

**Taxon:** *Biophytum sensitivum* (L.) DC.

**Family:** Oxalidaceae

**Common Name(s):** lifeplant  
little tree plant

**Synonym(s):** *Oxalis sensitiva* L.

**Assessor:** Chuck Chimera

**Status:** Assessor Approved

**End Date:** 16 Jan 2020

**WRA Score:** 0.0

**Designation:** L

**Rating:** Low Risk

**Keywords:** Annual Herb, Disturbance Weed, Medicinal Uses, Shade Tolerant, Explosive 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)	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	n
301	Naturalized beyond native range	y = 1*multiplier (see Appendix 2), n= question 205	n
302	Garden/amenity/disturbance weed	n=0, y = 1*multiplier (see Appendix 2)	y
303	Agricultural/forestry/horticultural weed		
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		
405	Toxic to animals	y=1, n=0	n
406	Host for recognized pests and pathogens		
407	Causes allergies or is otherwise toxic to humans	y=1, n=0	n
408	Creates a fire hazard in natural ecosystems	y=1, n=0	n
409	Is a shade tolerant plant at some stage of its life cycle	y=1, n=0	y

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	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		
605	Requires specialist pollinators	y=-1, n=0	n
606	Reproduction by vegetative fragmentation	y=1, n=-1	n
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)		
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		
706	Propagules bird dispersed	y=1, n=-1	n
707	Propagules dispersed by other animals (externally)	y=1, n=-1	n
708	Propagules survive passage through the gut	y=1, n=-1	n
801	Prolific seed production (>1000/m2)		
802	Evidence that a persistent propagule bank is formed (>1 yr)	y=1, n=-1	n
803	Well controlled by herbicides		
804	Tolerates, or benefits from, mutilation, cultivation, or fire	y=1, n=-1	n
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
	PlantUse English contributors. (2020). Biophytum (PROSEA). <a href="https://uses.plantnet-project.org">https://uses.plantnet-project.org</a> . [Accessed 13 Jan 2020]	[No evidence of domestication] "B. reinwardtii and B. sensitivum are weeds found in anthropogenic localities, while B. adiantoides is mainly found in open forest undergrowth."

102	Has the species become naturalized where grown?	
	Source(s)	Notes
	WRA Specialist. (2020). Personal Communication	NA

103	Does the species have weedy races?	
	Source(s)	Notes
	WRA Specialist. (2020). 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. (2020). 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 13 Jan 2020]	"Native Asia-Temperate CHINA: China (s.) EASTERN ASIA: Taiwan Asia-Tropical INDIAN SUBCONTINENT: India, Nepal, Sri Lanka INDO-CHINA: Indochina, Thailand MALESIA: Indonesia, Malaysia"
	Wu, Z.Y., Raven, P.H. & Hong, D.Y. (eds.). 2008. Flora of China. Vol. 11 (Oxalidaceae through Aceraceae). Science Press & Missouri Botanical Garden Press, Beijing & St. Louis	"SW Guangxi, ?Guizhou, Hainan, Taiwan, Yunnan [India, Indonesia, Malaysia, Nepal, Philippines, Sri Lanka, Thailand, Vietnam; tropical Africa]."

202	Quality of climate match data	High
	Source(s)	Notes
	USDA, Agricultural Research Service, National Plant Germplasm System. (2020). 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 13 Jan 2020]	

203	Broad climate suitability (environmental versatility)	n
	Source(s)	Notes

Qsn #	Question	Answer
	Dave's Garden. (2020). Sensitive Plant - <i>Biophytum sensitivum</i> . <a href="https://davesgarden.com/guides/pf/go/95422/">https://davesgarden.com/guides/pf/go/95422/</a> . [Accessed 14 Jan 2020]	"Hardiness: USDA Zone 9a: to -6.6 °C (20 °F) USDA Zone 9b: to -3.8 °C (25 °F) USDA Zone 10a: to -1.1 °C (30 °F) USDA Zone 10b: to 1.7 °C (35 °F) USDA Zone 11: above 4.5 °C (40 °F)"
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	"Preferred Climate/s: Subtropical, Tropical"
	Wu, Z.Y., Raven, P.H. & Hong, D.Y. (eds.). 2008. Flora of China. Vol. 11 (Oxalidaceae through Aceraceae). Science Press & Missouri Botanical Garden Press, Beijing & St. Louis	"Roadsides, mountain slopes, forest floors; 100–700 m."

<b>204</b>	<b>Native or naturalized in regions with tropical or subtropical climates</b>	<b>y</b>
	<b>Source(s)</b>	<b>Notes</b>
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	"Preferred Climate/s: Subtropical, Tropical"
	Wu, Z.Y., Raven, P.H. & Hong, D.Y. (eds.). 2008. Flora of China. Vol. 11 (Oxalidaceae through Aceraceae). Science Press & Missouri Botanical Garden Press, Beijing & St. Louis	"SW Guangxi, ?Guizhou, Hainan, Taiwan, Yunnan [India, Indonesia, Malaysia, Nepal, Philippines, Sri Lanka, Thailand, Vietnam; tropical Africa]."

<b>205</b>	<b>Does the species have a history of repeated introductions outside its natural range?</b>	<b>n</b>
	<b>Source(s)</b>	<b>Notes</b>
	Wiersema, J.H. & León, B. (2013). World Economic Plants: A Standard Reference. Second Edition. CRC Press, Boca Raton, FL	"DIST: native: China, E. Asia; Ind. Subcont., Indo-China, Malesia cult.: also cult." [Primarily distributed within native range]

<b>301</b>	<b>Naturalized beyond native range</b>	<b>n</b>
	<b>Source(s)</b>	<b>Notes</b>
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	[Cited as a weed within native range, but not listed as naturalized in this publication] "References: India-A-66, India-A-948, south and southeast Asia-A-1320, India-I-1345, south and southeast Asia-A-1408, Ghana- A-87, Indonesia-A-87, India-A-87, Philippines-A-87, India-W-1029, India-A- 1038, India-W-1672, India-A-1696, India- A-1698, India-A-1702, Bangladesh-A- 1761, Congo-A-1799, India-W-1866, India- A-1936, India-A-2000, Nepal-W-1977."
	Wiersema, J.H. & León, B. (2013). World Economic Plants: A Standard Reference. Second Edition. CRC Press, Boca Raton, FL	[No evidence] "DIST: native: China, E. Asia; Ind. Subcont., Indo-China, Malesia cult.: also cult."
	Imada, C. (2019). Hawaiian Naturalized Vascular Plants Checklist (February 2019 update). Bishop Museum Technical Report 69. Bishop Museum, Honolulu, HI	No evidence to date

<b>302</b>	<b>Garden/amenity/disturbance weed</b>	<b>y</b>
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Qsn #	Question	Answer
	<b>Source(s)</b>	<b>Notes</b>
	PlantUse English contributors. (2020). Biophytum (PROSEA). <a href="https://uses.plantnet-project.org">https://uses.plantnet-project.org</a> . [Accessed 16 Jan 2020]	"B. reinwardtii and B. sensitivum are weeds found in anthropogenic localities"
	WRA Specialist. (2020). Personal Communication	Repeatedly cited as a weed associated with crops, but impacts are not specified. May benefit from crop related and anthropogenic disturbance. As such, the plant will be classified conservatively as a disturbance weed (3.02) until such time as negative impacts have been quantified on crop yield or quality

303	Agricultural/forestry/horticultural weed	
	<b>Source(s)</b>	<b>Notes</b>
	PlantUse English contributors. (2020). Biophytum (PROSEA). <a href="https://uses.plantnet-project.org">https://uses.plantnet-project.org</a> . [Accessed 15 Jan 2020]	"B. reinwardtii and B. sensitivum are weeds found in anthropogenic localities"
	Khobragade, D. P., & Sathawane, K. N. (2014). Weed Diversity in Rabi Wheat Crop of Bhandara District (MS), India. <i>International Journal of Science</i> , A2: 128-131	"Table 1: List of weed plants in Bhandara district" [Includes <i>Biophytum sensitivum</i> . No impacts specified]
	Randall, R.P. (2017). <i>A Global Compendium of Weeds</i> . 3rd Edition. Perth, Western Australia. R.P. Randall	"Weed of: Bananas, Cereals, Orchards and Plantations"
	Moody, K. 1989. Weeds Reported in Rice in South and Southeast Asia. International Rice Research Institute, Manila, Philippines	<i>Biophytum sensitivum</i> reported as a rice weed in India, Nepal and the Philippines [IND,NEP,PHI]
	WRA Specialist. (2020). Personal Communication	Repeatedly cited as a weed associated with crops, but impacts are not specified. May benefit from crop related and anthropogenic disturbance. As such, the plant will be classified conservatively as a disturbance weed (3.02) until such time as negative impacts have been quantified on crop yield or quality

304	Environmental weed	n
	<b>Source(s)</b>	<b>Notes</b>
	Randall, R.P. (2017). <i>A Global Compendium of Weeds</i> . 3rd Edition. Perth, Western Australia. R.P. Randall	[No evidence] "Weed of: Bananas, Cereals, Orchards and Plantations"

305	Congeneric weed	
	<b>Source(s)</b>	<b>Notes</b>
	Randall, R.P. (2017). <i>A Global Compendium of Weeds</i> . 3rd Edition. Perth, Western Australia. R.P. Randall	<i>Biophytum petersianum</i> , <i>Biophytum reinwardtii</i> and <i>Biophytum umbraculum</i> cited as naturalized and/or weeds, but impacts are unspecified or inconclusive

401	Produces spines, thorns or burrs	n
	<b>Source(s)</b>	<b>Notes</b>

Qsn #	Question	Answer
	Wu, Z.Y., Raven, P.H. & Hong, D.Y. (eds.). 2008. Flora of China. Vol. 11 (Oxalidaceae through Aceraceae). Science Press & Missouri Botanical Garden Press, Beijing & St. Louis	[No evidence] "Annuals 5–25 cm tall, base woody. Stem simple, slender to robust, hispid especially apically. Leaves 3–13 cm; rachis slender, moderately hispid; leaflets 6–14 pairs; leaflet blades oblong to obovate-oblong, 3–15 × 2–7 mm, usually glabrous, occasionally sparsely covered with trichomes, base almost symmetric. Umbels several flowered; peduncle 2–7 cm, subequal to leaf length; bracts several, lanceolate, ca. 2 mm, densely crowded at apex of peduncle, cluster ca. 3 mm. Pedicel ca. 1 mm at anthesis but to 3 mm in fruit. Sepals 5–6 mm, with glandular septate trichomes. Petals yellow, longer than sepals. Capsule ellipsoid-obovoid, 4–5 × 3–4 mm, pubescent."

402	Allelopathic	
	Source(s)	Notes
	WRA Specialist. (2020). Personal Communication	Unknown. No evidence found

403	Parasitic	n
	Source(s)	Notes
	Wu, Z.Y., Raven, P.H. & Hong, D.Y. (eds.). 2008. Flora of China. Vol. 11 (Oxalidaceae through Aceraceae). Science Press & Missouri Botanical Garden Press, Beijing & St. Louis	"Annuals 5-25 cm tall, base woody." [Oxalidaceae. No evidence]

404	Unpalatable to grazing animals	
	Source(s)	Notes
	WRA Specialist. (2020). Personal Communication	Unknown. Palatability or fodder not listed among uses

405	Toxic to animals	n
	Source(s)	Notes
	Tropical Plants Database, Ken Fern. (2020). <i>Biophytum sensitivum</i> . <a href="http://tropical.theferns.info/viewtropical.php?id=Biophytum+sensitivum">http://tropical.theferns.info/viewtropical.php?id=Biophytum+sensitivum</a> . [Accessed 16 Jan 2020]	"Known Hazards - None known"
	Quattrocchi, U. 2012. CRC World Dictionary of Medicinal and Poisonous Plants: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. CRC Press, Boca Raton, FL	No evidence
	Wagstaff, D.J. 2008. International poisonous plants checklist: an evidence-based reference. CRC Press, Boca Raton, FL	No evidence

Qsn #	Question	Answer
406	Host for recognized pests and pathogens	
	Source(s)	Notes
	PlantUse English contributors. (2020). <i>Biophytum</i> (PROSEA). <a href="https://uses.plantnet-project.org">https://uses.plantnet-project.org</a> . [Accessed 14 Jan 2020]	"In India, <i>Biophytum</i> is sometimes attacked by the leaf spot fungus <i>Pseudocercospora biophytiicola</i> ."

407	Causes allergies or is otherwise toxic to humans	n
	Source(s)	Notes
	PlantUse English contributors. (2020). <i>Biophytum</i> (PROSEA). <a href="https://uses.plantnet-project.org">https://uses.plantnet-project.org</a> . [Accessed 16 Jan 2020]	[Medicinal and edible uses] "In Peninsular Malaysia, <i>B. adiantoides</i> and <i>B. sensitivum</i> are probably not distinguished from each other and are used in the same way. The whole pounded plant, or its ash mixed with some other plants, is made into a poultice to treat stomach-ache in small children. In Indonesia, the plant is roasted in a banana leaf and eaten with lime juice for stomach-ache, while children are given the roots to chew for this purpose. <i>B. sensitivum</i> is also widely applied in South-East Asia as an anti-inflammatory in the treatment of a sore throat, abscesses, chronic wounds, contusions and fevers. In Indonesia, Thailand and India, a decoction of the dried flowering plant is administered to treat chest illnesses including tuberculosis, asthma and feverish breathing. A decoction of the roots is taken against gall or bladder stones, and is also used to treat gonorrhoea. In India, the bruised plant is applied to burns. <i>B. sensitivum</i> is said to contain a plant-insulin, useful for treating diabetes, and is used as such in Thailand. Crushed with water, the plant is topically applied in Brazil against scorpion bites. The stem and leaves are used as an antihiccup. In India, a decoction of the whole plant of <i>B. reinwardtii</i> is applied against fevers, chicken pox and rashes. <i>B. sensitivum</i> is used in Malaysia and India as a magic plant, because of its sensitive leaves, which suggest modesty or youth, and the plant is taken to restore these qualities. In West Africa, it is taken for protection against snake-bites. <i>Biophytum</i> is not medicinally used in Indo-China, but in Vietnam it is used as a condiment. "
	Quattrocchi, U. 2012. <i>CRC World Dictionary of Medicinal and Poisonous Plants: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology</i> . CRC Press, Boca Raton, FL	[Medicinal uses] " <i>Biophytum sensitivum</i> (L.) DC. var. <i>candolleianum</i> ... Magico-religious beliefs, the plant as a good luck charm."
	Wagstaff, D.J. 2008. <i>International poisonous plants checklist: an evidence-based reference</i> . CRC Press, Boca Raton, FL	No evidence

Qsn #	Question	Answer
408	<b>Creates a fire hazard in natural ecosystems</b>	<b>n</b>
	<b>Source(s)</b>	<b>Notes</b>
	PlantUse English contributors. (2020). Biophytum (PROSEA). <a href="https://uses.plantnet-project.org">https://uses.plantnet-project.org</a> . [Accessed 16 Jan 2020]	"Erect annual herbs or sympodially branched dwarf shrubs." ... "B. reinwardtii and B. sensitivum are weeds found in anthropogenic localities" [No evidence]
	Steenis, C.G.G.J. van (ed.). (1971). Flora Malesiana. Series I, Spermatophyta: Flowering plants. Volume 7, part 1. Wolters-Noordhoff Publishing, Groningen, The Netherlands	[No evidence. Unlikely given habit and habitat] "Annual. Stem simple, up to 35 cm, pithy (compressible), smooth." ... "Ecol. Shady places, waste land, river-banks, under damp thickets, etc., up to 250 m."

409	Is a shade tolerant plant at some stage of its life cycle	y
	<b>Source(s)</b>	<b>Notes</b>
	Steenis, C.G.G.J. van (ed.). (1971). Flora Malesiana. Series I, Spermatophyta: Flowering plants. Volume 7, part 1. Wolters-Noordhoff Publishing, Groningen, The Netherlands	"Ecol. Shady places, waste land, river-banks, under damp thickets, etc., up to 250 m."
	Dave's Garden. (2020). Sensitive Plant - Biophytum sensitivum. <a href="https://davesgarden.com/guides/pf/go/95422/">https://davesgarden.com/guides/pf/go/95422/</a> . [Accessed 16 Jan 2020]	"Sun Exposure: Sun to Partial Shade"
	The National Gardening Association. (2020). Sensitive plant (Biophytum sensitivum). <a href="https://garden.org/plants/">https://garden.org/plants/</a> . [Accessed 16 Jan 2020]	"Sun Requirements: Full Sun to Partial Shade Partial or Dappled Shade Partial Shade to Full Shade"

410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	n
	<b>Source(s)</b>	<b>Notes</b>
	The National Gardening Association. (2020). Sensitive plant (Biophytum sensitivum). <a href="https://garden.org/plants/">https://garden.org/plants/</a> . [Accessed 16 Jan 2020]	"Soil pH Preferences: Moderately acid (5.6 – 6.0) Slightly acid (6.1 – 6.5) Neutral (6.6 – 7.3"
	Dave's Garden. (2020). Sensitive Plant - Biophytum sensitivum. <a href="https://davesgarden.com/guides/pf/go/95422/">https://davesgarden.com/guides/pf/go/95422/</a> . [Accessed 14 Jan 2020]	"Soil pH requirements: 4.6 to 5.0 (highly acidic)"

411	Climbing or smothering growth habit	n
	<b>Source(s)</b>	<b>Notes</b>
	Wu, Z.Y., Raven, P.H. & Hong, D.Y. (eds.). 2008. Flora of China. Vol. 11 (Oxalidaceae through Aceraceae). Science Press & Missouri Botanical Garden Press, Beijing & St. Louis	"Annuals 5–25 cm tall, base woody. Stem simple, slender to robust, hispid especially apically."

412	Forms dense thickets	n
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Qsn #	Question	Answer
	<b>Source(s)</b>	<b>Notes</b>
	Steenis, C.G.G.J. van (ed.). (1971). Flora Malesiana. Series I, Spermatophyta: Flowering plants. Volume 7, part 1. Wolters-Noordhoff Publishing, Groningen, The Netherlands	"Ecol. Shady places, waste land, river-banks, under damp thickets, etc., up to 250 m."
	van Valkenburg, J.L.C.H. and Bunyapraphatsara, N. (Editors). (2001). Plant Resources of South-East Asia No 12 (2): Medicinal and Poisonous Plants 2. PROSEA Foundation, Bogor, Indonesia	"Ecology <i>B. reinwardtii</i> and <i>B. sensitivum</i> are weeds found in anthropogenic localities, while <i>B. adiantoides</i> is mainly found in open forest undergrowth." [No evidence]
	Wu, Z.Y., Raven, P.H. & Hong, D.Y. (eds.). 2008. Flora of China. Vol. 11 (Oxalidaceae through Aceraceae). Science Press & Missouri Botanical Garden Press, Beijing & St. Louis	"Roadsides, mountain slopes, forest floors" [No evidence]

501	Aquatic	n
	<b>Source(s)</b>	<b>Notes</b>
	Wu, Z.Y., Raven, P.H. & Hong, D.Y. (eds.). 2008. Flora of China. Vol. 11 (Oxalidaceae through Aceraceae). Science Press & Missouri Botanical Garden Press, Beijing & St. Louis	[Terrestrial] "Annuals 5–25 cm tall, base woody." ... "Roadsides, mountain slopes, forest floors; 100–700 m."

502	Grass	n
	<b>Source(s)</b>	<b>Notes</b>
	USDA, Agricultural Research Service, National Plant Germplasm System. (2020). 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 16 Jan 2020]	"Family: Oxalidaceae"

503	Nitrogen fixing woody plant	n
	<b>Source(s)</b>	<b>Notes</b>
	USDA, Agricultural Research Service, National Plant Germplasm System. (2020). 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 16 Jan 2020]	"Family: Oxalidaceae"

504	Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)	n
	<b>Source(s)</b>	<b>Notes</b>
	Wu, Z.Y., Raven, P.H. & Hong, D.Y. (eds.). 2008. Flora of China. Vol. 11 (Oxalidaceae through Aceraceae). Science Press & Missouri Botanical Garden Press, Beijing & St. Louis	"Annuals 5–25 cm tall, base woody. Stem simple, slender to robust, hispid especially apically."

Qsn #	Question	Answer
601	<b>Evidence of substantial reproductive failure in native habitat</b>	<b>n</b>
	<b>Source(s)</b>	<b>Notes</b>
	PlantUse English contributors. (2020). <i>Biophytum</i> (PROSEA). <a href="https://uses.plantnet-project.org">https://uses.plantnet-project.org</a> . [Accessed 13 Jan 2020]	" <i>B. reinwardtii</i> and <i>B. sensitivum</i> are rather widespread, occurring in ruderal conditions, and therefore do not seem to be threatened by genetic erosion."

602	<b>Produces viable seed</b>	<b>y</b>
	<b>Source(s)</b>	<b>Notes</b>
	Dave's Garden. (2020). Sensitive Plant - <i>Biophytum sensitivum</i> . <a href="https://davesgarden.com/guides/pf/go/95422/">https://davesgarden.com/guides/pf/go/95422/</a> . [Accessed 14 Jan 2020]	"On Dec 29, 2008, Phytaphiliac from Gaithersburg, MD wrote: I've found it grows best in groups. If you keep the soil moist, it self-sows readily."
	van Valkenburg, J.L.C.H. and Bunyapraphatsara, N. (Editors). (2001). <i>Plant Resources of South-East Asia No 12 (2): Medicinal and Poisonous Plants 2</i> . PROSEA Foundation, Bogor, Indonesia	"Propagation and planting <i>Biophytum</i> is propagated by seed."

603	<b>Hybridizes naturally</b>	
	<b>Source(s)</b>	<b>Notes</b>
	WRA Specialist. (2020). Personal Communication	Unknown. No evidence found

604	<b>Self-compatible or apomictic</b>	
	<b>Source(s)</b>	<b>Notes</b>
	Compton, R. (1913). Phenomena and Problems of Self-Sterility. <i>The New Phytologist</i> , 12(6), 197-206	" <i>Biophytum sensitivum</i> is said to be self-sterile in its open, self-fertile in its cleistogamous flowers."
	Devi, P. M. (1964). Heterostyly in <i>Biophytum sensitivum</i> DC. <i>Journal of Genetics</i> , 59(1), 41-48	[Regarded as self-incompatible, but this may be overcome by artificial pollination] " <i>Biophytum sensitivum</i> DC., is a small unbranched annual and is characterised by sensitive pinnate leaves in rosettes. It exhibits floral trimorphism. Three kinds of flowers are produced on three different plant types" ... "Since the plants are self-incompatible, removal of buds was unnecessary." ... "Incompatibility was overcome by artificial hand pollinations. In the incompatible (illegitimate) combination the pollinations were made between the anther and the stigma at a different level, of the same plant or another (both the anther tiers were used taking one at a time) . In controlled compatible (legitimate) combination, the pollinations were made between the anther and the stigma at the same level, hence necessarily from another plant, i.e., a long style was pollinated with the pollen of a long anther of either the mid styled or short styled form."

605	<b>Requires specialist pollinators</b>	<b>n</b>
	<b>Source(s)</b>	<b>Notes</b>

Qsn #	Question	Answer
	Sharma, O.P. (1993). Plant Taxonomy. Tata McGraw-Hill, New Delhi, India	"Pollination and Dispersal: Pollination is usually by insects. Seeds are often discharged by the elastic separation of fleshy aril of the seed coat from an inner harder layer." [Family description]
	Singh, G. (ed.). (2010). Plant Systematics, Third Edition: An Integrated Approach. Science Publishers, Enfield, New Hampshire	"Pollination by insects, heterostyly resulting in outcrossing. Mostly self dispersed by explosive inversion of testa and aril." [Oxalidaceae family description]
	Wu, Z.Y., Raven, P.H. & Hong, D.Y. (eds.). 2008. Flora of China. Vol. 11 (Oxalidaceae through Aceraceae). Science Press & Missouri Botanical Garden Press, Beijing & St. Louis	"Umbels several flowered; peduncle 2–7 cm, subequal to leaf length; bracts several, lanceolate, ca. 2 mm, densely crowded at apex of peduncle, cluster ca. 3 mm. Pedicel ca. 1 mm at anthesis but to 3 mm in fruit. Sepals 5–6 mm, with glandular septate trichomes. Petals yellow, longer than sepals." [No evidence of floral specialization]

606	Reproduction by vegetative fragmentation	n
	Source(s)	Notes
	van Valkenburg, J.L.C.H. and Bunyapraphatsara, N. (Editors). (2001). Plant Resources of South-East Asia No 12 (2): Medicinal and Poisonous Plants 2. PROSEA Foundation, Bogor, Indonesia	"Erect annual herbs or sympodially branched dwarf shrubs." ... "Propagation and planting <i>Biophytum</i> is propagated by seed." [No evidence]

607	Minimum generative time (years)	1
	Source(s)	Notes
	Wu, Z.Y., Raven, P.H. & Hong, D.Y. (eds.). 2008. Flora of China. Vol. 11 (Oxalidaceae through Aceraceae). Science Press & Missouri Botanical Garden Press, Beijing & St. Louis	"Annuals 5–25 cm tall, base woody."

701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	
	Source(s)	Notes
	Wu, Z.Y., Raven, P.H. & Hong, D.Y. (eds.). 2008. Flora of China. Vol. 11 (Oxalidaceae through Aceraceae). Science Press & Missouri Botanical Garden Press, Beijing & St. Louis	"Roadsides, mountain slopes, forest floors" [Occurrence along roadsides suggests seeds may be moved by humans along heavily trafficked areas]

702	Propagules dispersed intentionally by people	y
	Source(s)	Notes
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	"Dispersed by: Humans"
	Dave's Garden. (2020). Sensitive Plant - <i>Biophytum sensitivum</i> . <a href="https://davesgarden.com/guides/pf/go/95422/">https://davesgarden.com/guides/pf/go/95422/</a> . [Accessed 14 Jan 2020]	Cultivated intentionally

703	Propagules likely to disperse as a produce contaminant	

Qsn #	Question	Answer
	<b>Source(s)</b>	<b>Notes</b>
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	[Possibly Yes. Listed as a crop weed, so may be accidentally dispersed. No direct evidence found] "Dispersed by: Humans Weed of: Bananas, Cereals, Orchards and Plantations"

704	Propagules adapted to wind dispersal	n
	<b>Source(s)</b>	<b>Notes</b>
	Steenis, C.G.G.J. van (ed.). (1971). Flora Malesiana. Series I, Spermatophyta: Flowering plants. Volume 7, part 1. Wolters-Noordhoff Publishing, Groningen, The Netherlands	"The seeds of Oxalis and Biophytum have a peculiar ejaculative aril originally enveloping the entire seed which at maturity shoots them away for some distance" [Possibly aided by wind in dispersal, but no morphological adaptations for wind dispersal]

705	Propagules water dispersed	n
	<b>Source(s)</b>	<b>Notes</b>
	Steenis, C.G.G.J. van (ed.). (1971). Flora Malesiana. Series I, Spermatophyta: Flowering plants. Volume 7, part 1. Wolters-Noordhoff Publishing, Groningen, The Netherlands	[Distribution along streambanks suggests seeds may be moved by water after ejection from capsule] "The seeds of Oxalis and Biophytum have a peculiar ejaculative aril originally enveloping the entire seed which at maturity shoots them away for some distance" ... "Ecol. Shady places, waste land, river-banks, under damp thickets, etc., up to 250 m."

706	Propagules bird dispersed	n
	<b>Source(s)</b>	<b>Notes</b>
	PlantUse English contributors. (2020). Biophytum (PROSEA). <a href="https://uses.plantnet-project.org">https://uses.plantnet-project.org</a> . [Accessed 14 Jan 2020]	"Seed with white aril, thin, at maturity ejaculatory."
	Flora Malesiana. (2020). Oxalidaceae. <a href="http://portal.cybertaxonomy.org/flora-malesiana/node/6676">http://portal.cybertaxonomy.org/flora-malesiana/node/6676</a> . [Accessed 14 Jan 2020]	"The seeds of Oxalis and Biophytum have a peculiar ejaculative aril originally enveloping the entire seed which at maturity shoots them away for some distance"
	Wu, Z.Y., Raven, P.H. & Hong, D.Y. (eds.). 2008. Flora of China. Vol. 11 (Oxalidaceae through Aceraceae). Science Press & Missouri Botanical Garden Press, Beijing & St. Louis	[Genus description] "Capsule ovoid to oblong, loculicidally dehiscent, sometimes splitting to base into 5 spreading valves, each valve with several seeds. Seeds brown, often with small tubercles."

707	Propagules dispersed by other animals (externally)	n
	<b>Source(s)</b>	<b>Notes</b>
	Steenis, C.G.G.J. van (ed.). (1971). Flora Malesiana. Series I, Spermatophyta: Flowering plants. Volume 7, part 1. Wolters-Noordhoff Publishing, Groningen, The Netherlands	"The seeds of Oxalis and Biophytum have a peculiar ejaculative aril originally enveloping the entire seed which at maturity shoots them away for some distance" [No evidence. No means of external attachment]

708	Propagules survive passage through the gut	n
	<b>Source(s)</b>	<b>Notes</b>

Qsn #	Question	Answer
	Steenis, C.G.G.J. van (ed.). (1971). Flora Malesiana. Series I, Spermatophyta: Flowering plants. Volume 7, part 1. Wolters-Noordhoff Publishing, Groningen, The Netherlands	"The seeds of Oxalis and Biophytum have a peculiar ejaculative aril originally enveloping the entire seed which at maturity shoots them away for some distance" [No evidence that seeds are consumed or dispersed internally]

801	Prolific seed production (>1000/m2)	
	Source(s)	Notes
	van Valkenburg, J.L.C.H. and Bunyaphatsara, N. (Editors). (2001). Plant Resources of South-East Asia No 12 (2): Medicinal and Poisonous Plants 2. PROSEA Foundation, Bogor, Indonesia	"seeds 0-3 per cell, 1 mm x 0.8 mm, transversely tubercled and ridged." [Seed densities unknown]

802	Evidence that a persistent propagule bank is formed (>1 yr)	n
	Source(s)	Notes
	van Valkenburg, J.L.C.H. and Bunyaphatsara, N. (Editors). (2001). Plant Resources of South-East Asia No 12 (2): Medicinal and Poisonous Plants 2. PROSEA Foundation, Bogor, Indonesia	"In India, seeds of <i>B. sensitivum</i> show a dormancy period of 8.5-9 months when collected at the beginning of the dry period, and show a considerable decrease in germination rate after 11-12 months."
	PlantUse English contributors. (2020). <i>Biophytum</i> (PROSEA). <a href="https://uses.plantnet-project.org">https://uses.plantnet-project.org</a> . [Accessed 13 Jan 2020]	[Some seeds may persist after 12 months, but viability drops off considerably] "In India, seeds of <i>B. sensitivum</i> show a dormancy period of 8.5-9 months when collected at the beginning of the dry period, and show a considerable decrease in germination rate after 11-12 months. The optimal temperature for germination is 30-40°C."

803	Well controlled by herbicides	
	Source(s)	Notes
	WRA Specialist. (2020). Personal Communication	Unknown. Despite categorization as a weed, efficacy of specific herbicides not found

804	Tolerates, or benefits from, mutilation, cultivation, or fire	n
	Source(s)	Notes
	van Valkenburg, J.L.C.H. and Bunyaphatsara, N. (Editors). (2001). Plant Resources of South-East Asia No 12 (2): Medicinal and Poisonous Plants 2. PROSEA Foundation, Bogor, Indonesia	" <i>Biophytum</i> is propagated by seed." ... "An annual herb, up to 35 cm tall, stem simple, smooth" [No evidence. Regenerates from seeds]

805	Effective natural enemies present locally (e.g. introduced biocontrol agents)	
	Source(s)	Notes
	WRA Specialist. (2020). Personal Communication	Unknown

**Summary of Risk Traits:**

High Risk / Undesirable Traits

- Thrives in tropical climates, with the potential to spread in regions like the Hawaiian Islands with a suitable climate
- A weed of disturbance and anthropogenic environments, and often cited as a weed of numerous crops
- Shade tolerant
- Reproduces by seed
- Potentially self-compatible
- An annual, reaching maturity in <1 year
- Seeds dispersed by being ejected some distance from the capsule; possibly also spread by water, or as a crop contaminant

Low Risk Traits

- Despite designation as a common crop weed, negative impacts to crop yield or productivity have not been specified
- Unarmed (no spines, thorns, or burrs)
- Non-toxic
- Valued for medicinal uses
- Not reported to spread vegetatively