Taxon: Oldenlandia corymbosa L. **Family:** Rubiaceae

Common Name(s): diamond flower
flat-top mille graines

Synonym(s): Hedyotis corymbosa (L.) Lam.

Assessor: Chuck Chimera **Status:** Assessor Approved **End Date:** 17 Sep 2021

WRA Score: 16.0 **Designation:** H(HPWRA) **Rating:** High Risk

Keywords: Annual/Perennial Herb, Lawn Weed, Disturbance Weed, Self-Fertile, Prolific Seeder

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		
304	Environmental weed		
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		
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		

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	n
703	Propagules likely to disperse as a produce contaminant	y=1, n=-1	y
704	Propagules adapted to wind dispersal	y=1, n=-1	y
705	Propagules water dispersed	y=1, n=-1	y
706	Propagules bird dispersed	y=1, n=-1	n
707	Propagules dispersed by other animals (externally)		
708	Propagules survive passage through the gut	y=1, n=-1	y
801	Prolific seed production (>1000/m2)	y=1, n=-1	y
802	Evidence that a persistent propagule bank is formed (>1 yr)	y=1, n=-1	y
803	Well controlled by herbicides	y=-1, n=1	y
804	Tolerates, or benefits from, mutilation, cultivation, or fire		
805	Effective natural enemies present locally (e.g. introduced biocontrol agents)		

Supporting Data:

Qsn #	Question	Answer
101	**Is the species highly domesticated?**	**n**
	Source(s)	**Notes**
	Aguilar, N.O. & Lemmens, R.H.M.J. (1999). Oldenlandia corymbosa L.. In: de Padua, L.S., Bunyapraphatsara, N. and Lemmens, R.H.M.J. (Editors): Plant Resources of South-East Asia No 12(1): Medicinal and poisonous plants 1. PROSEA Foundation, Bogor, Indonesia. Database record: prota4u.org/prosea	[Used medicinally. No evidence of domestication] "The leaves are commonly used for poulticing to treat sores and sore eyes. The entire plant is used in decoction as a febrifuge and stomachic. In Indo-China, it is also used as antirheumatic. In India, the plant is a common ingredient in mixtures used internally to treat fever and as a tonic. It is also used to treat jaundice. The roots are reported to have vermifuge properties."

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. https://npgsweb.ars-grin.gov/. [Accessed 15 Sep 2021]	"Native Africa NORTHEAST TROPICAL AFRICA: Ethiopia, Sudan, Somalia EAST TROPICAL AFRICA: Kenya, Tanzania, Uganda WEST-CENTRAL TROPICAL AFRICA: Burundi, Democratic Republic of the Congo WEST TROPICAL AFRICA: Senegal SOUTH TROPICAL AFRICA: Angola, Mozambique, Malawi, Zambia, Zimbabwe SOUTHERN AFRICA: Botswana, South Africa [KwaZulu-Natal] WESTERN INDIAN OCEAN: Madagascar Asia-Tropical INDIAN SUBCONTINENT: India Naturalized (natzd. in tropics & subtropics)"

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. https://npgsweb.ars-grin.gov/. [Accessed 15 Sep 2021]	

203	**Broad climate suitability (environmental versatility)**	**y**
	Source(s)	**Notes**
	Aguilar, N.O. & Lemmens, R.H.M.J. (1999). Oldenlandia corymbosa L.. In: de Padua, L.S., Bunyapraphatsara, N. and Lemmens, R.H.M.J. (Editors): Plant Resources of South-East Asia No 12(1): Medicinal and poisonous plants 1. PROSEA Foundation, Bogor, Indonesia. Database record: prota4u.org/prosea	"Oldenlandia corymbosa is a weed in fields, roadsides, lawns and gardens, preferably in not to wet, sunny, stony locations, usually up to 800 m altitude, but sometimes up to 1500 m."
	CABI. (2021). Invasive Species Compendium. Wallingford, UK: CAB International. www.cabi.org/isc	Can grow in tropical (Preferred) to warm temperate climates (Tolerated)

204	**Native or naturalized in regions with tropical or subtropical climates**	**y**
	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.	"Native to Africa, now widely naturalized; in Hawai'i naturalized in vicinity of Hilo to Volcano, Hawai'i, and apparently very recently naturalized in Honolulu, O'ahu (Wagner 5685, BISH), and at Wai'anapanapa State Park, East Maui (Hobdy 2334, BISH). First collected on Hawai'i in 1965 (Kami s.n., BISH)."
	USDA, Agricultural Research Service, National Plant Germplasm System. (2021). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. https://npgsweb.ars-grin.gov/. [Accessed 15 Sep 2021]	"Native Africa NORTHEAST TROPICAL AFRICA: Ethiopia, Sudan, Somalia EAST TROPICAL AFRICA: Kenya, Tanzania, Uganda WEST-CENTRAL TROPICAL AFRICA: Burundi, Democratic Republic of the Congo WEST TROPICAL AFRICA: Senegal SOUTH TROPICAL AFRICA: Angola, Mozambique, Malawi, Zambia, Zimbabwe SOUTHERN AFRICA: Botswana, South Africa [KwaZulu-Natal] WESTERN INDIAN OCEAN: Madagascar Asia-Tropical INDIAN SUBCONTINENT: India Naturalized (natzd. in tropics & subtropics)"

Qsn #	Question	Answer
205	**Does the species have a history of repeated introductions outside its natural range?**	**y**
	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.	"Native to Africa, now widely naturalized" [Widely introduced unintentionally]

301	**Naturalized beyond native range**	**y**
	Source(s)	**Notes**
	Starr, F., Starr, K. & Loope, L.L. (2006). New plant records from the Hawaiian Archipelago. Bishop Museum Occasional Papers 87: 31-43	"Hedyotis corymbosa (L.) Lam. New island record Hedyotis corymbosa (hedyotis) was previously reported from Kaua'i, O'ahu, Maui, and Hawai'i (Wagner et al., 1999; Oppenheimer & Bartlett, 2002; Starr et al., 2002). This small herb is now also known from Kaho'olawe where it was found in a high-traffic area near the summit. This collection represents a new island record for Kaho'olawe. Material examined. KAHO'OLAWE: Moaulanui, near summit, next to experimental pili grass bale planting, in association with Heteropogon contortus and Chenopodium oahuense, 1480 ft [450 m], 30 Apr 2004, Starr, Starr, Higashino & Abbott 040330-2."
	Starr, F., Martz, K., & Loope, L.L. (2002). New plant records from the Hawaiian archipelago. Bishop Museum Occasional Papers. 69:16-27	"Hedyotis corymbosa (L.) Lam. Range extension. Hedyotis corymbosa was previously known from Kaua'i, O'ahu, East Maui, and in the vicinity of Hilo to Volcano, Hawai'i, (Wagner et al., 1999: 1141, 1891; Lorence et al., 1995: 50). It is now also known from the Kona area of Hawai'i. Material examined: HAWAI'I: Kona, in cinder at Keauhou Kona Aston Resort, near sea level, 9 Apr 1999, Starr & Martz 000409-1."
	Oppenheimer, H. L. & Bartlett, R. T. (2002). New plant records from the main Hawaiian Islands. Bishop Museum Occasional Papers. 69: 1-14	"Hedyotis corymbosa (L.) Lam. Range extension. Naturalized at Honolulu, O'ahu, Wai'anapanapa, East Maui, and Hilo to Volcano, Hawai'i (Wagner et al., 1999: 1141), the following collections document its occurrence on West Maui. It has also been reported from Kaua'i by Lorence et al. (1995: 50). Elsewhere in this years Records a range extension to Kona, Hawai'i is reported (Starr et al., 2002: 24). Material examined. MAUI: West Maui, Lahaina Distr., Lahaina Town, in sidewalk landscaping, 6 m, 29 Mar 2000, Oppenheimer H30019; Hanaka'ö'ö, in lawn in Kä'anapali, 3 m, 17 Apr 2000, Oppenheimer H40018; Moali'i, near bathrooms at Mala Wharf, 3 m, 24 Jul 2000, Oppenheimer H700108 (PTBG)."
	Lorence, D.H., Flynn, T.W. & Wagner, W.L. (1995). Contributions to the flora of Hawai'i. III. New additions, range extensions, and rediscoveries of flowering plants. Bishop Museum Occasional Papers 41: 19-58	"Hedyotis corymbosa (L.) Lam. This species is an herb with matted or trailing stems occurring as a weed in lawns, along roadsides and paths, and in vacant lots. It has tiny seeds that can be transported easily by mud sticking to shoes, etc. Hedyotis corymbosa is native to Africa and now widely naturalized in many tropical regions. This collection establishes its naturalized status on Kauai. Hedyotis corymbosa is also naturalized on Oahu, East Maui, and Hawaii (Wagner et al. 1990: 114 l). Material examined. KAUAI: Lihue District, Lihue Airport, lawn adjacent to car rental agencies. ea. 36 m, 26 Sep 1990. D. Lorence & H. lltis 6611 (BISH. MO. PTBG, US)."

Qsn #	Question	Answer
	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.	"Native to Africa, now widely naturalized; in Hawai'i naturalized in vicinity of Hilo to Volcano, Hawai'i, and apparently very recently naturalized in Honolulu, O'ahu (Wagner 5685, BISH), and at Wai'anapanapa State Park, East Maui (Hobdy 2334, BISH). First collected on Hawai'i in 1965 (Kami s.n., BISH).-"
	USDA, Agricultural Research Service, National Plant Germplasm System. (2021). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. https://npgsweb.ars-grin.gov/. [Accessed 15 Sep 2021]	"Naturalized (natzd. in tropics & subtropics)"

302	Garden/amenity/disturbance weed	y
	Source(s)	**Notes**
	CABI. (2021). Invasive Species Compendium. Wallingford, UK: CAB International. www.cabi.org/isc	"Oldenlandia corymbosa often grows as a weed in paddy fields and farmlands. It is particularly common in cassava, pineapple, maize, soybean and rice plantations throughout the tropics (Olorunmaiye and Olorunmaiye, 2008; Habimana et al., 2013; Flora of China Editorial Committee, 2018; PROSEA, 2018). It also competes with turfgrass and is considered a weed of lawn areas in parks and gardens (Shahid and Rao, 2014)."
	Lorence, D.H., Flynn, T.W. & Wagner, W.L. (1995). Contributions to the flora of Hawai'i. III. New additions, range extensions, and rediscoveries of flowering plants. Bishop Museum Occasional Papers 41: 19-58	"This species is an herb with matted or trailing stems occurring as a weed in lawns, along roadsides and paths, and in vacant lots."
	McCarty, L.B., Everest, J.W., Hall, D.W., Murphy, T.R. & Yelverton, F. (2001). Color Atlas of Turfgrass Weeds. Sleeping Bear Press, Chelsea, MI	[Controlled as a turfgrass weed] "Found in all moist turf and in moist disturbed areas." ... "Control Strategies: Repeat applications of two- or three-way mixtures of 2,4-D, dicamba, MCPP, or MCPA. Ocher suggested options include atrazine/simazine, metribuzin, triclopyr alone or combined with clopyralid or 2,4-D, atrazine plus bentazon, imazaquin, and rnetsulfuron."

Qsn #	Question	Answer
303	**Agricultural/forestry/horticultural weed**	
	Source(s)	**Notes**
	CABI. (2021). Invasive Species Compendium. Wallingford, UK: CAB International. www.cabi.org/isc	"Oldenlandia corymbosa often grows as a weed in paddy fields and farmlands. It is particularly common in cassava, pineapple, maize, soybean and rice plantations throughout the tropics (Olorunmaiye and Olorunmaiye, 2008; Habimana et al., 2013; Flora of China Editorial Committee, 2018; PROSEA, 2018). "
	Aguilar, N.O. & Lemmens, R.H.M.J. (1999). Oldenlandia corymbosa L.. In: de Padua, L.S., Bunyapraphatsara, N. and Lemmens, R.H.M.J. (Editors): Plant Resources of South-East Asia No 12(1): Medicinal and poisonous plants 1. PROSEA Foundation, Bogor, Indonesia. Database record: prota4u.org/prosea	"Several species are common weeds in fields; Oldenlandia corymbosa is particularly common in e.g. cassava, pineapple and maize throughout the tropics."
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	"Weed of: Cereals, Cotton, Orchards & Plantations, Potatoes, Vegetables"
	WRA Specialist. (2021). Personal Communication	Commonly mentioned as a weed of crops, but economic impacts are unspecified

304	**Environmental weed**	
	Source(s)	**Notes**
	Lorence, D.H., Flynn, T.W. & Wagner, W.L. (1995). Contributions to the flora of Hawai'i. III. New additions, range extensions, and rediscoveries of flowering plants. Bishop Museum Occasional Papers 41: 19-58	"Hedyotis corymbosa (L.) Lam. This species is an herb with matted or trailing stems occurring as a weed in lawns, along roadsides and paths, and in vacant lots."
	CABI. (2021). Invasive Species Compendium. Wallingford, UK: CAB International. www.cabi.org/isc	[Potentially in disturbed areas] "Oldenlandia corymbosa is a cosmopolitan weed that often invades forest edges, disturbed areas, riversides, foreshores, lowland forests, coastal thickets and grasslands. Under suitable environmental conditions, it can rapidly dominate an ecosystem, with the potential to displace and outcompete native plants at early successional stages in disturbed areas. It has also been listed as a common weed in Biscayne National Park in Florida, USA (Wagner et al., 1999; Khuroo et al., 2012; GRIIS, 2018; National Park Service, 2018; PIER, 2018; PROTA, 2018)."
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	No evidence

Qsn #	Question	Answer
305	**Congeneric weed**	**y**
	Source(s)	**Notes**
	Aguilar, N.O. & Lemmens, R.H.M.J. (1999). Oldenlandia corymbosa L.. In: de Padua, L.S., Bunyapraphatsara, N. and Lemmens, R.H.M.J. (Editors): Plant Resources of South-East Asia No 12(1): Medicinal and poisonous plants 1. PROSEA Foundation, Bogor, Indonesia. Database record: prota4u.org/prosea	"Oldenlandia diffusa (Willd.) Roxb. is also a widespread weed."
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	[Oldenlandia diffusa] "Weed of: Cereals" [Oldenlandia gracilis] "Weed of: Cereals" [Oldenlandia herbacea] "Weed of: Cereals, Orchards & Plantations" [Oldenlandia lancifolia] "Weed of: Cereals" [Oldenlandia lineata] "Weed of: Orchards & Plantations" [Oldenlandia umbellata] "Weed of: Pastures"

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] "Slender annual or perennial herbs; stems prostrate to weakly erect, 1-4 dm long, few-branched to many-branched, glabrous. Leaves narrowly oblong to linear, 15-20 (-30) mm long, 2-5 mm wide, apex acute, base cuneate, petioles ca. 1 mm long, stipules ca. 2.5 mm long, connate, margins with several glandular teeth of unequal length. Flowers 1-3(-5), axillary, peduncles ca. 8-10(-15) mm long; calyx 4-toothed, the teeth ca. 1 mm long; corolla lavender to white, thin, broadly tubular, 4-lobed, ca. 2 mm long, the lobes 1-2 mm long. Fruit didymous, somewhat laterally compressed, thinly cartilaginous, ca. 1.5 mm long, ca. 2-2.5 mm wide. Seeds numerous per cell, angular, ca. 0.25 mm long, areolate."

402	**Allelopathic**	
	Source(s)	**Notes**
	WRA Specialist. (2021). Personal Communication	Unknown

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.	"Slender annual or perennial herbs; stems prostrate to weakly erect, 1-4 dm long, few-branched to many-branched, glabrous." [No evidence]

404	**Unpalatable to grazing animals**	**n**
	Source(s)	**Notes**

Qsn #	Question	Answer
	Singh, S. B., Paudel, H. R., & Singh, N. (2020). Popular fodder species for livestock raising in Gandaki province of Nepal. Nepalese Journal of Agricultural Sciences 19: 54-73	[A preferred fodder species in Nepal] "It was found that the diversity of fodder species in the hill forests was almost double the number of species found in the inner terai forest. However, the average proportion of legume species was higher in the inner terai forest than in hill forests. By farmer criteria, the most preferred species in Lamjung site were Hedyotis corymbosa, Rubus rugosus, Eurya acuminate and Tetrastigma rumicispermum. Similarly, Hedyotis corymbosa, Dodecadenia grandiflora, Tetrastigma rumicispermum, Carex baccans, Rubus rugosus and Anamirta coculus were the preferred species in Tanahu site and Phlogacanthus pubinervis, Celastrus sp and Rhus wallichii were the most preferred species in Nawalparasi site."
	Pile, L. S., Wang, G. G., Polomski, R., Yarrow, G., & Stuyck, C. M. (2015). Potential for nonnative endozoochorous seed dispersal by white-tailed deer in a southeastern maritime forest. Invasive Plant Science and Management, 8(1), 32-43	[Presumably consumed intentionally or inadvertently by deer] "Although such seeds may not be particularly attractive to herbivores, palatable leaves close to the seed head may have aided in the inadvertent consumption of small-seeded species (Gill and Beardall 2001). Of the plants that germinated under greenhouse conditions, 90% were from three, small-seeded, herbaceous plants: old world diamond-flower (Oldenlandia corymbosa L., 42%), low falsepimpernel [Lindernia dubia (L.) Pennell var. anagallidea (Michx.) Cooperr., 40%], and P. procumbens (8%) (Table 3)."

405	Toxic to animals	n
	Source(s)	**Notes**
	Tropical Plants Database, Ken Fern. (2021). Oldenlandia corymbosa. https://tropical.theferns.info/viewtropical.php?id=Oldenlandia+corymbosa. [Accessed 17 Sep 2021]	"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
	Singh, S. B., Paudel, H. R., & Singh, N. (2020). Popular fodder species for livestock raising in Gandaki province of Nepal. Nepalese Journal of Agricultural Sciences 19: 54-73	No evidence. Used as fodder

406	Host for recognized pests and pathogens	
	Source(s)	**Notes**
	Kumar, S., Bhowmick, M. K., & Ray, P. (2021). Weeds as alternate and alternative hosts of crop pests. Indian Journal of Weed Science, 53(1), 14-29	[Host of root–knot nematodes (Meloidogyne), which are found on a broad range of species] "From the on–farm as well as pot experiments, Singh et al. (2010) identified slender amaranth (Amaranthus viridis), diamond–flower (Oldenlandia corymbosa), tropic ageratum (Ageratum conyzoides), sicklepod (Senna obtusifolia), wild bittermelon (Momordica charantia), purple bush–bean (Macroptilium atropurpureum), little ironweed (Cyanthillium cinereum), ivy gourd (Coccinia grandis) and cutleaf groundcherry (Physalis angulata) as the potential reservoir hosts commonly infected by root–knot nematodes (Meloidogyne)."

Qsn #	Question	Answer
407	**Causes allergies or is otherwise toxic to humans**	**n**
	Source(s)	**Notes**
	Tropical Plants Database, Ken Fern. (2021). Oldenlandia corymbosa. https://tropical.theferns.info/viewtropical.php?id=Oldenlandia+corymbosa. [Accessed 17 Sep 2021]	"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	[Used medicinally] "Used in Ayurveda and Sidha. Powdered plant consumed with curd for venereal diseases; whole plant paste taken to cure jaundice; plant juice febrifuge, pectoral, stomachic, used in jaundice and liver ailments, depression, burning sensation of palm and sole, to stop bleeding; smoke from dried powdered plant used as fumigant, a remedy against mosquitoes and other insects."
	Wagstaff, D.J. (2008). International poisonous plants checklist: an evidence-based reference. CRC Press, Boca Raton, FL	No evidence

408	Creates a fire hazard in natural ecosystems	n
	Source(s)	**Notes**
	Raju, A. S., & Krishna, J. R. (2018). Pollination ecology of the annual herb Hedyotis corymbosa (Rubiaceae). Phytologia Balcanica: International Journal of Balkan Flora and Vegetation, 24(3), 343-349	[No evidence. Unlikely given habit and habitat] "It grows in open, moist and highly disturbed habitats during the rainy and winter seasons; it also grows in summer, in areas where the soil is sufficiently wet."
	CABI. (2021). Invasive Species Compendium. Wallingford, UK: CAB International. www.cabi.org/isc	No evidence

409	Is a shade tolerant plant at some stage of its life cycle	
	Source(s)	**Notes**
	Sriyani, N. et al. (2013). Upland Weed Flora of Southern Sumatra. Global Madani Press, Bandar Lampung, Indonesia	"In sunny, not too wet sites, along roadsides, base walls, gardens, fallow fields; often abundant."
	Flora Fauna Web. (2021). Hedyotis corymbosa. https://www.nparks.gov.sg/florafaunaweb/flora/5/2/5238. [Accessed 17 Sep 2021]	"Light Preference: Full Sun"
	Raju, A. S., & Krishna, J. R. (2018). Pollination ecology of the annual herb Hedyotis corymbosa (Rubiaceae). Phytologia Balcanica: International Journal of Balkan Flora and Vegetation, 24(3), 343-349	[Grows in open, high light environments] "It grows in open, moist and highly disturbed habitats during the rainy and winter seasons"

Qsn #	Question	Answer
410	**Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)**	**y**
	Source(s)	**Notes**
	CABI. (2021). Invasive Species Compendium. Wallingford, UK: CAB International. www.cabi.org/isc	"Oldenlandia corymbosa grows as a weed, and can often be found in open and sunny areas with high levels of disturbance. It is adapted to a variety of soil types, ranging from shallow soil in rocky places, to black-cotton soils and bare-sandy soils. It tolerates waterlogged conditions but does not tolerate frost (Fern, 2014; PROSEA, 2018; PROTA, 2018)."

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.	"Slender annual or perennial herbs; stems prostrate to weakly erect, 1-4 dm long, few-branched to many-branched, glabrous."

412	**Forms dense thickets**	
	Source(s)	**Notes**
	CABI. (2021). Invasive Species Compendium. Wallingford, UK: CAB International. www.cabi.org/isc	[Unknown. Described as being able to dominate and ecosystem, suggesting dense cover may exclude and outcompete other vegetation] "Oldenlandia corymbosa is a cosmopolitan weed that often invades forest edges, disturbed areas, riversides, foreshores, lowland forests, coastal thickets and grasslands. Under suitable environmental conditions, it can rapidly dominate an ecosystem, with the potential to displace and outcompete native plants at early successional stages in disturbed areas. It has also been listed as a common weed in Biscayne National Park in Florida, USA"

501	**Aquatic**	**n**
	Source(s)	**Notes**
	Lorence, D.H., Flynn, T.W. & Wagner, W.L. (1995). Contributions to the flora of Hawai'i. III. New additions, range extensions, and rediscoveries of flowering plants. Bishop Museum Occasional Papers 41: 19-58	[Terrestrial] "This species is an herb with matted or trailing stems occurring as a weed in lawns, along roadsides and paths, and in vacant lots."

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. https://npgsweb.ars-grin.gov/. [Accessed 15 Sep 2021]	Family: Rubiaceae Subfamily: Rubioideae Tribe: Spermacoceae

503	**Nitrogen fixing woody plant**	**n**

Qsn #	Question	Answer
	Source(s)	**Notes**
	USDA, Agricultural Research Service, National Plant Germplasm System. (2021). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. https://npgsweb.ars-grin.gov/. [Accessed 15 Sep 2021]	Family: Rubiaceae Subfamily: Rubioideae Tribe: Spermacoceae

504	Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)	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] "Slender annual or perennial herbs; stems prostrate to weakly erect, 1-4 dm long, few-branched to many-branched, glabrous."

601	Evidence of substantial reproductive failure in native habitat	n
	Source(s)	**Notes**
	Aguilar, N.O. & Lemmens, R.H.M.J. (1999). Oldenlandia corymbosa L.. In: de Padua, L.S., Bunyapraphatsara, N. and Lemmens, R.H.M.J. (Editors): Plant Resources of South-East Asia No 12(1): Medicinal and poisonous plants 1. PROSEA Foundation, Bogor, Indonesia. Database record: prota4u.org/prosea	"In South-East Asia the medicinally used Oldenlandia species are common weeds and widely distributed, so there is no danger of genetic erosion."
	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.	"Native to Africa, now widely naturalized" [No evidence]

602	Produces viable seed	y
	Source(s)	**Notes**
	McCarty, L.B., Everest, J.W., Hall, D.W., Murphy, T.R. & Yelverton, F. (2001). Color Atlas of Turfgrass Weeds. Sleeping Bear Press, Chelsea, MI	"Propagation: Seed."
	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.	"Seeds numerous per cell, angular, ca. 0.25 mm long, areolate."
	Lorence, D.H., Flynn, T.W. & Wagner, W.L. (1995). Contributions to the flora of Hawai'i. III. New additions, range extensions, and rediscoveries of flowering plants. Bishop Museum Occasional Papers 41: 19-58	"This species is an herb with matted or trailing stems occurring as a weed in lawns, along roadsides and paths, and in vacant lots. It has tiny seeds that can be transported easily by mud sticking to shoes, etc."

Qsn #	Question	Answer
603	**Hybridizes naturally**	
	Source(s)	**Notes**
	WRA Specialist. (2021). Personal Communication	Unknown. No evidence found

604	Self-compatible or apomictic	y
	Source(s)	**Notes**
	Raju, A. S., & Krishna, J. R. (2018). Pollination ecology of the annual herb Hedyotis corymbosa (Rubiaceae). Phytologia Balcanica: International Journal of Balkan Flora and Vegetation, 24(3), 343-349	"Hedyotis corymbosa is an annual herb that grows in open, moist and highly disturbed habitats during the wet and winter seasons. It is isostylous, weakly protandrous, self-compatible, auto-selfing and entomophilous. The natural fruit set is >90 % but only half the ovules produce seeds, which could be due to unfertilized ovules, selective abortion of low-quality seeds arising from self-pollination, and state of nutrient environment in the soil."

605	Requires specialist pollinators	n
	Source(s)	**Notes**
	Raju, A. S., & Krishna, J. R. (2018). Pollination ecology of the annual herb Hedyotis corymbosa (Rubiaceae). Phytologia Balcanica: International Journal of Balkan Flora and Vegetation, 24(3), 343-349	"The flowers attract small bees, wasps, flies and small lycaenid butterflies, of which only bees and butterflies are regular pollinators. Their pollination role is supported by the record of considerable number of pollen grains on their bodies."

606	Reproduction by vegetative fragmentation	y
	Source(s)	**Notes**
	CABI. (2021). Invasive Species Compendium. Wallingford, UK: CAB International. www.cabi.org/isc	"Oldenlandia corymbosa spreads mainly by seed, but plants can sometimes root at the nodes. The species produces numerous tiny seeds (~0.25 mm length) that can be easily dispersed by animals, water, vehicles, and in contaminated soil and agricultural produce. Stem and root fragments can be broken off and spread during cultivation or road maintenance, and can also be dispersed in contaminated soil (Wagner et al., 1999; Fern, 2014; Flora of China Editorial Committee, 2018; PIER, 2018; PROSEA, 2018; PROTA, 2018)."

607	Minimum generative time (years)	1
	Source(s)	**Notes**

Qsn #	Question	Answer
	Raju, A. S., & Krishna, J. R. (2018). Pollination ecology of the annual herb Hedyotis corymbosa (Rubiaceae). Phytologia Balcanica: International Journal of Balkan Flora and Vegetation, 24(3), 343-349	"Hedyotis corymbosa is an annual herb that grows in open, moist and highly disturbed habitats during the wet and winter seasons. It is isostylous, weakly protandrous, self-compatible, auto-selfing and entomophilous. The natural fruit set is >90 % but only half the ovules produce seeds, which could be due to unfertilized ovules, selective abortion of low-quality seeds arising from self-pollination, and state of nutrient environment in the soil. The fruits are non-fleshy, erect, cup-like capsules, which dehisce loculicidally. Seed dispersal is anemo-, baro-, ombro-, hydro-, and anthropochorous. The seeds are dormant, germinate and produce new plants during the wet season. Therefore, the study suggests that this plant is evolved to complete its entire life cycle seasonally."
	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.	"Slender annual or perennial herbs"

701	**Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)**	**y**
	Source(s)	**Notes**
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	"Dispersed by: Humans, Vehicles, Water"
	Raju, A. S., & Krishna, J. R. (2018). Pollination ecology of the annual herb Hedyotis corymbosa (Rubiaceae). Phytologia Balcanica: International Journal of Balkan Flora and Vegetation, 24(3), 343-349	"Human-mediated dispersal is also possible as a result of the transport of seeds in contaminated machinery, produce and soil from the agricultural fields."
	Lorence, D.H., Flynn, T.W. & Wagner, W.L. (1995). Contributions to the flora of Hawai'i. III. New additions, range extensions, and rediscoveries of flowering plants. Bishop Museum Occasional Papers 41: 19-58	"This spcies is an herb with matted or trailing stems occurring as a weed in lawns, along roadsides and paths, and in vacant lots. It has tiny seeds that can be transported easily by mud sticking to shoes, etc."

702	**Propagules dispersed intentionally by people**	**n**
	Source(s)	**Notes**
	CABI. (2021). Invasive Species Compendium. Wallingford, UK: CAB International. www.cabi.org/isc	"Oldenlandia corymbosa is a widespread polymorphic weed with a pantropical distribution. It is fast-growing and can rapidly colonize disturbed areas, open sites, gardens, farmlands, forest edges, grasslands, roadsides and riverbanks. O. corymbosa also produces large volumes of tiny seeds that can be easily dispersed by water, animals and vehicles, or as a contaminant in soil and agricultural produce. Its weedy habit, preference for disturbed sites and tiny seeds all facilitate its spread and colonization of new habitats."

Qsn #	Question	Answer
703	**Propagules likely to disperse as a produce contaminant**	**y**
	Source(s)	**Notes**
	Raju, A. S., & Krishna, J. R. (2018). Pollination ecology of the annual herb Hedyotis corymbosa (Rubiaceae). Phytologia Balcanica: International Journal of Balkan Flora and Vegetation, 24(3), 343-349	"Human-mediated dispersal is also possible as a result of the transport of seeds in contaminated machinery, produce and soil from the agricultural fields."

704	**Propagules adapted to wind dispersal**	**y**
	Source(s)	**Notes**
	Raju, A. S., & Krishna, J. R. (2018). Pollination ecology of the annual herb Hedyotis corymbosa (Rubiaceae). Phytologia Balcanica: International Journal of Balkan Flora and Vegetation, 24(3), 343-349	"Mature and dry fruits dehisced loculicidally into two valves releasing seeds into the air. The seeds were then carried away by the prevailing wind and also by gravity. Rain water drops falling into the fruit capsule caused ejection of seeds, which were subsequently carried away by flowing water. Furthermore, seed dispersal was prompted by human activities." ... "Randall (2002) reported that in H. corymbosa, the seed is very small and is likely to be dispersed by gravity or wind."

705	**Propagules water dispersed**	**y**
	Source(s)	**Notes**
	Raju, A. S., & Krishna, J. R. (2018). Pollination ecology of the annual herb Hedyotis corymbosa (Rubiaceae). Phytologia Balcanica: International Journal of Balkan Flora and Vegetation, 24(3), 343-349	"Mature and dry fruits dehisced loculicidally into two valves releasing seeds into the air. The seeds were then carried away by the prevailing wind and also by gravity. Rain water drops falling into the fruit capsule caused ejection of seeds, which were subsequently carried away by flowing water. Furthermore, seed dispersal was prompted by human activities."

706	**Propagules bird dispersed**	**n**
	Source(s)	**Notes**
	Raju, A. S., & Krishna, J. R. (2018). Pollination ecology of the annual herb Hedyotis corymbosa (Rubiaceae). Phytologia Balcanica: International Journal of Balkan Flora and Vegetation, 24(3), 343-349	"The fruit was a non-fleshy ovoid or globose, bilocular, membranous, glabrous, 2.5 × 2.8 mm capsule (Fig. 1h). The seed set rate per fruit was 50.25 ± 7.92 %. Mature and dry fruits dehisced loculicidally into two valves releasing seeds into the air. The seeds were then carried away by the prevailing wind and also by gravity. Rain water drops falling into the fruit capsule caused ejection of seeds, which were subsequently carried away by flowing water."

707	**Propagules dispersed by other animals (externally)**	
	Source(s)	**Notes**
	Raju, A. S., & Krishna, J. R. (2018). Pollination ecology of the annual herb Hedyotis corymbosa (Rubiaceae). Phytologia Balcanica: International Journal of Balkan Flora and Vegetation, 24(3), 343-349	[Possible that livestock could also transport seeds in soil from contaminated fields] "Human-mediated dispersal is also possible as a result of the transport of seeds in contaminated machinery, produce and soil from the agricultural fields."

708	**Propagules survive passage through the gut**	**y**

Qsn #	Question	Answer
	Source(s)	**Notes**
	Pile, L. S., Wang, G. G., Polomski, R., Yarrow, G., & Stuyck, C. M. (2015). Potential for nonnative endozoochorous seed dispersal by white-tailed deer in a southeastern maritime forest. Invasive Plant Science and Management, 8(1), 32-43	[Germinates from deer pellets] "Of the species that germinated, 28% (n 5 7) were nonnative plants that predominately occur in cultivated or disturbed habitats (Table 2). Oldenlandia corymbosa had the highest overall frequency by number of germinants for pellet collections from September 2012 through January 2013, and the second highest probability of occurrence in a pellet group (10.4%)."

801	Prolific seed production (>1000/m2)	y
	Source(s)	**Notes**
	Juraimi, A. S., Ahmad-Hamdani, M. S., Anuar, A. R., Azmi, M., Anwar, M. P., & Uddin, M. K. (2012). Effect of water regimes on germination of weed seeds in a Malaysian rice field. Australian Journal of Crop Science, 6(4), 598-605	"In soil samples taken from the plots during September-November 2004, the weed seed composition in rice plots treated with continuous flooding (T1), flooded until 55 DAS followed by saturated conditions (T2) and continuously saturated (T4) conditions were largely dominated by Hedyotis corymbosa (L.) Lam. (Table 1), which can be attributed to the large number of total weed seeds in these soils (Table 2)." ... "Table 2. Effect of water regime treatments on weed seed populations (number m-2; soils sampled in March-May 2004)."[Hedyotis corymbosa seeds found at densities of 62408, 44622, 16148, 41852 and 1222 m-2]
	Oke, S. O., Oladipo, O. T., Ndiribe, C. C., Akinyemi, D. S., & Ojo, O. M. (2010). Soil seed bank dynamics in Tithonia diversifolia dominated fallowland vegetation in Ile-Ife area of southwestern Nigeria. Agricultura-Agricultura-Ştiinţă şi practică, 19, 32-45	"In the dry season sampling 898 seedlings (15822 seeds/m2) emerged in all the months of the germination studies. Twenty-seven (27) species emerged from this study site 1 and only two plant species were unidentified. Oldenlandia corymbosa had the highest seedling density of 276 seedlings (4863 seeds/m2) or 30.7% of the seed density of the seed bank (Table 2)."
	CABI. (2021). Invasive Species Compendium. Wallingford, UK: CAB International. www.cabi.org/isc	"O. corymbosa also produces large volumes of tiny seeds that can be easily dispersed by water, animals and vehicles, or as a contaminant in soil and agricultural produce."

802	Evidence that a persistent propagule bank is formed (>1 yr)	y
	Source(s)	**Notes**
	Demel, T. (1998). Soil seed bank at an abandoned Afromontane arable site. Feddes Repertorium, 109(1-2), 161-174	"Table 1. List of species recorded from the soil samples with the total number of seeds from each of the layers (germination trial and soil sieving combined) and an average depth (AD) distribution of the seeds in the soil (ST = seed bank type; P = persistent seed bank)" [Oldenlandia corymbosa described with a persistent seed bank. Longevity unspecified]
	Mortimer, A. M., Mazid, M. A., & Riches, C. R. (2008). Long-term sustainability in weed management for direct seeding of rainfed rice. Improving agricultural productivity in rice-based systems of the High Barind Tract of Bangladesh. Los Baños (Philippines): International Rice Research Institute, Los Baños (Philippines). p, 67-78	"Table 2. Species recorded from the soil seed bank sampled at two different occasions. Soil samples in 2000 were air-dried and stored for two years. Both sets of samples were then used for seedling emergence trials in 2003. Species are listed in order of decreasing abundance of total counts from submerged and aerobic emergence trials." [Viable seeds of Oldenlandia corymbosa collected in 2002 sample and presumably remain viable for at least one year]

Qsn #	Question	Answer
	Oke, S. O., Oladipo, O. T., Ndiribe, C. C., Akinyemi, D. S., & Ojo, O. M. (2010). Soil seed bank dynamics in Tithonia diversifolia dominated fallowland vegetation in Ile-Ife area of southwestern Nigeria. Agricultura-Agricultura-Ştiinţă şi practică, 19, 32-45	[Present in seed bank. Longevity unspecified] "In the dry season sampling 898 seedlings (15822 seeds/m2) emerged in all the months of the germination studies. Twenty-seven (27) species emerged from this study site 1 and only two plant species were unidentified. Oldenlandia corymbosa had the highest seedling density of 276 seedlings (4863 seeds/m2) or 30.7% of the seed density of the seed bank (Table 2)."

803	Well controlled by herbicides	y
	Source(s)	**Notes**
	McCarty, L.B., Everest, J.W., Hall, D.W., Murphy, T.R. & Yelverton, F. (2001). Color Atlas of Turfgrass Weeds. Sleeping Bear Press, Chelsea, MI	"Control Strategies: Repeat applications of two- or three-way mixtures of 2,4-D, dicamba, MCPP, or MCPA. Ocher suggested options include atrazine/simazine, metribuzin, triclopyr alone or combined with clopyralid or 2,4-D, atrazine plus bentazon, imazaquin, and rnetsulfuron."
	CABI. (2021). Invasive Species Compendium. Wallingford, UK: CAB International. www.cabi.org/isc	"Herbicides such as pendimethalin, metribuzin and imazethapyr have been used to control O. corymbosa and other agricultural weeds in plantations and paddy fields (Olorunmaiye and Olorunmaiye, 2008; Habimana et al., 2013)."

804	Tolerates, or benefits from, mutilation, cultivation, or fire	
	Source(s)	**Notes**
	CABI. (2021). Invasive Species Compendium. Wallingford, UK: CAB International. www.cabi.org/isc	[Thrives in disturbed habitats. May be able to resprout after browsing, mowing or other mechanical damage. Details unspecified] "Tolerates, or benefits from, cultivation, browsing pressure, mutilation, fire etc"

805	Effective natural enemies present locally (e.g. introduced biocontrol agents)	
	Source(s)	**Notes**
	Starr, F., Starr, K. & Loope, L.L. (2006). New plant records from the Hawaiian Archipelago. Bishop Museum Occasional Papers 87: 31-43	[Unlikely. Distribution suggests absence of limiting biotic factors] "Hedyotis corymbosa (hedyotis) was previously reported from Kaua‘i, O‘ahu, Maui, and Hawai‘i (Wagner et al., 1999; Oppenheimer & Bartlett, 2002; Starr et al., 2002). This small herb is now also known from Kaho‘olawe where it was found in a high-traffic area near the summit."

Summary of Risk Traits:

High Risk / Undesirable Traits
• Broad climate suitability
• Thrives, and spreads, in regions with tropical climates
• Naturalized on Kauai, Oahu, Maui, Kahoolawe, and Hawaii (Hawaiian Islands), and widely naturalized elsewhere
• Weed of lawns, roadsides, and disturbed sites
• Common weed of crops
• Potential environmental weed
• Other Oldenlandia species are invasive weeds
• Tolerates many soil types
• Reproduces by prolific seed production, and vegetatively by stem and root fragments
• Self-compatible (able to produce seeds through self-pollination)
• Reaches maturity in one growing season
• Seeds dispersed by wind, water, animals, and vehicles, or as a contaminant in soil and agricultural produce
• Prolific seed production
• Forms a persistent seed bank

Low Risk Traits
• Unarmed (no spines, thorns, or burrs)
• Provides fodder for livestock
• Non-toxic (and reported to have medicinal uses)
• Thrives in high light environments (dense shade may inhibit spread)
• Herbicides may provide effective control