Invasive Species Compendium. Wallingford, UK: CAB International. <a href="http://www.cabi.org/isc">www.cabi.org/isc</a>	"The species shows considerable adaptability to a range of environments, including dry soils, beaches and disturbed habitats, as well as roadsides, railroads and limestone, granite and sandstone outcrops. It can be found at altitudes from sea level to 2000 m (Flora of North America Editorial Committee, 2015; LLIFLE, 2015)"

411	Climbing or smothering growth habit	n
	Source(s)	Notes
	Wagner, W.L., Herbst, D.R.& Sohmer, S.H. 1999. Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	"Perennial herbs from a taproot; stems green when young, usually purplish red when exposed to sun, prostrate to weakly ascending, 3-20 cm long, forming irregular mats."

412	Forms dense thickets	n
	Source(s)	Notes
	CABI. (2021). <i>Portulaca pilosa</i> (kiss-me-quick). In: Invasive Species Compendium. Wallingford, UK: CAB International. <a href="http://www.cabi.org/isc">www.cabi.org/isc</a>	" <i>P. pilosa</i> plants grow in the warmer months to form dense mats or mounds." [Could compete with native vegetation]

501	Aquatic	n
	Source(s)	Notes
	Wagner, W.L., Herbst, D.R.& Sohmer, S.H. 1999. Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	[Terrestrial] "in Hawai'i naturalized in usually dry, open, strand to coastal habitats or lava fields, 0-620 m"

502	Grass	n
	Source(s)	Notes
	USDA, Agricultural Research Service, National Plant Germplasm System. (2021). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. <a href="https://npgsweb.ars-grin.gov/">https://npgsweb.ars-grin.gov/</a> . [Accessed 6 Jan 2021]	Family: Portulacaceae

503	Nitrogen fixing woody plant	n
	Source(s)	Notes
	USDA, Agricultural Research Service, National Plant Germplasm System. (2021). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. <a href="https://npgsweb.ars-grin.gov/">https://npgsweb.ars-grin.gov/</a> . [Accessed 6 Jan 2021]	Family: Portulacaceae

Qsn #	Question	Answer
504	Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)	n
	Source(s)	Notes
	Flora of North America. (2021). <i>Portulaca pilosa</i> . <a href="http://www.efloras.org">http://www.efloras.org</a> . [Accessed 6 Jan 2021]	"Plants annual; roots fibrous to slightly fleshy."

601	Evidence of substantial reproductive failure in native habitat	n
	Source(s)	Notes
	Flora of North America. (2021). <i>Portulaca pilosa</i> . <a href="http://www.efloras.org">http://www.efloras.org</a> . [Accessed 8 Jan 2021]	[No evidence. Widespread native and introduced distribution] "Flowering late spring-early fall, year-round in s Fla. Dry soils, beaches, disturbed habitats, roadsides and railroads on limestone, granitic, and sandstone outcrops; 0-2000 m; Ala., Ariz., Ark., Fla., Ga., Kans., La., Miss., Mo., N.Mex., N.C., Okla., S.C., Tenn., Tex.; Mexico; West Indies; Central America; South America."

602	Produces viable seed	y
	Source(s)	Notes
	Zimmerman, C. (1977). A Comparison of Breeding Systems and Seed Physiologies in Three Species of <i>Portulaca</i> L. <i>Ecology</i> , 58(4), 860-868	"Germination on moistened discs with no standing water was compared with germination of submerged seeds at 25°C. <i>Portulaca grandiflora</i> showed 64.1% and 67.2%, respectively, with no significant difference (Tr-df = 1, F = 2.29, P > .05). <i>Portulaca pilosa</i> yielded 78.9% on moistened discs and 73.8% for submerged seeds, and this was a significant difference (Tr-df = 1, F = 4.66, P < .05)."
	Nellis, D.W. (1994). <i>Seashore Plants of South Florida and the Caribbean</i> . Pineapple Press Inc., Sarasota, FL	"Reproduction The fruit requires 13 to 17 days to mature, then the spherical seed capsule splits open around its axis, releasing about 60 small, black, long-lived seeds. Propagation Cuttings root well and may be used to start new plants. Seeds require sunlight for germination and should be sprinkled on the surface of a moist sandy soil. Germination percentage and speed are both improved if the soil temperature is maintained above 25°C."

603	Hybridizes naturally	
	Source(s)	Notes
	CABI. (2021). <i>Portulaca pilosa</i> (kiss-me-quick). In: <i>Invasive Species Compendium</i> . Wallingford, UK: CAB International. <a href="http://www.cabi.org/isc">www.cabi.org/isc</a>	"Kim and Carr (1990a) attempted to produce interspecific hybrids using eight species of Hawaiian <i>Portulaca</i> but without success for crosses involving <i>P. pilosa</i> ."
	Zimmerman, C. (1977). A Comparison of Breeding Systems and Seed Physiologies in Three Species of <i>Portulaca</i> L. <i>Ecology</i> , 58(4), 860-868	No evidence

Qsn #	Question	Answer
604	Self-compatible or apomictic	y
	Source(s)	Notes
	Zimmerman, C. (1977). A Comparison of Breeding Systems and Seed Physiologies in Three Species of <i>Portulaca</i> L. <i>Ecology</i> , 58(4), 860-868	"In <i>P. oleracea</i> and <i>P. pilosa</i> , self-compatibility, the tendency toward cleistogamy, and strict environmental control of floral opening encourage selfing."

605	Requires specialist pollinators	n
	Source(s)	Notes
	Zimmerman, C. (1977). A Comparison of Breeding Systems and Seed Physiologies in Three Species of <i>Portulaca</i> L. <i>Ecology</i> , 58(4), 860-868	[Self-compatible. Pollinators not required for seed set] " <i>Portulaca pilosa</i> has more latitude in its flowering response compared to the weed, since the flowers opened, on the average, 6 ha day. These flowers, too, opened for a single day. only under full sunlight and when temperatures were above 21°C. Cultivar flowers in the greenhouse often opened during the day, and they opened as early as 0800 and closed as late as 1700. The flowers expanded on cloudy days, but did not fully unfold. Flowers of <i>P. oleracea</i> and <i>P. pilosa</i> were not visited by insects during ten 2-h periods of observation, although the bright, showy, yellow blossoms of <i>P. oleracea</i> might be expected to attract them. <i>Portulaca grandiflora</i> flowers were visited by bees and flies during all observation periods." ... "The data demonstrated that <i>P. pilosa</i> and <i>P. oleracea</i> are self-compatible, since covered capsules yielded a large number of seeds."

606	Reproduction by vegetative fragmentation	y
	Source(s)	Notes
	CABI. (2021). <i>Portulaca pilosa</i> (kiss-me-quick). In: <i>Invasive Species Compendium</i> . Wallingford, UK: CAB International. <a href="http://www.cabi.org/isc">www.cabi.org/isc</a>	"Like other <i>Portulaca</i> species, <i>P. pilosa</i> can propagate vegetatively; when stems are cut or broken, rooting takes place at breakage points through the development of adventitious roots, and new plants develop (Connard and Zimmerman, 1931)."

607	Minimum generative time (years)	1
	Source(s)	Notes
	Flora of North America. (2021). <i>Portulaca pilosa</i> . <a href="http://www.efloras.org">http://www.efloras.org</a> . [Accessed 7 Jan 2021]	"Plants annual; roots fibrous to slightly fleshy."
	Wagner, W.L., Herbst, D.R. & Sohmer, S.H. 1999. Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	[Annual life cycle in some climates] "Perennial herbs from a taproot"

701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	y
	Source(s)	Notes
	Khan, I., Navie, S., George, D., O'Donnell, C., & Adkins, S. W. (2018). Alien and native plant seed dispersal by vehicles. <i>Austral Ecology</i> , 43(1), 76-88	"Table 2. Mean number of viable seeds belonging to different species and found in different seasons on utility vehicles that had been driven on- and off-road in southeast Queensland for 14 days" [Portulaca pilosa seeds collected on vehicles in Autumn Winter & Spring]

Qsn #	Question	Answer
	CABI. (2021). <i>Portulaca pilosa</i> (kiss-me-quick). In: Invasive Species Compendium. Wallingford, UK: CAB International. <a href="http://www.cabi.org/isc">www.cabi.org/isc</a>	Pathway Vectors include Debris and waste associated with human activities, Land vehicles, & Soil, sand and gravel

702	Propagules dispersed intentionally by people	y
	Source(s)	Notes
	CABI. (2021). <i>Portulaca pilosa</i> (kiss-me-quick). In: Invasive Species Compendium. Wallingford, UK: CAB International. <a href="http://www.cabi.org/isc">www.cabi.org/isc</a>	"As it is widely planted in dry areas as a garden ornamental, the risk of escape from cultivation is high, especially as it is able to reproduce vegetatively as well as by seed."
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	"Major Pathway/s: Contaminant, Crop, Herbal, Ornamental"

703	Propagules likely to disperse as a produce contaminant	y
	Source(s)	Notes
	CABI. (2021). <i>Portulaca pilosa</i> (kiss-me-quick). In: Invasive Species Compendium. Wallingford, UK: CAB International. <a href="http://www.cabi.org/isc">www.cabi.org/isc</a>	"Although Ridley (1930) suggested that <i>P. pilosa</i> was dispersed by birds, he noted that man was the main vector through accidental transport of seeds in contaminated hay, cereal grains and plant wastes. As it can establish from vegetative cuttings, <i>P. pilosa</i> can also be spread accidentally through the disposal of garden waste."
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	"Major Pathway/s: Contaminant, Crop, Herbal, Ornamental"

704	Propagules adapted to wind dispersal	n
	Source(s)	Notes
	Zimmerman, C. (1977). A Comparison of Breeding Systems and Seed Physiologies in Three Species of <i>Portulaca</i> L. <i>Ecology</i> , 58(4), 860-868	"None of the species under consideration has any anatomical modification that aids in dispersal."
	Wagner, W.L., Herbst, D.R. & Sohmer, S.H. 1999. Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	[Small seeds could be aided in dispersal by wind, but low growth habit and lack of specific adaptations for wind dispersal may make this an unlikely vector] "Perennial herbs from a taproot; stems green when young, usually purplish red when exposed to sun, prostrate to weakly ascending, 3-20 cm long, forming irregular mats."... "Capsules broadly ellipsoid, ca. 2-3(-4) mm long, circumscissile at or slightly below middle. Seeds dark blue with a metallic luster, the surface tuberculate, especially along margins."

705	Propagules water dispersed	y
	Source(s)	Notes
	Osunkoya, O. O., Ali, S., Nguyen, T., Perrett, C., Shabbir, A., Navie, S., Belgeri, A., Dhileepan, K. & Adkins, S. (2014). Soil seed bank dynamics in response to an extreme flood event in a riparian habitat. <i>Ecological Research</i> , 29(6), 1115-1129	"Table 3 SIMPLER analysis of Mooloyember creek, central Queensland, Australia seed bank data for pre- vs. post-flood periods" [Portulaca pilosa seeds present in Pre-flood & Post-flood seed bank]

Qsn #	Question	Answer
	Nellis, D.W. (1994). Seashore Plants of South Florida and the Caribbean. Pineapple Press Inc., Sarasota, FL	[Presence on shorelines suggests dispersal by water may be possible] "Habitat & Ecological Distribution This portulaca may be found on sandy and rocky shorelines as well as inland as a pioneer species on open sites. Dispersal is aided by wildlife as about 16% of the seeds are capable of germination after passing through the gut of a bird."
	CABI. (2021). <i>Portulaca pilosa</i> (kiss-me-quick). In: Invasive Species Compendium. Wallingford, UK: CAB International. www.cabi.org/isc	Pathway Vectors include Ship ballast water and sediment

706	Propagules bird dispersed	y
	Source(s)	Notes
	Nellis, D.W. (1994). Seashore Plants of South Florida and the Caribbean. Pineapple Press Inc., Sarasota, FL	"Dispersal is aided by wildlife as about 16% of the seeds are capable of germination after passing through the gut of a bird."
	Zimmerman, C. (1977). A Comparison of Breeding Systems and Seed Physiologies in Three Species of <i>Portulaca</i> L. Ecology, 58(4), 860-868	"None of the species under consideration has any anatomical modification that aids in dispersal. Muenscher (1955) states that <i>P. oleracea</i> seeds pass through digestive systems of swine and sheep, and farmers once fed large amounts of the plants to these animals. My data, using <i>Passer domesticus</i> , showed that species are significantly different from each other and that passage through the bird digestive system was more destructive to <i>P. grandiflora</i> and <i>P. pilosa</i> seeds than it was to <i>P. oleracea</i> seeds. In <i>P. grandiflora</i> only 4.7% of the seeds were viable after being eaten; <i>P. pilosa</i> , 15.9%; and <i>P. oleracea</i> , 61.9% (df = 2, 15; F = 201.51; P < .01; D = 10.21)."

707	Propagules dispersed by other animals (externally)	y
	Source(s)	Notes
	Staples, G.W., Herbst, D.R & Imada, C.T. 2000. Survey of invasive or potentially invasive cultivated plants in Hawai'i. Bishop Museum Occasional Papers 65: 1-35	"Table 2. Annotated checklist of invasive or potentially invasive cultivated plants in Hawai'i with dispersal syndrome" [ <i>Portulaca pilosa</i> - seeds slightly sticky when wetted]

708	Propagules survive passage through the gut	y
	Source(s)	Notes
	Nellis, D.W. (1994). Seashore Plants of South Florida and the Caribbean. Pineapple Press Inc., Sarasota, FL	"Dispersal is aided by wildlife as about 16% of the seeds are capable of germination after passing through the gut of a bird."
	Zimmerman, C. (1977). A Comparison of Breeding Systems and Seed Physiologies in Three Species of <i>Portulaca</i> L. Ecology, 58(4), 860-868	"None of the species under consideration has any anatomical modification that aids in dispersal. Muenscher (1955) states that <i>P. oleracea</i> seeds pass through digestive systems of swine and sheep, and farmers once fed large amounts of the plants to these animals. My data, using <i>Passer domesticus</i> , showed that species are significantly different from each other and that passage through the bird digestive system was more destructive to <i>P. grandiflora</i> and <i>P. pilosa</i> seeds than it was to <i>P. oleracea</i> seeds. In <i>P. grandiflora</i> only 4.7% of the seeds were viable after being eaten; <i>P. pilosa</i> , 15.9%; and <i>P. oleracea</i> , 61.9% (df = 2, 15; F = 201.51; P < .01; D = 10.21)."

Qsn #	Question	Answer
	Jones, R. M., & Bunch, G. A. (1999). Levels of seed in faeces of cattle grazing speargrass ( <i>Heteropogon contortus</i> ) pastures oversown with legumes in southern subcoastal Queensland. <i>Tropical Grasslands</i> , 33, 11-17	"The high levels of <i>P. pilosa</i> seed in the faeces indicate that this apparently insignificant low growing herb contributes effectively to animal intake. The high levels of <i>P. pilosa</i> seed in the faeces in autumn–early winter 1992 can be compared with the levels in plant samples in June 1992 when the average seed content was 1020 seeds/g DM."

801	Prolific seed production (>1000/m2)	
	Source(s)	Notes
	CABI. (2021). <i>Portulaca pilosa</i> (kiss-me-quick). In: <i>Invasive Species Compendium</i> . Wallingford, UK: CAB International. <a href="http://www.cabi.org/isc">www.cabi.org/isc</a>	[Possibly under certain conditions] "In garden experiments, Zimmerman (1976) found that in one growing season a single <i>P. pilosa</i> plant could produce up to 292,010 seeds. Reproductive output, however, was greatly reduced at low temperatures; experimentally grown plants maintained at 11°C produced only about 17 capsules over 40 days. In general, seeds germinate during spring and summer, requiring light and a temperature of 25°C for maximum germination (Zimmerman, 1977)."

802	Evidence that a persistent propagule bank is formed (>1 yr)	
	Source(s)	Notes
	CABI. (2021). <i>Portulaca pilosa</i> (kiss-me-quick). In: <i>Invasive Species Compendium</i> . Wallingford, UK: CAB International. <a href="http://www.cabi.org/isc">www.cabi.org/isc</a>	"Kim and Carr (1990b), based on experimentally grown plants in Hawaii, found that seed matured in approximately 14 days, with 60.7 seeds produced per capsule. They additionally showed that <i>P. pilosa</i> seeds are non-dormant, with a high percentage of germination occurring in 1-2 weeks."
	Zimmerman, C. (1977). A Comparison of Breeding Systems and Seed Physiologies in Three Species of <i>Portulaca</i> L. <i>Ecology</i> , 58(4), 860-868	"Muenscher (1955) lists <i>P. oleracea</i> with <i>Amaranthus retroflexus</i> , <i>Ambrosia elatior</i> , <i>Lepidium virginianum</i> , and <i>Plantago major</i> as species having seeds that normally remain viable for 40 yr. Tests of seeds of the three species from herbarium sheets failed since storage conditions appear to arrest germinability of <i>Portulaca</i> sp. after only 2 yr (Cotter and Platt 1959)."
	Royal Botanic Gardens Kew. (2021) Seed Information Database (SID). Version 7.1. <a href="http://data.kew.org/sid/">http://data.kew.org/sid/</a> . [Accessed 8 Jan 2021]	[ <i>Portulaca pilosa</i> ] "Storage Behaviour: Orthodox Storage Conditions: Long-term storage under IPGRI preferred conditions at RBG Kew, WP. Oldest collection 16 years; germination change 92 to 94.7%, 14 years, 1 collection"

803	Well controlled by herbicides	Y
	Source(s)	Notes



Qsn #	Question	Answer
	CABI. (2021). <i>Portulaca pilosa</i> (kiss-me-quick). In: Invasive Species Compendium. Wallingford, UK: CAB International. <a href="http://www.cabi.org/isc">www.cabi.org/isc</a>	"Chemical Control <i>P. pilosa</i> can be controlled to some extent with herbicides such as glyphosate. The ability of the species to germinate and produce seed quickly (<2 months) makes it very difficult to control effectively. However, Yelverton et al. (2008) report effective control with several post emergence herbicides including atrazine, metsulfuron-methyl, triclopyr, 2,4-D, clopyralid and fluroxypyr, as well as the mixtures 2,4-D + clopyralid + dicamba and fluroxypyr + dicamba + 2,4-D. In studies of <i>P. oleracea</i> , a congener with a similar life history, Proctor (2013) found that the pre-emergence herbicide isoxaben was effective, and that of 25 post-emergence herbicides the most effective were fluroxypyr, triclopyr, dicamba and metsulfuron-methyl. Data from surveys carried out throughout the USA indicated that <i>P. pilosa</i> has developed some resistance to herbicides under horticultural situations (Scott et al., 2009)."

<b>804</b>	<b>Tolerates, or benefits from, mutilation, cultivation, or fire</b>	<b>y</b>
	<b>Source(s)</b>	<b>Notes</b>
	CABI. (2021). <i>Portulaca pilosa</i> (kiss-me-quick). In: Invasive Species Compendium. Wallingford, UK: CAB International. <a href="http://www.cabi.org/isc">www.cabi.org/isc</a>	"Tolerates, or benefits from, cultivation, browsing pressure, mutilation, fire etc"

<b>805</b>	<b>Effective natural enemies present locally (e.g. introduced biocontrol agents)</b>	<b>n</b>
	<b>Source(s)</b>	<b>Notes</b>
	Wagner, W.L., Herbst, D.R.& Sohmer, S.H. 1999. Manual of the flowering plants of Hawaii. Revised edition. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	[No evidence of limiting factors present in Hawaiian Islands] "Pantropical; in Hawai'i naturalized in usually dry, open, strand to coastal habitats or lava fields, 0-620 m, on all of the main islands except Lana'i and Kaho'olawe."

**Summary of Risk Traits:**

## High Risk / Undesirable Traits

- Elevation range exceeds 1000 m, demonstrating environmental versatility
- Naturalized and able to spread in tropical climates
- Widely naturalized, including all main Hawaiian Islands
- A lawn, disturbance, and environmental weed and a threat to native plants in the Hawaiian Islands
- Other *Portulaca* species are invasive
- Tolerates many soil types
- Reproduces by seeds and vegetatively by stem fragments
- Self-compatible
- Reaches maturity in one growing season
- Seeds dispersed internally by birds and livestock
- Seeds dispersed externally by vehicles, animals, and water
- Prolific seed production under certain conditions
- Seeds may persist for up to two years
- Tolerates browsing, cutting and other damage

## Low Risk Traits

- May be primarily a weed of disturbed habitats
- Unarmed (no spines, thorns, or burrs)
- Provides fodder for livestock
- Requires full sun to flower
- Herbicides may provide effective control