Taxon: Urena lobata L. **Family:** Malvaceae

Common Name(s): aramina-plant
bur-mallow
Caesarweed
Congo-jute
pipiri

Synonym(s):

Assessor: Chuck Chimera **Status:** Assessor Approved **End Date:** 13 Feb 2018

WRA Score: 16.0 **Designation:** H(Hawai'i) **Rating:** High Risk

Keywords: Pasture Weed, Dense Stands, Disturbance, Barbed Capsules, Epizoochorous

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)	y
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	y=1, n=0	y
407	Causes allergies or is otherwise toxic to humans	y=1, n=0	n

Qsn #	Question	Answer Option	Answer
408	Creates a fire hazard in natural ecosystems		
409	Is a shade tolerant plant at some stage of its life cycle	y=1, n=0	n
410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	y=1, n=0	y
411	Climbing or smothering growth habit	y=1, n=0	n
412	Forms dense thickets	y=1, n=0	y
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	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)	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		
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	n
707	Propagules dispersed by other animals (externally)	y=1, n=-1	y
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)		
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**
	N'danikou, S. & Achigan-Dako, E.G. & Oyen, L.P.A. 2011. Urena lobata L. [Internet] Record from PROTA4U. Brink, M. & Achigan-Dako, E.G. (Editors). PROTA (Plant Resources of Tropical Africa / Wageningen, Netherlands. http://www.prota4u.org/search.asp. [Accessed 12 Feb 2018]	[Cultivated but not domesticated] "The origin of Urena lobata is not certain, but it is probably of African or Asian origin. It is now widely distributed in a wild or naturalised state throughout the tropics and subtropics. In tropical Africa it occurs naturally from Cape Verde and Senegal eastward to Ethiopia and Eritrea, and southward across the continent to South Africa. It also occurs in the Indian Ocean islands. Urena lobata is grown as a commercial fibre crop in DR Congo, and for local use in Ghana, Nigeria and elsewhere in tropical Africa; commercial fibre production in Angola and Madagascar is mainly based on wild or naturalized plants."

102	Has the species become naturalized where grown?	
	Source(s)	**Notes**
	WRA Specialist. 2018. Personal Communication	NA

103	Does the species have weedy races?	
	Source(s)	**Notes**
	WRA Specialist. 2018. Personal Communication	NA

Qsn #	Question	Answer
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, ARS, Germplasm Resources Information Network. 2018. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html. [Accessed 12 Feb 2018]	"Native Asia-Temperate China: China Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hubei, Hunan, Jiangsu, Jiangxi, Sichuan, Xizang, Yunnan, Zhejiang Eastern Asia: Japan ; Taiwan Asia-Tropical Indian Subcontinent: Bangladesh ; Bhutan ; India ; Nepal ; Pakistan Indo-China: Cambodia ; Laos ; Myanmar ; Thailand ; Vietnam Malesia: Brunei ; Indonesia ; Philippines Papuasia: New Guinea Australasia Australia: Australia New South Wales, Northern Territory, Queensland, Western Australia Southern America Brazil: Brazil Caribbean: Bahamas ; Cuba ; Hispaniola ; Jamaica ; Puerto Rico ; Virgin Islands (British) ; Virgin Islands (U.S.) Central America: Belize ; Costa Rica ; Nicaragua ; Panama Northern South America: French Guiana ; Guyana ; Suriname ; Venezuela Southern South America: Paraguay Western South America: Ecuador ; Peru"

202	Quality of climate match data	High
	Source(s)	**Notes**
	USDA, ARS, Germplasm Resources Information Network. 2018. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html. [Accessed 12 Feb 2018]	

203	Broad climate suitability (environmental versatility)	y
	Source(s)	**Notes**
	N'danikou, S. & Achigan-Dako, E.G. & Oyen, L.P.A. 2011. Urena lobata L. [Internet] Record from PROTA4U. Brink, M. & Achigan-Dako, E.G. (Editors). PROTA (Plant Resources of Tropical Africa / Wageningen, Netherlands. http://www.prota4u.org/search.asp. [Accessed 12 Feb 2018]	"For optimal growth and fibre production Urena lobata needs a hot and humid climate with ample sunlight and rainfall, and a deep, fertile, well-drained soil. It prefers an average temperature of21–27°C, a relative humidity of 75–85%, and a monthly rainfall of 150–200 mm during the growing season. Under less favourable conditions it may grow as a short, branched, wiry shrublet. In tropical Africa Urena lobata occurs from sea-level up to 2100 m altitude in grassland, bushland, thickets, flood plains, river banks, roadsides and fallow land, less often in semi-deciduous forest. " [Elevation range exceeds 2000 m in tropical Africa, demonstrating environmental versatility]

Qsn #	Question	Answer
	Awan, T. H., Chauhan, B. S., & Cruz, P. C. S. (2014). Influence of environmental factors on the germination of Urena lobata L. and its response to herbicides. PloS One, 9 (3), e90305	"It can grow over a wide altitude range; from near sea-level to about 1000-m above sea level. This weed usually grows in rainforests along roads, monsoon forests, and in disturbed areas."
	Francis, J. K. (ed.). 2004. Wildland shrubs of the United States and its Territories: thamnic descriptions: volume 1. Gen. Tech. Rep. IITF-GTR-26. U.S. Department of Agriculture, Forest Service, International Institute of Tropical Forestry, San Juan, PR, & U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fort Collins, CO	"It tolerates salt spray and a moderate amount of salt in the soil but does not grow in saturated soils. The species ranges to elevations of 1,500 m (Pacific Island Ecosystems at Risk 2003). In Puerto Rico, it occurs in areas that receive from about 1400 to 3000 mm of mean annual precipitation, forming thickets in favorable sites."

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.	"Pantropical; in Hawai'i naturalized in low elevation disturbed areas, 20-30 m, on Kaua'i, O'ahu, and East Maui. Hillebrand (1888) mentioned that a few plants of this species appeared in Honolulu, having been accidentally introduced with foreign plants from China; the species was first noted by Nelson (St. John, 1978e)."
	N’danikou, S. & Achigan-Dako, E.G. & Oyen, L.P.A. 2011. Urena lobata L. [Internet] Record from PROTA4U. Brink, M. & Achigan-Dako, E.G. (Editors). PROTA (Plant Resources of Tropical Africa / Wageningen, Netherlands. http://www.prota4u.org/search.asp. [Accessed 12 Feb 2018]	"The origin of Urena lobata is not certain, but it is probably of African or Asian origin. It is now widely distributed in a wild or naturalised state throughout the tropics and subtropics. In tropical Africa it occurs naturally from Cape Verde and Senegal eastward to Ethiopia and Eritrea, and southward across the continent to South Africa. It also occurs in the Indian Ocean islands. Urena lobata is grown as a commercial fibre crop in DR Congo, and for local use in Ghana, Nigeria and elsewhere in tropical Africa; commercial fibre production in Angola and Madagascar is mainly based on wild or naturalized plants."

205	Does the species have a history of repeated introductions outside its natural range?	y
	Source(s)	**Notes**
	CABI. 2018. Invasive Species Compendium. Wallingford , UK: CAB International. www.cabi.org/isc	"U. lobata was intentionally introduced in many tropical and subtropical countries as a fibre crop. Commercial cultivation of the plant began in the Belgian Congo in the 1920s and in Central Africa in the 1930s (Groof, 1940). This species is widely cultivated in Angola, Brazil, Congo, Ghana, and Malaysia to produce a fibre known as “jute” or “congo-jute” which is used to made carpets and ropes (Austin, 1999; Francis, 2000; Fagundes 2003)."

301	Naturalized beyond native range	y
	Source(s)	**Notes**

Qsn #	Question	Answer
	USDA, ARS, Germplasm Resources Information Network. 2018. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html. [Accessed 12 Feb 2018]	"Naturalized Africa East Tropical Africa: Tanzania ; Uganda Northeast Tropical Africa: Chad ; Ethiopia ; Sudan South Tropical Africa: Angola ; Malawi ; Mozambique ; Zambia ; Zimbabwe West Tropical Africa: Burkina Faso ; Gambia ; Ghana ; Guinea ; Liberia ; Mali ; Niger ; Nigeria ; Senegal ; Sierra Leone ; Togo West-Central Tropical Africa: Burundi ; Cameroon ; Central African Republic ; Congo ; Rwanda ; Zaire Western Indian Ocean: Reunion Asia-Tropical Papuasia: Solomon Islands Northern America Southeastern U.S.A.: United States Florida Pacific North-Central Pacific: United States Hawaii Northwestern Pacific: Guam ; Micronesia ; Northern Mariana Islands ; Palau South-Central Pacific: Cook Islands ; French Polynesia Gambier Islands, Marquesas Islands, Society Islands Southwestern Pacific: Fiji ; New Caledonia ; Samoa ; Tonga Southern America Western South America: Ecuador Galapagos Islands"
	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 low elevation disturbed areas, 20-30 m, on Kaua'i, O'ahu, and East Maui. Hillebrand (1888) mentioned that a few plants of this species appeared in Honolulu, having been accidentally introduced with foreign plants from China; the species was first noted by Nelson (St. John, 1978e)."

302	Garden/amenity/disturbance weed	y
	Source(s)	**Notes**
	Austin, D. F. 1999. Caesar's weed (Urena lobata): An invasive exotic or a Florida native? Wildland Weeds, 3(1): 13-16	"Urena is a plant mostly of disturbed places. We humans excel at that process, and create ideal sites for these tough-stemmed shrubs. The plants thrive in places like backyards, road shoulders, and trail sides. Caesar's weed is among what a biologist in the 1940s named "camp-followers" (cf. Anderson 1967)"
	CABI. 2018. Invasive Species Compendium. Wallingford , UK: CAB International. www.cabi.org/isc	[Disturbance adapted weed with negative impacts to agriculture & potentially to natural environment. See 3.03 & 3.04] "U. lobata can be found growing in disturbed areas, waste grounds, roadsides, open woodlands, forest margins, coastal dunes, riparian areas, swamps, salt marshes, as well as in pastures and active and abandoned croplands in tropical and sub-tropical regions (Francis, 2000; Langeland et al., 2008; Florida Exotic Pest Plant Council, 2011; PIER 2012). "

303	Agricultural/forestry/horticultural weed	y
	Source(s)	**Notes**

Qsn #	Question	Answer
	Francis, J. K. (ed.). 2004. Wildland shrubs of the United States and its Territories: thamnic descriptions: volume 1. Gen. Tech. Rep. IITF-GTR-26. U.S. Department of Agriculture, Forest Service, International Institute of Tropical Forestry, San Juan, PR, & U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fort Collins, CO	"Caesar weed readily invades disturbed areas, especially poorly managed pastures, scarified and eroded areas, and perennial crop plantations but is much less of a problem in annual crops. The species does not compete well in tall grass swards and brushlands and does not grow under forest canopies."
	Haselwood, E.L., Motter, G.G., & Hirano, R.T. (eds.). 1983. Handbook of Hawaiian Weeds. University of Hawaii Press, Honolulu, HI	"Declared noxious in Regulations 2 and NW 10. Forms dense stands, crowding out forage plants."
	Motooka, P., Castro, L., Nelson, D., Nagai, G. & Ching,L. 2003. Weeds of Hawaii's Pastures and Natural Areas: An Identification and Management Guide. CTAHR, UH Manoa, Honolulu, HI	"Environmental impact: Burs a nuisance in pastures and disturbed forests."
	Smith, A.C. 1981. Flora Vitiensis Nova - A New Flora of Fiji (Spermatophytes Only). Volume 2. Pacific Tropical Botanical Garden, Lawai, HI	"In Fiji Urena lobata is a shrub or subligneous herb 0.5-3 m. high, found at elevations from near sea level to the summit of Mt. Tomanivi, 1,323 m. It is a pernicious weed abundantly naturalized in gardens, canefields, pastures, clearings, and grassland, and also found along forest trails and on open hillsides."
	CABI. 2018. Invasive Species Compendium. Wallingford , UK: CAB International. www.cabi.org/isc	"U. lobata is a severe weed in pastures, sugarcane fields, coffee plantations, rice plantations, and perennial crop plantations in many countries around the world (Henty and Pritchard, 1973; Fournet and Hammerton, 1991; Martin and Pol, 2009; Randall, 2012). It is considered a weed in forest plantations in Bangladesh (Akter and Zuberi, 2009) and India (Chandra-Sekar, 2012)."
	N'danikou, S. & Achigan-Dako, E.G. & Oyen, L.P.A. 2011. Urena lobata L. [Internet] Record from PROTA4U. Brink, M. & Achigan-Dako, E.G. (Editors). PROTA (Plant Resources of Tropical Africa / Wageningen, Netherlands. http://www.prota4u.org/search.asp. [Accessed 12 Feb 2018]	"Urena lobata can be a troublesome weed, especially in pastures."

304	Environmental weed	
	Source(s)	**Notes**
	CABI. 2018. Invasive Species Compendium. Wallingford , UK: CAB International. www.cabi.org/isc	"U. lobata is also classified as a noxious environmental weed because it has the potential to alter native plant communities by displacing and out-competing native species, changing community structures, and altering ecological functions (Austin, 1999; Florida Exotic Pest Plant Council, 2011; USDA-NRCS; 2012)." ... "U. lobata is an aggressive weed that invades disturbed forests, shrublands, forest margins, coastal dunes, riparian areas, swamps, and salt marshes (Francis, 2000; Langeland et al., 2008; Florida Exotic Pest Plant Council 2011; PIER 2012; Randall, 2012). Under suitable environmental conditions, this species has the potential to form dense thickets and consequently alter native plant communities by displacing and out competing native species, changing community structures, and altering ecological functions (Austin, 1999; Florida Exotic Pest Plant Council, 2011; USDA-NRCS; 2012)."

Qsn #	Question	Answer
	Austin, D. F. 1999. Caesar's weed (Urena lobata): An invasive exotic or a Florida native? Wildland Weeds, 3(1): 13-16	[Potential environmental weed] "When a species is nominated, it is considered by the EPPC listing committee. We discuss the category and whether or not the species should be included. Category II, where Urena is listed, contains species that "have shown a potential to disrupt native plant communities." Many of the committee members have also found the shrubs as hammock understory components. In those sites, they at least occupy space that native species might otherwise occupy. By occupying space, and otherwise competing with native species that is currently unknown, they satisfy our view of "having the potential to disrupt native plant communities."

305	Congeneric weed	y
	Source(s)	**Notes**
	CABI. 2018. Invasive Species Compendium. Wallingford , UK: CAB International. www.cabi.org/isc	"U. sinuata is a shrubby invasive plant included in the Global Compendium of Weeds. It has been classified as a noxious weed in Cuba (González-Torres et al., 2012) and as an environmental weed in Puerto Rico, US Virgin Islands, Trinidad, Mexico and South-East Asia (Randall, 2012). It is a fast-growing plant that spreads by seeds and produces fruits with hooked spines which can easily be attached to animal fur and/or people's clothing allowing seeds to be dispersed (Liogier, 1988). This species is able to form monocultures when environmental conditions are favourable."

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] "Erect or diffuse sub shrubs 0.5-2 m tall; branches often tinged purple, closely stellate and sometimes also simple pubescent. Leaf blades ovate to transverse-elliptic, 2- 10 cm wide, unlobed or 3-angled, 5-angled, or 7-angled or lobed. Pedicels 0.2-0.4 (-0.6) cm long; involucral bracts 4-7 mm long; calyx 4-6 mm long; petals pink to purplish pink, maroon at base, 1-1.5 cm long; staminal column prominent, slightly deflexed, 1-1.5 cm long; anthers and stigmas dark purple. Mericarps 5, 4-5 mm long, stellate pubescent and reticulate-veined, glochidia ca. 1 mm long. Seeds 2.5-3.5 mm long."

402	Allelopathic	
	Source(s)	**Notes**
	CABI. 2018. Invasive Species Compendium. Wallingford , UK: CAB International. www.cabi.org/isc	Unknown. Not listed among impacts

Qsn #	Question	Answer
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.	"Erect or diffuse sub shrubs 0.5-2 m tall" [Malvaceae. No evidence]

404	**Unpalatable to grazing animals**	**n**
	Source(s)	**Notes**
	Alberts, H. W. & García-Molinari, O. (1943). Pastures of Puerto Rico and Their Relation to Soil Conservation. U.S. Department of Agriculture Miscellaneous Publication 43. Washington, D.C.	"Cadillo (Urena lobata) is a shrubby perennial weed with wide, deep-green leaves. It grows over 6 feet tall. It seeds profusely. The resultant seedings frequently cover entire fields in a relatively short period. Cattle eat the leaves of the young plant when no more palatable herbage is available, especially in overgrazed pastures."
	Francis, J. K. (ed.). 2004. Wildland shrubs of the United States and its Territories: thamnic descriptions: volume 1. Gen. Tech. Rep. IITF-GTR-26. U.S. Department of Agriculture, Forest Service, International Institute of Tropical Forestry, San Juan, PR, & U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fort Collins, CO	"However, the plant is little browsed by cattle and can become a severe weed in pastures and plantations."
	Setiya, A. V., Narkhede, M. S., & Dongarwar, N. M. (2015). Preliminary survey of fodder plants used by goats Gadchiroli District of Maharashtra State. International Journal of Advanced Research, 3(12), 1157-1167	"Table 1 – Plants preferred by Goats as fodder." [Includes Urena lobate. Parts eaten include leaves & flowers, but not fruits]
	Ahamefule, F. O., Obua, B. E., Ibeawuchi, J. A., & Udosen, N. R. (2006). The nutritive value of some plants browsed by cattle in Umudike, southeastern Nigeria. Pakistan Journal of Nutrition, 5(5), 404-409	"Table 1: Plant species browsed by cattle in Umudike, Abia state [Includes Urena lobate]

405	**Toxic to animals**	**n**
	Source(s)	**Notes**
	Alberts, H. W. & García-Molinari, O. (1943). Pastures of Puerto Rico and Their Relation to Soil Conservation. U.S. Department of Agriculture Miscellaneous Publication 43. Washington, D.C.	"Cattle eat the leaves of the young plant when no more palatable herbage is available, especially in overgrazed pastures." [No evidence]
	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
	Cornell University. 2018. Plants Poisonous to Livestock and other Animals. http://poisonousplants.ansci.cornell.edu/index.html. [Accessed 13 Feb 2018]	No evidence

406	**Host for recognized pests and pathogens**	**y**

Qsn #	Question	Answer
	Source(s)	**Notes**
	N'danikou, S. & Achigan-Dako, E.G. & Oyen, L.P.A. 2011. Urena lobata L. [Internet] Record from PROTA4U. Brink, M. & Achigan-Dako, E.G. (Editors). PROTA (Plant Resources of Tropical Africa / Wageningen, Netherlands. http://www.prota4u.org/search.asp. [Accessed 12 Feb 2018]	"Urena lobata can be seriously damaged by several fungi that form stem lesions ('stem canker'). The most widespread of these fungi are Botrytis cinerea and Macrophoma urenae. Another disease is damping-off or seedling blight caused by Fusarium spp. In India Urena lobata is attacked by Corynespora callicioidea, causing scattered, yellowish-red, irregular lesions on the leaves, with a black centre that develops into a hole. The fungal diseases can be controlled by treating seed with fungicides and by crop rotation. Urena lobata is an alternate host for the okra mosaic virus. Urena lobata is attacked by some serious pests of cotton (Gossypium spp.), kenaf, roselle and ramie (Boehmeria nivea (L.) Gaudich.), such as cotton stainers (Dysdercus spp.) and leaf rollers (Sylepta spp.). Dysdercus superstitiosus can strongly reduce the viability of Urena lobate seeds, but the fibre yield is unaffected. In Africa and Asia Urena lobata is attacked by spiny bollworms (Earias spp.). Urena lobata seems highly resistant to nematodes."

407	Causes allergies or is otherwise toxic to humans	n
	Source(s)	**Notes**
	CABI. 2018. Invasive Species Compendium. Wallingford , UK: CAB International. www.cabi.org/isc	[No evidence] "leaves, roots, and flowers are reportedly used in traditional medicine in Malaysia, Indo-China, Philippines, Papua New Guinea, Fiji, and India to treat such diverse ailments as colic, malaria, gonorrhea, fever, wounds, toothache, and rheumatism (Ong, 2001). In South East Asia and Africa, U. lobata is considered a magic plant, and is used in healing rites, for protection, and in wedding and rice ceremonies (Ong, 2001). Seeds and parts of plants are used in Africa in stews and are eaten as famine food. In India, seeds are used to produce soap, while the charcoal of the whole plant is used for blackening teeth (Ong, 2001)."

Qsn #	Question	Answer
	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. Whole plant paste applied for the treatment of rheumatic pains; twigs or stem cuttings used as tooth brush for healthy gums. The flowers, together with those of Sida rhombifolia, mixed with coconut flesh and eaten as a remedy for chickenpox; flowers heated over fire and applied to sores, to open and draw out the infection; flowers included in treatment for mental disorders and in oral remedies for fevers. Leaves used to treat burns, scalds, heat, hangover, fever; tender leaves poultice applied to wounds and cuts; pounded leaves boiled in coconut oil applied to treat wounds, cuts; for swelling and bone fracture a paste of fresh leaves is applied; leaves of Urena lobata along with velamen root of Vanda roxburghii prepared into a paste applied for skin diseases. Leaf tea diuretic, for flu and stomachache, colds, cough, heat; leaf juice applied as eye drop in conjunctivitis. Root diuretic, an infusion in postpartum; roots of Sida rhombifolia, Urena lobata, Elaeagnus caudata and stem bark and roots of Bixa orellana and Randia dumetorum pounded together and boiled in water, the extract taken to cure jaundice; a decoction of roots of Dillenia indica with roots of Ficus auriculata and Urena lobata given in discharge of blood in urine; a decoction of rhizome of Curcuma aromatica with roots of Urena lobata and leaves of Tolypanthus involucratus given to expel catarrh; roots and leaves used to cure diarrhea; root powder given with milk in dog bite; root extract an external application in rheumatic pains, cuts and wounds; for snakebite, chew the root with betel and spit onto the wound. Veterinary medicine, a paste of leaves and coconut oil smeared on wounds of cattle as insect repellent; leaves paste applied on wounds as an antidote to tiger bite; root tied to the neck of the cattle along with root of Stephania hernandifolia against maggots infection of ulcers."

408	Creates a fire hazard in natural ecosystems	
	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.	"in Hawai'i naturalized in low elevation disturbed areas, 20-30 m" [Unknown. May contribute to fuel load in fire prone areas]

Qsn #	Question	Answer
	Hagood, D. H. (2017). Influence Of Soil Disturbance and Fire on Caesar's Weed (Urena lobata) Invasion in Pine Flatwoods. MSc Thesis. Florida Atlantic University, Boca Raton, FL	[Fire may create disturbance that benefits Urena lobate. No evidence of increased fire risk in this publication] "Novel disturbances can increase the vulnerability of pine flatwoods to exotic species such as Caesar's weed (Urena lobata), a plant that has invaded many ecosystems. To understand Caesar's weed response to disturbance, a factorial field manipulation was used to quantify invasion success. Influence of feral swine (Sus scrofa) on the presence of seeds in the area was analyzed. The effect of heat on Caesar's weed germination was also quantified. A winter fire and mechanical soil disturbance had no statistical effect on the spread of Caesar's weed. However, in feral swine disturbed soils Caesar's weed was more likely to be husked and experience less competition from seeds of other species. Low levels of seed heating increased germination. This data can provide information about the influences of fire and soil disturbances on the spread of Caesar's weed, as well as how fire intensity levels can affect the spread of invasive Caesar's weed."
	CABI. 2018. Invasive Species Compendium. Wallingford , UK: CAB International. www.cabi.org/isc	Not listed among invasive impacts

409	Is a shade tolerant plant at some stage of its life cycle	n
	Source(s)	**Notes**
	N'danikou, S. & Achigan-Dako, E.G. & Oyen, L.P.A. 2011. Urena lobata L. [Internet] Record from PROTA4U. Brink, M. & Achigan-Dako, E.G. (Editors). PROTA (Plant Resources of Tropical Africa / Wageningen, Netherlands. http://www.prota4u.org/search.asp. [Accessed 12 Feb 2018]	"For optimal growth and fibre production Urena lobata needs a hot and humid climate with ample sunlight and rainfall, and a deep, fertile, well-drained soil."
	Francis, J. K. (ed.). 2004. Wildland shrubs of the United States and its Territories: thamnic descriptions: volume 1. Gen. Tech. Rep. IITF-GTR-26. U.S. Department of Agriculture, Forest Service, International Institute of Tropical Forestry, San Juan, PR, & U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fort Collins, CO	"The species does not compete well in tall grass swards and brushlands and does not grow under forest canopies."
	CABI. 2018. Invasive Species Compendium. Wallingford , UK: CAB International. www.cabi.org/isc	"The species does not tolerate shade and consequently it is unable to establish in unaltered native forests or in areas beneath forest canopies (Francis, 2000)."

410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	y
	Source(s)	**Notes**
	Francis, J. K. (ed.). 2004. Wildland shrubs of the United States and its Territories: thamnic descriptions: volume 1. Gen. Tech. Rep. IITF-GTR-26. U.S. Department of Agriculture, Forest Service, International Institute of Tropical Forestry, San Juan, PR, & U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fort Collins, CO	"Ceasar weed grows on a wide variety of soils of varying fertility derived from most parent materials. It tolerates salt spray and a moderate amount of salt in the soil but does not grow in saturated soils."

Qsn #	Question	Answer
	N'danikou, S. & Achigan-Dako, E.G. & Oyen, L.P.A. 2011. Urena lobata L. [Internet] Record from PROTA4U. Brink, M. & Achigan-Dako, E.G. (Editors). PROTA (Plant Resources of Tropical Africa / Wageningen, Netherlands. http://www.prota4u.org/search.asp. [Accessed 12 Feb 2018]	"For optimal growth and fibre production Urena lobata needs a hot and humid climate with ample sunlight and rainfall, and a deep, fertile, well-drained soil."
	CABI. 2018. Invasive Species Compendium. Wallingford , UK: CAB International. www.cabi.org/isc	"U. lobata grows in a great variety of soils, including sandy loam, lateritic gravel, clay, fine sand, and wetland soils (Harris, 1981), and it is also able to grow in acidic soils with pH of 3.5 (Nascimento and Vilhena, 1996; Souza-Filho et al., 2000)."

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.	"Erect or diffuse sub shrubs 0.5-2 m tall"

412	Forms dense thickets	y
	Source(s)	**Notes**
	Alberts, H. W. & García-Molinari, O. (1943). Pastures of Puerto Rico and Their Relation to Soil Conservation. U.S. Department of Agriculture Miscellaneous Publication 43. Washington, D.C.	"If the seeds are allowed to mature, the new seedlings will soon make a thick growth crowding out other more desirable plants."
	Francis, J. K. (ed.). 2004. Wildland shrubs of the United States and its Territories: thamnic descriptions: volume 1. Gen. Tech. Rep. IITF-GTR-26. U.S. Department of Agriculture, Forest Service, International Institute of Tropical Forestry, San Juan, PR, & U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fort Collins, CO	"In Puerto Rico, it occurs in areas that receive from about 1400 to 3000 mm of mean annual precipitation, forming thickets in favorable sites."
	CABI. 2018. Invasive Species Compendium. Wallingford , UK: CAB International. www.cabi.org/isc	"Under suitable environmental conditions, this species has the potential to form dense thickets and consequently alter native plant communities by displacing and out-competing native species, changing community structures, and altering ecological functions (Austin, 1999; Florida Exotic Pest Plant Council, 2011; USDA-NRCS; 2012)."
	Wagstaff, D.J. 2008. International poisonous plants checklist: an evidence-based reference. CRC Press, Boca Raton, FL	No evidence

Qsn #	Question	Answer
501	**Aquatic**	**n**
	Source(s)	**Notes**
	N'danikou, S. & Achigan-Dako, E.G. & Oyen, L.P.A. 2011. Urena lobata L. [Internet] Record from PROTA4U. Brink, M. & Achigan-Dako, E.G. (Editors). PROTA (Plant Resources of Tropical Africa / Wageningen, Netherlands. http://www.prota4u.org/search.asp. [Accessed 12 Feb 2018]	[Terrestrial] "In tropical Africa Urena lobata occurs from sea-level up to 2100 m altitude in grassland, bushland, thickets, flood plains, river banks, roadsides and fallow land, less often in semi-deciduous forest. "

502	**Grass**	**n**
	Source(s)	**Notes**
	USDA, ARS, Germplasm Resources Information Network. 2018. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html. [Accessed 12 Feb 2018]	Family: Malvaceae Subfamily: Malvoideae Tribe: Hibisceae

503	**Nitrogen fixing woody plant**	**n**
	Source(s)	**Notes**
	USDA, ARS, Germplasm Resources Information Network. 2018. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html. [Accessed 12 Feb 2018]	Family: Malvaceae Subfamily: Malvoideae Tribe: Hibisceae

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.	"Erect or diffuse sub shrubs 0.5-2 m tall"

601	**Evidence of substantial reproductive failure in native habitat**	**n**
	Source(s)	**Notes**
	N'danikou, S. & Achigan-Dako, E.G. & Oyen, L.P.A. 2011. Urena lobata L. [Internet] Record from PROTA4U. Brink, M. & Achigan-Dako, E.G. (Editors). PROTA (Plant Resources of Tropical Africa / Wageningen, Netherlands. http://www.prota4u.org/search.asp. [Accessed 12 Feb 2018]	"In view of its wide distribution, Urena lobata does not seem threatened by genetic erosion. In Madagascar harvesting of wild plants for fibre production is regulated by legislation to prevent overexploitation. Small germplasm collections are kept at the International Jute Organization, Dhaka, Bangladesh, and the USDA (United States Department of Agriculture) Southern Regional Plant Introduction Station, Griffin, Georgia, United States."

602	**Produces viable seed**	**y**
	Source(s)	**Notes**

Qsn #	Question	Answer
	N'danikou, S. & Achigan-Dako, E.G. & Oyen, L.P.A. 2011. Urena lobata L. [Internet] Record from PROTA4U. Brink, M. & Achigan-Dako, E.G. (Editors). PROTA (Plant Resources of Tropical Africa / Wageningen, Netherlands. http://www.prota4u.org/search.asp. [Accessed 12 Feb 2018]	"Cleaned and scarified seed may germinate within 5–8 days, but germination of seed in the husk may take place over a period of 2.5 months." ... "Urena lobata is propagated with seed. The 1000-seed weight is 15–30 g and per ha about 60–80 kg unshelled seed is required, or 3 –50 kg shelled seed. To obtain an even distribution of the seed, the bristly hooks should first be removed by rubbing with sand. Germination can be slow or uneven because of dormancy due to the impermeability of the seed-coat to water. It is considerably improved by shelling and scarification, for instance through removal of part of the seed-coat or treatment with concentrated sulphuric acid. Soaking in tepid water for 2 days also improves germination. Urena lobata is usually sown at the beginning of the rainy season in a well-prepared seedbed. Plants are closely spaced to prevent branching. Plant densities are usually around 300,000 plants/ha. In Sierra Leone spacings of 25 cm × 15 cm for fibre crops and 25 cm × 15 cm or 25 cm × 10 cm for seed crops have been recommended. Elsewhere a spacing of 5 cm × 5 cm has been recommended. Sowing may be done in rows (1–2 cm deep) or the seed may be broadcast."
	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.	"Mericarps 5, 4-5 mm long, stellate pubescent and reticulate-veined, glochidia ca. 1 mm long. Seeds 2.5-3.5 mm long."

603	Hybridizes naturally	
	Source(s)	**Notes**
	Pushparajan, G., Kuriachan, P. I., & Ninan, C. A. (1989). Intraspecific hybrid generations inUrena lobata L. with a note on the taxonomy of the species. Proceedings: Plant Sciences, 99(2), 127-130	"Meiosis in the hybrids between Urena lobata ssp.lobata and Urena lobata ssp.sinuata was normal with 14 bivalents thereby indicating close homology of the two genomes. The inheritance of leaf lobing was studied in F1, F2 and F3 generations. It is seen that leaf lobing in Urena lobata is a monogenic trait with incomplete dominance. Evidence from this study supports the retention of the subspecies status of the taxa." [Unknown if interspecific hybridization occurs]

604	Self-compatible or apomictic	y
	Source(s)	**Notes**
	N'danikou, S. & Achigan-Dako, E.G. & Oyen, L.P.A. 2011. Urena lobata L. [Internet] Record from PROTA4U. Brink, M. & Achigan-Dako, E.G. (Editors). PROTA (Plant Resources of Tropical Africa / Wageningen, Netherlands. http://www.prota4u.org/search.asp. [Accessed 12 Feb 2018]	"The flowers open early in the morning and wither about noon. They are capable of self-pollination, but the large intraspecific variation suggests a rather high percentage of cross-pollination."

Qsn #	Question	Answer
605	**Requires specialist pollinators**	**n**
	Source(s)	**Notes**
	N'danikou, S. & Achigan-Dako, E.G. & Oyen, L.P.A. 2011. Urena lobata L. [Internet] Record from PROTA4U. Brink, M. & Achigan-Dako, E.G. (Editors). PROTA (Plant Resources of Tropical Africa / Wageningen, Netherlands. http://www.prota4u.org/search.asp. [Accessed 12 Feb 2018]	"The nectaries are frequently visited by ants, aphids and various Hymenoptera."

Qsn #	Question	Answer
606	**Reproduction by vegetative fragmentation**	**n**
	Source(s)	**Notes**
	CABI. 2018. Invasive Species Compendium. Wallingford , UK: CAB International. www.cabi.org/isc	"U. lobata spreads by seeds. Fruits in this species are covered with barbed spines that readily attach to animal fur and clothing, allowing seeds to be widely dispersed. "

Qsn #	Question	Answer
607	**Minimum generative time (years)**	**1**
	Source(s)	**Notes**
	Francis, J. K. (ed.). 2004. Wildland shrubs of the United States and its Territories: thamnic descriptions: volume 1. Gen. Tech. Rep. IITF-GTR-26. U.S. Department of Agriculture, Forest Service, International Institute of Tropical Forestry, San Juan, PR, & U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fort Collins, CO	"Caesar weed grows rapidly and can reach 0.5 to 2 m by the end of the first year. In Puerto Rico, it can live 2 years, usually dying back to midheight after the first growing season." ... "A fiber crop yielding 1,800 kg/ha is ready to harvest after 6 to 7 months and seed crops of 300 to 500 kg/ha are ready after 7 or 8 months (Fagundes 2003)."
	Mukherjee, I. (1969). Studies on Flowering Responses of Urena lobata. Plant Physiology, 44(12), 1749-1751	"Urena lobata, Congo jute, is a Malvaceous fiber- yielding plant. It is usually a perennial in the tropics and an annual in the subtropics; in Ghana it is cultivated as an annual"

Qsn #	Question	Answer
701	**Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)**	**y**
	Source(s)	**Notes**
	Austin, D. F. 1999. Caesar's weed (Urena lobata): An invasive exotic or a Florida native? Wildland Weeds, 3(1): 13-16	"As anyone who ever walked through a patch of Caesar's weed knows, they are dispersed by animals. The sticky "spines" on the fruit segments easily cling to clothes and hair."
	N'danikou, S. & Achigan-Dako, E.G. & Oyen, L.P.A. 2011. Urena lobata L. [Internet] Record from PROTA4U. Brink, M. & Achigan-Dako, E.G. (Editors). PROTA (Plant Resources of Tropical Africa / Wageningen, Netherlands. http://www.prota4u.org/search.asp. [Accessed 12 Feb 2018]	"Dispersal is aided by the barbed spines on the fruits which stick to clothes and to the coats of animals."
	CABI. 2018. Invasive Species Compendium. Wallingford , UK: CAB International. www.cabi.org/isc	"U. lobata spreads by seeds. Fruits in this species are covered with barbed spines that readily attach to animal fur and clothing, allowing seeds to be widely dispersed. In addition, seeds may also be dispersed by water, contaminated soil and/or contaminated agricultural equipment (Queensland Department of Primary Industries and Fisheries, 2011)."

Qsn #	Question	Answer
702	**Propagules dispersed intentionally by people**	**y**
	Source(s)	**Notes**
	CABI. 2018. Invasive Species Compendium. Wallingford , UK: CAB International. www.cabi.org/isc	"U. lobata was intentionally introduced in many tropical and subtropical countries as a fibre crop. Commercial cultivation of the plant began in the Belgian Congo in the 1920s and in Central Africa in the 1930s (Groof, 1940). This species is widely cultivated in Angola, Brazil, Congo, Ghana, and Malaysia to produce a fibre known as “jute” or “congo-jute” which is used to made carpets and ropes (Austin, 1999; Francis, 2000; Fagundes 2003)."

703	**Propagules likely to disperse as a produce contaminant**	
	Source(s)	**Notes**
	CABI. 2018. Invasive Species Compendium. Wallingford , UK: CAB International. www.cabi.org/isc	[Soil contaminant] "U. lobata spreads by seeds. Fruits in this species are covered with barbed spines that readily attach to animal fur and clothing, allowing seeds to be widely dispersed. In addition, seeds may also be dispersed by water, contaminated soil and/or contaminated agricultural equipment (Queensland Department of Primary Industries and Fisheries, 2011)."

704	**Propagules adapted to wind dispersal**	**n**
	Source(s)	**Notes**
	CABI. 2018. Invasive Species Compendium. Wallingford , UK: CAB International. www.cabi.org/isc	"U. lobata spreads by seeds. Fruits in this species are covered with barbed spines that readily attach to animal fur and clothing, allowing seeds to be widely dispersed. In addition, seeds may also be dispersed by water, contaminated soil and/or contaminated agricultural equipment (Queensland Department of Primary Industries and Fisheries, 2011)."

705	**Propagules water dispersed**	**y**
	Source(s)	**Notes**
	CABI. 2018. Invasive Species Compendium. Wallingford , UK: CAB International. www.cabi.org/isc	"U. lobata spreads by seeds. ... In addition, seeds may also be dispersed by water, contaminated soil and/or contaminated agricultural equipment (Queensland Department of Primary Industries and Fisheries, 2011)."

706	**Propagules bird dispersed**	**n**
	Source(s)	**Notes**
	Austin, D. F. 1999. Caesar's weed (Urena lobata): An invasive exotic or a Florida native? Wildland Weeds, 3(1): 13-16	"Besides, before the advent of long-distance travel via ocean-going vessels and airplanes, there would have been little chance of a Caesar's weed fruit travelling from one continent to the other. Birds that do travel between continents are notoriously poor dispersers of relatively large sticky seeds like these, although they do carry many other kinds."

Qsn #	Question	Answer
	CABI. 2018. Invasive Species Compendium. Wallingford , UK: CAB International. www.cabi.org/isc	[Possibly dispersed externally by birds, but no evidence of internal dispersal] "U. lobata spreads by seeds. Fruits in this species are covered with barbed spines that readily attach to animal fur and clothing, allowing seeds to be widely dispersed. In addition, seeds may also be dispersed by water, contaminated soil and/or contaminated agricultural equipment (Queensland Department of Primary Industries and Fisheries, 2011)."

707	Propagules dispersed by other animals (externally)	y
	Source(s)	**Notes**
	Austin, D. F. 1999. Caesar's weed (Urena lobata): An invasive exotic or a Florida native? Wildland Weeds, 3(1): 13-16	"As anyone who ever walked through a patch of Caesar's weed knows, they are dispersed by animals. The sticky "spines" on the fruit segments easily cling to clothes and hair."
	N'danikou, S. & Achigan-Dako, E.G. & Oyen, L.P.A. 2011. Urena lobata L. [Internet] Record from PROTA4U. Brink, M. & Achigan-Dako, E.G. (Editors). PROTA (Plant Resources of Tropical Africa / Wageningen, Netherlands. http://www.prota4u.org/search.asp. [Accessed 12 Feb 2018]	"Dispersal is aided by the barbed spines on the fruits which stick to clothes and to the coats of animals."
	Haselwood, E.L., Motter, G.G., & Hirano, R.T. (eds.). 1983. Handbook of Hawaiian Weeds. University of Hawaii Press, Honolulu, HI	"Fruit a capsule, rounded, about 1/3 inch in diameter, with five downy, 1-seeded units covered with bristles, each bristle with a circle of barbs at the tip" ... "Propagation: By seed. Barbs on seed cling to fur of animals and to clothing."

708	Propagules survive passage through the gut	n
	Source(s)	**Notes**
	Setiya, A. V., Narkhede, M. S., & Dongarwar, N. M. (2015). Preliminary survey of fodder plants used by goats Gadchiroli District of Maharashtra State. International Journal of Advanced Research, 3(12), 1157-1167	"Table 1 – Plants preferred by Goats as fodder." [Includes Urena lobate. Parts eaten include leaves & flowers, but not fruits. Seeds unlikely to be internally dispersed]
	Francis, J. K. (ed.). 2004. Wildland shrubs of the United States and its Territories: thamnic descriptions: volume 1. Gen. Tech. Rep. IITF-GTR-26. U.S. Department of Agriculture, Forest Service, International Institute of Tropical Forestry, San Juan, PR, & U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fort Collins, CO	"the plant is little browsed by cattle and can become a severe weed in pastures and plantations." [Seeds unlikely to be ingested]

801	Prolific seed production (>1000/m2)	
	Source(s)	**Notes**
	Wang, J., Ferrell, J., MacDonald, G., & Sellers, B. (2009). Factors Affecting Seed Germination of Cadillo (Urena lobata). Weed Science, 57(1), 31-35	"Cadillo flowers and fruits throughout the year (Fryxell 2001) and can produce up to 600 seeds per plant per year (Harris and Brewah 1986)." [Possibly. Densities unknown]

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

Qsn #	Question	Answer
	Source(s)	**Notes**
	CABI. 2018. Invasive Species Compendium. Wallingford , UK: CAB International. www.cabi.org/isc	"Seeds have high dormancy rates (Harris, 1981), and require water soaking or scarification in order to germinate (Wang et al., 2009). Treated seeds have high germination rates ranging from 96% to 100%, but untreated seeds have very low germination rates (Harris, 1981). Seeds germinate well from 15°C to 40°C, with an optimal temperature of 28°C and germination is unaffected by pH levels (Wang et al., 2009)."
	Royal Botanic Gardens Kew. (2018) Seed Information Database (SID). Version 7.1. Available from: http://data.kew.org/sid/. [Accessed 13 Feb 2018]	"Storage Behaviour: Orthodox Storage Conditions: Long-term storage under IPGRI preferred conditions at RBG Kew, WP. Oldest collection 14 years; germination change 98 to 100%, 13 years, 1 collection"
	Wang, J., Ferrell, J., MacDonald, G., & Sellers, B. (2009). Factors Affecting Seed Germination of Cadillo (Urena lobata). Weed Science, 57(1), 31-35	[Possibly Yes. Longevity Unknown] "Cadillo seed dormancy is due to the hard seed coat." ... "Previous research has suggested that the viability of Cadillo declined rapidly during storage (Kirby 1963). However, our results indicated viability did not decrease when seeds are stored at ambient temperatures for less than 6 mo. Poor germination of Cadillo seed in the field was previously related to viability loss (Kirby 1963). Research suggests that coat-imposed dormancy might be a significant cause for decreased germination. The dormancy and the hardseededness help Cadillo to persist longer in the seedbank in the field, and once dormancy is released, it will start to germinate again because of the minimal viability loss of seeds."

803	Well controlled by herbicides	y
	Source(s)	**Notes**
	Awan, T. H., Chauhan, B. S., & Cruz, P. C. S. (2014). Influence of environmental factors on the germination of Urena lobata L. and its response to herbicides. PloS One, 9 (3), e90305	"Bispyribac-sodium, a commonly used herbicide in rice, sprayed at the 4-leaf stage of the weed, provided 100% control, which did not differ much with 2,4-D (98%), glyphosate (97%), and thiobencarb + 2,4-D (98%). These herbicides reduced shoot and root biomass by 99–100%."
	CABI. 2018. Invasive Species Compendium. Wallingford , UK: CAB International. www.cabi.org/isc	"There is limited research on chemical control of U. lobata, but based on research with cotton, foliar application of 1-2% 3,5,6-trichloro-2-pyridinyloxy-acetic acid (i.e., triclopyr) will be effective (IFAS Extension, 2008)."

804	Tolerates, or benefits from, mutilation, cultivation, or fire	
	Source(s)	**Notes**
	Francis, J. K. (ed.). 2004. Wildland shrubs of the United States and its Territories: thamnic descriptions: volume 1. Gen. Tech. Rep. IITF-GTR-26. U.S. Department of Agriculture, Forest Service, International Institute of Tropical Forestry, San Juan, PR, & U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fort Collins, CO	"It is not known whether the shrubs sprout from the roots multiple times."
	UF / IFAS Center for Aquatic and Invasive Plants. 2018. Urena lobate. https://plants.ifas.ufl.edu/plant-directory/urena-lobata/. [Accessed 13 Feb 2018]	"Mechanical - Shade will help to deter growth and limit seedling establishment. Mulches or other ground cover will also prevent seed germination. "

Qsn #	Question	Answer
	CABI. 2018. Invasive Species Compendium. Wallingford , UK: CAB International. www.cabi.org/isc	"U. lobata is difficult to control. Seedlings and young plants should be pulled up and removed from treated areas. Fruits and seeds should be also removed from treated areas in order to avoid germination. Follow-up treatments are required to control sprouts"

805	**Effective natural enemies present locally (e.g. introduced biocontrol agents)**	
	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.	"Pantropical; in Hawai'i naturalized in low elevation disturbed areas, 20-30 m, on Kaua'i, O'ahu, and East Maui." [Unknown]

Summary of Risk Traits:

High Risk / Undesirable Traits
• Elevation range exceeds 1000 m, demonstrating environmental versatility
• Thrives in tropical climates
• Widely naturalized (including Kauai, Oahu, & Maui, Hawaiian Islands)
• Disturbance-adapted weed of waste grounds, roadsides, open woodlands, forest margins, coastal dunes, riparian areas, swamps, salt marshes, as well as in pastures & active & abandoned croplands
• Agricultural & pasture weed
• Potential environmental weed
• Other Urena species are invasive weeds
• Alternate host of crop pathogens
• Tolerates many soil types
• Forms dense thickets that exclude other vegetation
• Reproduces by seeds
• Self-fertile
• Reaches maturity in one growing season
• Dispersed by barbed spines on fruits that adhere to clothing & fur
• Seeds also dispersed by water, contaminated soil &/or contaminated agricultural equipment
• May form a persistent seed bank (longevity unspecified)

Low Risk Traits
• Palatable to browsing/grazing animals (although may be less preferred than other pasture plants)
• Non-toxic
• Prefers full sun & high light environments
• Not reported to spread vegetatively
• Herbicides may provide effective control